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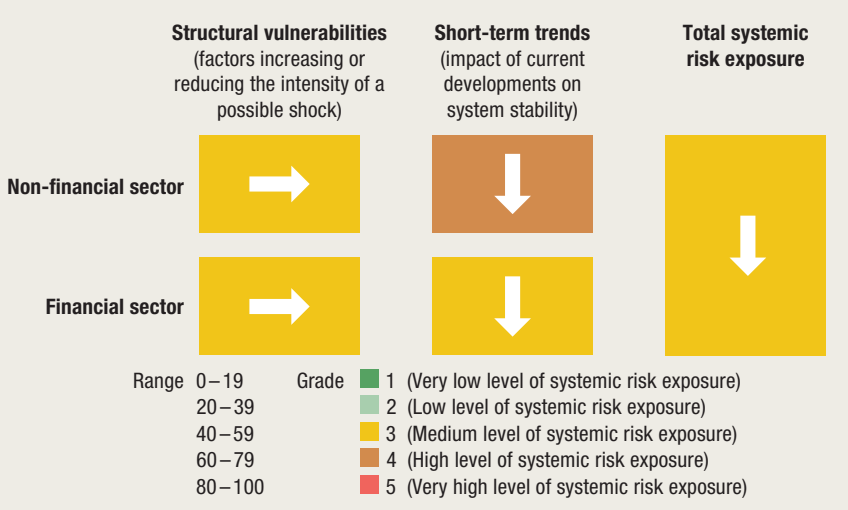
Introductory remarks

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

Strong economic growth is supporting the continued decrease in the total exposure of the Croatian financial system to systemic risks, which remain moderate (Figure 1). The financial position of households has benefited from the strong increase in income and the robust labour market, while the debt repayment burden has not increased, thanks to the high share of loans granted at fixed interest rates and the relatively low statutory cap on the variable interest rate on housing loans. The corporate sector has performed well despite a significant increase in interest expenses, which led to an increase in capital. Against such a backdrop, the credit risk of banks has decreased further, high profitability and liquidity continuing to boost their resilience. However, as interest rates grew and the loan servicing burden increased, the share of housing loans with an elevated debt service-to-income ratio increased in the segment of new housing loans as well as in the segment of general-purpose cash loans. In addition, real estate prices are continuing to grow strongly, although the number of transactions is still trending downwards.

Figure 1 Risks to financial stability continue to decline

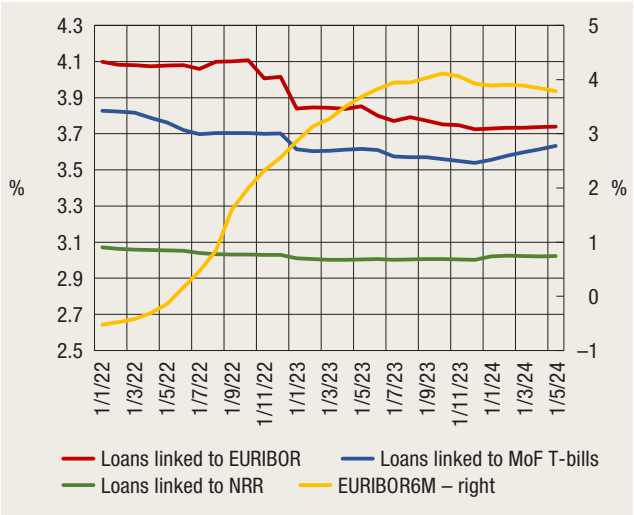


Note: The arrows indicate changes from the risk map published in Macroprudential Diagnostics No. 22 (February 2024).
Source: CNB.

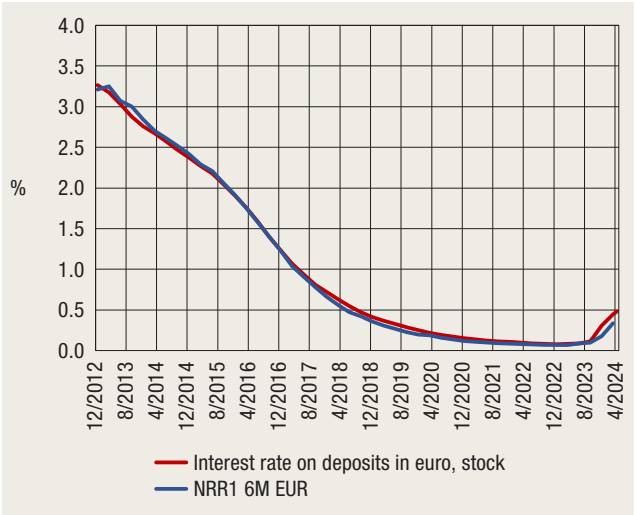
In early 2024, the euro area economy began showing noticeable signs of recovery as inflationary pressures eased. Real economic activity in the euro area surpassed expectations, with an annual growth rate of 1.2% in the first quarter. At the same time, the Croatian economy grew by 3.9% in real terms thanks to strong domestic demand and thus continued to expand significantly faster than the EU and euro area average. In addition, in the first five months of 2024, inflationary pressures continued to ease in Croatia, primarily under the influence of a slowdown in the growth in the prices of food and industrial products.

Figure 2 The repayment cost will grow slightly for housing loans with interest rates linked to the NRR

a) Housing loan interest rate developments according to reference parameter



b) Developments in the NRR and interest rates on deposits

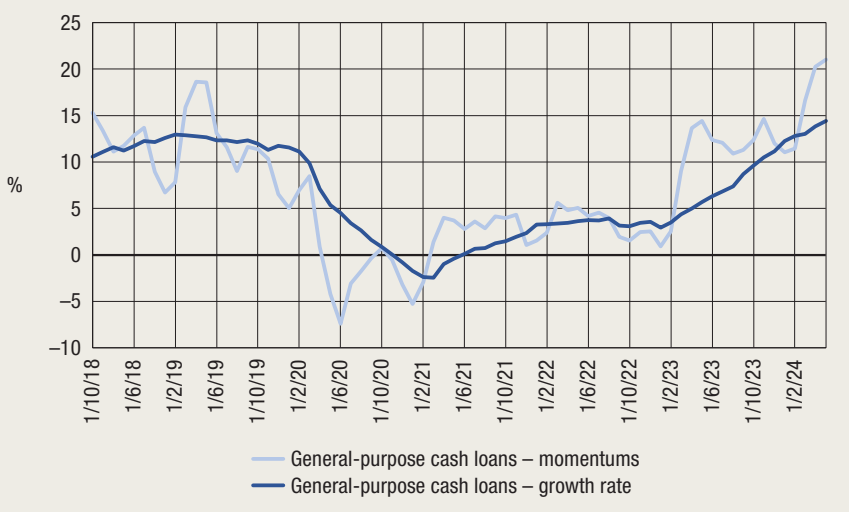


Notes: Figure shows the interest rate on the stock of housing loans with a variable interest rate according to reference parameter (left) and the interest rate on the stock of household time deposits in euro and the 6-month NRR (right). EURIBOR6M refers to the monthly market value of the 6M EURIBOR, while EURIBOR (reference parameter) refers to the variable interest rate linked to the EURIBOR.
Source: CNB.

As key interest rates are still high even after their slight decrease in June, the cost of repayment could increase slightly for debtors who have loans linked to the NRR, while for households with loans linked to the EURIBOR, the cost will remain unchanged. During the period of key interest rate increase, interest rates did not increase for most housing loans with a variable interest rate; in fact, on average they decreased slightly (Figure 2). Since interest rates on existing loans linked to the EURIBOR did not grow in the period of its strong increase due to the application of the statutory cap on the interest rate level[1], they are not expected to decline as a result of a EURIBOR decrease. Although the NRR, the most common parameter in existing household loans, was stable, as time deposits began to increase more rapidly in late 2023 following the increase in interest rates on time deposits, it increased slightly (by slightly less than 0.3 p. p. by the end of the first quarter of 2024). Since banks periodically adjust variable interest rates linked to reference parameters, in the second half of 2024, this could lead to a slight increase in the cost of repayment, and, depending on the developments in interest rates on deposits, this could continue in the upcoming year as well. However, as the NRR is not expected to rise by any great extent, the cost of loan repayment should not increase significantly either (see Box 2, Financial Stability No. 25).

The rise in general-purpose cash loans accelerated in the first half of the year, and some of these loans may be considered risky. The annual growth in cash loans accelerated to 14.4% in May, and their momentum (quarterly growth rate on an annual basis) rose to 21% (Figure 3). According to the bank lending survey, the main drivers of

Figure 3 Strong growth in cash loans continues

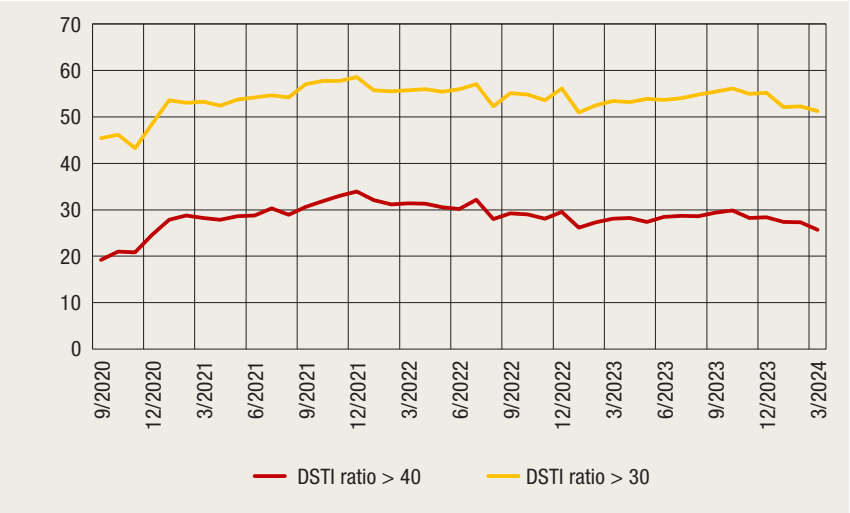


Source: CNB.

1 The legally prescribed cap on variable interest rates on housing loans even decreased due to the drop in the average variable interest rate on the stock of housing loans, as loans linked to the NRR, which reflects the banks' financing costs, constitute the largest share (around 60%) of housing loans.

growth in general-purpose cash loans are increased consumer confidence and durable goods consumption, particularly reflected in the increase seen in the import and registration of cars under the positive influence of a strong labour market and increasing real wages. However, a significant portion of new cash loans may be considered risky, as indicated by the fact that around a half of such loans were granted with a debt service-to-income (DSTI) ratio above 30%, and slightly over a quarter of them with a DSTI ratio exceeding 40% (Figure 4). Therefore, in the event of unfavourable macroeconomic developments, repayment difficulties could occur rapidly with such loans, leading to a rise in non-performing loans.

Figure 4 A significant portion of cash loans is potentially risky

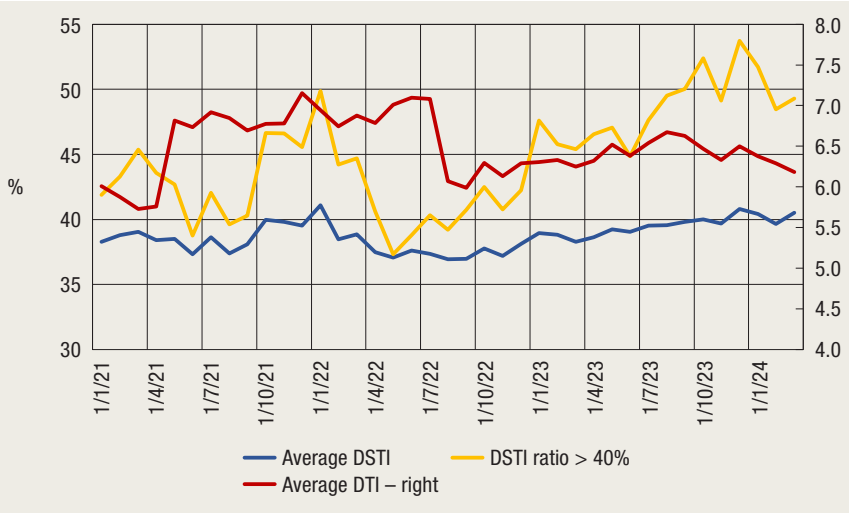


Source: CNB (Lending conditions).

In the first half of the year, housing loans continued to grow moderately as lending standards eased. Current lending activity (momentum) ranged between 6% and 8% in the first half of the year, while the annual growth rate was slightly higher, reflecting higher loan amounts granted under last year's housing loan subsidy programme. The growth in housing loans reflects increasing amounts of individual loans amid growing real estate prices and elevated interest rates, while the number of newly-granted loans is stagnant. The rise in the average amount of new housing loans is accompanied by income growth, so that the debt-to-income ratio (DTI) remained stable in the first quarter of 2024 (standing at 6.2, which means that the average housing loan equals 6.2 annual incomes of the debtor). However, as the rise in interest rates reduced the ability of purchasers to finance residential real estate, the average DSTI ratio is noticeably increasing (having reached 41% at the end of March 2024) (Figure 5), while loans with an elevated DSTI ratio (above 40%) constituted almost a half of new loans at the end of March.

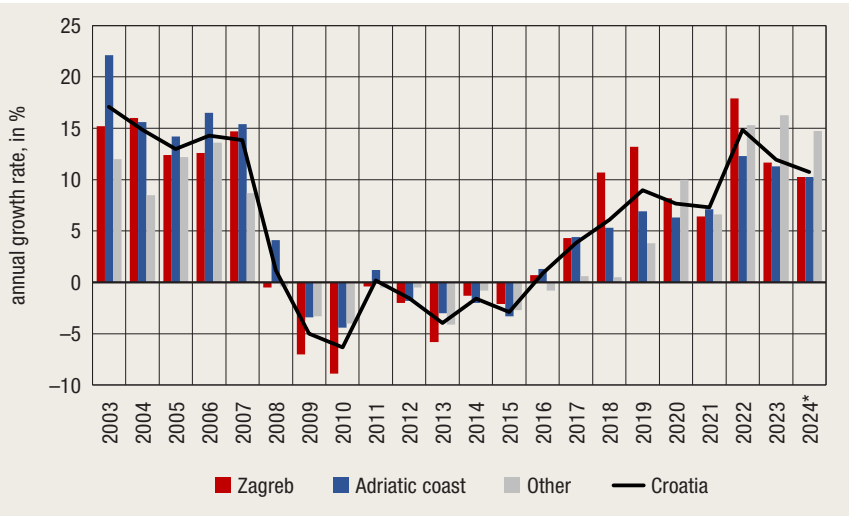
Activity on the residential real estate market continued to slow down gradually in the first quarter of 2024, but price growth remains pronounced. In 2023 and in early 2024, the number of purchase and

Figure 5 Lending standards remained somewhat more relaxed for housing loans



Source: CNB (Lending conditions).

Figure 6 Increase in residential real estate prices remains high

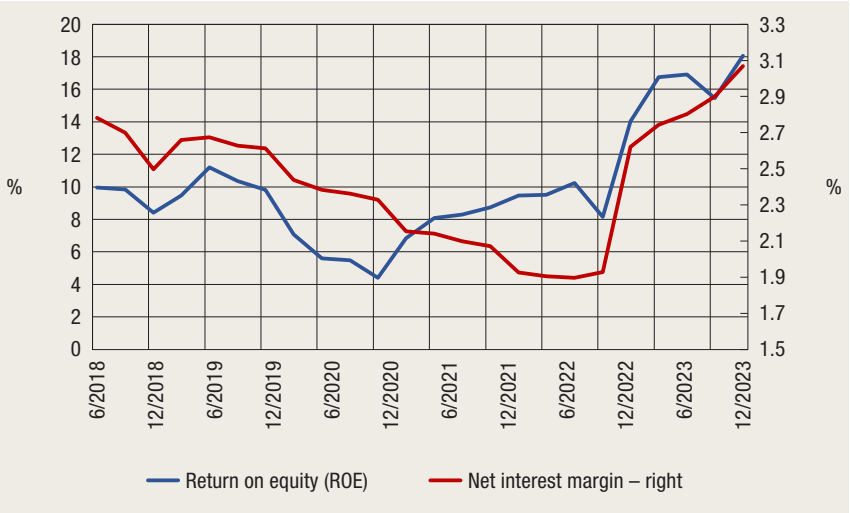


Note: For details on the structure of the nominal index, see Kunovac and Kotarac (2019): Residential property prices in Croatia.
Source: CNB.

sale transactions on the market continued to decline, primarily on the Adriatic coast and in Zagreb. The growth in the prices of residential real estate slowed down somewhat amid reduced investment demand, which primarily refers to the demand of non-residents. However, the growth at the beginning of 2024, with an annual rate of 9.1% in the first quarter, was still among the largest in the EU.

Low activity and insufficient depth remain the main vulnerabilities on the commercial real estate market. Commercial real estate prices continued to grow in the first quarter, and as the value of pledged commercial real estate increased, the average LTV ratio in loans linked to commercial real estate shrank further in the first quarter of 2024. However, low liquidity still poses a significant risk on the market, which, in the case of major disruptions, could lead to a rapid fall in prices, and, consequently, to a rise in the LTV ratio.

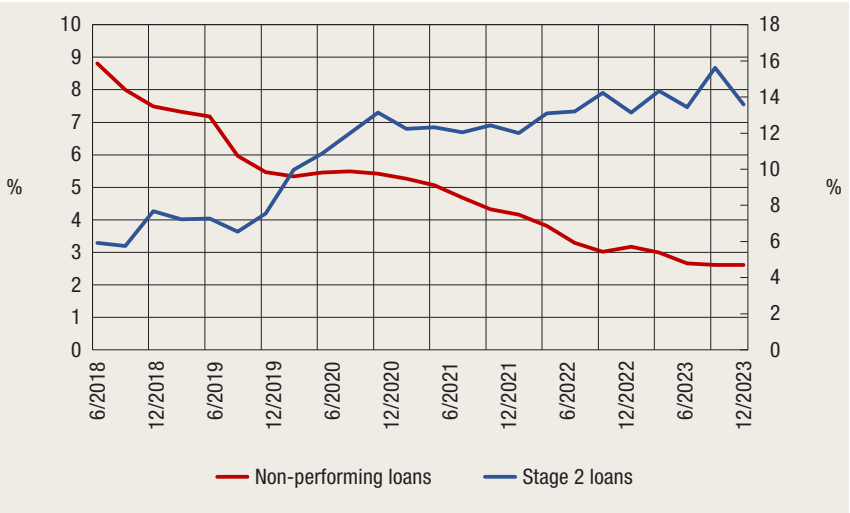
Figure 7 Bank profitability is at its peak and could decrease slightly in the upcoming part of the year



Source: CNB.

Corporate lending remained subdued in the first half of 2024 amid tightened financing conditions and reduced need for the funding of working capital. Following the rapid growth from mid-2022, interest rates on newly-granted corporate loans stabilised at the end of 2023. The transmission of tightened financing conditions to the servicing costs of existing loans was very fast considering the relatively short average loan maturity and the prevalence of loans with variable interest rates linked to the EURIBOR. On the other hand, the increase in interest rates has been slowed down somewhat by existing loans with fixed interest rates and variable interest rates linked to the NRR. In such an environment, corporate lending remained subdued, and the increase in loans was mainly driven by construction companies and companies engaged in real estate activities and, to a lesser extent, companies in manufacturing and trade.

Figure 8 Credit risk continues to decline, although the increased share of stage 2 loans points to a possible change of trend



Source: CNB.

Favourable corporate performance seen in 2023 continued in the first five months of 2024, supporting corporate resilience to potential shocks. In 2023, the income of non-financial corporations increased by some 10.5%, or 1.5 p. p. more than overall costs. Consequently, corporate net earnings grew strongly (38%), which supported the increase of capital by almost one fifth. Moreover, good business performance continued in the first five months of 2024 (according to data on fiscalisation), particularly in IT/communication and tourism-related activities. Although good business results and capital increase have had a favourable effect on the resilience of the non-financial corporate sector, to monitor corporate vulnerability, in addition to the current materialisation of risks, it is also necessary to observe risk-taking (Box 1 Corporate vulnerability indicators).

Banks' loan portfolio quality remains high and non-performing loans continue to decline. In the first quarter of 2024, the share of non-performing loans in total loans remained at the historically low level recorded in late 2023 (2.6%), while their nominal amount dropped somewhat, reflecting the more successful collection of corporate non-performing loans and, to a lesser extent, household loans. At the same time, the share of loans with increased credit risk since initial recognition (so-called stage 2 loans) in total loans decreased from 15.6% at the end of 2023 to 13.6% in March 2024 (Figure 8), which mainly reflects a more favourable risk assessment of loans in manufacturing and energy sectors.

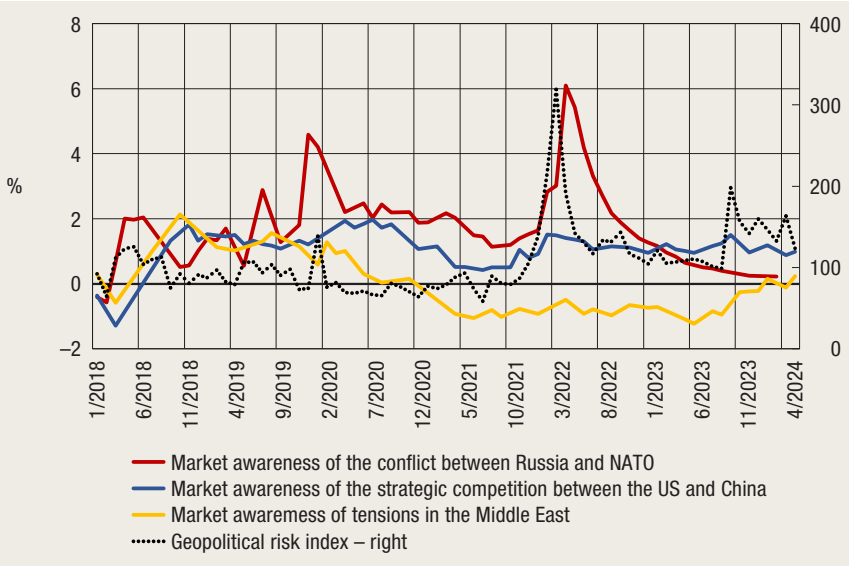
Banking system resilience is supported by very high levels of liquidity and capital and favourable expectations regarding its profitability (Figure 7). Own funds stagnated as a result of ample disbursements of last year's profit, while the total capital ratio dropped to 0.6 p. p. in the first quarter of 2024, but nevertheless remained high at 23.3%. The decline reflects an increase in risk-weighted assets, i.e., the average risk weight, which is linked to stronger lending activity in the segment of general-purpose cash loans and repo transactions with other financial institutions accompanied by a decline in the level of assets held with the central bank. The liquidity coverage ratio and the stable funding ratio also decreased slightly, but remain significantly above regulatory requirements.

Banks' financial results continued to improve, reaching historically high levels, from which they could begin to gradually decline. The net profit of banks in the first quarter was almost two fifths higher than in the same period in the year before. The increase in profit was primarily brought about by higher net interest income, while the contribution of increase in net non-interest income and release of provisions for credit losses formed in the preceding years was smaller. Profitability probably peaked at the beginning of the year and could decrease gradually as net interest spread narrows.

2 Potential risk materialisation triggers

The deteriorating geopolitical environment could trigger the materialisation of risks to financial stability, with further escalation of Russian aggression against Ukraine possibly having a considerable impact on European economies (Figure 9). Over the past two years, the war in Ukraine significantly affected international food and energy markets; however, over time, they stabilised. Still, a new potential cycle of increases in the prices of energy and other raw materials, and, consequently, food, and the growing numbers of refugees could burden European Union economies which are already seeing increased defence costs as a result of changes in the geopolitical environment. Therefore, in addition to increased risks of escalation of the conflict, the prolonged duration of the war could increase public expenditures and hamper fiscal adjustment.

Figure 9 Geopolitical risks remain elevated, with changes in their geographical distribution



Notes: Indicators (except the geopolitical risk index) track the relative frequency of brokerage reports (via the Refinitiv platform) and financial news (Dow Jones News) related to certain risks. In the formation of the indicator, greater weight is assigned to data from brokerage reports. Indicators reflect the level of market attention for each risk in relation to the preceding five-year period.
Source: Black Rock Institute, Caldara, Dario and Matteo Iacoviello (2022), "Measuring Geopolitical Risk," American Economic Review, April, 112(4), pp. 1194-1225.

At the same time, the escalation of the military conflict in the Middle East and the worsening geopolitical situation in the Far East are significant triggers of risk for the global economy. The spreading of the conflict in the Middle East could drive oil prices upwards (around 30% of global oil is produced in the Middle East[2]) and lead to a further decline in the traffic through the Suez Canal. Furthermore, an escalation

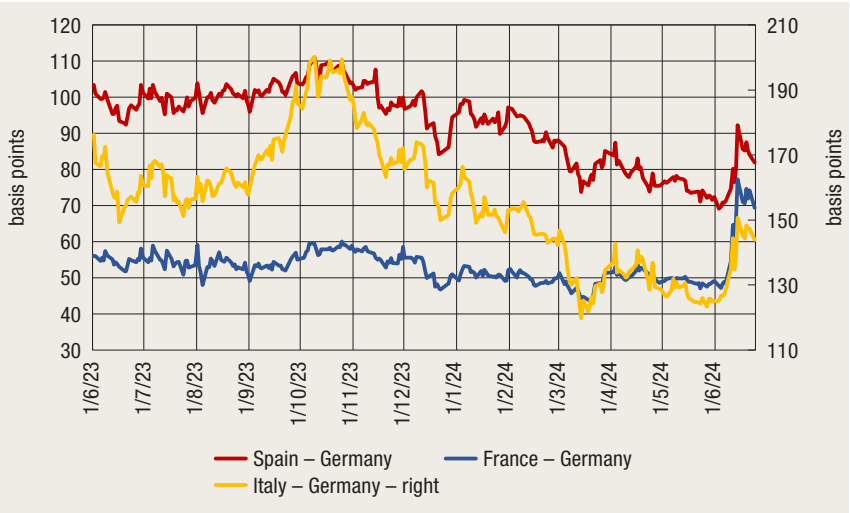
2 https://www.statista.com/statistics/265200/middle-eastern-oil-production-in-barrels-per-day/

in the relations of Taiwan and China could result in supply chain bottlenecks and thus slow down global economic growth[3].

The political situation in the Western Balkans could also affect financial stability in Croatia. A potential rise in political instability in the countries neighbouring Croatia could slow down growth and potentially trigger a recession in Croatia by reducing the perception of safety, which would negatively affect tourism and real estate demand. A drop in tourist arrivals would lead to a decline in revenues from tourism and make the debt repayment of indebted corporations and households for which tourism is a significant source of income difficult.

Growing uncertainty regarding policies that will be implemented after elections in numerous large economies in 2024 could have a negative effect on financial markets. Specifically, in many countries where elections are to be held in 2024 there is a significant level of social polarisation as political options advocating rapid changes in the domestic and global order grow increasingly popular. Should such political options be in a position to implement the policies they have announced, uncertainty will grow on the financial markets, which could lead to increased volatility and have a negative effect on market liquidity. In such an environment, a change in investor sentiment could primarily have a negative effect on the valuation of firms whose operations are based on artificial intelligence and which grew strongly over the past few years. Considering the large share of such firms in market capitalisations on major global markets, a drop in their valuation could

Figure 10 Political uncertainty in Europe after the elections for the European Parliament has led to increased risk premiums



Note: The figure shows the interest spread between 10-year government bonds.
Source: ECB.

3 With a share of around 50%, Taiwan is the world's largest manufacturer of semiconductors which are an indispensable component in producing most consumer electronics (source: https://www.cnbc.com/2024/01/12/taiwans-strength-in-semiconductors-could-be-its-achilles-heel-economist-says.html).

result in increased uncertainty and volatility on global financial markets. Ultimately, deglobalisation could intensify, i.e., international trade could become more fragmented (as a result of, for instance, reshoring), which could, in the longer term, lead to increased manufacturing costs and a slowdown in global economic activity (Figure 10).

Box 1 Corporate vulnerability indicators

Monitoring corporate vulnerability is exceptionally important, as corporate performance and possible default may have a significant impact on financial stability. Common corporate vulnerability indicators do not show clear tendencies, but their adjustment to specific local circumstances points to reduced vulnerability, with a somewhat steadier increase following the global financial crisis and a short-lived rise during the pandemic. The downward trend in vulnerability is clearly linked to reduced corporate financial and operating leverage. However, there are still significant differences in the level of corporate vulnerability across activities, and structural changes in the global economy and the associated risks could additionally highlight risks linked to operating leverage.

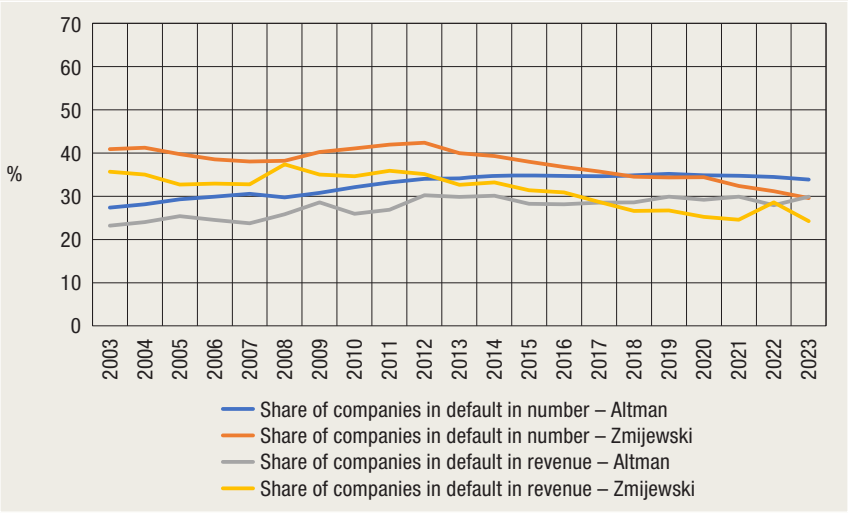
Since corporate default is one of the common causes of instability in the financial sector, when analysing risks to financial stability, special attention is paid to corporate performance and the assessment of risk of corporate default. Corporate vulnerability may be measured in various ways and is often assessed using the distance-to-default indicator. The concept of distance to default is based on assessing the probability that the company's asset value will fall below the value of its debt, i.e., on measuring the probability of a company becoming unable to settle its liabilities. Distance-to-default indicators are often derived from capital market data. Considering the very small number of listed companies, this approach is inapplicable in Croatia. Alternatively, distance-to-default indicators for domestic companies can be obtained from the data available in standard annual accounting statements. However, such data are usually available at a lower time frequency and with a considerable time lag compared with indicators obtained from the capital market. Two common distance-to-default indicators[4], the Altman[5] and the Zmijewski[6] indicator, are

4 Distance-to-default indicators are based on regression equations which determine thresholds for company default in a particular sample. The thresholds indicate the point of default for a company, and the distance from point of default (or points, if the indicator in question contains

easy to calculate and change. However, such pre-defined distance-to-default indicators, obtained from a sample of companies from other countries in the past, may not be representative of the current population of companies in Croatia. Therefore, drawing upon the methodology developed by Crundwell and Bennett (2024)[7], we assessed an additional indicator of risk of bankruptcy based on the data for Croatian companies.

While standard distance-to-default indicators for Croatian companies oscillate relatively mildly, without a clear trend (Figure 1), the Crundwell-Bennett indicator, adjusted to local data, clearly points to an increase in risk of default of Croatian companies in the period following the global financial crisis, after which a gradual decline in risk ensued. With the exception of the period after the global financial crisis and the period during the pandemic, corporate vulnerability clearly shows a gradual decline. During the pandemic, risk increased in the short term, particularly in the segment of small enterprises, but returned to a downward trajectory (Figure 2) under

Figure 1 Standard distance-to-default indicators oscillated moderately without a clear trend over the past twenty years



Note: Indicators are explained in footnote no. 3.
Source: FINA.

multiple components) becomes the measure of risk for that company. The Altman model (1968) is estimated according to the ratios of working capital, retained earnings, current earnings and equity to assets. An indicator value below 2.8 is considered company default. Zmijewski (1984) used the ratio of current earnings and total liabilities to assets and the ratio of current assets and current liabilities. An indicator value below 0 is considered company default. Both indicators were originally developed for manufacturing companies in the USA.

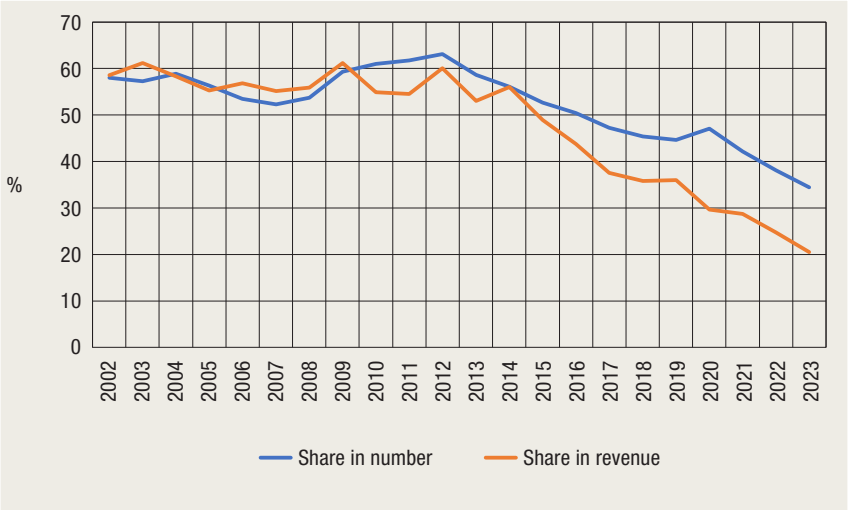
5 Altman, E. I. (1968): A Further Empirical Investigation of the Bankruptcy Cost Question, The Journal of Finance, Volume 39, Issue 4, September 1984

6 Zmijewski, M. E. (1984): Methodological Issues Related to the Estimation of Financial Distress Prediction Models, Journal of Accounting Research, Vol. 22, Studies on Current Econometric Issues in Accounting Research (1984), pp. 59-82 (24 pages)

7 Stressed or in distress? How best to measure corporate vulnerability, Bank Underground blog, https://bankunderground.co.uk/2024/02/21/stressed-or-in-distress-how-best-to-measure-corporate-vulnerability/

the influence of ample fiscal support (see Financial Stability No. 21, August 2020, Box 1 and Box 3) and the fast economic recovery after the pandemic.

Figure 2 Indicator based on data for Croatia (according to Crundwell and Bennett, 2024) points to increased risk during the pandemic



Note: The indicator is based on five sub-indicators; a company is considered vulnerable if three indicators cross the threshold.
Source: FINA.

Bankruptcy risk indicator

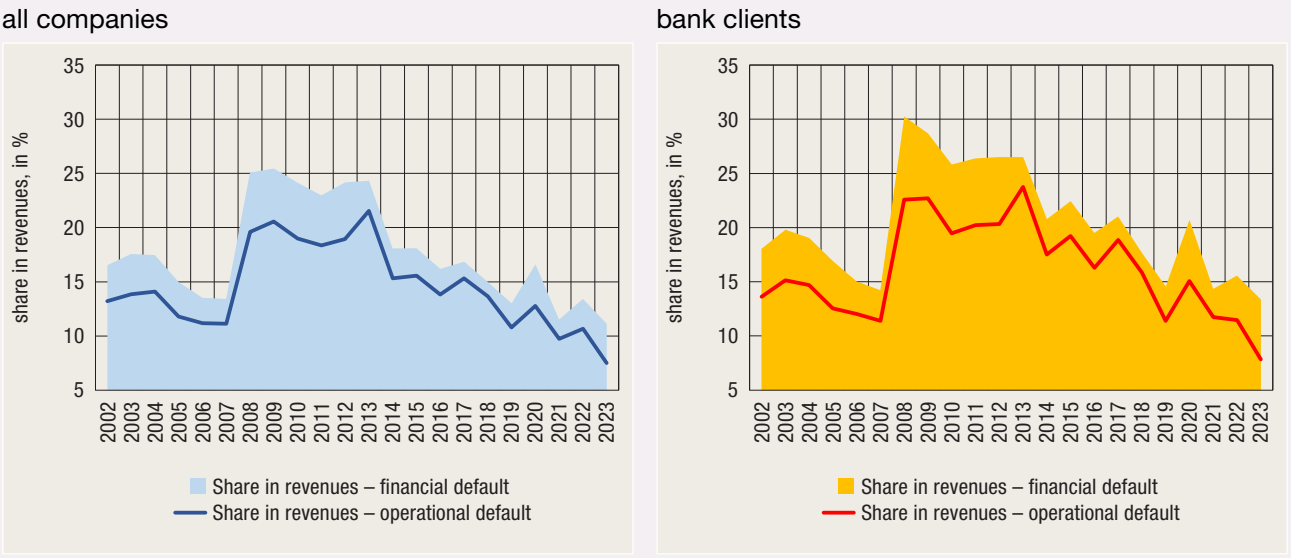
The bankruptcy risk for Croatian companies over a time horizon of three years has been estimated using the approach developed by Crundwell and Bennett (2024). The aforementioned methodology implies the estimation of threshold values for selected financial indicators from the balance sheet and the income statement which, once exceeded, signal increased risk of company bankruptcy. In the first step, the significance of selected indicators for the risk of company bankruptcy over a period of three years is determined using logistic regression. The sample consists of all companies that submitted financial statements in the period from 2003 to 2023. After that, threshold values are identified that are best suited to discriminate between the group of companies that went bankrupt and those that did not.

The inefficiency of the bankruptcy framework in Croatia prior to 2015 in many cases resulted in bankruptcy proceedings being opened too late, after the companies had already ceased to operate. For that reason, the date of official opening of bankruptcy proceedings in Croatia is frequently of low analytical value. Therefore, the moment of failure was defined for companies in bankruptcy proceedings as the year in which the share of owner's equity in total assets dropped below 10% and the ratio of short-term assets to short-term liabilities fell below 1.

Based on estimated models, the following threshold values of indicators determining increased bankruptcy risk were defined:

- return on assets (ratio of profit to total assets) <5%,
- cash ratio (ratio of cash and cash equivalents to short-term liabilities) <0.1,
- indebtedness (ratio of long-term and short-term liabilities to total assets) >0.6,
- increase in sales revenue < –10% and
- increase in debt > 5%.

Figure 3 Operational problems have historically been the main cause of company default in Croatia



Notes: A company is considered to be in operational default when fixed costs exceed the contribution margin (difference between revenues and variable expenses) due to which it generates negative operating income (EBIT). A company is considered to be in financial default when interest expenses exceed earnings before interest, i.e. when interest coverage is below 1, leading to a company being unable to service its debt. A bank client is defined as a company whose exposure to banks constitutes at least 5% of liabilities.
Source: FINA.

Although by adjusting the distance-to-default indicator we can obtain a more precise indicator for Croatia, the indicators are still backward-looking and do not enable the differentiation between the main causes of company default: operational causes and financial causes. To analyse corporate vulnerability, it is necessary to distinguish between operational default, where a company is unable to pay fixed operating costs, and financial default, where a company is unable to service its debt. Historical data suggest that in Croatia, a relatively small number of companies defaulted solely due to financial causes. Most companies that generated a net loss in Croatia failed to settle their fixed costs, while the number of companies that generated net loss exclusively due to interest expenses is relatively small, even if only the group of companies that are bank clients is observed (Figure 3).

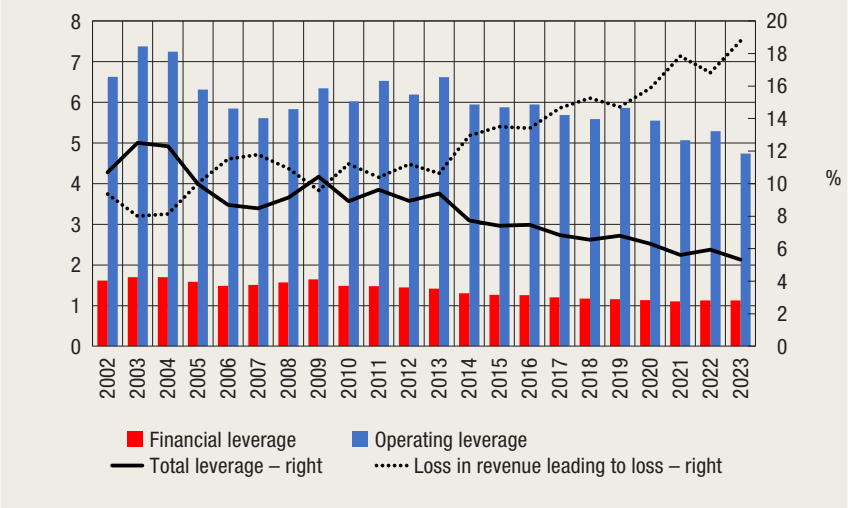
Corporate vulnerability under stress greatly depends on the extent to which companies rely on financial and operating leverage. By borrowing funds and investing in fixed capital, companies assume risk stemming from additional operating[8] and financial costs. Investments that increase debt and the level of fixed capital at the same time enable the increase of operational volume and, in turn, earnings. Therefore, companies that successfully use leverage usually grow faster and generate higher earnings. However, financing costs and fixed operating costs remain the same in absolute terms if operating performance declines. In such a scenario, these costs grow relative to income,

8 In this paper, fixed costs were approximated by labour costs and depreciated fixed tangible assets. In SUERF Policy Brief, No 256 (2020), Allinger and Huljak empirically confirm that these costs are indeed fixed based on a sample of Croatian companies.

increasing the risk of company default. Total leverage can thus be regarded as a multiplier of business and financial risk.

The tendency of corporate vulnerability to be reduced is closely linked to the decrease of financial and operating leverage[9]. Financial leverage declined gradually as firms reduced reliance on funding from financial institutions after the global financial crisis (Financial Stability No. 25, Box 5 The decrease of bank importance in corporate funding in Croatia). Operating leverage declined in parallel with financial leverage. The process took place simultaneously in various groups of companies. On the one hand, large and mature enterprises reached an operating level at which economy of scale enabled a relative decrease of fixed costs. On the other, smaller enterprises became more careful with regard to borrowing and expanding capacities after the global financial crisis to maintain a more flexible approach to operational organisation (Figure 4).

Figure 4 Despite a decline in total leverage, a drop in company revenue above 18% (2023) leads to loss
(components and degree of total leverage use)



Note: The median for companies is not shown because the median company does not have financial debt, i.e. financial leverage.
Source: FINA.

There are significant differences across firms in various activities with regard to total leverage, i.e., the sensitivity of business results to a decrease in business activity. At the end of 2022, companies

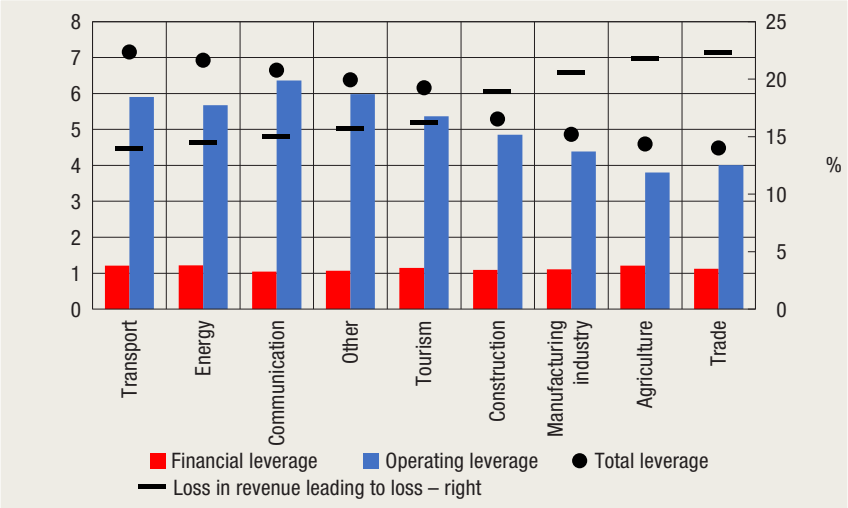
9 The degree of total leverage is the product of the degree of financial leverage and the degree of operating leverage, where financial leverage shows the ratio of earnings before and after interest, and operating leverage shows the ratio of earnings before and after fixed costs. Consequently, the degree of total leverage shows the sensitivity of a company to changes at operational level, i.e., the elasticity of earnings with regard to changes in revenue resulting from operating and financial leverage.

$$DTL = DFL \times DOL,\ DFL = EBIT/EBT,\ DOL = CM/EBIT \quad (1),$$

where: DTL is the degree of total leverage, DFL is the degree of financial leverage, DOL is the degree of operating leverage, EBIT is earnings before interest and tax, EBT is earnings before tax and CM is the contribution margin (revenue – variable costs).

engaged in transport and energy-related activities were most exposed to risk of default should there be any operational disruption. Specifically, a drop in revenue of 1% would result in a fall in earnings of 8.5%, i.e., companies engaged in those activities would record an aggregate loss if their revenue fell by around 12% and they failed to reduce operating capacities and de-leveraging vis-a-vis their creditors. In contrast, companies engaged in agriculture and trade should be able to withstand a drop in revenue as high as 22% (Figure 5).

Figure 5 Sensitivity of operating performance to changes in the level of business activity differs substantially across activities
(components and degree of total leverage use, 2023)



Note: Profitability is calculated as revenue over costs.
Source: FINA.

As reliance on debt, i.e., on financial leverage, declines and factors that may increase operating performance volatility intensify, operating leverage is becoming increasingly important for the analysis of corporate risk in Croatia. Events witnessed over the past few years such as the pandemic, supply chain bottlenecks and energy shocks pose considerable risks that are manifested in the unfavourable impact of operating leverage. Coupled with elevated geopolitical risks and potential consequences of exposure to climate physical and transition risks, the risk of operational disruption could become increasingly important for companies and reduce favourable effects on their vulnerability brought about by reduced financial leverage.

3 Recent macroprudential activities

In the first half of 2024, the mature phase of the financial cycle continued amid the strong expansion of domestic economy, as strong lending to households continued and residential real estate prices began to slow down gradually, albeit from a relatively high level, so that cyclical risks remained elevated. Consequently, in late June, a higher countercyclical capital buffer rate began to apply, as announced 12 months beforehand, which additionally boosted the resilience of the banking system. The regular annual review of the systemic materiality of third countries for the banking system of the Republic of Croatia was performed. Bosnia and Herzegovina and Montenegro were once again identified as material countries, with no cyclical risks being identified in those countries that would require a macroprudential response of the CNB in relation to domestic banks.

3.1 The announced countercyclical capital buffer rate to remain at 1.5%

The countercyclical capital buffer rate of 1.5%, which entered into force in late June, is currently considered adequate, having in mind the elevated level of cyclical vulnerabilities. A decline in the number of transactions continued in the residential real estate market. At the same time, the increase in residential real estate prices has been slowing down for several consecutive quarters, so that in the first quarter of 2024, these prices grew at an annual rate of 9.1%. In this phase of the financial cycle, the accelerated growth in household loans contributes the most to the level of cyclical risks, with the increase being particularly pronounced in general-purpose consumer lending. Total loans to households increased by 11.3% in annual terms (based on transactions) in May 2024, with particularly rapid growth in general-purpose cash loans (14.3%), while growth in housing loans remained stable (10.5%). Lending to non-financial corporations remained subdued until the end of May, with the annual rate of growth in these loans standing at 4.1%. Although the CNB assessed the countercyclical capital buffer rate of 1.5% as adequate with regard to the level of accumulated cyclical risks in the mature phase of the financial cycle, if the deepening of cyclical vulnerabilities continues, particularly in terms of the continued strong growth in cash loans in a favourable macrofinancial environment, a further increase of this buffer rate could be required.

3.2 Annual analysis of third-country materiality for the banking system of the Republic of Croatia

Bosnia and Herzegovina and Montenegro remain material third countries for the banking sector of the Republic of Croatia. This is confirmed by the results of the regular annual analysis carried out by the CNB in the second quarter of 2023. Material third countries have been identified based on three metrics: original exposure, defaulted exposure and risk-weighted exposure, as laid down by the European Systemic Risk Board[10]. The exposure of the domestic banking sector to these countries on a consolidated basis refers mainly to the exposure of three domestic other systemically important institutions through their subsidiaries.

In addition to identifying Bosnia and Herzegovina and Montenegro as material third countries, systemic risks of a cyclical nature were also analysed in these countries. The analysis shows low risks of excessive credit growth that would require the implementation of macroprudential measures for Croatian banks exposed to these markets. However, due to signs of the gradual strengthening of cyclical risks in both countries, it is necessary to monitor their development regularly to enable appropriate measures to be taken in a timely manner if need arises.

3.3 Implementation of macroprudential policy in other European Economic Area countries

Against the backdrop of an orderly contraction of the financial cycle in most EEA countries, in the second quarter of 2024, they mostly continued to apply the macroprudential instruments already in force with a view to maintaining the resilience of the financial system. At the same time, as earlier decisions on the increase of the countercyclical buffer rate entered into force, the share of releasable capital buffers increased in many countries, while a smaller number of countries also introduced new measures.

Italy introduced a sectoral systemic risk buffer for credit exposures and counterparty risk-weighted exposures to Italian residents for all Italian credit institutions. The target rate of 1% will be achieved by raising it in two stages: to 0.5% as of 31 December 2024 and to 1% as of 30 June 2025. The measure should strengthen the resilience of the banking

10 Decision of the European Systemic Risk Board (ESRB) on the assessment of materiality of third countries for the Union's banking system in relation to the recognition and setting of countercyclical buffer rates (ESRB/2015/3)

system in case of the materialisation of systemic risks, irrespective of their source. To ensure that all credit institutions operating in Italy operate under the same conditions, the ESRB will be asked to issue a recommendation on reciprocation.

Denmark activated a sectoral systemic risk buffer of 7% that will, as of 30 June, apply for all Danish credit institutions with regard to exposures to non-financial corporations operating in real estate and in the development of building projects in Denmark. Credit institutions in Denmark have substantial and growing exposures to companies operating in real estate, the activities of which are very sensitive to the risk of change in interest rates and other macrofinancial conditions. By introducing this instrument, the capitalisation of credit institutions is reinforced, which will enable them to better withstand possible losses related to exposures to the real estate sector. The Danish central bank requested the ESRB to recommend the reciprocation of the measure.

Greece introduced borrower-based measures for loans secured by immovable property, applicable as of 1 January 2025[11]. The measures consist of a cap on the debt service-to-income (DSTI) ratio of 50% for first-time buyers and 40% for other buyers and a cap on the loan-to-value (LTV) ratio at origination of 90% for first-time buyers and 80% for other buyers. A quota of allowed exemptions was adopted with the measure, so that banks may exempt 10% of the total number of new loans granted in each quarter from the application of the aforementioned caps. The measure does not apply to loans granted under national housing policy or green transition programmes.

11 Consequently, as of 1 January 2025, borrower-based measures will be actively applied in 26 out of 30 EEA countries.

Table 1 Overview of macroprudential measures in EEA member countries and the United Kingdom

	AT	BE	BG	CY	CZ	DE	DK	EE	ES	FI	FR	GR	HR	HU	IE	IS	IT	LI	LT	LU	LV	MT	NL	NO	PL	PT	RO	SE	SI	SK	UK
Capital and liquidity buffers																															
CCoB	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
CCyB rate applied (%)	0	0.5	2.0	1	1.75	0.75	2.50	1.5	0	0	1.0	0	1.5	0.5	1.5	2.5	0	1.0	0.5	0	0	0	2.0	2.5	0	0	1.0	2.0	0.5	1.5	2.0
CCyB rate pending (%)		1.0																			1.0								1.0		
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 10 June 2024.
Sources: ESRB, CNB and notifications from central banks and websites of central banks as at 10 June 2024.
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 2 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/bispap86l.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 1.5% as of 30 June 2024	CRD, Art. 136	1 Jan. 2016	Quarterly
		2015	Exemption of small and medium-sized investment firms from the countercyclical 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 2023, with corresponding O-SII buffer rates: 2.5% for Zagrebačka banka d.d., Zagreb, 2.0% for Privredna banka Zagreb d.d. and Erste&Steiermärkische Bank d.d., Rijeka, 1.5% for Raiffeisenbank Austria d.d., Zagreb and OTP banka Hrvatska d.d., Split, 1.0% for Hrvatska poštanska banka d.d., Zagreb, 0.25% for Addiko Bank 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

Notes: 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.
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 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
DTI	debt-to-income ratio
EEA	European Economic Area
EBA	European Banking Authority
EBITDA	earnings before interest, taxes, depreciation and amortisation
ECB	European Central Bank
ESRB	European Systemic Risk Board
EU	European Union
EUR	euro
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
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
m	million
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
LI	Liechtenstein
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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