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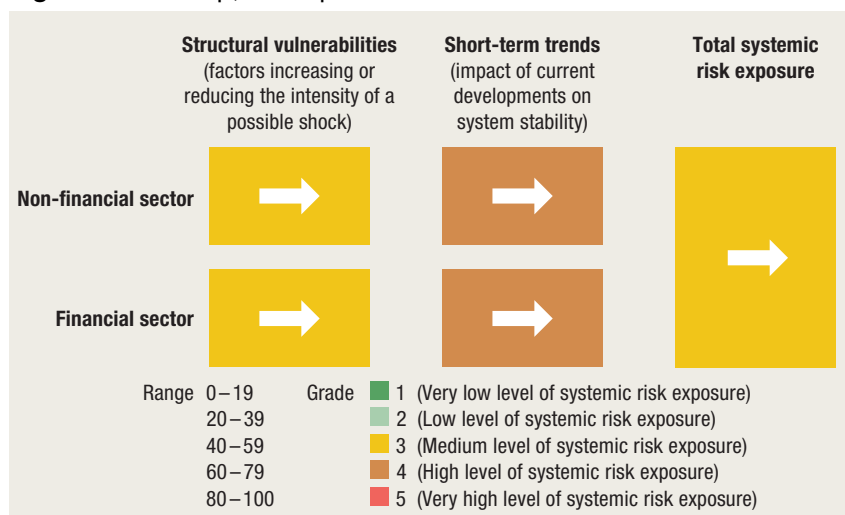
Introductory remarks

The macroprudential diagnostic process consists of assessing any macroeconomic and financial relations and developments that might result in the disruption of financial stability. In the process, individual signals indicating an increased level of risk are detected, according to calibrations using statistical methods, regulatory standards or expert estimates. They are then synthesised in a risk map indicating the level and dynamics of vulnerability, thus facilitating the identification of systemic risk, which includes the definition of its nature (structural or cyclical), location (segment of the system in which it is developing) and source (for instance, identifying whether the risk reflects disruptions on the demand or on the supply side). With regard to such diagnostics, instruments are optimised and the intensity of measures is calibrated in order to address the risks as efficiently as possible, reduce regulatory risk, including that of inaction bias, and minimise potential negative spillovers to other sectors as well as unexpected cross-border effects. What is more, market participants are thus informed of identified vulnerabilities and risks that might materialise and jeopardise financial stability.

1 Identification of systemic risks

Risks to the financial system of the Republic of Croatia remained broadly unchanged in the third quarter of 2023 with a slightly more unfavourable medium-term outlook (Figure 1). High inflation remains one of the main risks, while the beginning of the third quarter saw signs of economic slowdown in the euro area, reflected in lower high-frequency indicators for Croatia. Despite the tightening of financing conditions, lending activity remained quite robust, and thanks to high liquidity and the widening in the interest rate spread, bank profitability reached decade highs. However, in the medium term, bank performance could be negatively affected by the deterioration in asset quality related to interest rate increase and economic slowdown. Growing inflationary pressures have thus far affected corporate performance positively, but in the upcoming period, their business results could be influenced by growing debt servicing costs and uncertain economic developments. Household resilience is supported by the strong labour market and

Figure 1 Risk map, third quarter of 2023



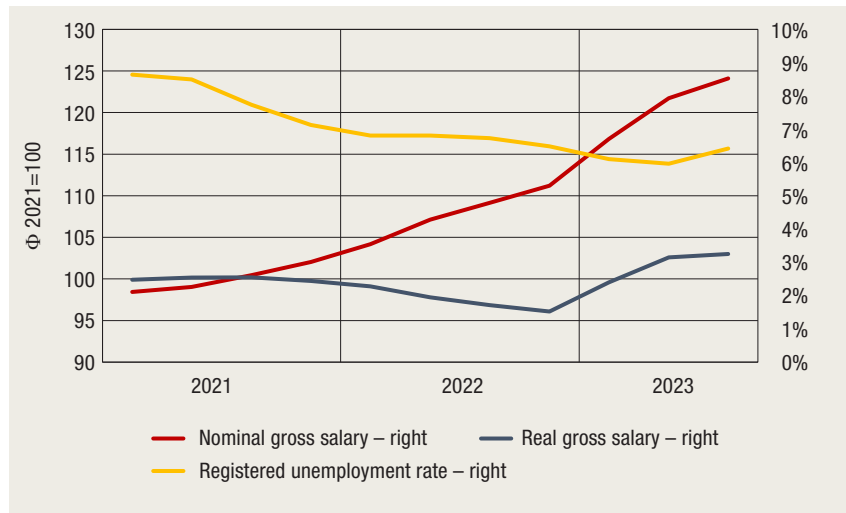
Note: The arrows indicate changes from the risk map in the second quarter of 2023 published in Macroprudential Diagnostics No. 20 (July 2023).
Source: CNB.

real income recovery. Upward trends in the prices on the residential real estate market continued, but were accompanied by a noticeable slowdown in activity relative to the year before, which could point to growing risks of cycle reversal.

Following a relatively strong growth in the first half of the year, at the beginning of the third quarter, signs of a slowdown in economic activity became noticeable in Croatia. Favourable developments in the first half of the year were mainly driven by growing personal consumption and exports of services supported by a strong labour market, real income recovery and favourable tourism performance. However, high-frequency indicators available for the beginning of the third quarter point to a drop in activity. Trade stagnated from the second quarter, while industry and physical indicators for tourism contracted; business and consumer confidence indices show a noticeable decline in optimism (Figure 3). Economic activity is unfavourably affected by the stagnation of the EU economy, particularly that of Croatia's main trading partners, Germany and Italy, as the third quarter was marked by poor survey indicators of activity in the European economy, which reinforced negative risks for economic growth.

Following a temporary pick-up in August, inflation on the domestic market, measured by the HICP, slowed down to 7.3% in September (from 8.4% in August). This is a result of a lower contribution from industrial product and service prices, and, to a lesser extent, food prices, while core inflation, which covers only the price evolution of industrial products and services, dropped from 9.1% to 7.1%. Current inflationary pressures, which were particularly pronounced during the main tourist season, also decreased in September. According to the CNB's

Figure 2 Favourable indicators from the labour market have thus far been supported by favourable economic results...

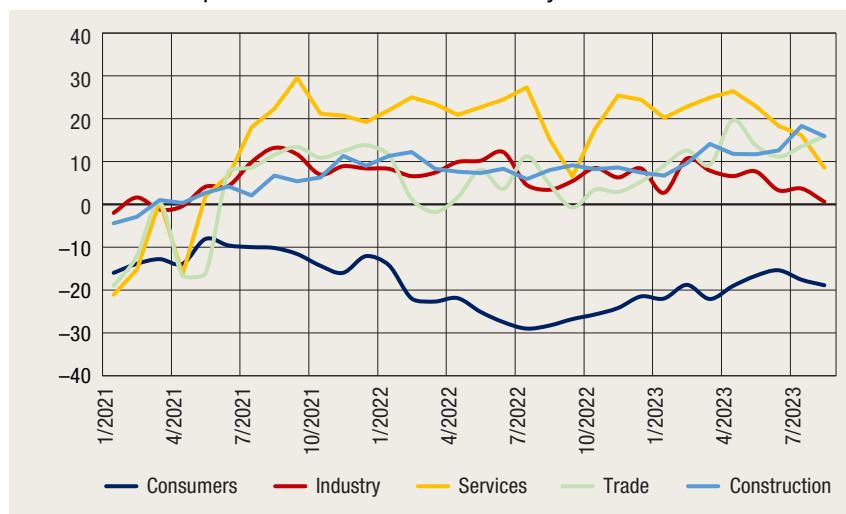


Note: Data for the third quarter refer to July.
Sources: CBS, CES and CNB calculations (seasonally adjusted by the CNB).

macroeconomic projections¹, the deceleration of annual inflation, which began in late 2022, should continue.

Total loans continued to grow relatively strongly. Observed on an annual basis, growth in household loans rose to 7.7% in August (transaction-based), with the two-digit increase in housing loans (10.1% in August) reflecting the new round of government subsidy allocation amid noticeably higher residential property prices. At the same time, general-purpose cash loans, whose growth has been accelerating continuously in 2023, increased substantially (to 7.4% in August) under

Figure 3 ... but the deteriorated confidence of domestic corporations and consumers points to elevated uncertainty



Source: European Commission.

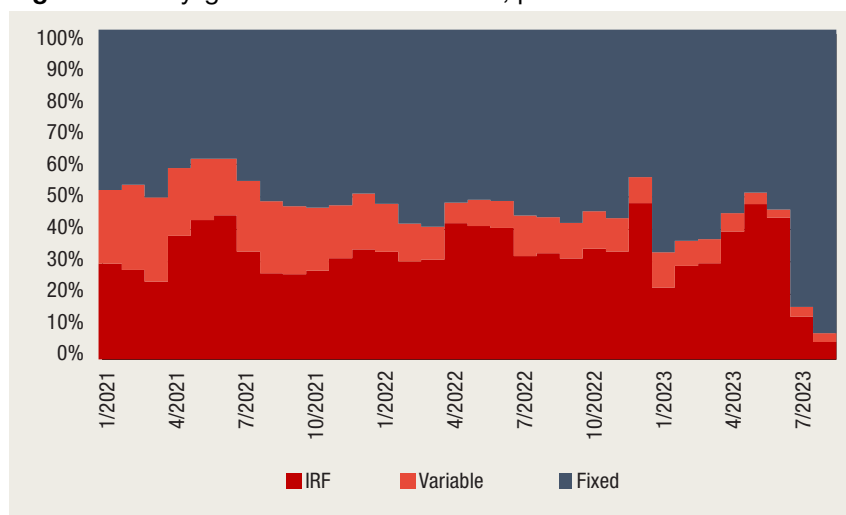
1 [Overview of the CNB's autumn macroeconomic projections for Croatia – September 2023](#)

the influence of growing consumer confidence. In the segment of non-financial corporations, lending was subdued over the past months, which slowed down their annual rate of growth to 10.8% in August.

Increasing portfolio segmentation is noticeable in the structure of newly-granted loans according to interest rate variability. In contrast to corporate loans, which have lately mostly been granted at a variable interest rate linked to the EURIBOR, household loans are mostly granted at fixed interest rates (Figures 4 and 5). This is due to the relatively low level of the legally prescribed cap on maximum interest rates on housing loans with variable interest rates compared to current reference interest rates, which redirected the supply of housing loans towards fixed rate loans, to which a significantly higher cap is applied. Some banks also started to offer more general-purpose cash loans at a variable interest rate linked to the EURIBOR, although most such loans are still granted at fixed interest rates.

The ECB's cycle of key interest rate increases has largely been passed to the financing costs of the private non-financial sector, with the pass-through being more pronounced in corporate lending than in household lending. The interest rate on pure new loans to corporations increased by 344 basis points from June 2022 and reached 5.14% in late August 2023. In the household segment, the interest rate on pure new general-purpose cash loans increased by 73 basis points, standing at 6.05% in August, while for housing loans, it grew by 131 basis point, reaching 3.55%. The intensity of the increase in interest rates on housing loans in Croatia was somewhat dampened by the government housing loans subsidy programme, within which housing loans are usually granted at an interest rate lower than the market average.

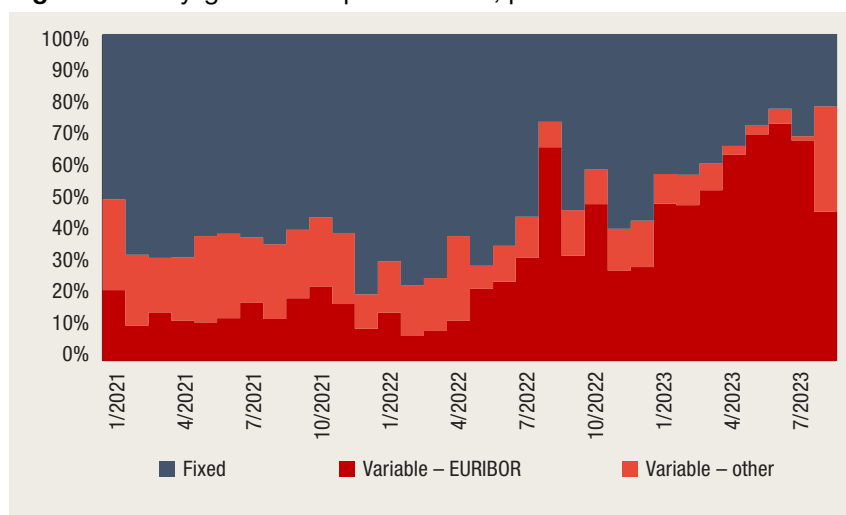
Figure 4 Newly-granted household loans, pure new loans



Note: IRF – period of initial interest rate fixing.

Source: CNB.

Figure 5 Newly-granted corporate loans, pure new loans

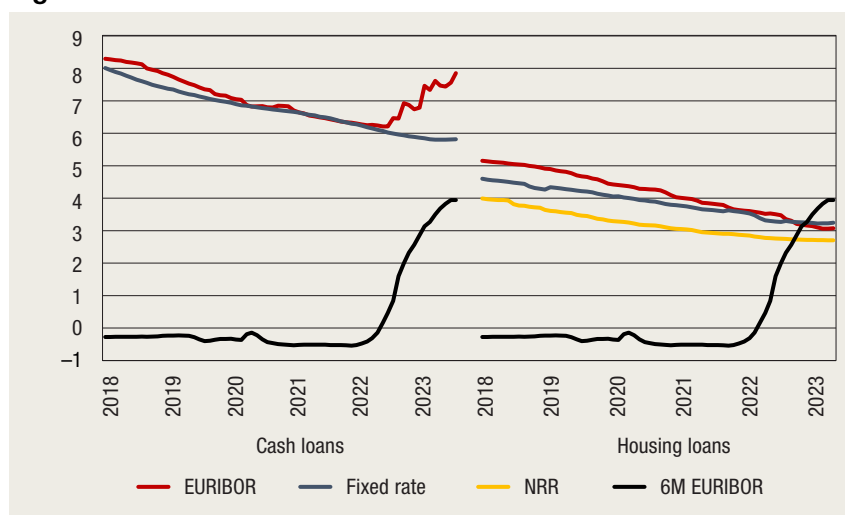


Note: IRF – period of initial interest rate fixing.
Source: CNB.

At the same time, interest rates on existing loans are increasing due to the granting of new loans at higher interest rates and the adjustment of repayments of loans with variable interest rates to increasing reference parameters. While interest rate increase is pronounced for corporate loans, households have, until now, been protected from an increasing debt repayment burden by a high share of loans with fixed interest rates and the legally prescribed cap on the maximum permitted variable interest rate on housing loans, so that in those loan segments costs did not increase for debtors. Nevertheless, for a very small portion of household loans (around 1.7%), i.e., for cash loans granted at a variable interest rate linked to the EURIBOR, the average interest rate on existing loans rose by almost 200 basis points (Figure 8) in line with the increase in the EURIBOR. Even though, owing to the favourable labour market situation, credit risk is still not increasing noticeably in such loans, a relatively strong transmission of changes in market interest rates is a sign of possible medium-term developments in other consumer loan types as well, particularly if the legally prescribed cap on the maximum variable interest rate is raised under the influence of a gradual rise in deposit interest rates and the NRR.

In the first half of the year, residential property prices continued to grow strongly despite slower market activity and tighter financing conditions. In the second quarter of 2023, residential property prices grew by 3.5% on a quarterly basis and by 13.7% relative to the same period last year. Croatia thus ranks among the EU countries with the highest price growth, while in a large number of member states, residential property prices have been declining for some time now. High prices are still supported by the housing loans subsidy programme, which, according to announcements from the government of Croatia, was implemented in 2023 for the last time. Still, the number of purchase

Figure 6 Interest rates on the balances of loans



Source: CNB.

and sale transactions including residential real estate shrank in the first half of 2023 by 12% in annual terms, in line with the developments in most EU countries. The weakening of foreign demand was particularly pronounced: in the first half of 2023, the share of transactions involving non-residents fell, both in number and total value, to the lowest level recorded in the past two years. Although this suggests that the price cycle could reverse, risks to financial stability linked with the residential real estate market are currently mitigated by the significantly lower reliance on borrowing compared with the real estate cycle in the middle of the past decade.

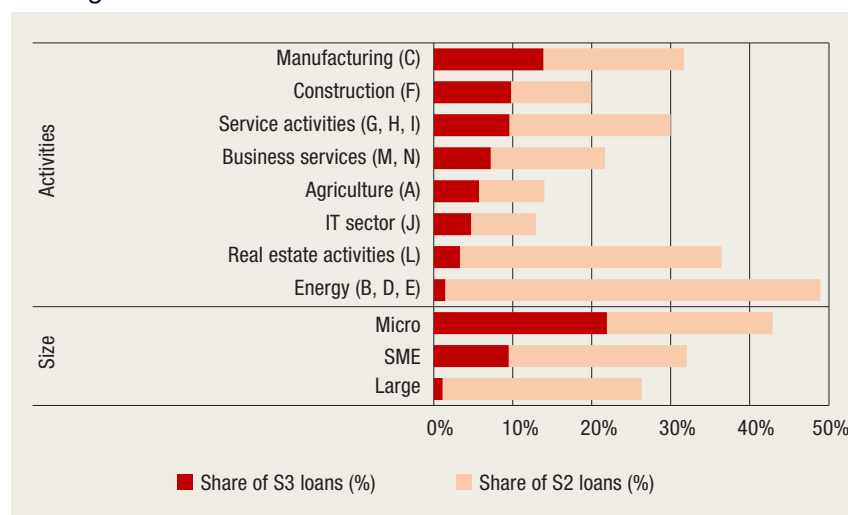
The banking system remained highly capitalised in the first half of 2023, with a capital ratio of 23.2% and a surplus above the regulatory requirements of 7.7 percentage points. A slight decrease in the total capital ratio is a result of own funds decrease due to dividend payments, while risk-weighted assets grew under the influence of stronger lending activity despite the decline of the average risk weight. The liquidity of credit institutions measured by the liquidity coverage ratio (LCR) at the end of July reached a historical high of 243%, while the NSFR stood at 173.3% at the end of June, which points to the exceptionally high liquidity and stability of sources of financing.

Bank profitability is growing strongly owing to the increase in net interest income (see Box 1), spurred by growing interest margins and a high share of assets sensitive to interest rate changes. Bank profitability was also favourably affected by the release of provisions for credit losses created over the past years amid elevated uncertainty driven by unfavourable economic effects of the global pandemic. In contrast, administrative expenses grew in 2023 under the influence of high inflation (by 10% on average), both in the segment of employee

expenses and other administrative expenses. In the first half of 2023, banks generated a profit of EUR 703.8m, which is almost equal to last year's net profit. Consequently, key returns indicators grew substantially from the end of 2022: return on assets (ROA) rose from 1.0% to 1.9% and return on equity (ROE) increased from 8.2% to 16.8%. However, in the medium and longer term, financing costs could increase further amid the stronger transmission of monetary policy to domestic deposit interest rates which still lag behind other euro area countries, particularly in the segment of overnight deposits. In addition, the portfolio of long-term securities and fixed-yield loans accumulated during a period of low interest rates could, for a while, limit the growth in income, and the deterioration of the loan portfolio could drive impairments upwards.

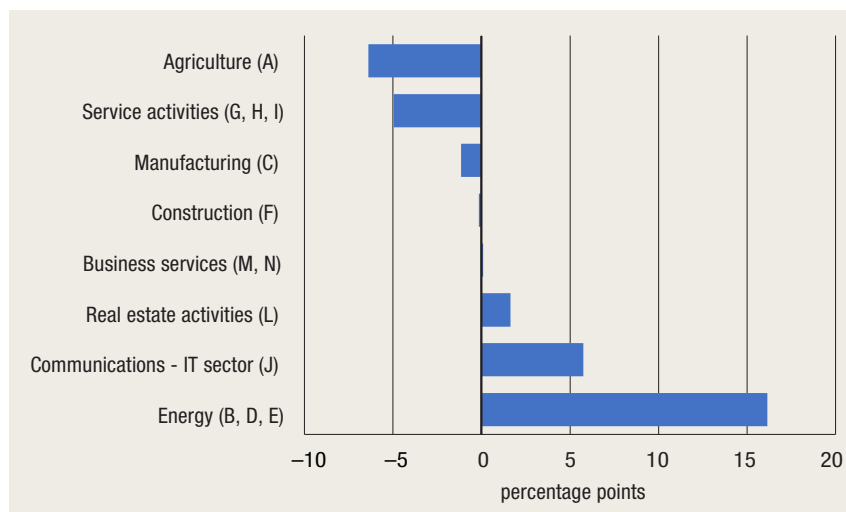
Although the nominal amount of non-performing loans to the private non-financial sector continues to decline, certain early signs pointing to the need for caution arose. Specifically, the share of stage 2 loans in the corporate sector increased from 20.3% in March to 23.5% in June, primarily as a result of the reclassification of loans in the energy sector (stage 2 loans in that sector accounted for as much as 47% at the end of July; Figure 7), which exceeded the decline of stage 2 loans in other activities, such as service activities, where the level of such loans increased substantially during the pandemic (Figure 8). Rising financing costs could, against the backdrop of subdued demand, have unfavourable effects on corporate performance and lead to deterioration in asset quality, which has been relatively favourable over the past years despite the challenging operating conditions during the pandemic and the energy crisis. A possible deterioration in the economic outlook could, in the context of higher interest rates and difficult access to sources of financing, increase the cost of impairments, i.e. credit portfolio losses.

Figure 7 Loan quality in the corporate sector is relatively heterogeneous



Source: CNB.

Figure 8 Change in the share of stage 2 loans according to activity, 31 June 2023 relative to 31 December 2022



Source: CNB.

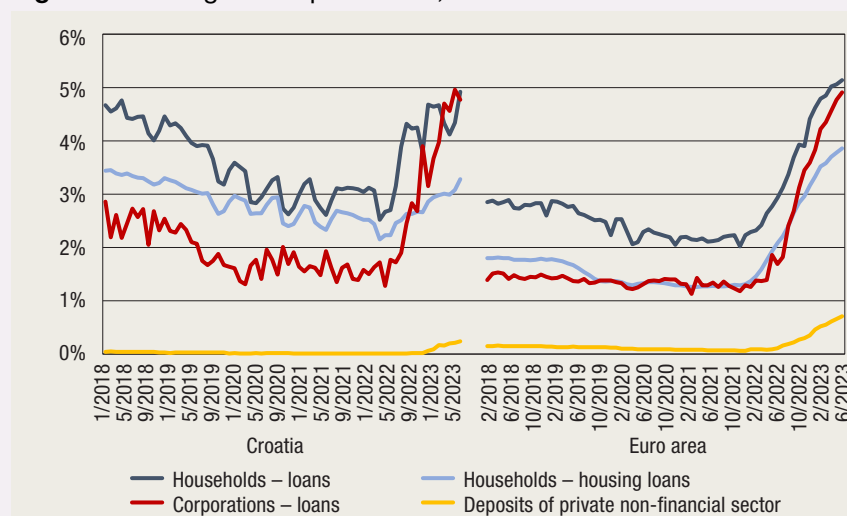
Banks should use their currently high profitability to improve their efficiency and increase their capital position to prepare better for potential future losses. The currently favourable environment offers a good starting point for intensifying efforts aimed at improving efficiency and cutting costs, which would enhance the banks' competitiveness amid rapidly-changing financial conditions and challenges linked with applied technological innovations.

Box 1 Monetary policy tightening amplifies bank profitability growth

The strong growth in interest rates, coupled with increased lending, has had a considerable positive effect on the developments in bank profitability. Since spring last year, interest rates have been rising in Europe at a pace unparalleled for decades. To battle inflation, the European Central Bank (ECB) raised its key interest rates by a total of 450 basis points in ten consecutive meetings in the period from July 2022 to mid-September 2023. This sudden and strong departure from a low interest rate environment enabled domestic banks to strengthen their net interest margin owing to the structure of their assets and liabilities. Net interest margin is the key profitability ratio used to measure the difference between interest income generated by lending and investing in financial instruments and interest expenditures resulting from bank borrowing compared to average interest-bearing assets. Since lending interest rates on new (Figure 1) and existing loans (Figure 2) grew faster than interest rates on deposits, the interest rate spread, i.e., the average interest rate on the balances of loans relative to the average deposit rate, has been continuously increasing over the past year, particularly in corporate lending (Figure 3).

Even though interest rates on new time deposits of corporations and households in Croatia have grown since the beginning of the monetary policy tightening cycle, interest rates on overnight transaction deposits still lag behind. For now, interest rate sensitivity is most pronounced in new time deposits of non-financial corporations, which are more prone

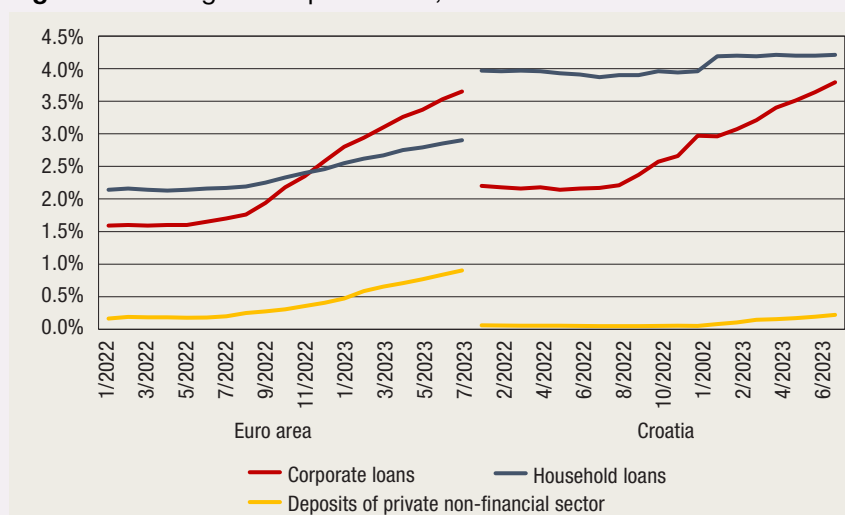
Figure 1 Lending and deposit rates, new business



Note: The average interest rate on deposits is the volume-weighted average of interest rates on time, sight and overnight deposits.

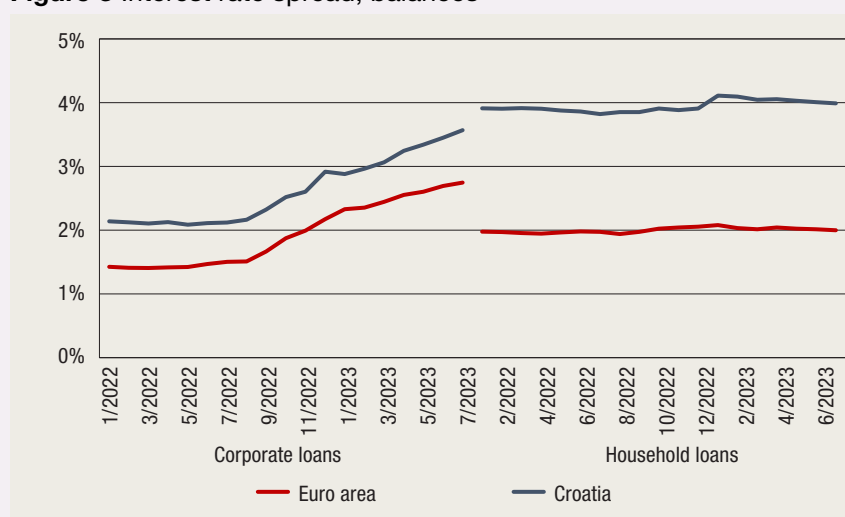
Source: ECB.

Figure 2 Lending and deposit rates, balances



Note: The average interest rate on deposits is the volume-weighted average of interest rates on time, sight and overnight deposits.
Source: ECB.

Figure 3 Interest rate spread, balances



Note: The average interest rate on deposits is the volume-weighted average of interest rates on time, sight and overnight deposits.
Source: ECB.

to switch to alternative investments with higher yields. Corporations have already transferred a portion of funds from overnight transaction accounts to time deposits (Figure 7). Changes in the structure of household deposits have thus far been limited; the structure is still dominated by transaction deposits, the behaviour of which still displays price inelasticity in current conditions, although the issue of a “public” bond in March this year triggered an outflow of a portion of deposits in demand for higher yields.

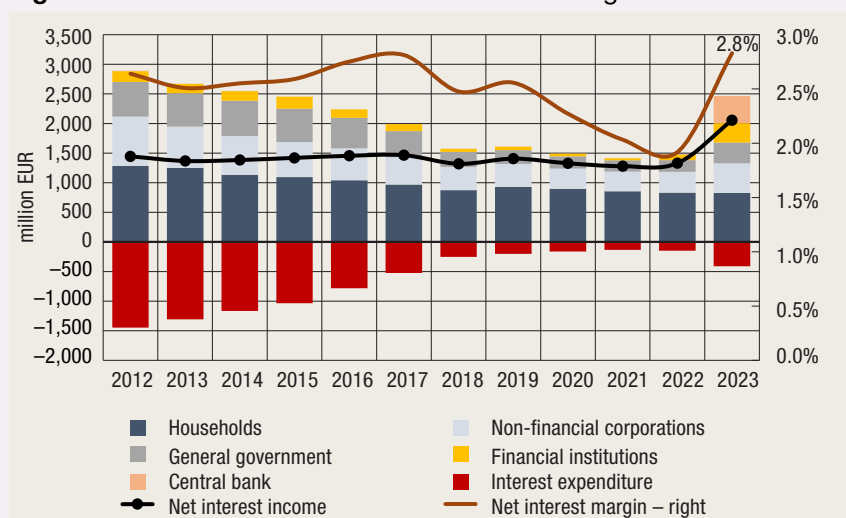
At the same time, interest rates on new loans (particularly in the corporate sector) increased at a faster pace than interest rates on deposits. Interest rates on outstanding corporate loans also grew strongly due to the large share of variable-rate loans with shorter maturities, which enables faster adjustment and higher interest rate spread. In contrast, interest rates on outstanding household loans still

have not increased, due to the relatively long average maturity and the high share of fixed interest rate in loans, the dominance of the NRR in the structure of variable interest rates and the currently very restrictive cap on the maximum variable interest rate on housing loans.

Net interest income is the most significant source of income of Croatian banks (accounting for over two thirds of income), and as a result of the increase in the interest rate spread in 2023, it grew considerably, reaching decade highs (Figure 4). Net interest income can change due not only to changes in new lending (volume effect) but also to an increase in the interest rate spread (margin effect, i.e., net interest margin), and Figure 5 shows that the dominant contribution to the change of net interest income in 2023 comes from margin growth. In contrast, over the past years, margins shrank, and banks maintained their net interest incomes by increasing the volumes of new loans.

The increase in net interest income was generated by business operations with all sectors except households (Figure 6.a), most notably by the overnight deposits with the central bank². Broken down by type of instrument, in addition to loans and deposits with the CNB, the increase in interest income was significantly driven by other interest-bearing assets, with equal contributions from income from debt securities and from deposits with foreign financial institutions (Figure 6.b).

Figure 4 Net interest income and net interest margin



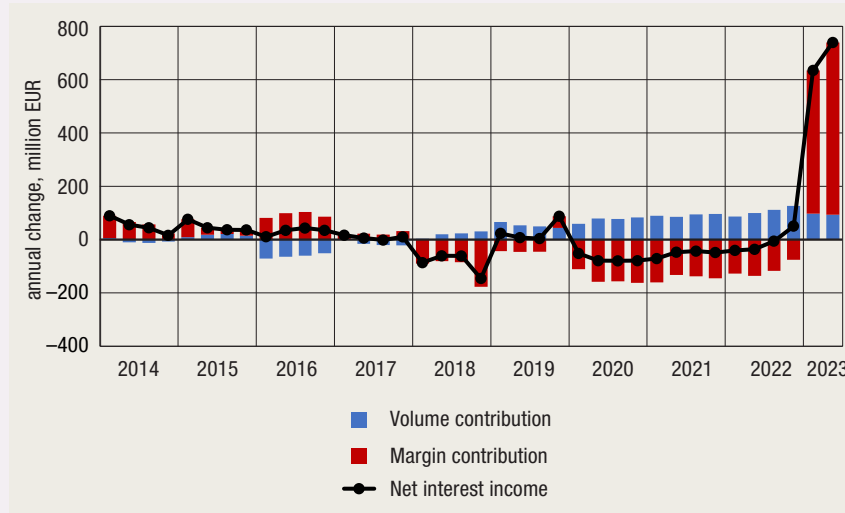
Notes: Net interest margin (NIM) is calculated as the ratio of interest income (assets) reduced by interest expenditures (liabilities) and divided by income from assets. In Figure 4, the calculation was made using the Marshall-Edgeworth (M-E) type decomposition, which divides annual change into margin effect (loan price change) and volume effect, with an equal division of combined effect: $\Delta NIM = Margin + Volume$, i.e. $p_1 * q_1 - p_0 * q_0 = Margin + Volume$,

where $Margin = (p_1 - p_0) \frac{q_1 + q_0}{2}$, and $Volume = (q_1 - q_0) \frac{p_1 + p_0}{2}$.

Source: CNB.

² The depositing of excess liquidity with the central bank became one of the most significant sources of increase in profitability of the Croatian banking system, with the contribution to income having reached EUR 330m in the first nine months.

Figure 5 Contribution to the annual change in net interest income



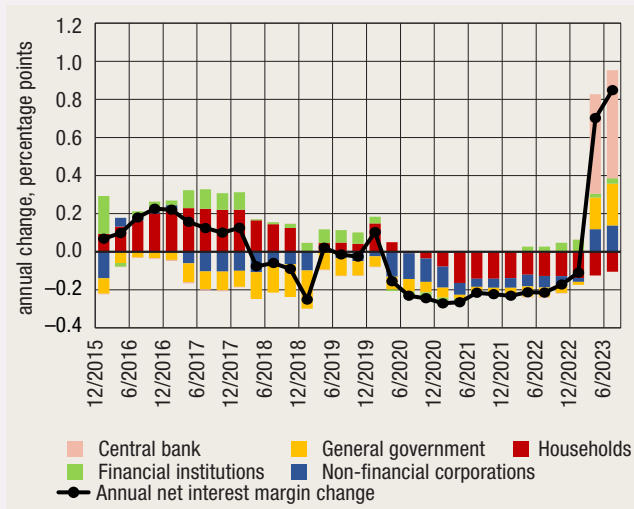
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where $Margin = (p_1 - p_0) \frac{q_1 + q_0}{2}$, and $Volume = (q_1 - q_0) \frac{p_1 + p_0}{2}$.
Source: CNB.

Income from overnight deposits increased strongly due to the relatively high level of free liquidity with very short maturity. Against such a backdrop, interest income reacts rapidly to monetary policy tightening (i.e., to the lifting of key interest rates), in contrast to other assets (such as loans), in relation to which income grows significantly slower, depending on the share of fixed interest rates and reference parameters in the portion of assets with a variable rate and legally prescribed caps and frequency of interest rate change (e.g., only a couple of times per year).

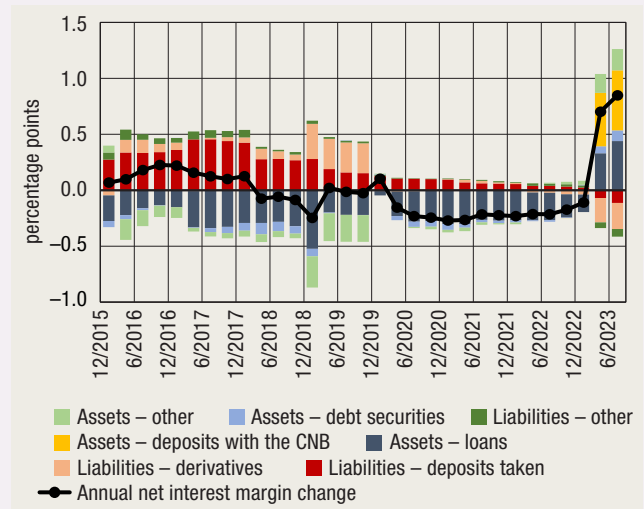
Figure 6 Net interest margin change

a. Contribution by sector



Source: CNB.

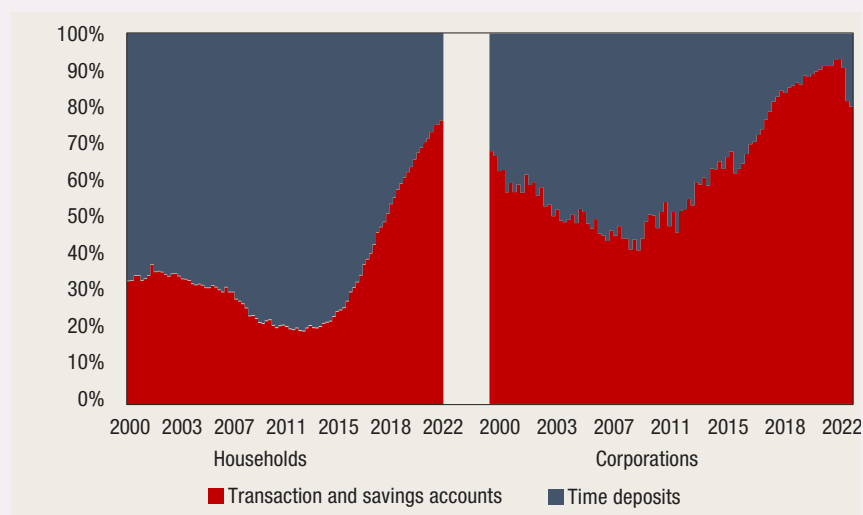
b. Contribution by instrument



Source: CNB.

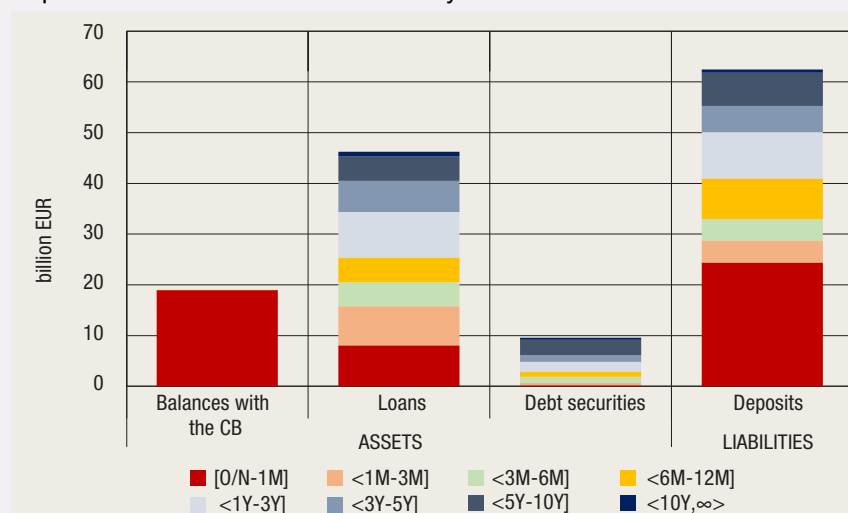
The currently strong increase in profitability is probably temporary. Specifically, domestic banks hold their assets in a high share of fixed-rate long term instruments (loans and debt securities), and tend to grant new loans at fixed interest rates, which limits the possibility of a passthrough of higher interest rates on the asset side of the balance sheet. Such loans and investments are mostly financed from deposits of the private non-financial sector without contractual maturity (Figure 7). On the other hand, the prevalence of overnight deposits on transaction accounts exposes domestic banks to interest rate risk that greatly depends on client behaviour. Due to their relatively high stability, banks often observe such sources as long-term liabilities, even though clients may, at any time, withdraw their funds. Therefore, banks have a relatively significant *duration gap (maturity gap)* between their assets and liabilities, making them sensitive to the repricing risk stemming

Figure 7 Deposits of the private non-financial sector dominate the structure of liabilities



Source: CNB.

Figure 8 Large share of long-term assets financed by short-term deposits without contractual maturity



Source: CNB.

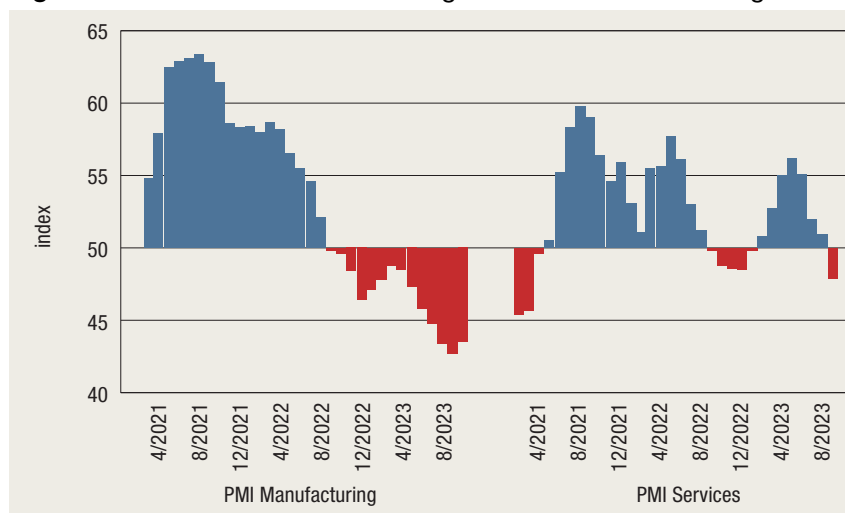
from different moments of interest rate change for instruments on both sides of the balance sheet (Figure 8). However, amid pressures on sources of financing and increasing competitiveness, the outflow of funds from overnight deposits to time deposits could further increase financing costs and have an unfavourable effect on profit. In addition, in the medium and long term, the increase in interest rates can lead to a slowdown in lending activity, asset quality deterioration and, consequently, decline in income for banks, which may further reduce profit.

2 Potential risk materialisation triggers

The slowdown in the European and the domestic economy remains the main source of the possible materialisation of risk to the stability of the domestic financial sector. Downside risks to economic growth stem from the relatively weak external environment, the prolonged duration of the war in Ukraine and continued geopolitical tensions. Current high-frequency indicators such as the PMI suggest that, in addition to the slower activity in the industrial sector since mid-2022, the services sector has also slowed down in the euro area since the third quarter of 2023 (Figure 9). The deteriorated economic outlook could have an unfavourable effect on the quality and valuation of assets on the financial markets. In addition, the turmoil on the Chinese real estate market could further decelerate the global economy, to which their main trading partners such as Germany and the US are most exposed. Recent developments on international financial markets point to high sensitivity to the trends in the Chinese economy, which could spill over to EU markets, including Croatia. Finally, the accumulated effects of monetary policy tightening could slow down economic activity somewhat more strongly than currently expected.

Uncertainty regarding the future path of monetary policy remains an important source of risk. If inflationary pressures turn out to be more persistent (Figure 10), central banks in major global economies could tighten monetary policy to an extent larger than currently expected or at least maintain interest rates in restrictive territory for longer than anticipated at present. In contrast, a potential premature lowering of key interest rates increases the risk of protracted high inflation and de-

Figure 9 PMI for the euro area strengthens downside risks to growth



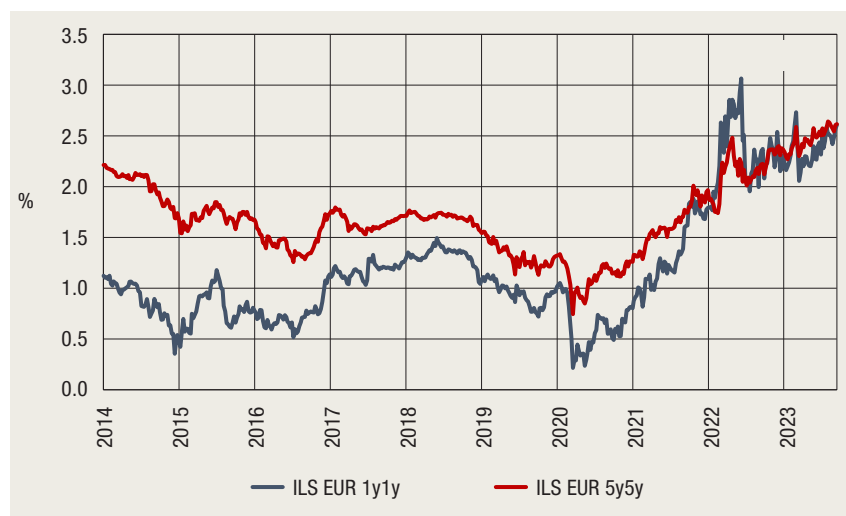
Sources: Bloomberg and S&P Global.

anchoring of inflationary expectations, which could, in turn, require an even more aggressive tightening, having an even more unfavourable effect on financing conditions and real activity.

Risks connected with the supply and prices of energy could, over the upcoming months, hamper the efforts of central banks to curb inflation. Although the storages of natural gas across Europe are almost full, the demand in winter will depend on weather conditions, while the supply and prices still have not stabilised. In addition to utilising the established routes used to deliver gas by the main pipelines from Russia, Norway, Algeria, Azerbaijan and other countries, to reduce its dependence on Russian gas, Europe is competing in the global markets of LNG. Since Saudi Arabia has signalled that it might further cut its output if the global demand for oil remains weak, oil prices have already gone up considerably. Furthermore, Russia prohibited the export of diesel and petrol, reinforcing the effect of pricier oil as a source of additional inflationary pressures.

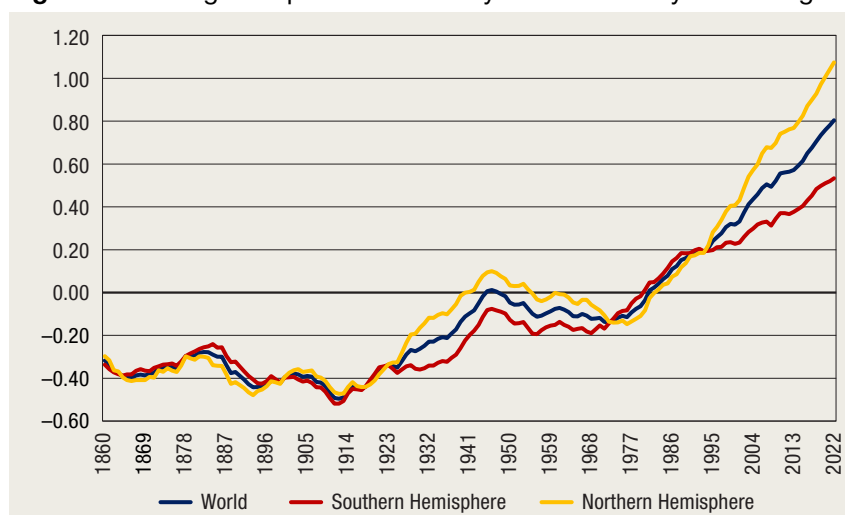
Prices of food raw materials are susceptible to risks due to unfavourable weather conditions – droughts on the Western hemisphere and the El Niño, which increase the probability of extreme weather conditions. In the case of increased prices of food and possible problems in supply, geopolitical uncertainties could strengthen further and have an unfavourable effect on global activity and trade. Factors related to climate change (Figure 11), unfavourable weather conditions and risks associated with the transition to low-carbon economy could affect the prices of certain raw materials.

Figure 10 Long-term inflationary expectations entrenched at elevated levels



Notes: 5y5y ILS (inflation-linked swap rate) measures the expected (average) inflation rate during a five-year period beginning five years from now. Short-term expectations are measured by applying a one-year inflation-linked swap rate (1y1y ILS).
Source: Refintiv.

Figure 11 Average temperature anomaly is continuously increasing



Notes: Deviation of average temperature relative to the average temperature in the period from 1961 to 1990. To reduce seasonality, the average deviation over the last ten years is observed.

Source: Met Office Hadley Center (HadCRUT5).

3 Recent macroprudential activities

In mid-2023, the financial cycle was in a mature phase characterised by an elevated level of systemic risk. The tightening of financing conditions and the slowdown in lending were the first signs of a possible reversal. Against such a backdrop, the CNB decided to maintain the countercyclical capital buffer rate at a previously announced level of 1.5% to preserve the resilience of the banking sector in case of possible risk materialisation. The CNB performed a regular periodical review of the exposures of the domestic banking system to member states that adopted national macroprudential measures whose reciprocation was recommended by the European Systemic Risk Board, which showed that the exposures remained very low and do not require action by the CNB. Although the financial cycle in most EU member states is contracting, some countries additionally tightened their macroprudential measures aimed at mitigating cyclical systemic risks and risks associated with the real estate market.

3.1 Announced countercyclical capital buffer rate to remain at 1.5%

The regular quarterly assessment of cyclical systemic risks has shown that, at the moment, there is no need to change the

announced countercyclical capital buffer rate of 1.5%. The analysis suggests that the Croatian economy is currently in a mature phase of the financial cycle characterised by elevated cyclical vulnerabilities, mainly driven by developments in the residential real estate market and strong bank lending to the private sector, showing the first signs of a possible slowdown (see chapter 1). Considering the elevated level of risk and the banks' strong capital position and high profitability, the CNB assessed that the currently announced countercyclical capital buffer rate of 1.5%, which is to apply as of 30 June 2024, is still adequate.

Table 1 Countercyclical buffer rates

Applicable rate:	0.5% from 31 March 2023
Announced rates:	1.0% from 31 December 2023 1.5% from 30 June 2024

Source: CNB.

3.2 Review of exposure of domestic credit institutions to member states whose macroprudential measures were recommended for reciprocation by the ESRB

Based on the regular annual analysis of foreign exposures of the Croatian banking sector, it has been concluded that there is no need for the CNB to reciprocate macroprudential measures of other EU member states. Specifically, the ESRB recommended reciprocation, at European level, of national macroprudential measures adopted by macroprudential authorities of other EU member states³ if the amount of exposures of domestic financial institutions exceeds the defined materiality threshold. Reciprocation is not performed automatically in Croatia; rather, the CNB verifies, for each macroprudential measure recommended for reciprocation, the amount of related exposures of domestic credit institutions relative to the recommended materiality threshold, and, on that basis, adopts a decision on the reciprocation of the measure, which is periodically reviewed.⁴

The reciprocation of national macroprudential measures was requested by the authorities of Sweden, Luxembourg, Norway,

- 3 Based on ESRB Recommendation (ESRB/2015/2) whose provisions was transposed by the CNB in the Decision on the reciprocity of macroprudential policy measures adopted by relevant authorities of other European Union Member States and assessment of cross-border effects of macroprudential policy measures.
- 4 Such an approach is in line with the practice of the majority of other EU member states and complies with ESRB Recommendation (2015/2) provided that, once a year, exposures to other countries are reviewed and that relevant measures are reciprocated where the recommended materiality threshold is exceeded.

Belgium, Lithuania, the Netherlands and Germany. In line with the recommendation of the ESRB regarding the application of the principle of reciprocity, the CNB did not prescribe reciprocation, as the related exposures of credit institutions in Croatia were significantly below the recommended threshold. Upon the review performed, the CNB established that, over the past year, exposures increased slightly, but remained very low, below the recommended materiality thresholds for each of the measures. Therefore, it was decided that there was no need for the reciprocation of any of the aforementioned measures.

3.3 Implementation of macroprudential policy in other European Economic Area countries

In the third quarter of 2023, most EEA countries kept the macroprudential measures already in force, while some tightened the measures targeting cyclical systemic risks and risks associated with the real estate market. In June 2023, **Cyprus** raised the countercyclical capital buffer rate from 0.5% to 1%, effective as of June 2024. **Norway** extended the application of the national measure relating to the systemic risk buffer rate of 4.5% for all exposures in Norway and the floors for average risk weights applied to exposures secured by commercial (35%) and residential (29%) real estate in Norway by banks using the internal ratings-based approach (IRB approach) in calculating capital requirements for credit risk.

In late September 2023, **Sweden** introduced a minimum average risk weight for bank exposures to non-financial corporations secured by real estate in the amount of 35% and 25% for commercial and residential real estate in Sweden, respectively, for all banks applying the IRB approach. The measure was adopted to replace the previously applicable Pillar 2 supervisory measure which covered the same risks, as it was estimated that the risks in question are systemic risks to financial stability, making a macroprudential measure more adequate.

Belgium revised the combined capital buffer structure. In October 2023 it reactivated the countercyclical buffer, which was released in the spring of 2020 following the outbreak of the pandemic, with announced rates of 0.5%, to be applied as of April 2024, and of 1%, effective as of October 2024. A term shorter than the usual 12 months for the first buffer rate increase has been justified by the extraordinary circumstances in the form of increased uncertainty following a surprisingly strong interest rate increase. At the same time, Belgium decided to lower the sectoral systemic risk buffer rate for exposures secured by real estate from

the currently applied 9% to 6%, applicable as of 1 April 2024. The announced rate decrease was justified by the high level of compliance of new mortgage loans with supervisory expectations and the concurrent downturn in the real estate cycle.

Table 2 Overview of macroprudential measures applied by EEA countries and the United Kingdom

	AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GR	HU	IE	IS	IT	LT	LU	LJ	LV	MT	NL	NO	PL	PT	RO	SE	SI	SK	UK					
Capital and liquidity buffers																																			
CCoB	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
CCyB rate applied (%)	0	0	2.00	0	2.25	0.75	2.50	1.00	0	0	0.50	0	0.50	0	2.00	0	1.00	0.50	0	0	0	1.00	2.00	2.00	0	0	0.50	2.00	0	1.50	2.00				
CCyB rate pending (%)	1.00	1.00	1.00	1.00	1.00	1.50	1.00	1.50	1.00	1.00	1.00	1.50	0.50	1.00	2.50	1.00	1.00	0.50	0	0	0	2.00	2.50	0	0	1.00	0.50	0.50	0	0	0				
G-SII						●			●		●			●								●													
O-SII	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
SRB	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
Sectoral SRB								●			●																								
Liquidity ratio						●					●		●				●		●				●				●								
Caps on prudential ratios																																			
DSTI	●			●	●	●		●			●		●		●		●			●						●									
DTI/LTI				●	●		●						●							●															
LTD																																			
LTV	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Loan amortisation																																			
Loan maturity	●										●									●															
Other measures																																			
Pillar II		●																																	
Risk weights								●		●			●					●		●		●				●									
LGD																																			
Stress/sensitivity test			●	●	●				●					●																					
Other measures	●	●	●	●	●		●				●		●							●							●								

Disclaimer: of which the CNB is aware.

Notes: The listed measures are in line with Regulation (EU) No 575/2013 on prudential requirements for credit institutions and investment firms (CRR) and Directive 2013/36/EU on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms (CRD IV). The definitions of abbreviations are provided in the List of abbreviations at the end of the publication. Green indicates measures that have been added since the last version of the table. Light red indicates measures that countries have released in response to the crisis triggered by the coronavirus pandemic, which were not re-applied as at 1 February 2023.

Sources: ESRB, CNB and notifications from central banks and websites of central banks as at 15 September 2023.

For details, see: https://www.esrb.europa.eu/national_policy/html/index.en.html and <https://www.esrb.europa.eu/home/coronavirus/html/index.en.html>.

Table 3 Implementation of macroprudential policy and overview of macroprudential measures in Croatia

Measure	Primary objective	Year of adoption	Description	Basis for standard measures in Union law	Activation date	Frequency of revisions
Macroprudential measures implemented by the CNB prior to the adoption of CRD IV						
Prior to the adoption of CRD IV, the CNB used various macroprudential policy measures, of which the most significant ones are listed and described in: a) Galac, T., and E. Kraft (2011): http://elibrary.worldbank.org/doi/pdf/10.1596/1813-9450-5772 b) Vujčić, B., and M. Dumičić (2016): https://www.bis.org/publ/bppdf/bispap861.pdf						
Macroprudential measures envisaged in CRD IV and CRR and implemented by the competent macroprudential authority						
CCoB	Credit growth and leverage following Recommendation ESRB/2013/1	2014	Early introduction: at 2.5% level	CRD, Art. 160(6)	1 Jan. 2014	Discretionary
		2015	Exemption of small and medium-sized investment firms from the capital conservation buffer	CRD, Art. 129(2)	17 Jul. 2015	Discretionary
CCyB	Credit growth and leverage following Recommendation ESRB/2013/1 and implementing Recommendation ESRB/2014/1	2015	CCyB rate set at 0.5%; announcement of CCyB rate of 1% and 1.5% to be applied as of 31 Dec. 2023 and 30 Jun. 2024, respectively	CRD, Art. 136	1 Jan. 2016	Quarterly
		2015	Exemption of small and medium-sized investment firms from the counter-cyclical capital buffer	CRD, Art. 130(2)	17 Jul. 2015	Discretionary
O-SII	Limiting the systemic impact of misaligned incentives with a view to reducing moral hazard following Recommendation ESRB/2013/1	2015	Seven O-SIIs identified by review in late 2022, with corresponding buffer rates: 2.0% for O-SIIs: Zagrebačka banka d.d., Zagreb, Privredna banka Zagreb d.d., Zagreb (effectively 1.75%), Erste&Steiermärkische Bank d.d., Rijeka; 1.5% for Raiffeisenbank Austria d.d., Zagreb, OTP banka Hrvatska d.d., Split; 0.5% for O-SIIs: Addiko Bank d.d., Zagreb, Hrvatska poštanska banka d.d., Zagreb	CRD, Art. 131	1 Feb. 2016	Annually
SRB	Credit growth and leverage following Recommendation ESRB/2013/1	2014	Two SRB rates (1.5% and 3%) applied to two sub-groups of banks (market share < 5%, market share ≥ 5%). Applied to all exposures	CRD, Art. 133	19 May 2014	Annually
		2017	The level of two SRB rates (1.5% and 3%) and the application to all exposures remain unchanged. Decision (OG 78/2017) changes the method for determining the two sub-groups to which the SRB is applied. Sub-groups are determined by calculating the indicator of the average three-year share of assets of a credit institution or a group of credit institutions in the total assets of the national financial sector (indicator < 5%, indicator ≥ 5%). The review conducted in 2019 determined that the rates for the two sub-groups remain unchanged.	CRD, Art. 133	17 Aug. 2017	At least on a biennial basis
		2020	Under the Decision (OG 144/2020), a uniform buffer rate (SRB) was introduced in the amount of 1.5% of the total amount of exposure. Since the buffers for SIIs and for the systemic risk are additive as of the beginning of the application of the AACIA, there is no more need for the systemic risks stemming from the size of individual credit institutions and banking sector concentrations to be covered by a higher of the systemic risk buffer rate because these risks will be covered by OSII buffers.	CRD V, Art. 133	29 Dec. 2020	At least on a biennial basis
Risk weights for exposures secured by mortgages on residential property	Credit growth and leverage following Recommendation ESRB/2013/1	2014	Maintaining a stricter definition of residential property for preferential risk weighting (e.g. owner cannot have more than two residential properties, exclusion of holiday homes, need for occupation by owner or tenant)	CRR, Art. 124, 125	1 Jan. 2014	Discretionary
Risk weights for exposures secured by mortgages on commercial property	Mitigating and preventing excessive maturity mismatch and market illiquidity pursuant to Recommendation ESRB/2013/1	2014	CNB's recommendation issued to banks (not legally binding) on avoiding the use of risk weights of 50% to exposures secured by CRE during low market liquidity	CRR, Art. 124, 126	1 Jan. 2014	Discretionary
		2016	Decision on higher risk weights for exposures secured by mortgages on commercial immovable property. RW set at 100% (substituted CNB's recommendation from 2014, i.e. effectively increased from 50%)	CRR, Art. 124, 126	1 Jul. 2016	Discretionary
Other measures and policy actions whose effects are of macroprudential importance and are implemented by the macroprudential authority						
Consumer protection and awareness	Raising risk awareness and creditworthiness of borrowers following Recommendation ESRB/2011/1	2013	Decision on the content of and the form in which consumers are provided information prior to contracting banking services (credit institutions are obliged to inform clients about details on interest rate changes and foreign currency risks)		1 Jan. 2013	Discretionary
		2013	Amended Decision from 1 Jan. 2013 (credit institutions were also obliged to provide information about the historical oscillations of the currency in which credit is denominated or indexed to vis-à-vis the domestic currency over the past 12 and 60 months)		1 Jul. 2013	Discretionary
Information list with the offer of loans to consumers aimed at consumer protection and awareness raising	Raising risk awareness of borrowers pursuant to Recommendation ESRB/2011/1 and encouraging price competitiveness in the banking system	2017	The Information list with the offer of loans to consumers, available on the CNB's website, provides a systematic and searchable overview of the conditions under which banks grant loans. With the Information list, standard information available to the consumers are extended with information regarding interest rates.		14 Sep. 2017	Discretionary
Consumer protection and awareness	Financial stability concerns regarding risk awareness of borrowers	2016	Borrowers are strongly recommended (publicly) by the CNB to carefully analyse the available information and documentation on the products and services offered prior to reaching their final decision, as is customary when concluding any other contract		1 Sep. 2016	Discretionary
Recommendation to mitigate interest rate and interest rate-induced credit risk	Mitigation of the interest rate risk in the household sector and the interest-induced credit risk in the banks' portfolios and enhancing the price competition in the banking system	2017	Credit institutions providing consumer credit services are recommended to extend their range of credit products to fixed-rate loans, while minimising consumer costs.		26 Sep. 2017	Discretionary
Additional criteria for assessing consumer creditworthiness in granting housing consumer loans	Credit risk management in housing consumer loans pursuant to EBA Guidelines on creditworthiness assessment (EBA/GL/2015/11) and EBA Guidelines on arrears and foreclosure (EBA/GL/2015/12)	2017	Decision on the additional criteria for the assessment of consumer creditworthiness and on the procedure for the collection of arrears and voluntary foreclosure		1 Jan. 2018	Discretionary

Measure	Primary objective	Year of adoption	Description	Basis for standard measures in Union law	Activation date	Frequency of revisions
Recommendation on actions in granting non-housing consumer loans	Financial stability concerns due to credit risk in banks' housing loan portfolios and protection of consumers excessive debt taking	2019	All credit institutions granting consumer loans in Croatia are recommended to apply, in determining a consumer's creditworthiness for all non-housing consumer loans with original maturity equal to or longer than 60 months, the minimum costs of living that may not be less than the amount prescribed by the act governing the part of salary exempted from foreclosure.		28 Feb. 2019	Discretionary
Decision on collecting data on standards on lending to consumers	Establishment of an analytical basis for the monitoring of systemic and credit risk and the calibration of borrower-based measures and for meeting the requirements from the ESRB recommendations on closing real estate data gaps (ESRB/2016/14 and ESRB/2019/3)	2020	A new reporting system is introduced which provides for a monthly collection of individual data on all newly-granted consumer loans at the individual loan level and the annual collection of data on all individual consumer loan balances. The collected data will be used for the analysis and the regular monitoring of systemic risk, the monitoring of credit risk, the calibration of macroprudential measures and, where necessary, the monitoring of actions by credit institutions against which measures have been imposed.		2 Apr. 2020	Discretionary
Other measures whose effects are of macroprudential use						
Amended Consumer Credit Act	Financial stability concerns due to interest rate risk and currency risk	2013	Fixed and variable parameters defined in interest rate setting, impact of exchange rate appreciation for housing loans limited, upper bound of appreciation set to 20%		1 Dec. 2013	Discretionary
Amended Consumer Credit Act	Financial stability concerns due to interest rate risk and currency risk	2014	Banks are obliged to inform their clients about exchange rate and interest rate risks in written form		1 Jan. 2014	Discretionary
Amended Consumer Credit Act	Financial stability concerns due to currency risk	2015	Freezing the CHF/HRK exchange rate at 6.39		1 Jan. 2015	Discretionary
Amended Consumer Credit Act	Financial stability concerns due to currency risk	2015	Conversion of CHF loans		1 Sep. 2015	Discretionary
Consumer Home Loan Act	Financial stability concerns due to interest rate risk and currency risk	2017	To establish the variable interest rate, the interest rate structure was defined through reference variable parameters and the fixed portion of the rate; for foreign currency consumer home loans, clients were offered one-off conversion of loans, from the currency a loan was denominated in or linked to, to the alternative currency without additional costs		20 Oct. 2017	Discretionary
Act on Amendments to the Credit Institutions Act	Compliance with the requirements for close cooperation with the ECB and the legal basis for imposing legally binding borrower-based measures	2020	Detailed provisions on the CNB's powers regarding the adoption and implementation of macroprudential measures that for the first time explicitly stipulate borrower-based measures. The ECB may issue instructions to the CNB if it assesses that a Croatian macroprudential measure, which is based on harmonised European rules and aimed at credit institutions, is not strict enough		15 Apr. 2020 (some provisions enter into force on 1 October 2020, with the beginning of close cooperation with the ECB)	Discretionary
Act on Amendments to the Credit Institutions Act	Compliance with CRD V	2020	Regulation of the provisions on capital buffers; increased maximum O-SII buffer rate; sectoral SRB; O-SII buffer and SRB additivity; changes to the notification system; determination of the CNB as the designated authority for the assessment of the adequacy of the risk weights referred to in Article 125(2) or Article 126(2) of Regulation (EU) No 575/2013		29 Dec. 2020	Discretionary

Note: The definitions of abbreviations are provided in the List of abbreviations at the end of the publication.

Source: CNB.

Glossary

Financial stability is characterised by the smooth and efficient functioning of the entire financial system with regard to the financial resource allocation process, risk assessment and management, payments execution, resilience of the financial system to sudden shocks and its contribution to sustainable long-term economic growth.

Macroprudential policy measures imply the use of economic policy instruments that, depending on the specific features of risk and the characteristics of its materialisation, may be standard macroprudential policy measures. In addition, monetary, microprudential, fiscal and other policy measures may also be used for macroprudential purposes, if necessary. Because the evolution of systemic risk and its consequences, despite certain regularities, may be difficult to predict in all of their manifestations, the successful safeguarding of financial stability requires not only cross-institutional cooperation within the field of their coordination but also the development of additional measures and approaches, when needed.

Systemic risk is defined as the risk of events that might, through various channels, disrupt the provision of financial services or result in a surge in their prices, as well as jeopardise the smooth functioning of a larger part of the financial system, thus negatively affecting real economic activity.

Vulnerability, within the context of financial stability, refers to the structural characteristics or weaknesses of the domestic economy that may either make it less resilient to possible shocks or intensify the negative consequences of such shocks. This publication analyses *risks* related to events or developments that, if materialised, may result in the disruption of financial stability. For instance, due to the high ratios of public and external debt to GDP and the consequentially high demand for debt (re)financing, Croatia is very vulnerable to possible changes in financial conditions and is exposed to interest rate and exchange rate change risks.

List of abbreviations

AACIA	Act on Amendments to the Credit Institutions Act
Art.	Article
bn	billion
b.p.	basis points
CB	central bank
CCoB	capital conservation buffer
CCyB	countercyclical capital buffer
CEE	Central and Eastern European
CES	Croatian Employment Service
CHF	Swiss franc
CNB	Croatian National Bank
CRD IV	Directive 2013/36/EU on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms
CRR	Regulation (EU) No 575/2013 on prudential requirements for credit institutions and investment firms
d.d.	dioničko društvo (joint stock company)
DSTI	debt-service-to-income ratio
EBA	European Banking Authority
EBITDA	earnings before interest, taxes, depreciation and amortisation
ECB	European Central Bank
ESRB	European Systemic Risk Board
EU	European Union
Fed	Federal Reserve System
FINA	Financial Agency
FOMC	Federal Open Market Committee
GDP	gross domestic product
G-SII	global systemically important institutions buffer
HANFA	Croatian Financial Services Supervisory Agency
HRK	Croatian kuna
IRB	internal ratings-based
LGD	loss-given-default
LTD	loan-to-deposit ratio
LTI	loan-to-income ratio
LTV	loan-to-value ratio
no.	number
NRR	national reference rate
OG	Official Gazette
O-SII	other systemically important institutions buffer
O-SIIs	other systemically important institutions
Q	quarter
SRB	systemic risk buffer

Two-letter country codes

AT	Austria
BE	Belgium
BG	Bulgaria
CY	Cyprus
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
ES	Spain
FI	Finland
FR	France
GR	Greece
HR	Croatia
HU	Hungary
IE	Ireland
IS	Iceland
IT	Italy
LV	Latvia
LT	Lithuania
LU	Luxembourg
MT	Malta
NL	Netherlands
NO	Norway
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia
UK	United Kingdom

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