



MACROPRUDENTIAL REPORT



2022

*‘The only road to perfection is one
where people work for the common good.’*

Count István Széchenyi



MACROPRUDENTIAL REPORT

2022

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Foreword

The 2008 international economic crisis fundamentally changed how the maintenance of financial stability was perceived. The painful lesson from the severe disorders in the financial system is that interventions which exclusively target the stability of certain financial institutions with a purely microprudential focus are not capable of maintaining the stability of the financial system. The mitigation of systemic financial risks and hence properly calibrated macroprudential regulations are also needed.

Act CXXXIX of 2013 on the Magyar Nemzeti Bank vested the MNB with strong authority and the proper means to efficiently manage financial systemic risks appearing at the national level, within its capacity as micro- and macroprudential authority, and through its consumer protection duties to support the preservation of trust in the financial system. The MNB applies its reinforced mandate proactively and in line with the regulatory framework of the European Union.

The purpose of the Macroprudential Report is to present the macroprudential instruments applied by the MNB to prevent and address the systemic risks identified and communicated in the Financial Stability Report, as well as the effects of those and the adjustment of market participants. It also provides an overview of resolution activity to support the smooth functioning of the financial system, and it also describes developments in financial consumer protection that contribute to the maintenance of financial stability through strengthening trust in the financial system. In line with the MNB's Statute, macroprudential and supervisory strategy, the publication intends to make the MNB's measures supporting financial stability easy to understand both for the actors of the sector and the public.

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Executive Summary

In its annually published Macroprudential Report, the MNB describes and evaluates - covering also the MNB's consumer protection and resolution activities - the operation of its currently applied macroprudential instruments, the adjustment of market participants, and how the instruments impact the sustainable contribution of the financial system to economic growth. In addition, the report provides a more in-depth analysis of some of the most relevant issues from a financial stability perspective. In October 2022, the following key messages can be formulated in respect of the instruments in question:

1. Following the easing of the coronavirus pandemic and the associated economic uncertainty, strong lending continued in both the corporate and household segments, supported by government and central bank lending programmes. In line with the expansion of retail lending, according to our estimates, housing prices are now overvalued even on a national average, which is of particular relevance for banking risks. In view of the rapid credit outflows, housing market overvaluation, rising cyclical risks, increase of countercyclical capital buffer (CCyB) rates internationally and the ESRB's warning for the residential real estate market, the MNB decided to activate the CCyB rate at 0.5 percent from 1 July 2023. Moving forward, cyclical systemic risks and the further evolution of the CCyB rate will also be substantially affected by the macroeconomic-financial impacts of the Russia-Ukraine war.

2. Borrower-based measures in place since 2015 help ensure that households have sufficient income reserves and resilience to offset potential economic shocks. Despite rapid loan outflows in recent years, historically high housing market overvaluation and rising interest rates, borrower over-indebtedness is not apparent. At the same time, the debt-service-to-income ratio (DSTI) of housing borrowers has already risen in the first half of 2022, while the loan-to-value ratio (LTV) has remained substantially unchanged. There is still no sign of excessive clustering of borrowers near the regulatory limits of borrower-based measures or of significant adaptation of borrowers to them. In the context of household lending, the MNB is monitoring in particular (1) the potential risks of the rising interest rate environment and inflation, (2) the increase in the maturity of loans, (3) and the extent to which personal loans are used to finance the household's down payment.

3. Banks comply with the liquidity coverage ratio (LCR) with decreasing but safe buffers, which can be traced back to, among other things, the monetary policy tightening steps taken so far. However, the liquidity position of banks is still sound and has returned to levels prior to the coronavirus pandemic, and even the outbreak of the war did not lead to liquidity difficulties. Banks' have been complying with the Net Stable Funding Ratio (NSFR) requirement, which came into force on 28 June 2021, without major fluctuations over the past year. However, a slower reflection of central bank interest rate hikes in the pricing of client deposits could pose funding risks in the longer term.

4. The banking system continues to meet the MNB's macroprudential funding requirements with adequate buffers and favourable funding structure. The banking system has an adequate and stable external funding position despite the current global challenges. In terms of currency mismatch, the banking system is now operating with a substantial foreign currency liability surplus. The funding position of banks is stable, and the sector has adequate buffers to offset potential funding challenges, therefore the funding situation is not an obstacle to sustaining lending.

5. With the support of the preferential treatment of green mortgage bond issuances, banks comply with the Mortgage Funding Adequacy Ratio (MFAR) requirement with safe buffers. In the summer of 2022, the MNB decided to amend the regulation in order to further develop the mortgage bond market, broaden the investor base and further strengthen the maturity match of assets and liabilities: From 1 July 2022, in addition to the forint, foreign currency-denominated mortgage-based liabilities will also be eligible for the mortgage funding requirement, and to support adjustment in an uncertain economic environment, the previously announced tightening measures will be postponed by 1 year, to take effect from 1 October 2023.

6. The MNB has not changed the scope of domestic other systemically important institutions (O-SII) in its 2021 review. Identified banks will have to comply from 2022 onwards with a quarter of the final value according to the gradual build-up of the capital buffer released during the coronavirus pandemic. The integration of Magyar Bankholding created the second

largest domestic O-SII, increasing the concentration of systemically important institutions, however, no changes to the ratios were required as a result.

7. The MNB continues to keep the systemic risk buffer (SyRB) used to manage the default risks of project financing loans secured by commercial real estate suspended. The systemic risk buffer may be appropriate in the future to address the challenges related to the portfolio quality considered adequate for the time being, given the Russia-Ukraine war and the deterioration of the macroeconomic environment, including by extending it to additional loan and counterparty segments. In addition, the sectoral SyRB could also be considered in the event of an increase in housing and real estate lending risks.

8. The MNB's financial consumer protection activities continue to support the maintenance of financial stability by increasing confidence in the financial system. In this context, the central bank has focused on 3 priority issues over the past year: (1) a targeted review of institutional practices in the management of payment moratorium, (2) renewal of its Recommendation on the consumer protection principles expected in the management of retail exposures in default, (3) and the close monitoring of specific consumer protection risks related to cross-border services.

9. The MNB has revised the principles of MREL calculation and published its expectations for investments in MREL-eligible assets in view of the changes in international legislation and their implementation in Hungary. The deadline for compliance with the new rules is 1 January 2024, and the central bank will monitor compliance on an ongoing basis, in particular as most of the institutions concerned will be required to adapt. Planning for compliance with the MREL is now part of the capital planning of the majority of credit institutions.

In addition to assessing the impact of the application of the macroprudential policy toolkit, the MNB has also examined the following topics from a macroprudential perspective:

10. The MNB will continue to pay particular attention to the assessment of financial stability risks arising from climate change. This will require addressing existing data gaps, which can be facilitated by corporate sustainability disclosures based on a common taxonomy capturing green aspects. The central bank regularly monitors information from other data providers, such as researchers and market data providers. In addition to addressing data gaps related to climate risks, the central bank is actively exploring the application of a risk-management toolkit: it is continuously examining how green transformation of borrower-based measures and capital buffers in particular can contribute to addressing climate change-related financial stability risks.

11. In response to the turbulent market developments of recent years and the lessons learnt, the European Commission has announced a consultation on proposals to review certain areas of the regulatory framework for macroprudential policy. The main proposals affecting the MNB relate to the usability of capital buffers, harmonisation of borrower-based measures and addressing the new types of risks such as climate and cyber risks. The expanding and increasingly complex regulatory environment is becoming more targeted, but at the same time makes compliance and monitoring more complex. It is important also for the MNB to avoid unnecessarily complex regulatory regimes in its own rulemaking and to create regulations that can adapt also to new risks.

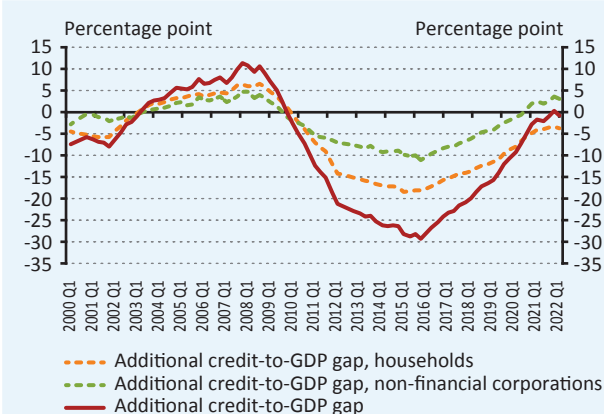
12. Improving online lending processes at banks has become not only a matter of efficiency, but also of competitiveness and financial stability. By June 2022, in the market for personal loans, which meet the legal conditions for full online lending, 20 percent of lending was already done online. By 2022 Q2, nearly 200,000 clients, 8 percent of bank borrowers, had already had an online borrowing experience. Personal loans granted online are not considered riskier than those granted offline. Flexible regulation and widespread access to national data assets are key to a stronger uptake of online lending.

13. As a result of the MNB's active engagement in recent years, loan products with interest rates fixed for a longer term have become common in the Hungarian mortgage market, significantly increasing the resilience of households to shocks. Although fixed-rate loans offer significant financial stability benefits in a rising interest rate environment, over the longer term, the development of the loan refinancing market is necessary to ensure that borrowers taking out loans now can also benefit from a potentially declining interest rate environment in the future. For banks the challenge is to ensure the effective use of hedging techniques to tackle interest rate risk.

1 Countercyclical capital buffer

The indicators examined in the determination of the countercyclical capital buffer (CCyB) rate do not yet indicate cyclical systemic risks on a rule basis requiring intervention. However, developments in the real estate market and related lending trends point to a potential build-up of such systemic risks in the medium term. To mitigate these, for the first time since 2016, the MNB imposed a countercyclical capital buffer rate of 0.5 percent on domestic exposures with an activation date of 1 July 2023. The MNB will continue to decide on the rate on a quarterly basis, depending on the evolution of risks.

Chart 1
The evolution of the additional credit-to-GDP gap used to calculate the buffer guide, as well as its household and non-financial corporation breakdown



Source: MNB.

1.1 THE MNB HAS ACTIVATED THE COUNTERCYCLICAL CAPITAL BUFFER TO MITIGATE RISKS IN THE HOUSING AND CREDIT MARKETS

The level of cyclical financial systemic risk in Hungary is rising. The country-specific benchmark additional credit-to-GDP gap, developed to assess the domestic credit cycle, continued to narrow, driven by the increase of outstanding loan volume exceeding nominal GDP growth, turning marginally positive by Q4 2021, reaching 0.2 percentage points. (Chart 1). The lending of the national economy has therefore reached its equilibrium level based on this overall indicator. In the set of overheating and vulnerability indicators of the cyclical systemic risk map, the measure capturing developments in corporate lending, banking system leverage and housing-prices-to-income-ratio point to high levels of cyclical systemic risk (Table 1); however, in the short term,

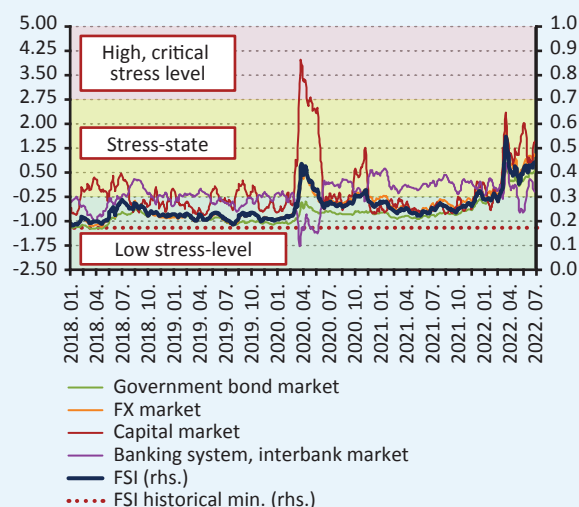
Table 1
Selected indicators of the cyclical systemic risk map, 2002–2021

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Country-specific credit-to-GDP gap																				
Country-specific credit-to-GDP gap, households																				
Country-specific credit-to-GDP gap, non-financial corporations																				
Global credit-to-GDP gap recommended by ESRB and BIS																				
Property price to income																				
Households' debt service burdens to disposable income																				
Gross external debt as a percent of GDP																				
Loan-to-deposit ratio of the banking sector																				
Ratio of FX loans to total loans (domestic financial institution)																				
Current account balance as a percent of GDP																				
Capital adequacy ratio of the banking sector																				
Leverage of the banking sector																				

Note: Green colour indicates low, yellow medium and red high cyclical systemic risk.

Source: BIS, HCSO, MNB.

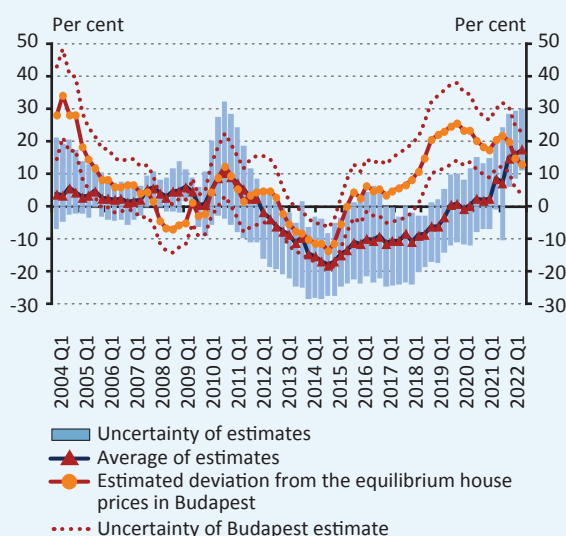
Chart 2
The Factor Based Financial Stress Index



Note: FSI values calculated on the basis of estimated factors for 2005–2019. In December 2008, the FSI approached a maximum of 1. The historical minimum refers to values calculated since 2005.

Source: Szendrei, T. – Varga, K. (2017); MNB.

Chart 3
Deviation of house prices from the estimated level justified by fundamentals, nationwide and in Budapest



Note: The quantification of the deviation of house prices from the level justified by fundamentals is based on four methodologies.

Source: MNB.

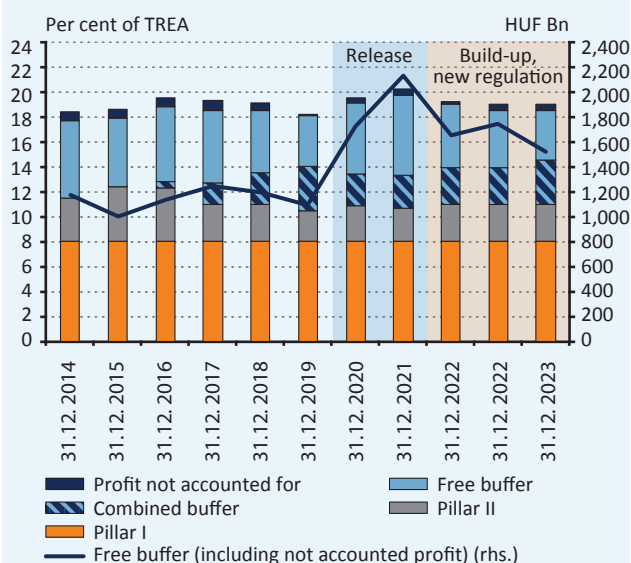
the risks signalled by the indicators are expected to moderate somewhat as a result of risk aversion due to rising uncertainty and slowing lending. The level of domestic cyclical financial systemic risks has therefore increased, but the methodology used has not yet triggered a need for intervention on a rule basis¹. Risks are further mitigated by the fact that the loan penetration ratio to domestic GDP is one of the lowest in the EU and there are no signs of excessive risk-taking in the credit market or material vulnerabilities in the banking sector.

Risks stemming from changes in the international environment have increased significantly over the past six months, and there is also considerable uncertainty about their future evolution. The stress level of the financial system increased significantly in the wake of the deterioration in the capital market situation following the outbreak of the war, but subsequently the Factor Based Stress Index (FSI) stabilised in the medium-risk band (Chart 2). The increased stress level was attributable to the following factors, listed in the order of magnitude of their contribution: capital market stress, an increase in foreign exchange market volatility, a sharp increase in risks in the banking sector as result of the parent banks' CDS and heightened tension in the government securities market resulting from a widening spread between yields on Hungarian and German government bonds with 10-year maturity. Compared to the stress event in March 2020 linked to the outbreak of the coronavirus pandemic, the Russo-Ukrainian conflict that started in February 2022 resulted in a more widespread, more persistent, medium-level stress situation with significant impacts on several markets. However, this elevated stress level does not come close to the levels seen during the 2008–09 crisis. Looking ahead, the prolongation of the war and the worsening of the related energy supply disruptions in Europe could also cause the persistence of or even an increase in the current stress levels in the financial system.

Private sector lending trends and real estate market developments justified macroprudential intervention. As a result of the rapid housing price increases in recent years, nationwide housing market overvaluation rose to a historically high level of 18 percent in Q1 2022 (Chart 3). The dynamic growth in housing prices in the first half of 2022 has not been slowed by the Russo-Ukrainian war and the deteriorating economic outlook in its wake. In February 2022, the European Systemic Risk Board (ESRB) issued a warning to Hungary on vulnerabilities in the residential real estate sector, due to the overvaluation of house prices and the outstanding growth of household lending even by European standards.

The MNB has initiated the build-up of the countercyclical capital buffer to mitigate housing and related credit risks, which may continue depending on further risk developments. To mitigate excessive overvaluation in the residential real estate market and related credit risks, the MNB has set the CCyB rate applicable to exposures to counterparties in Hungary at 0.5 percent as of 1 July 2023. This could increase

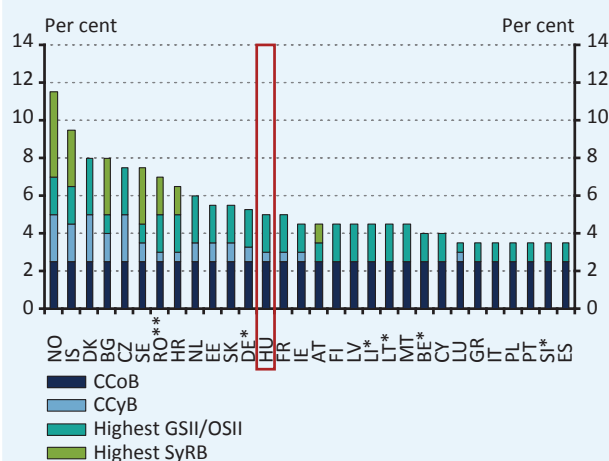
Chart 4
Historical and estimated development of banking system capital requirements and free buffers



Note: Estimate of July 1, 2023 values based on June 30, 2022 data, taking into account the O-SII increase and the 0.5% domestic CCyB rate effective from July 1, 2023. We did not count on the bank extra profit tax and RWA increase, which reduce the free buffer, or the change in profit that increases it.

Source: MNB.

Chart 5
Announced capital buffer requirements of EEA countries (30 June 2022)



Note: Buffers announced, but not yet implemented in all cases. The indicated CCyB rates apply to the exposures in the given country, in the case of bank groups present in several countries, the consolidated rate may differ significantly from this. *Sectoral SyRB was also introduced: 9% in Belgium, 2% in Germany, 2% in Lithuania for home loans, 1% for all mortgage loans in Liechtenstein, differentiated in Slovenia: 1% for home loans and 0.5% for other household loans. **In Romania, the highest capital buffer imposed on a bank is currently 6%.

Source: ESRB, websites of national authorities.

the banking system's shock resilience to a possible housing market adjustment and could also act as a preventive cooling mechanism for the housing and mortgage markets, thereby supporting tightening monetary policy measures, as well. In the coming rate reviews, the MNB may continue to increase the CCyB rate depending on developments in the housing and credit markets, and also has additional policy tools at its disposal, such as the introduction of a sectoral systemic risk buffer (SSyRB) or tightening of borrower-based measures. And in the event of a significant shock, such as the materialisation of war-related real economic risks, there is also the possibility for buffer release and thereby maintaining lending capacity.

1.2 THE PRESCRIBED COUNTERCYCLICAL CAPITAL REQUIREMENT DOES NOT IMPOSE AN EXCESSIVE BURDEN OF ADJUSTMENT

For most banks, there is room for manoeuvre to build up the countercyclical capital requirement given the current level of free capital buffers even after the increase in the capital requirement for other systemically important domestic banks (O-SIIs). Taking into account the already announced increase in the O-SII buffers from 1 January 2023 and the 0.5 percent CCyB for domestic exposures, we estimate that a free buffer of around HUF 1,513 billion, including the unaccounted profit, representing 4.5 percent of the Total Risk Exposure Amount (TREA) would remain in the banking sector (Chart 4.). However, the size of the free buffer may vary substantially depending on factors affecting the ability to accumulate capital (e.g., profitability, extra profit tax). Therefore, the build-up of capital buffers is not expected to require significant adjustment, and at the individual level, there is a one-year phase-in period to ensure adequate own funds. Increasing the capital buffer will not lead to an excessive reduction in lending capacity, while it will increase the resilience of the banking system. However, future decisions on the CCyB rate should take into account the potentially changing capital position of banks in the current uncertain macroeconomic environment, as well as the evolution of compliance with the minimum requirement for own funds and eligible liabilities (MREL).

Even with a CCyB rate of 0.5 percent, the domestic combined capital buffer requirements are not considered excessive in the EEA. While most European countries reduced their CCyB rates partially or completely during the coronavirus, 16 EEA member states have by now announced the introduction of a positive rate. Even with the announced CCyB rate increase, the Hungarian level of macroprudential capital buffers is in the mid-range of EU countries (Chart 5), i.e., it does not represent an excessive burden or competitive disadvantage for domestic banks by international standards.

Box 1**Addressing housing and credit market risks internationally**

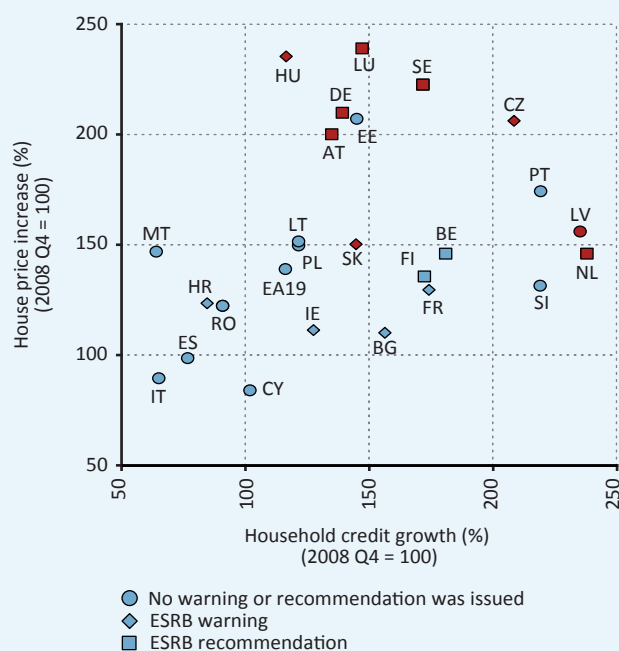
In recent years, cyclical and housing market risks have increased in the EU. Along with rising housing prices, the estimated degree of overvaluation of the housing market in the EU has also increased. According to Eurostat data², the annual rate of housing price growth in the EU in Q1 2022 ranged from 24.7 percent (CZ) to 1.1 percent (CY), with the Czech Republic, Hungary and Estonia showing exceptionally high increases of over 20 percent. The ECB estimates³ that housing market overvaluation reached high levels in several countries by Q1 2022 and was historically high also in Hungary (22 percent). Luxembourg, Sweden, the Czech Republic and Slovakia recorded the highest levels of overvaluation in Q1 2022, while the EU as a whole ranged from 60 percent (LU) to -18 percent (RO).

Housing price increases have been accompanied by dynamic lending in several countries. In the EU, the annual growth rate of household loans in Q1 2022 ranged from 13.1 percent (BG) to -1.8 percent (DK). In addition to Hungary's third-highest growth rate of 11.7 percent, Bulgaria (13.1 percent), Lithuania (12.8 percent) and the Czech Republic (10.4 percent) also recorded double-digit growth rates.

The ESRB's assessment of systemic risks in housing markets and the adequacy of related macroprudential measures suggests that in recent years, additional measures to mitigate cyclical risks have become necessary in several countries. In 2019, the ESRB issued warnings to 5 countries regarding elevated levels of residential real estate market risks and addressed recommendations to 5 countries regarding the need for potential macroprudential intervention, followed by warnings to another 5 countries, including Hungary, and recommendations to 2 countries in 2022. In response to the growing risks and the ESRB's signals, several EU Member States have already taken action to address cyclical and housing market risks. Among the policy tools available to address risks, Member States have most often used countercyclical capital buffers (CCyB), sectoral systemic risk buffers (SyRB) and borrower-based measures.

Of the capital instruments, the use of countercyclical capital buffer is the most widespread. After the easing in 2020, as the economic impact of the pandemic subsided, an increasing number of countries moved towards a tightening of the CCyB. By the end of June 2022, 16 EEA countries had a positive CCyB rate

(0.5–2.5 percent) or announced an increase. In most countries, the current credit market situation did not, but the outlook for the credit and real estate markets did point in the direction of a preventive increase. Some countries

Credit and house price growth in the EU and ESRB risk assessments (2022 Q1)

Note: Considering all ESRB warnings and recommendations issued until 2022. In the case of recommendations and warnings, the fact of the recommendation was displayed. We have marked in red the countries with an estimated housing market overvaluation of at least 20 percent. Denmark and Greece were not shown due to lack of data. EA19: Euro area.

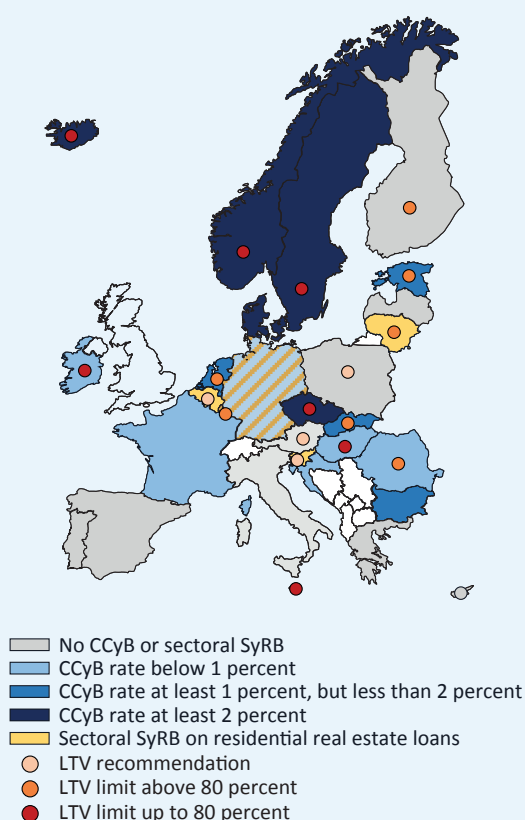
Source: MNB, ECB, Eurostat, ESRB

Advantages and disadvantages of policy tools to mitigate housing market risks

	Advantages	Disadvantages
Counter-cyclical capital buffer	<ul style="list-style-type: none"> A dedicated tool for managing cyclical risks A strong communication signal about elevated risks 	<ul style="list-style-type: none"> It is less targeted and indirect in effect It does not require significant asset-side adaptation of banks
Sectoral systemic risk capital buffer	<ul style="list-style-type: none"> A targeted, larger increase of the capital requirement of exposures related to overheating 	<ul style="list-style-type: none"> It does not require significant asset-side adaptation of banks Necessitates EU Commission opinion above 3 percent and approval above 5 percent
Borrower-based measures	<ul style="list-style-type: none"> Targeted restriction of loans most exposed to risks Strong, direct lending effect 	<ul style="list-style-type: none"> Can excessively restrict household borrowing (negative side effects)

Source: MNB.

Announced macroprudential measures affecting the housing market in EEA countries (30 June 2022)



Note: Measures announced, but not yet implemented in all cases. In the case of HFM rules, numerical limits were indicated only for binding regulations. In the case of Germany, CCyB and sectoral SyRB are also used.

Source: ESRB, websites on national authorities.

are mitigating risks through other forms of capital requirements. A sectoral SyRB has been imposed: on housing loans in Belgium at 9 percent, in Germany and Lithuania at 2 percent, in Liechtenstein at 1 percent for all mortgages, in Slovenia at a differential rate of 1 percent for housing loans and 0.5 percent for other household loans. Some countries also have macroprudential measures in place that increase risk weights and indirectly raise capital requirements. 8 countries have measures in place to adjust the risk weights of exposures backed by real estate under Articles 124 and 164 of the CRR and 5 countries apply other macroprudential measures affecting risk weights.

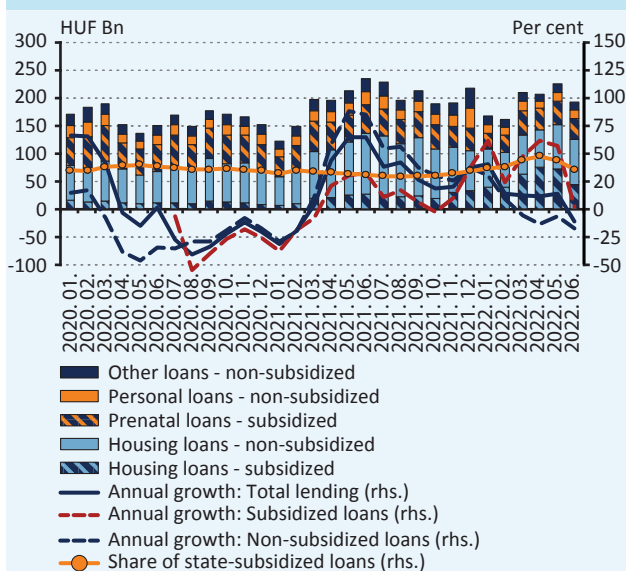
In the case of borrower-based measures, some countries have revised their regulations following the ESRB's recommendations and warnings in 2019. The domestic loan-to-value (LTV) requirement, more relevant due to the risks associated with the overvaluation of collateral, is applied on a mandatory basis by 13 EU countries, typically with an overall limit of 80-85 percent. Following the ESRB's assessment, Belgium has introduced a recommendation and Luxembourg a mandatory regime with an overall LTV limit of 80 and 90 percent respectively. In the Czech Republic and Finland, limits were temporarily eased to counter the effects of the COVID pandemic and have since been restored to the previous levels of 80 and 85 percent respectively (with exceptions for first-time buyers).

In the domestic context, increased monitoring of risks and, depending on their evolution, the data-driven activation or tightening of available capital instruments or borrower-based measures could be a solution to address rising cyclical and real estate market risks. The CCyB can enhance the stability of the banking system as a comprehensive and dedicated tool to address cyclical risks and encourage banking adjustment to mitigate cyclical risks. Thus, as an initial step, and in line with international measures, the MNB has decided to activate the CCyB rate at 0.5 percent from 1 July 2023. However, further increases in cyclical risks and real estate overvaluation may require a future increase in the capital buffer rate or even more direct intervention, which could involve tightening the borrower-based measures or introducing a sectoral SyRB.

2 Borrower-based measures

Borrower-based measures have not materially constrained the healthy growth of credit in recent years but have increased the resilience to shocks of loans by holding back risky lending and helping to offset the shocks of recent years from pandemic and war. The past year has seen a slight increase in the share of loans granted close to the regulatory limit on the debt-service-to-income ratio (DSTI), especially for housing loans. In the case of the loan-to-value ratio (LTV), the increasing burden on collateral is not visible despite the overvaluation of the housing market. In order to maintain a healthy structure of lending, the MNB continuously monitors (1) the evolution of credit market risks from the rising interest rate environment and inflation, (2) the possible increase in the maturity of household loans, and (3) the extent to which the down payment is financed from personal loans.

Chart 6
New household lending in the credit institution sector



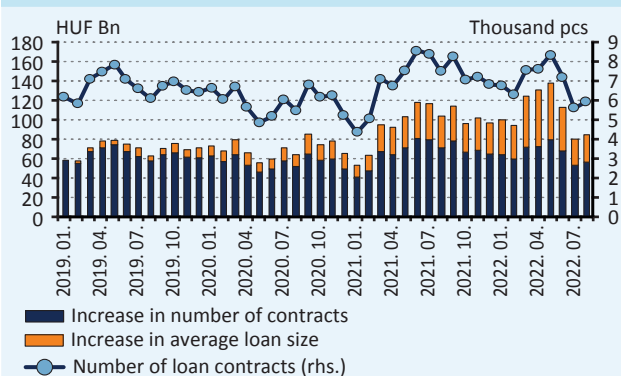
Note: Without individual entrepreneur loans. Annual growth of subsidized loans are shown from July 2020 due to base effects of prenatal loans started in 2019.

Source: MNB.

2.1 THE RISING INTEREST RATE ENVIRONMENT AND DETERIORATING MACROECONOMIC ENVIRONMENT ARE SLOWING DOWN HOUSEHOLD LENDING

While the first half of 2022 saw an annual increase in retail lending, the credit market slowed down in June. In the first half of 2022, banks granted HUF 1,350 billion in retail loans, 11 percent more than in the same period last year. Growth was mainly supported by an expansion in housing lending, including dynamic lending under state-subsidised and central bank lending programmes. The annual growth of unsubsidised lending has been slowing since mid-2021 and has already declined by 4 percent year-on-year in the first half of 2022. The slowdown in non-subsidised lending may have been driven by the expansion of lending under the Green Home Programme (GHP) in early 2022, the gradual introduction of monetary tightening in bank pricing and the deterioration in the macroeconomic outlook due to the war (Chart 6).

Chart 7
Factors of housing loan disbursement growth

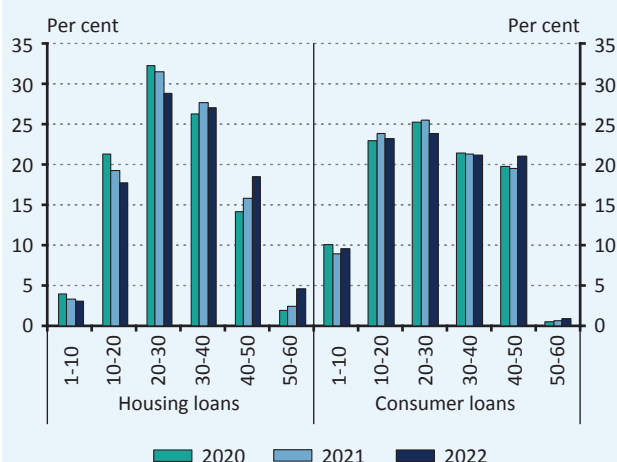


Note: Without loans for renovation and expansion. For calculating the loan disbursement due to change in number of contracts, the average loan size of January 2019 was applied.

Source: MNB.

The growth of the housing loan market was mainly driven by an increase in average loan amounts. The number of new housing loans has reached around 7,000 per month since 2019. Fixing the average loan amount at the January 2019 value would result in a monthly lending of HUF 60-80 billion. However, the average amount of housing loans increased from HUF 9 million at the beginning of 2019 to more than HUF 16 million in June 2022, so that the average monthly housing loan amount reached nearly HUF 130 billion per month in the second quarter of 2022 (Chart 7.). This suggests that the growth of the housing credit market has been driven mainly by rising housing prices and hence loan amounts, highlighting the potential credit market risks of overheating in the housing market.

Chart 8
DSTI distribution of new household lending by loan purpose



Note: Credit institution sector. Distribution by contract number. Data of 2022 refers to the first half of the year.

Source: MNB.

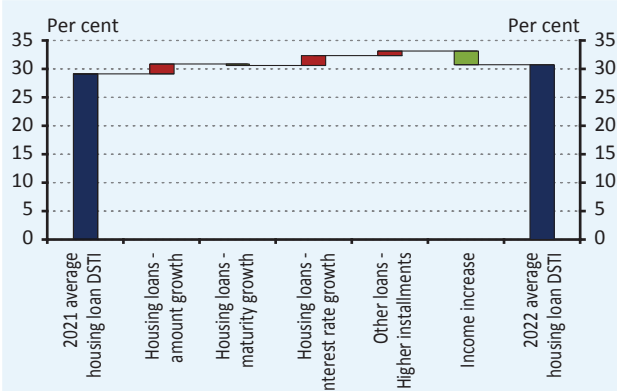
Table 2
The main characteristics of housing loans taken out by debtors who are financially stretched (2022 H1)

	DSTI≤40%	DSTI >40%
Average loan amount (HUF mn)	11	18
Average maturity (year)	15	18
Average APRC (%)	6.5	6.3
Average coverage value (HUF mn)	24	34
Average LTV (%)	46	53
Average income (HUF ths)	614	559

Note: In the case of income, the income taken into account in the calculation of the DSTI. The collateral value is estimated based on the LTV. The LTV volume-weighted value.

Source: MNB

Chart 9
Factors affecting the evolution of the average DSTI of home loan borrowers (2022 H1)



Note: Estimate based on data on home loan disbursements for the first half of 2021 and 2022.

Source: MNB

2.2 INCREASING DSTI LIMIT EFFECTIVENESS DUE TO FASTER RISING REPAYMENTS RELATIVE TO INCOME

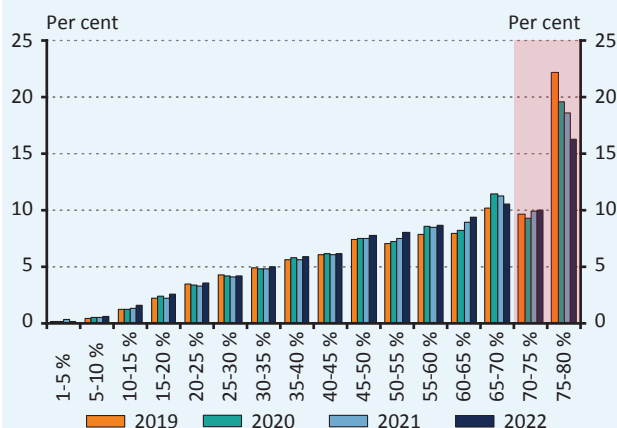
In the first half of 2022, the overstretched income position of borrowers increased slightly, especially among housing loan borrowers. The share of income-stretched loan contracts above the 40 percent debt-service-to-income ratio (DSTI) increased to 22 percent of total lending, compared to 20 percent in recent years (Chart 8.). The increase was mainly driven by higher burden on income among housing loan borrowers. In their case, the share of loans with a DSTI above 40 percent has been gradually increasing since 2020 and reached 23 percent in the first half of 2022, 7 percentage points more than in 2020. For consumer loans, no significant increase in income strain is observed.

In the housing credit market, a broad, general increase in income stretch is identified. Higher income stretch results mainly from higher loan amounts taken up by the borrowers concerned, rising interest rates and their lower incomes. The impact of large loans financed under the MNB Green Home Program (GHP), which typically finance energy-efficient, higher-value housing, was also a significant factor. Loans with a DSTI of over 40 percent are characterized by an average loan amount that is about 7 million HUF higher, a 3-year-longer maturity, a 10-million-HUF-higher collateral value and a 7-percent-higher LTV compliance, compared to loans with a DSTI of 40 percent or less, while the borrowers' income is 50 thousand HUF lower (Table 2). We estimate that the average DSTI value of housing loans has been increased by the higher loan amounts and the increase in interest rates to a similar extent, which was largely offset by the rise of incomes (Chart 9).

A gradual reduction in collateral stretch is visible. The share of housing loans above 70 percent of the collateral value in new lending declined to 26 percent by the first half of 2022 from 32 percent typical around 2019 (Chart 10), which could be due to the emergence of prenatal loans and the rise in GHP loans at lower LTV in early 2022. However, despite the declining LTV burden, the impact of the LTV requirement may be materially larger among young clients, who are nevertheless not eligible for family support programmes (e.g. single people) (see subchapter 2.4).

Overall, retail lending in the current credit cycle has taken place in a healthy way, complying with the borrower-based measures, denominated in forint and with interest

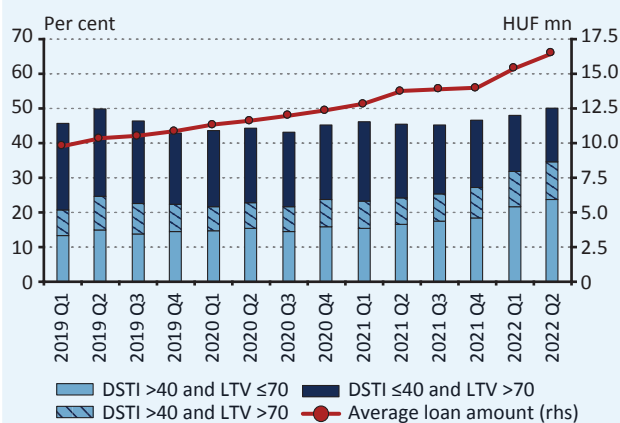
Chart 10
LTV distribution of new home loans



Note: Without loans for renovation and expansion, by volume. Data of 2022 refers to the first half of the year. In red, riskier loans granted close to the LTV limit.

Source: MNB.

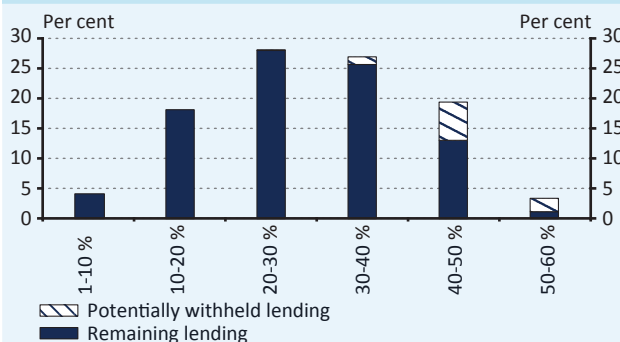
Chart 11
Compliance of home loans with borrower-based measures



Note: Distribution by volume.

Source: MNB.

Chart 12
Share of clients potentially restricted by the DSTI limit due to rising interest rates



Note: Assuming the impact of a 5 percentage point interest rate increase and a 10 percent increase in income on loan disbursement in 2021, by volume.

Source: MNB.

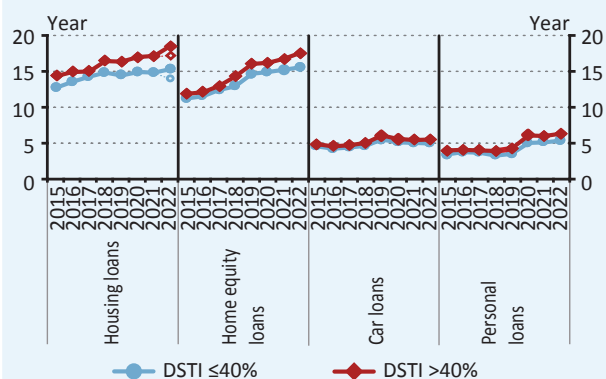
rates fixed for a longer period. In the case of housing loans, income stretching has increased slightly, while collateral encumbrance shows a downward trend (Chart 11). Borrower over-indebtedness is not identifiable in the unsecured loan category either. In addition, the dynamic loan outflows in recent years have not been accompanied by an overall over-indebtedness of households.

Higher interest rates are causing the increasing effectiveness of DSTI limits. If income rises more slowly than interest expenditure, the effectiveness of DSTI limits also increases. For example, in the case of housing loans granted in 2021, with hypothetical interest rates 5 percentage points higher and income 10 percentage points higher, almost 10 percent of lending would have hit the DSTI limit (Chart 12). The cap would have become effective mainly for housing loans and to a lesser extent for personal loans, thus a rise in interest rates could slow lending substantially already in the short run. In addition to postponing borrowing, borrowers may respond to hitting the DSTI limit by reducing the loan amount, extending the maturity, increasing the income invested for repayment (e.g. through a co-borrower), and therefore the actual credit and housing market effects are difficult to estimate.

2.3 INCREASING ADAPTATION TO BORROWER-BASED MEASURES CANNOT BE IDENTIFIED

Despite the increasing effectiveness of the DSTI requirement, no significant maturity extension of loans at higher DSTI is observed. Debtors may also adapt to rising interest rates and the resulting increasingly effective DSTI requirement by extending maturities. At present, there is no sign of an increase in the average maturity gap between loans to borrowers with more or less encumbered income for the main types of loans. However, in the case of housing loans, the average maturity of loans with a DSTI above 40 percent has gradually increased to 3 years over the past years (Chart 13). For housing loans under the Green Home Programme, average maturities are substantially higher, which has led to a temporary increase in the average maturity of the total new disbursement, but has not reinforced the maturity extension of borrowers with more stretched incomes. For this reason, adaptation through maturity extension is not currently considered a material risk, but should continue to be closely monitored in the future. In the event of a material increase, it may be appropriate to supplement the borrower-based measures available to the MNB with a statutory limit on the total amount of debt or credit in proportion to income.

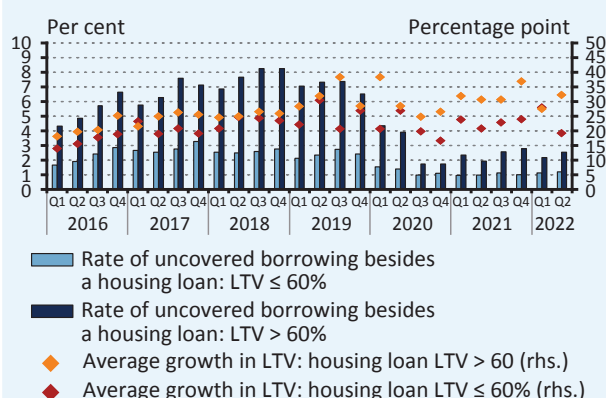
Chart 13
Average maturity by DSTI value and loan type



Note: In the case of 2022, first half data. The dashed line shows the maturity without GHP loans.

Source: MNB.

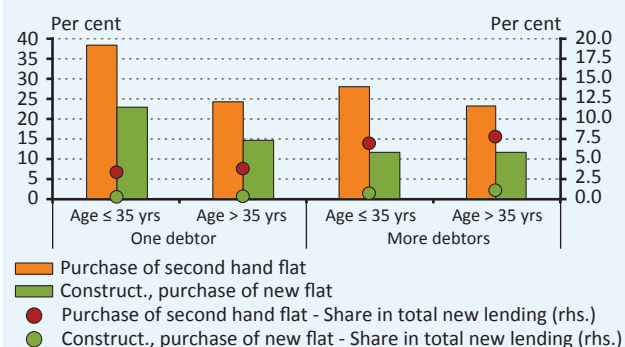
Chart 14
The estimated evolution of personal loans used for supplementing the down payment



Note: The share of housing loans within the total disbursement of each LTV category for which the principal debtor requested a personal loan 180 days prior the conclusion of the contract. Excluding Prenatal loans.

Source: MNB

Chart 15
The LTV stretch of new housing loans by various customer segments (2021)



Note: A LTV value of more than 70 percent was considered to be the stretched LTV. The ratios shall be considered within each client segment. Distribution by contract number.

Source: MNB.

The increasing use of unsecured borrowing to finance down payment is also not evident. The MNB considers it a particularly risky practice and has therefore called on institutions in a [management circular](#) not to consider personal loans as down payment and to develop procedures to eliminate such practices. Between 2017 and 2019, 7-8 percent of housing loans with an LTV of over 60 percent were still preceded by uptake of personal loans, but this has declined to around 2 percent from the second half of 2020 (Chart 14). This may have been supported by the MNB's call and the emergence of prenatal loans.

2.4 THE MNB IS CLOSELY MONITORING THE POSSIBLE NEGATIVE SIDE EFFECTS OF THE REGULATION

For first-time homebuyers, preferential LTV limits may be justified to support their access to the housing market, but need to be adjusted to the evolution of housing market risks. The rapid increase in housing prices in recent years may affect young first-time buyers, who mostly have little savings and low income, but pose a lower risk due to their objective of starting a home and expected rising income, more severely than average (Chart 15). In their case, a differentiated, higher level of LTV limits may therefore be necessary, also based on international examples. However, the application, extent and timing of this is heavily influenced by the current historically high and growing overvaluation of the housing market and the prevailing considerable macroeconomic uncertainty.

Box 2**Possibilities for applying the borrower-based measures in the case of commercial real estate loans**

In addition to excessive retail indebtedness, excessive corporate risk-taking can also pose significant financial stability risks, especially in the commercial real estate segment. The commercial real estate market is of particular importance from a financial stability perspective due to its size and close interconnection with the financial system and the real economy: in 2022 Q2, commercial real estate-backed loans accounted for 6 percent of domestic banks' assets, 13 percent of their total loans and 40 percent of non-financial corporate loans. Financing the commercial real estate market is a capital-intensive activity and real estate investors and developers are often highly leveraged risky corporations. This segment is riskier compared to loans secured by residential real estate, as commercial real estate is characterised by higher price volatility, which increases the risk that the value of the collateral will not be sufficient to cover the outstanding value of the debt in the event the borrower defaults. In addition, the liability of

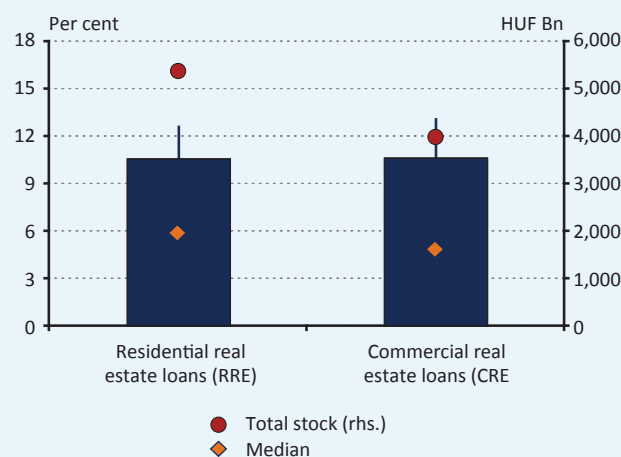
borrowers may be limited, further increasing the risk of credit losses for lenders (ESRB, 2022⁴). Although past crisis experience suggests that excessive risk-taking in the commercial real estate market alone rarely leads to a financial crisis, overheating in the real estate market can also lead to a build-up of significant vulnerabilities in this segment, which can deepen the impact of potential financial crises originating in other sectors (ESRB, 2019)⁵. And once a financial crisis occurs, these potentially defaulting exposures can put a persistent strain on the balance sheets of financial institutions, reducing their ability to lend. In Hungary, the MNB supported the balance sheet clean-up of project loans backed by problematic commercial debt, *inter alia*, by applying a systemic risk buffer (see previous years' [Macprudential Reports](#)).

The financial stability relevance of the commercial real estate segment may also raise the application of mandatory borrower-based measures, now common in retail lending, also in this market. Although credit risk mitigation indicators are currently used by market participants for commercial real estate financing, their calculation and definition show considerable heterogeneity depending on the practices of market participants. Therefore, harmonisation of different market practices may be advisable in order to standardise risk monitoring.

However, due to the practical difficulties faced, there are few examples of mandatory regulatory limits on commercial real estate credit exposures. The commercial real estate market comprises more heterogeneous and substantially more complex financing structures than retail financing. In the calculation of indicators, the market value of less liquid real estate is difficult to determine, the inclusion of pre-existing encumbrances and the syndicated financing structure involving multiple, even cross-border, lenders can be challenging. Determining the potential income and repayments to be taken into account can also be problematic, for example, due to the determination of the expected rental income and repayment burden of properties under development.

For the above reasons, regulatory action for the time being is mainly aimed at addressing potential data gaps and standardising market practices for risk monitoring, usually by developing supervisory recommendations that are not legally binding. There are as yet few international examples of mandatory regulatory limits: in Denmark, only borrowers with a positive cash flow can be granted a loan for the purchase of buy-to-let property. In Poland, both income-producing and owner-occupied commercial real estate loans are subject to a LTV limit of 75 percent set

Distribution of share of loans secured by commercial real estate and residential real estate to total balance sheet by banks



Note: First and ninth decile, interquartile and median values.

Source: MNB

out in a recommendation. Similarly, the MNB also expects in its Recommendation that for project loans, the borrower must have proven actual equity before the first disbursement of the loan, i.e., the LTV ratio must not exceed 100 percent.⁶

The European Systemic Risk Board (ESRB) has also developed its recommendation on the elimination of data gaps in the real estate market in order to eliminate data gaps and harmonise the definitions used.⁷ The Recommendation aims to harmonise European risk monitoring and eliminate data gaps for residential and commercial real estate credit exposures by laying down common definitions and imposing regular monitoring obligations on ESRB Member States. The European Systemic Risk Board is also working in an expert working group to examine the scope for the use of borrower-based measures and the potential challenges in the area of commercial real estate exposures, in which the MNB is also actively involved.

Indicators suitable for measuring commercial real estate market risk

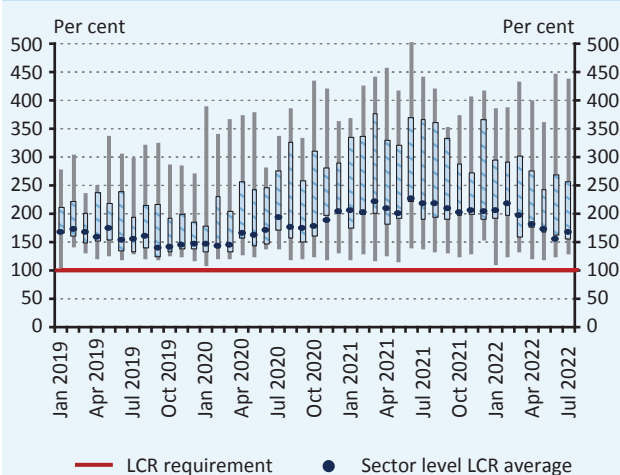
Measure	Description
Loan-to-value (LTV) ratio	the ratio of the value of the loan and the property serving as collateral
Loan-to-cost (LTC) ratio	in the case of properties under development, the amount of all loans disbursed in relation to all costs incurred until the end of the development of the property
Interest coverage ratio (ICR)	the ratio of rental income from the property used as collateral for the loan to interest expense
Debt-service coverage ratio (DSCR)	the ratio of rental income from the property used as collateral for the loan to the debt service of the secured loan

Source: MNB.

3 Basel liquidity and funding instruments

The Liquidity Coverage Ratio (LCR) requirement is being met by banks with decreasing buffers compared to the elevated levels during the coronavirus pandemic, also in line with the change in monetary policy stance. Even so, banks' liquidity positions are sound and have returned to the levels observed before the coronavirus pandemic, and the outbreak of the war did not lead to liquidity problems. Compliance with the Net Stable Funding Ratio (NSFR), which entered into force on 28 June 2021, has remained stable in the year since its introduction, meaning that domestic banks' funding has remained sound despite the coronavirus pandemic and the outbreak of the war. The slow transmission of central bank rate hikes in the pricing of client deposits, however, could, in extreme cases, pose a risk to bank funding in the longer term.

Chart 16
Development of institutions' LCR



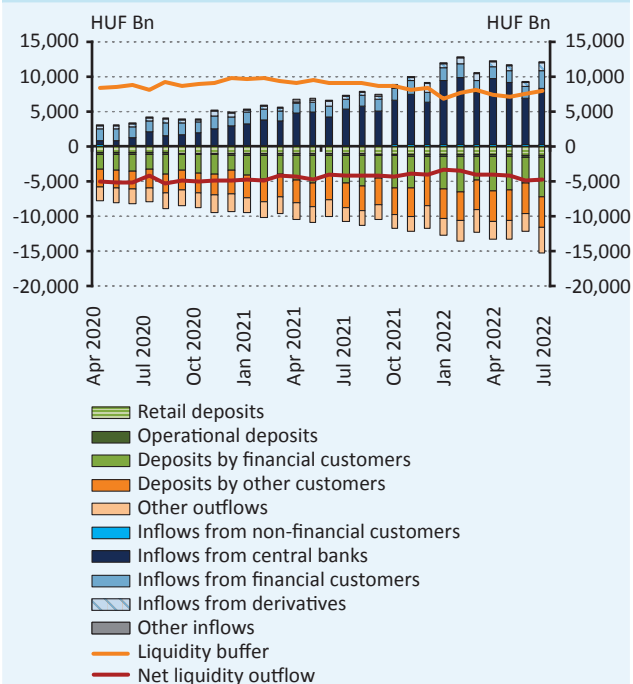
Note: The first and ninth decile, first and third quartile values and averages are represented. Without mortgage banks and building societies.

Source: MNB.

3.1 THE BANKING SYSTEM'S LCR LEVEL HAS FALLEN IN RECENT MONTHS TO LEVELS SEEN PRIOR TO THE PANDEMIC

The elevated banking system LCR levels seen during the coronavirus period have started to decline again over the past few months. As a result of the liquidity-providing measures taken by the central bank in the context of the coronavirus, banks' liquidity reached unprecedented high levels: from late 2020 to early 2022, the average LCR level in the banking sector was consistently above 200 percent (Chart 16). Since spring 2022, however, there has been a gradual decline, in line with the withdrawal of the central bank's liquidity-providing measures and the tightening of monetary policy. In addition, specific factors at some banks also played a role in the sharper decline in the past few months, which are expected to have only a temporary impact on LCR levels. However, the liquidity situation is still adequate. At end-July 2022, the average LCR for the banking system was 169 percent, returning to levels seen before the start of the coronavirus. Although there are large differences in liquidity management and hence LCR levels across banks, none of them shows overly stretched compliance, and the outbreak of the Russo-Ukrainian war has not led to liquidity problems affecting a wider range of banks.

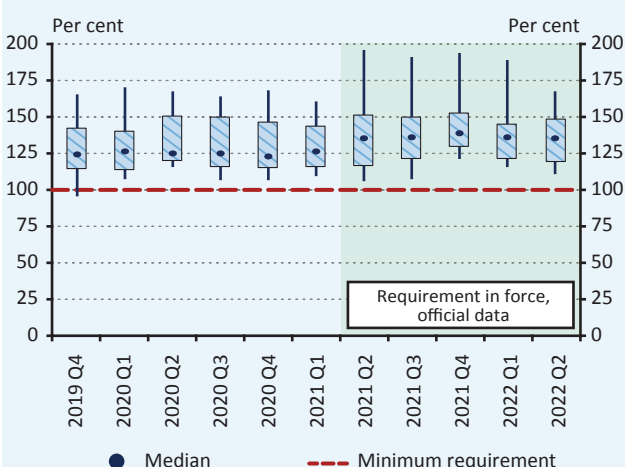
Chart 17
Developments of LCR components on a sectoral level



Note: Weighted by the weights used in the LCR. Without mortgage banks and building societies.

Source: MNB.

Chart 18
Development of institutions' NSFR



Note: Lower and upper decile and lower and upper quartile. Until the first quarter of 2021 estimation based on bank balance sheet data, from the second quarter of 2021 data from official data reporting.

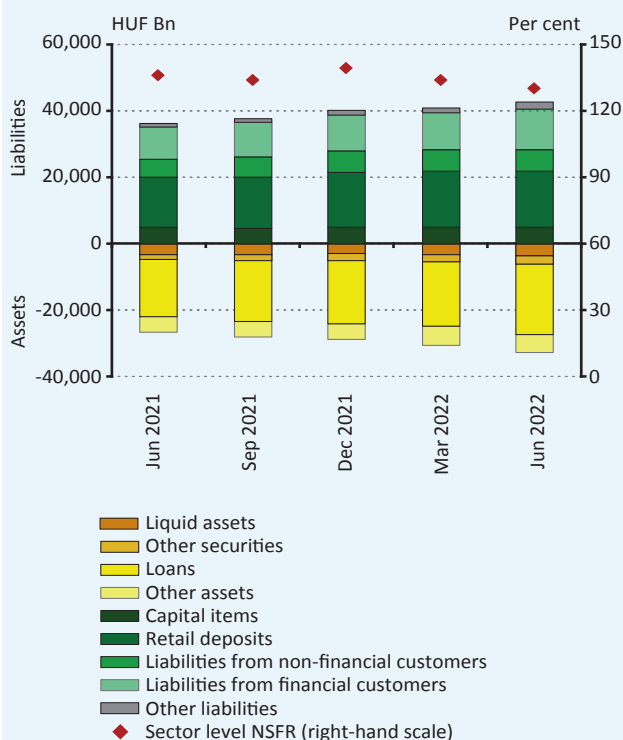
Source: MNB.

Monetary policy actions have had a significant impact on the evolution of the components of the LCR. The decline in the LCR level is the result of a reduction in the liquidity buffer and a simultaneous increase in outflows and inflows, and the resulting rise in net outflows (Chart 17). The rise in outflows was mainly due to a rise in non-operational corporate deposits, which are taken into account with higher weights. The increase in inflows is mainly due to a strong increase in deposits with the MNB, mainly one-week deposits, while the decrease in liquidity buffers is due to the depreciation of the stock of government securities, representing a large part of it, due to the rising yield environment, as well as to the termination of preferential deposits, considered as a liquid asset, from which larger amounts have been transferred to the one-week deposit facility. The stock of one-week deposits account for about 70 percent of inflows, with a maximum of HUF 9,600 billion at the end of February 2022 and HUF 8,000 billion at the latest available date of end-July 2022. Due to the build-up of significant stocks, the limit on the inclusion of inflows in the LCR calculation, set at 75 percent of outflows, became increasingly effective, and for most banks, part of the inflows can no longer be included in the LCR, because the limit has been reached. Thus, the actual liquidity situation may be better than indicated by the LCR level.

3.2 BANKS ARE ADEQUATELY SUPPLIED WITH STABLE FUNDS BASED ON THE NSFR LEVEL

Banks comply with the NSFR requirement, entered into force at EU level in June 2021, without any substantial adjustment. NSFR levels have remained stable in the year since implementation, meaning that domestic banks' funding has remained sound despite the coronavirus pandemic and the outbreak of war. Throughout this period, both the average and median NSFR levels for the banking system have remained in the range of 130-140 percent, with the average at 130 percent and the median at 135 percent at end-June 2022 (Chart 18).

Chart 19
Development of the NSFR components



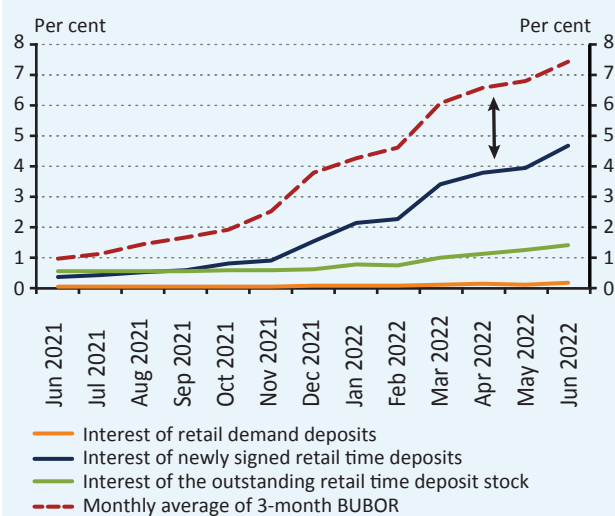
Note: Weighted by the factors used in the NSFR.

Source: MNB.

Most of the stable funds banks have to hold are related to loans granted, which are mostly met by retail deposits. The components of the required and available stable funding do not change significantly over time (Chart 19). Loans granted account for the largest share of assets requiring the maintenance of stable funds, accounting for nearly two-thirds of stable funding needs. Given their greater weight within loans, banks need to hold most stable funds for loans to non-financial clients other than mortgages. Among the available stable funding, retail deposits play the most important role, accounting for around 40 percent of stable funding. The relatively high share of retail deposits in bank funding and the high weight applied to these funds in the NSFR regulation both contribute to this.

Central bank interest rate hikes are only slowly and partially transmitted in the pricing of client deposits, which may pose a funding risk. Demand deposit interest rates are close to zero for both households and corporates, and repricing of newly committed term deposits is slower for household deposits than for corporate deposits and is well below the rise in short-term interbank yields (Chart 20). Slow repricing is a result of banks' abundance of liquidity, weak competition between banks, the improvable retail financial awareness and inflexible savings habits. As deposits, and in particular retail deposits, are a key component of bank funding, despite their assumed high stability in the NSFR, they may pose a funding risk in the longer term if the mismatch of the rise in the interest rate environment with deposit pricing comes with a reduction of deposit holdings and a shift to alternative investment vehicles.

Chart 20
Development of the average annual interest rate on newly contracted and the outstanding stock of retail deposits and the average monthly level of 3-month BUBOR

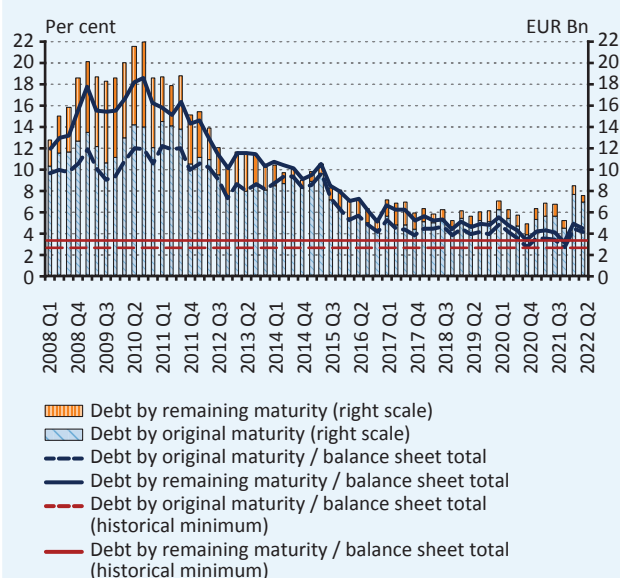


Source: MNB.

4 Funding instruments mitigating external vulnerability

The elements of the MNB's macroprudential financing toolkit applied under national competence to limit external vulnerabilities are met by the banking system with adequate buffers and in a favourable funding structure, which has not been materially affected by past and current global challenges. The short external vulnerability of the banking system appears to have moved somewhat away from its historical low, due to more active funds management by some banks, leading to higher volatility. At the same time, banks' funding positions continue to provide a sufficient buffer against the adjustments to the potential funding challenges the banking system may face and do not hinder the continuation of sustainable lending activity.

Chart 21
Development of the short-term debt of the banking system



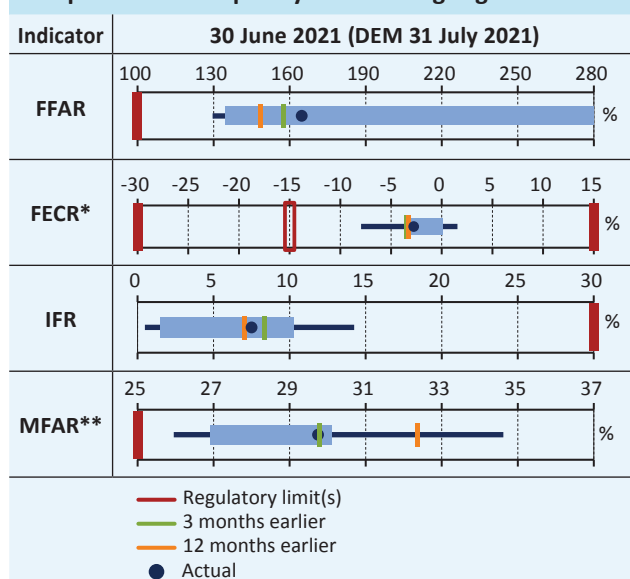
Note: Credit institutions sector, including the data of EXIM, MFB and KELER. Data from balance of payments statistics until the first quarter of 2022, data estimated from other MNB data services for the second quarter of 2022. Historical minimums are calculated from 1998 Q1.

Source: MNB.

Despite the recent slight rise, the banking system's short-term external debt relative to the balance sheet total remains close to its historical low. Banks' short external debt to total liabilities by remaining maturity reached its lowest level in decades at the end of 2021 (Chart 21). In recent years, the MNB's macroprudential measures, inter alia, have also played a role in minimising external vulnerabilities, in addition to the availability of fundraising and funding renewal facilities on favourable terms at all maturities. However, in early 2022, the conditions for raising funds changed as global monetary conditions tightened and financial market stress increased. The relative degree of short-term external vulnerability increased even with rising banking system balance sheet total as a result of the still active government and central bank measures in response to the coronavirus. This, however, occurred in a concentrated way because of the activity of few large banks and branches. The operation of these banks has resulted in a substantial quarterly surge in short external liabilities, indicating more active liability management.

At the end of 2021, the MNB decided to asymmetrically relax the regulatory limit on the Foreign Exchange Coverage Ratio (FECR), which increased the room for manoeuvre of banks to restructure the denomination structure of their balance sheets without materially increasing systemic risks. Accordingly, the expected minimum value of the indicator in the case of a foreign currency liabilities surplus has been reduced from -15 percent to -30 percent, while the limit in force for foreign currency assets surpluses has remained unchanged. The amendment was justified by the continuous increase in the sectoral foreign currency liabilities surplus, mainly as a result of growing foreign currency client deposits, due to

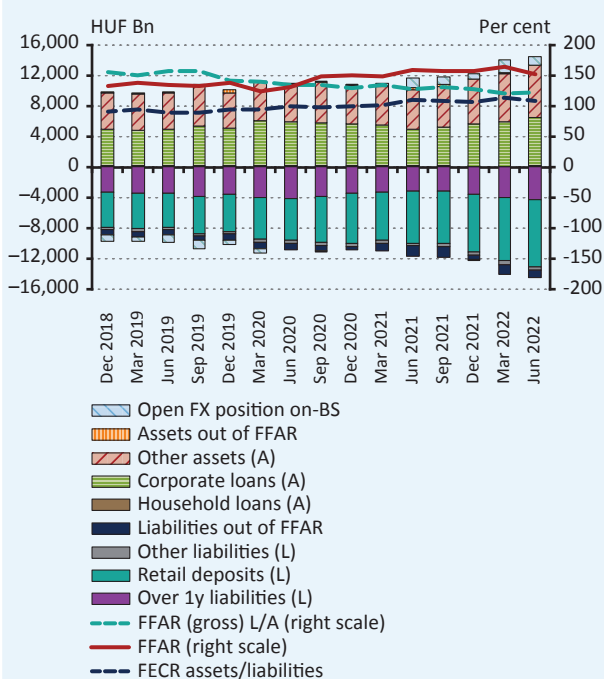
Chart 22
Compliance with liquidity and funding regulations



Note: 30 June 2022 data, except Foreign Exchange Coverage Ratio (FECR), which is 31 July 2022 data. The edges of the blue rectangles indicate the lower and upper quartiles of the distribution, and the ends of the dark blue lines indicate the 10th and 90th percentiles of the distribution. *From 9 December 2021, the FECR operates with an asymmetric limit. **In the MFAR, green funds can be taken into account with a preferential weighting (150%) from 1 July 2021 and foreign currency mortgage funds can also be included from 1 July 2022.

Source: MNB

Chart 23
Development of asset and liability groups requiring and providing stable foreign currency funding, as well as financing indicators



Note: Based on FFAR unweighted amounts. Between March and Sept 2020 temporary tightening was in effect. A: Asset, L: Liability

Source: MNB

which the previous regulation could have prevented some institutions from engaging in normal liquidity management operations without excessive risk-taking. The operation with foreign currency liabilities excess carries much lower risks than the excess of foreign currency assets. The risk of the swap market drying up is much lower when forint buying swaps are concluded, as the MNB can provide forint liquidity to the extent of eligible collateral. In addition, the Foreign exchange Funding Adequacy Ratio (FFAR) rule continues to ensure that the foreign currency funding raised is of sufficiently long maturity and stable. Accordingly, the amendment provides greater scope for banks' foreign exchange swap market activity, which has helped to increase the efficiency of the foreign exchange swap market and monetary transmission and to reduce end-quarter swap market turbulences.

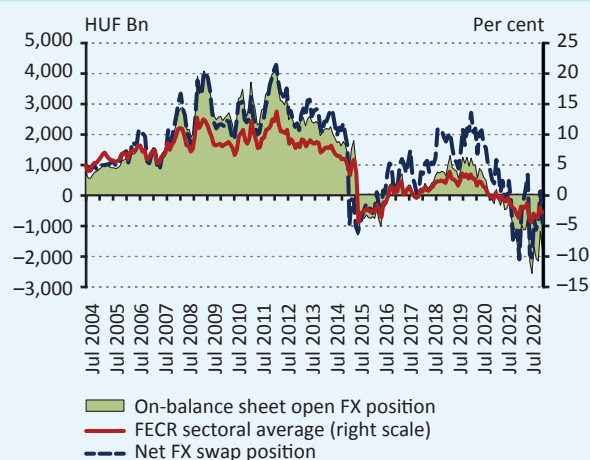
Banks are operating with an adequate funding structure in terms of both foreign currency and maturity, with relevant elements of the macroprudential toolkit showing meaningful buffers despite consecutive global challenges.

Domestic banks, both at the sectoral and individual level, operate in compliance with the national regulatory requirements (Chart 22). The banking system functions with adequate and stable funding, both in terms of own funds and non-capital external funding, despite the pandemic and war-related effects. The strong lending trends have so far not been constrained by funding, but this could turn around significantly depending on changes in global cyclical and monetary conditions. The continued and intense monetary tightening and the uncertain financial market situation require continuous monitoring of the evolution of the funding situation.

In the continued improvement of foreign currency and foreign currency maturity match the increase in foreign currency client deposits was decisive over the past year.

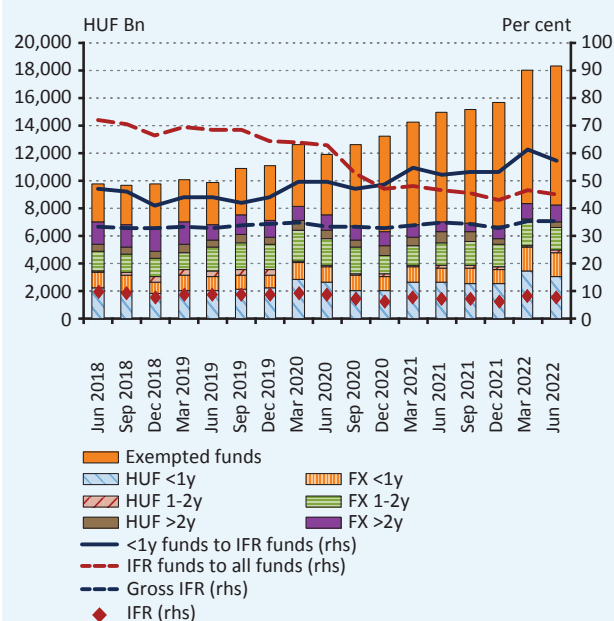
On the foreign currency assets side, the volume and the share in foreign currency assets of corporate foreign currency loans and, in particular, of other foreign currency assets, including mainly long-term or no maturity loans to financial corporations, increased. Opposite the increasing foreign currency assets, the volume of foreign currency deposits by households and corporates also increased significantly, allowing banks to reduce their need for over 1-year foreign currency liabilities and foreign currency funding from non-residents, although to a much lesser extent than the increase in foreign currency deposits (Chart 23). Consequently, both the banking sector average FFAR and the ratio of the unweighted amounts of foreign currency liabilities and assets included in the FFAR are at their historical maximum.

Chart 24
On-balance sheet open FX position and net FX swap position



Source: MNB.

Chart 25
Funds of the banking system originated from financial corporations targeted by IFR



Note: Gross unweighted funds from financial corporations. Gross IFR is the unweighted financial corporate funds over all funds

Source: MNB.

The banking system is operating with a substantial and sustained abundance of foreign currency funds. The banking system's on-balance-sheet foreign currency asset surplus has been declining since mid-2019, and a foreign currency liabilities surplus has been observed since the outbreak of the pandemic in Hungary in spring 2020. This has occurred alongside a reduction in corporate foreign currency lending, mainly due to an increase in foreign currency client deposits. The share of banks with foreign currency liabilities surpluses has not changed significantly over the past year, neither in terms of number of units nor in terms of balance sheet total. Accordingly, the net foreign currency swap position of banks remains in negative range, with the banking system continuing to be a net forint buyer in the money market (Chart 24). The FECR easing at end-2021 has slightly increased the scope for banks with excess foreign currency liabilities, and the sectoral foreign currency liabilities surplus has also increased, but the risks remain low given the significant distance from the regulatory limit.

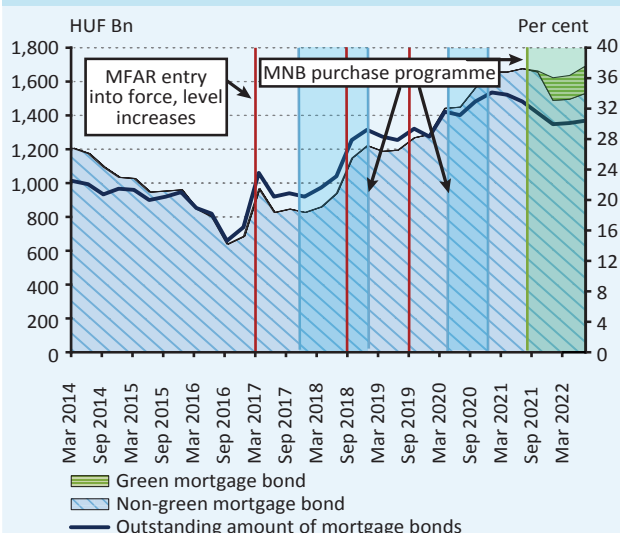
The volume and share of less stable funding from financial corporations have also further declined, as a result of the ongoing central bank lending programmes. The reliance on riskier funding from financial corporates has been declining for several years. Banks meet the Interbank Funding Ratio (IFR) requirement with significant buffers. Within funding from financial corporates, the share of long-term central bank forint funds, which are not targeted by and exempted from the IFR and are considered less risky, and of mortgage-based forint liabilities, which are encouraged by monetary and regulatory instruments, has increased significantly, which may alter with the current monetary policy changes. The share of short-term, primarily forint and secondarily foreign currency liabilities increased slightly within the liabilities targeted by the IFR (Chart 25). In early 2022, some large banks caused a surge in the volume of short-term forint liabilities, which also slightly increased the sectoral IFR average.

Mortgage-based foreign currency liabilities included in the calculation of the Mortgage Funding Adequacy Ratio (MFAR) may have a small impact on external debt developments without any material risks. With the recent revision of the MFAR (see Chapter 5 for details), foreign currency liabilities that become eligible will have longer maturities, so that banks' FFAR could improve, and short external vulnerabilities could even be reduced by substituting other non-mortgage bond-based short external liabilities. FECR levels may deteriorate with an increase in on-balance sheet funding surpluses, but this implies a shift towards less risky, foreign currency-denominated funding practices.

5 Mortgage Funding Adequacy Ratio

With the support of the preferential treatment applicable to green mortgage bond issues, banks comply with the Mortgage Funding Adequacy Ratio (MFAR) requirement with safe buffers. In the summer of 2022, the MNB decided to amend the regulation to further develop the mortgage bond market, broaden the investor base and further strengthen the maturity match of assets and liabilities: from 1 July 2022, in addition to forint funds, liabilities denominated in foreign currency will also be included in the indicator, and to help adjust to the uncertain economic environment, the previously announced tightening measures will be postponed by 1 year, to take effect from 1 October 2023.

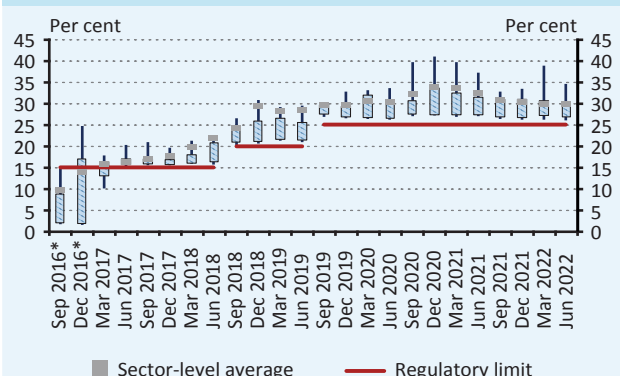
Chart 26
Development of domestic outstanding amount of mortgage bonds and mortgage bond/mortgage loan ratio



Note: Nominal values.

Source: MNB.

Chart 27
Development of MFAR compliance



Note: First and ninth decile values and lower and upper quartile values. *Estimation only for large banks.

Source: MNB.

5.1 DOMESTIC GREEN MORTGAGE BOND ISSUANCE LAUNCHED, SUPPORTED ALSO BY THE AMENDMENT TO THE MFAR REGULATION

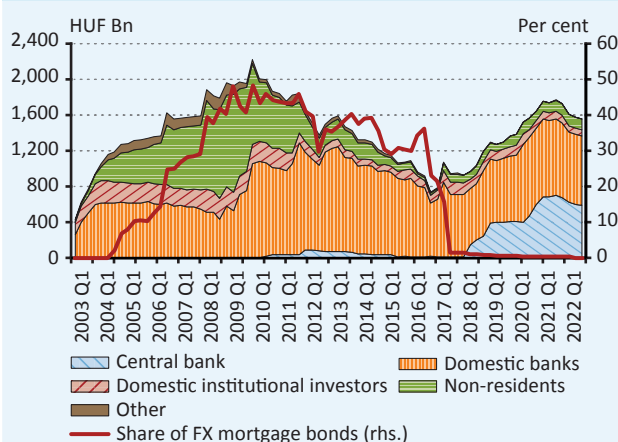
On 1 July 2021, the preferential treatment of green funds in the MFAR came into force, which contributed to the emergence of the first domestic green mortgage bonds. Under the preferential treatment, green mortgage bonds and refinancing loans can be considered with a weight of 150 percent. With the incentive of the preferential treatment and the MNB's Green Mortgage Bond Purchase Programme, green mortgage bond issuances started in the summer of 2021 and by June 2022 all five mortgage banks were already present in the market with a total of HUF 156 billion of green mortgage bonds issued. This represents 9 percent of the outstanding amount of mortgage bonds with a nominal value of around HUF 1680 billion (Chart 26).

All banks can safely comply with the MFAR, which is supported, albeit moderately for the time being, by the preferential treatment of green funds. Although the banking sector average MFAR has declined slightly over the past period, the level of 29.7 percent at end-June 2022 can still be considered adequate (Chart 27). Without the green preferential treatment, this average level would have been 1.2 percentage points lower at 28.5 percent. The increase in the MFAR level attributable to green funds was mainly observed for the banking groups with mortgage banks, with two of them experiencing an impact of the preferential treatment of over 2 percentage points. In the future, as green loan portfolios build up, the share of green funds is expected to increase, and the rising impact of preferential treatment is expected.

5.2 FROM JULY 2022, THE MORTGAGE BOND MARKET COULD BE STRENGTHENED THROUGH FOREIGN CURRENCY ISSUANCES

Although the mortgage bond market supporting banks' long-term, stable funding has developed substantially

Chart 28
Development of the outstanding amount of mortgage bonds by owner sector and the share of FX mortgage bonds



Source: MNB.

Table 3
Amendments relating to the MFAR regulation

Acceptance of FX liabilities and other related amendments

- **Acceptance of FX mortgage-based funds**, but limiting the amount of acceptable FX funds to **30 percent of the HUF cover assets**
- In the case of FX funds raised after 30 September 2023, **only green FX funds will be taken into account**
- **The denominator of the MFAR also includes residential mortgage loans** secured by residential real estate of **any other denomination** in addition to HUF loans
- **Acceptance of funds secured by commercial real estate loans**, up to a maximum of 20 percent of the cover assets (in the case of mortgage bonds, the ordinary assets)

Postponement of tightening measures

- **The previously adopted tightenings** (increase of required level, cross-ownership, stock market listing) **will come into effect 1 year later, from October 2023**, in view of the current capital market situation and external factors affecting the banking sector (interest rate freeze, Russo-Ukrainian conflict, etc.)

Other changes

- **Increase of the *de minimis* limit to HUF 40 billion**
- **Other technical, simplifying and clarifying amendments**

Source: MNB.

since the introduction of the MFAR, the MNB has reviewed the regulation again in 2022 to broaden the investor base.

More than 85 percent of mortgage bonds are owned by domestic banks and the MNB (Chart 28). Cross-ownership across banks may entail contagion risks and does not represent a real stable funding at the sector level, and the MNB's role in the market may diminish in the future with the change in monetary policy stance. Therefore, an amendment to the regulation has become necessary, according to which, from 1 July 2022, mortgage bonds and refinancing loans denominated in other currencies besides the forint will be eligible for the calculation of the MFAR. This will allow foreign investors, who are primarily interested in foreign currency assets, to play a more active role and the market for mortgage bonds to expand, giving banks access to this stable funding in larger quantities and at lower cost. The emergence of foreign currency mortgage bonds, in addition to the positive effects, does not imply a material increase in financial stability risks, despite the currency mismatch between mortgage bonds and their collateral because of the legal safeguards for these securities (Mortgage Act provisions, limit introduced in the MFAR, Foreign Exchange Coverage Ratio). Although foreign currency lending could also mitigate exchange rate risk on the asset side, the re-emergence of foreign currency lending to households is hampered by several factors: lack of demand, the much stricter limits on such lending under the borrower-based measures and the prevalence of HUF-denominated Certified Consumer-Friendly Housing Loans products. To increase incentives to attract green funds, but allowing sufficient time for the build-up of sufficient green mortgage collateral, foreign currency mortgage-based liabilities issued after 30 September 2023 will also need to meet sustainability (green) requirements to be included in the MFAR.

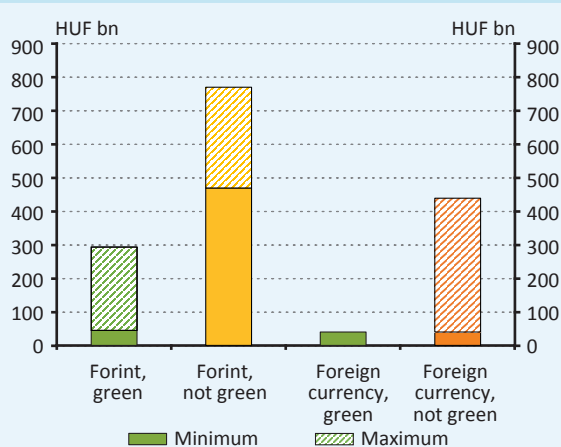
Other amendments have also been adopted to help adapt to the MFAR requirement (Table 3). Due to feedback from market participants, the uncertain impacts of the pandemic and the war on the banking sector and capital markets, and the longer lead time required for foreign currency issuance, the MFAR tightening originally planned for 1 October 2022 will be postponed by 1 year. The MFAR level increase, which will come into force on 1 October 2023, may require a sector-wide issuance of mortgage bonds of around HUF 200 billion, which can be reduced to HUF 130 billion through green fundraising due to the preferential weighting. Furthermore, in the future, the regulation will apply to institutions with a net outstanding retail mortgage portfolio with a residual maturity of over 1 year of at least HUF 40 billion (instead of the currently effective HUF 10 billion threshold), in order to reduce the burden on small institutions not posing a material systemic risk.

Box 3**Expected mortgage bond issuances based on the MNB'S mortgage bank survey**

To monitor the impact of the changes to the MFAR regulation and the evolution of the mortgage bond market, the MNB surveyed domestic mortgage banks on the volume and main characteristics of their mortgage bond issuance planned until the end of 2023. In assessing the results, it is important to note that in the current unpredictable global growth as well as credit and capital market environment, bank planning is more challenging than usual, therefore, the data reported in the responses are subject to a high degree of uncertainty.

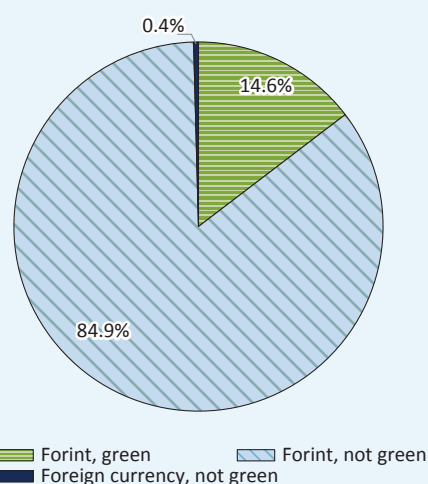
By end-2023, issuance of up to HUF 1,000 billion could be realised, mainly in forint, but foreign currency mortgage bonds are also expected to appear. Therefore, compared to the current outstanding amount of around HUF 1,680 billion, significant issuance is expected, part of which will also serve to replace the HUF 280 billion maturing by end-2023. Due to the uncertain market environment, only a minority of mortgage banks plan to issue foreign currency mortgage bonds in the coming period. As a consequence, the denomination of the vast majority of the outstanding portfolio is likely to remain forint, so that a denomination in a currency other than that of the collateral will not pose any material risk in the coming period, given the small volume and the constraints in the regulatory environment. According to the banks' plans, the share of green funds is expected to increase further in the total amount of liabilities eligible for MFAR. Most issuance is planned by domestic mortgage banks to take place with maturities of 5-6 years, but issuance of securities with maturities of 7-10 years is also expected. This is broadly in line with the current maturity distribution, although there are also mortgage bonds with maturities below 5 years and above 10 years in the outstanding portfolio.

Despite the expected increase in the share of foreign currency mortgage bonds, the vast majority of mortgage bonds will continue to be covered by HUF residential mortgage loans. It is not anticipated that the expected emergence of foreign currency mortgage bonds will change the current structure of the cover pool, i.e. loans other than residential mortgages in forint will continue to account for only a minimal share of the collateral. The share of foreign currency loans backed by commercial real estate is therefore not expected to increase significantly due to their different risk profile and the regulatory limit of 20 percent. However, the gradual build-up of green loans could continue and could account for as much as 15 percent of the loan portfolio serving as cover assets by the end of 2023. Rising interest rates and worsening cyclical expectations will, however, also

Volumes of mortgage bond issuance planned until end 2023 by type

Note: The minimum and maximum values represent the bottom and top of the ranges given by the respondents.

Source: MNB.

Projected distribution of mortgage bond collateral at end-2023

Note: Based on the answers of 4 mortgage banks

Source: MNB.

affect residential mortgage lending, creating uncertainty about the evolution of the loan portfolio that provides collateral for mortgage bonds.

Issuers still expect domestic banks to be the main investors in the case of forint mortgage bonds, while they expect foreign financial institutions to be the main investors in the case of foreign currency mortgage bonds.

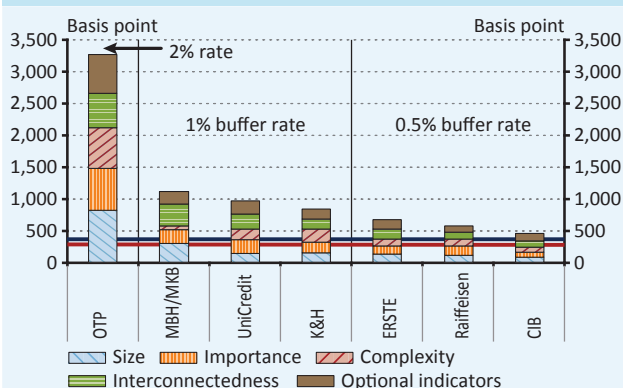
Similar to the current situation, domestic banks are expected to be the main investors in forint mortgage bonds in the near future, followed, in terms of significance, by the MNB, multilateral institutions and other domestic investors. However, in the case of foreign currency issues, the usual investor base may change in line with the objective of the amendment to the MFAR regulation, in which case foreign non-group member financial institutions are expected to generate the largest demand, while multilateral institutions, foreign group members and domestic institutions may also play a role as buyers in the market.

Overall, although the coming period may also entail turbulence in the mortgage bond market, banks' compliance with the MFAR is for the time being not at risk. Adjustment to the level increase, which will come into force from October 2023, may be made more difficult by the aforementioned uncertainties in the economic environment and potential market shocks. Further constraints are the current slow repricing of mortgages and the interest rate freeze on variable-rate mortgages: these narrow the potential cover pool due to the regulatory requirements to align the interest rate levels of the underlying mortgages with those of the mortgage-based funds. However, the long preparatory period, the preferential treatment of green funds and the inclusion of mortgage-based foreign currency liabilities in the MFAR offer considerable help to banks. The MNB will continue to monitor market developments and regulatory compliance and will consult regularly with market participants to support smooth compliance with the MFAR.

6 Capital buffer for other systemically important institutions

The MNB's 2021 review has not changed the scope of domestic Systemically Important Institutions (O-SIIs). Systemically Important Institutions are required from 2022 to comply with one-quarter of the final buffer rates along the gradual buffer build-up paths following the buffer relief introduced in the context of the coronavirus pandemic. The integration of Magyar Bankholding, the MKB Bank Nyrt. as the acquirer as of April 2022, created the second largest domestic O-SII, increasing the concentration of systemically important institutions, but no changes to buffer rates were necessary as a result.

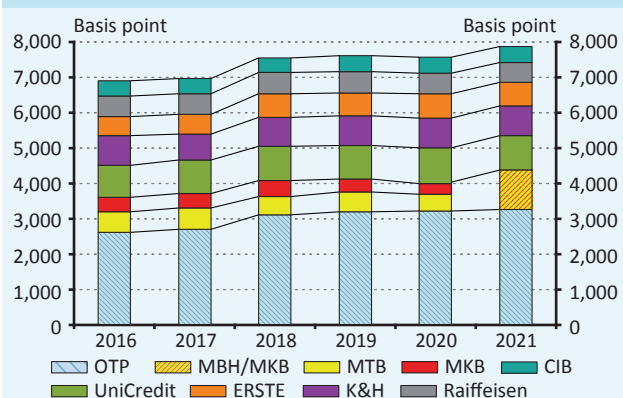
Chart 29
The components of the scores of other systemically important institutions and their final buffer rates (2021)



Note: The horizontal blue line indicates the standard of 350 basis points contained in the Guidelines of the European Banking Authority, and the red line indicates the domestic threshold level reduced to 275 basis points, above which a bank receives an O-SII rating.

Source: MNB.

Chart 30
Changes in the scores of other systemically important institutions



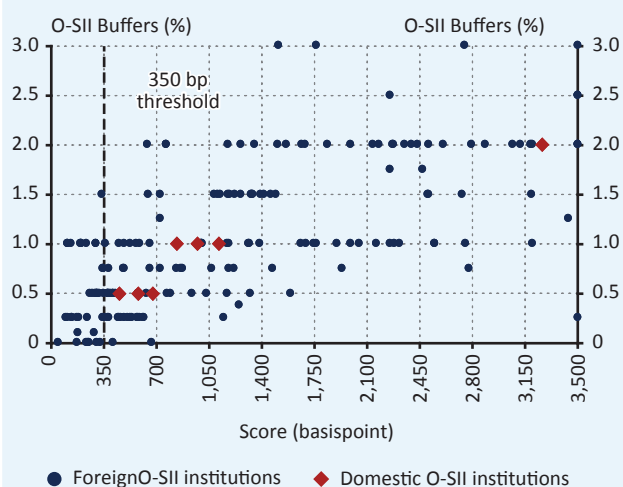
Note: The year numbers indicate the validity period of the scores, the scores are calculated by the MNB on the basis of the audited data provided by December 31 of the previous year.

Source: MNB.

The scope of other systemically important institutions has not changed as the result of the MNB's regular annual review in 2021. During the last identification of Other Systemically Important Institutions (O-SIIs) headquartered in Hungary in 2021, the MNB has continued to use the same method for the measurement of systemic importance as in previous years, which is based on the aggregation of the EU-harmonised core indicators harmonised at EU level indicators and the additional domestic indicators. This was used to determine the O-SII scores⁸ representing systemic importance, which for seven banking groups exceeded the 350-basis point threshold for the benchmark of systemically important status (Chart 29).

The credit institution created by the merger of MKB, MTB and Budapest Bank increases the concentration and share of O-SII banks in the banking system. In 2021, the merger process of the banking group resulting from the merger of the three credit institutions reached the stage of close integration; for this reason, the MNB considered it appropriate to impose the O-SII buffer on Magyar Bankholding, acting as the group's holding company, instead of the member banks, from 2022. The merger of Budapest Bank into MKB Bank was completed on 31 March 2022, and the legal merger of Takarékbank, which is already included in the scope of prudential consolidation, is also expected to be completed in 2023. As MKB has taken over the controlling function of the group as of 29 April 2022, from this date onwards the MNB expects the O-SII buffer compliance from MKB Bank at the highest consolidation level of the group. The simultaneous removal of MBH from the prudential scope of consolidation did not materially change the extent of the group's systemically critical activities or its financial assets and liabilities, and the scores assigned to MBH in the 2021 systemic importance review are also appropriate to capture the importance of the group under MKB's control. The merging banking group became the second largest in terms of both total assets and loan

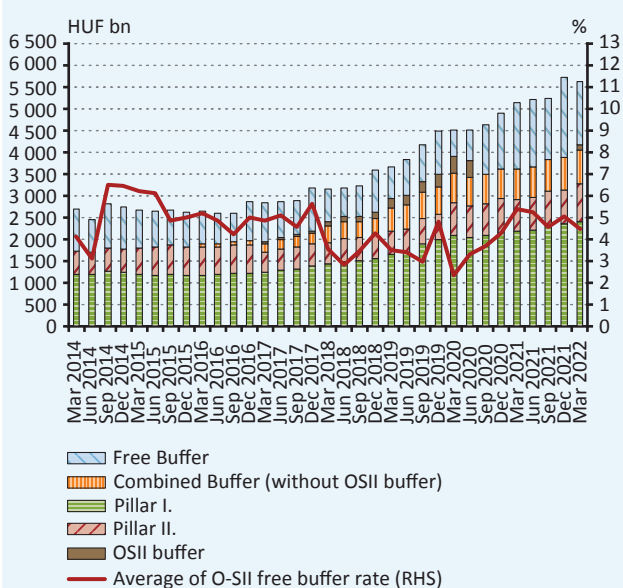
Chart 31
Correlation of score and buffer rates of O-SII banks



Note: There are 6 O-SII institutions with a score higher than 3500 basis points, which are shown at 3500 basis points in the figure.

Source: MNB.

Chart 32
The evolution of the O-SII banks' free buffer rates



Note: The average of the free buffers shows the unweighted average of each institution.

Source: MNB

portfolio among the banking institutions operating in the country. The merger has also increased the concentration of O-SII banks in the banking system, but beyond that, the emergence of the new banking group has not significantly affected the share and score of other O-SII banks (Chart 30).

The earlier release and the gradual rebuilding of the O-SII buffers provides banks a high degree of freedom to adapt to adverse conditions also in comparison with international practice. The MNB has helped the banking system to maintain its lending capacity since July 2020 by the largest and one of the longest O-SII buffer release in the European Union, in response to the exceptional economic conditions and uncertainty that unfolded in the wake of the pandemic. Already at the time of the release, the central bank set subsequent buffer rebuilding paths, which allowed the gradual raising of buffers to start from 2022: for the first year, the MNB envisaged maintaining one quarter of the final buffer rates to be reached by 2024 (Chart 29). One reason of the relatively long time horizon for the gradual rebuilding of buffers was the larger size of the release compared to other national authorities, which have implemented similar but typically a partial release in the O-SII buffer requirements (NE, LT by 2022; AT, CY, GR, LV, PT by 2023, MT by 2025).

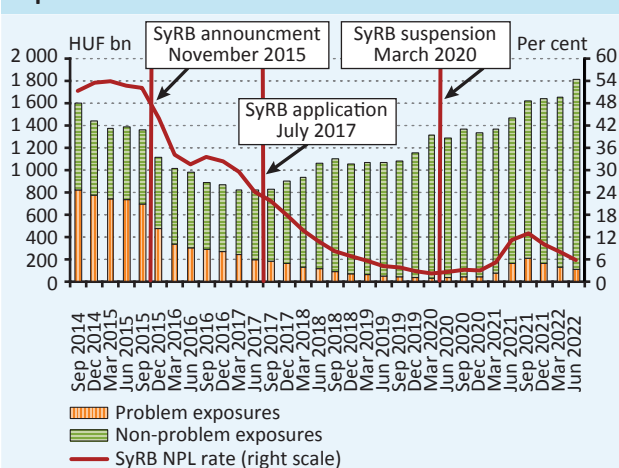
The final buffer rates set by the MNB fall within the average range compared to European regulatory practice and are not overly stringent. For example, it can be observed that other European O-SII banks that meet the same buffer rate requirements as domestic O-SII banks typically have lower scores than domestic banks (Chart 31).

The build-up of O-SII buffers starting in 2022 has not resulted in the banks' capital positions being overly stretched. Domestic systemically important banks, even after taking into account the MNB's capital buffer release measures, continued to operate with high voluntary capital buffers of more than HUF 1,400 billion at the end of 2022 Q1, while O-SII buffers required capital of HUF 112 billion (Chart 32). The buffer rates currently foreseen for 2024 would tie up around HUF 450 billion of the management buffers. The stable capital position and the recovery of lending growth seen in 2021-2022 provide the possibility to rebuild the buffers that could be used in a crisis situation.

7 Systemic risk buffer

The MNB continues to keep the Systemic Risk Buffer (SyRB) suspended to manage the default risks of project financing loans secured by commercial real estate. The stock of non-performing project loans in the domestic banking sector has risen only moderately in the recent period. Following the tightening of the repayment moratorium, the increase in non-performing loans has remained limited compared to previous expectations and has mainly occurred in the sectors most exposed to the crisis. In view of the war and the deterioration of the macroeconomic environment, the systemic risk buffer may continue to be appropriate to address portfolio quality challenges in the future, including by possibly extending it to additional loan and counterparty segments. In addition, the sectoral application of the systemic risk buffer could also be considered in the event of an increase in housing and real estate lending risks.

Chart 33
Domestic commercial real estate project loan exposures and held-for-sale real estates



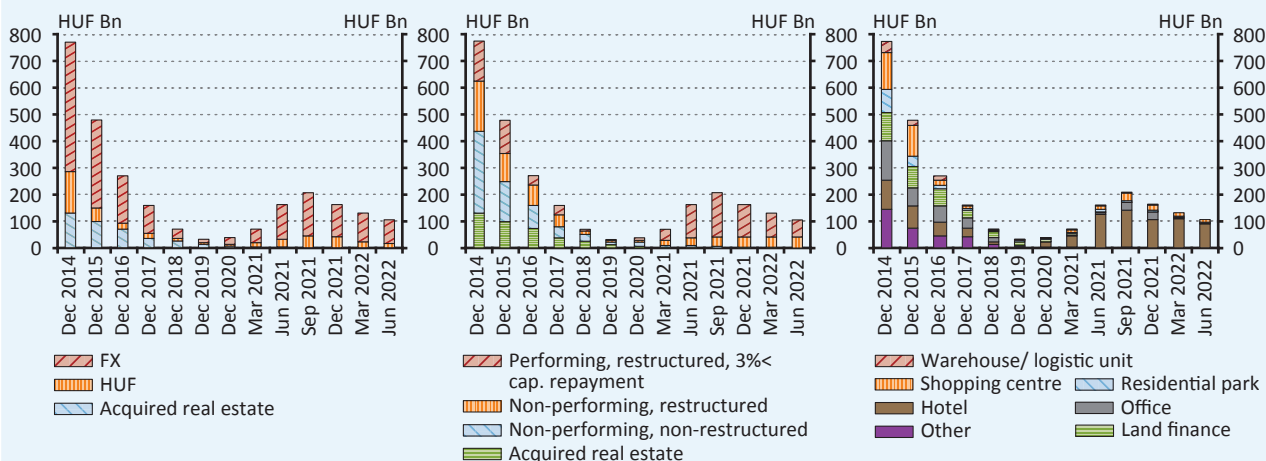
Note: From 31 March 2021 with the consolidated data of Banholding/MKB data. Based on L70 report. SyRB NPL rate: problem exposures by SyRB definition to total stock of CRE project loans.

Source: MNB.

7.1 MNB MAINTAINS THE SUSPENSION OF THE SYSTEMIC RISK BUFFER RELATED TO PROBLEM COMMERCIAL REAL ESTATE EXPOSURES

The MNB did not consider it necessary to reactivate the Systemic Risk Buffer (SyRB) for commercial real estate exposures lifted in 2020. The MNB maintained the indefinite suspension of the capital buffer requirement at the beginning of the coronavirus pandemic to maintain lending, mitigate relevant risks and avoid pro-cyclical effects. With the dynamic upsurge in commercial real estate project lending despite the COVID crisis, none of the banks has built up a problem stock that would have posed a structural risk observable after the 2008 crisis. The temporary surge in the problem stock according to the SyRB definition, which includes risky exposures other than non-performing transactions (Chart 33), was caused by a temporary increase in the number of exposures that were considered

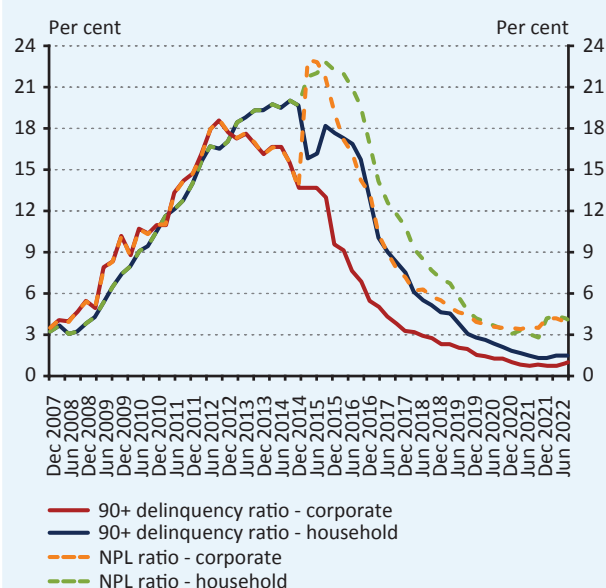
Chart 34
Domestic problem commercial real estate exposures by different type classifications



Note: From 31 March 2021 with the consolidated data of Banholding/MKB data. Based on L70 report, with quarterly data.

Source: MNB.

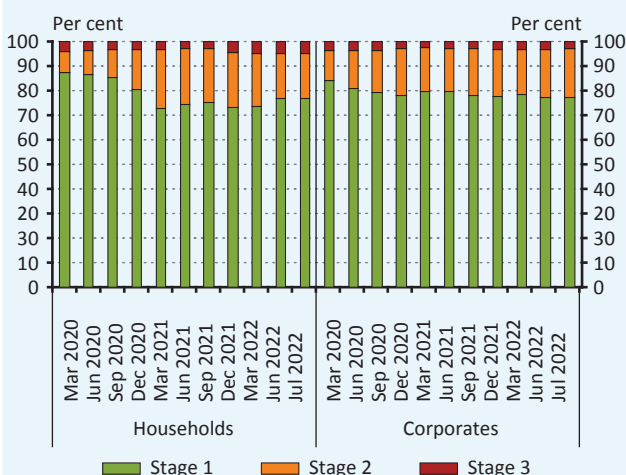
Chart 35
Ratios of non-performing corporate and household loans



Note: The definition of non-performing loans changed in 2015. From then on, in addition to the loans over 90 days past due, loans less than 90 days past due where non-payment is likely are also classified as non-performing. Calculated by clients until 2010 and by contracts from 2010.

Source: MNB.

Chart 36
Distribution of retail and corporate loans by quality



Source: MNB.

performing and had to be taken into account as restructured according to the MNB's expectation⁹, due to the moratorium (Chart 34), mainly in the sectors most severely affected by the first waves of the pandemic (hotel, shopping centre, office). For many banks, this would have led to the imposition of the capital requirement and a reduction in the free buffers available to finance lending activity, or even a balance sheet adjustment, whereas the actual quality of the loan portfolio would not have justified it.

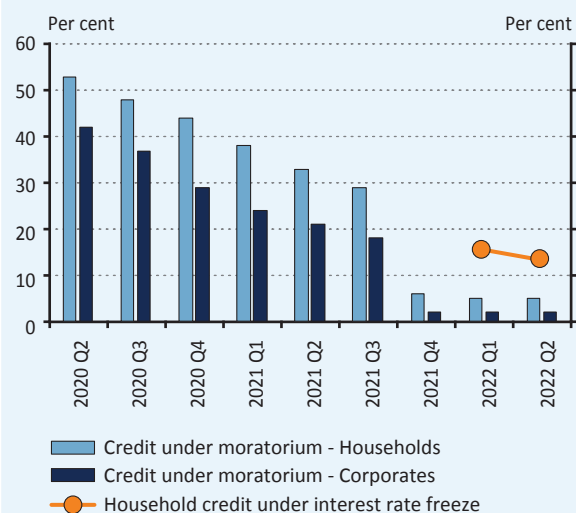
7.2 THE PORTFOLIO QUALITY OF BANKS DOES NOT CURRENTLY REQUIRE MACROPRUDENTIAL INTERVENTION, BUT CLOSE MONITORING IS JUSTIFIED

The portfolio quality of banks and the evolution of the non-performing loan stock do not currently pose a systemic risk that needs to be addressed, and macroprudential intervention is therefore currently not needed. The portfolio quality of the banking system deteriorated slightly after the general moratorium was phased out in autumn 2021. The share of non-performing loans, mainly due to loans not yet past due over 90 days but classified as non-performing by banks, moved from its historical low in the fourth quarter of 2021 and, after a moderate increase, continued to decline and has remained below the 5 percent level (Chart 35). Loan loss provision coverage ratio is sufficiently high for both non-performing and Stage 2 loans, the stock of which is declining in the household and slightly rising in the corporate sector (Chart 36), so the extent of potentially new losses may be limited.

The systemic risk of non-performing loans may increase in the near future. The Russo-Ukrainian war and related sanctions, the inflationary environment, cost shocks to corporates and households could adversely affect banks' portfolio quality, and there are questions about the ability of borrowers to make payments on loans affected by the tightened credit moratorium extended until end-2022 (Chart 37) and the interest rate freeze foreseen until summer 2023. Approximately HUF 320 billion of corporate and HUF 120 billion of retail loans remain in the fourth phase of the moratorium, which runs until the end of 2022, representing about 3 percent of corporate loans and 1.5 percent of retail loans. In June 2022, the interest rate freeze protected more than HUF 1,400 billion of loans from the risk of interest rate rises. On average, repayments on the loans concerned averaged HUF 53,000, which would rise to HUF 85,000 if the programme were to be phased out.

Rising overhead costs could also lead to a substantial deterioration in the portfolio quality of loans to household

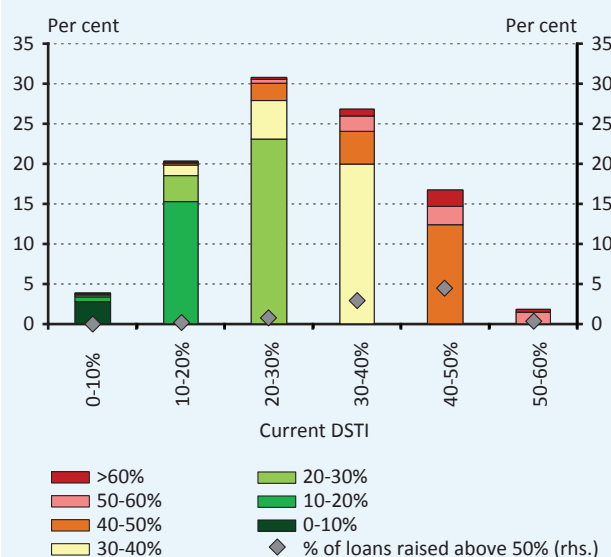
Chart 37
Development of the share of household and corporate credit under moratorium and interest rate freeze



Note: Credit institution sector.

Source: MNB.

Chart 38
The estimated effect of the increase in gas bills on the DSTI value of residential mortgage loans



Note: The debtors' income at the time of credit origination was indexed based on the time elapsed since the conclusion of the contract. The debtors affected by the gas price increase were determined on the basis of probabilities calculated from the consumption data of residential gas customers.

Source: MVM, MNB.

clients with above-average consumption. We estimate that a substantial share of retail borrowers could be affected by the increase in utility costs due to the change in the conditions of the government utility cost reduction scheme. Borrowers in smaller municipalities, living in larger detached houses and presumably with lower incomes, may be more exposed. Based on the proportion of consumers facing higher overheads, around a quarter of retail debtors could face higher energy costs, leading to a substantial increase in their income stretching and even to payment difficulties unless there is significant consumption adjustment (Chart 38). Among businesses, those with energy-intensive production structures and price-sensitive markets may be particularly affected. Given the significant number of vulnerable debtors, portfolio quality represents a risk that needs to be monitored closely.

7.3 THE FUTURE USE OF THE SYSTEMIC RISK BUFFER COULD TAKE SEVERAL FORMS

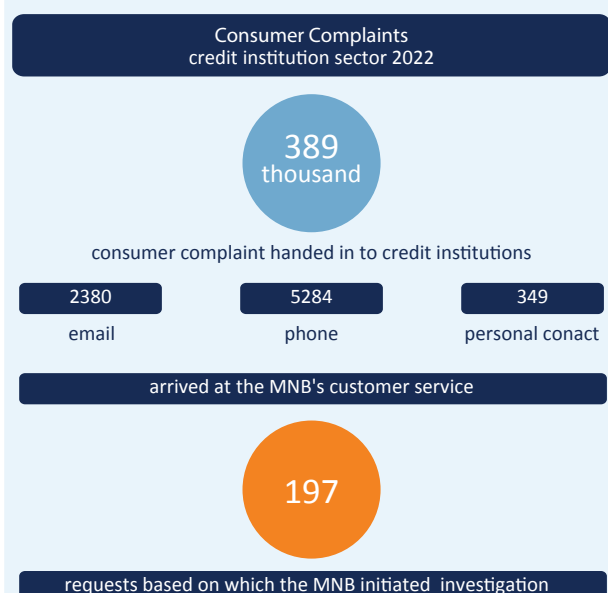
The SyRB can be an effective tool to mitigate banking system vulnerabilities related to problem portfolios in the future, also in the light of past experiences. In the event of an increase in the NPL portfolio, or its prolonged persistence at higher levels, the SyRB requirement may encourage portfolio cleaning or, in its absence, capital accumulation to ensure adequate shock absorbing capacity. It is appropriate to apply it at a time when the state of the relevant real estate markets, the market conditions for the sale of receivables or collateral are favourable to minimise the cost of adjustment. At present, however, there is still considerable uncertainty in the period of risk build-up. The use of SyRB, by reviewing and reactivating the currently suspended application or extending it to other high-risk segments, should be considered in the period following the current challenges, and until then it is appropriate to focus on means to prevent default.

A sectorally imposed SyRB can help to effectively prevent the build-up of systemic risks in the residential real estate market. To prevent the build-up of excessive overvaluation in the residential real estate market and related credit risks, the MNB has already taken steps to increase the countercyclical capital buffer and apply borrower-based measures. To increase the banking system's shock resilience to a potential real estate market correction and to more strongly curb the build-up of certain targeted exposures, the possibility of applying a sectoral SyRB should also be explored. In the event of a substantial shock, such as the materialisation of real economic risks, there is also scope for buffer release and maintaining lending capacity through this mechanism.

8 Financial consumer protection activity of the MNB

Through the trust in the financial system, the MNB's financial consumer protection activity – which has become increasingly complex and emphasised – makes substantial contribution to the maintenance of financial stability, in the scope of which, the central bank reviewed the institutional practice of moratoria in the past year in the context of an investigation and issued a recommendation on its consumer protection expectations regarding the restoration of solvency in the case of overdue retail loans. In addition, the MNB will continue to pay particular attention to the consumer protection aspects of cross-border services and to raise awareness of the potential risks impacting a wide range of consumers.

Chart 39
Consumer complaints in 2021 in the credit institution sector



Note: The credit institution sector refers to credit institutions and their financial enterprises.

Source: MNB.

8.1 IN ADDITION TO ONGOING SUPERVISION, THE MNB'S CLASSICAL SUPERVISORY ACTIVITY WAS STRENGTHENED IN 2021

In 2021, despite a decrease in the number of complaints received by the credit institution sector, the number of consumer complaints received by the MNB saw little change compared to 2020. In 2021, the number of complaints received by the institutions fell by nearly 8 percent compared to the previous year, while the number of investigations initiated on request remained stable compared to the previous year (2020: 192 cases) (Chart 39). In the first half of 2022, the number of investigations initiated increased slightly compared to the same period in 2021, and the number of investigations initiated in 2021, both on request and ex officio, also increased compared to 2020 (Chart 40). The consumer protection fines imposed in 2021 were nearly 60 percent higher than the amount of fines imposed in the previous year (Chart 41). By subject of complaints received by credit institutions, complaints about quality of service and electronic services increased the most, while most complaints continued to relate to settlement disputes and financial abuse. Although the number of complaints received by institutions regarding financial abuse decreased compared to 2020, the number of complaints regarding debit card and payment account abuse increased among the complaints received by the MNB in the second half of 2021 and the first half of 2022.

Chart 40
Data on consumer protection activity in the credit institution sector

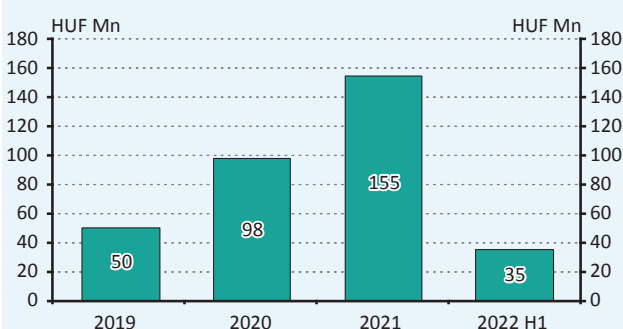
Consumer protection credit institution sector		
2022 H1	2021	2020
Number of investigations initiated		
119	202*	197
Number of infringement decisions		
54	129	103
Consumer protection fine (HUF million)		
35	155	98
Number of consumer warnings		
13	4	31

Note: The credit institution sector refers to credit institutions and their financial enterprises.

*The moratorium-focused investigation involving 16 institutions was counted as 1 investigation.

Source: MNB.

Chart 41
Developments in consumer protection fines in the credit institution sector



Note: The credit institution sector refers to credit institutions and their financial enterprises.

Source: MNB.

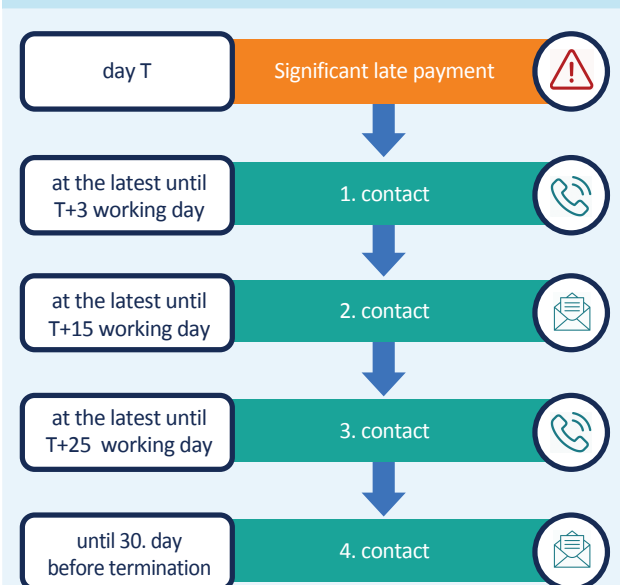
8.2 THE MNB HAS ALSO REVIEWED INSTITUTIONAL PRACTICES RELATED TO THE PAYMENT MORATORIUM IN THE CONTEXT OF AN INVESTIGATION

The MNB also reviewed the compliance with the payment moratorium rules, which entered into force after 18 March 2020, and the related institutional practices in the context of an investigation. In addition to reviewing the planned practice of maturity extensions and payment scheduling, the thematic audit involving 16 institutions also covered the review of institutional practices related to the management of interest and fees occurring during the moratorium and the payment scheduling after the exit from the moratorium, as well as institutional practices related to the re-calculation of debt from credit agreements on consumers' credit card and payment account (overdraft). In the past, the MNB has assisted credit institutions' lawful operation regarding the moratorium by issuing a number of guidelines – Frequently Asked Questions, management circulars, position papers – which institutions could refer to when developing their institutional practices. The thematic audit will be closed in October 2022.

8.3 THE MNB HAS DRAFTED A RECOMMENDATION SETTING OUT ITS CONSUMER PROTECTION EXPECTATIONS REGARDING THE RESTORATION OF SOLVENCY IN THE CASE OF OVERDUE RETAIL LOANS.

On 22 April 2022, the MNB published its renewed recommendation on the consumer protection principles expected in the management of retail credit, loan and financial leasing contracts in default. The MNB monitors with special attention the treatment of defaulting clients also from a consumer protection perspective. The aim of the recommendation is to facilitate the restoration of solvency through cooperation between the parties in the period before termination. The recommendation expects financial institutions to apply a standardised and regulated treatment to all credit and loans and financial leasing contracts with defaulting clients. Institutions are required to contact the debtor no later than 3 working days after being in default for 45 days for one month's payment obligation, and if unsuccessful, to initiate 3 more attempts before termination (Chart 42). The recommendation

Chart 42
Flow diagram of the process required in the 5/2022 supervisory guideline



Source: MNB.

explicitly expects institutions to tailor both the provision of information and the solutions to facilitate payment to the debtor's situation. In the process, financial institutions may apply reasonable and proportionate fees and charges, disclosed in a transparent manner. The expectations set out in the recommendation must be applied by institutions from 1 September 2022, even for ongoing cases. The MNB will monitor compliance with the recommendation in the future.

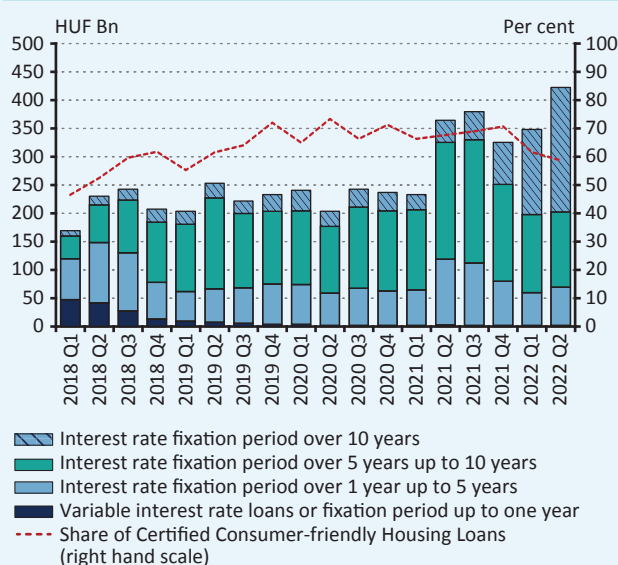
8.4 THE MNB CONTINUES TO CLOSELY MONITOR THE ACTIVITIES OF CROSS-BORDER SERVICE PROVIDERS

The MNB continues to place particular emphasis on the protection of the financial interests and security of Hungarian consumers, taking the necessary measures where warranted and drawing attention to the risks of using cross-border services. The FinTech ecosystem is developing rapidly and dynamically, with several licensed innovative institutions engaging in cross-border activities in Hungary, in many cases with a significant consumer base. These companies have a supervisory licence in their home Member State – outside Hungary – and a cross-border service registration with the MNB in Hungary. Under EU rules, they do not have to apply for a supervisory licence in each country of destination and are not subject to certain national regulations, thereby achieving significant cost savings. The MNB supports, at all times, the strengthening of competition in the Hungarian financial markets, as it encourages market participants to implement innovations, developments and to operate more efficiently, at the same time providing their customers with higher quality, simpler and faster services. However, these processes should not be against the interests of domestic clients. Examples of consumer protection risks include the language used in rendering the services, the adequacy of the complaint management and the alternative dispute resolution, the adequacy and availability of the information related to the conditions and fees of the services and the absence of deposit insurance. However, the MNB's powers against cross-border service providers are limited, as it only has direct powers to take action in the absence of action by the supervisory authority of the country of the service provider's registered office or in the case of conduct that seriously jeopardises a wide range of consumers, and, given the lack of data, it has little information on both service providers and clients using services, therefore it only has indirect access to the information that might justify action.

Box 4**Experience to date and directions for improvement in the introduction of the Certified Consumer-Friendly product line**

The MNB launched the Certified Consumer-Friendly certification framework in the summer of 2017, taking into account competitiveness, financial stability and consumer protection aspects. Following the introduction of the Certified Consumer-Friendly Housing Loan products in 2017, with the introduction of the Certified Consumer-Friendly Home Insurance (CCHI) and the Certified Consumer-Friendly Personal Loan (CCPL), Certified Consumer-Friendly products are now available for 3 product types. For all three products, the MNB supports the stimulation of banking competition, consumer protection and financial awareness by promoting the digital transition and by operating an online comparison site that allows consumers to compare products in a standardised, easily comparable and transparent way, providing them with information on the main parameters of the products offered by the institutions.

The success of the certified products is demonstrated by the significant market share they have gained in all markets. CCHL products have become standard products in the housing loan market. By the second quarter of 2022, banks have granted more than 175,000 Certified Consumer-Friendly Housing Loans worth around HUF 2,500 billion since the launch of the product. This means that the market share of CCHL products among potentially qualifying home loans has been consistently around 70 percent in recent years. Eliminating GHP loans, the share of CCHL products has been around 60 percent in recent months. In the case of home insurance, nine insurers have already successfully applied to market the product following the launch of the CCHI certification, with more than 15,000 contracts signed and insured assets of over HUF 500 billion. In the personal loan market, the popularity of CCPL products is shown by the fact that since the launch in January 2021, nearly 45,000 loans have been taken out by customers, amounting more than HUF 160 billion. This means that CCPL products account for 20 percent of new loans in the financial sector as a whole, while the share among institutions selling certified products is 30 percent.

Newly issued housing loans based on the length of the interest period

Note: We calculated the share of CCHL products among the potentially qualifying bank housing loans, in addition we filtered out loans granted within the Green Home Program.

Source: MNB.

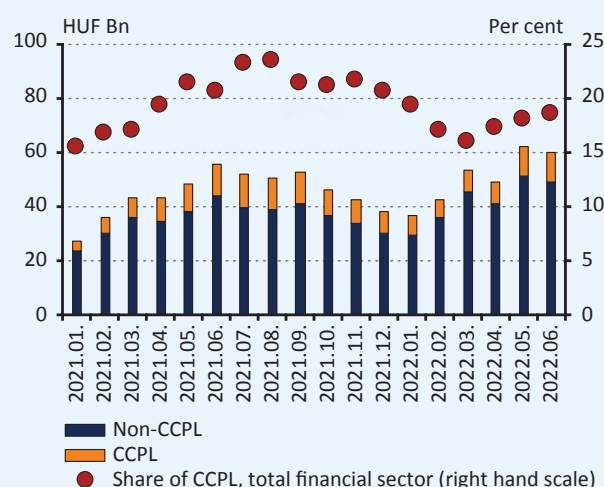
CCHL products have contributed significantly to reducing the interest rate risk of the housing loan portfolio and lowering interest rate spreads. Products with interest rates fixed for a long period, at least 10 years, have become dominant in the housing loan market: in June 2022, the share of products with fixed interest rates for 10 years or for the full maturity was around 80 percent of total CCHL lending. The APR spread over the reference rate on the CCHL products, depending on the loan attributes, may be lower by 1 percentage point compared to the non-certified housing loans, thanks to increased competition from banks and the crowding out of the most expensive products. And together with the uptake of MFL loans, the 4-5 percentage point spreads that prevailed before the certification was introduced have fallen to around 2 percentage points by 2022, based on the typical 4-month repricing.

CCPL products have already had after their launch a positive impact on market competition and the development of online lending processes. With a capped interest rate premium in the certification criteria, online provision of loan facilities and a transparent product offering, consumers can access loans on more favourable terms. With the provision of online lending, around 30 percent of CCPL transactions are now conducted entirely online. Experience so far shows that CCPL products are issued in higher amounts, with longer maturities and lower interest rates than

non-certified products. The average loan amount of the Certified Consumer-Friendly Personal Loans was HUF 2 million higher than that of the non-certified products, reaching HUF 4.1 million. On average, the maturity of CCPL products is almost half a year longer than that of non-certified products, while their average APRC is 1.0 percentage points lower than that of non-certified transactions.

Following the introduction of the certification framework, the MNB continuously monitors the development of retail lending and examines possible measures to support the wider availability of certified products. In the context of the latest review, as of March 2022, it has been possible to certify and market as CCHL loans with repayments other than by annuities, but without any material additional – prudential or consumer protection – risks, combined with savings in a building society and with a grace period of up to 12 months.

Development of personal loans by volume, broken down by CCPL and non-CCPL



Note: Total financial sector.

Source: MNB.

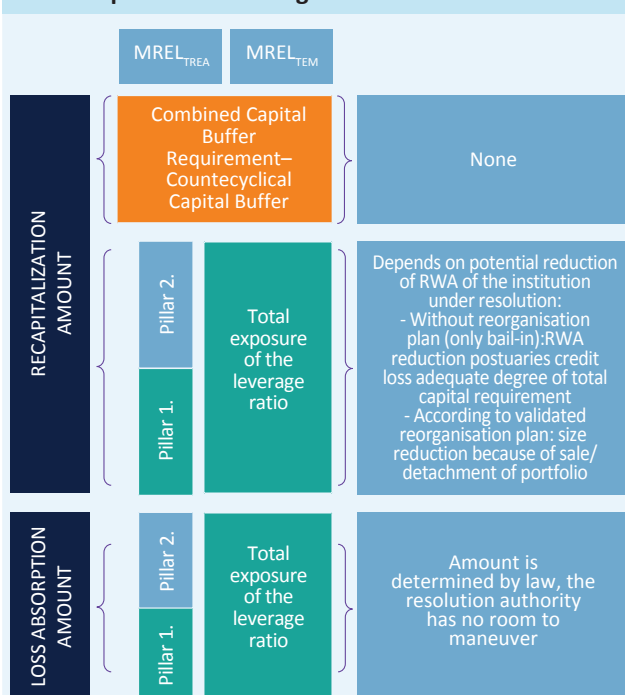
Looking ahead, in view of both market and consumer needs, it may be appropriate to extend the requirements of the Certified Consumer Friendly certification framework for online lending and to expand the criteria to support climate objectives. Bank green funding can play a key role in greening the economy. On the one hand, personal loans financing green objectives can be less risky and can be an important source of funding for smaller green credit objectives (e.g. renovation, energy investment, green car purchase). On the other hand, according to the „green hypothesis“, green housing loans also have a lower risk profile and their uptake could help to increase the low energy efficiency of the domestic housing stock, ensure energy sustainability and maintain financial stability. In view of this, the MNB, in line with its green mandate, is exploring, in consultation with market participants, the possibility of extending the CCPL and CCHL frameworks with dedicated green loan objectives and related benefit schemes (waiving of disbursement fees, assumption of the cost of the energy performance certificate, potential interest rate reductions).

Similar to the full online access to loans already introduced for certified personal loans, the channelling – within the limits provided by the existing legal provisions – of a significant part of the credit application process to electronic means would also support the efficiency improvement of the application process for housing loans. With a view to the digital development of the housing credit market, the MNB plans to encourage that in the future, for CCHL products, the need for the debtors to appear in person at a bank branch should be limited to a single occasion, the time of contract conclusion, and the other elements of the process (loan assessment, documentation submission, etc.) should be carried out online, thus creating a simple, efficient and highly digitised online borrowing process in line with market needs.

9 Resolution activity of the MNB

In 2021, based on the new regulation (BRRD2) the MNB revised the MNB Principles for imposing the MREL, and imposed the corresponding requirements on credit institutions in a transparent manner and in cooperation with them. In 2022, the MNB published its principles on sanctions in case of non-compliance with MREL and published its expectations for investments in MREL eligible assets to support credit institutions' issuance of MREL eligible bonds. Credit institutions had to comply with the MREL by 1 January 2022, after which the MNB continuously assesses MREL compliance. A number of credit institutions have already issued MREL eligible bonds, and some banks intend to issue more in the near future. Mandatory compliance on 1 January 2024 will require further adjustment by credit institutions, with capital buffers being rebuilt reducing the stock of MREL eligible liabilities. The MNB develops and operates its resolution planning practices in line with EU and national legislation.

Chart 43
MREL requirement for large banks



Note: MREL TREA: a risk-based MREL requirement set as a proportion of the total risk exposure amount. MREL TEM: MREL requirement set as a proportion of the total exposure amount. Pillar 1: Pillar 1 capital requirement. Pillar 2: Pillar 2 capital requirement.

Source: MNB.

9.1 THE MNB PRINCIPLES AND REQUIREMENTS FOR CALCULATING MREL HAVE BEEN RENEWED

In 2020–2021, the MNB revised the principles related to the MREL calculation in view of the changes in international legislation and its implementation in Hungary. The changes to the principles were required by the national implementation of the EU Bank Recovery and Resolution Directive (BRRD2) in December 2020. The MNB has developed its principles on the basis of best international practice, adapted to national circumstances, with a focus on financial stability objectives, a level playing field and ensuring the international competitiveness of Hungarian institutions.

In 2022, the Principles were complemented by limits on credit institutions' investments in MREL eligible instruments. The detailed rules define a diversification of investments in MREL eligible bonds and set a cap on all such investments, thus allowing credit institutions to invest in MREL eligible instruments while maintaining an acceptable level of contagion risk and thereby financial stability. For the time being, the limits do not materially constrain issuance that has already taken place or is expected to take place.

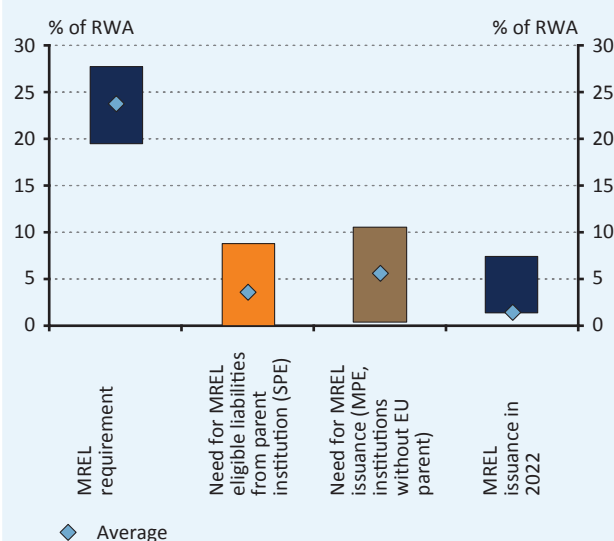
Following the implementation of BRRD2, the combined capital buffer will no longer be part of the loss absorbing amount and the MREL will be imposed both through the capital requirement and leverage. Institutions have to meet both requirements simultaneously and continuously, but in Hungary the capital-based requirement is the effective limit. The MNB still does not consider it justified to impose a market confidence requirement in its principles. (Chart 43).

Chart 44
The timeframe for meeting the MREL requirements



Source: MNB.

Chart 45
MREL for large banks as a ratio to TREA and the size of MREL shortfall for different resolution strategies



Note: The chart shows minimum and maximum values.

Source: MNB.

Core Tier 1 capital held to meet capital buffers is no longer an MREL eligible item because of the prohibition on its multiple use. In the calculation of the MREL, capital buffers have been excluded from the calculation, while core Tier 1 capital (CET1) covering capital buffers is not part of MREL eligible liabilities. Consequently, the planned increase in the capital buffers determined for the O-SIIs and the activation of the cCyB will reduce the stock of MREL eligible liabilities by the extent of the increase in the buffers.

In the context of resolution planning, MREL under the new rules were imposed in 2021, and institutions will be required to be fully compliant from 1 January 2024, essentially following a linear path of continuous adjustment. According to the new regulation, the MNB has set an interim mandatory target for 1 January 2022 and a planned MREL level for 1 January 2023 (Chart 44).

9.2 COMPLIANCE WITH MREL IS CONTINUOUSLY MONITORED BY THE MNB

The MNB has also published its sanctioning policy on non-compliance with MREL. The objective of the resolution authority is to increase the resilience, i.e. the resolvability, of the entities concerned during the transitional period by forcing the build-up of MREL-eligible stock and, thereafter, ensuring the continued availability of MREL-eligible stock to implement the resolution strategy in order to effectively manage a possible crisis. A transparent sanction policy will also contribute substantially to meeting these expectations.

The MNB will monitor the necessary adaptation to the MREL of 1 January 2024. The MNB will monitor the compliance of credit institutions with the MREL on a quarterly basis starting from 2022. The first mandatory level was met by all relevant credit institutions by 1 January 2022. Credit institutions have issued MREL eligible bonds in several cases and additional such issuances are expected and will be monitored by the MNB on an ongoing basis. At present, the MREL represents additional capital requirement only for those institutions for the resolution of which bail-in has been defined as the preferred resolution tool. Institutions with additional pressure to adapt to the final target level, assuming the continuation of current risk exposures, and excluding the impact of the countercyclical buffer that will come into effect in 2023, will need to raise HUF 1,425 billion of MREL, equivalent to 5 percent of risk-weighted assets, to meet the MREL in 2024 (Chart 45). Overall, planning for compliance with the MREL became part of the capital planning of the majority of credit institutions.

5. :

Box 5

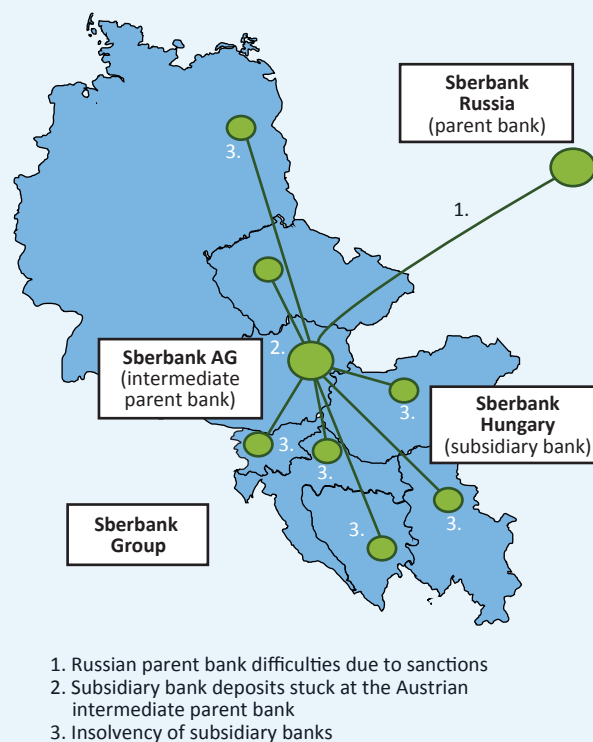
Lessons learnt from the crisis management of Sberbank

The Russian-owned Sberbank Group provided retail and corporate banking services in the CEE region.

Liquidity from Russia was channelled through the Austrian intermediary parent bank, Sberbank AG, to other EU subsidiary banks, including Sberbank Magyarország Zrt. The outbreak of the Russo-Ukrainian war on 24 February 2022 led to an immediate outflow of significant liquidity from several group members. Sberbank AG's payment difficulties, partly due to deposits with the parent bank, led to severe liquidity and solvency difficulties also for the Hungarian subsidiary bank, which did not, however, threaten the financial stability of the Hungarian banking system, as the bank's market share was only 1 percent.

The MNB immediately entered into consultations with the relevant EU and national authorities as soon as it received a notification from the EU Single Resolution Board (SRB), responsible for group resolution authority tasks for the banking group, about the sudden crisis situation in the banking group. In addition, contacts with the Hungarian subsidiary bank have been ongoing to prevent a similar situation to the one in the Czech Republic, where depositors stormed Sberbank branches. Similar to the measures taken at the Austrian parent bank, the MNB, as the supervisory authority, imposed – at the bank's request – a moratorium on deposit withdrawals at the Hungarian subsidiary bank on 28 February, in addition to a two-day bank holiday. On 1 March, the SRB concluded that the conditions for the resolution of the Austrian parent bank were not fully met, making it clear that it would be wound up and therefore that, at least in the short term, the Hungarian subsidiary would not be able to access the large amount of its deposits there. The Hungarian subsidiary bank was also facing solvency difficulties in connection with the unavailability of the deposit and, in view of this, the sale of the bank within the framework of a resolution procedure was not feasible in the short time available. As no resolution instrument was available that would have been able to achieve the resolution objectives better than liquidation, the bank's licence to operate was withdrawn and winding-up proceedings were initiated.

Overall, the crisis management of the Sberbank Group and its Hungarian operations has been successful with regard to the financial system, as the crisis situation of the Group did not have a negative impact on the stability of the financial intermediary system neither at EU level nor in other Member States, including Hungary, but it also provided important lessons. On the one hand, the exchange of information between the EU and national authorities needs to be further strengthened as early as the period before insolvency is declared, while the moratorium, i.e., the limitation of certain payment obligations (e.g. deposit payments), has proved to be an effective tool: it has given a short but essential time to prepare the measures needed in the crisis situation. In the case of a decision involving several Member States, the possible consequences of the decision for each Member State concerned must be taken into account, in particular financial stability with regard to the available financial resources of the Member States. Indeed, during the crisis management of the Sberbank Group, the Hungarian subsidiary bank was unable to access a significant deposit previously placed with the Austrian parent bank, representing around two thirds of Sberbank

The development of liquidity and solvency difficulties of the Sberbank group

Source: MNB.

Hungary's own funds, due to the payment restriction in Austria, which contributed considerably to its insolvency, creating a significant obstacle to the swift sale of the Hungarian bank in resolution.

Sberbank met international and domestic liquidity regulatory ratios with a high buffer, therefore its case highlighted that foreign exposures within the group could also carry substantial risk. Although the involvement of other institutions in the Hungarian banking system with foreign group members is not as significant, the MNB has introduced restrictive measures on a preventive basis. Under these measures, the aggregate amount of unsecured exposures of a parent company and its subsidiaries not established in Hungary under its control may not exceed 25 percent of the banks' respective sub-consolidated own funds. Adaptation has been successful and all banks are currently within the limit, thereby reducing the risks incurred to a manageable level.

A deeper examination of the applicability of alternative resolution strategies is justified during the resolution planning phase, if the preferred resolution strategy does not prove to be applicable in the actual crisis situation.

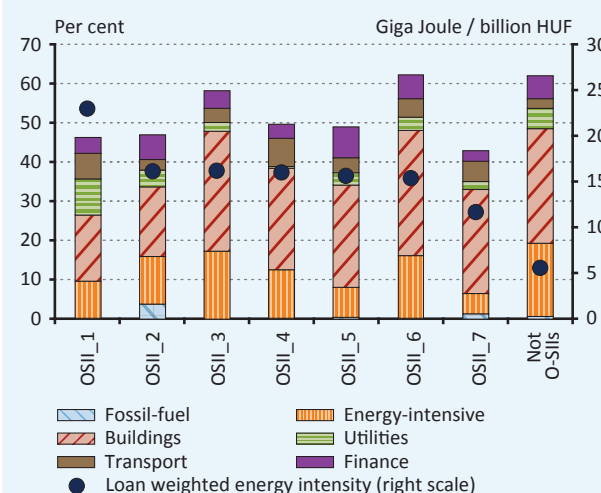
Although the Austrian parent bank did not have a critical function, its group resolution plan considered it necessary to apply a resolution measure to safeguard financial stability because of its close interconnection with its subsidiaries; however, the parent bank was not placed into resolution in the crisis situation. Considering that the primary cause of the extremely rapid insolvency of the Sberbank Group was an immediate and drastic loss of liquidity, it is appropriate to broaden the scope for providing liquidity in resolution through a possible revision of EU legislation and to make it a priority planning aspect in the context of resolution planning. Sberbank's crisis management has underlined the need to continue to recognise the intra-group loss absorption and recapitalisation mechanisms with sufficient weight in group resolution plans.

Overall, the crisis management of the Sberbank Group was able to prevent the destabilisation of the financial system in Hungary as well, and the contagion of the individual shock. The National Deposit Insurance Fund has paid out insured deposits below the compensation limit within the statutory deadline of 10 working days, and the liquidator also believes that there are positive prospects that the Hungarian subsidiary bank in liquidation will be able to recover its large deposit with the Austrian parent bank, and thus the liabilities to uninsured depositors are expected to be at least partially recovered.

10 Focus topic: Potential financial systemic risks of climate change and their tackling

The MNB considers the assessment of financial risks potentially amplified by climate change to be an important task also from a systemic risk perspective. To facilitate this, the possibilities of developing a systemic risk monitoring framework are explored. The risk assessment requires on the one hand filling significant data gaps and preparing financial institutions to take climate change risks into account. On the other hand, it is worth exploring the structure of the real economic sectors exposed to the transition risks and identifying the types and geographical scope of the physical risks and localising the economic actors concerned. This will support the application of macroprudential regulatory instruments already underway, differentiated according to green criteria.

Chart 46
Share of loans to non-financial corporations (NFC) potentially exposed to the transition risk of climate change and the energy intensity of the total NFC portfolio presented for O-SII banks



Note: The reference date for the data on loan portfolios is the end of 2021, while on energy intensity is the end of 2019. The CPRS (Climate Policy Relevant Sectors) is a common method for identifying economic sectors potentially affected by transition risks (EBA, 2021; in Hungary, Ritter was the first to examine banks' exposure to CPRS). Energy intensity is the value of sectoral energy intensity averaged with sectoral credit exposure weights and calculated across the banks' aggregate corporate loan portfolio.

Source: MNB, Eurostat

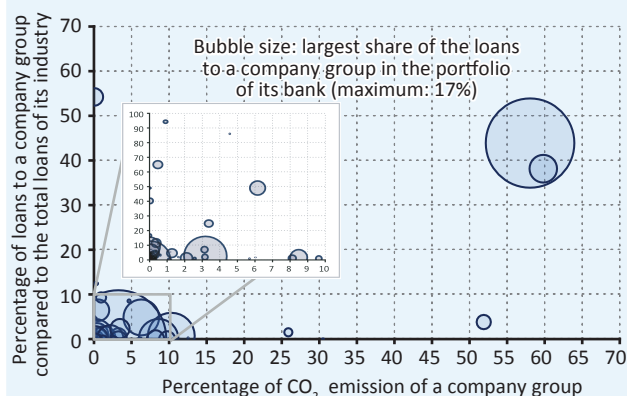
10.1 POTENTIAL FINANCIAL SYSTEMIC RISKS OF CLIMATE CHANGE

The credit exposure of Hungarian banks is systemically significant to vulnerable sectors exposed to climate change transition risks. Potential real economic losses due to climate change may indirectly increase the conventional risks inherent in the financial system. Nearly half of the corporate loan portfolios of systemically important (O-SII) domestic large banks, as defined by sectoral classification, are potentially vulnerable to transition risks. The share of vulnerable portfolio components and the indirect vulnerability of the overall portfolio, e.g. in terms of energy intensity, may vary significantly across large banks (Chart 46).

Carbon emissions are concentrated at the large corporate groups, but the concentration of bank financing is relatively moderate. For a more accurate risk assessment, it is worthwhile to assess vulnerability at the level of the companies financed.¹⁰ International experience suggests that a significant share of sectoral GHG emissions and credit exposures may be linked in a concentrated way to some large companies (see e.g. [ECB-ESRB, 2021](#) and [ECB-ESRB, 2022](#) reports). The domestic analysis is currently hampered by gaps in data availability, but installation-level information is available for energy producers and some large energy-intensive companies through the European Emissions Trading Scheme (ETS). The 70 groups of companies in the ETS (established domestically and subsidiary groups) for which it was possible to associate lending from the available

Chart 47

The share of carbon dioxide emission of domestic corporations participating in the EU Emissions Trading System (ETS) from the total emission of its industry in 2021 and the share of their loans from the outstanding loans at the end of 2021



Note: The database created by Abrell (2022) based on the European Union Transaction Log is used for the chart. Database for the European Union Transaction Log (euets.info)

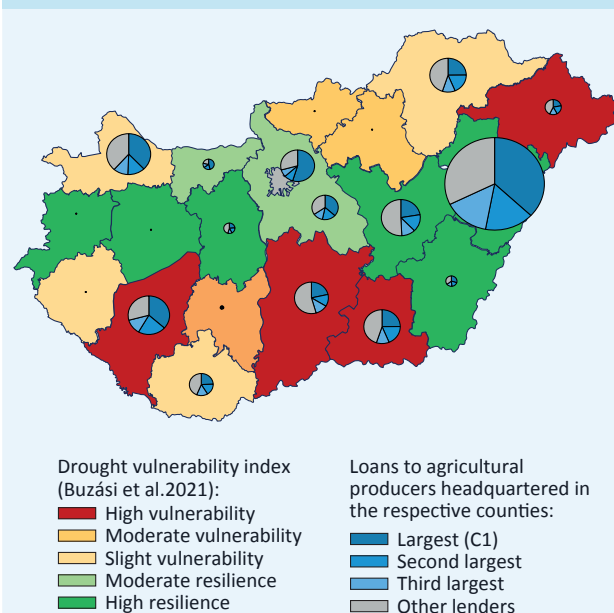
Source: MNB, EC Union Registry

Chart 48 a–c

Regional climate vulnerability and bank loan exposures

Chart a:

Regional drought vulnerability and the outstanding loans to agricultural producers headquartered in the respective counties (end of 2021)



Note: The size of the pie charts representing the concentration of loans to agricultural firms are proportional to the total loans of the banking system to firms active in agriculture and forestry (NACE A section).

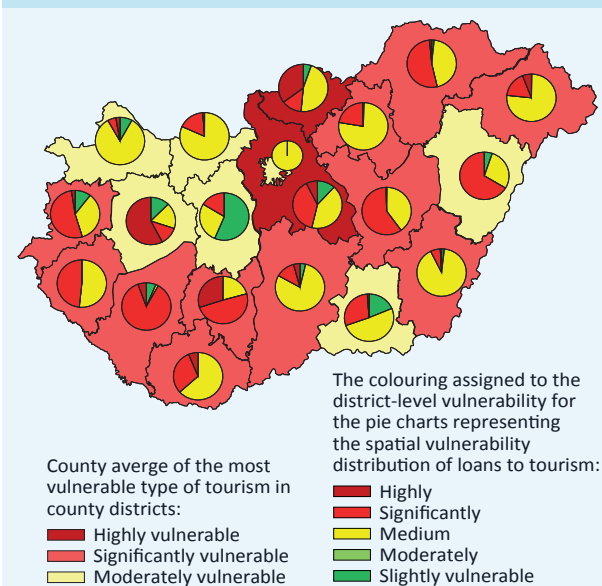
Source: MNB and Buzási et al. (2021)

data cover a significant share of energy and industrial emissions. However, even at the level of sectoral exposures, bank exposures vis-à-vis these groups do not indicate excessive concentration, with some specific exceptions which have special economic policy status (Chart 47).

Depending on the location of production activity, vulnerable sectors are foreseen to be exposed to increased physical risks. A permanently transformed environment due to climate change (e.g. higher average temperatures, deteriorating water quality, changing ecosystems) and an increase in the frequency or impact of extreme environmental events (e.g. drought, storms, flash floods, frost) may expose vulnerable economic activities or assets in the Carpathian Basin to physical impacts. There may be a considerable difference between regions and the adaptive capacity and economic capabilities of corporations depending on their location. [In the ITM \(2020\) report on the assessment of the potential impacts of climate change on the Carpathian Basin](#), the vulnerability of agriculture, tourism and the built environment is particularly addressed. Comparing the available information on the spatial distribution of bank credit exposures with the district and county projections of the research referred here, some counties in the Southern Great Plain and Southern Transdanubia regions, which account for about a quarter of the current arable land, may be at particular risk in terms of financing agriculture. The highly vulnerable districts of the Transdanubian counties, which are the most popular in terms of overnight stays in tourism, also receive a relatively high proportion of bank financing. The vulnerability of the building stock shows a correlation with regional economic development, while credit penetration is also lower in less developed areas (Charts 48 a-c). Furthermore, projections based on currently limited data give a strong indication that the range of vulnerable economic activities financed by the banking system may be regionally extensive.

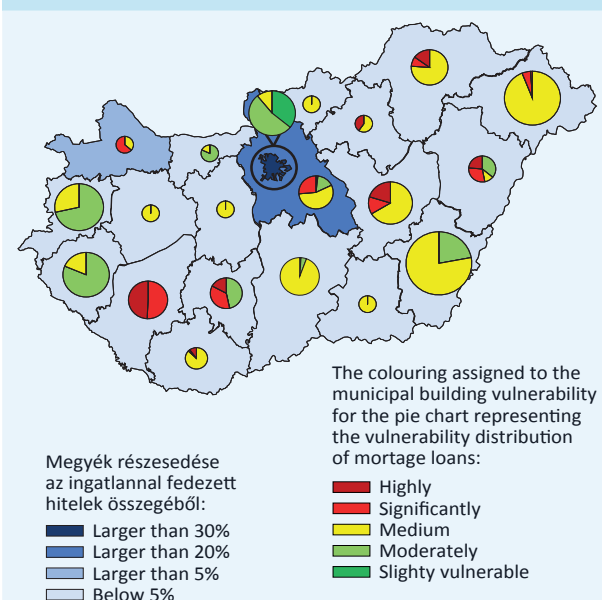
In order to fully capture systemic risk, it is also worth considering losses through the value chain. To capture the systemic effects as a whole, it is worth exploring the risk channel of close economic links in the real economy and the financial system, causing potential losses to other economic actors. Climate stress scenario analyses and network analyses that also assess real economic interconnections can play an important role in further analysis in assessing both direct and indirect systemic risk impacts.

Chart b:
The county-level climate vulnerability of tourism and the distribution of loans to tourism firms according to district-level vulnerability



Note: In order to assess the vulnerability of tourism the results of the NATÉR research project of MBFSZ were used. Waterside, active and heritage tourism types are distinguished in the research. The pie charts are showing the distribution of loans to firms with main activities related to tourism (NACE I55, I56, N7721, N79, R93) according to the maximums of the district-level vulnerability measurements--assigned into five categories-- for the different types of tourism. Source: MNB, NATÉR.

Chart c:
The county distribution of mortgage loans according to the municipal building stock vulnerability index categories



Note: For the pie charts the municipal building stock vulnerability index categories are used developed as part of the Lechner Nonprofit Kft. MBFSZ NATÉR project. Their size is proportional to the share of those mortgage loans that are secured by mortgages on real estate located in those settlements which have vulnerability index estimations compared to the total amount of mortgage loans secured by real estates located in the respective county. The highest county-level coverage is above 80%, the lowest is below 2%, however, below 30% the diameter of the pie charts are not decreased further. Source: MNB, NATÉR.

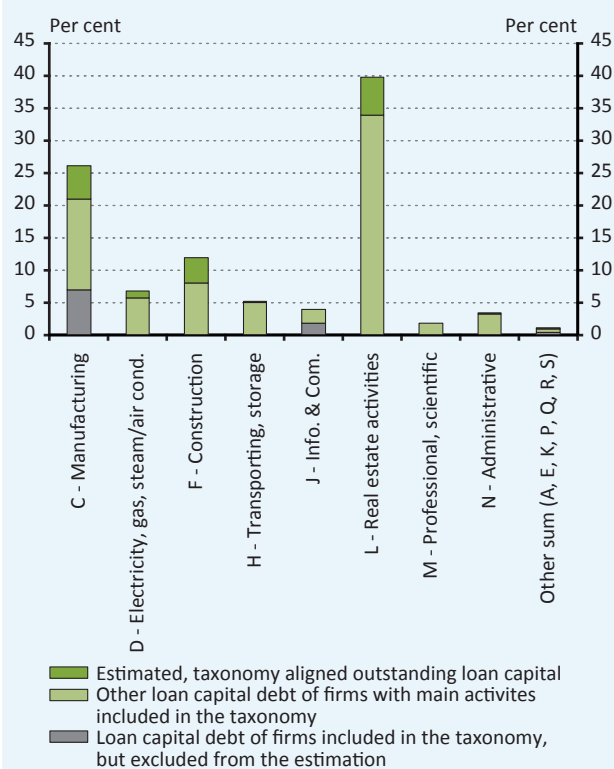
10.2 CLIMATE RISK-RELATED REPORTING AND DISCLOSURES

Taxonomy-based corporate sustainability disclosures can help to increase green investment. The EU [Taxonomy Regulation](#), entered into force in July 2020, will allow the identification of exposures that support climate sustainability. The Taxonomy Regulation and other related legislation¹¹ will require large companies in the real economy and financial sector to disclose the proportion of green assets and metrics indicating the extent of taxonomy-aligned activities and exposures from 2024. A single taxonomy could help investors identify sustainable investment targets and, through harmonisation, reduce disclosure costs for companies seeking funding in the longer term. In the absence of credible sustainability information, the funding premium for green financial markets disappears and transparent recognition of real risks is hindered.¹² Bank exposures aligned to taxonomy can currently only be estimated with considerable uncertainty, however, both EU and domestic approximations show that the compliance of exposures is still significantly limited (Chart 49). The MNB will expect information at least on the status of transactions by taxonomy with counterparties subject to disclosure obligations¹³ as part of the HITREG reporting from 2023.

The availability of taxonomy-related information is an important step in addressing the data gap, but it may not be sufficient for a comprehensive risk assessment. Taxonomy aligned exposures primarily suggest low or decreasing transition risk. However, the taxonomy does not provide comprehensive information on the risk differentials between the transactions it covers and, in particular, neither is any information gained on the transactions it does not cover, nor is on the systemic vulnerabilities of the value chain. In order to close this data gap, the MNB regularly monitors information from researchers and market data providers.

Chart 49

Estimation for the share of outstanding bank loans financing economic activities aligned with the environmental objectives related to climate change of the EU sustainable finance taxonomy compared to the total amount of loans to non-financial corporates (end of 2021)



Note: For the estimation the method calibrated for the EU in Alessi and Battiston (2021) has been applied with some country specific modifications of the parameters based on the activities of the domestic corporate sector where necessary information was available.

Source: MNB, HCSO, Eurostat

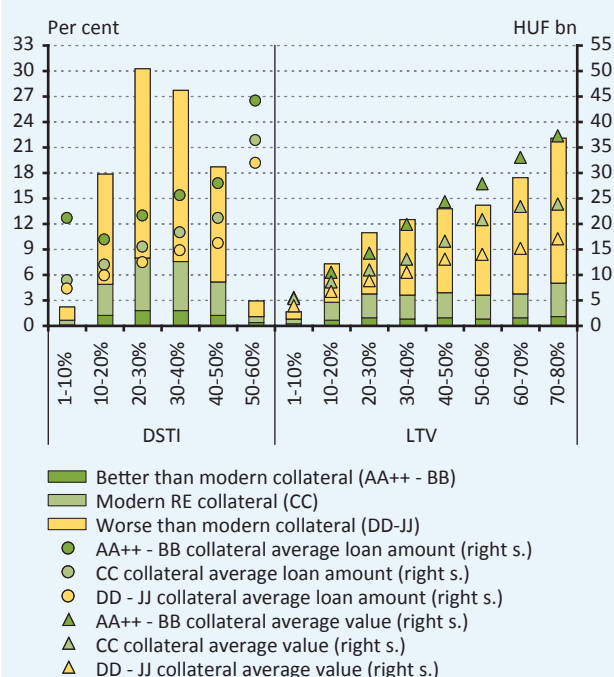
10.3 SHAPING THE POTENTIAL ROLE OF MACROPRUDENTIAL REGULATION

There is a growing consensus on the suitability of macroprudential instruments to mitigate the financial risks of climate change. Depending also on the risks detected, there could be significant differences between instruments in their effectiveness.¹⁴

The positive relationship between real estate value, debt servicing capacity and energy efficiency provides an opportunity for differentiated assessment of green mortgage exposures. *Green hypotheses* for green housing lending suggest that energy-efficient real estate-backed loans have a lower default risk and a lower loss given default rate than loans backed by less energy-efficient real estate.¹⁵

Loan transactions close to the limits imposed by the borrower-based measures are more likely to involve worst-rated energy-efficient housing, highlighting the potential for differentiation of the measures from a green perspective. Among the residential real estate transactions financed by loans in the last year and a half, the frequency of transactions with the worst energy-efficiency quality properties near the upper limits imposed by the borrower-based measures is over 70 percent, the share of transactions with poorer energy characteristics increases as the regulatory limit is approached for LTV, while it remains roughly constant for DSTI (Chart 50). Overall, about a quarter of the transactions backed by worse than modern real estate were in the DSTI band above 40 percent or in the LTV band between 70 and 80 percent. This may also suggest that clients with less own funds are opting for cheaper properties with unfavourable energy characteristics in order to meet the LTV requirement. Thus, differential treatment of energy efficient dwellings in the regulations, especially for the LTV standard, could help to increase the availability of green properties and energy efficiency retrofits by improving financing options, while not materially increasing risks as described above. Continually improving market and supervisory standards and expanding access to data by banks may also promote the feasibility of differentiating borrower-based measures in the near future.

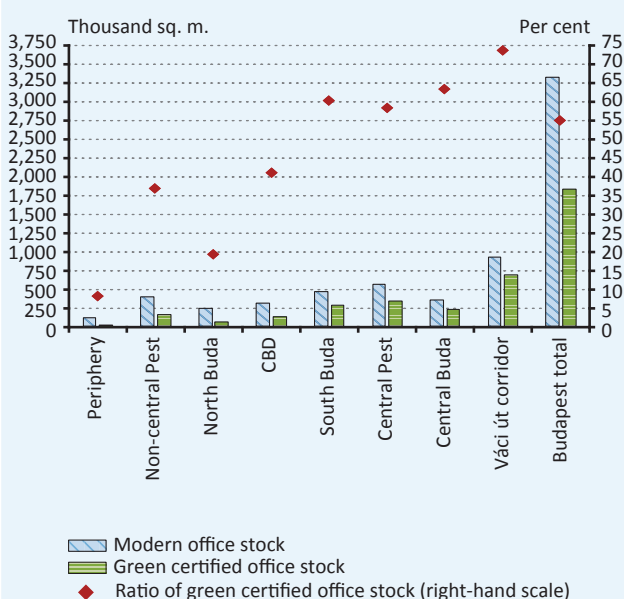
Chart 50
The distribution of DSTI and LTV ratios of loans financing household real estate transactions according to the energy efficiency of the real estate collateral (based on loan transactions between 2021 Q1 – 2022 Q2)



Note: The data reporting provides opportunity only for indicative, preliminary analysis for now, in the future the development of the reporting quality will allow for a more accurate description of the entirety of transactions.

Source: MNB.

Chart 51
Green office space in the Budapest office market by sub-markets



Note: The green-certified office stock includes modern office buildings in Budapest with BREEAM or LEED certification.

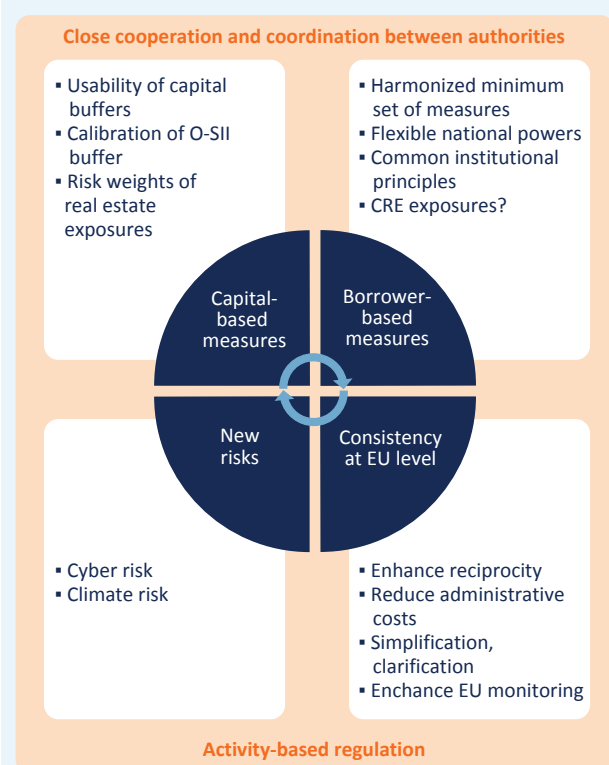
Source: CBRE.

The differentiation of the Systemic Risk Buffer requires appropriate risk mapping and the identification of high-risk exposures. The Systemic Risk Buffer (SyRB) is a flexible capital tool that can currently cover a wide range of risks and could theoretically target vulnerable and support sustainable credit exposures. For other macroprudential capital buffers, an application differentiated according to climate risks is conceivable but less obvious.¹⁶ However, there are some challenges of implementation for SyRB as well: (i) long-term, model-based projections and their uncertainty may play a much more important role in the risk assessment, (ii) the sustainability or improvement of exposures and their credit market segment (in line with the relevant [EBA GL/2020/13-Guidelines](#)) should be defined by a clear and reliable categorisation system¹⁷ [e.g. commercial real estate project loans can be relatively well differentiated by location, asset type and sustainability¹⁸ (Chart 51)], and (iii) the effectiveness of differentiating the cost of capital in increasing the sustainability of loan portfolios and financed activities still needs to be examined.¹⁹

11 Focus topic: Formulating a regulatory environment supporting the sustainable functioning of the financial system

In order to include the experiences collected since the global economic crisis (and especially during the coronavirus pandemic), the European Commission initiated a review of the macroprudential framework. The most important proposals that concern the MNB relate to the usability of capital buffers, the harmonisation of borrower-based measures and the management of new types of risks, such as the climate and cyber risks. However, the expanding framework, which covers an increasing number of risks, makes regulation more complicated, and thus it may result in unwanted additional costs on the sides of market participants and authorities alike. It is important for the MNB as well to address these challenges properly and to reduce the excessive complexity of the regulatory system, if possible.

Chart 52
Main topics of the EU macroprudential framework review



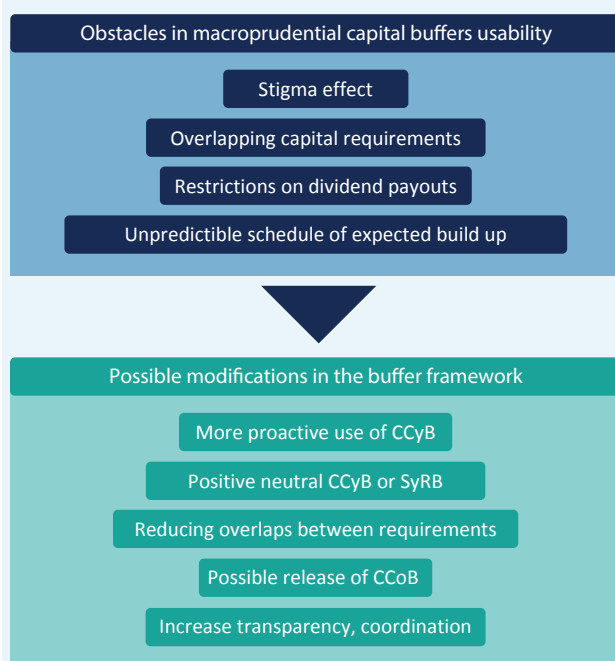
Source: MNB.

11.1 REVIEW OF THE EUROPEAN MACROPRUDENTIAL FRAMEWORK

In order to include the experiences collected since the global economic crisis (and especially during the coronavirus pandemic), as well as meeting its obligation described in the CRR, the European Commission initiated a review of the macroprudential framework. Accordingly, it announced a consultation in connection with the proposals concerning certain regulatory areas, to which – in addition to many national macroprudential authorities – the EBA, the ECB and the ESRB also submitted their respective proposals. According to preliminary plans, on the basis of the proposals received, by early 2023 the Commission will prepare its package of proposals to amend the relevant legislation. The most important proposals that concern the MNB relate to the usability of capital buffers, the harmonisation of borrower-based measures and the management of new types of risks, such as the climate and cyber risks (Chart 52). These areas may be supported by giving preference to activity-based regulation as well as by even stronger coordination and cooperation between authorities.

The already introduced capital-based instruments passed the exam with good results in the past years, but the coronavirus crisis highlighted some points that needed improvement. Prior to the coronavirus crisis, no releasable capital buffers of an adequate size were built up in the majority of countries, and there were also signs that banks were not always able or willing to use their capital buffers for lending (Chart 53). It is seen in the case of domestic banks as well that the capital buffer releases by the MNB in order to mitigate the effects of the coronavirus pandemic did not entail any major changes in banks' capital target

Chart 53
Obstacles in macroprudential capital buffers usability and proposals to eliminate them



Source: MNB.

Table 4
Main points of ESRB proposal regarding the inclusion of borrower-based measures into the EU legal framework

Minimum set of measures	<ul style="list-style-type: none"> Debt-service-to-income (DSTI) limits, Debt-to-income (DTI) limits Loan-to-value (LTV) limits Maturity limits Amortisation requirements
Definition of indicators	General principles and concept according to the related ESRB recommendation, but leave the possibility to specify further details of the definitions to member states
Decision making	Activation and calibration in national powers, without the possibility of top-up by EU authorities
Flexibility of application	Possibility of preventive application, multi-measure application, conditional differentiated application and use of exceptions
Methodology and conditions on activation, release and calibration	<ul style="list-style-type: none"> Conditions on application and applied methods of risk assessment and calibration are defined by member states. ESRB could support member states by issuing guidelines based on "guided discretion".
Reporting and disclosure	<ul style="list-style-type: none"> No need for EU approval for activation, but post notification and explanation required. Public disclosure needed
Transitional period	Avoiding excessive intervention in national frameworks, ensuring appropriate transitional period

Source: ESRB, MNB.

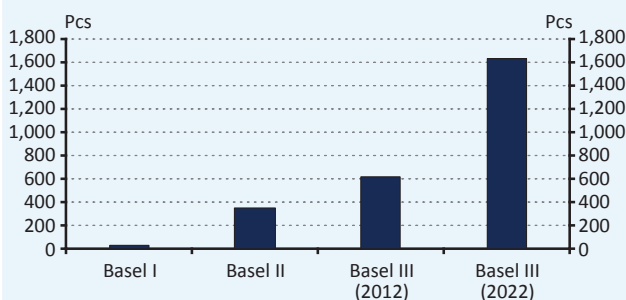
levels. Therefore, it is necessary to review the framework of buffer requirements, although its concrete way is still undecided. There are various alternatives for the increasing of releasability and usability.

Borrower-based measures are used in many Member States within national competence, but due to major differences, need for harmonisation regarding the elements of the toolkit arose, maintaining the necessary level of Member State flexibility. At present, the framework of borrower-based measures is not determined in the EU framework, and thus it is justified to create a certain level of uniformity in the case of this toolkit as well (Table 4). Nevertheless, excessive harmonisation may cause problems, as various characteristics of Member States may affect the functioning and efficiency of these instruments. It was indicated by the MNB as well at various forums that it supports the inclusion of the available instruments in EU legislation concerning borrower-based measures, but it is necessary to maintain the possibility of individual consideration in the areas of activation, calibration, monitoring and definitions. In relation to the introduction of the uniform minimum toolkit, expansion of the set of instruments that can be applied by the MNB (maturity limit, loan-to-income limits, amortisation requirements) may also be justified.

At present, the application and calibration of macroprudential instruments may vary significantly across member countries, which may warrant certain changes in order to create greater consistence. It may be necessary, for example, to further strengthen the reciprocity framework between Member States, to reduce the administrative burdens that arise at authorities and to standardise Member State methodologies to a greater degree in the case of certain instruments (such as O-SII buffers).

The current framework lacks instruments that are clearly for the mitigation of climate or cyber risks, although the inclusion of these instruments would be a major step forward in managing these new types of risks in a more efficient manner. Based on the proposal to amend the legislation, it is worth to focus primarily on the calibration of the already existing instruments according to climate exposure, mainly in the areas of the SyRB and large exposure limits, but fine-tuning of the borrower-based measures from a green perspective may also arise. In the case of cyber risks potentially leading to systemic problems, it is necessary to call the authorities' attention to the importance of this area, determine the maximum acceptable disruption level of basic functions, strengthen the focus beyond financial institutions, and stricter handling of systemically important institutions may also arise.

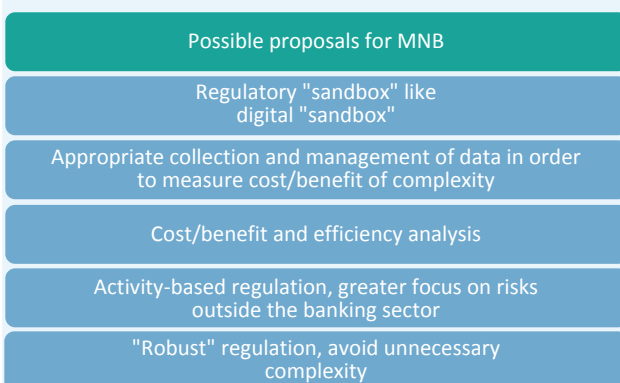
Chart 54
Increase in pages of Basel banking regulation



Note: Basel III (2022) indicates the aggregated Basel standard text valid in August 2022.

Source: SUERF, Haldane, BCBS.

Chart 55
Proposals for MNB to reduce regulatory complexity



Source: ESRB, MNB.

11.2 ISSUES OF THE COMPLEXITY OF THE REGULATORY FRAMEWORK

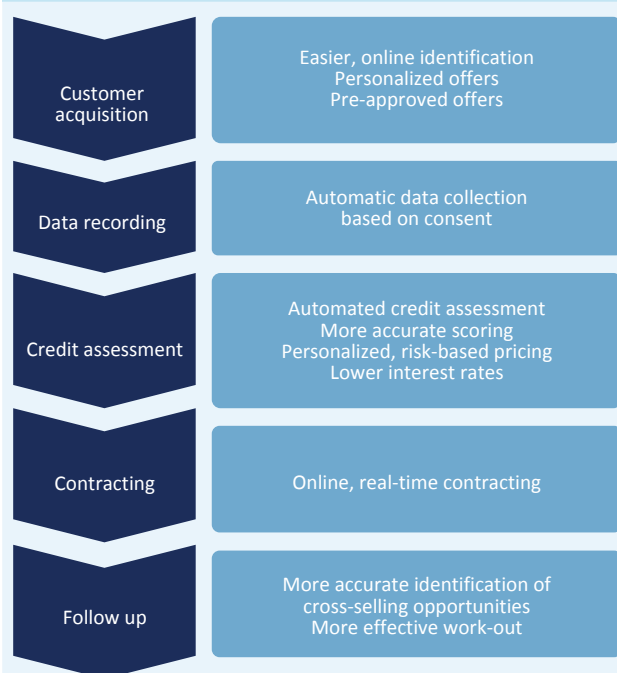
The expanding framework, which covers an increasing number of risks, makes regulation more complicated, and thus it may result in unwanted additional costs on the sides of market participants and authorities alike. In the past years, the regulation concerning financial institutions expanded continuously (Chart 54), and the calibration of existing instruments also developed. The resulting complex regulatory systems evolved also due to the fact that they allow more targeted, more flexible and risk-proportionate regulation, and eliminate the deficiencies of too simple rules that do not take systemic risks into account. At the same time, they pose many challenges for those concerned: the complicated rules result in heavy reporting and implementation burdens, and thus they may reduce competition in the market, and may also result in the relocation of certain services to outside of regulated markets. Complex regulations burdened with exception rules also make the regulatory, supervisory assessment of compliance more difficult, giving the semblance of safety, while they are often not suitable for managing new, still unknown risks.

It is important for the MNB as well to address these challenges properly and to reduce the excessive complexity of the regulatory system, if possible. For the achievement of this, an instrument that can be applied in the short run as well may be, inter alia, the formulating of 'sandboxes' already applied by several countries and the MNB as well in digital fields and comprising wider regulatory and supervisory subjects in the case of new types of financial services, thus making the restructuring of the entire framework unnecessary. In addition, it also needs to be pointed out that sufficiently detailed data reporting is a precondition of making the advantages and disadvantages of the complexity of regulations measurable. The costs and benefits of regulations should be assessed, if possible numerically, and evaluating their efficiency is important subsequently as well. In the future, it is worth to significantly extend the current focus on the banking sector to other financial institutions as well, and to apply activity-based rules that are valid for various kinds of institutions, as it allows an easier achievement of systemic stability. While taking the above aspects into consideration, upon formulating its own rules, the MNB should strive to avoid setting up unnecessarily complex regulatory systems and to create a 'robust' regulation that is able to adjust to new risks as well (Chart 55).

12 Focus topic: Financial stability implications of online lending trends

Directing bank lending processes into online space may result in a major increase in efficiency, which may become not only a competitiveness but also a financial stability issue. Especially significant improvement in efficiency may be achieved by directing the typically data intensive lending processes into online space. At present, in Hungary the legal conditions of full online lending exist in the area of unsecured lending. By H1 2022, within new lending, the share of personal loans granted online reached 20 percent, corresponding to a market of HUF 53 billion. Based on the characteristics of personal loans borrowed online, the online sales channel in itself does not mean any risk. Openness towards online borrowing may be further increased by the development of financial awareness and IT competences, the creation of a supportive legal environment and the ensuring of online access to data.

Chart 56
The advantages of digitalizing the main stages of the lending process



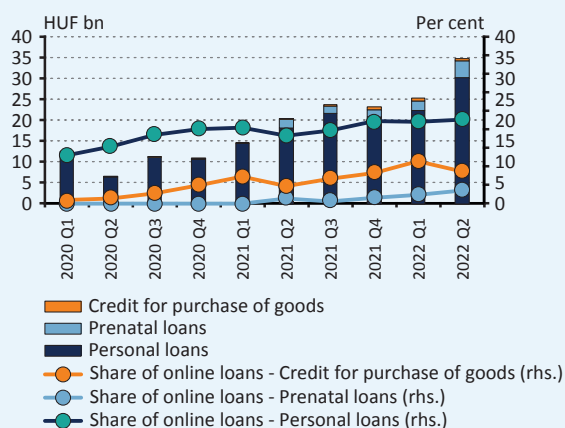
Source: MNB.

12.1 DIGITALLY DISBURSED LOANS ARE GRADUALLY GAINING GROUND IN THE DOMESTIC CREDIT MARKET

Fully comprehensive online lending may be possible in the case of unsecured loans. Directing bank lending processes into online space may result in a major increase in efficiency (Chart 56), which may become not only a competitiveness but also a financial stability issue. Especially significant improvement in efficiency may be achieved by directing the typically data intensive lending processes into online space. On the basis of the domestic legal environment, fully comprehensive online lending is possible in the unsecured credit market, whereas personal presence is required when concluding housing loan contracts, which allows only partial development of digitalisation. Accordingly, fully comprehensive online lending is mainly typical of personal loans and hire-purchase loans, and to a lesser extent of prenatal loans (Chart 57). According to volume, the share of loans disbursed fully online has been gradually growing since the coronavirus pandemic; it increased from 4 percent in early 2020 to nearly 13 percent by Q2 2022. The share of online lending is the highest in the personal loan market, where in H1 2022 already 20 percent of the lending was online, amounting to some HUF 53 billion in value, representing 29 thousand contracts concluded online. With that, the market of personal loans disbursed online is extremely dynamic, showing a more than 60 percent average annual growth rate since 2020. Compared to personal loans, the ratio of online disbursements is slightly lower, i.e. 8 percent in Q2 2022, in the case of hire-purchase credit and 3 percent in the case of prenatal loans.

The increase in the disbursement of online personal loans is mostly driven by a few banks, although their share is

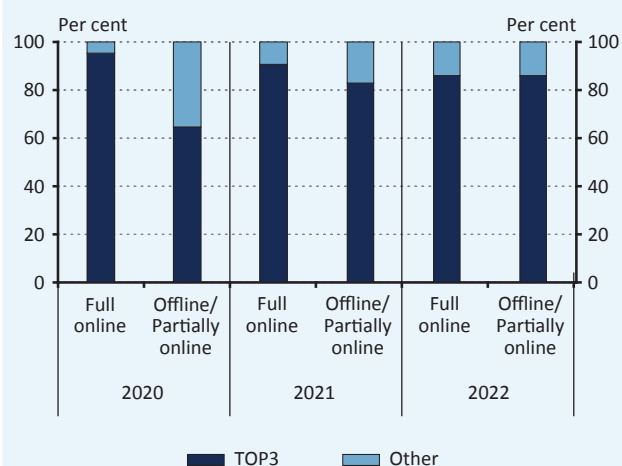
Chart 57
The share of online loans within the new placement by loan type



Note: Estimation, credit institution sector.

Source: MNB.

Chart 58
The share of the three largest market participants in the personal loan market according to the method of sale



Note: Credit institution sector. 2022 data pertains to the first half of the year.

Source: MNB.

declining gradually, as other creditors are catching up.

In 2020, almost all personal loans disbursed online were still related to three institutions (Chart 58). However, the conditions of fully comprehensive online lending do not yet exist in the case of several institutions that are market leaders in offline personal loans. Therefore, entry into the market by creditors that play a major role in offline lending may considerably increase the intensity of competition in the online personal loan market. Looking ahead, digital lending is likely to gain further ground, which is also supported by the MNB's Certified Consumer-Friendly Personal Loan (CCPL) framework, which requires mandatory online lending.

Loans disbursed online have typically lower amounts.

(Table 5) In H1 2022, the average maturity of the personal loans disbursed online was 5 years, i.e. one year shorter than that of the loans not borrowed online. The average APR level on loans borrowed fully online is 18 percent, which is 2 percentage points higher than that of loans not or only partly borrowed online, which may be explained by the higher pricing due to the lower loan amount and shorter maturity. The lower loan amount and shorter maturity may be caused by the stricter bank risk limits concerning online sales channels. CCPL products also contributed to the increased disbursement of online personal loans: in H1 2022, the share of CCPL products within online lending amounted to 29 percent, whereas this ratio is 18 percent in the case of offline or partly online lending. However, there is no major difference between the two types of borrowing in terms of the average income upon credit assessment and the debt-service-to-income ratio (DSTI). Accordingly, on the whole, no higher risk level of online borrowers can be identified; online lending itself cannot be considered a risk, while it may support bank efficiency considerably.

A gradual increase is seen in the number of banks' clients that have fully comprehensive online borrowing experience.

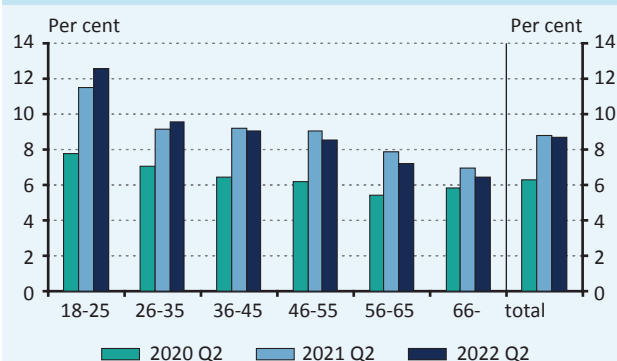
While in early 2020, prior to the coronavirus pandemic, only 5 percent of banks' debtors had online loans, this ratio rose one and a half times, i.e. to more than 8 percent by H1 2022, corresponding to more than 200 thousand people with digital borrowing experience. These clients had 2 loans and outstanding debt of HUF 4 million on average, corresponding to HUF 820 billion of total loans outstanding. No significant differences in territorial distribution can be seen among clients that have online loans, but the ratio of online borrowing is slightly higher in villages and small towns (10%) than in the capital (7%). This may be explained by the limited access to borrowing in person. Accordingly, the higher ratio of online borrowing in these settlements may also indicate that online lending may be a real alternative to a less dense network of branches. In

Table 5**Main data of personal loans distributed online and traditionally (Q1-Q2 2022)**

	Not or partially online administration	Fully comprehensive online lending
Average loan amount (HUF mn)	3	2
Average maturity (year)	6	5
Average APRC (%)	16	18
Average DSTI (%)	32	33
Average DSTI income	330	320
Proportion of CCPL* products (%)	18	29

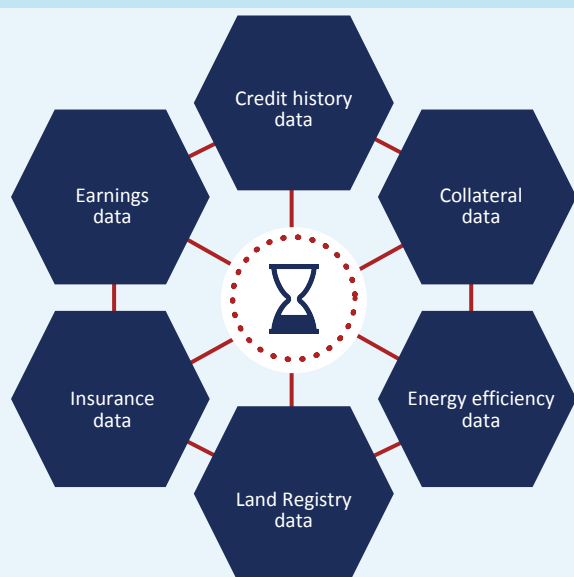
Note: Credit institution sector.

Source: MNB.

Chart 59**Evolution of the proportion of customers with online taken loans by age**

Note: At the end of the respective quarters, in the proportion of customers with credit. Without co-debtors. Credit institution loans only.

Source: MNB.

Chart 60**Data circles with limited availability required for fully comprehensive online lending**

Source: MNB.

addition, among those that have online loans, the above-55 age group is slightly underrepresented compared to their weight in offline lending (Chart 59), which is attributable to a lower level of IT skills and financial awareness. The significance of borrowing experience is corroborated by the fact that the share of more experienced borrowers, who have more than one loan, is greater among online borrowers: half of the clients with online personal loans have more than one loan, whereas the same ratio is 30 percent among the borrowers of offline personal loans.

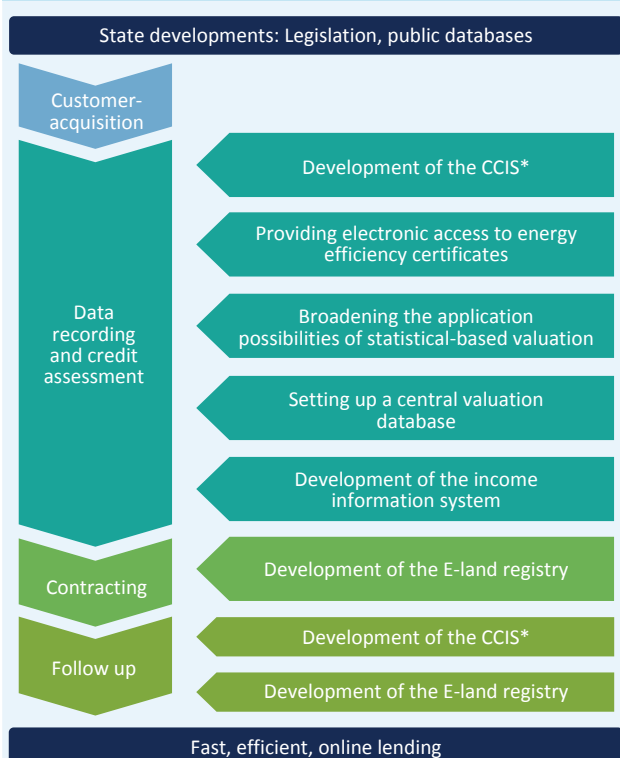
Looking ahead, expansion in the clientele experienced in digital borrowing may lead to a gradual increase in the openness towards online borrowing, which, in turn, may encourage banks' product development.

12.2 FURTHER INCREASE IN ONLINE LENDING COULD BE SUPPORTED THE MOST BY THE EXPANSION OF THE ACCESS TO THE AVAILABLE DATA ASSETS

At present, limited access to the available state data assets is typical in the banking sector. The databases needed for decision-making related to loan disbursements are often available, but they operate independently of one another, like islands, and they are not accessible in an automated manner (Chart 60). As a result, the cost and time requirements of the lending process cannot be reduced significantly, and financial deepening is not enhanced. A fundamental condition of the transition of lending processes into online space is the termination of existing bottlenecks through the development of the availability of the already existing databases and the creation of new ones as necessary. All this may result in the short run in significant achievements through a targeted completion of and amendment to the relevant legislation, which can bring significant results even with low costs. For the directing of lending processes into online space, the possibility of regulated, rapid electronic access to data is proposed to be created in the following areas (Chart 61).

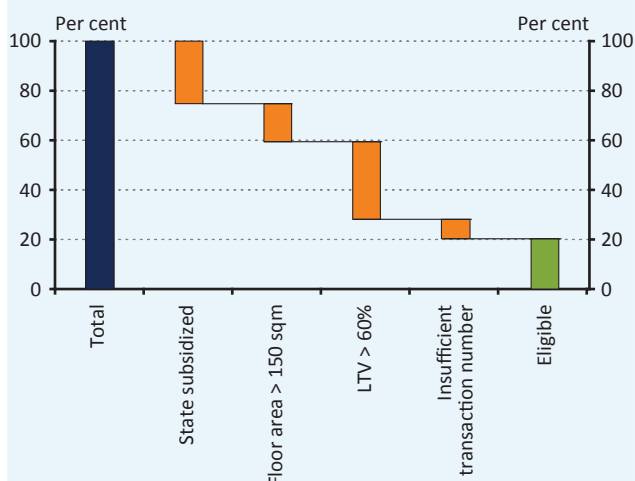
- **Improving the data content and functioning of the Central Credit Information System (CCIS):** expansion of the scope of data stored in the CCIS (for example to previous credit history, utility debts) and ensuring the accessibility of data without the clients' consent would increase the efficiency of more than 1 million loans disbursed by banks to households a year.
- **Providing electronic access to energy efficiency certificates:** for the spreading of green lending and the stimulation of green mortgage bond issues it is necessary

Chart 61
Lending in the 21st century



Source: MNB.

Chart 62
Estimate of the proportion of properties eligible for statistical valuation (05.02.2021. – 30.06.2022)



Note: The settlement transaction condition is a value calculated based on the 2020 data of NTCA's real estate transaction database.

Source: National Tax and Customs Administration (NTCA), MNB.

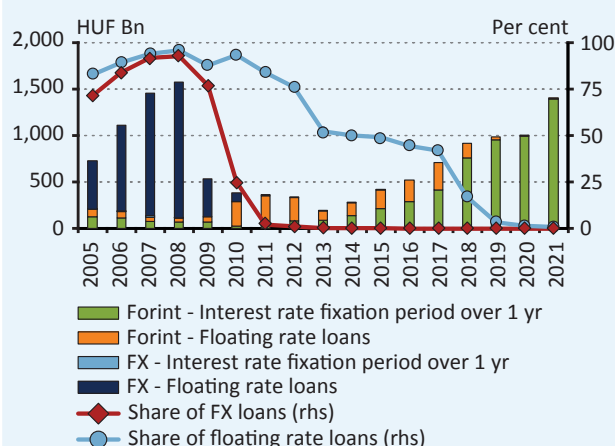
that banks have access to the energy efficiency certificates of the real estate properties that serve as collateral. For this, an automated process is proposed to be developed, within the framework of which banks could simply have access to the content of the energy efficiency certificates of 1.5 million homes already available at the Lechner Knowledge Centre.

- Widening the application possibilities of statistics-based appraisal of residential properties:** if certain conditions are met, since 20 February 2021 the change in the legal environment has allowed the statistical appraisal of residential properties in the case of loans granted against real estate as collateral. Tracking that appraisal, the MNB also accepts it in connection with determining the loan-to-value ratio according to the debt cap decree. However, for a widespread use of statistics-based appraisal, the conditions of application are proposed to be expanded, as according to the current conditions, on-site appraisal can be avoided only in the case of 20 percent of lending (Chart 62).
- Establishment of a central valuation database:** the time-consuming and costly processes of appraisal related to mortgage lending would be improved by the wide spreading of automated, statistics-based appraisal of real estate property, which would also result in the omission of 100 thousand on-site appraisals, which would require the setting up of a central appraisal database.
- Development of an income information system:** as of February 2020, on the eBEV portal the NTCA introduced an electronic earnings statement based on monthly employer and payer data. Between February and December 2020, employees initiated some 50 thousand queries, whereas in the whole 2021 the number of queries was around 80 thousand, representing an annual growth of 40 percent. In order to improve the usability of the income information system, the MNB identified various directions of development.
- Expansion of the data content of the electronic real estate records and providing electronic access to it:** in view of their lower credit risk, the MNB is planning to introduce a lower own contribution requirement for clients who purchase their first home. It would help credit institutions in the identification of clients who actually buy their first home if banks could learn about the data of the real estate property currently existing on the debtors' side in a simple, automated manner.

13 Focus topic: Financial stability aspects of the interest rate fixation of mortgage loans

In the past years, owing to the active actions of the MNB, the domestic mortgage loan market went through significant structural changes as fixed-rate credit schemes became general, significantly increasing the shock resilience of households. Major differences can be observed in terms of the penetration of variable-rate lending in the EU; schemes with interest rate fixation are more typical in the western and southern countries, while variable-rate lending is more widespread in the northern and eastern countries of the EU. In Hungary, due to the MNB's various measures, the weight of variable-rate lending increased considerably starting from the second half of 2017, and this type of lending became general by end-2018. The spread of Certified Consumer-Friendly Housing Loans, the differentiation of the debt-service-to-income (DSTI) ratio by the interest rate fixation period as well as the MNB's mortgage bond market development steps had a major part in this. Although fixed-rate loans have significant financial stability advantages in a rising interest rate environment, over the longer term development of the loan refinancing market is necessary to allow debtors to benefit from the advantages of a potentially declining interest rate environment as well.

Chart 63
New mortgage lending by interest rate fixation period



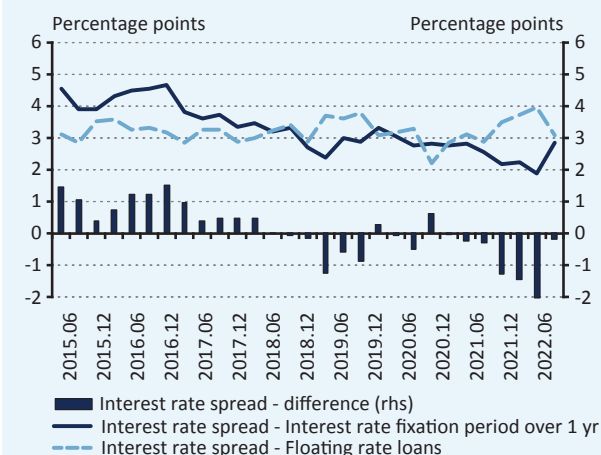
Source: MNB.

13.1 THE FINANCIAL STABILITY RELEVANCE OF FIXED INTEREST RATE MORTGAGES

It was of utmost importance to ensure a healthy structure of accumulating credit after the 2008–2009 economic crisis. Although following the crisis the conversion into forints had terminated the exchange rate risk of the mortgage loans, the newly disbursed mortgage loans were still long-term, variable-rate ones, exposed to interest rate risk (Chart 63). Due to the significant share of variable-rate schemes within new loans, until 2017 the weight of variable-rate loans within loans outstanding was high, above 70 percent. The persistently low interest rate environment that evolved after the 2008–2009 global economic crisis concealed the importance of the interest rate risk on the side of market participants, while it also provided an opportunity for the long-term fixation of favourable interest rates.

Loans with interest rate fixation mean plannable, stable instalments and lower probability of default, but its 'price' is the higher initial interest rate and the potential failure to benefit from the decline in the debt service burden if interest rates fall. On the debtors' side, in the case of fixed rates the borrower does not have to face increasing instalments due to a rise in interest rates in the period when the interest rate is fixed, which – in a rising interest rate environment – also means a generally lower probability of default of fixed-rate loans compared to variable-rate ones (Campbell and Cocco, 2015²¹; Gaudêncio et al., 2019²²). Following borrowing, however, in a potentially declining

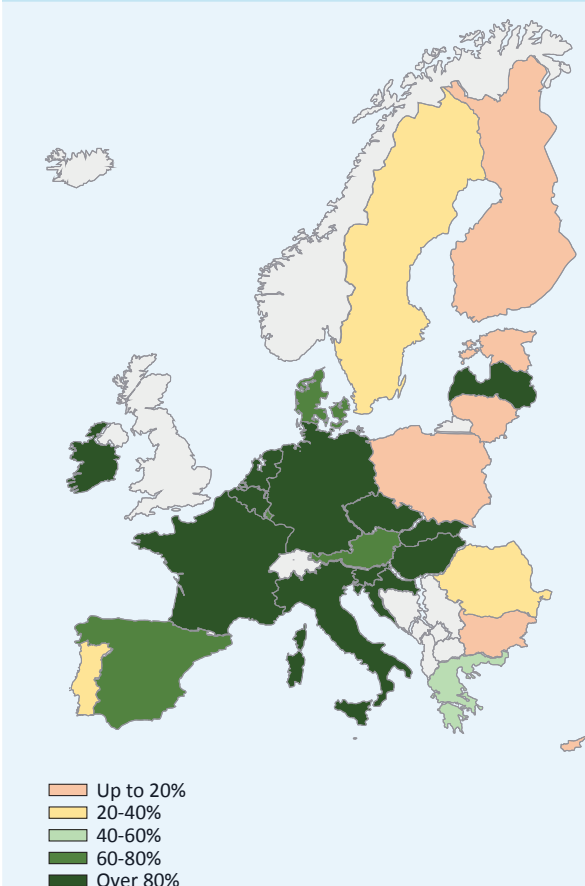
Chart 64
Average interest rate spreads of variable and over one-year fixed-rate mortgages



Note: The interest rate spreads were calculated as the difference between the APRC value of the loans and the reference interest rate according to the interest rate fixation period of the month four months before the conclusion of the contract. Volume-weighted averages.

Source: MNB.

Chart 65
The share of loans with interest rate fixation over one year within the new housing loans in the EU (December 2021)



Note: November 2021 data for Greece and Latvia.

Source: ECB.

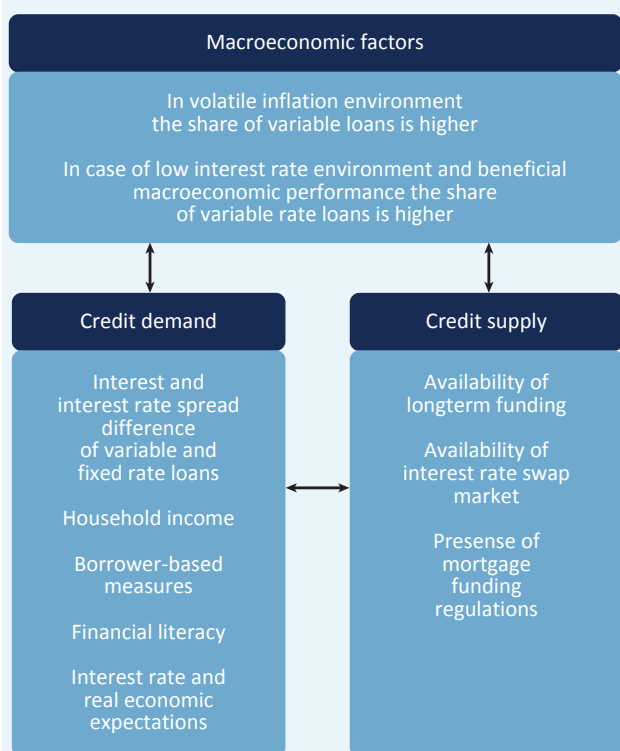
interest rate environment debtors may 'get stuck' in a higher interest rate level. They can shield themselves against that by prepayment or loan refinancing, but it usually entails additional costs. On the banks' side, in the case of a fixed interest rate it is necessary to manage the interest rate risk stemming from the difference in the length of interest rate fixation on the asset and liability sides. They can do that, for example, by raising longer-term fixed-rate funds and by concluding derivative transactions, but they incorporate the related cost into the pricing of these kinds of loans. Therefore, upon borrowing, the interest rate on fixed-rate loans is usually higher due to the different cost of funding for banks (Chart 64). Nevertheless, in the case of loans with longer interest rate fixation the lower default risk may justify a lower interest rate spread compared to variable-rate loans. From a macroeconomic point of view, the rise of loans with longer interest rate fixation periods weakens the interest rate channel of monetary transmission, as it decelerates the repricing of loans, but at the same time, interest rate increases in times of monetary tightening pose lower financial stability risk, increasing the leeway for monetary policy.

13.2 THE ROLE OF MORTGAGE LOANS WITH INTEREST RATE FIXATION VARIES INTERNATIONALLY

Major differences are seen in the EU in terms of the penetration of fixed- and variable-rate mortgage loan schemes. In the case of new mortgage loan disbursements, loans with interest rate fixation for more than one year are the most widespread in the Western and South European countries, while Central and East European countries show a mixed picture (Chart 65). Within the EU, with a share of more than 99 percent, the weight of mortgage loans with interest rate fixation for more than one year within new loans is the highest in Hungary.

The significant international heterogeneity seen in the EU in relation to the penetration of fixed-rate mortgage loans indicates the importance of national credit market factors. According to international literature, the spread of fixed-rate loans is affected by both demand factors, which depend on the characteristics of clients, and supply factors, which depend on the features of the financial system (Chart 66). On the client side, lower income and expectations of an interest rate hike increase the demand for these loans. At the same time, the demand for variable-rate loans may be greater among clients with higher income who are financially more conscious and able to cover the interest rate risk. The demand for fixed-rate loans may significantly be affected by the existence of borrower-based measures, which may also direct clients towards products with longer

Chart 66
The main factors influencing the spread of variable interest rate loans



Source: MNB; literature review²⁰.

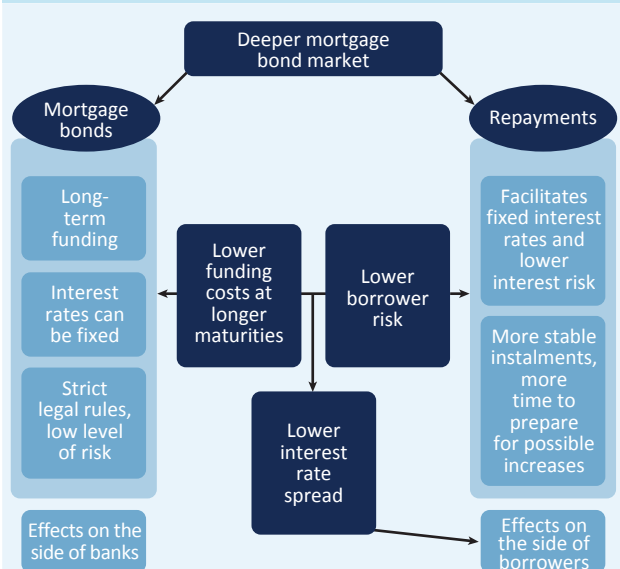
interest rate fixation periods if they expect the interest rate risk to be taken into account. At the same time, the penetration of fixed-rate loans also greatly depends on their relative cost compared to variable-rate loans, which is determined by credit supply factors. The additional cost of interest rate fixation compared to variable-rate schemes is determined by the costs of covering the bank's interest rate risk, which is mostly affected by the availability of long-term funds (such as mortgage bonds) and interest rate hedges and the existence of relevant regulatory provisions.

13.3 THE MNB SUPPORTED THE INTEREST RATE FIXATION OF MORTGAGE LOANS WITH VARIOUS MEASURES

In the domestic credit market, in the past years' low interest rate environment, supporting the spread of mortgage loans with longer interest rate fixation was warranted, which was facilitated by the MNB using various means:

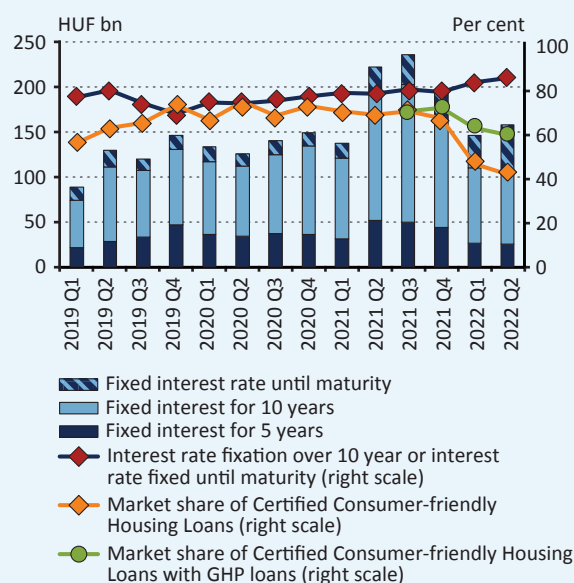
- As of 1 April 2017, the Mortgage Funding Adequacy Ratio (MFAR) regulation was introduced, which incentivised fixed-rate mortgage lending indirectly, by deepening the mortgage bond market and thus by promoting the raising of long-term, fixed-rate funds (Chart 67).
- In June 2017 the MNB launched its Certified Consumer-Friendly Housing Loan (CCHL) programme. The CCHL products, which can be granted only with a longer interest rate fixation period and an interest rate spread of up to 350 basis points over the reference rate, contributed to the increase in the supply of fixed-rate housing loans and in customer demand. By end-2018, these products became decisive in the housing loan market, encouraging the interest rate fixation of mortgage loans (Chart 68) and supporting the reduction of the interest rate spread on loans with interest rate fixation for more than one year.
- Starting from October 2018, the MNB shifted the market towards mortgage loans with interest rate fixation in the debt-service-to-income ratio (DSTI) rule as well through differentiating the DSTI limits by the length of the interest rate fixation period. This directed the loans with interest rate fixation, which had already become common owing to the appearance of the CCHL, towards products with even longer, typically 10-year interest rate fixation periods or ones fixed for the whole term.

Chart 67
Impact of the mortgage bond-based funding on the interest rate spreads at the banks and the clients



Source: MNB.

Chart 68
Distribution of CCHL products by interest rate fixation period



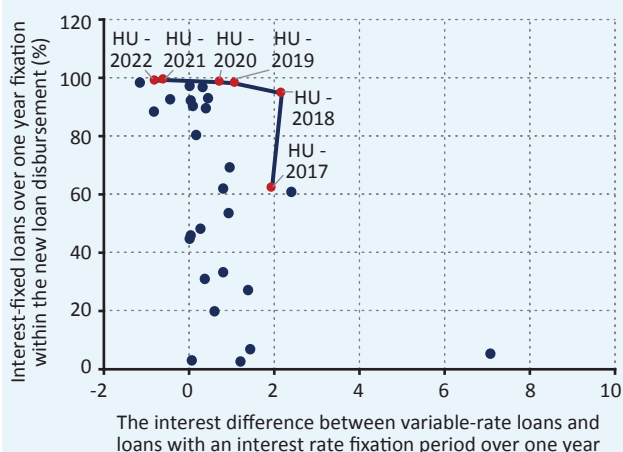
Note: The CCHL rate was calculated without housing savings fund disbursement. GHP: Green Home Programme.

Source: MNB.

- During 2018, the MNB contributed to the further increase in mortgage bond issues and the prevailing of loose monetary conditions on the longer section of the yield curve and thus in the case of mortgage loans with longer interest rate fixation by applying monetary policy interest rate swaps (MIRS) and a mortgage bond purchase programme.

As a result of the MNB's steps, interest rate fixation became common in the housing loan market by end-2018. By early 2018 the interest rate spread disadvantage of loans with interest rates fixed for more than one year compared to variable-rate loans disappeared. By 2021, due to the flattening of the yield curve, the interest rates of the two loan types reached similar levels as well. In parallel with the decline in the interest rate on fixed-rate loans, the share of loans with interest rate fixation for more than one year increased within new disbursements, and by end-2018 practically all the new housing loans were of this type (Chart 69). Simultaneously with that, the market share of CCHL products gradually rose to nearly 70 percent. Owing to the measures, by the first half of 2021 the majority of housing loan debtors had loans with interest rates fixed for a long time, while clients who had variable-rate loans faced the increase of interest rates with a major income buffer.

Chart 69
Housing loan disbursements by the spread of fixed-rate loans and their interest rate spreads (2022 Q2)

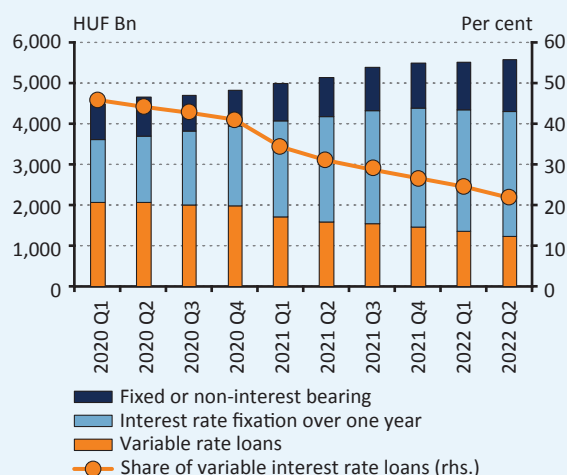


Note: For Cyprus, no interest rate fixation period breakdown is available. The proportion of loans with interest rates fixed over one year data is for December 2021 for Greece and May 2022 for Denmark.

Source: ECB

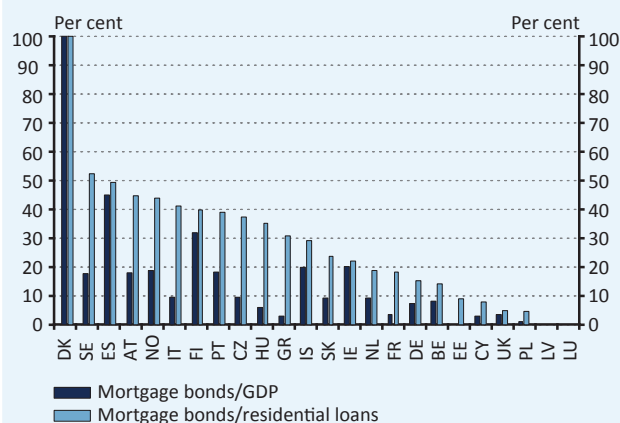
Nevertheless, outstanding variable-rate loans continue to carry major risks. Although by end-2018 the 'supply' of variable rate loans almost disappeared, and the structure of outstanding mortgage loans shifted towards longer interest rate fixation periods, in June 2022 still 22 percent of outstanding mortgage loans were variable-rate ones, amounting to some HUF 1200 billion (Chart 71). At the same time, the risk of repricing of variable-rate loans is temporarily limited by the government's interest rate freeze measure introduced as of January 2022. A permanent solution to the risk of variable-rate loans would be the interest rate fixation of loans by encouraging refinancing and contract amendments.

Chart 70
Mortgage loan stock by the length of interest rate fixation



Source: MNB.

Chart 71
Importance of mortgage bond financing internationally (2021)

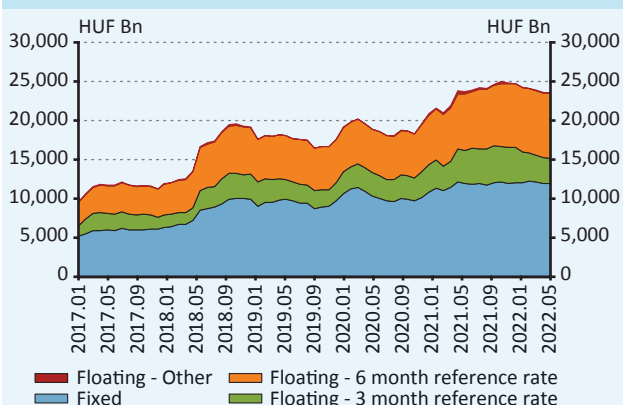


Source: EMF, MNB.

13.4 FIXED-RATE MORTGAGE LOANS BECOMING COMMON POSES NEW CHALLENGES AS WELL

Although the conditions of fixed-rate lending improved on the side of funding and banks' interest rate risk management, further measures may be necessary. The MNB considers interest rate risk in the banking book to be a material Pillar 2 risk for all institutions and expects institutions to have procedures and processes that provide an appropriate level of control for their risk situation to identify, measure and manage this risk, as well as develop models and conduct stress tests. One of the ways to manage banks' interest rate risk stemming from the disbursement of fixed-rate mortgage loans is the raising of long-term, fixed-rate funds, e.g. through mortgage bond issues. The domestic mortgage bond market developed considerably as a result of the introduction and gradual tightening of the MFAR requirement as well as the MNB's mortgage bond purchase programme, and Hungary became mid-ranking in the EU on the basis of the importance of mortgage bond financing (Chart 71). Although the narrow circle of domestic investors and the high level of cross-ownership between banks continue to pose risks, the MNB strives to mitigate these risks by regular reviews of the MFAR regulation. In addition to mortgage bond issues, banks' may manage their risks through derivative transactions as well, typically by concluding interest rate swaps (IRS). Partly as a result of the increasing demand for interest rate hedging, the domestic IRS market has developed significantly in recent years, and has shifted towards longer-term transactions. Contrasting transactions of residents mostly offset one another in the market, as domestic banks conclude fixed-rate and variable-rate paying transactions of similar amounts with one another (Chart 73), while against the background of non-residents' preponderance, the transactions of domestic banks account only for a minor share within the total

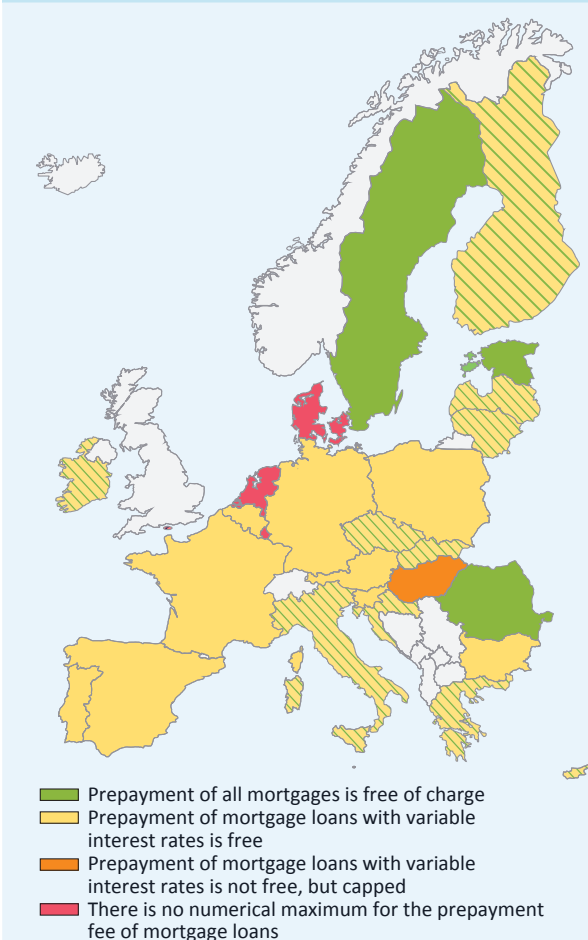
Chart 72
Nominal value of the outstanding interest rate derivatives of domestic banks based on the type of interest paid



Note: The chart shows interest rate derivatives with HUF buy (long) positions, based on the nominal value of the buy (long) position. Data based on bank balance sheet statistics.

Source: MNB.

Chart 73
Early repayment costs of mortgage loans in the EU (2022)



Note: Shading refers to the free annual prepayment of a fixed amount, which varies from country to country. In Sweden, interest discounts can be withdrawn in case of prepayment within the interest period. In Estonia, the creditor may charge a prepayment fee for prepayment within nine months of the disbursement.

Source: MNB collection based on the legislation of each country.

turnover. However, with the spreading of fixed-rate loans, for example with a simultaneous, concentrated fixation of the variable-rate loans in order to avoid risks, the hedging requirement of lending would increase, creating demand for longer-term IRS and the IRS side that pays fixed interest, increasing their yield.

In the current increasing interest rate environment it is especially important that the existing loans should be simply refinancable with more favourable funding if interest rates happen to decline later. Without the availability of loan refinancing at a favourable cost, due to the rise in loans with interest rate fixation for a long time, even for 10 years, current borrowers may 'get stuck' in their respective high-interest loans when interest rates decline. The mitigation of this risk requires regulation that supports loan refinancing, and conscious clients are also needed. In Hungary, the high cost and the time requirement are major drags on loan refinancing. Including the notarial fees and the appraisal, debtors may pay fees amounting in total to as much as 2–5 percent of their loan debt for the refinancing of the outstanding liability with a new loan or for the amendment to their respective contracts. The time-consuming administration that restrains the willingness to refinance loans and the high cost of the procedure could be reduced by legislative steps, primarily through the lowering of prepayment fees (Chart 74), the expansion of the applicability conditions of statistical valuation, the digitalisation of notarial work and making mortgage lending entirely online. In addition, it is also particularly important to develop financial awareness in order to increase the willingness to refinance loans.

Endnotes

- ¹ For more information on how to determine the CCyB rate, please see the related methodological information: <https://www.mnb.hu/letoltes/ccyb-modszertan-uj-hu-1.pdf>
- ² <https://ec.europa.eu/eurostat/databrowser/bookmark/59e11dd7-4d5d-41e2-bcac-93cd0dd37af7?lang=en>
- ³ <https://sdw.ecb.int/browse.do?node=9698056>
- ⁴ [Review of the EU Macroprudential Framework for the Banking Sector - Concept Note \(europa.eu\)](https://www.europa.eu/Review_of_the_EU_Macroprudential_Framework_for_the_Banking_Sector_-_Concept_Note)
- ⁵ For more on financial stability risks in commercial real estate markets, see: https://www.esrb.europa.eu/pub/pdf/reports/esrb.report181126_vulnerabilities_EU_commercial_real_estate_sector.en.pdf
- ⁶ <https://www.mnb.hu/letoltes/14-2021-hitelkocka-ajanlas.pdf>
- ⁷ <https://www.esrb.europa.eu/mppa/recommendations/html/index.en.html>
- ⁸ For more details on the identification methodology and the methodology for calibrating the capital buffer rates of other systemically important institutions, see the MNB's Methodological note: <https://www.mnb.hu/letoltes/modszertani-tajekoztato-hu-honlap.pdf>
- ⁹ Executive Circular on using macroeconomic information and the factors indicating a significant increase in credit risk under the IFRS 9 standard, <https://www.mnb.hu/letoltes/vezetoi-korlevel-az-ifs-9-standard-alkalmazasaban-a-makrogazdasagi-informaciok-felhasznalasarol-es-a-hitelkockazat-jelentos-novekedeset-jelzo-tenyezokrol.pdf>
- ¹⁰ To monitor domestic climate-related transition risks at the national economy and sectoral level, see the [Bank Carbon Risk Index](#).
- ¹¹ In January this year, the Taxonomy Regulation was supplemented by [Commission Delegated Regulation 2021/2139](#), which established technical screening criteria for the identification of activities that make a substantial contribution to the environmental objectives of *climate change mitigation* and *adaptation*. This should facilitate at EU level the harmonised identification of financial investments that can be considered sustainable and contribute to the EU's 2030 and 2050 climate policy goals. Article 8 of the Taxonomy Regulation and [Commission Delegated Regulation 2021/2178](#) (Disclosures Delegated Act) impose KPI disclosure obligations based on the green taxonomy on financial and non-financial companies, requiring full compliance by the former from 2024 and by the latter from 2023. Its institutional scope covers under the Non-Financial Reporting Directive (NFRD) and the [Corporate Sustainability Reporting Directive \(CSRD\)](#), which is due to be adopted later this year, will be all listed companies (except micro companies) and all large companies (more than 250 employees). The CSRD will require disclosure of additional information on sustainability and vulnerability, and the disclosures will need to be approved by external auditors with appropriate expertise. Following Article 449a of Regulation (EU) No 575/2013 (CRR), the EBA issued a [final draft technical standard](#) on Pillar III disclosure requirements (final draft ITS), under which all large institutions that issue securities authorised for trading on a regulated market in a Member State will be required from 2023 to disclose environmental sustainability information, including the proportion of green assets in their taxonomy-adjusted exposures. The [European Green Bond Standards](#), still under preparation, would also qualify activities identified by the taxonomy as sustainable.
- ¹² On this, see, for example, the study of [Baldi and Pandimiglio \(2022\)](#) on the erosion of the premium measured in international green bond markets as the risk of greenwashing intensifies.
- ¹³ Reporting entities will be required to report in accordance with the taxonomy regulation, i.e. for example, if the debtor has fewer than 500 employees, it will fall into the category not required to be assessed by the taxonomy, but it may also be worthwhile for the creditor to inform itself about the sustainability status of the transaction.
- ¹⁴ Three possible regulatory approaches, based on the extent and quality of the risks detected, are that (i) in addition to the provisioning and micro-prudential capital instruments to address the risks that are perceived as idiosyncratic and amplify in the wake of climate change, macroprudential regulation will only adjust its tools as necessary based on new information revealed about risk parameters, for example, based on an increase in the probability of failure of certain types of credit transactions or banks according to climate risks; or (ii) climate change risks may trigger systemic processes, such as distorted pricing of financial assets or real estate, fire sales of impaired brown assets, concentrated exposures at the banking system level or a tightening of credit supply due to critical losses; (iii) macroprudential instruments prevent the expansion of risky exposures by means of a green supporting factor (GSF) or a carbon penalizing factor (CPF).

The microprudential aspects of item (i) are discussed in the [EBA Discussion Paper](#) published in May, which reviews the options for and problems with the Pillar I policy amendment, including the lack of empirical support and available data, and the need for a very long-term perspective and the high degree of uncertainty surrounding it. The assumption of the risk mechanisms mentioned in item (ii) is supported by theoretical and model results (for an overview see Chapter 4 of the [ECB-ESRB, 2022](#) Report), and macroprudential stress tests mapping climate change risks show that systemic feedbacks can contribute significantly to financial system losses. The regulatory community has not yet reached a consensus on the assessment of items (ii) and (iii), for example, the [EBA \(2022\)](#) or the [BIS FSI \(2022\)](#) express reservations about capital support/penalisation of green/green exposures. While [FSB](#), [BoE](#) and [ECB](#) attach clear importance to systemic risk vulnerabilities and examine the applicability of regulatory tools, [IMF \(2022\)](#) or [Bolton et al. \(2021\)](#) also seem to adopt a more proactive regulatory approach, especially in relation to item (ii).

¹⁵ See [Ertl et al. \(2021\)](#) on the price premium associated with improvements in the energy efficiency of real estate, and for international research on the lower default probability of loans backed by better energy-efficient property see [EEMI \(2022\)](#).

¹⁶ For other macroprudential capital buffers, an application differentiated according to climate risks is conceivable but less obvious. In setting the countercyclical capital buffer (CCyB) targeting the risks of systemic excessive credit outflows, the benchmark credit aggregate and gap indicators reflect either the excessive expansion of vulnerable credit exposures under excessively loose conditions or the excessively rapid expansion of green credit exposures. At the same time, in specific credit segments, the design of the SyRB allows the targeting of systemic risks from the cyclical build-up of potentially concentrated exposures. The extent to which either brown/non-sustainable or green assets are mispriced, and thus whether for brown assets there may be overfunding of productive assets and assets that are subsequently stranded or overpricing of green assets in the form of a price bubble, is still a matter of debate. For example, [Borio et al. \(2022\)](#) find that the risk of developing a green bubble is significant, while [Giorgis et al. \(2021\)](#) show some bubble pattern price changes among clean-tech firms over the period 2004-08 and [Ghosh et al. \(2022\)](#) during the COVID epidemic, but are optimistic in their assessment of the potential social costs of promoting green technology transition. In contrast, [Jourde és Stalla-Bourdillon \(2021\)](#) studied 2500 firms over the recent years and found that firms with higher ESG scores typically have lower price-earnings ratios. In Hungary, given the high share of banking system-mediated financing in the domestic financial system by international comparison, and the moderate size of green innovation firms at the systemic level, systemic risks may arise mainly from pricing anomalies of brown assets. Essentially, the exploration of both the correlation between business cycles and carbon emissions and the role of financial and credit cycles in changes in carbon emissions and the optimal regulatory response to cyclical positioning have begun only in the last five to ten years. Regarding the latter, we highlight the empirical research of [De Haas and Popov \(2018\)](#): they estimated their results on data from 73 countries and 14 sectors between 1974 and 2013, and found that an increase in the banking system's credit stock leads to an increase in carbon emissions even after controlling for economic development. One explanation for this may be the reallocation of bank finance to sectors with relatively high carbon emissions, i.e. an increase in the share of polluting sectors in funding from the banking system, and another may be that the carbon emissions per unit of value added of polluting sectors increase with the expansion of bank lending (while the expansion of capital market finance has the opposite, positive environmental effect). [Lamperti et al. \(2019, 2021\)](#), [Carattini et al. \(2021\)](#) and [Chaves et al. \(2021\)](#) show, in the presence of climate transition and physical risks, using various model calculations, that when applying a countercyclically determined macroprudential capital instrument, it may be worth considering the impact of climate risks on the systemic vulnerability of debtors.

When determining the capital buffers (O-SIIB) of domestic systemically important credit institutions, some calibration methods take into account the stress probability of the institutions, which may also reflect the risks of climate change. In addition, theoretically the prominent or difficult to substitute role of a bank in sustainable lending or in the transition of polluting companies may be reflected in the identification of systemic importance. However, this may also counteract the expansion of sustainable lending. For example, in addition to information systems, data assets, expertise and client relationships that support sustainable lending, what may differentiate lending institutions, as [Degryse et al. \(2022\)](#) found empirical evidence from their study of Belgian corporate loan portfolios, is that banks that lend more to non-sustainable companies are less likely to lend to an innovative green company, as the success of green competitors may threaten the profitability of non-sustainable corporate clients and the value of collaterals. The O-SIIB is also meant to address the distorted risk-taking incentives of credit institutions that are critical to the national economy, which may arise from the expectation that large (too big to fail) banks may be bailed out by the state to compensate for potential losses. In their paper, [Cherbonnier and Hege \(2022\)](#) develop a model in which severe losses triggered by climate change

are assumed to be subject to public bail out. This distorts upfront investment in climate change risk mitigation and the introduction of financial regulation differentiated on the basis of sustainability.

¹⁷ See, for example, the study by [Elmalt et al. \(2021\)](#), who looked at 52 different companies with ESG scores in 20 different countries responsible for about a quarter of global carbon emissions and found a weak correlation between GHG emissions and ESG scores, even with regard to the environmental score component.

¹⁸ In order to facilitate implementation, [the European Commission's proposed amendment to the Capital Requirements Directive](#) would make explicit that authorities have the possibility to target exposures vulnerable due to climate change under the current legal structure of the SyRB.

¹⁹ In developing a possible regulation applying different capital requirements to green and brown exposures, it is worth taking into account the ideas offered for consideration by the [EBA \(2022\)](#) (pages 44–46) in relation to green supporting/brown penalty factors. The definition of exposures targeted by capital requirements should also include credit targets that enable the green transformation of a currently unsustainable asset/activity. This will further complicate the definitions and their possible harmonisation, while providing the possibility of preferential financing for products such as sustainability-linked/improvement loans priced according to the achievement of the green transition. Moreover, the EBA and others, such as [Oehmke and Opp \(2022\)](#), consider among the options that higher capital requirements for polluting exposures do not have a significant impact on portfolio rebalancing, in fact, higher capital requirements may limit lending capacity, and thus even the expansion of green credit supply.

²⁰ See, for example: Albertazzi, U., Ongena, S., & Fringuel-lotti, F. (2019). Fixed rate versus adjustable rate mortgages: evidence from euro area banks; Kelly, J., & Myers, S. (2019). Fixed-rate mortgages: building resilience or generating risk? (No. 5/FS/19). Central Bank of Ireland.; Ehrmann, M., & Ziegelmeyer, M. (2017). Mortgage choice in the Euro area: macroeconomic determinants and the effect of monetary policy on debt burdens. *Journal of Money, Credit and Banking*, 49(2–3), 469–494.

²¹ Campbell, J. Y., & Cocco, J. F. (2015). A model of mortgage default. *The Journal of Finance*, 70(4), 1495–1554.

²² Gaudêncio, J., Mazany, A., & Schwarz, C. (2019). The impact of lending standards on default rates of residential real-estate loans. *ECB Occasional Paper*, (220).

Count István Széchenyi

(21 September 1791 – 8 April 1860)

Politician, writer, economist, minister for transport in the Batthyány government whom Lajos Kossuth referred to as ‘the greatest Hungarian’. His father, Count Ferenc Széchényi established the Hungarian National Museum and Library; his mother, Julianna Festetich was the daughter of Count György Festetich, the founder of Georgikon, an institution for the teaching of agricultural sciences.

With his ideas – whose message remains relevant even today – and his activities both as a writer and a politician, István Széchenyi laid the foundation for modern Hungary. He is one of the most eminent and significant figures in Hungarian politics whose name is associated with reforms in the Hungarian economy, transportation and sports. He is also known as the founder and eponym of numerous public benefit institutions, a traveller all across Europe and an explorer of England as well as the champion of economic and political development at the time. István Széchenyi recognised that Hungary needed reforms in order to rise, and considered paving the way for a Hungary set on the path of industrialisation and embourgeoisement to be his calling in life.

Published in 1830, his *Credit* outlined the embourgeoisement of Hungary and summarised its economic and social programme. Count Széchenyi intended this writing to make the nobility aware of the importance of the country’s desperate need for a social and economic transformation. Another work of his, *Stádium* [Stage of Development] (1833) listed the cornerstones of his reform programme in 12 points, including the voluntary and compulsory liberation of serfs; the abrogation of *avicitas* (inalienable status of noble property); the right of possession for the peasantry; and the freedom of industry and commerce. This work of Széchenyi already conveyed the idea of equality before the law and the general and proportionate sharing of taxation.

After the revolution in 1848 István Széchenyi joined the Batthyány government and as minister embarked vigorously on implementing his transportation programme.

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