ANNUAL FINANCIAL STABILITY REPORT

National Bank of Serbia

2022

ANNUAL FINANCIAL STABILITY REPORT

2022

NATIONAL BANK OF SERBIA
Belgrade, Kralja Petra 12
Tel: +381 11 3027-100

Belgrade, Nemanjina 17
Tel: +381 11 333-8000

www.nbs.rs
Number of copies: 60
ISSN 2217-6942

Introductory note

Financial stability means that the financial system – financial intermediaries, financial markets and financial infrastructures – is capable of ensuring efficient allocation of financial resources and fulfilling its key macroeconomic functions even if financial imbalances and shocks occur in the domestic and international environment.

Under conditions of financial stability, economic agents have confidence in the banking system and ready access to financial services, such as payments, lending, deposits and risk hedging.

Articles 3 and 4 of the Law on the National Bank of Serbia (RS Official Gazette, Nos 72/2003, 55/2004, 85/2005 – other law, 44/2010, 76/2012, 106/2012, 14/2015, 40/2015 – CC decision and 44/2018) mandate the National Bank of Serbia to contribute, without prejudice to its primary objective, to maintaining and strengthening of the stability of the financial system, and to determine and implement measures and activities to that effect. In striving to achieve this statutory objective, the National Bank of Serbia actively cooperates with other relevant state and international institutions.

As part of the above measures and activities, the National Bank of Serbia undertakes regular and comprehensive analyses of macroeconomic environment and functioning of key financial institutions, markets and infrastructure; identifies risks that pose a threat to the stability of the financial system; identifies trends that may increase the vulnerability of the financial system; and launches debate on new regulatory initiatives and their potential effect on the financial system and the real sector of the economy. The National Bank acts both preventively and correctively by changing the financial regulatory framework. If necessary, the National Bank also manages the consequences of external shocks and other crisis situations, lessening potentially negative effects on financial stability.

The *Financial Stability Report* aims to provide information about the situation in the financial system, identify potential risks to financial stability and raise awareness of economic agents to those risks. We expect the *Report* to contribute to improved transparency and strengthened confidence in the domestic financial system, which will underpin its stability and support a stable and sustainable economic growth.

The analyses in the *Report* were prepared by the Financial Stability Department. The *Report* uses data available as at end-2022.

The *Financial Stability Report* was adopted by the National Bank of Serbia's Executive Board in its meeting of 8 June 2023. Earlier issues of the *Report* are available on the National Bank of Serbia's website (http://www.nbs.rs).

Executive Board of the National Bank of Serbia:

Jorgovanka Tabaković, Governor
Željko Jović, Vice Governor
Ana Ivković, Vice Governor
Dragana Stanić, Vice Governor
Nikola Dragašević, Vice Governor

ABBREVIATIONS

ARIMA – Autoregressive Integrated Moving Average
ASB - Association of Serbian banks
BIS – Bank for International Settlements
bn – billion
bp – basis point
CAR – Capital Adequacy Ratio
CESEE – Central, Eastern and Southeastern Europe
DvP – Delivery vs. Payment
EBA – European Banking Authority
ECB – European Central Bank
EMBI – Emerging Markets Bond Index
EU – European Union
FDI – foreign direct investment
Fed – Federal Reserves
GDP – gross domestic product
GSFR – Global Financial Stability Report
IFEM – Interbank Foreign Exchange Market
IMF – International Monetary Fund
lhs – left hand scale
IPS – Instant Payments Serbia
LtD – Loan-to-Deposit ratio
LtV – Loan-to-Value ratio
mn – million
NMIC – National Mortgage Insurance Corporation
NPL – non-performing loan
PD – probability of default
pp – percentage point
Q – quarter
rhs – right hand scale
RTGS – Real Time Gross Settlement
s-a – seasonally adjusted
VAT – value added tax
VPFs – voluntary pension funds
y-o-y – year-on-year

Other generally accepted abbreviations are not cited.

External risks:	Mitigating measures
– extended duration of inflation and inflationary pressures on a global scale, reflecting a rise in the prices of energy and primary agricultural commodities or entrenched core inflation; – continued monetary tightening of leading central banks due to more persistent than expected global inflationary pressures and further tightening of financial conditions; – uncertainty regarding the pace of recovery of the global economy, possibility of a sudden global slowdown of economic growth and the euro area sliding into recession; – further heightening of global uncertainties and the Ukraine conflict, and deepening of geoeconomic fragmentation; – uncertainty prevailing in the international financial market, increased investors' risk aversion and reduced capital flows toward emerging economies; – increased risk perception among global banking groups and aggravated access to sources of financing; – a potential decrease in banking sector solvency and difficulties in operation of banks in the euro area due to possible deterioration of asset quality and a higher cost of financing; – a greater number of cyber attacks that can undermine trust in financial system stability.	– monetary policy adjustments depending on geopolitical developments and movement of key inflation factors, while taking into account the effects of past monetary tightening aimed at ensuring price and financial stability, and contributing to sustainable economic growth; – maintaining relative exchange rate stability; – economic policy support to vulnerable sectors in order to overcome the consequences of a multidimensional crisis, while coordinating monetary and fiscal policy measures; – maintaining a globally diversified economic structure and finding alternative markets for energy imports, commodity exports and sources of financing; – continuing to ensure relatively favourable terms of borrowing from international financial organisations; – cooperation with international financial institutions and supervisors of parent banking groups; – adequate conduct of macroprudential policy, by applying relevant tools and maintaining optimum capital and liquidity buffers; – ensuring additional liquidity by central banks by concluding swap and repo transactions; – preserving the banks' domestic deposit base and continuing to ensure the coverage of loans by local deposits; – continuous improvement of information systems of all financial market participants.

Internal risks:	Mitigating measures
– prolonged duration of inflationary pressures and an impact on production costs and the labour market;	– tightening of monetary conditions through lifting of the key policy rate and standing facilities rates; – maintaining relative exchange rate stability; – defining economic packages and other measures supporting the most vulnerable segments of the household and corporate sectors, while taking into account the coordination of fiscal and monetary policy; – implementing measures to facilitate the financial position and access to financing for borrowers in case of need;
– a high level of euroisation of the domestic financial system;	– continued implementation of measures and activities envisaged by the Strategy of Dinarisation of the Serbian Financial System; – implementation of monetary, microprudential and macroprudential policy regulations and measures, to encourage lending in the local currency; – continuous promotion of higher profitability of dinar compared to FX savings and financial instruments in the local currency; – continuous promotion of FX hedging instruments; – expanding the volume of dinar government securities issues in the domestic market, in order to reduce currency risk in public debt management; – further lengthening of the maturity of issued dinar government securities in order to extend the dinar yield curve;
– deceleration in lending and a potential rise in new NPLs due to the tightening of financial conditions and banks' credit standards;	– relaxing the applied macroprudential and microprudential tools, in order to facilitate lending to the economy and boost credit demand; – enhanced monitoring of banks' asset quality;

Internal risks:	Mitigating measures
	– encouraging banks to additionally improve credit risk management, as the most important risk in Serbia's banking sector; – further strengthening of the banks' capital base; – adopting targeted measures to support the most vulnerable segments of household and corporate sectors;
– uncertainty regarding the movement of prices of residential and commercial real estate.	– enhanced monitoring and analysis of real estate market trends, along with improved collection and distribution of data from the mortgage real estate market; – monitoring credit risk in the banking sector through adequate valuation of real estate serving as collateral; – timely use of prudential tools targeting borrowers or banks' capital aimed at increasing banks' resilience to risks and containing leverage.

Contents

Overview

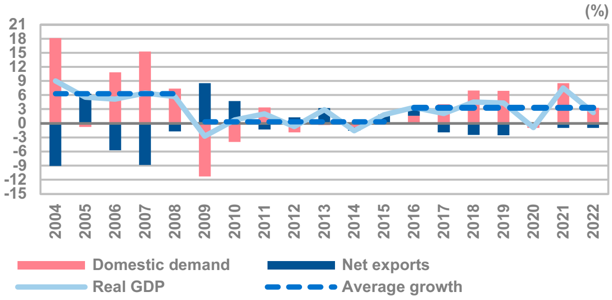
Mounting geopolitical tensions from early 2022 and the outbreak of the Ukraine conflict caused much instability in the international commodity and financial markets. As a result, global economic growth slackened to 3.4% in 2022. Growth slowed in both advanced and emerging economies (from 5.4% in 2021 to 2.7% in 2022, and from 6.9% in 2021 to 4.0% in 2022, respectively). Economic activity in Europe is expected to decelerate further in 2023 reflecting elevated uncertainty over the consequences of the Ukraine conflict, the energy crisis, more stringent financing conditions and the global economic slackening. The growth rate in the euro area (0.8%) is expected to be lower than in the emerging and developing European economies (1.2%). In July 2022, the ECB embarked on a cycle of interest rate hikes, raising the main refinancing rate by a total of seven times (375 bp) to 3.75% in May 2023. Rates on lending and deposit facilities were lifted to 4.00% and 3.25%, respectively. The ECB began normalising its asset purchases in March 2023 by downsizing its balance sheet at a monthly pace of EUR 15 bn, an amount to be increased from July 2023. The Fed began tightening its monetary policy in March 2022. By May 2023, it raised its Fed funds rate ten times in a row, by a total of 500 basis points, to the range of 5.00–5.25%. The Fed explained that the continuation of monetary policy tightening was mandated by further strengthening of labour market indicators, with inflation remaining elevated, reflecting the mismatch between supply and demand, and noted that the events in Ukraine have further spurred inflation and put a burden on global economic activity.

In 2022, international developments were marked by mounting geopolitical tensions, the escalation of the Ukraine conflict, rising inflation worldwide, monetary policy tightening by central banks and poorer global growth prospects. Global economy slowed in 2022 to 3.4% amid rising global inflation, more stringent monetary and financial conditions, fewer fiscal incentives after the improvement of the epidemiological situation caused by the coronavirus, frequent disruptions in energy supply to Europe and heightened uncertainty in global commodity and financial markets. The International Monetary Fund places global growth at 2.8% in 2023 and expects it to pick up moderately to 3.0% in 2024.

Serbia's real GDP growth in 2022 was 2.3%, down from 7.5% in 2021. This slowdown reflected subdued external demand, last year's high base and heightened global cost-push pressures amid mounting geopolitical tensions and the outbreak of the Ukraine conflict, as well as the drought which resulted in a poorer agricultural season at home. Economic growth in 2022 reflected growth in industry and service sectors. The contribution of construction and agricultural production was negative.

In 2022, Serbia's real GDP growth measured 2.3%, and was guided by growth in industry and service sectors. Growth slackened in 2022 relative to 2021 as a result of subdued external demand and heightened global cost-push pressures caused by the Ukraine conflict, as well as a poorer agricultural season due to the drought. Average annual inflation in 2022 was 11.9% and average core inflation was 7.1%.

Real GDP growth – demand contributions



Sources: NBS and SORS.

Average annual inflation in 2022 measured 11.9%, while y-o-y inflation in December came at 15.1%. Even in the face of the combined effect of many negative factors, including primarily the consequences of the energy crisis and the drought which hit a large part of Europe, inflation in Serbia was lower than in its regional peers. Around two-thirds of the contribution to y-o-y inflation came from rising food and energy prices. Core inflation moved well below headline inflation throughout the year, averaging 7.1% in 2022 and measuring 10.1% y-o-y in December. This indicates that inflation in Serbia is largely driven by supply-side factors, on which monetary policy measures have a negligible or limited effect. The NBS responded to heightened inflationary pressures by tightening its monetary policy. Since October 2021, it began tightening monetary conditions by gradually and continuously lifting the weighted average interest rate at reverse repo auctions. As of April 2022, it began the cycle of key policy rate hikes. Until end-2022, this rate was lifted by a total of 4 pp to 5% at year-end. At end-2022, deposit and lending facility rates measured 4.0% and 6.0%, respectively.

In the face of escalating geopolitical tensions and mounting inflation worldwide, the NBS has preserved the relative stability of the dinar exchange rate against the euro. The NBS introduced an option for banks to enter into bilateral transactions of FX (euro) swap sale and purchase in exchange for dinars. In addition, bilateral repo transactions with the NBS were introduced to support banks in managing their liquidity. Monetary policy tightening pushed up interest rates in the domestic financial market.

In 2022, the relative stability of the dinar exchange rate against the euro was preserved, thanks to the NBS's interventions in the interbank foreign exchange market, where the NBS sold EUR 2.27 bn, net, in the first four months of the year, and bought EUR 3.27 bn, net, in the remainder of the year. By buying EUR 1 bn, net, the NBS further boosted FX reserves. In March 2022, the 25-year government bond in euros was issued for the first time, as the longest-maturity bond issued so far in the domestic market. Thanks to a credible economic policy framework, demonstrated banking sector resilience and preserved overall macroeconomic stability, Fitch Ratings and Standard & Poor's affirmed Serbia's credit rating for long-term local and foreign currency borrowing at BB+, one notch below investment-grade.

In 2022 as well, fiscal policy measures acted to mitigate the negative economic consequences of intensified global uncertainties. The share of central government public debt in GDP dropped from 56.5% at end-2021 to 55.1% at end-2022, while the share of external debt in GDP climbed to 69.4%. The fiscal deficit was lower than in 2021 and measured 3.2% of GDP. The current account deficit was fully covered by FDIs for the eighth year in a row.

In 2022, measures were taken in the Republic of Serbia to prevent major shocks from energy and food prices. These included gas price subsidies, temporary reduction of excises on petroleum products and caps on the prices of basic foodstuffs. The general government deficit measured RSD 224.8 bn or 3.2% of GDP in 2022. This is well below its level in 2021 (4.1% of GDP). The share of central government debt in GDP measured 55.1% at end-2022, down by 1.4 pp from end-2021. End-2022 external debt was EUR 41.9 bn or 69.4% of GDP. The current account deficit in 2022 was EUR 4.1 bn or 6.9% of GDP. The current account deficit was fully covered by FDIs for the eighth successive year – coverage of 104.0% at end-2022, supporting the sustainability of the country's external position. In late 2022, the Republic of Serbia concluded a new stand-by arrangement with the International Monetary Fund, which will further support efforts to preserve macroeconomic and fiscal stability.

In 2022, the NBS FX reserves rose by EUR 3.0 bn to EUR 19.4 bn in gross and EUR 15.4 bn in net terms at end-December 2022, further reinforcing the resilience of the domestic system to external shocks. Different stress scenarios have confirmed that, even in the case of extreme shocks, the level of FX reserves at end-2022 was more than adequate to safeguard financial stability, settle government obligations to foreign creditors, and finance potentially more significant balance of payment imbalances.

Gross FX reserves reached a new end-of-year high of EUR 19.4 bn at end-December 2022, having increased by EUR 3.0 bn relative to end-2021. Net FX reserves measured EUR 15.4 bn. Different stress scenarios have shown that FX reserves are sufficiently high to protect the domestic financial system even in the case of extreme shocks.

Excluding the exchange rate effect, corporate loans gained 7.1% in 2022. The share of dinar receivables in total corporate receivables shrank by 4.6 pp from 2021 to 19.4%. This was due to the maturing of guarantee scheme loans which were mostly approved in dinars. The rise in receivables was supported primarily by the electricity, gas, steam and air conditioning supply sector, as well as by the mining, manufacturing and water management sector. By maturity, long-term receivables prevail, accounting for 81.7% and indicating a low refinancing risk. The share of NPLs in total corporate loans fell to a new all-time low of 2.1% at the end of the year.

After posting dynamic, double-digit growth in H1, corporate lending slowed y-o-y in H2 2022. Even though interest rates increased in 2022, the share of NPLs in total loans to the corporate sector dipped further, to an all-time low recorded late in the year.

Despite global uncertainty and weaker global growth, positive trends prevailed in the labour market. The unemployment rate in Q4 2022 dipped by 0.6 pp relative to the same period last year, to 9.2%. The employment rate in Q4 2022 was 50.1%, up by 0.1 pp relative to Q4 2021. Gross and net wages rose by 13.8% in nominal and 1.7% in real terms in 2022 relative to 2021. The outbreak of the Ukraine conflict led to a temporary rise in households' demand for foreign cash from end-February until mid-April 2023, inducing a change in the currency composition of savings. After dropping temporarily immediately after the crisis broke out, dinar savings rallied steadily from June onwards, posting extremely dynamic growth in the final months of 2022. At year-end, dinar savings measured RSD 95.7 bn, down by RSD 8.0 bn from end-2021. At end-2022, FX savings reached EUR 12.8 bn. This is a record-high level, up by EUR 0.5 bn relative to end-2021. Total household receivables gained 6.1% in nominal terms at end-2022 relative to 2021. Some of the measures taken by the NBS to help households service their current obligations and ease access to new sources of financing continued to be applied in 2022 as well. In addition, new regulations were adopted to preserve households' living standard. Timely and adequate measures of the NBS and the Serbian Government helped avoid major negative effects of the

Key labour market indicators improved further in 2022, despite heightened global uncertainty and economic growth slowdown. FX savings reached a record-high of EUR 12.8 bn at end-2022. To help households service their current liabilities and ease access to financing, the NBS extended the existing measures and adopted a new set of regulations to preserve households' living standard.

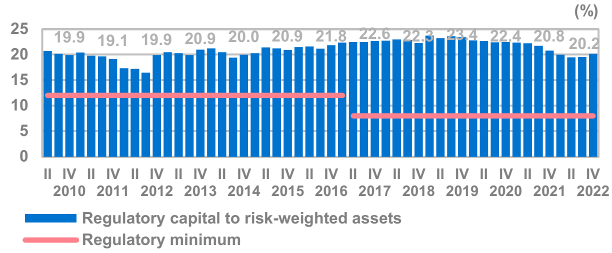
coronavirus pandemic, intensified geopolitical tensions and rising interest rates on households' creditworthiness. As a result, the share of NPLs in total gross household loans decreased to 3.9% in December 2022.

Both prices and trade in the real estate market increased in 2022. Since November 2022, the Republic Geodetic Authority has been publishing the housing price index, which indicates a trend of growth in flat prices. Lower total value of construction works and the decline in the number of issued construction permits may point to a potential decline in real estate market supply going forward.

Based on the data of the Republic Geodetic Authority, the number of total sales/purchases increased in 2022. Of this, the purchase of 11% of all traded real estate properties and 26% of all traded flats was financed from loans. The housing price index for the Republic of Serbia was 148.79 in Q4, up by 14.9% relative to the same period last year. In H2 2022, demand for housing loans subsided, as indicated by the results of the bank lending survey. According to banks, rising prices of housing properties and higher interest rates led to diminished household demand for loans in 2022. On the supply side, household credit standards were tightened from Q2 2022, due primarily to higher costs of sources of lending, reduced banking sector competition and uncertainty regarding the general economic situation, which led to diminished risk propensity.

Serbia's banking sector, accounting for around 91% of financial sector assets, was stable in 2022, thanks to adequate capitalisation, high liquidity and profitability.

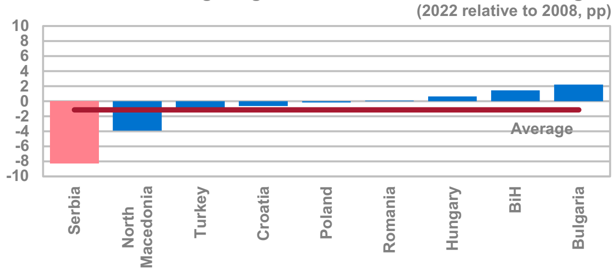
Banking sector capital adequacy
(%)



Source: NBS.

The long-term trend of decline in the share of NPLs continued in 2022, which means that higher costs of loan repayment did not reduce the quality of banks' assets and that the NBS's measures were timely and adequate, acting to preserve financial stability even in the period of the multidimensional crisis we have faced in the past three years. Domestic deposits were banks' dominant source of funding.

Change in gross NPL ratios, countries of the region
(2022 relative to 2008, pp)



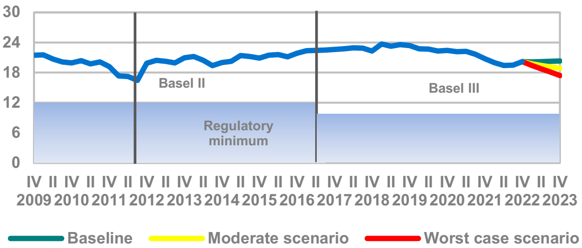
Sources: NBS and IMF - GFSR.

With a capital adequacy ratio of 20.2% at end-2022, Serbia's banking sector capitalisation was above the regional average. The average monthly liquidity ratio of the banking sector was 2.2, well above the prescribed minimum (1.0). Serbia's banking sector posted a positive financial result in 2022: ROA equalled 1.9% and ROE 13.9%. The share of NPLs in total loans continued down to 3.0% at end-2022, a new all-time low. The fact that the NPL share declined in the conditions of a general rise in interest rates indicates that the NBS's measures were well-timed and adequate and that they prevented major negative effects on the corporate and household sectors and on banking sector asset quality, i.e. that financial stability has been preserved even in the period of the multidimensional crisis we have faced in the past three years. Lending activity at home expanded in 2022. At end-2022, total domestic loans, excluding the exchange rate effect, increased by 7.3% y-o-y. The largest contribution to y-o-y growth in total domestic loans continued to come from corporate loans, followed by household loans. The results of the bank lending survey suggest that banks tightened their corporate and household credit standards. The strengthening of the domestic deposit base, reflected in the amount of deposits which was more than enough to cover the amount of loans in 2022 as well, enabled banks to decrease their dependence on other sources of funding, such as funding by their parent banks, thereby reducing their exposure to risks emanating from the international environment.

In 2022, Serbia's banking sector remained resilient, capitalised and highly liquid. The banking sector CAR meets all of the prescribed capital adequacy regulatory minimums and all of the requirements for the coverage of capital buffers. According to the results of macroprudential solvency stress-testing, the banking sector CAR would remain above the regulatory minimum even in the worst-case scenario. Also, the banking sector would remain liquid even in the conditions of assumed extreme deposit withdrawal. Based on banking system analysis, the results of network modelling show that there is no significant systemic risk component in Serbia's banking sector. The results of macroprudential stress-tests confirm that the banking sector has sufficient capacity to absorb the consequences of the risks to which it could be exposed even in case of extremely adverse developments.

The results of macroprudential stress tests confirm that Serbia's banking sector as a whole remains highly resilient to the assumed shocks, including the most severe ones, and that it has sufficient capacity to absorb the consequences of the risks to which it could be exposed. Also, the network structure indicates a low and stable systemic risk component, i.e. the system's high resilience in case of individual shocks.

CAR by stress scenario*
(%)

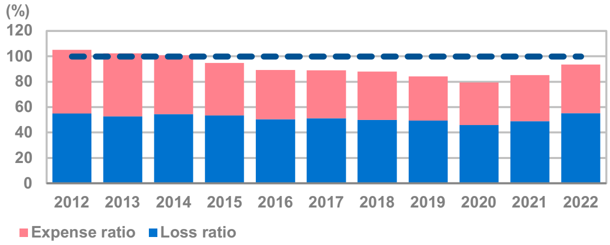


* NBS estimate.
Source: NBS.

The insurance sector ended the year 2022 with a positive net result after tax of RSD 8.2 bn. The end-2022 value of the combined ratio of non-life insurance undertakings increased relative to 2021 to 93.4%, which still indicates a premium level adequate for meeting obligations under insurance contracts. A positive trend was recorded in total premium, which equalled RSD 133.9 bn in 2022, up by around 12.2% from 2021. The Serbian insurance sector is adequately capitalised given the risks to which it is exposed. The main capital adequacy ratio, i.e. the ratio of available to required solvency margin, in 2022 was 206.42% for non-life insurance and 210.63% for life insurance. In the conditions of rising global uncertainty in 2022, the role of the insurance sector in protecting insurance beneficiaries and ensuring continuity of insurance service provision has become even more important. To that end, the NBS timely took a set of well-calibrated measures to prevent, mitigate and remove the negative effects of the different crises we have faced in the past three years with a view to protecting the rights and interests of insurance beneficiaries and preserving operational stability of all players in the insurance market.

The global challenges did not have a major impact on the Serbian insurance sector, which continued to post positive results and remained adequately capitalised and profitable. Total premium went up, with non-life insurance still holding a dominant share.

Combined ratio in insurance
(%)



Source: NBS.

Net assets of VPFs measured RSD 48.2 bn at end-2022, down by 1.7% relative to end-2021. The value of net assets of funds declined in 2022, as a negative return on investment was recorded for the first time. The FONDex index measured 3,063.74 points at end-2022. The annual return on FONDex, which is the weighted average return of all funds, measured -2.2% in 2022, while the return since the start of operation of VPFs was 7.2% at end-2022.

Marked global uncertainty greatly affected the operations of voluntary pension funds, as the general rise in interest rates reduced the market value of long-term bonds in which a large part of funds' assets is invested. Still, it should be noted that this is a one-off effect.

Balance sheet assets of financial lessors continued to grow. At end-2022, balance sheet assets stood at RSD 145.0 bn, up by 17.4% from end-2021. The share of NPLs in total receivables decreased further relative to 2021. At end-2022, gross past due outstanding receivables (RSD

The financial leasing sector continued to post positive results in 2022. The sector's balance sheet assets increased further and their quality improved thanks to an additional decline in NPLs.

2.8 bn) made up 2.1% of gross financial lease receivables. As in earlier years, the structure of lessees remained dominated by non-financial companies, accounting for 82.9% of total investments. Since 2021, the financing of passenger vehicles has been dominant in the composition of investments by lease asset. This share increased further in 2022 from 39.4% in 2021 to 40.5% in 2022.

In 2022, payment services turnover continued up. Interest in the provision of cashless payment services increased substantially, particularly in the domain of online payments. In December 2022, the NBS issued the first two licences to provide virtual currency services.

At end-2022, 14 payment institutions were licenced to provide payment services by the NBS and there were three e-money institutions. According to data of all payment services providers for 2022, there was an increase in the number of almost all payment services provided, particularly of cashless payments. Relative to 2021, the total number of e-banking users increased by 8.5% and that of m-banking users – by 20.6%. The increase in the relative significance of m-banking is reflected in the y-o-y increase in the number of transactions by natural and legal persons and entrepreneurs by 26.0%, while the number of transactions of natural and legal persons and entrepreneurs via e-banking dipped slightly, by 0.4% y-o-y. Pursuant to the Law on Digital Assets applied from end-June 2021, in December 2022 the NBS issued the first two licences to provide virtual currency services. In this way, it has become possible in the Republic of Serbia to use virtual currency services covered by these licences through local licensed companies, which are subject to comprehensive supervision by the NBS and are fully compliant with international standards.

The implementation of microprudential and macroprudential policy measures continued in 2022 to contain the risk in the financial system, which has helped mitigate the adverse impact of the multidimensional crisis we have faced in the past three years.

In 2022, the NBS continued to adopt measures aimed at mitigating the consequences of different crises we have faced in the past three years, with a view to safeguarding and strenghtening financial stability. The NBS coordinated its timely response with the Government to support households and facilitate corporate operations amid disrupted global supply chains and thus soften the pass-through of high global primary commodity prices to the domestic market. In order to ensure permanent protection of the households' living standard in the segment of payment services needed for everyday life activities, in August 2022 the NBS adopted a decision capping the price of the payment account with basic features to RSD 150 and specifying the mandatory services under this account. In addition, it was prescribed that the NBS should be notified in due time of any planned changes to the banks' fees, which enables it to timely identify whether banks' conduct is adequate and take appropriate activities. Given the strategic importance of agricultural production for households and corporates, in October 2022 the NBS adopted regulations allowing the rescheduling of current obligations for banks' and financial lessors' borrowers from the agricultural sector.

In December 2022, banks were allowed to restructure receivables under consumer, cash or similar loans from natural persons facing financial difficulties, by extending the loan maturity by three years relative to the current regulatory solution. The implementation of the measures aimed at facilitating repayment of household housing loans was extended, which means that during the entire 2023 banks will be able to offer facilities to borrowers by extending the repayment term for housing loans by a maximum of five years. In the conditions of rising interest rates, the above measures could lessen the pressure on users of loans with variable interest rates and prevent a rise in NPLs. In June 2022, the NBS also adopted a temporary measure giving banks the opportunity to moderate the negative effect of changes in the price of securities on capital. All these decisions and measures were taken in a timely manner, preserving adequate capitalisation and high liquidity of the baking sector, and facilitating loan repayment and access to sources of funding for households and corporates. Thanks to this, even in the conditions of elevated global uncertainty, the NBS has managed to preserve and further reinforce financial system stability.

The composite systemic stress indicator and other financial soundness indicators signal that financial stability has been preserved despite numerous challenges in the past year.

In 2022, the systemic stress indicator points to a period of low risk, followed by a low and stable systemic component, which confirms the resilience and preserved stability of the financial system as a whole. This indicator recorded somewhat higher values between May and October 2022, after the outbreak of the Ukraine conflict and the mounting of geopolitical tensions, but declined thereafter, until the end of 2022.

I International and domestic environment

The strengthening of geopolitical tensions since the beginning of 2022 and the outbreak of the conflict in Ukraine caused considerable instability in the international commodity and financial markets, resulting in a weaker outlook for global economic growth and an increase in global inflation. Central banks reacted to rising inflationary pressures by tightening their monetary policies, which in turn led to stricter global financial conditions. Despite the shocks emanating from the international environment, Serbia managed to preserve and strengthen its macroeconomic and financial stability. In 2022, real GDP growth amounted to 2.3%, a record inflow of FDI was achieved (EUR 4.4 bn) and the upward trend in employment and wages in the private sector continued. Serbia's risk premium on debt in dollars stood at 270 bp at end-December 2022, and at 389 bp on debt in euros. At the level of 2022, the average annual inflation was 11.9%, and the average core inflation 7.1%. The preserved relative stability of the exchange rate in highly uncertain and unpredictable global circumstances contributed to the lower level of core inflation which the NBS can impact to a greater extent. At end-2022, gross FX reserves reached the then record level of EUR 19.4 bn (net EUR 15.4 bn), which is EUR 3.0 bn more than at end-December 2021. Thanks to preserved macroeconomic stability, in 2022 the rating agencies kept Serbia's credit rating at a notch from investment grade.

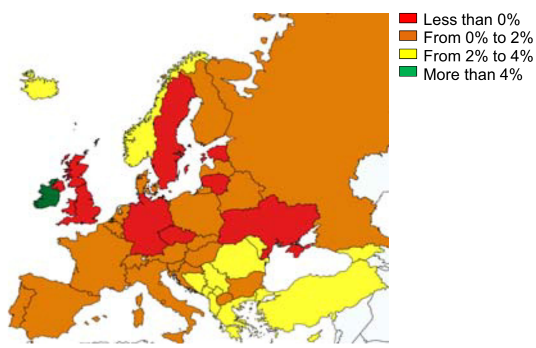
I.1 International environment

Movements in the international environment in 2022 were characterised by amplified geopolitical tensions and the escalation of the conflict in Ukraine, rising global inflation and an increase in the degree of restrictiveness of central banks' monetary policies, as well as the less favourable global growth prospects. Still, it is estimated that a recovery will follow in H2, under the impact of the pick-up in China's economic growth, gradual balancing of the energy market in Europe, alleviation of global uncertainty, strengthening of external demand and further resolution of halts in global supply chains.

The rise in global inflation and tightening of monetary and financial conditions, a reduction of fiscal incentives in the wake of improved health situation caused by the coronavirus and frequent disruptions in energy supply in Europe, as well as the uncertainty due to the consequences of the conflict in Ukraine and intensified geopolitical tensions, dragged the world economy to a slowdown in 2022 – to 3.4%. Growth decelerated both in advanced (from 5.4% in 2021 to 2.7% in 2022) and in emerging countries (from 6.9% in 2021 to 4.0% in 2022). A global growth rate of 2.8% is forecast for 2023, and a moderate pick-up in economic activity and a 3.0% growth rate are forecast for 2024.[1]

Growth in the euro area, with which we have the most significant financial and trade ties, slowed down in 2022 to 3.5%[2] (5.4% in 2021). According to the IMF,[3] the highest growth rates in the euro area in 2022 were recorded by Ireland (12.0%), Malta (6.9%), Portugal (6.7%) and Iceland (6.4%). Growth of the largest euro area economies slowed down compared to 2021, with

Chart I.1.1 **GDP growth projections for 2023 − European countries**
(%)



Source: IMF.

[1] IMF WEO, April 2023.

[2] According to Eurostat's estimate.

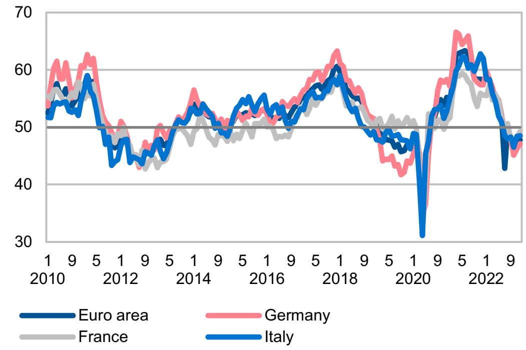
[3] IMF WEO, April 2023.

Germany achieving a growth rate of 1.8%, France 2.6%, and Italy 3.7%. The conflict in Ukraine and sanctions imposed on Russia resulted in a fall in Russia's economic activity (-2.1%) and in Ukraine's (-30.3%).

According to the IMF data from April 2023, emerging and developing European countries, which include countries participating in the conflict, as well as their close neighbours, achieved a lower growth rate (0.8%) than euro area countries. On the other hand, the highest growth rates among emerging and developing European countries were recorded in Montenegro (6.4%), Turkey (5.6%), Poland (4.9%), Hungary (4.9%) and Romania (4.8%). Of countries in the Balkan region,[4] the highest GDP growth rates were recorded in Montenegro (6.4%), Croatia (6.3%) and Greece (5.9%).

According to the IMF's assessment from April 2023, it seems that the global economy is ready for a gradual recovery from the strong consequences of the pandemic and the conflict between Russia and Ukraine. China is gradually recovering after reopening its economy. Disruptions in supply chains are being resolved, while disruptions in energy and food markets caused by the war are calming down. At the same time, monetary policy tightening by most central banks should result in inflation returning to its targets. Global inflation will recede, albeit more slowly than expected, from 8.7% in 2022 to 7.0% this year and 4.9% in 2024. Notably, emerging and developing countries are thriving, with a growth rate (Q4 vs. Q4) of 2.8% in 2022 to 4.5% this year. The slowdown in economic growth is present in advanced countries, especially in the euro area, where GDP growth (also Q4 vs. Q4) is expected to fall to 0.7% this year, before rebounding to 1.8% in 2024. However, global uncertainty is on the rise, as shown by developments in the US banking sector in the first half of 2023. Inflation is much more persistent than expected a few months ago. Although global inflation has retreated, largely reflecting more moderate cost-push pressures in energy and food prices, core inflation has not yet peaked in many countries. Still, global core inflation is expected to decline to 5.1% this year. Economic activity is also showing signs of resilience, as labour markets continue to post positive performance in the majority of advanced countries. In the tightening phase of the monetary policy cycle, stronger signs of reduced production activity and employment would be expected. Instead, estimates of output and inflation have been revised upward in the past two quarters, indicating stronger-than-expected demand,

Chart I.1.2 **Activity indicator* (manufacturing)**
(index points)



* Purchasing Managers Index (PMI).
Source: Markit Group.

which may call for further tightening of monetary policy or a longer period of monetary restrictiveness.

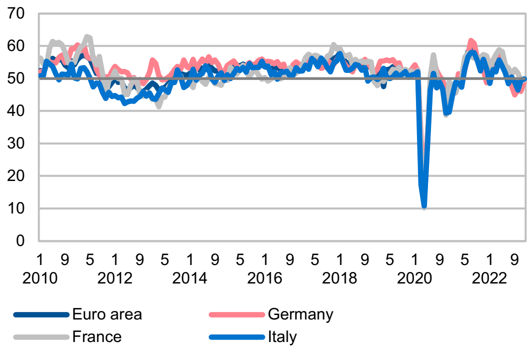
Europe is expected to see a slowdown in economic activity in 2023 amid elevated uncertainty over the consequences of the conflict in Ukraine, the energy crisis, stricter financing conditions and the global economic slowdown, with a lower growth rate expected in the euro area (0.8%) than in emerging and developing European countries (1.2%) (Chart I.1.1).

According to the European Commission's forecast from May 2023, the euro area economic growth is estimated at 1.1% in 2023, after which it is expected to accelerate to 1.6% in 2024 (1.0% in 2023 and 1.7% in 2024 for the EU). The household and corporate sectors showed high resilience to numerous challenges during 2022. Despite the energy shock and record high inflation that followed, the slowdown in Q3 was milder than previously estimated, and the EU economy stagnated in Q4. Labour markets remained tight in most European countries, given low unemployment rates and growth in nominal wages. The decrease in the inflation rate at the beginning of 2023 that followed its maximum level in October 2022, confirms that, as previously predicted, the peak of inflation has most likely already been reached. Also, economic sentiment continued to improve, indicating that the economy will avoid contraction in Q1 2023 as well.

Observed at the annual level, the US real GDP growth in 2022 stood at 2.1%, having slowed down significantly compared to 2021 when a 5.9% increase was recorded. In April 2023, the IMF estimated a further slowdown in

[4] Albania, Bosnia and Herzegovina, Bulgaria, Greece, North Macedonia, Serbia, Croatia and Montenegro.

Chart I.1.3 **Activity indicator* (services)**
(index points)



* Purchasing Managers Index (PMI).
Source: Markit Group.

economic activity, with economic growth of 1.6% projected for this year and 1.1% for 2024.

In December 2022, the euro area's PMI Manufacturing measured 47.8 points, which is less than at end-2021 (58.0 points). At end-2022 the indicator recorded the following values in leading euro area countries: Germany 47.1 points, Italy 48.5 points and France 49.2 points. During 2022, the PMI Manufacturing in the euro area dropped to its lowest level in July, measuring 42.8 points (Chart I.1.2).

In December 2022, the PMI Services indicator equalled 49.8 points and was lower than at end-2021 (53.1 points). The highest PMI Services value at end-2022 was recorded by Italy (49.9 points), and the lowest by Germany (49.2 points) (Chart I.1.3). The PMI Services dropped to its lowest level in September, measuring 45.0 points in Germany, while its lowest level in the euro area was recorded in November (48.5 points).

Since April 2022, the euro area unemployment rate decreased to 6.7% and remained unchanged until end-2022. This is lower than in December 2021, when it stood at 7%, and its lowest level since it was first statistically monitored. The unemployment rate in the EU in December 2022 was 6.1%, which is less than at end-2021, when it equalled 6.4%. The lowest unemployment rate in December 2022 was recorded in the Czech Republic (2.3%), Poland and Malta (2.9%) and Germany (3.0%), and the highest in Spain (13.0%) and Greece (11.8%).[5] As the labour supply and demand gap is still pronounced, the ECB estimates that the increase in wages should contribute to preserving consumption and prevent a major slump in purchasing power in the euro area. However, the anticipated weakening of economic activity is likely to slow the pace of job creation and employment.

The US unemployment rate subsided to 3.5% in December 2022, from 3.9% in December 2021.[6] According to the Fed, the tight conditions on the labour market in the USA were eased slightly in October and November, but already in December they returned to the September level, as evidenced by the same unemployment, employment and participation rates as in September (3.5%, 60.1% and 62.3%, respectively). In addition, average nominal wages in the private sector continued to rise.

The global price of oil went up during 2022 and averaged USD 99.8 per barrel, which is 42% more than in the previous year. In H1 2022, oil prices trended up due to elevated geopolitical tensions and aggravated supply of oil and other energy products, primarily from Russia. The price of oil reached record levels in the first half of June, after which it began to decline amid fears over the world economy possibly falling into recession and the slowdown of economic activity in China. In H2 2022, the price of oil had a downward trend due to the unfavourable global economic outlook, Russia's reorientation to Asian markets and the increase in the level of US oil inventories. At end-2022, the price of oil hovered at around USD 85 per barrel.

I.1.1 ECB and Fed's monetary policy and overview of economic developments in 2022

During 2022 the ECB embarked on a cycle of interest rate hikes and since July 2022, when the cycle began, the main refinancing rate was increased seven times, by a total of 375 bp, reaching 3.75% in May 2023, while lending and deposit facilities rates equalled 4.00% and 3.25%, respectively. March 2023 saw the beginning of the asset purchase programme normalisation, at a monthly pace of EUR 15 bn, while the amount is to be increased as of July 2023. In March 2022 the Fed began with monetary policy tightening and by May 2023 the federal funds rate was lifted ten consecutive times by a total of 500 bp, to 5.00–5.25%. The Fed attributed the monetary policy tightening to stronger labour market indicators and elevated inflation that maintains the balance between supply and demand, adding that

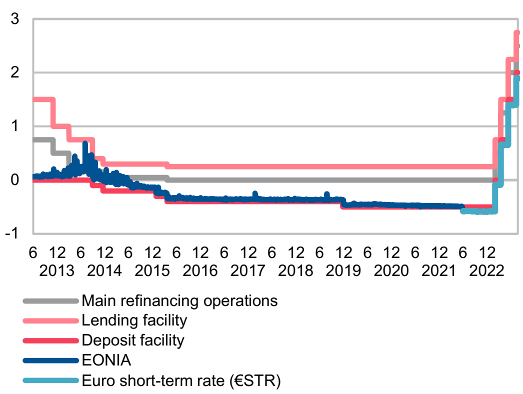
[5] According to Eurostat's preliminary flash estimate, as at the beginning of May 2023.

[6] https://fred.stlouisfed.org/series/UNRATE

developments in Ukraine affect inflation growth and burden the global economic activity.

In July 2022, the ECB began a cycle of main interest rate increases (by 50 bp), then made the hikes more pronounced in September and October meetings (by 75 bp each), and the subsequent increases more moderate (in December 2022, February and March 2023 by 50 bp each and in May by 25 bp). As of July 2022, when the cycle of interest rate hikes began, the main refinancing rate was lifted seven times, by a total of 375 bp, and measured 3.75% in May 2023, while the lending and deposit facilities rates measured 4.00% and 3.25%, respectively. The normalisation of the asset purchase programme began in March 2023 by downsizing the balance sheet at a monthly pace of EUR 15 bn, and discontinuing the reinvestments of principal amounts of maturing securities purchased within the Asset Purchase Programme (APP). The Pandemic Emergency Purchase Programme (PEPP) was terminated at end-March, and the principal amounts of securities purchased within this programme will be reinvested at least until the end of 2024. In H1, the ECB continued to secure liquidity via its targeted longer-term refinancing operations (TLTROs III). Also, to ensure consistency with monetary policy normalisation and strengthen the transmission of ECB rates onto interest rates on bank loans, a decision was made to recalibrate TLTROs III and as of November, the interest rates on these operations were indexed to the ECB's applicable key rate instead of the previous average of the key rate over the entire loan repayment period. Also, the ECB offered the possibility of additional early repayments of securities within this programme. In July 2022, a new instrument was presented, the Transmission Protection Instrument (TPI), whose goal is to prevent fragmentation and higher growth in yields on securities of some euro area members. When the deposit facility rate entered the positive territory after the September increase in the main refinancing rate, the ECB discontinued the practice where a portion of the bank's deposit is exempted from the negative interest rate on deposit facilities. It also temporarily removed the 0% interest rate ceiling on government deposits and the new limit will remain at the deposit facility rate or the euro short-term rate in the money market (€STR),[7] whichever is lower. The measure aims to prevent an abrupt outflow of non-interest yielding deposits and was applied until end-April 2023. Amid rising bank profitability in an environment of elevated interest rates, in October the ECB decided to remunerate minimum required reserves at the deposit facility rate as of December, instead of the main refinancing rate, which had been the case thus far.

Chart I.1.4 **ECB's interest rates and EONIA/€STR**
(%)



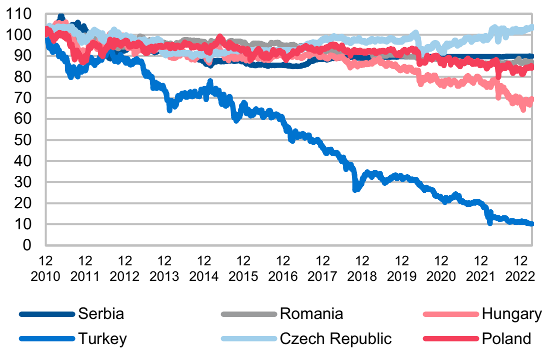
Sources: ECB and Bloomberg.

In March 2022, the Fed began tightening its monetary policy. By May 2023, the federal funds rate was lifted ten consecutive times by a total of 500 bp, to 5.00–5.25%. The Fed explained that monetary policy tightening was mandated by the strengthening of labour market indicators and elevated inflation that reflects the imbalance between supply and demand, estimating that developments in Ukraine also affect the rising inflation and burden global economic activity. In the May 2022 meeting, the Fed announced the plan to unwind the balance sheet, launching it in June at a monthly pace of USD 47.5 bn, and raising the level to USD 95 bn as of September.

Rising inflationary pressures, propped further by the escalation of the Ukraine conflict, drove the majority of central banks in the CESEE region to continue with monetary policy tightening in 2022. During 2022, the central bank of Hungary raised its policy rate from 2.4% to 13.0%. The Polish central bank lifted it from 1.75% to 6.75%, where it stood at the end of the year, while the Czech central bank raised the policy rate in the same period from 3.75% to 7.0% at end-2022. During 2022, the central bank of Romania raised the policy rate on several occasions, bringing it up to 6.75% at end-year, and with another increase, to 7.00%, in January 2023. In contrast, the central bank of Turkey was the only central bank in the region to trim its rate in 2022, despite pronounced inflationary and depreciation pressures. Namely, during the year it cut the rate by 500 bp, from

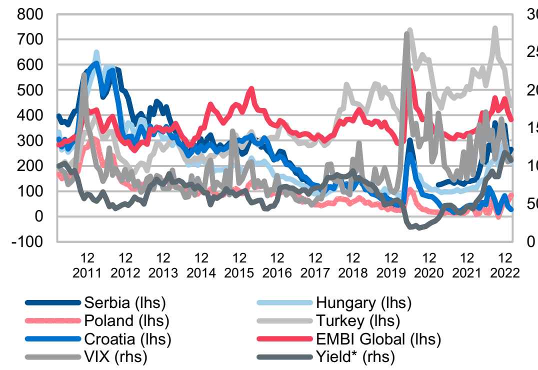
[7] €STR – Euro Short-Term Rate – interest rate on overnight bank borrowing in euros in the European financial market.

Chart I.1.5 **Exchange rates of selected national currencies against the euro***
(daily data, 31 Dec 2010 = 100)



* Growth indicates appreciation.
Sources: Central bank websites.

Chart I.1.6 **EMBI for Serbia and its regional peers, VIX and yields on US bonds**
(bp, 31 Jan 2011 = 100)



* On derived ten-year US bonds.
Sources: J.P. Morgan and Bloomberg.

14.0% to 9% at end-2022, while in February 2023 the rate went down by 50 bp to 8.5% and was kept there in March and April 2023 meetings.

In 2022, euro area inflation averaged 8.4% y-o-y, significantly above the 2021 average (2.6% y-o-y). Since the start of the year, euro area inflation trended up and touched its historical maximum in October (10.6% y-o-y), after which it slowed and ended 2022 at 9.2% y-o-y. Inflation growth in the euro area in 2022 was mostly propped by the robust hike in energy prices, as well as the higher prices of services and industrial products excluding energy. Core inflation (inflation excluding the prices of food, energy, alcohol and cigarettes) also rose during the year, accelerating even more at the end of the year and measuring 5.2% y-o-y in December (2.6% y-o-y in December 2021).

According to the ECB's March projection, average inflation should retreat to 5.3% this year (from 8.4% in 2022), and then edge further down to 2.9% in 2024 and 2.1% in 2025.

Headline inflation in the USA (measured by the change in the CPI[8]) in June 2022 reached a peak (9.1% y-o-y), and then started to slow, measuring 6.5% y-o-y in December,[9] its lowest level since October 2021. Almost all CPI components (except services) contributed to inflation slowing down, notably the significantly lower y-o-y growth in energy prices (7.3% in December), due to the high base effect from the same period last year. Similar to headline inflation, core inflation (excluding energy and food prices) also slowed in Q4 2022, to 5.7% y-o-y in December 2022. In December the Fed estimated that though slower, inflation is still elevated due to the steady imbalance between supply and demand since the outbreak of the pandemic, and the persistently high food and energy prices, which is reflected on other prices and makes inflationary pressures widely distributed. According to the Fed's projections from March 2023, US inflation is forecast at 3.3% in 2023, at 2.5% in 2024 and at 2.1% in 2025.

At the level of the year, the euro lost to the dollar by 6.2%.[10] The appreciation of the dollar against the euro in the first three quarters of 2022 is mostly attributable to decisions by leading central banks, as well as expectations of market participants that the Fed would tighten monetary policy faster than the ECB. Moreover, the strengthening of the US currency is partly a result of elevated tensions between Russia and Western countries against the backdrop of the Ukraine crisis, which drove up investor demand for the dollar as a safe haven currency. During Q4 2022, the dollar lost to the euro amid the expected stricter tightening of the ECB's compared to the Fed's monetary policy.

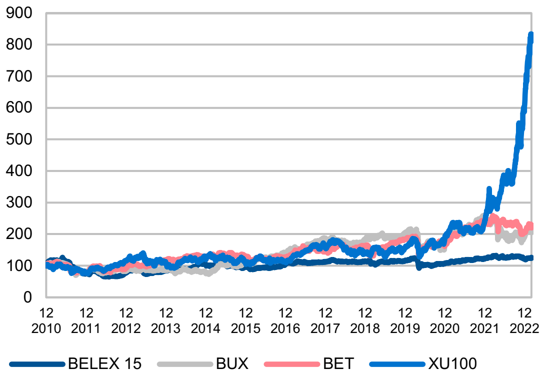
During 2022, the dinar gained 0.2% vis-à-vis the euro in nominal terms. In the same period, as the euro weakened against the dollar in the international financial market, the dinar lost to the dollar by 5.7% annualised. The currencies of observed countries in the region displayed diverging movements against the euro. At the annual level, only the Czech koruna strengthened in 2022 (3.1%), the Romanian

[8] CPI – Consumer Price Index.

[9] https://www.bls.gov/charts/consumer-price-index/consumer-price-index-by-category-line-chart.htm

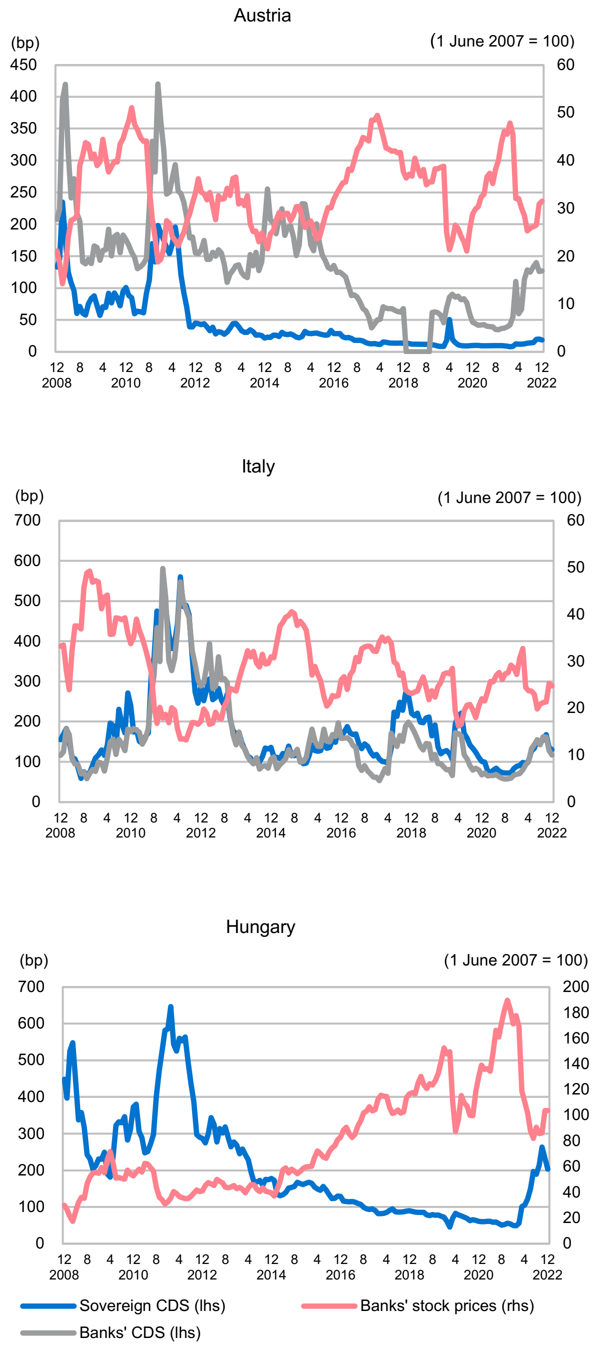
[10] The analysis relied on the official EUR/USD exchange rate, which the NBS uses in its exchange rate lists.

Chart I.1.7 **Selected stock exchange indices**
(index points, 31 Dec. 2010 = 100)



Sources: Stock exchange websites.

Chart I.1.8 **Developments in the home markets of selected banking groups present in Serbia***



* Note: CDS spreads and stock prices are non-weighted average values for parent banks originating from each country. Monthly data represent daily data averages.
Sources: Bloomberg and Reuters.

leu remained unchanged, while the Polish zloty (1.9%), the Hungarian forint (7.8%) and the Turkish lira (26.2%) depreciated (Chart I.1.5).

Volatility in the international financial market, measured by the implicit measure of financial market volatility (VIX),[11] ranged from 16.6% (January 2022) to 36.5% (March 2022) during the year. At end-2022, VIX equalled 21.7% (Chart I.1.6).

The EURO EMBIG Composite increased by 45 bp during 2022, to 208 bp at end-December. At the same time, Serbia's risk premium based on the euro debt, EURO EMBIG, rose 193 bp during 2022, measuring 389 bp at end-December. Serbia's dollar risk premium also increased during the year (by 131 bp to 270 bp), and continued to trend below the EMBI Composite, which equalled 374 bp at end-December. Serbia's eurobond in dollars, issued in January 2023, was included in J.P. Morgan's EMBI Global.

The values of stock exchange indices on financial markets of observed countries in the region were at a higher level in Serbia and Turkey at end-2022 relative to end-2021, while in the same period, the Romanian and Hungarian indices recorded a fall (Chart I.1.7).

According to the January 2023 euro area Bank Lending Survey,[12] corporate credit standards were additionally tightened in Q4 2022. This was the strictest tightening since the 2011 sovereign debt crisis in the euro area.

[11] Chicago Board Options Exchange – CBOE, based on the S&P 500 (SPX).
[12] https://www.ecb.europa.eu/stats/ecb_surveys/bank_lending_survey/html/ecb.blssurvey2022q4~e27b836c04.en.html

Higher risk perception as to economic prospects, banks' rising risk aversion and costlier financing sources resulted in tighter corporate credit standards in the euro area. As for housing, consumer and other household loans, banks reported a strong tightening of credit standards. At end-2022, housing loan demand was slashed the most since the survey was first conducted, i.e. since 2003. Demand for consumer and other household loans also retreated significantly, though to a lesser extent than housing loan demand. The decline in housing loan demand was mostly triggered by the rising interest rates, dampened consumer confidence and less favourable outlook in the real estate market. Euro area banks expected an additional tightening in credit standards for both housing and consumer loans, as well as for corporate loans. They also expected the sharp fall in demand to continue in Q1 2023 by both the corporate and household sectors.

I.1.2 Lending in CESEE countries

During 2022, the CESEE region saw an increase in loan demand, and a decrease in loan supply. The trend of banking groups' exposures to the region remained unchanged during the year.

According to the CESEE Bank Lending Survey,[13] published in June[14] and December[15] 2022 by the EIB, loan demand went up, while the supply deteriorated. Lowered global growth prospects are expected to further exacerbate loan supply conditions, which will most likely create a mismatch between supply and demand for corporate and household loans. After a sharp fall in 2020, demand for loans and credit lines rose in 2021 and H1 2022 in all lending segments. However, H2 2022 was characterised by a change in the structure of loan demand, which was driven by liquidity and housing loans, while corporate loans for fixed investments contributed less.

In the period ahead, banks expect loan demand to continue up, though by a smaller amount. The bulk of this growth is expected to come from working capital loans, while a significant deterioration is projected in the household sector, which will in turn affect housing loan demand and consumer confidence.

Supply-side credit standards were slightly eased in H1 2022, while in H2 they were tightened significantly due to the conflict in Ukraine, high inflation and a slowdown in economic growth. All segments of loan supply were similarly affected, while the greatest deterioration was recorded with mortgage loans. According to a survey from December 2022, going forward banks expect supply-side credit standards to be tightened further, mostly on account of economic growth prospects and deterioration in credit quality.

Access to financing sources in CESEE countries remained favourable. Further improvement in financing sources is expected going forward. Access to financing within the group improved slightly, and banking groups expect an improvement in financing sources in the period ahead. Corporate deposits could be the main driver behind an improvement in financing sources, and household deposits even more so, while international financial institutions are also expected to yield a positive contribution. Considering the high percentage of foreign-owned banks in the domestic market, registered as domestic legal entities, developments in the euro area may reflect on financing subsidiaries in Serbia. Chart I.1.8 shows developments in the home markets of banking groups present in Serbia.

The credit quality deteriorated in 2020 due to the pandemic, while implementation of various financing support measures for corporates and households helped contain the deterioration to a significant extent. The implemented measures helped improve credit quality in 2021 and 2022. Deterioration in asset quality, predicted in the June survey, did not come about, i.e. credit quality improved in H2 2022. Still, bearing in mind the unfavourable global growth prospects, in the coming period banks expect to see an increase in NPLs in CESEE countries in the corporate and household loan segment.

According to June and December 2022 survey results, banking groups stated they recorded a fall in the loan-to-deposit (LtD) ratio prior to 2017, which was significantly moderated in the years leading up to the pandemic. December survey data showed that banks expect the LtD ratio to remain stable in the coming period or to go up.

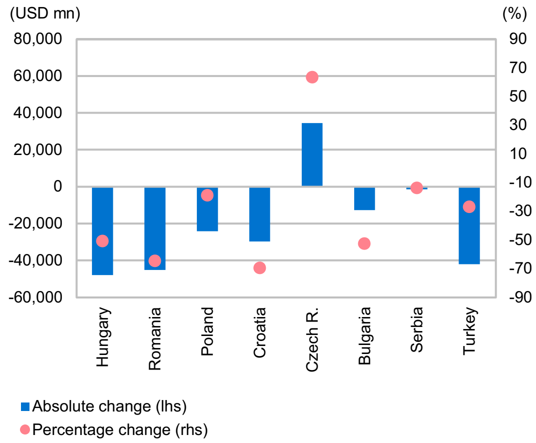
December 2022 survey results showed that the majority of banks (80%) maintained the same level of cross-border exposure to CESEE countries, 10% of banks increased it and the other 10% decreased their exposure.

[13] The survey, published twice a year, was developed within the Vienna Initiative to monitor cross-border activities and deleveraging in the CESEE region.

[14] https://www.eib.org/attachments/lucalli/economics_cesee_bls_2022_h1_en.pdf

[15] https://www.eib.org/attachments/lucalli/20220190-economics_cesee_bls_2022_h2_en.pdf

Chart I.1.9 **Change of cross-border exposure to selected countries, Q3 2008 – Q4 2022**



Source: BIS, locational statistics, resident principle, gross.

These results are in line with the expectations published in the June survey. However, 27% of parent banks stated that they reduced group financing, while 18% of them increased it. Despite uncertainty and stepped-up risks, international banking groups kept their confidence in the stability of doing business in the region. Most banking groups expect to maintain (70%) or to increase exposure (20%) going forward. Still, 10% of banking groups expect their exposure to the region to decrease. Most banking groups (80%) expect their exposure to capital and financing within the group to remain stable, while 10% expect it to increase.

According to BIS data, in Q4 2022 relative to the beginning of the global financial crisis (Q3 2008), euro area banks reduced their cross-border exposure to countries in the region, except to the Czech Republic. In terms of percentage change, exposure was reduced the most for Croatia, Romania, Bulgaria and Hungary, and the least for Serbia, Poland and Turkey (Chart I.1.9). Deleveraging by foreign banks in the wake of the 2008 global financial crisis in the CESEE region did not have major consequences on Serbia's financial stability thanks to the strengthened domestic deposit base, as well as the NBS's adequate and timely measures. Relative to the period before the coronavirus pandemic (Q4 2019), exposure to Hungary, Poland, the Czech Republic, Bulgaria, Romania and Serbia increased, and to Turkey and Croatia decreased. Relative to end-2021, exposure to Turkey, the Czech Republic and Romania decreased in Q4 2022, and to Croatia, Bulgaria, Poland, Hungary and Serbia increased. Chapter II.1 offers a more detailed analysis of credit growth and an overview of the stock and trends in the Serbian banking sector.

I.2 Overview of domestic macroeconomic developments

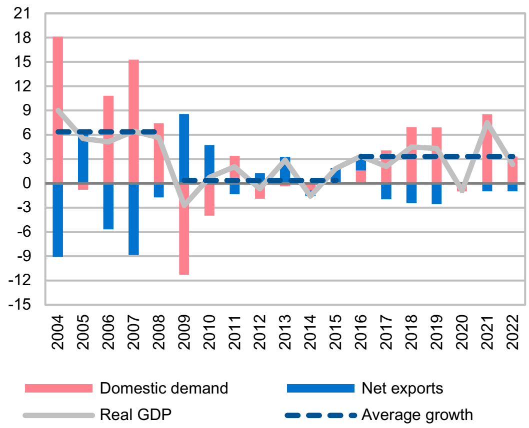
In 2022, Serbia's real GDP growth came at 2.3%, driven by an upturn in industry and services. Growth softened relative to 2021 as a consequence of reduced external demand and higher global cost-push pressures caused by the conflict in Ukraine, as well as a weaker agricultural season due to the drought. Average annual inflation in 2022 measured 11.9%, and average core inflation 7.1%.

In 2022, Serbia recorded real GDP growth of 2.3%, lower than in 2021, when it measured 7.5%. The slowdown is attributable to lower external demand, high base and heightened global cost-push pressures caused by exacerbated geopolitical tensions and the conflict in Ukraine, as well as the drought at home. The achieved economic growth in 2022 resulted from the expansion of the industry and service sectors. A negative contribution came from construction and agricultural production. Unfavourable weather conditions during summer months led to a slump in yields, primarily of autumn crops, dragging agricultural production down by 8.3% in 2022. On the expenditure side, in 2022 growth was driven mostly by personal consumption, owing to favourable labour market trends.

Assuming global economic recovery, Serbia's favourable medium-term growth outlook (i.e. projected return to the pre-pandemic growth trajectory of 4% p.a. in the medium run) is supported not only by the preserved investment and consumer confidence, boosted production capacities and more jobs, but also by the expected implementation of planned projects, notably in the areas of road, railway and utility infrastructure.

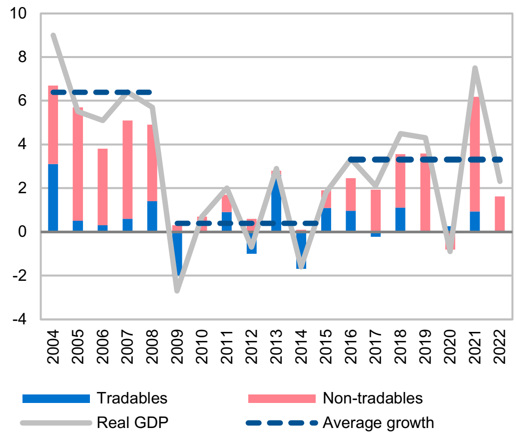
Annual inflation in 2022 averaged 11.9%, and measured 15.1% y-o-y in December. Even amid the combined effect of many factors, notably the energy crisis and the drought which hit most of Europe, inflation in Serbia was lower than in regional peers. The largest contribution to inflation (around two-thirds contribution to y-o-y inflation) came from the prices of food and energy. Core inflation remained much lower than headline inflation and measured 10.1% y-o-y in December and 7.1% on average in 2022. This indicates that inflation in Serbia was powered mainly by supply-side factors, on which monetary policy measures have a rather small or limited effect. Lower core than headline inflation in 2022 was also underpinned by the preserved relative stability of the dinar exchange rate against the euro amid rather uncertain and unpredictable global circumstances.

Chart I.2.1 **Real GDP growth – demand contributions**
(%)



Sources: NBS and SORS.

Chart I.2.2 **Real GDP growth – supply contributions**
(%)



Sources: NBS and SORS.

Under the May 2023 central projection, y-o-y inflation is expected to strike a downward path starting from Q2 and decline more sharply in H2 2023. The retreat within the bounds of the target tolerance band is expected in mid-2024 (Chart I.2.4). Inflation will slow down as a result of the effects of monetary policy tightening to date, weakening of the global cost-push pressures from the international environment (on account of lower prices of energy, primary commodities, resolution of global value chain disruptions, etc.), followed by the expected slowdown in imported inflation, as well as subdued external demand amid unfavourable global growth prospects.

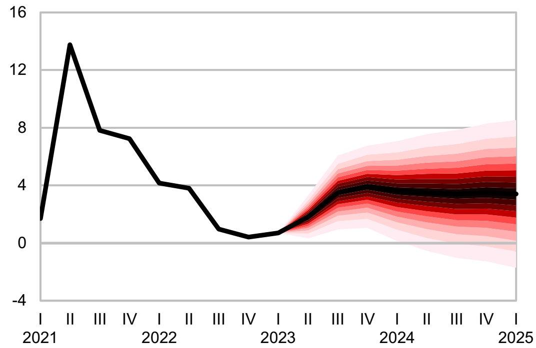
Despite global geopolitical tensions and the slowdown in economic growth, positive trends in the labour market continued. Labour market data indicate that in Q4 2022 the unemployment rate fell by 0.6 pp y-o-y, to 9.2%, while the employment rate went up by 0.1 pp y-o-y, to 50.1%. At the level of entire 2022, the average unemployment rate was 9.4% (down by 1.6 pp from 2021), while the average employment rate stood at 50.3% (up by 1.6 pp from 2021).[16] In the period January–December 2022, gross and net wage growth came at 13.8% in nominal and 1.7% in real terms.

The NBS responded to heightened inflationary pressures by tightening the monetary policy. As of October 2021, it has started tightening monetary conditions by gradually and continuously increasing the weighted average interest rate in reverse repo auctions. This rate stood at 0.96% at end-March 2022 and was almost equal to the key policy rate (1%). The cycle of policy rate hikes started in April 2022. Until end-2022, the NBS raised the key policy rate by a total of 4 pp, to 5% at year end. The key policy rate hikes continued, though to a lesser degree (by 25 bp each), until April 2023, when the rate reached 6%.

The relative stability of the dinar exchange rate against the euro was preserved throughout 2022, and despite heightened global uncertainty caused by geopolitical tensions and rising inflation, appreciation pressures prevailed in the major part of the year. In 2022, the dinar gained 0.2% against the euro in nominal terms. In the same period, due to the depreciation of the euro vis-a-vis the dollar in the international market, the dinar lost 5.7% against the US dollar. The first four months of the year saw strong depreciation pressures on the RSD/EUR exchange rate, fuelled mainly by elevated foreign currency demand of domestic energy importers, primarily due to soaring global energy prices. Tensions in the international market over the Russia-Ukraine conflict also affected the local market. March saw record high net sale of foreign cash by banks (to exchange dealers and natural persons), causing additional depreciation pressures on the dinar. The NBS managed to preserve the relative stability of the exchange rate owing to a timely and adequate response, including the net sale of FX in the amount of EUR 2.27 bn in the first four months of 2022. Despite still elevated foreign currency demand of domestic energy importers, supply-

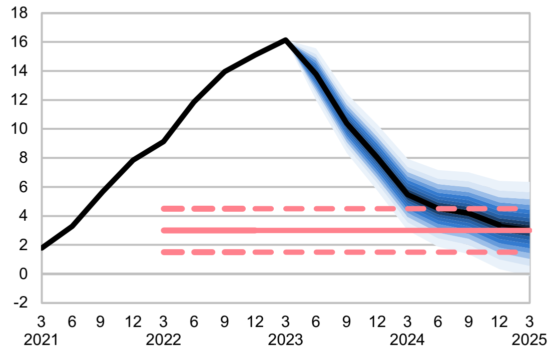
[16] Since 2021, the SORS has conducted the Labour Force Survey under the new, revised Eurostat methodology.

Chart I.2.3 **Projection* of real GDP growth**
(y-o-y growth rates, %)



* May 2023.
Source: NBS.

Chart I.2.4 **Inflation projection***
(y-o-y growth rates, %)



* May 2023.
Source: NBS.

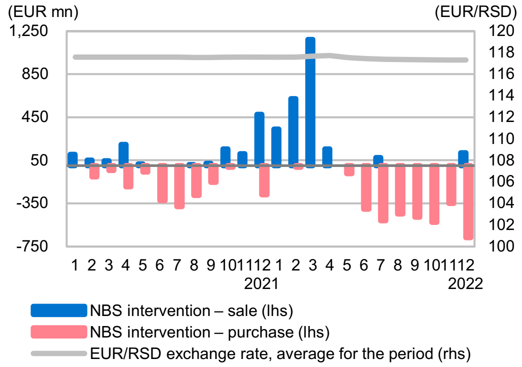
side factors (inflows from FDI, exports, tourism, etc.) marked the period from May until end-2022, underpinning appreciation pressures. From May until year end, the NBS bought EUR 3.27 bn net in the IFEM. At the annual level, the NBS bought EUR 1.0 bn net in the IFEM, buying EUR 3,480 mn and selling EUR 2,480 mn (Chart I.2.5). The NBS intervened in the FX market to mitigate excessive short-term volatility of the exchange rate, with the aim of maintaining price and financial stability. At end-2022, gross FX reserves reached EUR 19.4 bn at (EUR 15.4 bn in net terms), this being their highest end-month and end-year level on record, up by EUR 3.0 bn from end-December 2021. The rise reflected primarily funds under the first tranche of the stand-by arrangement with the IMF (EUR 985.6 mn), and NBS interventions in the IFEM. Such level of FX reserves ensured a 159% coverage of money supply M1 and 5.2 months' worth of the country's goods and services imports, which is twice the level prescribed by the adequacy standard.

Heightened uncertainty in commodity and financial markets drove up the risk premium on both euro and dollar debt. EURO EMBIG for Serbia increased by 193 bp in 2022, and measured 389 bp at end-December. US-dollar EMBI for Serbia also rose in 2022 (by 131 bp, to 270 bp), continuing to move below EMBI Composite though, which measured 374 bp at end-December. Serbia's eurobonds issued in dollars in January 2023 were included in J.P. Morgan's EMBI Global on 31 January 2023.

In February and August 2022, and February 2023, Fitch kept Serbia's credit rating at BB+, one step away from investment grade, despite pronounced geopolitical risks. It also confirmed Serbia's stable outlook, citing its credible macroeconomic policy framework as the main factor behind such decision. In addition, when making the decision, the agency took into account the proven resilience of the banking sector, a high and adequate level of FX reserves, full coverage of the current account deficit by FDI and the maintained overall stability of the balance of payments, as well as the preserved stability of the exchange rate. In June 2022, Standard & Poor's kept Serbia's credit rating at BB+, and changed outlook from positive to stable. In December 2022, it affirmed credit rating at BB+, with a stable outlook, also pointing to a credible macroeconomic policy framework, as well as an adequate level of FX reserves as one of the critical buffers of the Serbian economy against external shocks. Standard & Poor's particularly emphasised that the maintained credit rating reflects Serbia's highly capitalised, profitable and liquid banking sector, historically lowest NPLs, and moderate public debt. Moreover, in its April 2023 report for Serbia, it affirmed Serbia's credit rating at BB+, with stable outlook, despite the still pronounced international risks and the consequences of geopolitical events on the global economy. Moody's Investors Service did not publish any statements in relation to Serbia's credit rating in 2022.

The financial system vulnerability indicators[17] in 2022 suggest strengthened resilience of the financial system compared to 2021, as indicated by the decrease in the share of public debt in GDP (from 56.5% to 55.1%). The country's higher FX reserves worked in the same direction, as did the coverage of goods and services

Chart I.2.5 **Exchange rate movements and NBS interventions in the IFEM**



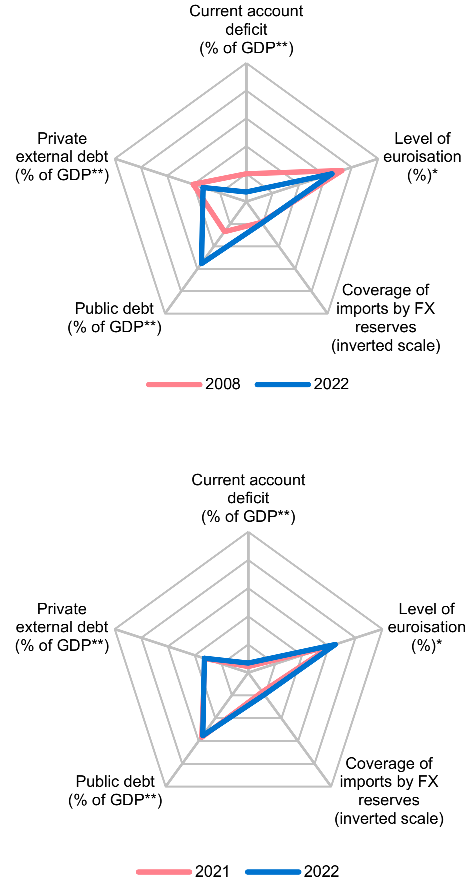
Source: NBS.

imports by FX reserves, which was almost twice the level prescribed by the reserve adequacy standard.

What worked in the opposite direction – toward lowering the resilience of the domestic economy in 2022 was a negligible increase in the share of private external debt in GDP (from 32.5% to 32.7%). A decrease in the dinarisation of the Serbian financial system also worked to the same end, as the share of FX and FX-indexed corporate and household loans in total bank loans grew by 3.2 pp in 2022, to 64.9% at the end of the year. The share of FX and FX-indexed corporate and household deposits in total bank deposits also edged up (from 59.7% at end-2021 to 59.9% at end-2022).

The current account deficit share in GDP widened from 4.2% in 2021 to 6.9% in 2022, driven dominantly by the elevated cost of energy imports.

Chart I.2.6 **Key macroeconomic risks**



* Share of FX and FX-indexed deposits in total deposits of households and corporates.

** GDP is compliant with ESA 2010 methodology.

Source: NBS.

[17] Chart I.2.6 shows the main financial vulnerability indicators, i.e. changes in the current account deficit, private external debt, public debt, the degree of euroisation and FX reserves adequacy (inverted value of the number of months of coverage of imports by gross FX reserves). Increased distance from the centre for each indicator warns of elevated risk and poses a threat to stability. Increased surface indicates higher vulnerability of the economy.

I.3 Foreign exchange reserves as insurance against shocks

During 2022 as well, FX reserves reached their highest end-of-year level, strengthening further the resilience of the domestic financial system to the shocks from the international environment, which is particularly important amid current geopolitical tensions. Gross FX reserves equalled EUR 19.4 bn at end-December 2022, up by EUR 3.0 bn from the end of the previous year, while net[18] FX reserves amounted to EUR 15.4 bn. Different stress scenarios lead to the conclusion that FX reserves are high enough to safeguard the domestic financial system even in the event of extreme scenarios.

As an institution mandated to safeguard and strengthen the stability of the financial system, the NBS manages and maintains an adequate level of FX reserves, used for the preservation of financial sector stability, settlement of government liabilities to foreign creditors, and in times of crisis, for financing potential, more significant balance of payments imbalances.

The adequacy of FX reserves is assessed by various analyses and indicators, from the aspect of materialisation of an individual risk or a mix of several risks. The most common risks, based on which relevant indicators are constructed are: hindered financing of the imports of goods and services and external debt of one-year maturity in the event of reduced capital inflows from abroad due to the limited access to international capital markets, and the withdrawal of a portion of deposits from the banking sector.

Traditional indicators of FX reserves adequacy analyse the degree of protection against individual risks. The indicator of FX reserves import coverage shows the link between FX reserves and the size and market openness of the economy. The level of FX reserves is considered adequate if it covers three months' worth of imports of goods and services.

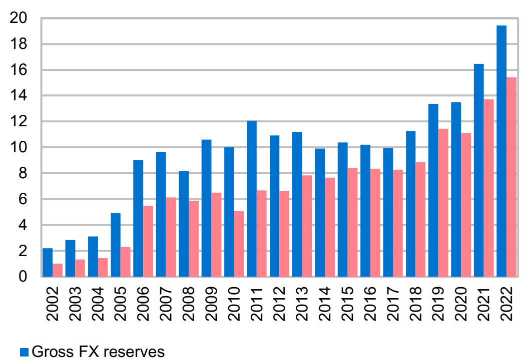
In addition to the indicator of FX reserves import coverage, protection against individual risks is also measured by an indicator known as the Greenspan–

Table I.3.1 **Indicators of FX reserves adequacy, end-2022**

Indicators of adequacy	Adequate level (EUR bn)	Coverage of adequate level with gross FX reserves
Average three-month imports of goods and services	11.3	172%
Short-term external debt at remaining maturity	7.3	265%
20% money supply M3	6.9	282%
"Right measure for Serbia"	10.4	186%
FX reserves		
Gross	19.4	
Net	15.4	

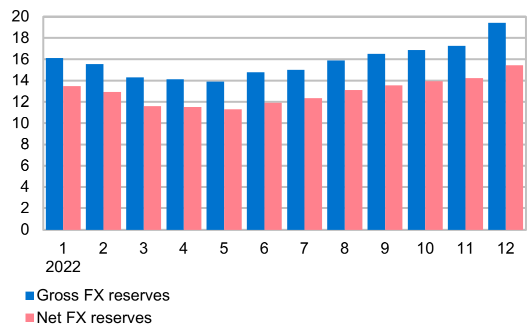
Source: NBS.

Chart I.3.1 **National Bank of Serbia FX reserves**
(EUR bn)



Source: NBS.

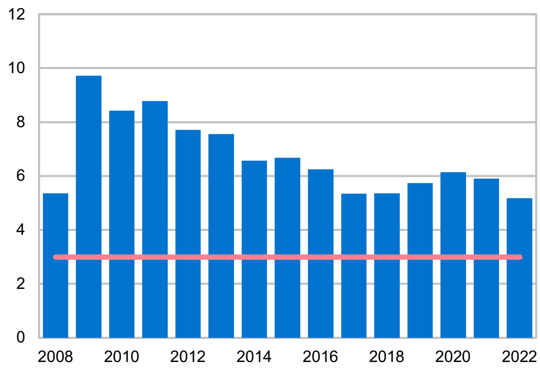
Chart I.3.2 **National Bank of Serbia FX reserves in 2022**
(EUR bn)



Source: NBS.

[18] Net reserves are total reserves less banks' FX required reserves and other reductions.

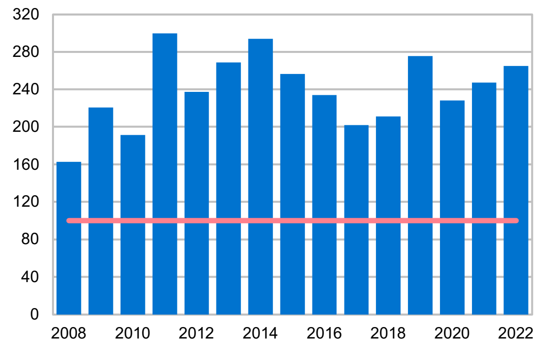
Chart I.3.3 **Months of imports covered by gross FX reserves**



Source: NBS.

Chart I.3.5 **Short-term external debt at remaining maturity covered by gross FX reserves**

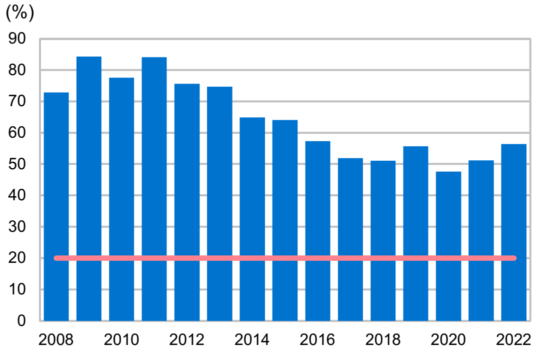
(%)



Source: NBS.

Chart I.3.4 **Money supply M3 covered by gross FX reserves**

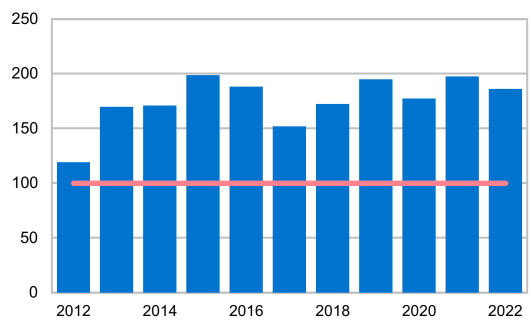
(%)



Source: NBS.

Chart I.3.6 **"Right measure for Serbia" for gross FX reserves**

(%)



Source: NBS.

Guidotti rule,[19] which shows the capacity of a country to service its external debt in the course of one year. The adequate level is achieved when a country can cover at least 100% of its short-term external debt in case it is cut off from the international capital market for the duration of one year.

To measure the degree of protection against the risk of withdrawal of domestic currency deposits, we use an indicator that shows the connection between FX reserves and monetary aggregates. The optimal level is achieved if FX reserves cover at least 20% of broad money (M3). At end-2022, Serbia's FX reserves were at an adequate level to serve as the protection against individual risks. They provided for the financing of over five months' worth of imports of goods and services, 265.1% coverage of external short-term debt at remaining maturity and 56.4% coverage of broad money (M3).

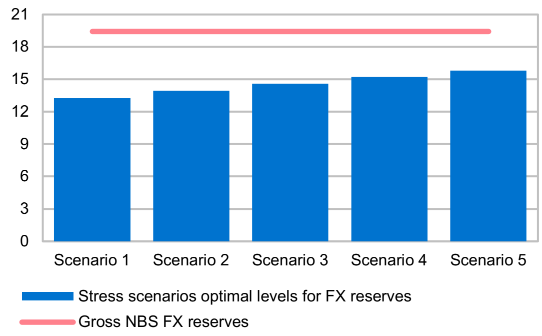
In order to make a comprehensive assessment of the adequacy of FX reserves, we developed "the right measure for Serbia" indicator that takes into account the specificities of the Serbian economy.[20] It implies the coverage of the sum total of short-term debt at remaining maturity, the current account deficit adjusted for FDI, 15% of FX and FX-indexed deposits and 5% of dinar deposits of corporates and households.

At end-2022, "the right measure for Serbia" indicator was also considerably above the optimal 100% (186.0%). A decline in this indicator relative to last year (197.6%) reflected the increase in the current account deficit.

[19] Guidotti, Pablo, Sturzenegger, Federico and Augustin Villar (2004), On the Consequences of Sudden Stops, *Economia*, vol. 4, no. 2, p.171–203.

[20] For more details on this indicator, see the *Annual Financial Stability Report – 2011*.

Chart I.3.7 **Optimal levels of FX reserves under stress scenarios, December 2022**
(EUR bn)



Source: NBS.

Table I.3.2 **Stress scenarios for FX reserves**

Symbol	Parameter	Scenario 1	2	3	4	5
γ	Damage caused by sudden stop	7%	7%	7%	7%	7%
r	Yield on reserves	2.75%	2.5%	2.25%	2%	1.75%
g	Average GDP growth	3%	2.5%	2%	1.5%	1%
σ	Risk aversion	2	2	2	2	2
δ	Opportunity cost	1%	1%	1%	1%	1%
π	Probability of sudden stop	10%	10%	10%	10%	10%
λ	Size of shock (% of GDP)	20%	20%	20%	20%	20%
ΔQ	Real depreciation	0%	2.5%	5%	7.5%	10%
	Optimal level of reserves (EUR bln)	13.2	13.9	14.6	15.2	15.8
Gross NBS FX reserves (2022, EUR bn)				19.4		

Source: NBS.

Around a half of the total value of the current account deficit was realised in the first four months of 2022, largely on account of the increase in energy prices. At end-2022, the current account deficit was fully covered by the net FDI inflow for the eighth consecutive year.[21]

The Jeanne–Ranciere[22] model determines an optimal level of FX reserves as a share in GDP (ρ), depending on the size of the shock (λ), probability of a sudden stop (π), damage caused by the sudden stop of capital flows (γ), real depreciation (ΔQ), risk aversion (σ), return on reserves (r), opportunity cost of holding reserves (δ) and real GDP growth (g).

The model assumes that in a small and open economy, vulnerable to sudden stops to capital flows, economic policy makers set the adequate level of FX reserves. In the event of a sudden stop to capital flows, resulting in the impossibility of external debt rollover, it is assumed that a higher level of FX reserves will mitigate the decline in output and ensure smooth consumption. In this model, the optimal level of reserves is determined by the size and likelihood of a sudden stop to capital inflows, the potential output and consumption losses, the opportunity cost of holding reserves, and the degree of risk aversion.

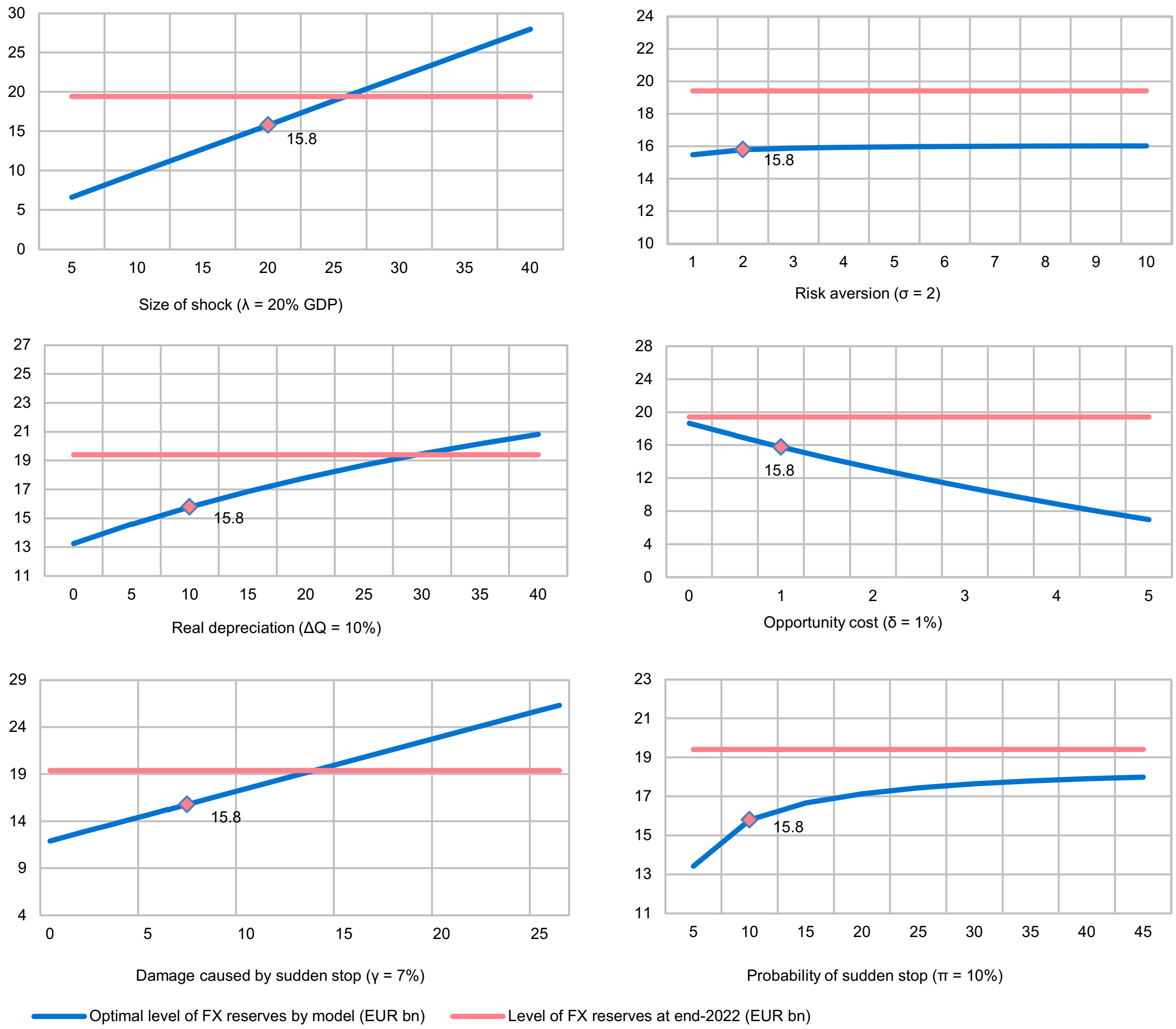
Table I.3.2 gives an overview of stress scenarios for FX reserves, according to the Jeanne Ranciere model, where the fifth scenario is extreme, i.e. least likely to occur.

All five scenarios run on the used adequacy model, including all indicators of FX reserves adequacy, confirmed that the level of FX reserves at end-2022 was more than adequate. Chart I.3.8 shows the optimal level of FX reserves in case the fifth scenario, which is the most extreme, materialised. And the conclusion is that even in this scenario Serbia would have an adequate level of FX reserves.

[21] Serbia's FX reserves position, measured by ARA, defined by the IMF as a measure supplementing traditional ones, suggests that end-2022 FX reserves provided an adequate safeguard of the Serbian economy against external shocks (inflation_report_02_2023.pdf (nbs.rs).

[22] See O. Jeanne, R. Ranciere (2008): The Optimal Level of International Reserves for Emerging Market Countries: A New Formula and Some Applications, *CEPR Discussion Papers 7623*, and the *Annual Financial Stability Report – 2011*.

Chart I.3.8 **Sensitivity analysis of FX reserves adequacy model parameters, based on the fifth stress scenario**

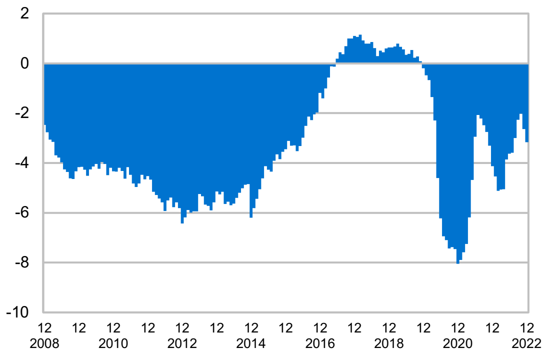


Source: NBS.

I.4 Fiscal policy, public and external debt

In 2022 as well, fiscal policy measures mitigated negative economic consequences caused by the upsurge in political tensions. Despite considerable spending aimed at overcoming the crisis in the energy sector, in 2022 fiscal deficit equalled 3.2% of GDP, down by 1.0 pp from the year before. The share of central government debt in GDP declined from 56.5% of GDP at end-2021 to 55.1% of GDP at end-2022. The external debt share in GDP increased to 69.4% of GDP (68.4% at end-2021). At end-2022, the Republic of Serbia concluded a new stand-by arrangement with the IMF, underpinning the efforts toward maintaining macroeconomic and fiscal stability.

Chart I.4.1 **Fiscal result***
(% of GDP)



* Ratio of 12m moving sums.
Source: NBS, based on data of the Ministry of Finance.

I.4.1 Fiscal policy

Against the background of rising uncertainty, fiscal policy plays an important role in maintaining macroeconomic stability. Adequate fiscal policy measures in 2020 and 2021 mitigated negative economic consequences of the coronavirus. However, after the outbreak of the Ukraine conflict and the heightening of global uncertainty, fiscal policy faced new challenges. Countries are now coping with a global rise in prices, particularly of energy and primary agricultural commodities, the slowing of economic growth and aggravated conditions and possibilities of deficit financing. These disruptions also negatively affect the economy, and require a new set of government aid measures. In 2022 the Republic of Serbia already took measures to prevent larger shocks that could be triggered by rising energy and food prices, such as subsidising the gas price, a temporary reduction in excise taxes on petroleum products and control of prices of basic foodstuffs. In conditions of high uncertainty, it is extremely important to maintain fiscal discipline, so that fiscal policy would be able to timely and efficiently respond to external shocks.

With a view to maintaining fiscal stability, at end-2022 amendments to the Law on the Budget System[23] redefined the existing and set up a new set of fiscal rules. The general fiscal rules – that the government sector debt shall not exceed 60% of GDP, with the medium-term deficit target of 0.5% of GDP – will be implemented as of 2025, given that deficit levels planned for 2023 and 2024 were higher due to the energy crisis and external factors. Special fiscal rules capping wage expenditures at the maximum of 10% of GDP and pension indexation depending on their share in GDP have been implemented since 2023.

In 2022 the fiscal deficit of general government came at RSD 224.8 bn, or 3.2% of GDP, significantly below the previous year's figure, which stood at 4.1% of GDP (Chart I.4.1). The funds spent for the purchase of energy, whose global prices spiralled on the back of geopolitical tensions and the Ukraine conflict, were the major factor behind the fiscal deficit. In terms of the levels of government, the largest deficit was generated in the republic budget, equalling RSD 235.2 bn.

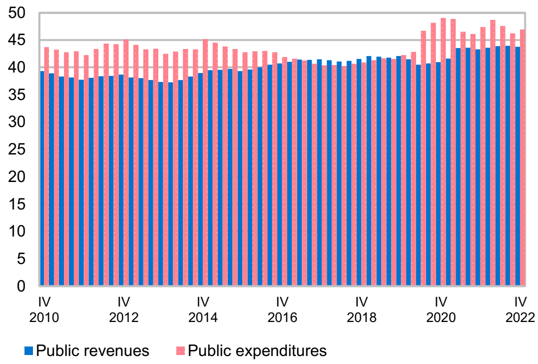
The primary fiscal result,[24] an indicator of efficiency of the current fiscal policy and its impact on public debt trends, measured RSD 117.6 bn in 2022 (1.7% of GDP), continuing the declining tendency of the primary fiscal deficit both in absolute amount and as a share in GDP, compared to 2021 when it equalled 2.4% of GDP.

The fiscal deficit of 2022 was recorded against the background of increased fiscal revenues and fiscal expenditures relative to the year before, with fiscal revenues rising faster than expenditures. The fiscal support, primarily to the energy sector, did not jeopardise public finance sustainability, thanks to better collection of revenues, mainly from taxes. Total public revenues of general government in 2022 increased by RSD 391.4 bn from the year before. The greatest increase in public revenues in 2022 relative to 2021 was recorded for

[23] RS Official Gazette, Nos 54/2009, 73/2010, 101/2010, 101/2011, 93/2012, 62/2013, 63/2013 – correction, 108/2013, 142/2014, 68/2015 – other law, 103/2015, 9/2016, 113/2017, 95/2018, 31/2019, 72/2019, 149/2020, 118/2021, 118/-2021 – other law and 138/2022.

[24] The primary fiscal result is the fiscal result adjusted for the impact of paid and charged interest and it shows whether the realised fiscal revenues suffice to cover fiscal expenditures not arising from public debt servicing.

Chart I.4.2 **Public revenues and expenditures***
(% of GDP)



* Ratio of 4Q moving sums.
Source: NBS, based on data of the Ministry of Finance.

current revenues (up by RSD 394.5 bn), with tax revenues rising the most (by RSD 339.6 bn). In the structure of tax revenues in 2022, relative to the previous year, VAT revenues posted the greatest increase, specifically, revenues from import VAT (by RSD 137.3 bn). A significant rise in tax revenues was also recorded for corporate profit tax –31.2% y-o-y. To limit the rise in prices of petroleum products in the domestic market, triggered by the spiralling global oil price, excise taxes were not indexed by the consumer price rise in 2022 and excise taxes on petroleum products were reduced further, from 10% to 20%.

Total public expenditures of general government in 2022 rose by RSD 356.9 bn from the last year. The major part of the increase originated from additional measures for the purchase of energy, further aid to the population and implementation of new measures, as well as from the outlays for the purchase of goods and services and increase in capital expenditures. The purchase of necessary energy primarily drove up the expenditures under budget loans, which increased by RSD 154.1 bn from the year before. In 2022, current expenditures were RSD 133.2 bn higher than in the previous year, mostly due to higher expenditures for social assistance and transfers (RSD 76.2 bn), purchase of goods and services (RSD 66.7 bn) and employees (RSD 66 bn). On the other hand, expenditures for subsidies decreased by RSD 45.8 bn in 2022 and their share in GDP measured 2.3% (3.3% in 2021). Though lower than in the previous two years, the amount of subsidies in 2022 was significantly higher than in the years preceding the pandemic. In the structure of subsidies disbursed in 2022, the major part were agricultural subsidies and aid paid out to certain categories of the population.

The amount of capital investments reached the record high amount in 2022 – RSD 59.5 bn more than in 2021. The share of capital expenditures in total general government expenditures in 2022 (15.8%) was at a similar level as in 2021 (15.7%), while the share of capital expenditures in GDP in 2022 stayed at the same level as in 2021, amounting to 7.4%. Given the importance of infrastructure improvements for long-term sustainable economic growth, as well as planned infrastructure investments, the maintenance of the achieved level of investment in capital expenditures will remain fiscal policy priority going forward. The most important are investments in road, railway, utility and water infrastructure, while additional capital investments are also planned in health care, energy, environmental protection, education, culture, defence and other areas.

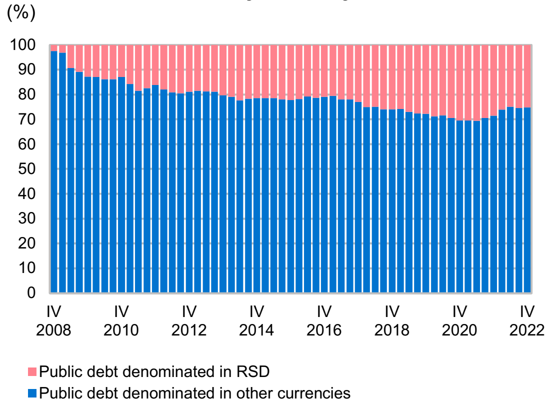
Interest payment expenditures shrank additionally in 2022, despite a significant rise in interest rates. This confirms a considerable progress achieved over the past ten years with regard to the increase in average maturity of government securities and a reduction in financing costs on that account, as well as the lower exposure to refinancing risk.

The sustainability of fiscal policy, even in conditions of pronounced global uncertainties, was also confirmed by one of the most relevant financial institutions. In June 2022 the IMF Executive Board completed the second review under the Policy Coordination Instrument (PCI), and in December 2022 it concluded the third review under the PCI. At the meeting held on 19 December 2022 the IMF Executive Board approved to the Republic of Serbia a Stand-by Arrangement (SBA) worth 290% of our country's quota in the IMF, which is around SDR 1.89 bn or around EUR 2.4 bn (the first credit tranche of EUR 985.6 mn was disbursed at end-2022). The arrangement was approved for a 24-month term, in support of the agreed economic programme. Building upon the achieved results and the reform agenda, the new IMF arrangement replaced the former PCI. The objectives of the economic programme of the Republic of Serbia for 2023–2024 supported by the new SBA are aimed at preservation of macroeconomic and financial stability, strengthening the economy's resilience to the energy crisis and stimulating high, ecological, inclusive and sustainable growth in the medium-term. The IMF assessed that the Serbian economy has sound risk-safeguard mechanisms, including adequate FX reserves, moderate levels of external and public debt, as well as a well-capitalised and highly liquid banking sector. The monetary policy response was assessed as adequate against the current inflationary pressures. The new SBA ensures additional protection throughout the period of prevailing challenges and uncertainties at the global level and represents an additional support in facing global risks and a positive signal for all potential investors. April 2023 saw the completion of talks between the IMF mission and the delegation of the Republic of Serbia as part of the first review of the agreed economic programme under the SBA. It was concluded that the Serbian economy demonstrated resilience in very unfavourable conditions, that macroeconomic results within the programme were excellent and that the structural reform programme was well progressing. In April 2023 the Republic of Serbia also held Article IV consultations with the IMF, a regular activity with all member countries as part of the supervisory function of this financial institution. The previous round of Article IV consultations with the Republic of Serbia took place in 2021.

I.4.2 Public debt

Despite the impact of the international energy crisis on the rise in budgetary expenditures and purchase of energy, the public debt-to-GDP ratio continued down in 2022. The share of central government debt in GDP at end-2022 amounted to 55.1%, down by 1.4 pp from end-2021 (Chart I.4.3). The share of central government debt in GDP continued on a downward path in Q1 2023, coming at 51%. The general government debt's share in GDP in 2022, including non-guaranteed debt of local governments and AP Vojvodina, measured 55.6% in the same period, down by 1.5 pp y-o-y.

Chart I.4.4 **Public debt by currency**



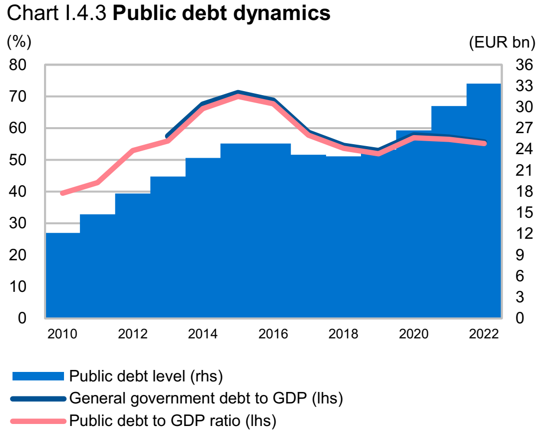
Source: Ministry of Finance.

Observed in absolute amounts, central government debt at end-2022 equalled EUR 33.3 bn (EUR 30.1 bn at end-2021) and general government debt EUR 33.6 bn (EUR 30.5 bn at end-2021).

A high share of debt in foreign currency of 74.8% at end-2022 indicates FX risk (Charts I.4.4. and I.4.5). Relative to the year before, the dinar portion of public debt edged down by 3.3 pp to 25.2%, and the share of the euro portion by 1.9 pp to 55.8%. The share of public debt in US dollars rose by 3.5 pp to 14.3% relative to 2022.

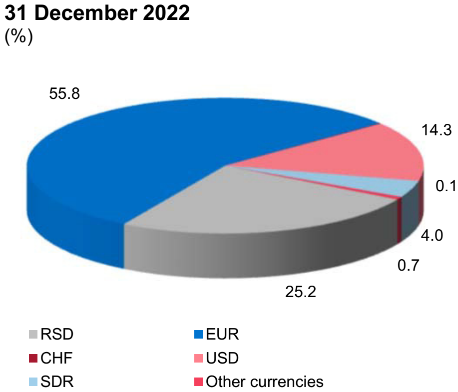
At end-2022, the share of debt repaid at a fixed interest rate declined by 4.3 pp y-o-y, to 82.3% (Chart I.4.6), which still indicates a small risk of interest rate fluctuations.

Chart I.4.3 **Public debt dynamics**



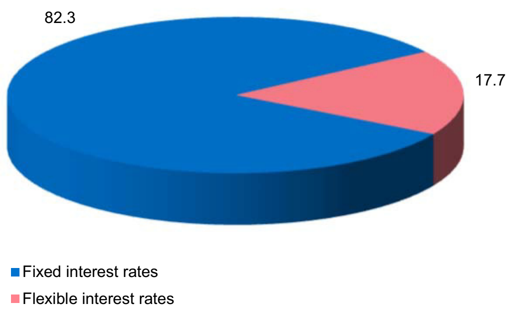
Source: Ministry of Finance.

Chart I.4.5 **Public debt currency composition, 31 December 2022**



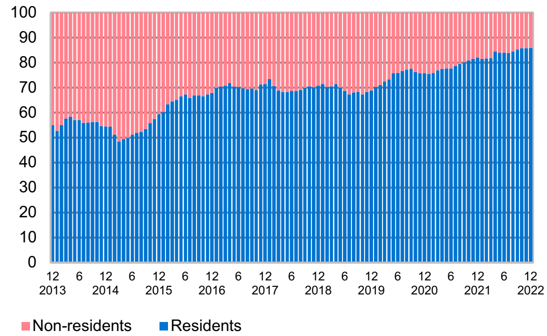
Source: Ministry of Finance.

Chart I.4.6 **Public debt interest rate composition, 31 December 2022**
(%)



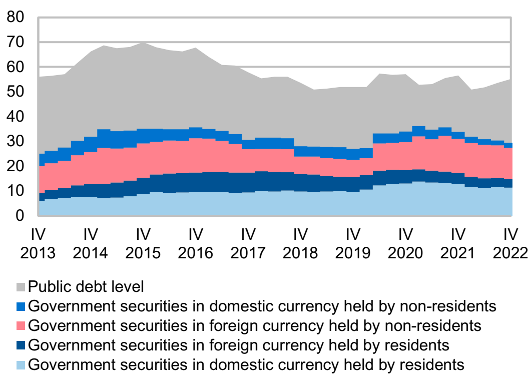
Source: Ministry of Finance.

Chart I.4.8 **Ownership structure of government securities denominated in dinars**
(%)



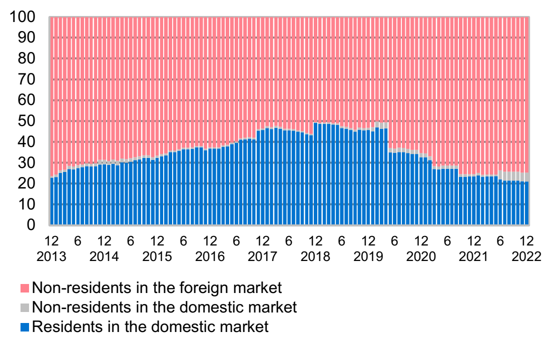
Source: NBS, based on data from the Central Securities Depository and Clearing House.

Chart I.4.7 **Public debt in government securities**
(% of GDP)



Source: NBS, based on data of the Ministry of Finance.

Chart I.4.9 **Ownership structure of government securities denominated in foreign currency**
(%)



Source: NBS, based on data from the Central Securities Depository and Clearing House.

In 2022 the government partly incurred debt through the sale of securities. The share of government securities in total central government public debt was 53.4% in 2022 (Chart I.4.7).

Foreign investors' role in the government securities market is very important. At end-2022 they held 50% in the portfolio of securities issued in the domestic and international market (49% at end-2021). In 2022 the non-resident share in the segment of dinar government securities dropped by 3.9 pp from the year before, to 14.1% (Chart I.4.8). The non-resident share in securities denominated in foreign currencies increased by 2.4 pp to 79% in 2022 (Chart I.4.9).

March 2022 saw the first issuance of a 25-year government bond in euros. This was the longest maturity bond issued in the domestic market thus far, at a relatively favourable interest rate (2.50%), before the rise in the costs of euro borrowing triggered by the tightening of ECB's monetary policy.

In mid-January 2022 the Republic of Serbia for the first time issued government bonds to settle the liabilities under compensation for the confiscated property, regulating the Republic of Serbia obligations in accordance with the Law on Property Restitution and Compensation.[25] Five, ten and twelve year-bonds were issued, in total amount of EUR 69.5 mn.

[25] RS Official Gazette, Nos 72/11, 108/13, 142/14, 88/15 – CC Decision 95/18 and 153/20.

In 2022 three auctions were held by private placement.[26] A 53-week bond was issued through private placement in June and sold in nominal value of EUR 350 mn, at the coupon rate of 2.4%. The same bond was early bought back at end-January 2023. Two amortised government bonds in euros were issued through private placement in August, a three-year one with the coupon rate of six-month EURIBOR + 3.75 pp and a four-year bond at the coupon rate of six-month EURIBOR + 3.95 pp.

In 2022 there were no eurobond issues in the international market and in January 2023 the Republic of Serbia issued a dual-tranche of eurobonds in euros in the international financial market. These were five- and ten-year eurobonds worth USD 1.75 bn and were more than six times oversubscribed (over USD 11 bn). The five-year eurobond was issued at the coupon rate of 6.25%, while the ten-year eurobond was issued at the rate of 6.50%. For the sake of efficient public debt management, hedging transactions were concluded concurrently, i.e. liabilities under the issuance of dollar eurobonds were immediately converted into euro liabilities. Apart from reducing exposure to the USD/EUR risk, this also helped to reduce the cost of borrowing of the Republic of Serbia.

Also speaking of positive perception of Serbia as an investment destination is the preserved country credit rating, one notch away from investment grade, despite the heightened uncertainties in the international environment. Fitch Ratings kept Serbia's credit rating at BB+ (one step away from investment grade) in February and August 2022, as well as in February 2023, with the stable outlook. In June 2022 Standard & Poor's affirmed Serbia's BB+ long-term foreign and local currency sovereign credit rating, while changing the outlook from positive to stable, and in December it kept the rating at BB+, with the stable outlook. In its report from April 2023, Standard & Poor's particularly underscored proven credibility of economic policy, favourable long-term growth prospects of Serbia, fiscal discipline, reduced financing needs and the downward path of public debt. They also stated high FDI inflow, which played a significant role in the expansion of export capacities and in their greater diversification, as well as in the increase of country's FX reserves, which are estimated to remain adequate in the medium run as well. In 2022 Moody's Investors Service did not publish press releases about Serbia's credit rating.

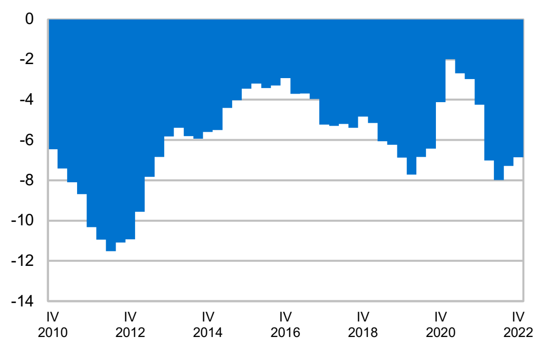
I.4.3 External debt

The outbreak of the Ukraine conflict and the energy crisis resulted in deterioration of terms of trade in the majority of European countries which are net energy importers. In 2022, the domestic current account deficit amounted to EUR 4.1 bn or 6.9% of GDP, up by EUR 1.9 bn from 2021 (Chart I.4.10).

Around one half of the current account deficit value was generated in the first four months of the year, due to high import prices of energy. However, more favourable movements in energy prices since May, with the rising surpluses in services trade and secondary income, softened the current account deficit increase.

After foreign trade rebounded from the consequences of the coronavirus in 2021, it continued strongly upward in 2022. EU countries remained the biggest foreign trade partners of Serbia, accounting for 64.1% of total exports and 54.9% of total imports in 2022. Thanks to the production and geographic diversification and export-oriented investments, goods and services exports went up by 1.9% in 2022. According to the categories of the Standard International Trade Classification, the greatest share in exports in 2022 was that of electric machinery, apparatus and appliances (11.4%).[27] The rise in commodity exports was driven by strong growth in manufacturing and mining exports, an extension of

Chart I.4.10 **Current account***
(% of GDP)

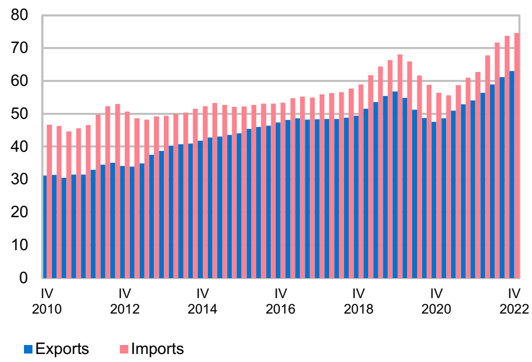


* Moving sums for the last four quarters.
Source: NBS.

[26] Through private placement, prescribed by the Regulation Amending the Regulation on General Conditions for Issuance and Sale of Government Securities in the Primary Market (RS Official Gazette, No 59/2022), exceptionally, the Government may decide to sell government securities to qualified investors, domestic or foreign, in the country or abroad.

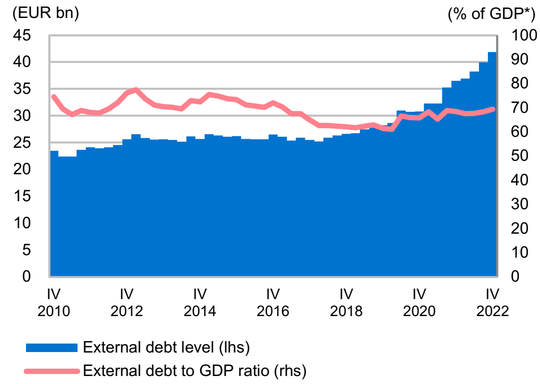
[27] https://www.mfin.gov.rs/aktivnosti/bilten-javnih-finansija-za-mesec-decembar-2022

Chart I.4.11 **Exports and imports***
(% of GDP)



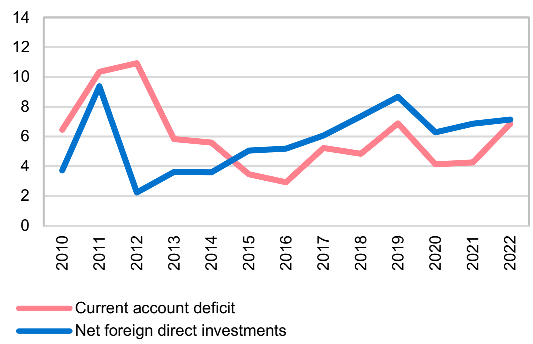
* Moving sums for the last four quarters.
Source: NBS.

Chart I.4.13 **External debt dynamics**



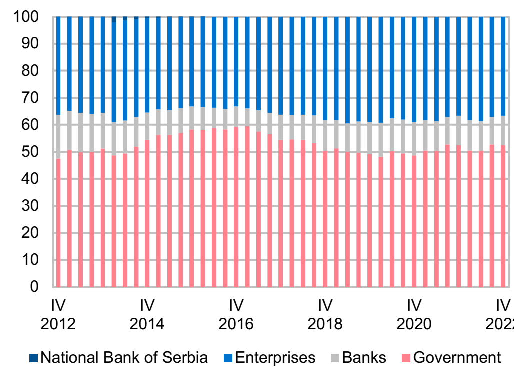
* Moving sums for the last four quarters.
Source: NBS.

Chart I.4.12 **Current account deficit financing via FDIs**
(% of GDP)



Source: NBS

Chart I.4.14 **External debt by borrower**
(%)



Source: NBS.

positive trends from 2021, while services exports increased on the back of tourist and ICT services.

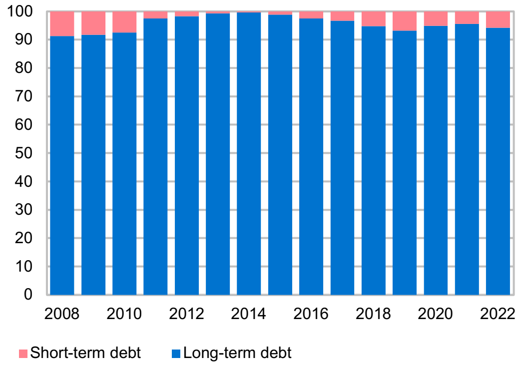
Goods and services imports went up by 34.7% annually (Chart I.4.11). The greatest contribution came from imports of intermediate goods, primarily higher imports of energy, which due to higher prices of petroleum products and gas increased by EUR 3.9 bn. 2022 saw the rise in imports of capital goods and consumer goods, while services imports rose on the back of transport and tourist services.

For the eighth year in a row, the current account deficit was fully covered by FDI (104.0% coverage at end-2022), which also strengthens the sustainability of the country's external position (Chart I.4.12).

In 2022, total FDI inflow to Serbia reached EUR 4.4 bn (EUR 4.3 bn net), the highest annual FDI inflow since data are monitored (since 1997). Net FDI inflow in 2022 was 17.7% higher than in the year before, and their share in GDP equalled 7.1%. Investments remained broadly project-diversified and oriented mainly to export-oriented sectors. The majority of investments were channelled to manufacturing, followed by construction, transport and mining. Branches of manufacturing with the largest FDI inflow recorded a strong upswing in employment, production and exports. FDIs are geographically dispersed, with the rising share of countries from the Asia-Pacific region, apart from the EU. Net FDI inflow is expected to continue to fully cover the current account deficit going forward, which will contribute to external sustainability.

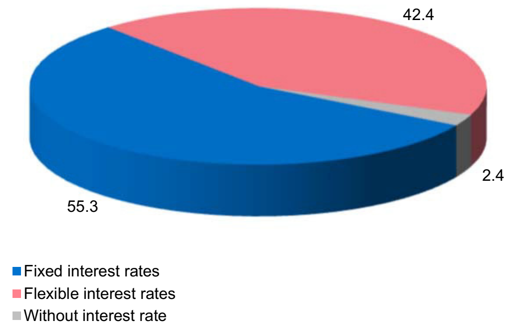
At end-2022 external debt equalled EUR 41.9 bn, or 69.4% of GDP. Relative to end-2021, total external debt increased by around EUR 5.4 bn, while its share in GDP edged up by 1.0 pp (Chart I.4.13).

Chart I.4.15 **External debt by original maturity**
(%)



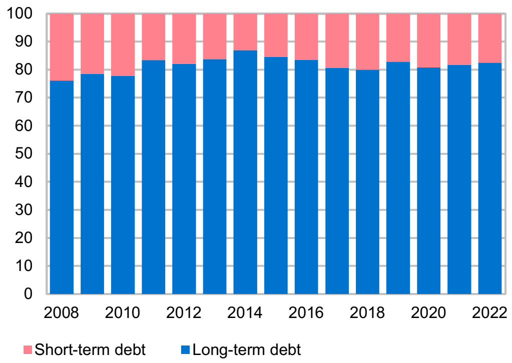
Source: NBS.

Chart I.4.17 **External debt interest rate composition 31 December 2022**
(%)



Source: NBS.

Chart I.4.16 **External debt by remaining maturity**
(%)



Source: NBS.

External debt increased due to both public and private sector borrowing. At end-2022, external debt of the public sector rose by EUR 3.0 bn and of the private sector by EUR 2.4 bn, of which banks' debt by EUR 0.3 bn (Chart I.4.14).

The risk of external debt refinancing is relatively low, given that its maturity structure is favourable. The share of external debt with original and remaining maturity of over one year is high, measuring 94.3% at end-2022 (Chart I.4.15) or 82.5% (Chart I.4.16).

The external debt share repaid at the fixed interest rate dropped by 6.3 pp relative to the year before, while remaining favourable at 55.3% (Chart I.4.17). The external debt share repaid at the variable interest rate (42.4%) was concentrated predominantly in the banking sector (87.3%). The effective interest rate has been relatively low and stable over a longer period, mainly owing to a considerable share of loans of international financial institutions in total external debt.

I.5 Corporate sector

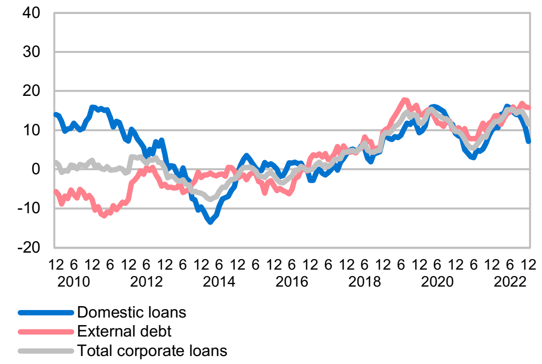
Y-o-y growth in corporate lending slowed down in H2 2022, and standards for approval of corporate loans were tightened. Despite an increase in interest rates due to more stringent monetary policies of leading central banks and the NBS, the share of corporate NPLs in 2022 was additionally lowered to its new low. In 2022 as well, the NBS supported the corporate sector with numerous measures.

As monetary conditions were more rigid in 2022, banks tightened corporate loan approval standards. In H1 corporate lending recorded double-digit y-o-y growth rates, only to decelerate in H2 2022. Domestic corporate loans[28], excluding the exchange rate effect[29], went up by 7.1% in 2022 (Chart I.5.1). The increase in domestic corporate loans, coupled with higher external corporate debt, resulted in the rise in total corporate debt compared to the previous year. Excluding the exchange rate effect, the rise in total corporate loans, which includes external debt as well, measured 11.5% in 2022. External corporate debt in 2022 increased by 15.8% (Chart I.5.1).

[28] The corporate sector includes the public non-financial sector, companies and the non-financial sector undergoing bankruptcy.

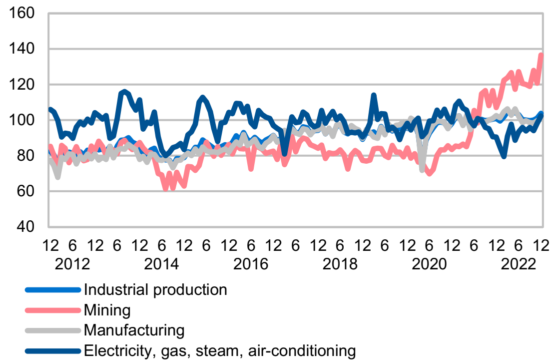
[29] Calculated at the dinar exchange rate against the euro, Swiss franc and US dollar as at 31 October 2022 (the programme exchange rate used for monitoring the performance under the stand-by arrangement with the IMF), taking into account the currency structure of the loan.

Chart I.5.1 **Corporate credit activity***
(y-o-y growth rates, %)



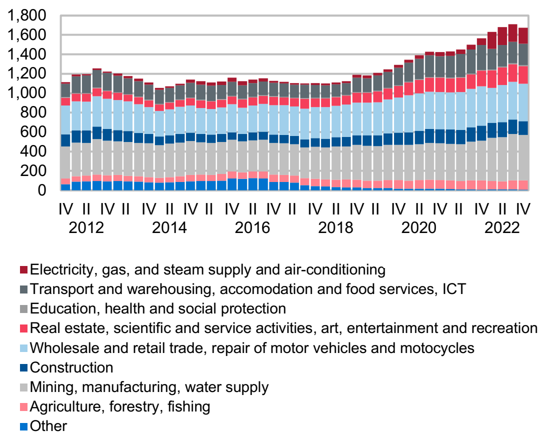
* Excluding the exchange rate effect.
Source: NBS.

Chart I.5.3 **Industrial production index***
(index, 2021 = 100)



* Seasonally ajusted data.
Source: NBS.

Chart I.5.2 **Bank claims on corporates, by sector**
(RSD bn)



Source NBS.

Sector-wise (Chart I.5.2), the bulk of bank receivables from corporates at end-2022 were receivables from mining, manufacturing and water supply sectors, worth RSD 467.5 bn (27.9% of total corporate sector receivables), wholesale and retail trade sector, repair of motor vehicles and motorcycles worth RSD 385.5 bn (23.0% of total corporate sector receivables), as well as transport and storage, food and accommodation services, and ICT worth RSD 219.9 bn (13.1% of total corporate sector receivables).

Total bank receivables from the corporate sector at end-December 2022 increased nominally by 6.8% relative to the same period in 2021, mostly on account of the rise in receivables from the electricity, gas, steam and air conditioning supply sector by RSD 94.7 bn compared to the end of the previous year, and mining, manufacturing and water management by RSD 56.9 bn. On the other hand, bank receivables from the transport and storage sectors, food and accommodation services, as well as the ICT sector (RSD 36.8 bn) decreased the most, followed by retail and wholesale trade, as well as repair of motor vehicles and motorcycles (RSD 17.8 bn).

Due to rising energy imports in Q1 2022, the debt of energy sector corporates also went up. In this period, the electricity, gas, steam and air conditioning supply sector recorded the y-o-y growth of RSD 103.2 bn, which contributed to the highest y-o-y growth in receivables of this sector of 135.1% at end-2022, observed by economic branch.

The increase in the borrowing of the mining and manufacturing sectors was accompanied by the y-o-y rise in industrial production in these sectors in 2022 by 22.5% and 1.5%, respectively.

As in the previous period, the dominant share in corporate lending pertained to liquidity and working capital loans (47.3%), driven by the guarantee scheme loans. Loans for this purpose recorded the highest y-o-y nominal growth of RSD 64.4 bn (9.3%), followed by investment loans with the share in total corporate loans of 40.5%. They went up by RSD 24.5 bn (3.9%) in 2022.

The Bank Lending Survey[30] indicates that in 2022 banks kept tightening corporate loan approval standards. The

[30] Report on the Results of the Bank Lending Survey, https://nbs.rs/en/drugi-nivo-navigacije/publikacije-i-istrazivanja/anketa-kreditna-aktivnost/index.html

tightening of standards was driven by the rise in the costs of financing and stronger risk aversion amid uncertainty as to the overall economic situation, as well as NPLs and the quality of required collateral. The tightening affected FX-indexed more than dinar loans. By enterprise size, credit standards were tightened more for large enterprises than for SMEs. The tightening of conditions for loan approval pertained to both price and other conditions – collateral requirements were made more rigid while maximum loan amount and maturity were reduced.

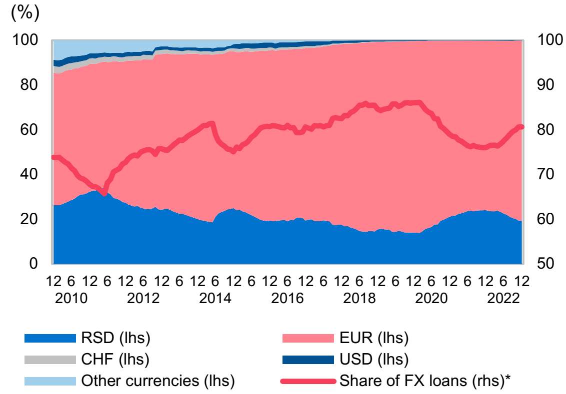
Loans approved to microenterprises and SMEs at end-2022 accounted for 60.6% of total corporate loans. In y-o-y terms, the volume of lending to small and medium-sized enterprises increased by 0.2% and 2.2%, respectively, while it was reduced in case of microenterprises, by 17.6%. Loans granted to large enterprises accounted for 39.4% of total corporate loans, recording 26.0% y-o-y growth.

By maturity, at end-2022, long-term receivables were dominant. The share of long-term loans in total corporate loans in December measured 81.7%, indicating a low risk of corporate sector refinancing. This share dropped by 3.5 pp from 2021.

As guarantee scheme loans, predominantly approved in dinars, were maturing in 2022, the degree of dinarisation of corporate sector receivables dropped. At end-2022, the share of dinar receivables in total bank receivables from corporates equalled 19.4%, down by 4.6 pp from end-2021 (Chart I.5.4). The share of euro receivables increased by 4.7 pp, while the share of dollar and Swiss franc receivables remained almost the same. To reduce exposure of the corporate sector to currency risk, the NBS is actively promoting the use of hedging instruments, attempting to lower the risk of exchange rate volatility and in turn aid the strengthening of financial stability. Hedging instruments offered in the market are FX forward contracts, forward FX purchases (covered forward contracts) and currency swaps.

The recorded share of NPLs in total corporate loans and loans to the public non-financial sector of 2.1% at end-2022 amid geopolitical risks, rising inflation and tightened monetary policy measures, is yet another confirmation of the success of the systemic approach to NPL resolution. Since the adoption of the NPL Resolution Strategy in 2015, the share of NPLs of this sector dropped by 22.3 pp. The reduction in this indicator by 0.8 pp in 2022 from 2021 indicates that the rise in interest rates did not worsen the corporate capacity for servicing liabilities arising from loans. Also, the fact that this share is 1.1 pp below the pre-pandemic level indicates that timely and adequate NBS measures during the pandemic prevented a more serious adverse impact on the corporate sector and, in turn, on financial stability.

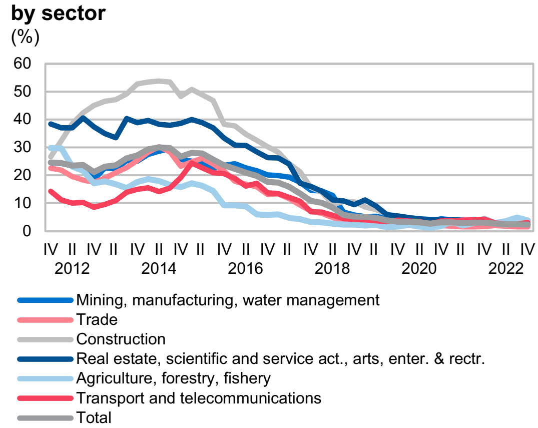
Chart I.5.4 **Currency structure of domestic corporate loans**



* Share of FX and FX-indexed loans in total debt.
Source: NBS.

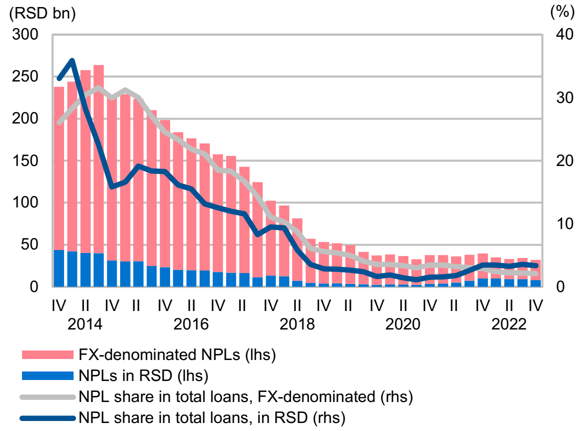
The share of NPLs in total loans in 2022 declined in both the corporate sector and the public non-financial sector. The share of NPLs in total corporate loans dropped from end-2021 by 0.7 pp to 2.3% at end-2022 and the share of NPLs of the public non-financial sector by 1.1 pp, to 0.8%. Overall, at the level of the corporate and public non-financial sector, the y-o-y reduction in the share of NPLs in 2022 was also driven by the decrease in the level

Chart I.5.5 **NPL share in total loans of corporates by sector**



Source: NBS.

Chart I.5.6 **Corporate NPLs by currency**



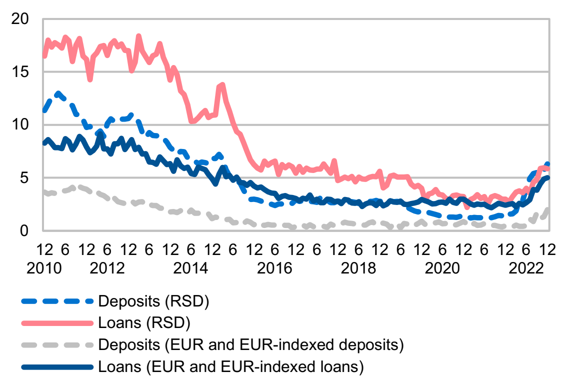
Source: NBS.

of NPLs by RSD 9.4 bn and the rise in total corporate lending by RSD 109.9 bn.

The level of NPLs in 2022 declined in all economic branches. The sharpest decline in the level of NPLs was recorded in mining, manufacturing and water supply sectors – by RSD 3.2 bn (a drop in the share by 1.1 pp, to 2.2%), followed by transport and storage, accommodation and food services, ICT – by RSD 2.9 bn (a decline in the share by 0.9 pp, to 2.5%).

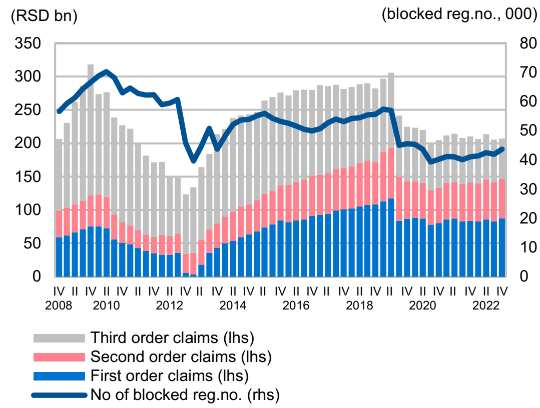
Since August 2015, when the NPL Resolution Strategy was adopted, the share of NPLs in total corporate loans (Chart I.5.5) was reduced the most in the sectors of construction (by 44.6 pp) and real estate, scientific and

Chart I.5.7 **Interest rates on corporate loans and deposits – new business**
(weighted average, annual, %)



Source: NBS.

Chart I.5.8 **Movement of claims through enforced collection by priority**



Source: NBS.

service activities, art, entertainment and recreation (by 34.8 pp).

In terms of the currency structure (Chart I.5.6), the share of corporate FX-denominated NPLs stood at 2.1% at end-2022, down by 0.8 pp y-o-y. The share of dinar NPLs stood at 3.3% at end-2022, down by 0.1 pp.

In 2022, banks wrote off RSD 6.7 bn and sold RSD 3.1 bn of corporate NPLs to entities outside the banking sector.

In 2022, borrowing costs of corporates increased (Chart I.5.7). Observing the costs of borrowing in dinars, in December 2022, the weighted average interest rate on new dinar loans stood at 5.86%, up by 2.88 pp from December 2021. The weighted average rate on new euro and dinar euro-indexed loans also increased to 5.01% in December 2022 (2.59 pp higher than in December 2021). The interest rate on term dinar deposits of the corporate sector increased by 4.59 pp y-o-y, to 6.32% in December 2022, while the interest rate on euro deposits rose by 1.51 pp, y-o-y, to 2.00%.

At end-2022, there were 43,760 corporates with blocked accounts (Chart I.5.8), up by 6.5% from end-2021. The amount of blocked funds in the accounts decreased from last year. In 2022, it amounted to RSD 206.9 bn (down by 1.6% from 2021).

In 2022, the NBS Enforced Collection received from competent commercial courts 438 decisions to open bankruptcy proceedings against debtors (up by 41 from 2021), and 362 decisions to close bankruptcy proceedings (up by 12 from 2021). Further, it also received: 15 decisions on closing bankruptcy proceedings (11 decisions in 2021) and 61 decisions on suspension of the proceedings in order to sell the debtor's assets (67 in 2021). In addition, the NBS received 65 decisions on instituting a preliminary bankruptcy procedure with safeguard measures (50 in 2021), and 19 decisions on the adoption of the pre-pack reorganisation plan (14 in 2021).

When global supply chains were disrupted due to intensified geopolitical tensions and the Ukraine conflict, the NBS responded timely and helped corporates to mitigate the spillover of high global prices of primary commodities to the domestic market.

In view of the strategic importance of agricultural production for citizens and corporates and given the unfavourable economic situation affecting some agricultural producers, in October 2022 the NBS adopted the following regulations:

– Decision on Temporary Measures for Banks Aimed at Adequate Management of Credit Risk in Agricultural Loans Portfolio in Conditions of Aggravated Agricultural Production[31] and

– Decision on Temporary Measures for Lessors Aimed at Adequate Management of Credit Risk in the Portfolio of Leases of Agricultural Machinery and Equipment in Conditions of Aggravated Agricultural Production.[32]

The said agricultural regulations enabled the rescheduling of existing liabilities, meaning that the debtors can opt for the extended settlement of liabilities on account of principal by at least six to 12 months. The payment term for the loan and/or lease repayment is in this case extended in such a way that the amount of annuity at the moment of reschedule approval cannot be higher than the amount before the reschedule. During the grace period, the debtors will pay solely the contracted interest. The reschedule of liabilities was also offered to bank debtors who deal with purchase and storage of fruit (raspberries) in cold storage plants on account of reduced demand for and unfavourable movements in the prices of raspberries in the international market. The reschedule was intended for agricultural producers listed in the Register of agricultural estates within the meaning of the law governing agriculture and rural development: a natural person who is the owner of a commercial family agricultural estate within the meaning of the law governing agriculture and rural development, an entrepreneur, legal entity: agricultural cooperative with at least five cooperative members listed in the Register as owners or members of five different agricultural estates listed in the Register, another legal entity classified as a micro or small legal entity within the meaning of the law governing accounting.

As in the previous years, in 2022 the Government adopted a series of decrees aimed at stimulating the development of entrepreneurship by providing financial support to start-ups and by means of development projects. The Government also adopted the Decree on establishing the programme for stimulating entrepreneurship through development projects in 2022[33], which implied giving grants worth RSD 350 mn. The aim of the programme was to increase the value and volume of output and turnover, stimulate balanced regional development, support employment, strengthen competitiveness and protect the environment.

I.6 Household sector

Key labour market indicators were stable in 2022 despite heightened global uncertainty and economic slack. Total household savings continued up, strengthening the deposit base of the banking sector. Some NBS measures adopted to facilitate to households the settlement of liabilities and access to financing remained in force in 2022. In addition, the NBS adopted a new set of regulations in 2022 with a view to preserving the living standard.

Positive labour market developments continued in 2022 despite the pronounced geopolitical tensions and economic slack. According to the Labour Force Survey, the employment rate went up by 0.1 pp from Q4 2021, to 50.1% in Q4 2022. Following a slight increase in Q1, the unemployment rate resumed a decline, falling by 0.6 pp y-o-y, to 9.2% in Q4 2022. The average monthly net wage in the Republic of Serbia in 2022 equalled RSD 74,933, having risen 13.8% in nominal and 1.7% in real terms, compared to 2021.[34] The average pension in 2022 equalled RSD 31,432, which is a nominal increase of 7.0% from the previous year.[35]

In 2022, regulations were adopted which temporarily limited the prices of basic foodstuffs and petroleum products so as to mitigate inflationary pressures and

[31] RS Official Gazette, Nos 111/2022 and 5/2023.

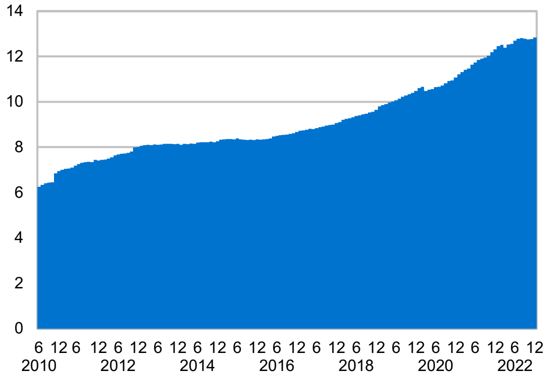
[32] RS Official Gazette, No 111/2022.

[33] RS Official Gazette, No 4/2022.

[34] Source: SORS.

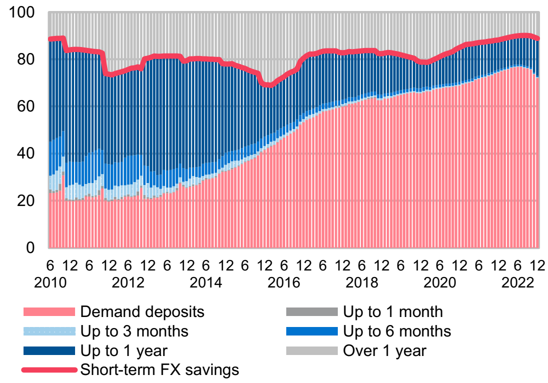
[35] Source: Pension and Disability Insurance Fund of the Republic of Serbia.

Chart I.6.1 **FX household savings**
(EUR bn)



Source: NBS.

Chart I.6.2 **FX household savings by maturity**
(%)



Source: NBS.

preserve the living standard, particularly of the socially vulnerable groups. Further, on three occasions the Serbian government provided assistance to youth (16-29) to reduce the negative impact of the pandemic, sustain aggregate demand and stimulate economic growth. Also, one-off assistance was paid to pensioners.

Despite heightened global uncertainty due to intensified geopolitical tensions and the Ukraine conflict, total residents' savings kept up, strengthening the banking sector deposit base which is the main source of loan financing. FX savings reached record EUR 12.8 bn at end-2022, up by EUR 0.5 bn from end-2021 (Chart I.6.1).

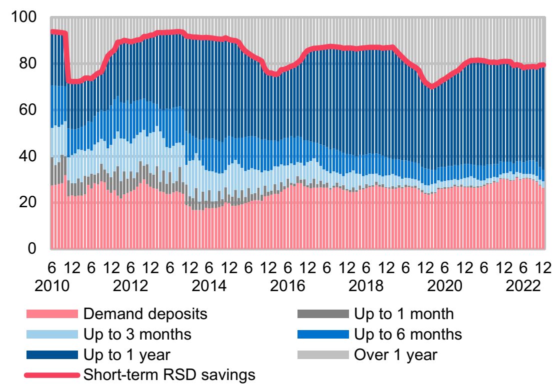
The maturity structure of FX savings shows that the share of short-term savings in total FX savings went up by 0.6 pp, to 88.8% in 2022 (Chart I.6.2).

Dinar household savings equalled RSD 95.7 bn at end-2022, down by RSD 8.0 bn from end-2021. The outbreak of the Ukraine conflict caused a temporary increase in household demand for foreign cash and, accordingly, changes in the currency composition of savings in favour of FX savings. As of end-H1, dinar savings recovered and have been gradually rising ever since. In Q3 2022, dinar savings recorded extremely dynamic growth owing to more intense bank activity around the savings week, as well as a rise in interest rates caused by the ECB and NBS monetary policy tightening. Promoting savings in the local currency and emphasizing their higher profitability is a part of the NBS strategy of dinarisation of the financial system. This bolsters financial stability given that a higher degree of dinarisation of the financial system ensures greater efficiency of monetary policy measures and greater resilience to the risk of exchange rate volatility, as well as impacts from the international environment.

The analysis of savings profitability[36] shows that in the past ten years dinar savings were more profitable than euro savings both in the short and long run reflecting the achieved and preserved macroeconomic and financial stability, relatively higher interest rate on savings in dinars compared to the rates on savings in euros, more favourable tax treatment of dinar savings, as well as proactive measures of monetary and fiscal policies aimed at reducing the adverse impact of geopolitical tensions and other risks from the international environment.

Chart I.6.3 shows that in 2022 the maturity structure of dinar savings changed slightly in favour of long-term

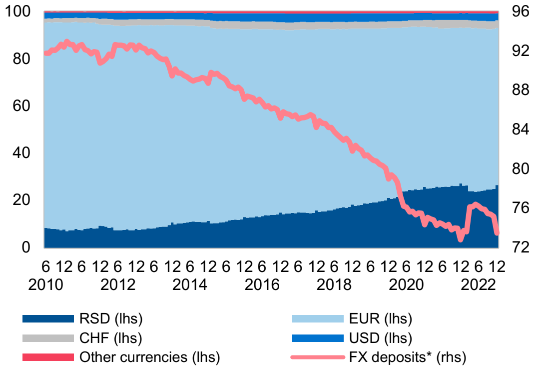
Chart I.6.3 **RSD household savings by maturity**
(%)



Source: NBS.

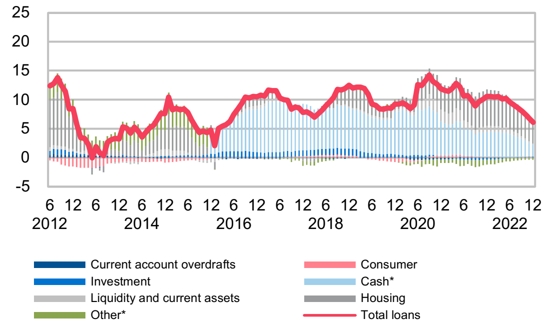
[36] https://www.nbs.rs/export/sites/NBS_site/documents-eng/publikacije/dinarizacija/analize/analiza_isplativosti_dds_e_II_2022.pdf

Chart I.6.4 **Currency structure of household deposits**
(%)



* The share of FX and FX-indexed deposits in total household deposits.
Source: NBS.

Chart I.6.6 **Contributions to growth in bank receivables from households, by purpose**
(y-o-y growth rates, pp)



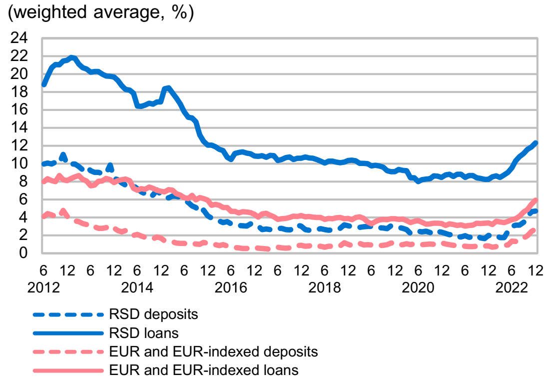
* Until December 2014, cash loans were included in the category of other loans.
Source: NBS.

savings and their share in total dinar savings equalled 20.6% at the end of the year, up by 1.4 pp from end-2021.

The share of dinar deposits in total household deposits[37] decreased by 0.7 pp from end-2021, to 26.5% at end-2022. Euro deposits continued to account for the bulk of deposits (66.4%), while their share was 0.5 pp higher than at end-2021. At end-2022, the share of dollar and Swiss franc deposits was low and amounted to 3.1% and 3.2%, respectively (Chart I.6.4).

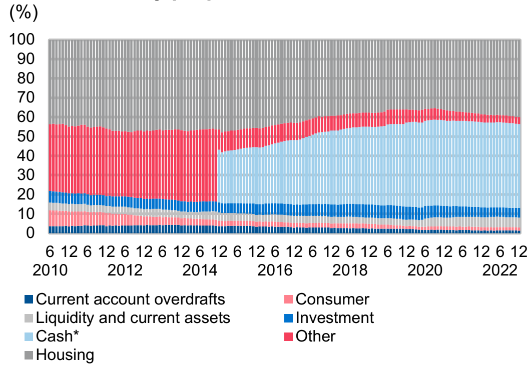
The NBS and ECB monetary policy tightening reflected on the increase in interest rates on household loans and savings with banks. Interest rates on new dinar household loans in 2022 went up by 4.06 pp, to 12.31% in December. In the same period, interest rates on new euro-indexed and euro loans increased by 2.55 pp to 5.93% (Chart I.6.5). The interest rates on new dinar deposits rose by 2.72 pp, amounting to 4.70% in December 2022. The interest rates on euro savings went up by 1.89 pp y-o-y, to 2.71% in December 2022. Total receivables[38] from the household sector[39] at end-2022 rose 6.1% in nominal terms relative to a year earlier (Chart I.6.6). Broken down by purpose, the highest contribution to the nominal growth in household receivables came from the rise in housing and cash loans (4.0 pp and 2.1 pp, respectively). Housing loans growth was driven by a higher demand for real estate, continued rise in the supply of flats,[40] as well as NBS measures supporting housing loans. At end-2022, the number of housing loans totalled 168,934 and their

Chart I.6.5 **Interest rates on RSD, EUR and EUR-indexed household loans and deposits – new business**
(weighted average, %)



Source: NBS.

Chart I.6.7 **Structure of bank receivables from households, by purpose**
(%)



* Until December 2014, cash loans were included in the category of other loans.
Source: NBS.

[37] In addition to savings, household deposits also include transaction deposits. The calculation includes the household sector (without non-profit institutions serving households).

[38] Receivables include loans, interests, fees and other receivables.

[39] The household sector comprises domestic natural persons, foreign natural persons – residents, private households with employed persons, registered farmers and entrepreneurs.

[40] For more information about trends in the real estate market, see Chapter III. 4.

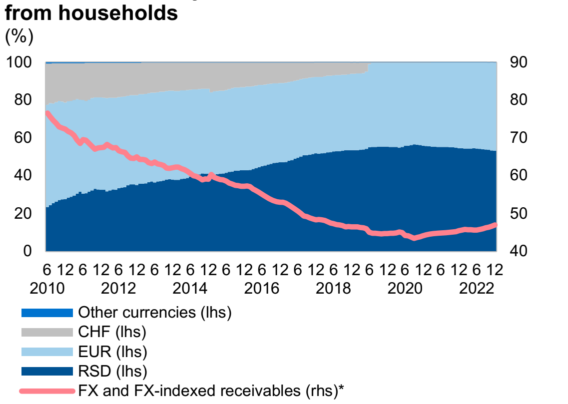
gross value was RSD 583.4 bn, while their share in total bank household receivables reached 40.0%, which is 1.6 pp more than in 2021. The share of receivables under cash loans in total household receivables was insignificantly reduced (by 0.5 pp) to 43.4% at end-2022 (Chart I.6.7).

The volume of new loans to households (non-profit institutions included) in 2022 contracted by 2.1% from 2021. The composition of new household loans shows the dominance of cash loans (58.3%) in 2022. Also, a considerable amount of new lending were housing loans, whose share in new household loans equalled 23.5% in 2022, down by 1.7 pp from 2021.

As for the currency composition, the bulk of new household loans (68.2%) was granted in dinars (up by 0.3 pp from 2021) as a result of NBS regulations,[41] which encourage borrowing in dinars. In the category of cash loans, new dinar loans accounted for over 99% of total new loans in 2022, which is supportive of the dinarisation process. Relative to end-2021, the share of dinar receivables in total household receivables decreased by 1.5 pp to 53.1% (Chart I.6.8), as a result of robust growth in housing loans, still predominantly euro-indexed. This share moved above the share of FX and FX-indexed receivables (46.9%) among which euro-indexed and euro loans were prevalent (accounting for 46.8% of total bank receivables from households).

The share of gross NPLs of the household sector in total household loans (gross NPL ratio) was 3.9% in December 2022, down by 0.2 pp from end-2021. At end-2022, gross NPL ratio for housing loans dropped by 0.5 pp relative to the previous year, to 1.5%, while it went up by 0.1 pp, to 6.0% for cash loans. Timely and adequate NBS and Serbian government measures helped avoid a larger negative impact of the coronavirus pandemic, heightened geopolitical tensions and a rise in interest rates on households' creditworthiness.

Chart I.6.8 **Currency structure of bank receivables from households**



* The share of FX and FX-indexed receivables in total receivables on households.
Source: NBS.

The majority of housing loans (60.0%) were insured by the National Mortgage Insurance Corporation. At end-2022, there were 101,435 insured loans, down by 3,744 from end-2021. The initially insured amount is EUR 3.4 bn, of which EUR 2.3 bn is outstanding. At the end of 2022, the Corporation portfolio contained 334 past due loans worth EUR 13.7 mn. These loans were declared past due because of difficulties in repayment, and until the mortgaged property is sold, the Corporation is the one paying the annuities. Compared to 2021, the number of these loans decreased by 95, while the outstanding amount of insured past due loans went down by EUR 2.6 mn. A total of 680 mortgages under insured housing loans have been foreclosed since the Corporation began operating.

In December 2022, the decision was made to extend the application of the Decision on Temporary Measures for Banks to Facilitate Access to Financing for Natural Persons,[42] adopted in August 2020, until the end of December 2023. This Decision reduced the minimum degree of completion of a residential building whose purchase can be financed from a housing loan with preferential treatment, allowed the housing loan repayment period extension by maximum five years, and facilitated the granting of loans of up to RSD 90,000 with the maturity of up to two years to a natural person who does not receive his/her pension via an account with the lending bank. In addition, the said Decision enabled a bank to exclude for the purposes of establishing capital conservation buffer and systemic risk buffer the exposures under a new housing loan to a natural person secured with a mortgage entered in the cadastre even if the natural person is using the loan to buy the real estate from an investor. Further, in 2020, banks were allowed to reduce downpayment for first-time home buyers from 20% to 10% for an indefinite period of time.[43]

In August 2022, the NBS adopted the Decision on the Payment Account with Basic Features, which permanently protects citizens' standard in relation to payment services needed for everyday activities. This

[41] Decision on Measures for Safeguarding and Strengthening Stability of the Financial System (RS Official Gazette, Nos 34/2011, 114/2017 and 84/2020).

[42] Decision on Temporary Measures for Banks to Facilitate Access to Financing for Natural Persons (RS Official Gazette, Nos 108/ 2020, 119/2021 and 137/2022).

[43] Decision on Measures for Safeguarding and Strengthening Stability of the Financial System (RS Official Gazette, Nos 34/2011, 114/2017 and 84/2020).

Decision regulates in detail the right of consumers to the payment account with basic features, types of services covered by that account and limit to fees that can be charged by banks in relation to that account. Maximum fee for the payment account with basic features is RSD 150 and the mandatory services included are as follows: opening and maintaining a dinar current account, free-of-charge cash withdrawal at bank offices and its ATMs, free-of-charge debit card and the use of m- and e-banking.[44] Also, the amended Decision on Risk Management by Banks requires commercial banks to inform the NBS about the planned changes of bank fees within a reasonable time ahead of the change, which enables timely establishment of whether bank actions are appropriate, as well as taking of adequate measures and activities.[45]

Bearing in mind the increase in interest rates, the Decision on Capital Adequacy of Banks was amended in December 2022 in order to enable banks[46] to restructure their receivables from natural persons on account of consumer, cash or other loans without any impact on their capital. The said regulatory arrangement enabled banks to extend the repayment term in respect of these loans to financially distressed debtors, based on a reasoned request, by up to three years so that the repayment term for cash and consumer loans is no more than nine years and for loans for the purchase of motor vehicles no more than 11 years. It is important to stress that this procedure does not increase the outstanding amount of debt and that the restructuring within the meaning of this Decision can be implemented only once.

As so far, the NBS continues to monitor developments and implement all the necessary measures aimed at preserving the stability of the financial system and protecting the interests of households and corporates.

The table below contains the main indicators for the household sector for the period 2011-2022.

Table I.6.1 **Household sector performance indicators**
(%, unless indicated otherwise)

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Bank receivables from households												
RSD bn	601.7	652.7	673.7	724.6	759.1	838.6	904.2	1,017.3	1,111.3	1,243.0	1,374.2	1,457.5
EUR mn	5,750.5	5,739.5	5,876.3	5,990.6	6,240.8	6,792.0	7,632.1	8,606.8	9,450.6	10,571.5	11,687.2	12,423.1
Total deposits of households												
RSD bn	855.2	988.7	1,044.6	1,125.9	1,165.5	1,258.0	1,275.9	1,393.5	1,558.7	1,751.6	1,989.3	2,048.7
EUR mn	8,172.7	8,694.2	9,111.6	9,308.6	9,582.9	10,188.8	10,769.6	11,789.9	13,254.7	14,897.1	16,918.7	17,462.6
FX bank receivables to total receivables[1]	67.4	65.0	62.1	59.0	57.2	53.0	48.3	46.4	44.7	44.1	45.4	46.9
FX to total deposits[1]	90.7	92.1	89.4	88.7	87.1	85.1	84.2	81.8	79.0	74.3	72.8	73.5
FX deposits to FX bank receivables[1]	191.2	214.7	223.3	233.4	233.9	241.0	246.2	241.3	248.1	237.7	232.1	220.2
LTV ratio - flats	n/a	n/a	n/a	n/a	55.9	61.2	60.6	64.7	52.1	63.1	62.4	63.6
Average loan per resident												
RSD thousand	80.6	87.8	91.0	99.9	105.3	117.4	127.7	144.5	158.8	177.9	198.7	213.2
EUR	770.1	771.9	793.4	826.3	865.7	950.5	1,077.6	1,222.8	1,350.8	1,513.3	1,689.6	1,817.4
Average loan amount												
RSD thousand	439.6	460.4	489.9	511.1	472.2	483.9	483.8	516.3	553.1	564.0	575.6	586.6
EUR	4,201.4	4,049.0	4,273.1	4,225.3	3,882.5	3,918.7	4,083.5	4,368.4	4,703.4	4,796.5	4,895.5	5,000.1
Average loan per user												
RSD thousand	530.9	570.1	612.0	644.7	614.6	634.7	646.9	701.7	747.9	786.7	824.9	853.1
EUR	5,073.9	5,012.9	5,338.8	5,329.8	5,053.1	5,140.5	5,460.1	5,936.5	6,359.7	6,691.0	7,015.8	7,271.5

[1] FX receivables and deposits include FX-indexed claims and deposits.
Sources: SORS, ASB and NBS.

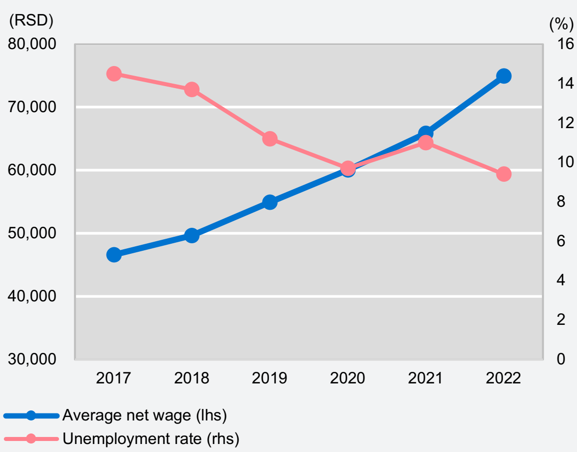
[44] Decision on the Payment Account with Basic Features (RS Official Gazette, No 89/2022).
[45] Decision Amending the Decision on Risk Management by Banks (RS Official Gazette, No 89/2022).
[46] Decision Amending the Decision on Capital Adequacy of Banks (RS Official Gazette, No 137/2022).

Text box 1: Impact of interest rate changes on household debt

Elevated cost-push pressures in late 2021 were amplified by the outbreak of the Ukraine conflict in February 2022. As geopolitical tensions intensified, energy prices soared further and global supply chains were disrupted, fuelling inflationary pressures globally. Inflation hit its multi-decade highs across the world. Responding to mounting inflation, central banks of both advanced and developing economies embarked on monetary tightening, pushing up borrowing costs.

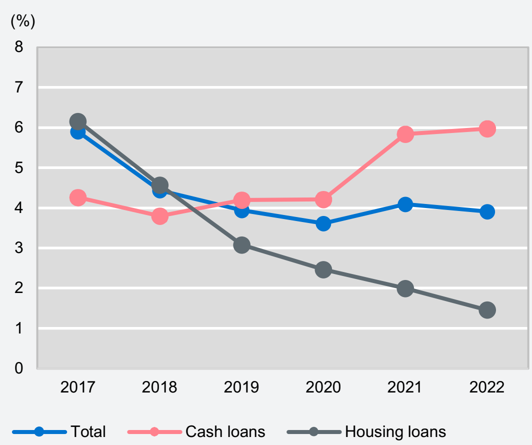
The debt of the Serbian household sector is comparable to the debt of countries in the region, but is significantly below the level recorded in advanced economies. The credit-to-GDP ratio is around 20% in Serbia and around 58% in the euro area.[47] According to data for December 2022, around 19% of Serbia's population (around 55% of the employed) had a cash loan, vs. merely around 2% (around 7% of the employed) of those who took a housing loan. However, a high share of FX and FX-indexed loans, and loans approved at a variable interest rate, makes the costs of repayment of these loans vulnerable not only to interest rate changes at home, but also to movement of euro interest rates which are beyond NBS's control.

Chart O.1.1 a) **Labour market indicators**



Sources: SORS, NBS.

Chart O.1.1 b) **Household sector NPLs**



Sources: SORS, NBS.

Chart O.1.1 shows the household sector indicators, such as the NPL ratio, average wage and unemployment rate from 2017 to 2022. In the period observed, the average nominal net wage was on a constant rise, amounting to RSD 74,933 in 2022. The share of household sector NPLs declined in the first three observed years, only to increase marginally in 2021 relative to end-2020, as a result of the pandemic fallout. In late 2022, this ratio fell to 3.9%, down by 0.2 pp from late 2021. This means that rising interest rates did not deteriorate bank asset quality and that NBS's and Government's measures were adopted in time and helped avoid any major negative effects of the crises from the past three years on citizens' creditworthiness.

As interest rates rise, monthly debt servicing obligations increase, which, in some cases, can lead to loan repayment difficulties. It is therefore important to assess the impact of rising debt as debtors' inability to service their obligations can drive up NPLs and diminish bank asset quality. To assess the credit risk banks are exposed to based on loans extended to households, we carried out an analysis of the impact of interest rate changes on household debt. It is worth noting that those households that concluded contracts on variable rate loans are exposed to rising interest rates.[48]

[47] Data for Q3 2022. Source: https://stats.bis.org/statx/srs/table/f3.1

[48] According to data from Trends in Lending for Q4 2022, in late 2022, the share of fixed rate loans was 28% in the structure of FX and FX-indexed household loans and 61% in the structure of dinar household loans. The rest concerns the loans extended at different levels of the variable interest rate or without the interest rate.

Within the analysis, we observed instalments for cash and housing loans, as the most widely present categories in the household sector, with 43% and 41% respective shares in total loans, according to data for December 2022. In calculation of the average cash loan instalment, the average remaining balance of debt based on cash loans, the average remaining maturity of 50 months and the average interest rate on household cash loans were taken into account. As for housing loans, the average amount of a housing loan worth RSD 3.9 mn[49], the average remaining maturity of 217 months, and the average interest rate on these types of loans were taken into account.

The table below shows the average instalments for housing and cash loans. The data on the amount of the average monthly instalment of a cash loan are expressed in dinars and those of housing loans in euros, given the prevailing share of these currencies in total cash and housing loans (over 99%).

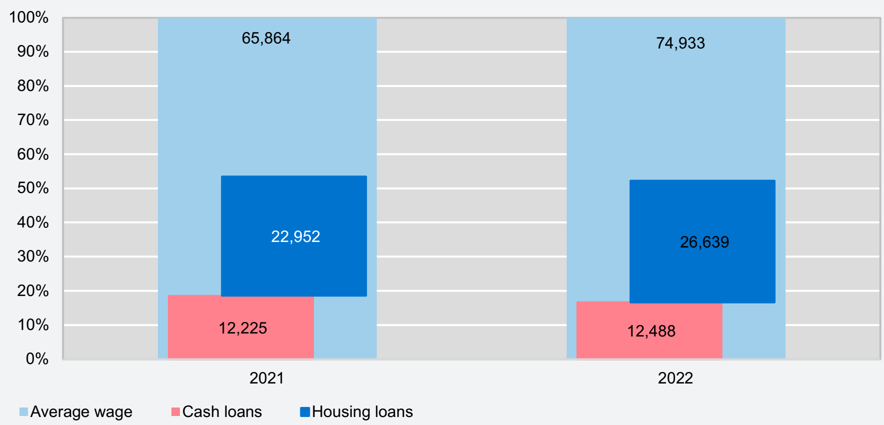
Table O.1.1 **Average monthly instalment of cash and housing loans in 2021 and 2022**

	Cash (RSD)	Housing (EUR)
2021	12,225	195
2022	12,488	227

Sources: NBS, authors' calculation.

The monthly instalment increased for both loan categories. The y-o-y rise was somewhat higher for housing loans – around 16%, vs. around 2% for cash loans. In the same period, the average net wage rose by 13.8% y-o-y. In absolute terms, the average wage increased by RSD 9,069, with instalments for both types of loans going up by RSD 3,950, i.e. the total rise in the average monthly instalment for both types of loans was fully compensated for by the rise in the average monthly net wage.

Chart O.1.2 **Share of average monthly instalment of cash and housing loans in average wage in 2021 and 2022**



Sources: SORS, NBS, authors' calculation.

A rise in credit indebtedness increases the probability of a single loan moving into the NPL category. Therefore, the ratio of total monthly loan obligations to the average monthly net wage was observed, with the aim of assessing the impact of interest rate increases in 2022 on the capacity to settle debt.

The ratio of total monthly credit obligations to the average monthly net wage for cash and housing loans shows no significant changes compared to the year before. At end-2022, the share of the average instalment of cash loans in the average net wage declined by 1.9 pp to 16.7% relative to end-2021. This share in case of housing loans equalled 35.6% in late 2022, up by merely 0.7 pp from the year before.

[49] Association of Serbian Banks, Credit Bureau (December 2022), Report, https://www.ubs-asb.com/en/about-us/credit-bureau/credit-bureau-report

In an environment of monetary tightening, the effect of interest rate increases on the degree of household credit indebtedness in 2022, and, consequently, on the degree of loan collectibility, does not pose a risk to financial stability. A rise in average wages is fully compensating for the increase in credit obligations under average cash and housing loans, even in the case when an individual has both types of loans.

Though rising interest rates did not affect the debt servicing capacity of the household sector as whole, the positions of individual debtors, particularly of socially vulnerable categories, can deteriorate. Bearing this mind, in December 2022, in order to ease the position of those debtors, the NBS amended regulations, enabling banks to reschedule claims on debtors facing loan repayment difficulties. It enabled the extension of the repayment deadline for cash and consumer loans up to nine years, and for car purchase loans up to 11 years.[50] In 2023, banks will also be able to extend the housing loan repayment deadline by five years at most.

Owing to these measures, the effect of rising interest rates on the increase in the household NPL ratio, in an environment of a stable exchange rate and preserved credit activity, is expected to remain contained in the coming period.

[50] Decision Amending the Decision on Capital Adequacy of Banks (RS Official Gazette, No 137/2022).

II Financial sector

Accounting for around 91% of financial sector assets, the Serbian banking sector was stable in 2022 owing to adequate capitalisation, high liquidity and profitability. In 2022, banks posted a positive net financial result, with 1.9% RoA and 13.9% RoE. Domestic lending activity rose by 7.3% in 2022. The share of NPLs in total loans at end-2022 recorded a new historic minimum of 3.0%, indicating that increased costs of loan repayment did not lead to a deterioration of bank asset quality, that NBS measures were timely and adequate and that financial stability was preserved even in the period of a multidimensional crisis we have been facing in the last three years.

II.1 Banking sector

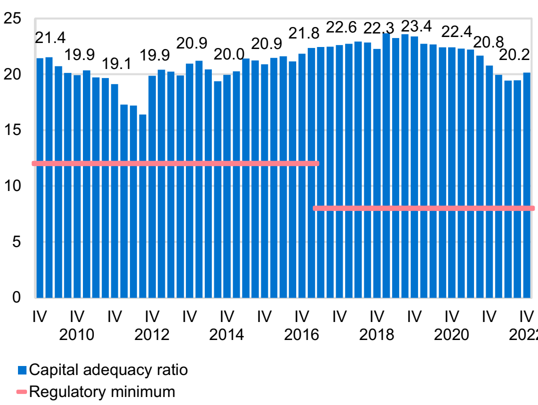
II.1.1 Capital adequacy

In 2022, the Serbian banking sector was adequately capitalised, as confirmed by CARs, which moved considerably above the prescribed regulatory minimums. At end-2022, CAR measured 20.2% (Chart II.1.1), somewhat above the regional average (Chart II.1.2). Owing to the quality capital base, high levels of Common Equity Tier 1 (CET 1) capital ratio (18.75%) and Tier 1 capital adequacy ratio (18.80%) were recorded.

At end-2022, CAR went down by 0.6 pp y-o-y amid sharper growth in total risk-weighted assets compared to regulatory capital. Regulatory capital increased by RSD 13.7 bn to RSD 640.6 bn at end-2022, while banks' CET 1 rose by RSD 2.9 bn, to RSD 596.1 bn. In 2022 risk-weighted assets went up by RSD 159.9 bn, to RSD 3,178.8 bn, largely on account of the rise in bank lending.

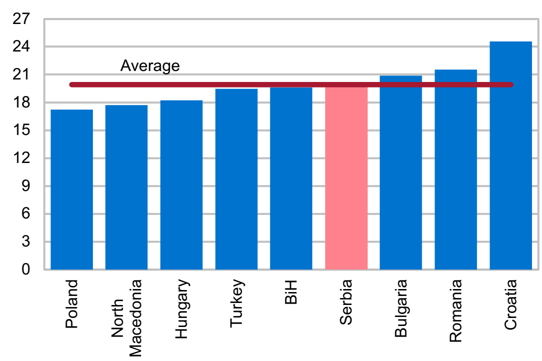
In June 2022, the NBS adopted a temporary measure[51] enabling banks to mitigate the adverse impact of the changes in the prices of securities on capital. Banks were allowed to exclude 70% of net unrealised losses and gains on the valuation of certain debt instruments from the calculation of Common Equity Tier 1. The measure will be in force until 31 December 2023 and is aimed at maintaining the balance between the tightening of monetary conditions required for limiting the effects of

Chart II.1.1 **Banking sector capital adequacy**
(%)



Source: NBS.

Chart II.1.2 **Regulatory capital to risk-weighted assets, countries of the region**
(2022, latest available data, %)



Sources: NBS and IMF.

[51] Decision on Temporary Measure for Calculation of Bank Capital (RS Official Gazette, Nos 72/2022 and 124/2022).

inflationary pressures and stimulating bank lending activity to continue supporting the real sector and further economic growth.

According to end-2022 statements, banks allocated RSD 185.1 bn worth of CET 1, or 5.8% of risk-weighted assets by means of the combined capital buffer.[52] Maintenance of capital buffers above the prescribed regulatory minimum increases bank resilience to losses, decreases excessive exposures and limits capital distribution in order to contain systemic risks in the financial system. Relaxing the requirements for maintaining capital buffers in case of a shock, such as geopolitical tensions and the coronavirus pandemic, may additionally boost lending. To facilitate access to housing loans for natural persons, in August 2020, the NBS allowed banks to use a portion of allocated capital buffers (capital conservation buffer and systemic risk buffer) for financing this form of lending. This measure is temporary and its implementation was extended in December 2022 by another year, until the end of 2023.[53]

Bank business models in Serbia are traditional and based on corporate and household lending. Hence, credit risk was the most dominant risk in the Serbian banking sector in 2022. Credit risk accounted for the largest share in risk-weighted assets (87.4%), while the shares of operational risk and market risks were smaller (11.9% and 0.6%, respectively).

High solvency of the banking sector is also evidenced by the leverage ratio,[54] introduced in Serbia's regulatory framework by Basel III implementing regulations, which measured 10.3% at end-2022.

II.1.2 Level, structure and quality of assets

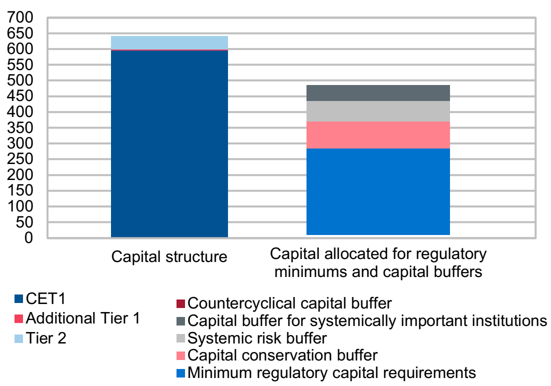
At end-2022, banking sector net assets amounted to RSD 5,455.4 bn or around 77% of GDP. In terms of the ownership structure of the banking sector, the largest share was held by foreign-owned banks (83.6%), while domestic private and state-owned banks accounted for 8.6% and 7.8%, respectively.

Loans and receivables accounted for the bulk of total net assets of banks (65.2%), reflecting traditional bank business models based on credit-deposit activities. Cash and deposits with the central bank accounted for around 17.8% of assets, while securities, primarily government securities, made up 13.8%.

At end-2022, the credit portfolio was worth RSD 3,262 bn. The bulk of the portfolio related to corporate (47.7%) and household loans (42.9%). Total net corporate loans stood at RSD 1,555 bn, of which 83.2% was in foreign currency, i.e. 83.0% in euros. Total net household loans were worth RSD 1,398 bn, of which RSD 599 bn (43%) relating to cash loans and RSD 577 bn (41%) to housing loans. The share of loans in foreign currency in total household loans was 48.0%, and almost all of them were euro loans.

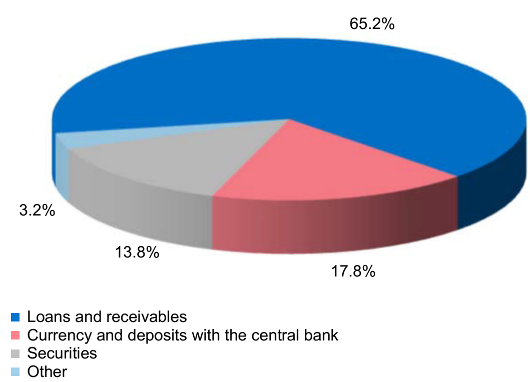
As loans account for a dominant share of total balance sheet assets of the domestic banking sector, the NPL ratio

Chart II.1.3 **Structure of regulatory capital and capital buffers**
(2022 eop, RSD bn)



Source: NBS.

Chart II.1.4 **Structure of assets of the Republic of Serbia's banking sector as at 31 December 2022**



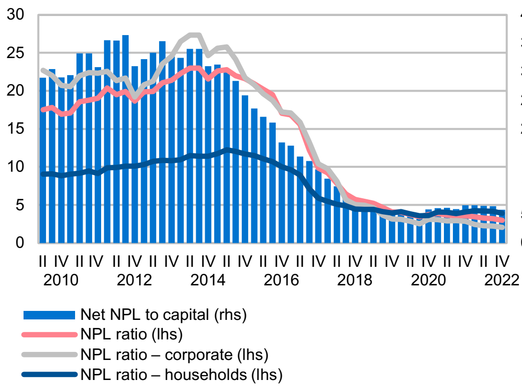
Source: NBS.

[52] The combined capital buffer consists of capital conservation buffer, countercyclical buffer, capital buffer for systemically important banks, and systemic risk buffer.

[53] Decision on Temporary Measures for Banks to Facilitate Access to Financing for Natural Persons (RS Official Gazette, Nos 108/2020, 119/2021 and 137/2022).

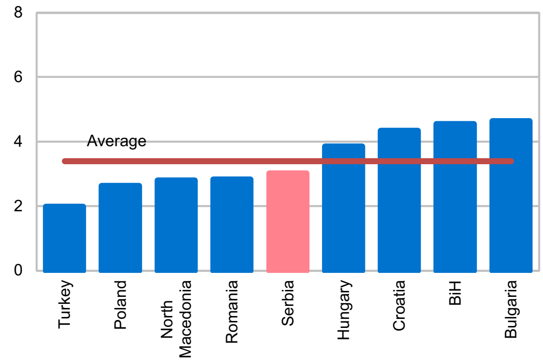
[54] The leverage ratio is calculated as a ratio of Tier 1 capital and a bank's total exposure amount.

Chart II.1.5 **Non-performing loans**
(%)



Source: NBS.

Chart II.1.6 **NPL ratios, countries of the region**
(2022, latest available data, %)



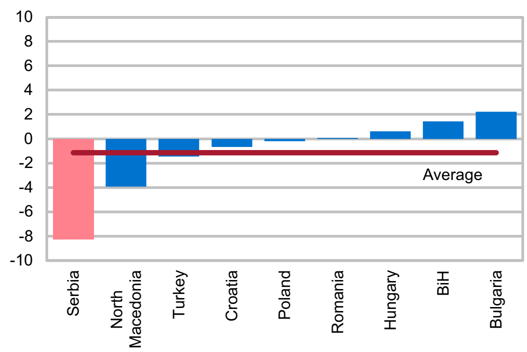
Sources: NBS and IMF: GFSR.

is a significant measure of asset quality. At end-2022, the share of NPLs in total Serbian banking sector loans stood at 3.0%, which is the new low of this indicator. In y-o-y terms, this indicator was reduced by 0.6 pp amid a reduction of gross NPLs by 8.7% or RSD 9.5 bn and an increase in total gross loans by 8.3% or RSD 251.9 bn. The NPL ratio reduction in 2022 signals that the increase in interest rates did not deteriorate bank asset quality and that financial stability has been preserved even in the period of a multidimensional crisis we have been facing in the last three years. Also, the fact that this share is below the pre-pandemic level indicates that NBS measures[55] were timely, thus preventing a stronger negative effect on corporates and households, and, in turn, on financial stability as well.

The years-long downward trend of NPLs, even amid heightened geopolitical tensions, economic slack and still present coronavirus pandemic, is a result of a systemic approach to addressing NPLs that was initiated in 2015 with the adoption of the NPL Resolution Strategy. Such approach has continuously yielded excellent results. The share of NPLs at end-2022 was reduced by 19.2 pp relative to August 2015 when the NPL Resolution Strategy was adopted.

In 2022, RSD 15.1 bn worth of gross NPLs were written off and RSD 6.3 bn assigned/sold.

Chart II.1.7 **Change in the NPL ratio, countries of the region**
(2022 relative to 2008, pp)



Sources: NBS and IMF: GFSR.

The share of NPLs in total loans to corporates (companies and public non-financial sector) edged down by 0.8 pp y-o-y, to 2.1% in December 2022. The share of NPLs in total loans to companies declined by 0.7 pp, to 2.3% and the share of NPLs in total loans to public non-financial sector by 1.1 pp y-o-y, to 0.8% at end-2022. Lower share of NPLs in total corporate loans in 2022 was a result of the decrease in the amount of the sector's NPLs by 21.8% (RSD 9.4 bn) and a rise in total corporate loans by 7.3% (RSD 109.9 bn). In 2022, NPL levels went down in all

[55] In 2020, the NBS first stipulated a moratorium to facilitate the settlement of liabilities to banks for debtors affected by the coronavirus pandemic and prevent new NPLs. The moratorium introduced in March 2020 lasted for 90 days. In July, a new moratorium, which lasted for 60 days, was introduced. Further, in December 2020, an obligation was stipulated for banks to approve facilities for borrowers who experience difficulties in the repayment of liabilities due to the coronavirus pandemic. In 2022, the NBS continued supporting Serbian corporates and households in servicing their debts. Due to the economic situation some agricultural producers are faced with and bearing in mind the strategic importance of agricultural production, farmers were offered to have their existing bank receivables rescheduled. In addition, banks were encouraged to extend the repayment terms for cash, consumer and other similar loans for citizens in financial distress. The implementation of the measure aimed at easing conditions for the repayment of citizens' housing loans was extended until end-2023, whereby banks are additionally encouraged to extend repayment terms for housing loans by additional five years relative to the initially contracted maturity.

sectors, with the highest absolute reduction recorded in mining, manufacturing, water supply, sewerage, waste management and remediation, and similar activities (by RSD 3.2 bn, and their share in total gross loans of this sector by 1.1 pp, to 2.2%), as well as transport and storage, food and accommodation services, information and communication (by RSD 2.9 bn, with their share in total gross loans of this sector going down by 0.9 pp, to 2.5%). Relative to the period before the NPL Resolution Strategy, the sharpest drop was recorded in construction, where the share of NPLs in total loans of this sector went down by 46.6 pp to 3.2% and in real estate business by 35.8 pp to 2.4% at end-2022.

At end-2022, the share of NPLs in total gross loans to households[56] came at 3.9%, dropping by 0.2 pp from end-2021. The y-o-y decrease is a result of a rise in gross household loans by 6% (RSD 83.2 bn) and a concurrent increase in gross NPLs by 1.5% (RSD 0.8 bn). As for the most significant household loan categories, the NPL ratio for cash loans increased by 0.1 pp y-o-y, to 6.0% at end-2022, while the NPL ratio for housing loans declined by 0.5 pp y-o-y, to 1.5%. A negligible increase in the share of cash NPLs was driven by the increase in the amount of these loans by RSD 3.9 bn in 2022. At the same time, total cash loans went up by RSD 51.4 bn. On the other hand, NPLs in housing construction went down by RSD 2.0 bn y-o-y in 2022, amid an increase in total housing loans by RSD 55.0 bn.

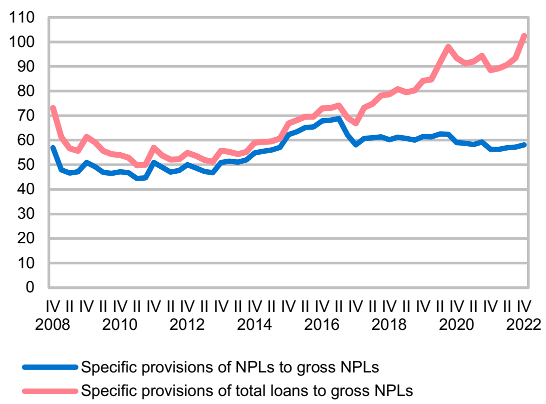
At end-2022, the coverage of total gross NPLs with allowances for impairment stood at 58.1% on average, and the coverage of total loans with allowances for impairment measured 102.5%. The level and satisfactory coverage of NPLs with allowances for their impairment moderate the NPL channel as the possible source of instability in the financial system. This is also confirmed by the macroprudential solvency stress-tests conducted by the NBS, which project changes in the trajectory of the NPL ratios over a one-year horizon in order to assess the resilience of the banking sector. According to the results of these stress-tests, the banking sector would remain adequately capitalised even under the worst-case scenario.[57]

II.1.3 Lending activity

In 2022, domestic lending activity was on the rise. In H1 2022, it continued up on the back of growing needs for ensuring liquidity, restructuring liabilities and purchasing real estate. In H2 it recorded lower growth rates. Lower growth rates of total domestic loans in y-o-y terms are attributable to high last year's base, maturing of guarantee scheme loans and monetary policy tightening by the ECB and the NBS.

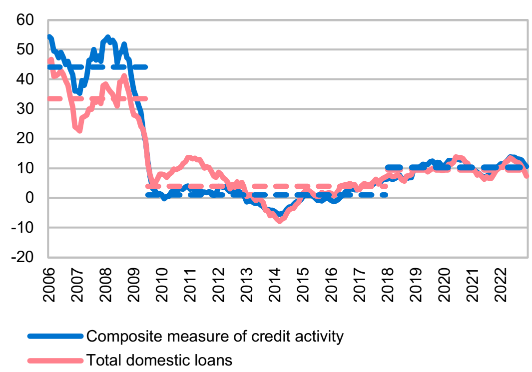
At end-2022, total domestic lending, excluding the exchange rate effect,[58] rose by 7.3% y-o-y. A major contribution to y-o-y growth in total domestic

Chart II.1.8 **Coverage of non-performing loans**
(%)



Source: NBS.

Chart II.1.9 **Lending trend***
(y-o-y growth rates, %)



* Excluding the exchange rate effect.
Source: NBS.

[56] The household sector includes, in addition to households, entrepreneurs, private households with employed persons and registered farmers.

[57] For a more detailed account of macroprudential stress-tests, see Chapter II.2 Macroprudential stress-tests.

[58] Calculated applying the dinar exchange rate against the euro, Swiss franc and dollar as at 31 October 2022 (programme exchange rate used for monitoring the performance under the stand-by arrangement with the IMF), taking into account the currency structure of loan receivables.

loans again came from corporate loans, followed by household ones.

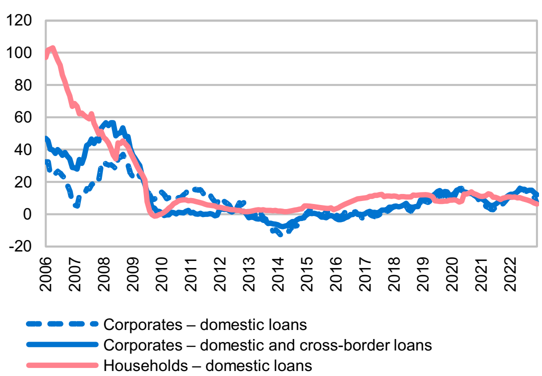
The rise in corporate lending in 2022 was driven by liquidity and working capital loans, which are the dominant loan category, followed by investment loans. Excluding the exchange rate effect, domestic corporate loans increased by 7.1% from a year earlier.

The degree of dinarisation of corporate receivables decreased partly due to the more intensive FX lending to corporates, and partly as a result of the repayment of guarantee scheme loans, which were mostly approved in dinars.

Domestic household lending went up primarily due to an increase in housing and cash loans, with these two categories also being the dominant ones. Excluding the exchange rate effect, domestic household lending rose by 6.3% from the year before. Positive labour market trends and the NBS's measures aimed at easing the conditions for the approval of housing loans (lowering the minimum downpayment for first-time home buyers, lower degree of completion of a building, up-to-five-year extension of repayment term for housing loans), despite the somewhat higher cost of borrowing in H2, drove housing loans up.

The Bank Lending Survey shows that during 2022 banks continued tightening standards for approving loans to corporates under the impact of higher financing costs, uncertainty as to the overall economic situation and consequently lower risk propensity, as well as due to NPLs, the quality of collateral requirements and dampened competition in the banking sector created by bank mergers. The tightening mostly affected FX-indexed loans rather than dinar ones, while in terms of company size, it was more present with large companies than small and medium-sized ones. The tightening of loan conditions pertained to both cost-related and other conditions – collateral requirements were made stricter, while the maximum loan amount and loan maturity were lowered. The tightening trend is in line with the monetary policy tightening of the ECB and the NBS.

Chart II.1.10 **Corporate and household lending***
(y-o-y growth rates, %)



* Excluding the exchange rate effect.
Source: NBS.

Banks assessed that in Q1 2022, household lending standards were relaxed primarily thanks to the banking sector competition, labour market recovery and factors related to the real estate market, including the NBS's regulations (lowering the minimum downpayment for first-time home buyers and the degree of completion of a building). However, standards were slightly tightened in Q2 after a year of relaxation. The tightening continued throughout rest of the 2022. As with the corporate sector, this was due to increased costs of lending sources, subdued risk propensity which mirrors elevated uncertainty in terms of the economic situation, and the anticipated growth in NPLs. The tightening mostly pertained to the dominant loan categories – dinar cash loans (including refinancing loans) and FX-indexed housing loans. Banks toughened their collateral requirements. In contrast, given the NBS's measures for lowering payment services fees in order to decrease banking costs for citizens,[59] banks trimmed their fees and commissions in Q3 2022.

Banks estimated that the needs for financing working capital and capital investments, as well as restructuring current liabilities, were the dominant factors driving corporate demand up throughout the year. On the other hand, household loan demand rose in H1 on the back of factors such as refinancing current liabilities and real estate purchase. However, banks assessed that in H2 household loan demand decreased amid dampened need for purchasing durable goods and the less favourable situation in the real estate market owing to the hike in real estate prices.

[59] Decision on the Payment Account with Basic Features (RS Official Gazette, No 89/2022).

II.1.4 Profitability

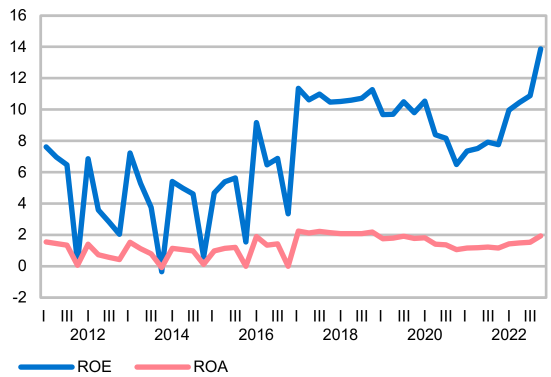
The Serbian banking sector posted a positive financial result in 2022. Banking sector profit at the end of the year resulted in RoA of 1.9% and RoE of 13.9%. RoA was slightly above the region's average, while RoE, despite the high banking sector capitalisation, was at the level of regional average.

In 2022, high profitability was recorded by domestic private banks, followed by foreign banks from the EU and domestic state-owned banks, while foreign non-EU banks had somewhat lower profitability (Chart II.1.13). Among other, the high profitability of domestic private banks is attributable to the profit gained from the mergers of domestic private banks at the end of the year.

Banking sector's net profit before tax amounted to RSD 99.6 bn in 2022, up by RSD 45.8 bn (or 84.9%) from 2021. Total profit of RSD 99.8 bn was made by 20 banks (99.9% of banking sector net assets), while only one bank operated at a loss of RSD 0.2 bn. Around 69% of the profit was generated by four banks and as much as 30% of total banking sector profit by a single bank, whose high profitability is the result of the one-off effects of the merger with another bank in its ownership at end-2022.

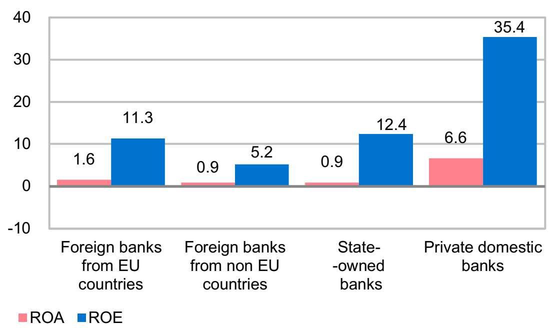
Owing to the rise in lending, and in view of traditional credit and deposit operations of domestic banks, net income from interest is the dominant category in the structure of the final result. Net profit from interest contributed to a y-o-y increase in banks' net profit in 2022 and it rose by RSD 20.8 bn, while net profit from fees and commissions contributed with RSD 13.9 bn. Growth in other income equalling RSD 28.2 bn also contributed significantly to the rise in profit due to the one-off effect of bank mergers. Net losses from impairment of financial assets not carried at fair value through income statement worked in the opposite direction, by RSD 11.5 bn y-o-y.

Chart II.1.11 **Profitability indicators**
(%)



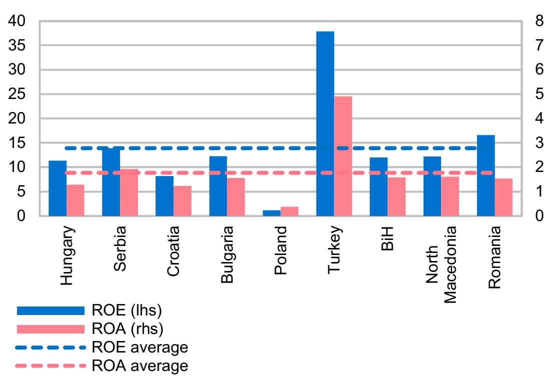
Source: NBS.

Chart II.1.13 **Profitability indicators, by majority shareholder's country of origin and ownership structure in 2022**
(%)



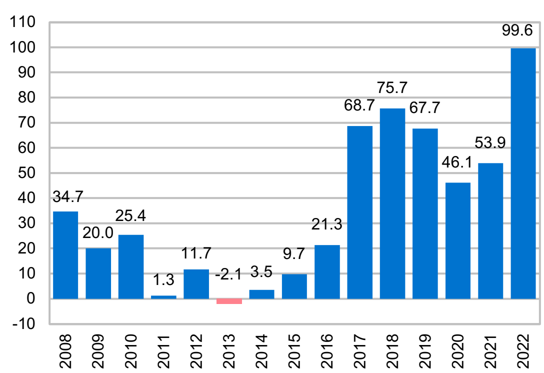
Source: NBS.

Chart II.1.12 **ROE and ROA, countries of the region**
(2022, latest available data, %)



Sources: NBS and IMF: GFSR.

Chart II.1.14 **Pre-tax profit/loss of the banking sector**
(RSD bn)



Source: NBS.

II.1.5 Liquidity

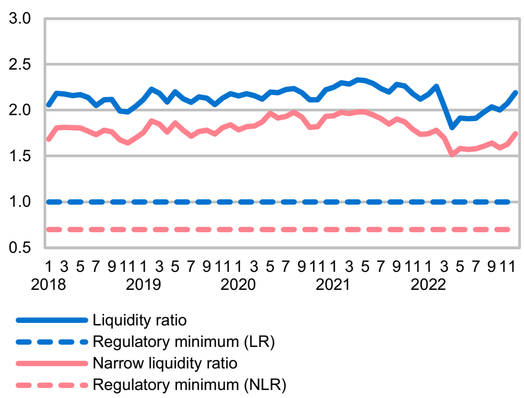
Serbian banking sector liquidity remained high in 2022, with no major adverse effects from global geopolitical uncertainty. Though the value of liquidity indicators decreased in March and April, by the year's end it rose back to the level from previous periods.

At end-2022, the average monthly liquidity ratio stood at 2.2, well above the regulatory minimum (1.0). The average monthly narrow liquidity ratio of 1.7 was also significantly above the regulatory minimum (0.7). At 177.5%, the liquidity coverage ratio was also considerably above the limit set by the regulator (100%). Movements in the average monthly liquidity indicator are presented in Chart II.1.15, while Charts II.1.16 and II.1.17 show the distribution of liquidity indicators by bank.

Banking in the Republic of Serbia is traditional, i.e. deposits are the main source of financing bank activities. As the results of macroprudential stress-tests indicate that the banking sector would remain highly liquid even in conditions of extreme deposit withdrawal, there are no risks to financial stability in this segment.

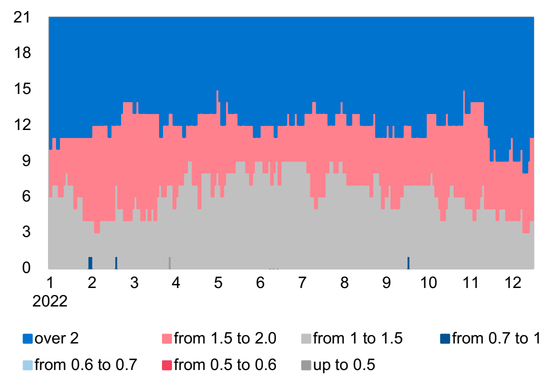
At end-2022, liquid assets accounted for 37.5% of total assets and covered 48.7% of short-term liabilities. The share of liquid assets in the narrow sense in total assets and the coverage of short-term liabilities were 28.7% and 37.2%, respectively. During H1, the value of indicators declined on account of a decrease of liquid assets or liquid assets in the narrow sense, however, the trend was reversed in H2. The fact that the Serbian banking sector holds substantial provisions of liquid assets contributes to its stability but may also decelerate lending activity. While the high share of liquid assets carries low risk, it also brings lower returns.

Chart II.1.15 **Average monthly liquidity ratio**



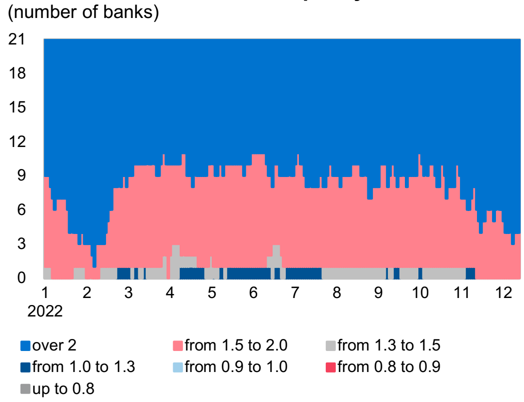
Source: NBS.

Chart II.1.17 **Distribution of narrow liquidity ratio**
(number of banks)



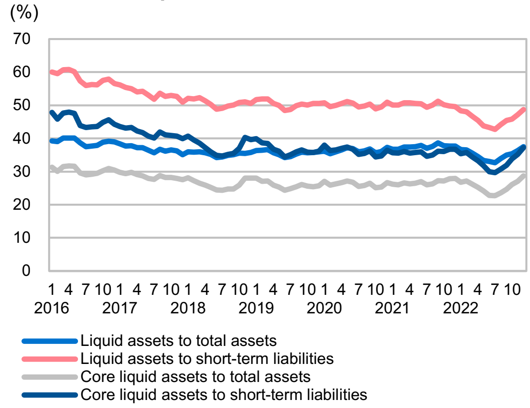
Source: NBS.

Chart II.1.16 **Distribution of liquidity ratio**
(number of banks)



Source: NBS.

Chart II.1.18 **Liquid assets**
(%)



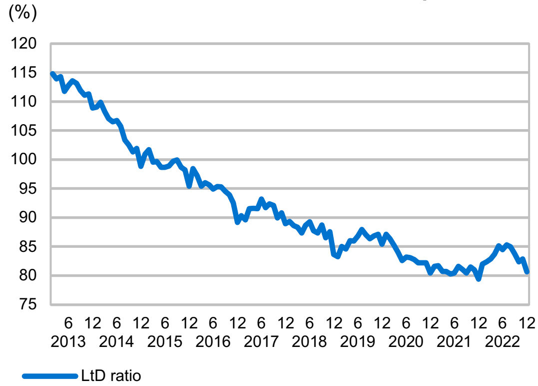
Source: NBS.

II.1.6 Sources of funding

Banks operating in Serbia rely mostly on domestic, stable sources of funding. Loan-to-deposit ratio measured 80.6% at end-2022 (Chart II.1.19). In 2022, the amount of deposits was sufficient to cover the entire amount of loans. Strengthening of the domestic deposit base helps banks reduce their reliance on other sources of funding, e.g. on parent bank financing, thus decreasing banks' exposure to risks from the international environment. In particular, it decreases exposure to the risk of a sudden withdrawal of money by parent banks, which was one of the challenges faced by countries of the region in the wake of 2008.[60] The results of macroprudential liquidity stress-tests indicate that even in case of a deposit withdrawal due to the domestic banks deleveraging to parent banks, the banking sector liquidity would not be jeopardised.

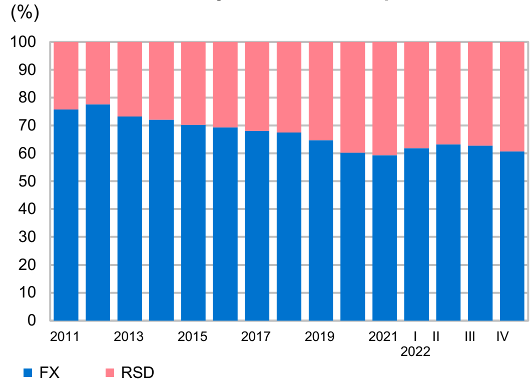
Total deposits accounted for 76.4% and capital for 13.2% of the total banking sector liabilities at end-2022 (Chart II.1.20). The share of total FX deposits (which are manly in euros) remained almost unchanged – 60.7% at end-2022 compared to 59.4% at end-2021 (Chart II.1.21). In terms of maturity composition, short-term deposits made up the largest share (94.9%) (Chart II.1.22).

Chart II.1.19 **Movements of the loan-to-deposit ratio**



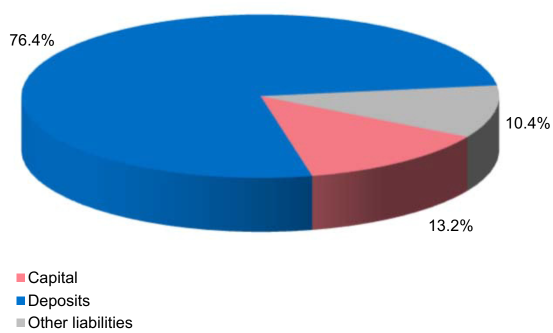
Source: NBS.

Chart II.1.21 **Currency structure of deposits**



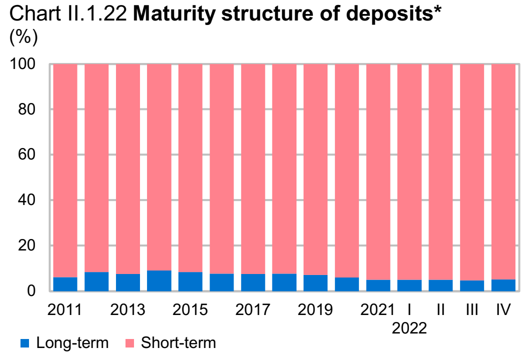
Source: NBS.

Chart II.1.20 **Sources of banking sector funding as at 31 December 2022**



Source: NBS.

Chart II.1.22 **Maturity structure of deposits***



* Long-term deposits consist of deposits maturing in over 1 year, while short-term deposits consist of deposits maturing within the next year, matured and sight deposits.

Source: NBS.

[60] *Annual Financial Stability Report – 2012*, Section I.1 International environment.

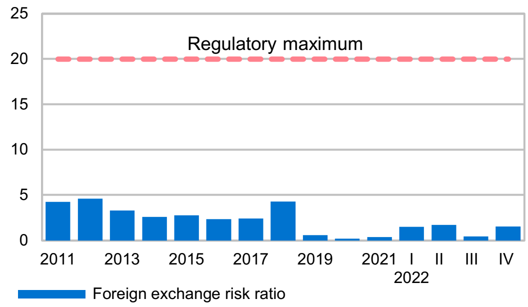
II.1.7 Sensitivity to market risks

Serbia's banking sector exposure to market risks is minimal.[61] Exposure to market risks was lower than the year before, accounting for only 0.6% of total risk weighted assets.

At end-2022, the FX risk indicator, expressed as net open FX position relative to regulatory capital (Chart II.1.23) was 1.5%,[62] up by 1.1 pp from the year before, and well below the regulatory ceiling of 20.0%.

Mostly reliant on FX sources of funding, banks hedged against the FX risk by extending loans indexed to a foreign currency. In this regard, banks' FX position is well-balanced, and they are not directly exposed to the FX risk. However, they are exposed to this risk indirectly, as the approval of FX clause-indexed loans to clients with a debt/income currency mismatch may generate FX-induced credit risk. In view of the structure of banks' portfolio, the risk of negative effects on banks' financial result and capital due to the direct impact of interest rate and exchange rate changes is judged to be minimal.

Chart II.1.23 **Foreign exchange risk ratio**



Source: NBS.

Table II.1.1 **Serbia: Financial sector structure**

	2015			2016			2017			2018			2019			2020			2021			2022		
		Assets			Assets			Assets			Assets			Assets			Assets			Assets			Assets	
	No.	RSD billion	%	No.	RSD billion	%	No.	RSD billion	%	No.	RSD billion	%	No.	RSD billion	%	No.	RSD billion	%	No.	RSD billion	%	No.	RSD billion	%
Financial sector	77	3,329	100	76	3,556	100	73	3,714	100	72	4,179	100	70	4,532	100	69	5,078	100	66	5,555	100	63	5,985	100
(in % of GDP)		*77.1%*			*78.5%*			*78.0%*			*82.4%*			*83.6%*			*92.3%*			*88.6%*			*84.4%*	
Banking system	30	3,048	91.6	30	3,242	91.2	29	3,369	90.7	27	3,774	90.3	26	4,084	90.1	26	4,601	90.6	23	5,048	90.9	21	5,455	91.1
State-owned banks	6	550	16.5	6	561	15.8	6	544	14.6	5	660	15.8	4	686	15.1	3	325	6.4	2	368	6.6	2	427	7.1
Local private banks	1	179	5.4	2	195	5.5	2	236	6.4	2	266	6.4	3	305	6.7	3	319	6.3	2	290	5.2	2	468	7.8
Foreign-owned banks	23	2,319	69.7	22	2,486	69.9	21	2,590	69.7	20	2,848	68.1	19	3,093	68.3	20	3,958	77.9	19	4,390	79.0	17	4,561	76.2
Greek	4	395	11.9	4	403	11.3	2	210	5.6	1	169	4.1	1	177	3.9	1	196	3.9	1	290	5.2	1	303	5.1
Italian	2	796	23.9	2	884	24.8	2	928	25.0	2	1,008	24.1	2	1,094	24.1	2	1,204	23.7	2	1,284	23.1	2	1,408	23.5
French	3	316	9.5	3	327	9.2	2	375	10.1	2	415	9.9	1	119	2.6	1	152	3.0	1	167	3.0	0	0	0.0
Austrian	3	453	13.6	3	494	13.9	2	427	11.5	2	495	11.8	2	550	12.1	2	665	13.1	2	752	13.5	3	1,051	17.6
Hungarian	1	45	1.4	1	48	1.3	2	196	5.3	2	221	5.3	2	551	12.1	2	615	12.1	1	666	12.0	1	744	12.4
Slovenian	2	38	1.1	1	34	1.0	1	44	1.2	1	57	1.4	1	72	1.6	2	540	10.6	2	574	10.3	1	548	9.2
Other	8	276	8.3	8	296	8.3	10	411	11.1	10	481	11.5	10	530	11.7	10	586	11.5	10	658	11.8	9	507	8.5
Nonbank financial institutions	47	281	8.4	46	315	8.8	44	344	9.3	45	406	9.7	44	448	9.9	43	477	9.4	43	507	9.1	42	530	8.9
Insurance companies	24	192	5.8	23	216	6.1	21	233	6.3	21	279	6.7	20	300	6.6	20	314	6.2	20	334	6.0	20	337	5.6
Pension funds	7	29	0.9	7	33	0.9	7	36	1.0	7	40	1.0	7	45	1.0	7	47	0.9	7	49	0.9	7	48	0.8
Leasing companies	16	60	1.8	16	66	1.9	16	75	2.0	17	87	2.1	17	103	2.3	16	115	2.3	16	124	2.2	15	145	2.4

Source: NBS.

[61] Market risks are price, exchange rate and commodity risks.
[62] Calculated at net principle.

Table II.1.2 **Serbia: Key macroprudential indicators**
(in % unless otherwise indicated)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Capital Adequacy															
Regulatory capital to risk-weighted assets	21.9	21.4	19.9	19.1	19.9	20.9	20.0	20.9	21.8	22.6	22.3	23.4	22.4	20.8	20.2
Regulatory Tier 1 capital to risk-weighted assets	17.9	16.5	15.9	18.1	19.0	19.3	17.6	18.8	20.0	21.6	21.1	22.4	21.6	19.7	18.8
Nonperforming loans net of provisions to regulatory capital	15.5	26.9	35.5	52.1	52.3	55.9	56.0	44.0	27.1	17.7	9.7	6.3	6.7	7.6	6.5
Regulatory Tier 1 capital to assets	16.8	13.1	12.8	11.5	11.6	11.2	10.1	10.7	11.6	13.7	13.5	14.4	13.1	11.8	11.0
Large exposures to capital	-	-	-	110.1	104.5	90.4	130.5	115.7	86.0	69.3	77.4	66.5	73.8	86.0	86.7
Regulatory capital to assets	20.5	17.1	16.1	12.2	12.2	12.2	11.4	11.9	12.7	14.4	14.2	15.1	13.6	12.4	11.7
Asset quality															
Nonperforming loans to total gross loans	11.3	15.7	16.9	19.0	18.6	21.4	21.5	21.6	17.0	9.8	5.7	4.1	3.7	3.6	3.0
Sectoral distribution of loans to total loans – Deposit takers	1.1	0.6	0.1	0.1	0.3	0.3	0.8	0.1	0.5	0.3	0.4	0.4	0.3	0.0	0.7
Sectoral distribution of loans to total loans – Central bank	6.6	10.9	2.8	6.5	2.1	5.8	0.4	1.6	1.7	2.1	0.7	2.8	1.1	1.5	3.3
Sectoral distribution of loans to total loans – General government	0.9	1.7	3.5	3.4	3.0	2.3	2.3	1.7	1.5	1.3	1.1	1.5	1.6	1.7	2.2
Sectoral distribution of loans to total loans – Other financial corporations	0.7	0.5	1.2	1.6	1.6	1.6	0.5	0.7	0.9	0.9	0.8	0.8	0.8	0.6	1.1
Sectoral distribution of loans to total loans – Nonfinancial corporations	52.4	53.3	57.0	54.9	58.2	54.1	56.3	55.9	52.6	50.5	50.0	49.2	49.6	49.3	47.6
Sectoral distribution of loans to total loans – Agriculture	3.3	3.1	3.0	2.8	3.0	2.7	3.5	3.7	3.6	3.5	3.5	3.5	3.3	3.0	2.8
Sectoral distribution of loans to total loans – Industry	18.4	17.9	19.3	17.2	17.9	18.4	19.2	18.4	16.5	16.2	16.5	15.0	15.0	15.5	18.4
Sectoral distribution of loans to total loans – Construction	5.7	5.3	6.9	6.2	5.8	4.6	4.2	3.8	4.1	4.0	4.2	4.8	5.1	4.9	4.1
Sectoral distribution of loans to total loans – Trade	16.9	17.3	16.6	14.7	15.0	13.5	13.9	13.9	14.3	14.6	14.0	13.7	13.3	12.5	10.7
Sectoral distribution of loans to total loans – Other loans to nonfinancial corporations	8.1	9.8	11.3	13.9	16.5	14.9	15.6	16.2	14.1	12.2	11.8	12.3	13.0	13.4	11.7
Sectoral distribution of loans to total loans – Households and NPISH	35.3	32.2	33.3	31.9	33.0	34.8	38.3	39.1	41.5	42.9	44.3	43.8	45.0	45.0	43.2
Households and NPISH of which: mortgage loans to total loans	13.9	13.7	15.4	15.0	16.1	16.8	18.0	18.1	17.9	16.9	16.8	15.8	16.4	17.4	17.4
Sectoral distribution of loans to total loans – Foreign sector	2.8	0.8	2.0	1.6	1.9	1.1	1.4	0.9	1.4	2.0	2.6	1.5	1.6	1.9	2.0
IFRS provision for NPLs to gross NPLs	56.9	50.9	47.2	51.0	50.0	50.9	54.9	62.3	67.8	58.1	60.2	61.5	59.0	56.3	58.1
IFRS provision of total loans to total gross loans	8.2	9.6	9.1	10.8	10.2	11.9	12.7	14.4	12.4	6.6	4.5	3.4	3.5	3.2	3.1
Earnings and profitability															
Return on assets	2.1	1.0	1.1	0.0	0.4	-0.1	0.1	0.3	0.7	2.1	2.2	1.8	1.1	1.2	1.9
Return on equity	9.0	4.6	5.3	0.2	2.0	-0.4	0.6	1.5	3.3	10.5	11.3	9.8	6.5	7.8	13.9
Interest margin to gross income	60.5	62.6	64.2	67.3	64.4	67.5	66.6	65.7	64.6	58.4	60.0	58.8	60.6	58.2	50.9
Noninterest expenses to gross income	62.3	65.6	65.7	67.5	65.9	68.3	66.9	64.9	67.7	63.2	62.1	63.4	66.3	71.0	58.7
Personnel expenses to noninterest expenses	36.8	37.3	37.4	35.9	35.7	35.1	33.6	33.0	33.4	32.9	34.0	32.5	33.8	30.2	28.5
Liquidity															
Core liquid assets to total assets	47.8	48.2	41.8	40.3	35.2	36.1	35.7	32.5	30.5	27.5	28.0	25.7	26.7	27.9	28.7
Core liquid assets to short-term liabilities	75.7	73.8	67.1	67.3	58.9	58.3	56.3	49.3	44.3	39.9	39.6	36.1	36.4	36.8	37.2
Liquid assets to total assets	47.8	49.0	43.7	42.3	38.9	41.0	42.2	40.5	38.9	35.1	35.7	36.0	37.3	37.7	37.5
Liquid assets to short-term liabilities	75.7	75.1	70.1	70.6	65.0	66.4	66.7	61.3	56.6	50.9	50.5	50.5	50.9	49.6	48.7
Customer deposits to total (noninterbank) loans	82.7	88.3	80.1	83.1	84.9	92.3	95.7	99.7	108.1	106.9	110.6	109.2	116.4	119.5	120.5
Foreign currency-denominated loans to total loans	73.9	75.8	76.8	69.8	74.1	71.6	70.1	72.3	69.4	67.5	68.5	67.1	64.7	63.2	65.5
Average monthy liquidity ratio	1.8	1.9	2.0	2.2	2.1	2.4	2.2	2.1	2.1	2.0	2.0	2.2	2.2	2.1	2.2
Average monthy narrow liquidity ratio	1.2	1.2	1.3	1.5	1.6	1.8	1.7	1.7	1.7	1.7	1.7	1.8	1.9	1.7	1.7
Sensitivity to market risk															
Net open position in foreign exchange to regulatory capital	4.2	1.1	1.6	4.2	4.6	3.3	2.6	2.8	2.3	2.4	4.3	0.6	0.2	0.4	1.5
Foreign currency-denominated liabilities to total liabilities	74.3	77.7	81.8	79.0	80.1	76.7	74.7	72.7	71.1	69.7	69.3	66.6	62.3	61.4	62.1
Classified off-balance sheet items to classified balance sheet assets	56.2	43.3	33.9	32.0	26.1	28.7	27.6	30.6	32.4	36.4	36.8	39.7	36.3	39.1	39.6

Source: NBS.

Text box 2: Effects of the Ukraine conflict on the banking sectors of the EU and Serbia

The year 2022 was marked by the heightening of geopolitical tensions and the outbreak of the conflict in Ukraine. Investors, market participants and economic policy makers assess that the conflict primarily affected the slackening of economic activity, the surge in global energy and primary commodity prices, and the rise in inflation. Such a situation led to an abrupt increase in global uncertainty and risks in international commodity and financial markets. Historically, periods of elevated geopolitical risks went hand in hand with significant negative effects on global economic activity, since they reduce resource productivity, disrupt global supply chains and redirect international trade and capital flows. In addition, changed perceptions about the outcome of geopolitical events may further impact economic activity by postponing investments, undermining consumer confidence and tightening financial conditions. Against the background of stronger geopolitical risks, in 2022 global growth slowed to 3.4%, as opposed to the 4.4% expected before the conflict broke out.[63] Given the share that conflicted countries hold in the global production of energy and cereals, higher prices of energy and commodities caused by the conflict and the resulting sanctions put an upward pressure on inflation in economies worldwide.

Due to the regional nature of geopolitical risks, the economic repercussions of the Ukraine conflict are not of the same intensity in all countries. The conflict has also differently affected individual economic sectors and/or activities. Observing the Ukraine conflict consequences on the European banking sector, there are views that the direct effects are limited, given that the European banking sector's exposure toward Russia and Ukraine is not considerable, but rather concentrated in some European banks with a higher level of exposure to Russia. At end-2021, immediately before the Ukraine conflict broke out, European banks' exposure toward Russia amounted to around EUR 76 bn and toward Ukraine around EUR 11.5 bn, or a little more than 0.3% of the total exposure of EU banks. In the Russian market, banks from three European countries (Italy, France and Austria) made up more than a half of total exposure of foreign banks. After the conflict erupted, the majority of European banks which previously operated in the Russian market were quick to exit the market, thereby further reducing the already limited exposure of the European banking sector to Russia.[64]

Apart from the limited direct influence on the European banking sector, there are also indirect effects, reflected primarily in banks' increased risk aversion. This risk could materialise via a contraction in lending and the volume of loans approved to companies that are exposed to this region and have trade relations in the conflict-struck region. The conflict also impacted adversely the prices of bank shares and put an upward pressure on financing costs, because central banks responded to heightened inflationary pressures by raising their policy rates. Besides, credit ratings of Russia and Russian companies were downgraded, and the collapse of Russian bonds entails losses for the banks that hold them. Banks face losses on other capital market instruments as well because of the general risk aversion and instability affecting the markets, but also due to the policy rate hikes aimed at curbing inflation. The worsening economic environment and a potential increase in credit and market losses may also lead to lower profitability and deterioration in banks' capital position.

Apart from the effects on financial stability via EU banks' exposure to conflicted economies, the financial stability in EU members and countries in the region is also impacted by the operation of banks whose parents are in conflict-struck countries. After the outbreak of the Ukraine conflict and sanctions imposed to Russia, the bank in majority ownership of the Russian state which operated in the EU – Sberbank Europe AG (Austria) and its subsidiaries in our region suffered a sizeable liquidity outflow, due to which the ECB declared Sberbank Europe AG (Austria) illiquid. The

[63] According to IMF estimates from April 2023 and January 2022.

[64] https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/russia-ukraine-war-splinters-europe-s-banking-industry-74075106

situation with subsidiaries in Slovenia and Croatia was resolved through swift sales of the bank's subsidiaries to domestic banks. The Slovenian bank was bought by the largest Slovenian banking group – Nova Ljubljanska banka, in which the government holds a significant share in capital, while the Croatian bank was bought by Hrvatska poštanska banka, also in majority government ownership. However, operating licences were revoked from subsidiaries in the Czech Republic and Hungary, which accounted for a negligible market share in these countries. In the Federation of Bosnia and Herzegovina, Sberbank was taken over by ASA banka. In the Republic of Srpska, the RS Banking Agency took over control of the bank and subsequently sold Sberbank shares to Nova banka a.d. Banja Luka in the resolution process.

The impact of the Ukraine crisis on Serbia is smaller than on the majority of European countries thanks to the preserved macroeconomic and financial stability, dynamic economic growth in the prior period, the structure of domestic economy and the created fiscal space, as well as the timely and comprehensive support package for corporates and households. The NBS was one of the first central banks in the region to have responded swiftly and efficiently to prevent the spillover of external shocks caused by the escalation of the Ukraine conflict on the domestic banking sector. In order to preserve the smooth functioning of the overall financial system, only a few days upon the outbreak of the Ukraine conflict, the NBS gave consent to Agroindustrijska komercijalna banka AIK banka a.d. Beograd for the acquisition of 100% ownership over Sberbank Srbija a.d. Beograd. The takeover was completed on 1 March 2022 and the bank became a part of a highly capitalised, liquid and profitable domestic group, which prevented a potential spillover of risks to the banking sector.

At end-December 2022, the Serbian banking sector exposure toward the Russian Federation was below 0.1% of total exposure, while exposure to Ukraine was almost negligible, speaking in favour of the limited direct effects of the Ukraine conflict on the domestic financial system. Given the ownership structure of the domestic banking sector, the NBS monitors and analyses data on cross-border exposure of domestic banks, in order to contain the deleveraging risk in case of any potential problems in the financial systems of home countries and aggravated access to sources of financing. The strengthening of the domestic deposit base in the prior period significantly reduced this risk, as well as the possibility of contagion from financial shocks originating in the home countries of local banks in foreign ownership. The safety of domestic deposits is also supported by the provisions of the Deposit Insurance Law, according to which dinar and FX deposits of bank clients are insured up to the amount of EUR 50,000 in the dinar equivalent.

As for the trends in the financial sector, Serbia's banking sector remained stable and profitable, despite all the challenges in the previous year. All banks in Serbia operate smoothly, with sufficient dinar and FX funds at their disposal, including all foreign currencies in demand in the domestic market and are able to respond to all clients' requests and needs. The banking sector is adequately capitalised (capital adequacy ratio – 20.2% in December 2022) and highly liquid (average monthly liquidity ratio – 2.2 in December 2022) and is expected to remain so going forward. Also, capital buffers, as instruments of macroprudential policy, have been applied since June 2017, containing risks in the financial system. Further, the results of macroprudential stress-tests, carried out on a quarterly basis, confirm that the domestic banking sector would remain adequately capitalised, highly liquid and with a low level of systemic risks even in case of the most adverse movements and the worst-assumed scenarios.

The sustained stable key indicators for the protection from internal and external shocks, such as the maintained relative stability of the exchange rate, the record high level of FX reserves and financial system liquidity, as well as the preserved asset quality in the form of the lowest share of non-performing loans, indicate that the NBS managed to maintain financial system stability even in times of heightened geopolitical tensions.

II.2 Macroprudential stress testing

The results of macroprudential stress tests confirm that Serbia's banking sector is stable and resilient even amid the multidimensional crisis we have been facing in the past three years. The banking sector as a whole remains highly resilient to the assumed shocks, including the most severe ones, and it has sufficient capacity to mitigate the consequences of the risks to which it could be exposed. Also, the network structure indicates a low and stable systemic risk component, i.e. the system's high resilience in case of individual shocks.

Since 2012 the NBS has regularly conducted quarterly macroprudential stress tests, as one of the tools to assess the key risks and vulnerability of the financial system as a whole, as well as of individual financial institutions. Also, in order to assess Serbia's banking sector systemic risk, based on network modelling, the dynamics of banks' mutual relations is considered and potential ways of the transfer of risks between financial institutions are analysed. The assumptions underlying macroprudential stress testing in 2022 were made in view of heightened global uncertainties.

Basel III[65] standards and NBS regulations require that banks use stress tests to assess their capital adequacy. Stress tests are based on plausible but highly improbable assumptions, or events that may produce negative consequences for the financial system. Therefore, poor stress test results do not necessarily mean that a sector, an individual bank or a group of banks are faced with higher risks, but indicate the capacity of banks to keep their operations unhindered in case of such events.

Currently, macroprudential stress tests conducted by the NBS enable the following:

– measurement of banking sector resilience to an increase in credit risk caused by assumed adverse macroeconomic developments;

– measurement of the liquidity risk caused by the loss of depositors' confidence and unfavourable macroeconomic conditions;

– application of network modelling to assess banking sector systemic risk and systemic importance of individual financial institutions;

– application of network modelling to assess the transfer of systemic risk from the real to the financial sector and systemic importance of groups of connected enterprises.

This *Report* sets out *three parts* of the analysis of the impact of assumed shocks on banking sector stability. *The first part* involves credit risk assessment in relation to predefined scenarios based on assumed developments in the macroeconomic environment. *The second* involves the assessment of whether, in case of significant deposit withdrawals and additional liquidity needs, the banking sector is able to ensure its regular operations. *The third part* involves the assessment of banking sector systemic risk – whether the current structure of banks' interconnectedness is conducive to the propagation of shocks across the entire banking sector, i.e. the assessment of how resilient the entire system is to potential shocks.

Solvency stress testing

Of the large set of variables eligible for econometric analysis,[66] with the potential to impact the monthly movement of NPLs, three showed reliable predictive power: (1) the nominal exchange rate, (2) s-a real net wages and (3) the key policy rate. Elasticity coefficients (assessing the impact of each variable on NPLs) and individual contributions of each variable to any change in NPLs are presented in Table II.2.1. According to model specification, the factors which would have the greatest impact on a change in gross NPLs are changes in the

Table II.2.1 **Elasticity coefficients of NPLs and contributions of independent variables from Q4 2021 to Q4 2022**

	Elasticity coefficients	Contributions of independent variables (pp)
Nominal exchange rate	0.69	-0.02
Key policy rate	0.02	0.00
Seasonally-adjusted real net wages	-0.19	0.02

Source: NBS.

Table II.2.2 **Overview of scenarios**

	Baseline	Moderate	Worst case
Y-o-y growth in NPL ratio (pp)	0.30	2.11	3.94
Y-o-y depreciation of RSD against EUR (%)	0.42	16.49	34.02
Y-o-y change in key policy rate (pp)	1.25	11.25	22.00
Y-o-y growth in real net wages (%)	0.37	-14.58	-22.52

Source: NBS.

[65] The regulatory framework of Basel III standards came into force on 30 June 2017.

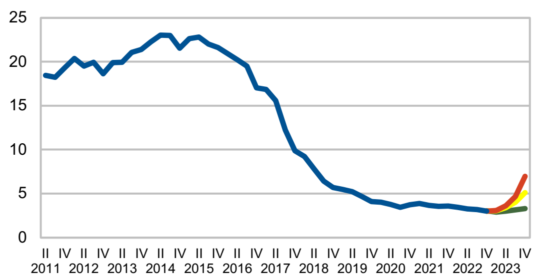
[66] A detailed explanation of the applied econometric model is available in the *Financial Stability Report – 2017*, Text box 3.

exchange rate (elasticity coefficient of 0.69), in s-a real net wages (-0.19) and in the key policy rate (0.02).

For stress test purposes, three macroeconomic scenarios are assumed over a one-year horizon (Table II.2.2). All three scenarios of key policy rate movements are conditional on the assumed path of the exchange rate and its impact on inflation. The projection of nominal net wages was made independently, based on the ARIMA model. The projection of real net wages was made by excluding the impact of projected inflation on wage growth, under relevant scenarios.

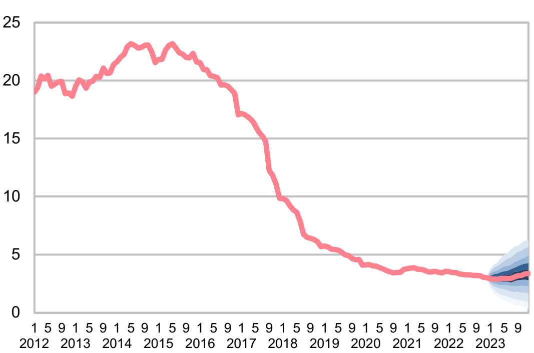
Chart II.2.1 shows the projected change in the share of NPLs in total loans for the three scenarios: 0.30 pp, 2.11 pp and 3.94 pp, respectively.

Chart II.2.1 **Share of gross NPLs in baseline, moderate and worst case scenario***
(%)



* NBS estimate.
Source: NBS.

Chart II.2.2 **Projection of the share of gross NPLs in total loans***
(%)



NBS estimate.
Source: NBS.

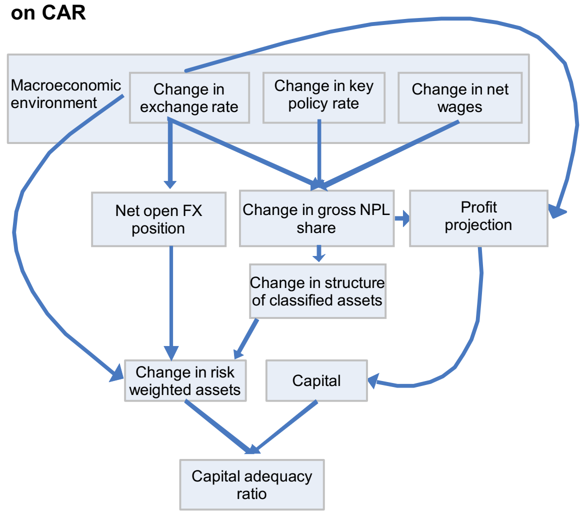
The projected movement with confidence intervals of 90% for the baseline scenario (the most probable scenario) is presented in Chart II.2.2.

Assessment of the resilience of the banking sector and individual banks assuming a profit buffer

For the purposes of this analysis, banking sector resilience is defined as a change in the capital adequacy ratio (CAR) at assumed changes in variables which directly and indirectly impact the CAR level. If the CAR remains above the regulatory minimum over the entire projection period, the banking sector as a whole is considered to be resilient.

The CAR level is directly affected by the changes in risk-weighted assets, as well as by the changes in capital positions due to the inclusion of the financial result, issuance of new shares or, for instance, increase in deductibles from capital. However, there are also significant indirect effects, the most important being those of the exchange rate and projected profit, amendments to regulations, etc. When conducting macroprudential stress tests, depending on movements in macroeconomic variables, the financial result before tax is projected. When projecting profit, the write-off of receivables is also taken into consideration assuming a deterioration in asset quality. The impact of the exchange rate on the share of NPLs is not the only channel through which the exchange rate affects capital adequacy (Diagram II.2.1).

Diagram II.2.1 **Channels of macroeconomic impact on CAR**



The exchange rate also affects the level of capital requirements for FX risk coverage. Given the high level of asset euroisation, the exchange rate affects the revaluation of risk-weighted assets. Finally, the exchange rate influences banking sector profits which serve as a buffer against losses, and it also affects the level of capital allocated to cover capital buffers.

According to the Decision on Capital Adequacy of Banks, banks are required, at all times, to maintain their CAR not below:

– 4.5% for Common Equity Tier 1 capital ratio;

– 6% for Tier 1 capital ratio;

– 8% for (total) capital adequacy ratio.

Also, in addition to meeting these requirements, a bank is required to maintain, at all times, its capital at a level necessary to cover all risks to which it is or may be exposed in its operations, i.e. at least at the level necessary for maintaining higher capital adequacy ratios, if such bank was determined higher than prescribed capital adequacy ratios by the NBS, in line with this Decision.

Capital buffers are additional Common Equity Tier 1 capital that banks are obliged to maintain above the prescribed regulatory minimum. The goal of introducing capital buffers is to mitigate the cyclical dimension of systemic risk (countercyclical capital buffer and capital conservation buffer) and its structural dimension (systemic risk buffer and capital buffer for systemically important banks).

Capital buffers include:[67]

– capital conservation buffer (2.5% of risk-weighted assets);

– countercyclical capital buffer (0% of risk-weighted assets);

– systemic risk buffer (3% of FX and FX-indexed bank exposures to corporates and households in Serbia);

– capital buffer for systemically important banks (1% or 2% of risk-weighted assets).

As at 31 December 2022, Common Equity Tier 1 capital adequacy ratio and regulatory capital adequacy ratio for the Serbian banking sector measured 18.8% and 20.2%, respectively.

Under the baseline scenario, Common Equity Tier 1 capital adequacy ratio would be 18.93%, and regulatory capital adequacy ratio – 20.33%.

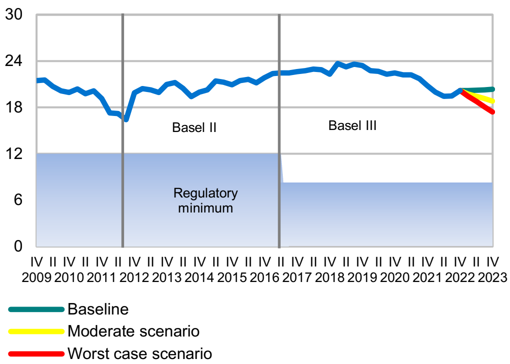
Under the moderate scenario, these ratios would measure 17.52% and 18.82%, respectively.

Under the worst-case scenario, implying a powerful but highly improbable shock, Common Equity Tier 1 capital adequacy ratio would be 16.19%, and regulatory capital adequacy ratio – 17.40%.

Needs for recapitalisation and/or reduction in risk-weighted assets

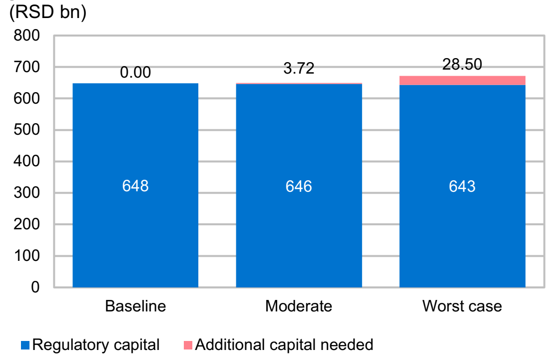
Based on data as at 31 December 2022, and under the **baseline scenario** assumptions, there is no need for the

Chart II.2.3 **CAR by stress scenario***
(%)



* NBS estimate.
Source: NBS.

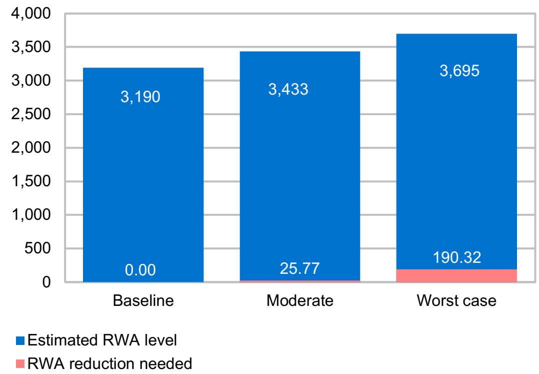
Chart II.2.4 **Capital levels by scenario with projected profit buffer***
(RSD bn)



* NBS estimate.
Source: NBS.

[67] https://nbs.rs/en/ciljevi-i-funkcije/finansijska-stabilnost/zastitni_slojevi_kapitala/index.html

Chart II.2.5 **Risk-weighted assets by scenario with projected profit buffer***
(RSD bn)



* NBS estimate.
Source: NBS.

recapitalisation of banks in order to meet the requirements for Common Equity Tier 1 capital ratio of 4.5% of risk-weighted assets, Tier 1 capital ratio of 6% of risk-weighted assets and regulatory capital adequacy ratio of 8% of risk-weighted assets, or the increased capital adequacy ratios in line with the Decision on Capital Adequacy of Banks. Also, all banks would have sufficient Common Equity Tier 1 capital for the coverage of all prescribed capital buffers.

Assuming a projected profit buffer,[68] Chart II.2.4 shows the movement in the level of regulatory capital by scenario, while Chart II.2.5 shows the movement in the value of risk-weighted assets by scenario.

Under the assumptions of the **moderate scenario**, banks would need additional capital of around RSD 3.7 bn, or 0.58% of the regulatory capital at the banking sector level. An alternative to capital increase would be a RSD 25.8 bn decrease in risk-weighted assets, which accounts for 0.75% of the banking sector's risk-weighted assets.

Under the assumptions of the **worst-case scenario**, banks would need additional capital of around RSD 28.5 bn, or 4.43% of the regulatory capital at banking sector level. An alternative to capital increase would be a RSD 190.3 bn decrease in risk-weighted assets, which accounts for 5.15% of the banking sector's risk-weighted assets.[69]

NPLs that bring the CAR to threshold

The final stage of solvency stress tests aims to determine the share of NPLs that would bring the banking sector CAR down to the threshold, with all of the prescribed regulatory minimums, and/or higher capital adequacy ratios in line with the Decision on Capital Adequacy, plus the established capital buffers, being met.

In conditions of a projected significant deterioration in the macroeconomic environment which would drive the share of gross NPLs in total loans up by 4.33 pp, the banking sector's regulatory capital adequacy ratio could drop from the initial 20.15% to the threshold level of 17.10% over a one-year span.

However, it should be noted that the probability of such increase in the share of NPLs in total loans, which would bring the CAR down to the threshold, is low.

Determining leverage ratio values by scenario

According to the Decision on Reporting Requirements for Banks, banks are required to compile and submit to the NBS quarterly reports about the ratio of their Tier 1 capital and total exposure amount – the leverage ratio[70]. The introduction of the leverage ratio has two aims: to limit the amount of capital which banks may use and to ensure complementary measures for capital assessment regardless of the estimated risk. The recommendation of Basel III standards is to keep the leverage ratio at a 3% minimum.

The leverage ratio for the Serbian banking sector at end-2022 equalled 10.28%. Under the baseline scenario, the leverage ratio would measure 10.21%, while under the moderate and worst-case scenarios, this ratio would amount to 9.28% and 8.34%, respectively, i.e. well above the 3% minimum.

Liquidity stress tests

The liquidity risk in Serbia's banking sector is not as pronounced as the credit risk. However, the sudden deposit withdrawal in late 2008 as a result of the global

[68] Depending, inter alia, on macroeconomic variables, a projection is made of the pre-tax financial result, or of the profit buffer, as the first line of defence from assumed losses. In case of an insufficient amount of the profit buffer, the losses would reflect negatively on the bank's capital.

[69] Banks which fail to meet the combined capital buffer requirement are subject to restrictions in profit distribution and are obliged to submit to the NBS a capital conservation plan in accordance with the Decision on Capital Adequacy of Banks (RS Official Gazette, Nos 103/2016, 103/2018, 88/2019, 67/2020, 98/2020, 137/2020, 59/2021, 67/2022 and 137/2022).

[70] RS Official Gazette, Nos 125/2014, 4/2015, 111/2015, 61/2016, 69/2016 103/2016, 101/2017, 46/2018, 8/2019, 27/2020, 137/2020, 59/2021, 67/2022 and 89/2022.

financial crisis and a temporary loss of confidence in the European parents of banks operating in Serbia indicates the importance of monitoring this risk.[71]

Liquidity stress testing aims to determine whether the banking sector could continue to operate normally in case of the same or a stronger shock. In addition to deposit withdrawal, other factors can also depress liquidity on the liabilities side, including the inability to refinance, or strained access to new sources of funding. Likewise, factors on the assets side may include the unexpected use of credit lines, contraction in market liquidity, lower value of assets, etc., which would further impair the bank's liquidity position.

Liquidity ratio assessment

The analysis of the deposit withdrawal shock in domestic banks that lasted from September 2008 to January 2009 served to create the following scenarios:

– déjà vu scenario, envisaging a deposit withdrawal worth around RSD 439 bn (11% of total deposits) and the same structure of deposits withdrawn as recorded in the above period;

– risk spillover scenario, implying the spillover of the liquidity crisis from parent groups into Serbia's financial sector; in addition to the deposit withdrawal in October 2008, this scenario also envisages a lack of support from parent banks due to the international banking crisis, which raises total deposit withdrawal to around RSD 609 bn (15% of total deposits);

– worst-case scenario, envisaging a shock two times stronger than in October 2008, i.e. a deposit withdrawal of around RSD 866 bn (21% of total deposits).

For the purposes of the analysis, deposits are divided into two main groups – demand and time deposits. Deposit withdrawal assumptions for all three scenarios are presented in Table II.2.3.

According to the initial data, the liquidity ratios of all banks would be above the regulatory minimum.

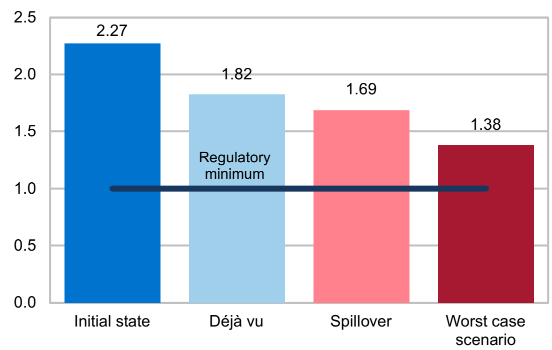
In the scenarios described above, the banking sector liquidity ratio would range from 2.27, where it stood on 31 December 2022, to 1.38 in the worst-case scenario (Chart II.2.6).

Table II.2.3 **Assumptions of deposit withdrawals by sector**

DEPOSIT WITHDRAWAL	Déjà vu 2008	Spillover	Worst case
Banks – demand	0%	60%	60%
Corporate – demand	10%	10%	20%
Household – demand	12%	20%	24%
Government – demand	23%	23%	35%
Other demand deposits	11%	15%	22%
Time deposits	11%	13%	20%
Marketability of 2nd class liquid assets	100%	100%	80%
Stocks and bonds listed on the stock exchange	100%	100%	40%
Total of deposits withdrawn (RSD bn)	439	609	866
Share in total deposits (%)	11%	15%	21%

Source: NBS.

Chart II.2.6 **Liquidity ratio for the banking sector by stress scenario***



* NBS estimate.
Source: NBS.

According to the déjà vu scenario, as well as under the risk spillover scenario, the liquidity ratio would not fall below the regulatory minimum for any bank, while in the worst-case scenario, assuming a severe shock, it would fall below the regulatory minimum for banks accounting for 2.8% of total banking sector balance sheet assets. The largest number of banks would stay in the safe zone, with liquidity ratios above 1.0.

The Decision on Liquidity Risk Management by Banks, applied as of 30 June 2017, introduced a new liquidity ratio – Liquidity Coverage Ratio. This ratio was

[71] For a more detailed description of the deposit withdrawal in late 2008, see the *Annual Financial Stability Report – 2012*.

introduced in order to ensure a bank's resilience to liquidity shocks over a 30-day span.[72] According to bank reports as at 31 December 2022, all banks disclosed the liquidity coverage ratio, aggregately by all currencies, above the regulatory minimum, while at the banking sector level this ratio stood at 1.77.

Liquidity needs

Based on reported data as at 31 December 2022, there was no need for additional first-order liquidity.

Under the déjà vu and risk spillover scenarios, there would be no need for first-order liquidity in any bank.

Under the worst-case scenario, first-order liquidity needs would be RSD 4.8 bn, or 0.3% of the initial first-order liquidity.

If the assumed scenarios materialised, the NBS could react by providing additional liquidity or by exercising its lender of last resort function.[73]

Deposit withdrawal values that bring the liquidity ratio to threshold

The liquidity risk analysis aims to determine the values of deposit withdrawals from the banking sector and individual banks that would lower the liquidity ratio from the initial level to 1.5 and 1.0, respectively.

Based on Table II.2.3, the structure of deposit withdrawal by deposit category in total withdrawn deposits was derived for the déjà vu scenario (Table II.2.4).

At the banking sector level, the liquidity ratio would measure 1.5 under the déjà vu scenario and the assumed deposit withdrawal structure of around RSD 790.3 bn or 19.0% of total deposits (RSD 583.9 bn demand and RSD 206.4 bn time deposits). In case of a withdrawal of RSD 1,398.3 bn, i.e. 33.7% of total deposits (of which around RSD 1,033.1 bn are demand and around RSD 365.2 bn time deposits), the liquidity ratio would fall to 1.

Banking sector survival period in case of sudden deposit withdrawal

The period in which we observe the effects of a strong shock is defined as the survival period, and it consists of two stages. The first is a short period of high-intensity stress, lasting for several days. During that time evaluation is made of the bank's ability to cover liquidity outflows amid reduced possibility of obtaining new liquid assets and changing the business model. The second stage is a longer period, marked by weaker but more persistent shocks, lasting for over a month.

This group of liquidity tests aims to determine the longest period of banking sector survival in case of large daily deposit withdrawals – in the stage of a short and strong liquidity shock. The main withdrawal assumptions for the moderate and worst-case scenarios are presented in Table II.2.5.

Charts II.2.7 and II.2.8 show available liquid assets and the amount of deposits withdrawn at banking sector level in the first five days (the amount of liquid assets remaining after liquidity needs are satisfied) for both

Table II.2.4 **Derived structure for share of deposit withdrawals by depositor category in total deposits withdrawn**

	Déjà vu
Withdrawal of demand deposits	74%
Withdrawal of time deposits	26%
Structure of total demand deposit withdrawal	
Banks	0%
Other depositors	81%
Household savings	19%

Source: NBS.

Table II.2.5 **Assumed daily deposit withdrawal**

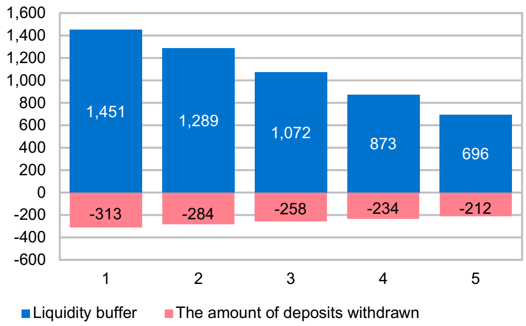
DEPOSIT WITHDRAWAL	Moderate scenario	Worst case scenario
Demand deposits – daily	10%	15%
Time deposits – daily	2%	5%
Availability of liquid assets – daily	95%	95%
Availability of non-liquid assets – daily	1%	1%

Source: NBS.

[72] In order to assess bank's resilience over a longer term (one year), the introduction of the Net Stable Funding Ratio (NSFR) has been envisaged. On 23 November 2016, the European Commission published a proposal to amend EU Regulation No 575/2013. The proposed amendments, among other things, supplement Article 428 of EU Regulation No 575/2013, which more closely defines the general rules for the calculation of NSFR indicator, as well as the elements that enter into the calculation itself.

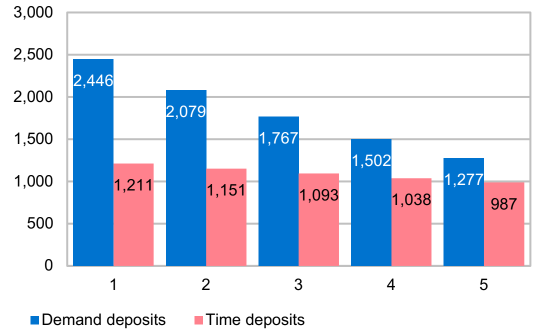
[73] The lender of last resort function is a standard function of central banks and is commonly defined as the readiness of the central bank to extend loans to banks that cannot access more favourable sources of liquidity available in the market, all with a view to protecting depositors and/or preventing a systemicthe crisis in the financial system (https://www.nbs.rs/export/sites/NBS_site/documents-eng/propisi/propisi-mp/liquidity_assistance_loans.pdf).

Chart II.2.7 **Liquidity buffer – daily for moderate scenario***
(RSD bn)



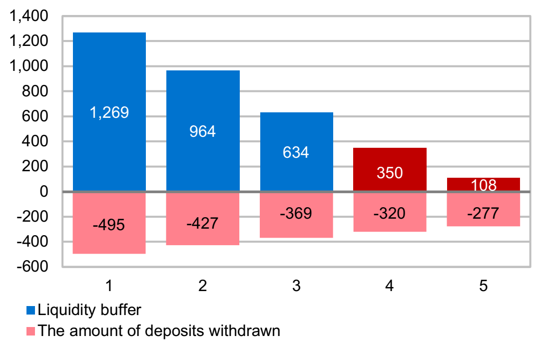
* NBS estimate.
Source: NBS.

Chart II.2.10 **Structure of demand and time deposits – daily for worst case scenario***
(RSD bn)



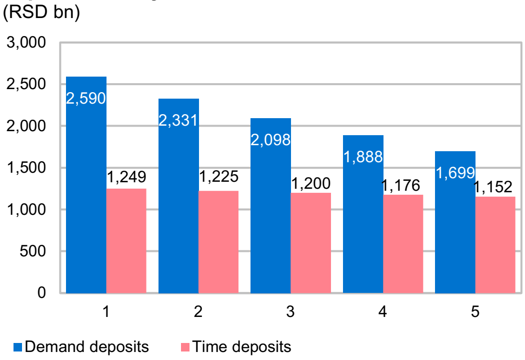
* NBS estimate.
Source: NBS.

Chart II.2.8 **Liquidity buffer – daily for worst case scenario***
(RSD bn)



* NBS estimate.
Source: NBS.

Chart II.2.9 **Structure of demand and time deposits – daily for moderate scenario***
(RSD bn)



* NBS estimate.
Source: NBS.

scenarios. Charts II.2.9 and II.2.10 give the deposit structure by day.

According to the results of liquidity stress tests as at 31 December 2022, the entire banking sector can withstand eleven business days[74] in conditions of daily deposit withdrawal in the moderate scenario, or six business days in the worst-case scenario.

Simulations of the liquidity shock

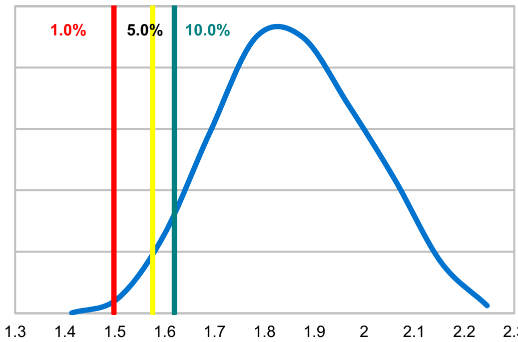
This analysis aims to determine the probability of movement in banking sector liquidity ratios under assumed negative effects, i.e. various randomly selected values of deposit withdrawals.

The liquidity ratios are obtained based on tens of thousands of different scenarios, which imply the statistical sampling of the assumptions of deposit withdrawal by sector, from zero to the worst-case scenario value (Table II.2.4). Since only assumption values with a negative effect are observed, the tentative values of the variable under assumed negative effects are calculated. This enables an efficient modelling of a large number of simulations of low-probability shocks to Serbia's banking sector liquidity for test purposes.

These simulations produced a distribution of liquidity ratios of the banking sector at various combinations of assumptions (Chart II.2.11).

[74] The IMF's recommendation about the bank survival period after deposit withdrawal is a period of five business days. After this period, it is believed that a bank will have sufficient time to consolidate its operations.

Chart II.2.11 **Confidence intervals for banking sector liquidity ratio***



* NBS estimate.
Source: NBS.

With the given confidence interval of 10%, the liquidity ratio equals 1.62, while for confidence intervals of 5% and 1% it equals 1.58 and 1.50 respectively.

In other words, it can be asserted with a 90% certainty that the liquidity ratio will not fall below 1.62 in various combinations of deposit withdrawal assumptions. Moreover, there is a certainty of 99% that the ratio will not fall below 1.50.

Network modelling in the assessment of banking sector systemic risk

The 2008 global financial crisis revealed the importance of observing the interdependencies among financial institutions for the purpose of determining the systemic component of risk. In terms of the systemic risk, it is important to determine which financial institutions are systemically important, whether the existing structure of interconnectedness is conducive to the transmission of the shock through the system, and above all, to what extent the entire system is resilient to potential shocks. Therefore, the financial system cannot be observed only from the aspect of a single institution; rather, information on the interinstitutional dependencies must be included as well.

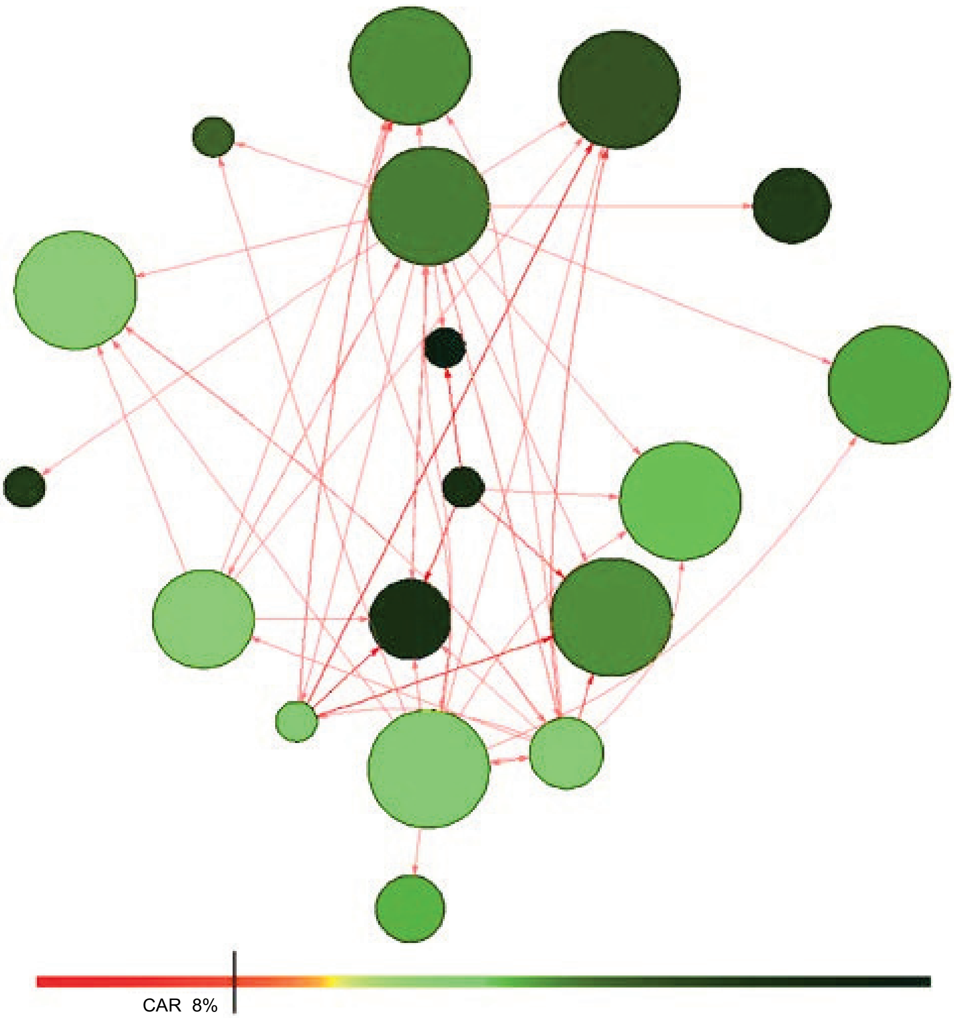
The network structure describes the domestic banking sector in the context of mutual on- and off-balance sheet exposure of banks. The edge weight from bank *i* to bank *j* represents the potential increase in allowances for loan impairment relative to the regulatory capital of bank *i*, in case of insolvency of bank *j*. The network of Serbia's banking sector, in accordance with the given definition, is presented in Chart II.2.12. The intensity of the edge colour indicates its weight – the greater the weight, the more intense its colour. The edge direction is determined as follows: the edge from node *i* to node *j* relates to potential growth in allowances for impairment relative to the regulatory capital of bank *i* in case of a decrease in the solvency of bank *j*. The size of the circle that represents the bank shows the amount of its regulatory capital – the greater the circle, the higher the amount of regulatory capital. The circle colour indicates the level of CAR. In the spectrum from red to green, red corresponds to the minimum observed CAR of 0%, while green corresponds to CAR of 36%. Values above 36% are considered exceptionally high and are therefore not taken into account when forming the scale of CAR.

Global efficiency indicates the banking sector's network capacity in terms of shock transmission and equals 0.19. As global efficiency ranges between 0 and 1, where values close to 1 indicate high conductivity of shocks through the network, a global efficiency of 0.19 does not indicate a high network potential for shock transmission.

The impact of the network structure on shock transmission is simulated as follows: assuming the insolvency of a pre-determined bank, the expected increase in allowances for loan impairment is calculated for each bank in the system. An increase in allowances for impairment results in a lower CAR, already in the first iteration of shock transmission. In each following iteration, based on the CAR values obtained in the previous iteration, new probabilities of default were obtained for each bank in the system (which did not become undercapitalised up to that point). Based on this, the expected increase in allowances for impairment and a new reduction in risk-weighted assets, capital and the CAR were calculated again. A shock is considered to be neutralised when further iterations register no change in regulatory capital and risk-weighted assets of any of the banks. Assuming the insolvency of an individual bank and the transmission of a particular shock through the system, as was explained, the effect on each individual bank, and therefore on the system, originates from two different sources. One relates to the initial iteration following the insolvency of a pre-determined bank – to its elimination from the system and the immediate impact on banks exposed to it. The other relates to shock transmission in the following iterations, i.e. the domino effect, which measures the impact of the structure of the banking sector network on the transmission of insolvency through the system.

Chart II.2.13 shows the banking sector's CAR immediately after the assumed insolvency of each individual bank in the sector and the total effect of the existence of the network structure. Chart II.2.14 shows the impact of the network structure on shock

Chart II.2.12 **Banking network of the Republic of Serbia**



Source: NBS.

transmission, reflected in a reduction in the CAR of individual banks and/or sector, in all iterations following the first one.

The results shown in Charts II.2.13 and II.2.14 indicate that, in case of insolvency of any bank, the banking sector's CAR would stay in the safe zone, i.e. above the regulatory minimum. Also, the impact of the network structure on shock transmission is relatively weak, which is conducive to the maintenance of financial stability

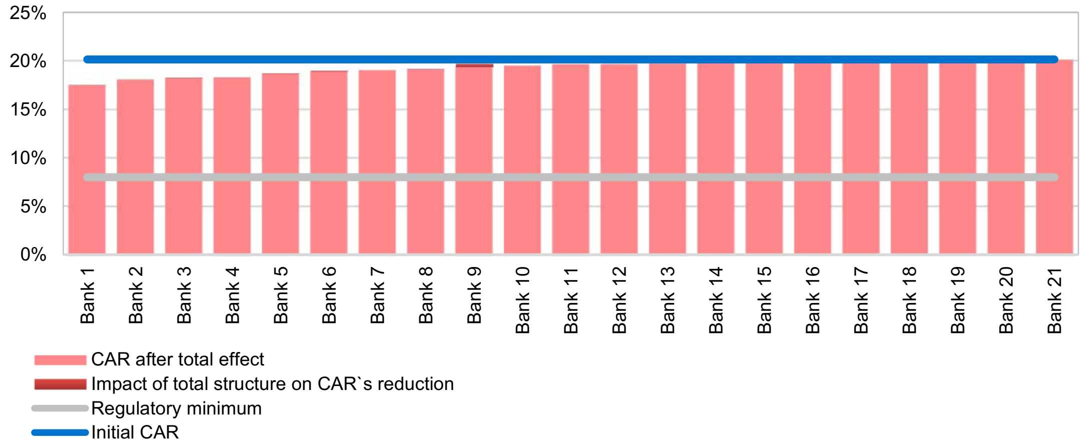
Conclusion

The Serbian banking sector would remain resilient, adequately capitalised and highly liquid even in case of the strongest assumed shocks in the period of the multidimensional crisis we have been facing in the past three years. Further strengthening of the financial stability function, protecting depositors, as well as building public trust in the banking system mandates continuous and systemic monitoring of risks in the banking sector.

The results of macroprudential stress testing indicate that the regulatory capital adequacy ratio of the banking sector would remain above the regulatory minimum even in the worst-case scenario.

The banking sector would stay liquid even in conditions of the largest assumed deposit outflow. However, in case the assumed scenarios materialise, the NBS has the instruments to ensure additional liquidity. The application of Basel III standards implies new regulatory requirements in terms of liquidity risk management and minimum liquidity ratios for banks. These regulatory

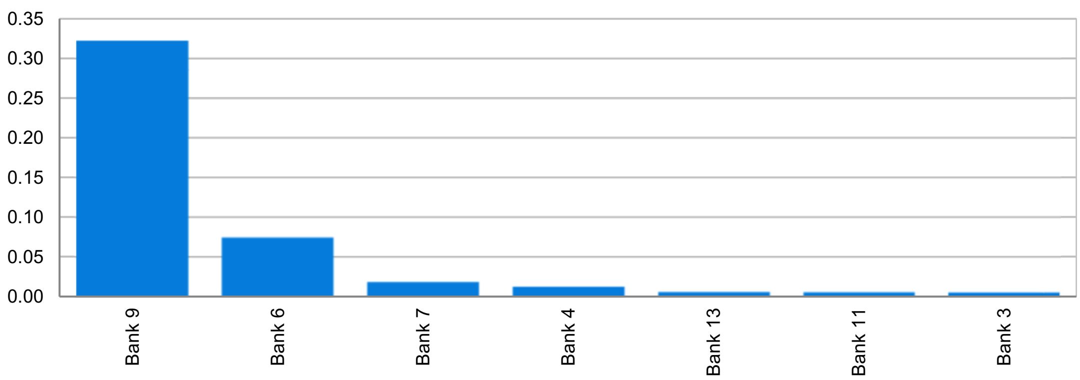
Chart II.2.13 **Banking sector CAR after the insolvency of an individual bank**



Source: NBS.

Chart II.2.14. **Impact of network structure on the drop in banking sector`s CAR after the insolvency of an individual bank**

(pp)



Source: NBS.

requirements function as both micro and macroprudential instruments that are used to prevent the occurrence of or increase in the maturity mismatch between the sources of funding and financial institutions' investment.

As the interconnectedness of financial institutions may lead to a contagion or shock transmission in the banking sector, it is of particular importance to assess the connection among banks and the potential systemic risk arising therefrom. The results of the network modelling indicate that there is no significant systemic risk component in the Serbian banking sector.

Now that exceptional results have been achieved in the resolution of existing NPLs, the monitoring of NPL movements in all segments of the corporate and household sectors continues, as a result of changed business conditions due to lower growth outlook and monetary policy tightening of leading central banks.

Thanks to the NPL Resolution Strategy, adopted in August 2015, and the implementation of the resulting activities and regulatory measures of the NBS, as well as the NPL Resolution Programme for the Period 2018–2020 from December 2018, the NPL ratio dropped drastically. At end-December 2022 the NPL ratio equalled 3.01%, and at end-March 2023 – 3.00%. NPLs are currently at their lowest level, indicating that global uncertainties did not exert a negative effect on the banks' asset quality. Allowances for impairment of NPLs are also high. On the other hand, it is necessary to monitor further dynamics in NPLs as a materialisation of risk after the gradual lifting of measures aimed to support corporate and household financing conditions amid the coronavirus pandemic, as well as due to the economic consequences of the extended conflict in Ukraine, global inflation and central banks' monetary policy responses.

As part of its activities, the NBS started the development of an analytical framework for analysing the effects of climate change on financial stability. The response to the risks resulting from climate change must be well-measured, given the uncertainty regarding the time and manner in which these risks will play out and the size of direct and indirect damage they may cause. It is of key importance to recognise the broadest possible scope of the risks (both physical and transitional) and the channels of their impact on some sectors of the economy, geographical regions, population categories and ultimately on GDP and financial system stability. Once the risks and channels are recognised, it is possible to embark on a scenario analysis which would help quantify some effects and identify areas where certain fiscal, monetary and macroprudential policy measures could produce an effect.

Even amid new challenges, in terms of preserving financial stability, the NBS aims to achieve a full coordination between monetary and macroprudential policy. The NBS uses available macroprudential tools with the aim of making the financial system more resilient, limiting the accumulation of vulnerabilities and mitigating systemic risk. This approach contributes to the stability, resilience and lower procyclicality of the financial system and works towards increasing the efficiency of monetary policy transmission.

Text box 3: ECB 2022 climate risk stress tests – how well prepared are euro area banks for green transition?

In line with its supervisory mandate, in early 2022 the ECB initiated the process of climate risk stress-testing for euro area banks. The ECB published the results of the climate risk stress test[75] in July 2022. The aim of the ECB 2021 climate risk stress test[76] was to make a comprehensive assessment of the impact and spill-over of climate risks from the real to the banking sector of the euro area using the top-down approach.[77] The primary aim of the ECB 2022 climate risk stress test was to assess the level of banks' preparedness for managing climate risks and to look into banks' capacity for independent conduct of climate risk stress tests. The ECB 2022 climate risk stress test used the bottom-up approach.[78] To exercise this stress test, the ECB collected qualitative and quantitative information about the readiness of the euro area banking sector for the assessment of climate risks taking into consideration the best international practices. The 2022 climate risk stress test was a complex learning exercise for both banks and supervisory authorities. The applied stress scenarios are not forecasts and do not reflect the expectations of the ECB, Eurosystem or supervisors about possible outcomes, but are aimed at providing an insight into banks' preparedness for managing climate risks and exploring the potential impact of climate change on financial risks. Though they will not have any direct capital implications for banks, the findings will feed into the SREP (supervisory review evaluation process) assessment by means of capital requirements for the coverage of climate risks.

Three modules formed the basis of 2022 climate risk stress tests. Module 1 consists of a qualitative questionnaire aimed at providing an assessment of banks' climate risk stress-testing capabilities and existing frameworks, as well as climate risk management methods. Module 2 assesses the sensitivity of banks' income to transition risk and their exposure to carbon dioxide (CO_2) emission-intensive industries and in this sense an assessment of resilience of banks' business models. Module 3 constitutes the bottom-up stress test which focuses particularly on transition and physical risk,[79] with financial institutions asked to carry out their own stress tests. The scenarios are largely based on scenarios of the Network for Greening the Financial System (NGFS),[80] including additional calibrations performed to tailor the scenarios to the specific needs. Transition risk includes long- and short-term scenarios, whereas physical risk is materialised at the beginning of a period.[81] The test included participation of 104 systemically important banks, while Module 3 climate risk stress test applying bottom-up approach was carried out with the participation of 41 banks. Banks were asked to split their corporate exposures among 22 industries at the NACE (Nomenclature of Economic Activities) level.[82] Also, they were required to break down mortgages by EPC (Energy Performance Certificates) ratings, which measure their energy efficiency.

The long-term transition risk implies three distinct scenarios:

1. The orderly scenario is based on the NGFS net zero 2050 scenario and assumptions of early introduction and fast implementation of climate policies aimed at attaining climate goals by 2050 (modelled mainly by a gradual increase in carbon prices). Under this scenario, both physical and transition risks are relatively subdued as the gradual nature of the transition ensures that the costs for banks are minimised, while restricting global warming to 1.5°C by 2050 helps mitigate physical risk.

2. The disorderly scenario is based on the NGFS delayed transition scenario which assumes climate policies for attaining climate goals are not implemented until 2030. In this case, the model assumes an abrupt and significant carbon

---

[75] https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.climate_stress_test_report.20220708~2e3cc0999f.en.pdf
[76] *Annual Financial Stability Report – 2021*, Text box 7: ECB Climate risk stress test.
[77] The top-down approach implies using banks' reports for stress test by regulatory authorities..
[78] The bottom-up approach means that financial institutions carry out stress tests under their own models.
[79] Transition risks occur as a result of tightening regulatory requirements for certain technological processes aimed at transitioning toward low carbon emission economy. Physical risks stem from the physical impact on household and corporate property due to changes in climate conditions.
[80] https://www.ngfs.net/ngfs-scenarios-portal/explore
[81] https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.macrofinancialscenariosclimateriskstresstest2022~bcac934986.en.pdf
[82] La Nomenclature statistique des activités économiques dans la Communauté européenne.

price increase as of 2030 and strong policy actions to ensure great probability of limiting global warming to below 2°C by 2050. Compared with the orderly transition scenario, the delayed transition carries higher transition risk. Physical risks are also higher as the delay in carbon reduction leads to an increase in temperature, subsequently leading to a rise in the frequency and magnitude of extreme weather events.

3. The hot house scenario is based on the NGFS current policies scenario, i.e. it assumes that no new climate risk policies are implemented. Even though European carbon emissions gradually decline in this scenario, global emissions grow, leading to about 3°C warming until 2080. In this scenario, the transition to a carbon-neutral economy is assumed to take place in the long run so transition risks are negligible. However, the absence of transition costs would be offset by the multiple adverse impact of extreme physical risk on the economy over time.

The short-term transition risk scenario named short-term delayed (disorderly) transition assesses the vulnerability of banks to abrupt increases in carbon prices over a three-year horizon. The scenario calibration is based on the NGFS policy which assumes a carbon price increase in 2022. This scenario was considered as a risk scenario suitable for stress testing and assessment of vulnerability of bank balance sheets to the introduction of unexpected stringent measures for carbon reduction in the near future.[83]

For physical risks, two risk scenarios were considered, a drought and heat scenario and a flood scenario. The drought and heat scenario models the economic effects of a severe drought and heat wave in Europe. It assumes that the heat wave hit Europe on 1 January 2022. Data from end-2021 were used as the starting point with a one-year projection horizon. The scenario only models the shocks to gross value-added growth. The calibration is based on NGFS estimates for labour productivity shocks due to heat stress as the labour productivity is the key channel for pass-through of heat risks to the economy. In the flood risk scenario, it is assumed that severe floods took place across Europe on 1 January 2022. While the probability of such an event is low, it makes room for the adjustment and creation of relevant flood risk scenarios across the EU. River flooding has historically been a major source of physical risk in Europe and, with a rise in extreme levels of precipitation being associated with climate change, this risk is expected to increase further, leading to banks making more losses as real estate value is eroded. Flood risk is heterogeneous across the EU and can differ significantly even within a single country. Therefore, the flood risk scenario accounts for within-country variation in risks, with shocks for residential and business real estate estimated taking into account the specific levels of flood risks in line with the NUTS3 (Nomenclature of territorial units for statistics) level.

The results of the 2022 climate risk stress test led to the following conclusions:

- Materialisation of climate risks may significantly affect banks' profitability. In the short run, transition risk has a tendency of being an important component of the financial risk. The current energy crisis and the decision of some countries to use coal and other fossil sources of energy more have particularly elevated the risk of delayed (disorderly) transition.

- Physical risks are also relevant, but currently they are mainly connected with local extreme weather conditions, which makes them more manageable in the short run. However, if global warming intensity continues, physical risk will gain in importance due to increased likelihood of extreme weather conditions and heat.

- Banks should be able to absorb climate-related losses due to strong capital buffers. However, limited availability of data and stress test models which do not sufficiently take climate risk into account may underestimate the vulnerability of financial institutions to climate risks.

Climate risk stress tests have several constraints:[84]

- The long-term and potentially non-linear nature of climate change (i.e. possible tipping points) and a complex chain of effects make it difficult to model future transition pathways.

[83] https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.macrofinancialscenariosclimateriskstresstest2022~bcac934986.en.pdf
[84] Deutsche Bank Research: Climate stress tests - Are banks fit for the green transition?

- Data gaps reduce the accuracy of the projections. Key counterparty data such as the level of greenhouse gas emissions are not readily available. In the 2022 ECB climate stress test, banks overall estimated 70–85% of their counterparty emission data. With respect to physical risk, banks often have differing information on business locations of large counterparties.
- The conducted climate stress tests make simplifying assumptions such as static balance sheets[85] and they often do not estimate second-round effects.

Though commercial banks have made certain progress with climate stress tests since 2020, the results demonstrated that euro area banks' internal models did not sufficiently cover climate risk. Around 60% of banks did not include climate risk in their credit risk models, while only 20% of banks take climate risk into consideration in loan approval. However, most banks which integrated climate risks in their models did not integrate them in the Internal Capital Adequacy Assessment Process (ICAAP) or a wider stress testing framework. As for bank income exposure to transition risk it has been concluded that a bulk of almost two thirds of total bank income comes from clients operating in economic sectors with enhanced green-house effect. The scenario analysis forecasts that by 2050, total mortgage losses of the non-financial sector will be 10% higher under delayed (disorderly) transition than under orderly transition, while hot house scenario losses would be 13% higher. It transpired that an abrupt shock in the hike of carbon prices would affect banks much more (envisaged losses of 0.7% of unpaid corporate loans) than a shock caused by extreme weather conditions (0.004%). This rather negligible effect of physical risk in the short run is in sharp contrast with its potential impact over the long run.

Banks should integrate climate risks in their risk management policies, and set a comprehensive climate risk management framework. In November 2022, the ECB published the results of the thematic review for 2022,[86] pointing to a significant progress, but also a failure of 55% of banks to implement the adopted plans. It also showed that almost every bank (96%) made certain errors in estimates of bank exposures to climate risks. The ECB requires financial institutions to fully align with supervisory expectations by end-2024, and has announced further supervisory instruments for fostering decisive climate risk management exercises. Based on climate risk stress tests, in December 2022 the ECB published examples of good practice,[87] to facilitate the efforts of commercial banks to align their practice with supervisory expectations.

The ECB 2022 climate risk stress test is an important exercise for both banks and supervisory bodies, carried out to improve the assessment of the climate risk impact, and a continuation of alignment with supervisory expectations for environmental protection. In the coming period, climate risk remains one of the priorities of the ECB and other supervisory bodies. Financial institutions should continue improving their framework for the implementation of climate risk stress-tests, along with the development of analytical capacities for the assessment of climate risks. Such approach is important for reducing the risk of making inadequate decisions when granting loans, inefficient resource allocation and inadequate assessment of collateral value. The ECB expects that banks will make significant improvements in terms of the availability and quality of data, and development of models integrating climate risks in stress tests, with consideration of the dynamic balance sheet for modelling transitions risks, which would significantly contribute to the development of the methodology for climate risk management in the long run.

[85] Static balance sheet assumes that its size, structure and risk profile do not change over the observed time horizon.
[86] https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.thematicreviewcerreport112022~2eb322a79c.en.pdf
[87] https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.202212_ECBreport_on_good_practices_for_CST~539227e0c1.en.pdf

II.3 Non-bank financial sector

II.3.1 (Re)insurance undertakings

The Serbian insurance sector continued to post positive results and was adequately capitalised and profitable despite the challenges that arose first from the coronavirus pandemic and then from pronounced geopolitical tensions, as well as the energy crisis caused by the Ukraine conflict. Total premium growth was also recorded, with continued dominance of non-life insurance. On the other hand, the sector's share in the financial sector's balance sheet total declined in y-o-y terms.

The share of the balance sheet total of the insurance sector in the balance sheet total of the financial sector supervised by the NBS (banks, financial lessors, (re)insurance undertakings and VPFs)[88] was 6.0% at end-2022, indicating a slight decrease from end-2021 (5.6%). After the dominant banking sector, insurance is the second largest segment of the Serbian financial system.

At end-2022, there were 16 insurance undertakings and four reinsurance undertakings in Serbia.[89] Among insurance undertakings, four were engaged in life insurance, six in non-life, and six provided both life and non-life insurance services. Of the total number of undertakings, 15 were in majority foreign ownership. Major foreign owners were from Austria (23.5%) and the Netherlands (22.4%). Insurance undertakings in majority domestic ownership accounted for 30.7% of all insurance undertakings[90] (Chart II.3.1), up by 1.1 pp from 2021.

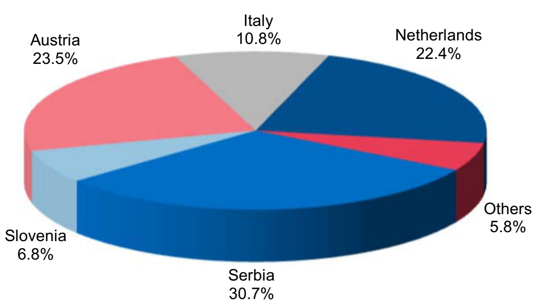
In addition to insurance undertakings, in 2022, the sales network included 17 banks, eight financial lessors, and one public postal operator, all of them licensed to carry out insurance agency activities, 109 legal persons (undertakings for insurance brokerage and insurance agency activities), and 78 insurance agents (natural persons – entrepreneurs).

Compared with both the neighbouring countries and EU member states, Serbia's insurance market has a significant potential for further development. According to data of the Swiss Re Institute, in 2021,[91] the penetration ratio (gross written premium as a percentage of GDP) at the EU level stood at 7.0%,[92] while the same ratio in Serbia measured 1.9%.[93] Also, Serbia's density ratio (the average premium per capita spent on insurance) of USD 176[94] was much lower than the EU's USD 2,670[95] in 2021[96] (Chart II.3.2).

A positive trend was also recorded in the total premium, which measured RSD 133.9 bn in 2022, having risen by 12.2% from 2021. Serbia lags behind the neighbouring countries in terms of the absolute amount of the total premium (Chart II.3.3).

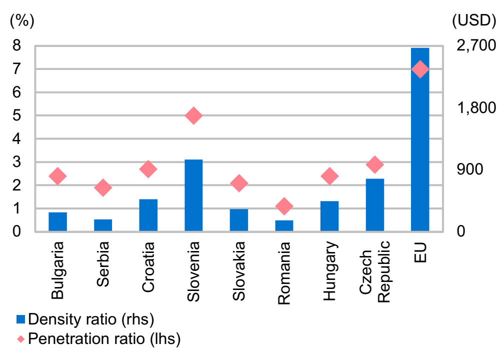
Owing to higher nominal growth in non-life than in life insurance premium, the share of life insurance

Chart II.3.1 **Insurance undertakings* ownership structure, as at 31 December 2022**



* Does not include reinsurance undertakings.
Source: NBS.

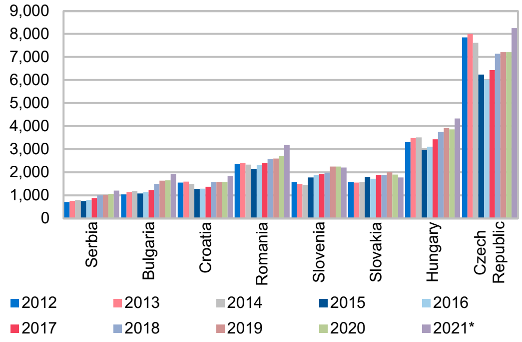
Chart II.3.2 **Insurance sector development indicators as at 31 December 2021***



* Latest available data.
Sources: Swiss RE and NBS.

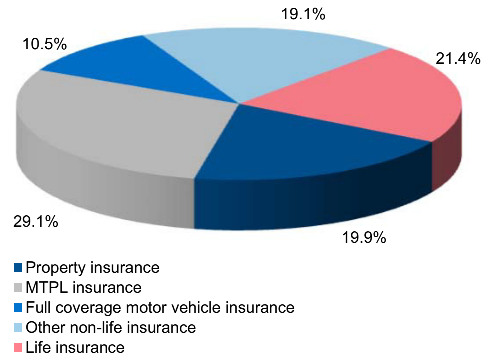
[88] Excluding payment institutions, e-money institutions and virtual currency service providers.
[89] https://nbs.rs/en/finansijske-institucije/osiguranje/registar/index.html
[90] Excluding reinsurance undertakings.
[91] Latest available data.
[92] Source: Swiss Re Sigma 4/2022.
[93] Source: NBS.
[94] Latest available data.
[95] Source: Swiss Re Sigma 4/2022.
[96] Source: NBS.

Chart II.3.3 **Total insurance premium**
(USD mn)



* Latest available data.
Sources: Swiss RE and NBS.

Chart II.3.5 **Total premium according to types of insurance as at 31 December 2022**



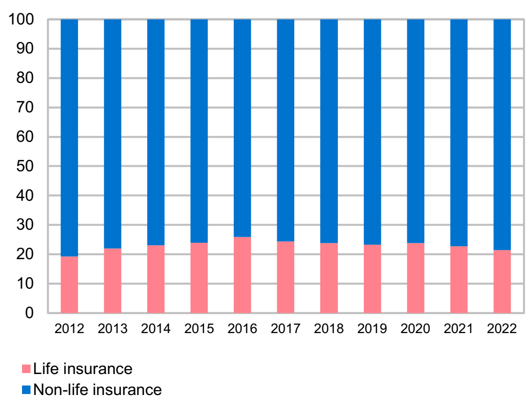
Source: NBS.

premium decreased from 22.7% in 2021 to 21.4% in 2022 (Chart II.3.4).

At end-2022, within the total premium, motor third party liability insurance was still dominant (29.1%), followed by life insurance (21.4%), property insurance (19.9%) and full-coverage motor vehicle insurance (10.5%) (Chart II.3.5).

The Serbian insurance sector is adequately capitalised despite the risks to which it is exposed. The available solvency margin (guarantee reserve) is the amount of assets that an insurance undertaking must provide to be able to permanently perform its obligations. According to the Insurance Law, it must be at the level of at least the required solvency margin. Given that in 2022 the core CAR was 206.42% for non-life and 210.63% for life insurance, it can be concluded that the capital adequacy of Serbian insurers was satisfactory.

Chart II.3.4 **Insurance premium structure**
(%)



Source: NBS.

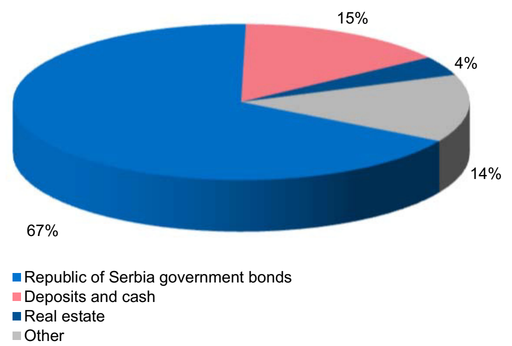
The leverage ratio (capital to asset ratio) reflects the level of exposure of insurers' capital to risks. At end-2022, this ratio dropped slightly in both non-life and life insurance: to 22.0% and 19.0%, respectively (from 25.1% and 22.7% in 2021). These data indicate that the Serbian insurance sector is well-capitalised.

For an insurance undertaking to be able to protect the interests of the insured and injured third parties, i.e. to timely settle claims, it must create an adequate amount of technical provisions and invest them in such a way so as to ensure that their real value is maintained and increased so that the undertaken insurance obligations can be fully and timely met. To be able to settle all its liabilities, an undertaking must invest its assets in line with its investment policy, while taking into account the risks of such policy. Technical provisions must be invested into the prescribed types of assets. At end-2022, technical provisions of all (re)insurance undertakings stood at RSD 229.7 bn, rising by 4.8% in nominal terms relative to 2021. Mathematical reserve[97] kept the dominant share in technical provisions, with a growth rate of 3.3% at end-2022.

The bulk of technical provisions of non-life insurance was invested in government securities (67% at end-2022)

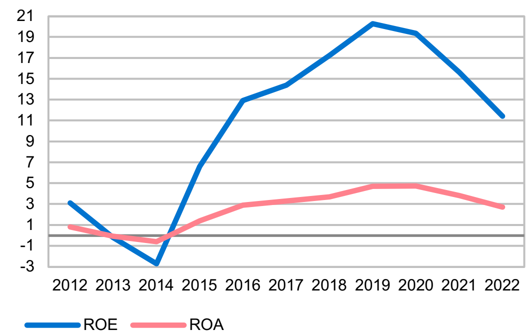
[97] Mathematical reserve means technical provision of insurance undertakings intended for meeting the present value of future liabilities under life insurance contracts (as well as under multi-year non-life insurance contracts accumulating savings or funds for risk coverage in future years and to which probability tables and calculations are applied same as in life insurance).

Chart II.3.6 **Non-life insurance technical provisions coverage as at 31 December 2022**



Source: NBS.

Chart II.3.8 **Profitability ratios of non-life insurance undertakings**
(%)



Source: NBS.

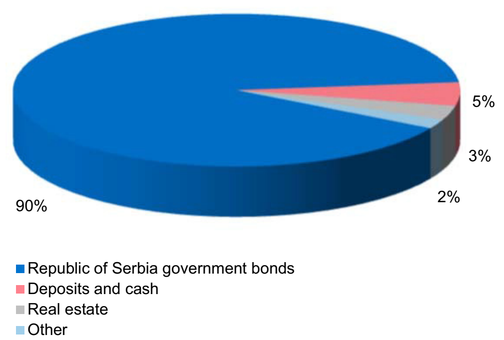
(Chart II.3.6). Technical provisions of life insurance were also predominantly invested in government securities (90% at end-2022) (Chart II.3.7). The high share of Serbian government securities in non-life and life insurance investments indicates a low level of investment credit risk.

The liquidity of insurance undertakings is also an important factor in assessing the quality of assets. Setting an adequate liquidity level is extremely important for the timely settlement of liabilities. Apart from liquid forms of assets, insurance undertakings also invest in instruments of limited liquidity, such as intangible assets, real estate, non-tradable securities and receivables. In 2022, the indicator of less tradable assets (share of less liquid assets in total assets) in undertakings mainly engaged in non-life insurance measured 20.3%, somewhat more than in 2021 (18.3%). In undertakings engaged mainly in life insurance, this indicator equalled 7.2%, the same as in 2021.

The insurance sector ended 2022, with a positive after-tax net result[98] amounting to RSD 8.2 bn. Profitability indicators are somewhat lower than in 2021. In 2022 ROE in non-life insurance undertakings was 11.4% (15.6% in 2021) and ROA 2.7% (3.8% in 2021) (Chart II.3.8). Life insurers' ROE was 6.3% (7.4% in 2021) and ROA 1.3% (1.7% in 2021) (Chart II.3.9).

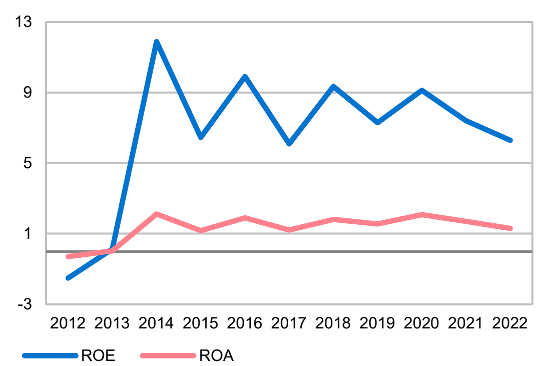
The profitability of insurance undertakings is indicated by the combined ratio.[99] The ratio value below 100%

Chart II.3.7 **Life insurance technical provisions coverage as at 31 December 2022**



Source: NBS.

Chart II.3.9 **Profitability ratios of life insurance undertakings**
(%)

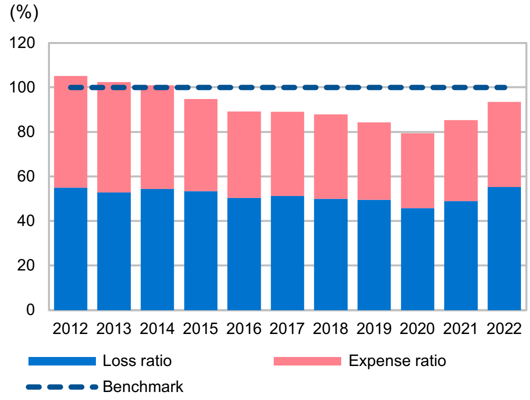


Source: NBS.

[98] Includes only tax expenses which (re)insurance undertakings disclosed by the time the data were submitted to the NBS.

[99] Self-retention is the portion of contractual risks that the insurance undertaking always carries under its own cover and that it can cover with its own funds.

Chart II.3.10 **Combined insurance ratio**



Source: NBS.

indicates that an undertaking is able to pay out claims and cover expenses from the collected premiums. If the ratio value is above 100%, it is assumed that an insurer determines the level of the premium by considering the potential investment income from the financial and real estate markets, which makes it vulnerable to additional market risks. In undertakings predominantly engaged in non-life insurance, the combined ratio at end-2022 increased from the year before, to 93.4% (end-2021: 85.3%) (Chart II.3.10). The combined ratio was impacted by faster growth in incurred losses and insurance administration expenses compared to the rise in premium earned. Nevertheless, the ratio value is a positive result, indicating that the premium level is adequate to meet the liabilities from insurance contracts and that the readiness to take risks does not compromise the fulfilment of both assumed and future liabilities.

The expense ratio (ratio of insurance administration expenses to premium earned) rose from 36.4% at end-2021 to 38.2% at end-2022, which suggests somewhat weaker efficiency in cost administration. The loss ratio (the ratio of losses incurred in claims to premium earned) indicates the adequacy of the price policy of insurance undertakings. It is a measure of an undertaking's ability to cover claims from the premium income. This ratio rose from 48.9% at end-2021 to 55.2% in 2022.

In the regulatory area, in May 2022, the NBS adopted the Decision on Application of the Sex Factor in Insurance (RS Official Gazette, No 58/2022). This Decision regulates the manner of ensuring uniform application of the rule that an insurance undertaking shall not use the sex factor in pricing insurance premiums and benefits which leads to differences in individual premiums and benefits, with a view to promoting gender equality in access to insurance services in line with the Law on Gender Equality.

In May 2022, the NBS adopted the Decision Amending the Decision on Reporting by Insurance/Reinsurance Undertakings (RS Official Gazette, No 58/2022). An insurance/reinsurance undertaking must submit to the NBS a proposal of the decision on the distribution of profit (if recorded) – by no more than 14 days before the date of the meeting of the undertaking's assembly that will consider the adoption of that decision. If the assembly of the insurance/reinsurance undertaking has adopted the decision, the undertaking shall also submit a notification of the planned date of dividend payment to shareholders – by no more than 14 days before the date of such payment (if the dividend is paid out).

To preserve the living standard, in August 2022 the NBS ordered all insurance undertakings which increased their MPTL insurance premium as of 1 August, without any grounds, by around 22% on average, to return it to the previous level as soon as possible. In August 2022, the NBS also adopted the Decision Amending the Decision on the System of Governance in an Insurance/Reinsurance Undertaking (RS Official Gazette, No 94/2022). This Decision stipulates that undertakings shall separately regulate by internal acts the process of change of general and special insurance conditions and compulsory insurance premium tariffs. In line with this Decision, undertakings shall notify the NBS of the planned change in premium tariffs and the premium system with the technical bases of compulsory MPTL insurance, no later than 60 days prior to the planned change in the premium tariff. This notification should be accompanied with the planned draft premium tariff, as well as the analyses, data and opinions defined by this Decision. The NBS may request from an undertaking to submit a reasoned opinion of a certified actuary on whether MPTL insurance premium tariffs adopted before the entry into force of this Decision ensured a permanent meeting of the undertaking's obligations from insurance contracts prior to their adoption, as well as other relevant data about the tariff.

In December 2022, the NBS adopted the Decision Amending the Decision on Investment of Insurance Funds (RS Official Gazette, No 137/2022). This amendment extended the deadline for acquiring the types of assets related to premium receivables under unexpired non-life insurance, coinsurance and retrocession with funds from technical provisions – up to 10% of those provisions. The deadline was extended from 31 December 2022 to 31 December 2024.

The current insurance regulations in the Republic of Serbia have laid the legislative groundwork for further convergence of the Serbian insurance sector to that of the EU. Full alignment of local regulations with the Directive on insurance distribution (EU 2016/97) (IDD) and implementation of Solvency II (Directive 2009/138/EC of the European Parliament and of the Council on the taking-up and pursuit of the business of Insurance and Reinsurance) will result in significant changes of the regulatory framework in the area of insurance supervision.

Amid mounting global uncertainty in 2022, the role of the insurance sector in protecting the insured and ensuring continuous insurance service provision gained in significance even more. The NBS therefore adopted a series of well-calibrated measures aimed at preventing, reducing and eliminating the negative effects of different crises we have faced in the past three years, in order to ensure, among other things, the rights and interests of insurance service consumers and preserve the stability of operation of all professional participants in the insurance market, i.e. maintain the continuity of the supervisory function.

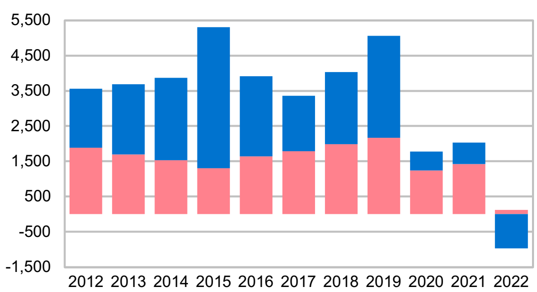
II.3.2 Voluntary pension funds

The impact of geopolitical tensions and rising inflation on the VPF sector in 2022 was stronger than the challenges from previous years marked by the coronavirus pandemic. In addition to the impact of pronounced uncertainties on the global capital market, the overall rise in interest rates pushed down the value of financial instruments. This largely affected VPFs given that a bulk of their assets was invested in long-term bonds. Net pension fund assets equalled RSD 48.2 bn at end-2022, down by 1.7% from end-2021. Total contributions amounted to RSD 3.7 bn, withdrawals to RSD 3.5 bn and investment losses to RSD 972 mn.

In 2005, the Republic of Serbia legally regulated the operation of VPFs, with a view to ensuring additional income for persons who reached the statutory age limit, as an addition to the public system which has remained the principal source of pension income. VPFs are collective investment institutions that collect pension contributions and invest them into various types of assets in order to generate private pensions, i.e. they represent long-term saving for old age. These funds are based on the defined contribution principle, where future benefits are not defined in advance and depend on the amount of contributions paid, level of fees, the return on invested VPF assets, and the length of the accumulation period. VPFs are managed by management companies, which engage in setting up and managing of VPFs as their sole activity. Founders of management companies are insurance undertakings and commercial banks. VPF assets are separated from the assets of a management company and are kept in accounts with custody banks.[100]

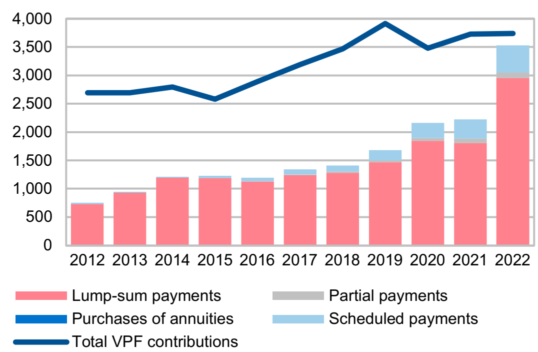
The number of management companies and VPFs did not change in 2022 – at the end of the year there were four management companies in Serbia in charge of managing the assets of seven VPFs. The assets of all VPFs were kept in accounts with a single custody bank in 2022.

Chart II.3.11 **Annual increase in net VPF assets and net contributions**
(RSD mn)



Source: NBS.

Chart II.3.12 **Annual VPF contributions and withdrawals**
(RSD mn)



Source: NBS.

[100] A bank that keeps a VPF's account, performs other custody services on behalf of the VPF and acts upon the VPF management company's orders in compliance with the Law on Voluntary Pension Funds and Pension Schemes.

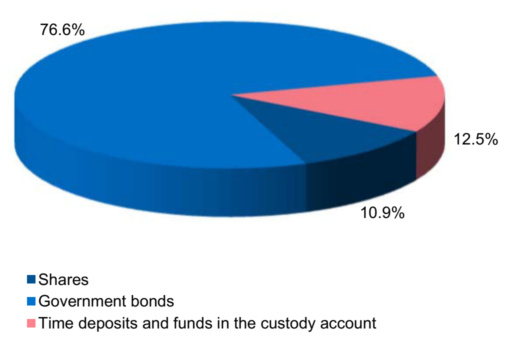
From the start of operation of VPFs (2006), their total net assets have been constantly increasing. However, at end-2022 a fall was recorded for the first time relative to a year earlier. Net assets equalled RSD 48.2 bn at end-2022, down by 1.7% (around RSD 849 mn) y-o-y. Changes in the value of net fund assets depend on members' contributions, collected fees, withdrawals of accumulated funds and return on VPF investment (Chart II.3.11). The reduction in net VPF assets in 2022 was the consequence of the first recorded negative yield from investment. Given the structure of VPF investment, the return is influenced by: a change in the yield curve on government debt instruments,[101] change in the value of shares, level of the NBS key policy rate and banks' interest rates, and changes in the dinar exchange rate against the euro and the dollar, etc. The overall rise in interest rates pushed down the value of financial instruments, issued with lower yield rates in the previous period. Given that VPFs are collective investment institutions with a long-term investment horizon and that the bulk of their assets is invested in government bonds, the rise in interest rates brought down the market value of instruments where funds' assets were invested. Nevertheless, one should bear in mind that this is a one-off effect.

Total contributions in 2022 amounted to RSD 3,738.5 mn (7.5 mn more than in 2021), total withdrawals to RSD 3,530.1 mn (RSD 1.3 bn more than in 2021), while the investment loss equalled RSD 972 mn (Chart II.3.12). Total withdrawals increase every year and this phenomenon is a normal consequence of system development. Namely, as contributions and net assets rise and the VPF system matures, the amount of withdrawals also goes up in absolute terms. The structure of withdrawals was not entirely in line with the objective of saving in VPFs, which assumes the use of accumulated assets over a longer period. Assets are largely paid out as a lump sum. The share of lump-sum withdrawals in total withdrawals was higher by 2.3 pp than in the previous year, and 83.6% of total withdrawals in 2022 were lump-sum withdrawals, which are usually made as soon as the member reaches the age limit for the withdrawal of accumulated funds. Since withdrawals are made by the members who fulfil the requirements, and are usually not long-standing fund members, their accumulated sum is relatively small, and this kind of withdrawals is expected, even though it is not in accordance with the nature of VPFs, which assumes the use of accumulated funds over a longer period, as stated above. The next period is likely to see a further increase in scheduled and other types of withdrawals, with the lengthening of accumulation periods and increase in the accumulated sums.

The total number of VPF users went up by 4,754 from the previous year, to 215,451 at end-2022. These users concluded a total of 294,519 contracts on membership. In 2022, the number of active users (users that regularly pay contributions) increased, but their share in the total number of users in the accumulation stage stayed relatively low, at 36.5% in December 2022 (35.9% in December 2021). The average age of VPF users in Serbia is around 47 years, with users aged 40–60 making up the dominant share of around 62%. The percentage of users above the age of 53 was similar as in prior years, accounting for 30.5%, while the percentage of those aged above 58 was 17.9%. The share of VPF users in the total number of employees was 10.63%, which indicates that this sector is still underdeveloped, though there is room for development of this financial market segment.

At end-2022 the bulk of VPF assets (76.6%) were again invested in government bonds of the Republic of Serbia (Chart II.3.13). Given that government bonds are issued by the Republic of Serbia, credit risk is low and has been declining further in recent years, thanks to the preserved and reinforced macroeconomic and financial stability. However, due to the high share of debt instruments and deposits with banks in the funds' portfolios, the bulk of funds' assets is exposed to the interest rate risk. The domestic capital market and new long-term financial

Chart II.3.13 **Structure of VPF assets as at 31 December 2022**



Source: NBS.

[101] A decline in the interest rate leads to an increase in the prices of debt instruments and vice versa. The prices of longer-maturity instruments are more sensitive to interest rate changes.

instruments need to be further developed in the period ahead. Aware of the importance of this market, in 2021 the Government adopted the Capital Market Development Strategy in the Republic of Serbia for the 2021–2026 Period, setting the goals and measures for the development of the Serbian capital market. The relevant secondary legislation of the NBS, governing the investment of VPF assets and primarily aimed at protecting VPF users' interests and securing their assets, leave enough room for the diversification of VPF investments.

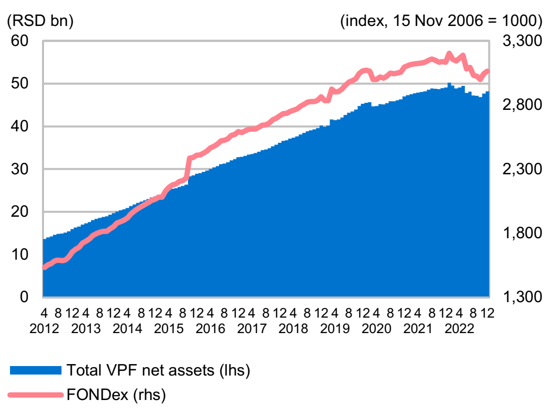
The portion of shares in total VPF assets decreased from 13.6% in 2021 to 10.9% in 2022. At end-2022, time deposits and custody bank assets made up 12.5% of total assets.

At end-2022, 15.3% of total VPF assets were in euros (EUR 7.4 bn), and 84.7% in the domestic currency (RSD 40.9 bn).

At end-2022, FONDex[102] reached the value of 3,063.74 points (Chart II.3.14), which was 70.44 points lower than a year earlier. The annual FONDex return, as the weighted average return of all funds, equalled -2.2% in 2022 (1.3% at end-2021). At end-2022, FONDex return since the start of VPF operations equalled 7.2%.

Fees charged by VPF management companies include contribution fees and management fees. Though the contribution fee is front-loaded, it is not the largest cost for members. Calculated daily, the management fee made up 88% of total collected fees in 2022. Total management fees amounted to RSD 599.0 mn in 2022, almost the same as in 2021 (RSD 599.4 mn).

Chart II.3.14 **Total net VPF assets and FONDex**



Source: NBS.

VPF contributions have been continuously increasing over the last couple of years. Though individual contributions are possible, most contributions are made through employers who, in this way, display a high level of responsibility towards their staff.

Ample potential for further growth in the membership base are companies with high staffing levels. Tax incentives have also exerted a positive impact on the VPF sector. In 2022, payments made by employers in the amount of up to RSD 6,541[103] were exempt from income tax and contributions for mandatory social insurance, as well as payments in the same amount made by the employer through wage garnishment. This is an additional incentive for employees and employers to allocate a part of the wage to long-term saving in VPFs.

As part of the regulatory measures related to VPFs, in October 2022, the NBS adopted a new Decision on Intermediaries of a Voluntary Pension Fund Management Company and Licensing for the Performance of Services of Provision of Information on the Fund (RS Official Gazette, No 111/2022). This Decision lays down the types of financial institutions that may be intermediaries of a VPF management company and regulates in more detail the conditions of issuance to natural persons of the NBS licence for the performance of the services of provision of information on membership in a VPF and its operation, and the distribution of prospectuses, and the manner in which the NBS keeps records of licensed intermediaries and natural persons.

In addition, in December 2022, it adopted the Decision Amending the Decision on the Manner of Calculating the Returns of a Voluntary Pension Fund (RS Official Gazette, No 137/2022), introducing minor changes to the existing Decision. This Decision prescribes the manner of calculating the return of a VPF, including the principles of value rounding.

II.3.3 Financial leasing

The financial leasing sector continued to record positive results in 2022. The sector's balance sheet assets increased further and improved in quality owing to the additional reduction in non-performing receivables.

[102] FONDex indicates movements in the value of investment units of all VPFs in the market. The initial FONDex value on the first business day of the first VPF, 15 November 2006, was 1,000.

[103] Under the Government decision, this amount is adjusted with previous-year inflation once a year.

Financial leasing is a type of financial intermediation. The lessor keeps the ownership right to the lease asset, while transferring to the lessee, in exchange for the lease payment, the right to hold and use the asset with all the risks and rewards of ownership.

At end-2022, there were 15 lessors in the Serbian financial leasing sector, three of which undergoing voluntary liquidation.

Financial lessors were mostly owned by banks, members of banking groups or other financial institutions (11 lessors). Seven lessors were in 100% or majority ownership of foreign legal entities, while eight lessors were in majority ownership of domestic entities (seven of which were owned by domestic banks with foreign capital). Employment in the sector edged down relative to the year before (from 343 to 296 employees).

Lessors' balance sheet assets continued up. At end-2022, they stood at RSD 145.0 bn, up by 17.4% from end-2021 (RSD 123.5 bn).

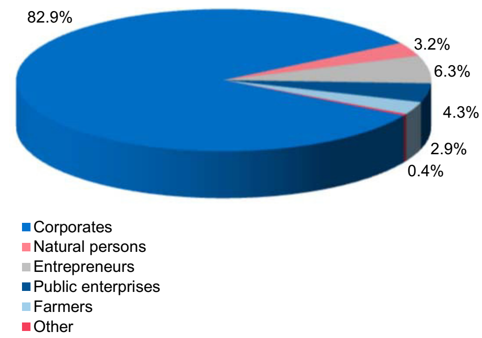
The share of non-performing receivables in total investments was further reduced. At end-2022, gross receivables past due (RSD 2.8 bn) made up 2.1% of gross financial lease receivables (1.8% at end-2021). The share of net carrying value of these receivables in total net receivables expanded mildly relative to end-2021 (0.9% at end-2022). Receivables past due more than 90 days made up the largest share of the total receivables past due. At end-2022, they amounted to RSD 1.4 bn and their share in total gross receivables from financial leasing accounted for 1.1% (1.2% at end-2021). The net carrying value of receivables past due more than 90 days made up 0.1% of the total net portfolio.

Total lessors' capital at end-2022 equalled RSD 11.9 bn, up by 17.8% from end-2021.

At RSD 1.4 bn, the pre-tax result of the financial leasing sector was lower than the result achieved at end-2021 (RSD 1.5 bn). Net profit came at RSD 1.1 bn, with most lessors (nine) posting a positive net result. Total revenues and profit in 2022 equalled RSD 5.4 bn, up by 15.3% from the year before, and total expenses and losses – RSD 4 bn, up by 23.2% relative to 2021.

At end-Q4 2022, ROA and ROE declined from 1.23% to 1.06% and from 15.12% to 12.96% relative to end-2021, respectively.

Chart II.3.15 **Investment structure by lessee as at 31 December 2022**



Source: NBS.

Structure of lessees

The structure of lessees stayed largely unchanged. Like in the previous years, the most important lessees were companies outside the financial sector, with an 82.9% share in total investment, slightly less than in 2021 (83.3%).

Entrepreneurs accounted for 6.3% of total investment (6.6% in 2021), public enterprises for 4.3% (2.4% in 2021), natural persons for 3.2% (4.2% in 2021) and farmers for 2.9% (2.2% in 2021) (Chart II.3.15).

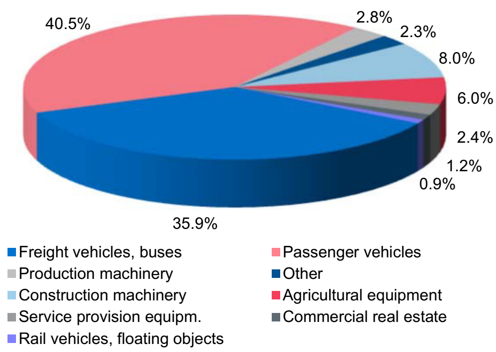
Structure of investment by lease asset

Financing of passenger vehicles, with the largest share in the structure of investment by lease asset since 2021, grew further in 2022 – from 39.4% in 2021 to 40.5% in 2022 (Chart II.3.16). In contrast, the share of financing of freight vehicles, minibuses and buses decreased from 37.7% at end-2021 to 35.9% at end-2022. The share of financing of agricultural machinery and equipment increased negligibly (from 5.8% in 2021 to 6.0% in 2022).

The share of balance sheet assets of this sector in the balance sheet total of the NBS-supervised segment of the financial sector (banks, financial lessors, (re)insurance undertakings and VPFs) stood at a somewhat higher level than at end-2021 (2.2%), and equalled 2.4% at end-2022.

When it comes to regulatory measures within this financial segment, in October 2022, the NBS adopted the

Chart II.3.16 **Investment structure by lease asset as at 31 December 2022**



Source: NBS.

Decision on Temporary Measures for Lessors Aimed at Adequate Management of Credit Risk in the Portfolio of Leases of Agricultural Machinery and Equipment in Conditions of Aggravated Agricultural Production (RS Official Gazette, No 111/2022). This Decision sets out the measures and activities which a lessor is obligated to implement with the aim of adequate management of credit risk in the portfolio of leases of agricultural machinery and equipment in conditions of aggravated agricultural production by enabling the rescheduling of obligations under the lease agreement to lessees.

II.3.4 Payment institutions, electronic money institutions and virtual currency service providers

The upward trend in the turnover in various types of payment services was maintained in 2022. There was a notably higher interest in the provision of services based on cashless payments, primarily online payments. In December 2022, the NBS issued the first two licences for the provision of virtual currency services.

Pursuant to the Law on Payment Services (RS Official Gazette, Nos 139/2014 and 44/2018), applied since the beginning of October 2015, special institutions registered to provide payment services[104] and issue e-money operate in Serbia – payment institutions and e-money institutions. Payment institutions may only be companies, in accordance with the law governing companies, headquartered in the Republic of Serbia and licensed by the NBS to provide payment services.

Given their significant role in the AML/CFT system, in assessing the applications for licences for the provision of payment services and e-money issuance, the NBS pays special attention to the prevention of money laundering and terrorism financing.[105] At end-2022 there were 14 payment institutions[106] licensed by the NBS to provide payment services. Of these, 12 payment institutions also provided payment services through a network of their agents. Five international companies for fast money transfer carry out transactions via payment institutions, the public postal operator and their agents. In 2022, Western Union, MoneyGram, Ria Money Transfer, Unistream and Small World operated in the domestic financial market. With these companies' services, it is possible to transfer money within a short period to a large number of countries across the globe.

An e-money institution may only be a company headquartered in Serbia, in accordance with the law governing companies. It is authorised to issue e-money subject to the NBS's licensing. The first licence to issue e-money was granted in 2016. At end-2022, three institutions licensed to issue e-money operated in the market.[107] In addition to e-money issuance, e-money institutions can also provide payment services both at their location and through the network of their agents. Unlike the domestic licensed e-money institutions, the e-money institution services from third countries, which operate in accordance with the Law on Foreign Exchange Operations (RS Official Gazette, Nos 62/2006, 31/2011, 119/2012, 139/2014 and 30/2018) and are listed on the NBS website[108] (e.g. PayPal, Skrill, Payoneer, Paysafe Financial Services Limited, Google Payment Corp., Payeer Ltd. and Aircrash), may only be used in foreign payment transactions (for payments and collections based on e-purchase and sale of goods and services).

[104] Payment services include services that enable cash payments to and from payment accounts, and all services required to open, maintain and close those accounts, services of transfer of funds to and from payment accounts, execution of payment transactions where funds are covered by a credit line, services of issuance and/or acceptance of payment instruments, money remittance services and the execution of payment transactions where the payer gives consent by means of a telecommunication, digital or IT device.

[105] In this procedure, it is particularly considered whether the origin of capital of the applicant can be identified, and/or the source of funds for acquiring a qualifying holding and whether these persons or persons related to them have been associated with money laundering and financing of terrorism – based on the information submitted by the body competent for the prevention of money laundering and financing of terrorism, or other information available. In this regard, the NBS also particularly assesses whether a prospective acquirer of a qualifying holding is a public official, a close family member or a close associate of a public official within the meaning of the law governing the prevention of money laundering and terrorism financing.

[106] https://www.nbs.rs/en/finansijske-institucije/pi-ien/registar-pi/index.html

[107] https://www.nbs.rs/en/finansijske-institucije/pi-ien/registar-ien/index.html

[108] https://nbs.rs/export/sites/NBS_site/documents-eng/platne-institucije/lista_ien_trece_drzave_en.pdf

Pursuant to the Law on Digital Assets (RS Official Gazette, No 153/2020), applied since end-June 2021, the NBS issued the first two licences for virtual currency service provision in December 2022. It thus enabled the use of virtual currency services which are covered by these licences through domestic licensed companies – subject to the NBS's comprehensive supervision, and which are fully aligned with international standards. A digital asset service provider may only be a legal person, in accordance with the law governing companies, headquartered in the Republic of Serbia and licensed by the NBS and/or by the Securities Commission for providing one or more digital asset services. The NBS is in charge of matters under the Law on Digital Assets which pertain to decision-making in administrative procedures, adoption of secondary legislation, supervision of operations and exercise of other rights and obligations of the supervisory body relating to virtual currencies as a type of digital assets.

In addition to licensing, the NBS also carries out the supervision of payment institutions, e-money institutions and the public postal operator in the part of operations relating to the provision of payment services and/or e-money issuance. In addition to licensing, the NBS carries out the supervision of virtual currency service providers and issuers and holders of virtual currency as a type of digital assets.

The NBS website contains an overview of fees charged for specific services linked to a payment account, as well as comparable data on fees charged by payment service providers. By enhancing transparency, the NBS enabled users to be better informed about the level of fees charged for the above services. At the same time, this fosters competition among payment service providers in terms of their price policy, with the aim of ensuring competitive and reduced prices in the market so as to attract new and keep current clients.

According to data of all payment service providers for 2022, an increase was recorded for almost all payment services provided, especially cashless payments. Relative to 2021, the total number of e-banking users grew by 8.46% and m-banking users by 20.58%. The rise in the relative importance of m-banking is also observable from the y-o-y increase in the number of transactions by natural and legal persons and entrepreneurs (26.04%). The number of e-banking transactions by natural and legal persons and entrepreneurs fell negligibly, by 0.37% y-o-y.

As for the number of distance contracts on financial services concluded electronically, according to the data submitted by payment service providers, 154,991 contracts were concluded in 2022, up by 33.15% from 2021. Of these, 21,587 contracts were concluded using the video identification of users, up by 18% y-o-y.[109]

Payment institutions have operated in Serbia since October 2015, when the Law on Payment Services began to apply. The NBS recognised the importance and potential of this financial market segment, which reflected on improvement of the regulatory framework for payment service provision aimed at higher efficiency and transparency, ensuring that payment service users are better informed and protected. In previous years, the NBS, as the competent body, adopted several regulations to establish and enhance the regulatory framework in this financial market segment.

In May and October 2022, the NBS amended the Decision on Implementation of Provisions of the Law on Payment Services Relating to Issuing of Licences and Approvals of the National Bank of Serbia,[110] which regulates the operation of payment and e-money institutions, with a view to improving the management of these institutions and reducing risks in payment services provision. The amendments concern the operation of payment and e-money institutions, with a view to achieving a higher degree of stability and security in managing these institutions in the Serbian payment services market, and above all, in order to protect the rights and interests of payment services users. The amendments also specify in greater detail the eligibility conditions of the management and ownership structure of payment and e-money institutions, which are evaluated by the NBS when granting approval to these institutions.

The NBS recognised the importance of novel payment methods and technological innovations in the payment services market. This was supported by adequate infrastructure and a regulatory framework, which are a result of years of continuous activities aimed at creating appropriate preconditions for modernisation and advancement of payment operations in Serbia.

[109] The overview of data about payment services provision and e-money issuance for 2021–2022. https://www.nbs.rs/export/sites/NBS_site/documents-eng/platni-sistem/pregled-pu-ien/pu-ien_e_IV_22.pdf

[110] The Decision Amending the Decision on Implementation of Provisions of the Law on Payment Services Relating to Issuing of Licences and Approvals of the National Bank of Serbia (RS Official Gazette, No 58/2022) and the Decision Amending the Decision on Implementation of Provisions of the Law on Payment Services Relating to Issuing of Licences and Approvals of the National Bank of Serbia (RS Official Gazette, No 111/2022).

III Financial markets

The escalation of geopolitical tensions and mounting global inflation greatly affected financial market developments worldwide. The NBS continued to tighten its monetary policy in response to elevated cost-push pressures at home and abroad. The relative stability of the dinar exchange rate against the euro was preserved thanks to the NBS's interventions in the IFEM where the NBS bought EUR 1 bn net. As a result, FX reserves rose further to their highest level on record. In 2022, the NBS introduced an option for banks to enter into bilateral FX (euro) swap purchase and swap sale transactions, and bilateral repo transactions with the NBS in order to help them manage their liquidity. Thanks to the credible economic policy framework, Fitch Ratings and Standard & Poor's affirmed Serbia's credit rating for local and foreign currency long-term borrowing at BB+, a notch away from investment grade.

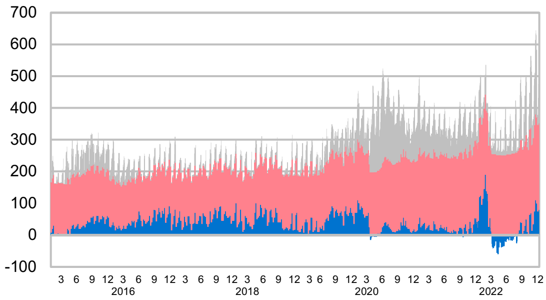
III.1 Money market

The heightening of geopolitical tensions over the Ukraine conflict, rising energy prices and global value chain bottlenecks, together with lingering uncertainty regarding the path of the coronavirus pandemic, greatly affected the global economic growth outlook in 2022, giving rise to further inflationary pressures worldwide. In many countries, inflation hit multi-decade highs, prompting the central banks of the most advanced economies, but also of emerging markets, to tighten their monetary policies sharply. This drove up the general costs of borrowing, adding to volatility in the international financial market. In the face of the multifaceted crisis during the past three years, Serbia managed to preserve the stability of its economy and ensure smooth functioning of its financial market.

The NBS continued implementing the managed float exchange rate regime, intervening in the FX market in order to ease excessive short-term volatility of the dinar against the euro, and maintaining price and financial stability and an adequate level of FX reserves. Depreciation pressures, in place since end-2021, prevailed in the first four months of 2022 as FX demand of energy importers went up, mostly as a result of soaring energy prices globally. Tensions in the international market over the Ukraine conflict affected the domestic FX market as well. In March 2022, net sales of foreign cash by banks (to exchange offices and natural persons) hit record-high levels, generating further depreciation pressures on the domestic currency. Thanks to its well-timed and adequate response, the NBS managed to preserve the relative stability of the exchange rate. From May until year-end, despite continuingly high FX demand of energy importers, FX supply-side factors prevailed, supported by FDIs, export and tourism, and resulted in appreciation pressures.

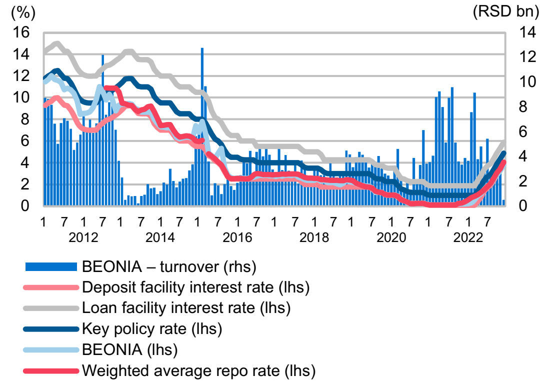
In 2022, the dinar gained 0.2% in nominal terms against the euro. Relative to end-December 2021, the dinar weakened against the dollar by 5.7% as a result of the euro's depreciation against the dollar in the international financial market. In 2022, the NBS intervened in the IFEM by buying EUR 1.0 bn net (buying EUR 3,480 mn and selling EUR 2,480 mn), preserving the relative stability of the exchange rate as in previous years. End-2022 gross FX reserves reached a record high end-of-month and end-of-year level of EUR 19.4 bn (EUR 15.4 bn, net), up by EUR 3.0 bn from end-December 2021. Significant support to FX reserves growth came from the drawdown of EUR 985.6 mn under the first tranche of the new Stand-By Arrangement (SBA) approved by the IMF to the Republic of Serbia on 19 December 2022 and from FX purchase interventions in the local IFEM. The Ukraine conflict added to uncertainty in the international financial market, driving up the risk premia of Serbia and other comparable CESEE emerging markets, on both euro and dollar debt. US-dollar EMBI for Serbia measured 270 bp at end-December 2022 (139 bp at end-2021). End-2022 EURO EMBIG for Serbia was 389 bp (195 bp at end-2021). Serbia's dollar-denominated eurobonds issued

Chart III.1.1 **Selected NBS monetary policy instruments**
(RSD bn)



Source: NBS.

Chart III.1.2 **Key policy rate, BEONIA and interest rates on deposit and loan facilities**
(monthly averages of daily data)



Source: NBS.

in January 2023 were included on 31 January 2023 in J.P. Morgan's risk premium indicator EMBI Global.

In February and August 2022, and in February 2023, Fitch Ratings affirmed Serbia's long-term local and foreign currency credit rating at BB+ (one notch away from investment grade), with a stable outlook. As the key underlying factor, the rating agency highlighted Serbia's credible economic policy framework. In making its decision, the agency was also guided by the demonstrated resilience of the banking sector, high and adequate FX reserves, current account deficit fully covered by FDI and the overall stability of balance of payments trends, as well as the preserved relative stability of the exchange rate, which is particularly important in the conditions of high global energy prices and multiple risks from the international environment. In June 2022, Standard & Poor's affirmed Serbia's long-term local and foreign currency credit rating at BB+, revising the outlook from positive to stable. In December, it kept the credit rating at BB+, with a stable outlook. In particular, the rating agency highlighted the credible macroeconomic policy framework, with adequate FX reserves as an important buffer against external shocks. As key underlying factors, Standard & Poor's highlighted that Serbia's banking sector is highly capitalised, profitable and liquid, that NPLs are at a historical low, and that moderate public debt levels have been maintained. In 2022, Moody's Investors Service published no press releases on Serbia's credit rating.

From October 2021 until the first key policy rate hike in April 2022, the NBS used the current flexible monetary policy framework which enabled it to raise the weighted average interest rate at reverse repo auctions and gradually tighten monetary conditions without changing the key policy rate or the main interest rates corridor. As inflationary pressures mounted, and in order to contain the second-round effects of rising cost-push pressures from abroad on price growth at home through inflation expectations, in 2022 the NBS raised the key policy rate nine times, by a total of 4 pp to 5.0% at year-end. Deposit and lending facility rates were also raised to 4.0% and 6.0%, respectively, at end-2022.

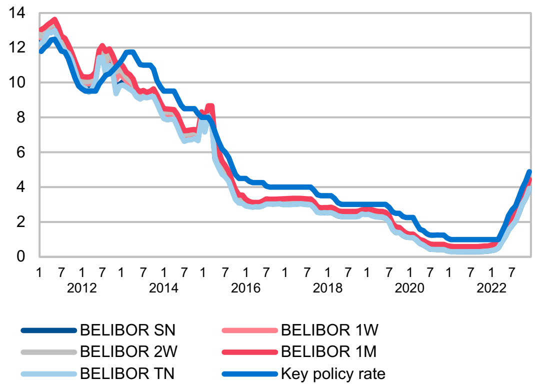
In 2022, the NBS continued to implement reverse repo transactions (repo sale of securities with one-week maturity) as its main open market operations, in order to absorb excess dinar liquidity from the banking sector. The weighted average rate at the final one-week repo auction[111] in 2022 was 4.16% (0.50% at the final auction in 2021). Compared to end-2021, banks scaled up their investment in NBS treasury bills with which they perform reverse repo transactions (from RSD 44.5 bn to RSD 110 bn) at end-2022 (Chart III.1.1).

From end-February 2022, amid global uncertainty generated by the outbreak of the Ukraine conflict, the NBS provided additional dinar liquidity to banks through bilateral transactions of repo purchase of dinar government securities, temporarily, in a limited amount and in the short term.

The average daily turnover in the interbank overnight money market in 2022 equalled RSD 4.0 bn, which is below the average daily turnover in 2021 (RSD 6.1 bn) (Chart III.1.2).

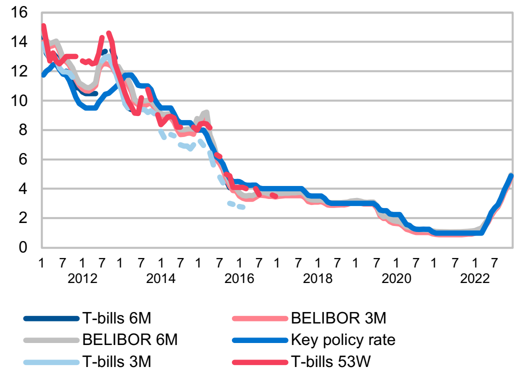
[111] The rate achieved at repo auctions weighted by the amount of securities sold.

Chart III.1.3 **BELIBOR interest rates**
(monthly averages, %)



Source: NBS.

Chart III.1.4 **Interest rates in the money market and auctions of dinar T-bills**
(monthly averages, %)



Sources: Ministry of Finance and NBS.

Monetary policy tightening drove up interest rates in the domestic market. BEONIA[112] averaged 3.8% in December 2022, up by 3.6 pp relative to its December 2021 average. Average BELIBOR rates in December 2022 ranged from 3.9% for the shortest to 4.9% for the longest maturity (compared to 0.3% for the shortest and 1.1% for the longest maturity in December 2021) (Chart III.1.3).

In the first seven months of 2022, the NBS swap purchased and swap sold EUR 27.0 mn each in regular two-week and three-month swap auctions (in 2021, swap purchases measured EUR 518.0 mn and swap sales EUR 353.0 mn).

On 1 August 2022, the NBS discontinued regular two-week and three-month swap auctions (without excluding the possibility to reinstate them in case of need), as the additional operations introduced by the NBS in early 2022 – bilateral FX swap sale and purchase transactions – proved to be a more efficient tool for supporting banks in managing their dinar and FX liquidity, offering more flexibility than the regular swap auctions regarding the time of concluding transactions and their maturity.

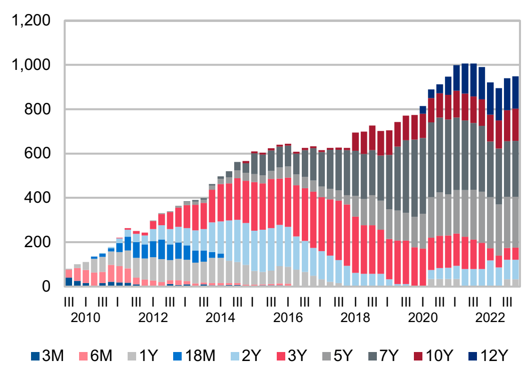
In 2022, in bilateral swap transactions with banks, the NBS swap purchased EUR 966.6 mn and swap sold EUR 653.6 mn. The volume of interbank swap transactions in 2022 was EUR 56.1 mn (EUR 256.2 mn in 2021).

In 2022, the Public Debt Administration of the Ministry of Finance organised one auction of 12-month T-bills in dinars. T-bills were sold in the nominal amount of RSD 33 bn, at the effective rate of 3.90%. No euro T-bills were auctioned in 2022.

III.2 Bond and share market

The government bond market is one of the most important segments of the domestic financial market. The primary sale of these securities is organised by the Ministry of Finance – Public Debt Administration, by the single interest rate auction method. Through the sale of dinar bonds in the domestic market, the government reduces exposure to the FX risk and contributes to further dinarisation of the financial system. In the past ten years,

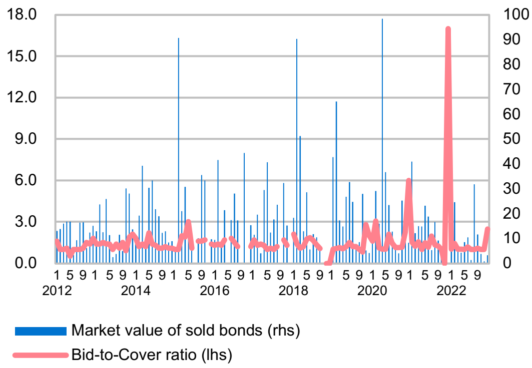
Chart III.2.1 **Stock of dinar government securities**
(nominal value, RSD bn)



Source: Ministry of Finance.

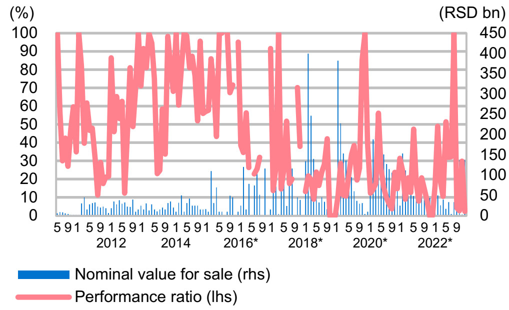
[112] The weighted average overnight rate in the interbank money market in the Republic of Serbia.

Chart III.2.2 **Market demand for dinar government bonds**
(primary auctions, RSD bn)



Source: Ministry of Finance.

Chart III.2.3 **Performance ratio in auctions of dinar government bonds**



* For benchmark bonds the total value of issue is shown and performance is expressed as a percentage of that value. The planned sale volume at these auctions was lower than the total amount issued.
Source: Ministry of Finance.

on the basis of this type of financing, the average maturity of dinar government securities increased, reducing the risk of refinancing, which is particularly significant in the current circumstances of more stringent global financing conditions.

In 2022, there were no early buyback auctions of dinar government bonds, while in 2021 total early buyback of dinar government bonds amounted to RSD 34.0 bn.

The stock of sold dinar government bonds with the maturity of over one year amounted to RSD 915.3 bn at end-2022, or 7.6% less than at end-2021 (Chart III.2.1). As for their structure, at end-2022 seven-year bonds made up the dominant share – 27.5%, which is less than at end-2021 (29.9%), while the share of five-year government bonds edged up in 2022 from 23.2% to 25.2%.

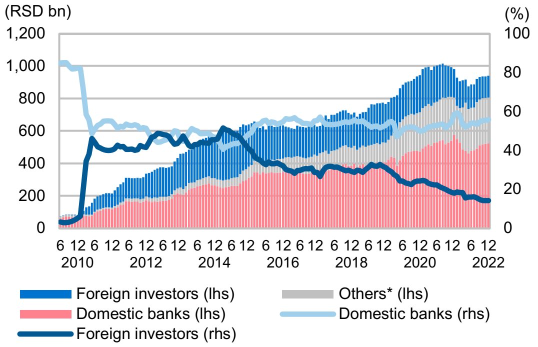
The issuance of benchmark bonds, which started in 2016, continued in 2022. When issuing benchmark bonds, the planned sales volume is only a part of the total issue, so that the issue can be reopened multiple times throughout the year. These issues boost the volume of secondary trading. Also, the issuance of these bonds is one of the requirements for the inclusion of government securities in the Local Currency Government Bond Emerging Market Index. As of end-June 2021, dinar government bonds with the original maturity of seven, ten and twelve years have been included in the J.P. Morgan GBI-EM family of indices. These indices are among the most frequently watched ones, i.e. benchmark indices of bonds issued in local currencies of emerging economies. By being included in these indices, Serbia made significant progress in strengthening the liquidity of the secondary market of government securities.

In 2022, the bid-to-cover ratio at primary auctions of dinar government bonds reached its highest value in December (2.5) (Chart III.2.2).

The auctions of dinar government bonds of two- and ten-year original maturity were held in 2022. As monetary conditions were tightened, the executive rates at the primary government bond auctions increased. The effective rates on two-year dinar government bonds went up from 1.57% in 2021 (the May auction) to 4.35% in 2022 (the November auction). The effective rate on ten-year government bonds (falling due in February 2028) went up from 2.50% (February 2021) to 6.75% (December 2022). The coupon rate on two-year dinar government bonds was up by 1 pp to 2.75%. The coupon rate on ten-year dinar government bonds (5.875%) remained unchanged as all 2022 auctions concerned the re-opening of the issue of the security originally issued in February 2018.

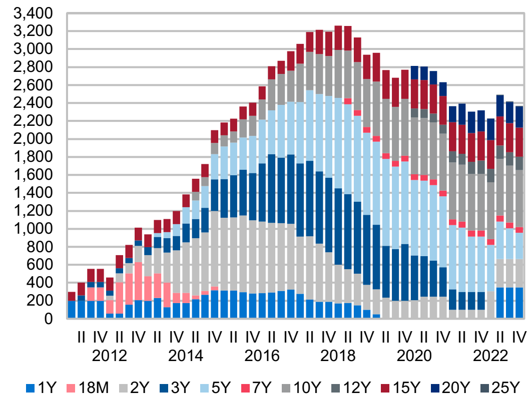
As shown in Chart III.2.4, in 2022 the foreign investor share in the portfolio of dinar government bonds shrank from 18.0% in December 2021 to 14.1% in December 2022. Since late 2015, domestic banks have been the predominant owners of dinar government bonds. At end-2022, their share in the dinar securities portfolio was 55.7%, down by 2.8 pp from December 2021. Other domestic investors (insurance undertakings, pension and investment funds etc.) still account for lower holdings of dinar government bonds, though there has been a gradual rise in their participation in recent years. Further diversification and strengthening of the base of domestic institutional investors will continue to be a very important factor of improvement of the government bond market in

Chart III.2.4 **Structure of the portfolio of dinar government bonds**



* Custody banks, insurance undertakings, pension funds, natural persons and other legal entities.
Source: Central Securities Depository and Clearing House.

Chart III.2.5 **Stock of euro government bonds**
(nominal value, EUR mn)



Source: Ministry of Finance.

the coming period, and of reducing the vulnerability of this market segment to movements in the international environment. In H1 2022, the auctions of two-year and 25-year euro government bonds were also held. At the auction of two-year euro government bonds, maturing in January 2024, the effective rate was the same as the coupon rate, equalling 0.75%. At two auctions of two-year euro government bonds maturing in August 2024, the effective rate was 0.81% (coupon rate: 0.85%). In March 2022, the 25-year euro government bond was issued for the first time, at the effective rate of 2.50% (coupon rate: 2.30%). This was the longest-maturity bond issued so far in the domestic market – at a relatively favourable interest rate as the auction took place before the ECB embarked on monetary policy tightening, which drove up euro borrowing costs.

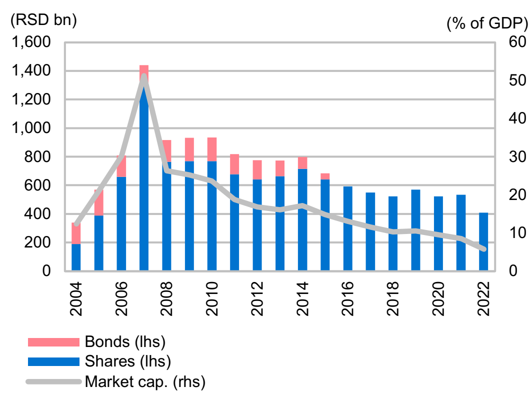
In mid-January 2022, the government issued, for the first time, five-, ten- and 12-year bonds worth EUR 69.5 mn to settle liabilities in respect of compensation for confiscated property, under the Law on Restitution of Confiscated Property and Compensation.[113]

The stock of euro securities with the maturity of over one year was EUR 0.3 bn lower than in 2021, and equalled EUR 2.0 bn in December 2021 (Chart III.2.5). The biggest share in the total portfolio of euro government bonds was that of ten-year (31.3%), 15-year (16.0%), and two-year (15.6%) securities.

In 2022, no eurobond was issued in the international market, and three bonds were issued in a private placement.[114] In late June 2022, a 53-week eurobond was issued in a private placement, sold in the nominal value of EUR 350 mn and at a coupon rate of 2.40%, which was bought back early in late January 2023. At end-August 2022, four-year bonds worth EUR 90 mn were issued at a coupon rate of six-month EURIBOR + 3.95 pp, as were three-year bonds worth EUR 250 mn, at a coupon rate of six-month EURIBOR + 3.75 pp.

In late January 2023, Serbia issued a dual-tranche of five- and ten-year dollar eurobonds, worth USD 1.75 bn. The offering was over six times oversubscribed, attracting more than USD 11 bn. The coupon rates on the five- and ten-year bonds were 6.25% and 6.50%, respectively.

Chart III.2.6 **Belgrade Stock Exchange market capitalisation**

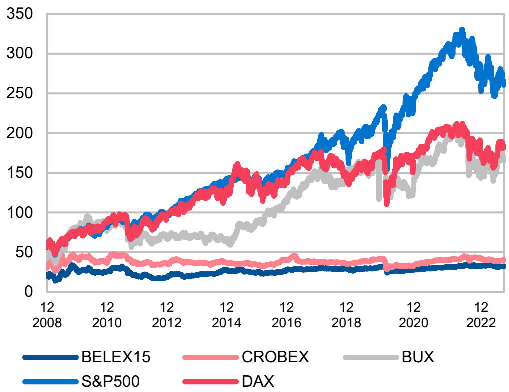


Sources: Belgrade Stock Exchange and NBS.

[113] RS Official Gazette, Nos 72/11, 108/13, 142/14, 88/15 – CC decision, 95/18 and 153/20.

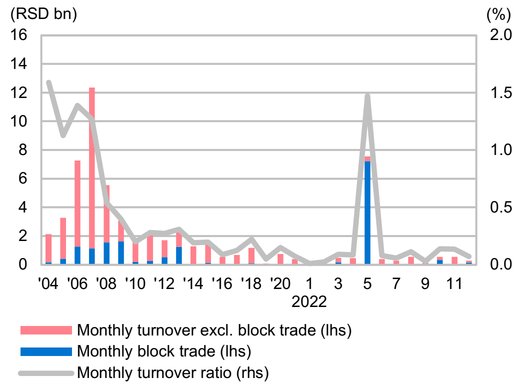
[114] A private placement, stipulated by the Decree Amending the Decree on General Terms and Conditions for the Issuance and Sale of Government Securities in the Primary Market (RS Official Gazette, No. 59/2022), enables the government to sell its bonds to domestic or foreign qualified investors, in the country or abroad.

Chart III.2.7 **Stock market indices**
(index, 15 Nov 2007 = 100)



Source: Bloomberg.

Chart III.2.8 **Belgrade Stock Exchange share turnover**



Source: NBS, based on data of the Belgrade Stock Exchange.

Hedging transactions were also carried out, i.e. liabilities in respect of the issue of dollar eurobonds were immediately converted into euro liabilities via swap transactions. This reduced exposure to the USD/EUR currency risk and the government's borrowing cost. After the cross-currency swap (CCS), six-month EURIBOR for the five- and ten-year bonds increased by 2.9 pp and 3.1 pp, respectively.

The trading volume in the secondary market of dinar government securities in 2022 was lower than in 2021 (RSD 549.9 bn) and equalled RSD 186.1 bn. Secondary trading in euro securities amounted to EUR 346.6 mn (EUR 472.9 mn in 2021). The strategy of issuing benchmark bonds had a positive impact on secondary trading. In 2022, total trading in long-term government bonds included in the Belgrade Stock Exchange (BSE) prime listing (in dinars and euros) came at RSD 26.9 bn. The development of secondary trading in government bonds in the regulated market should contribute to greater transparency and liquidity of the secondary market of government bonds, enabling more efficient valuation of these securities.

Further development of the government securities market can be expected with the introduction of the primary dealers function, which will enhance the primary and secondary markets of government securities.[115]

At end-2022, BSE market capitalisation came at RSD 409.6 bn (5.8% of GDP) (Chart III.2.6). Compared to 2021, it declined in all market segments – by RSD 15.2 bn, RSD 48.5 bn and RSD 60.1 bn in open market, listing and MTP[116] segments, respectively.

At end-December 2022, BELEX15 (the index of the most liquid shares) measured 824.61, up by 0.5% from end-2021 (820.78). BELEXline was up by 1.7% to 1,739.86 (Chart III.2.7).

Total shares turnover on the BSE amounted to RSD 11.4 bn in 2022, up by RSD 4.9 bn from 2021. The largest turnover was recorded in the listing segment (RSD 8.2 bn).

In December 2022, the average monthly share turnover ratio[117] equalled 0.07% and was unchanged from the previous year, signalling low BSE liquidity (Chart III.2.8).

The number of transactions on the BSE rose from 18,743 in 2021 to 22,760 in 2022.

Foreign investor participation in total BSE turnover was 64.8%, up by 40.3 pp from 2021. Foreign investors were almost equally active on the sale (65.7%, up by 26.3 pp from 2021) and the purchase side (63.8%, up by 54.4 pp from 2021). They were most active in May 2022 (95.4%) – almost equally on the sale (95.4%) and purchase side (95.3%).

With the adoption of the Law on Digital Assets[118] in December 2020, applied since 29 June 2021, Serbia became one of the first countries in the world to create a

[115] The function of primary dealers was introduced in the domestic regulatory framework in early December 2018, with the Law Amending the Law on Public Debt (RS Official Gazette, No 95/2018).

[116] MTP – multilateral trading platform.

[117] Calculated as the ratio between the total monthly shares turnover and the average stock of market capitalisation of shares at two points in time (the end of the month observed and the end of the previous month).

[118] RS Official Gazette, No 153/2020.

regulatory framework for digital assets. In late May 2022, the Securities Commission approved the publication of a white paper[119] for the initial public offering of 35,250 tokens in the nominal value of RSD 1,000 for the company Finspot d.o.o. Beograd. With the approval of the white paper, Serbia obtained its first digital token[120] – the Finspot Factoring Token (FIN). In late December 2022, the same company received approval for a new white paper for the initial public offering of 185,250 Finspot Factoring Tokens (FIN2) in the nominal value of RSD 1,000.

The new Capital Market Law[121] was adopted in December 2021 and has been applied as of 6 January 2023. It is aligned with the Capital Market Development Strategy for the 2021–2026 Period, and the Action Plan for the Implementation of the Strategy. The aim of the new Law is to lay the foundation for further development of the capital market and to provide Serbian companies with additional funding sources. It is aligned with EU regulations governing financial instrument markets (MiFID II), the prospectus, investor compensation systems, transparency, irrevocability of settlements in securities settlement systems and market abuse. The goal of the Strategy is for the Republic of Serbia to develop a competitive, highly efficient, transparent and productive capital market that will offer Serbian institutional and individual investors and issuers a wide range of products and services comparable to leading regional and European financial centres.

In 2022, the first alternative investment funds (AIFs) were set up in the country.[122] Intended primarily for professional and semi-professional investors, AIFs raise funds from investors and invest them, for investors' benefit, in line with the defined investment policy.

In late January 2022, the Government signed a document defining the terms of cooperation for the inclusion of Serbia's government securities in the Euroclear system. The purport is to expand the investor base and make government securities better available to foreign investors.

New financial instruments can contribute to further development of the domestic financial market. Moreover, continued financial education and accelerated financial inclusion may help domestic natural persons boost their investment in the local financial market.

III.3 Financial infrastructure

Safe and sound operation of payment systems is an important precondition for adequate functioning of the overall financial and economic system of a country. Payment system efficiency has a bearing on the speed of economic flows, costs and liquidity of participants. It also serves as a channel for transmission of monetary policy measures, since inadequate functioning of a payment system can undermine public trust in the overall financial system. The central bank's task is therefore to ensure its reliable and efficient functioning.

Pursuant to Article 4 of the Law on the National Bank of Serbia (RS Official Gazette, Nos 72/2003, 55/2004, 85/2005, 44/2010, 76/2012, 106/2012, 14/2015, 40/2015 – CC Decision and 44/2018), the NBS regulates, supervises and promotes smooth performance of payment operations in the Republic of Serbia.

Given that payment systems are part of financial infrastructure enabling mutual interlinking of different entities for the sake of timely execution of payment transactions, their design is of great importance for the proper functioning of the financial market and safe and sound payment execution.

The following make up the infrastructure of Serbia's payment transactions: (1) NBS RTGS payment system; (2) NBS clearing system; (3) NBS IPS system; (4) NBS system of interbank clearing of foreign exchange payments; (5) system of international clearing of foreign exchange payments; (6) DinaCard clearing system; (7) ASB cheque clearing; (8) ASB direct debit clearing.

The NBS is the operator of the following payment systems: (1) NBS RTGS payment system; (2) NBS IPS system; (3) NBS clearing system; (4) NBS system of interbank clearing of foreign exchange payments; (5) system of international clearing of foreign exchange payments; (6) DinaCard clearing system.

In accordance with the Law on Payment Services (RS Official Gazette, Nos 139/2014 and 44/2018) and supporting regulations, the NBS RTGS payment system and NBS clearing system have been determined to be important payment systems, relevant for the stability of

[119] A document published at the issuance of virtual currencies, which contains information about the issuer, virtual currencies and the risks associated with the virtual currencies, so that investors are able to make an informed investment decision.

[120] A type of digital assets and means any intangible property representing, in digital form, one or more property rights, which might include the right of a digital token user to specific services.

[121] RS Official Gazette, No 129/2021.

[122] Pursuant to the Law on Alternative Investment Funds (RS Official Gazette, No 73/2019).

the overall financial system, in which the settlement finality is guaranteed in case of a participant's inability to meet its liabilities.

NBS RTGS is a payment system for the transfer of dinar funds between participants in real time at gross principle up to the level of coverage in participant accounts. This payment system is regulated by the Operating Rules of the NBS RTGS System.[123]

Sound, safe and efficient operation of the NBS RTGS payment system is of special importance for ensuring stability of the financial system of the Republic of Serbia. Its systemic importance is also reflected in the fact that it is a system for real time money transfer with mandatory execution of all interbank payment transactions exceeding RSD 300,000 ("large payments") providing an efficient channel for the implementation of monetary policy measures. The system further serves for the settlement of monetary payables and/or receivables which have originated in other payment systems and the settlement of the monetary segment of transactions in the trading of financial instruments.

Participants in this system are: (1) the NBS, (2) banks with their head offices in the Republic of Serbia holding an operating licence issued by the NBS, in accordance with the law regulating banks, (3) the ministry in charge of finance – Treasury Administration, (4) the Association of Serbian Banks (ASB), as the operator of the direct debit and cheque clearing systems; (5) the Central Securities Depository and Clearing House, as the operator of the system for the settlement of financial instruments.

Participants in the RTGS payment system are enabled to adequately manage the risks they are exposed to since settlement is executed in real time at gross principle. Given that mutual transactions are settled in central bank money, participants are not exposed to credit and liquidity risk. As in all RTGS systems, participants must have sufficient funds in their accounts to execute transactions smoothly. Accordingly, RTGS participants can manage their liquidity risk as well, as the system enables them to view all their transactions and account balances and to change the sequence of payment orders execution depending on priority.

On the other hand, in order to participate in the NBS clearing system, a participant must ensure an appropriate limit amount in the form of money set aside for the calculated negative position.

Table III.3.1 **Value and number of payments in the NBS RTGS system**

	Average for period 2010–2021	2022
NBS RTGS		
Value, RSD bn	57,006.19	97,436.50
Number of payments, mn	153.80	205.80

Source: NBS.

An important indicator of the significance of the RTGS system for the national economy is the value of payment transactions executed in the system over a period of time. In 2022, 99.50% of the total value of payment transactions in the Serbian financial infrastructure were executed in this system.

The value of turnover in the RTGS system in 2022 measured RSD 97,436.5 bn, with 205.8 mn payments (86.8% of the total number of payments in the NBS RTGS and clearing systems).[124] The highest monthly turnover in 2022 was recorded in December (RSD 13,631 bn[125]).

Another indicator of importance of this type of systems for the national economy is the value of payments executed (total value of turnover) relative to GDP. In 2022, RTGS turnover was 13.74 times the value of Serbia's GDP.

The availability of the NBS RTGS and clearing systems is one of the key factors affecting the stability of the financial market. Out of a total of 251 business days, i.e. 141,090 minutes of production, the availability of the RTGS and clearing systems was 99.95%.[126]

In late 2022, the NBS marked full four years of the NBS IPS system. The NBS established the system on 22 October 2018 to stimulate innovation in the financial sector and support digitisation and development of domestic cashless payments. At the moment when the NBS IPS system was launched, such systems were rare in the world, which speaks volumes of the significance of this opportunity provided to citizens and businesses by the NBS.

[123] Regulations in the area of payment system and payment services (https://nbs.rs/en/drugi-nivo-navigacije/propisi/propisi-ps/index.html).

[124] https://www.nbs.rs/export/sites/NBS_site/documents-eng/platni-sistem/statistika/rtgs/stat_22.pdf

[125] https://www.nbs.rs/export/sites/NBS_site/documents-eng/platni-sistem/statistika/rtgs/pp_12_22.pdf

[126] https://www.nbs.rs/export/sites/NBS_site/documents-eng/platni-sistem/statistika/rtgs/stat_22.pdf

Table III.3.2 **Value and number of payments in the NBS IPS system**

	Average for period 2019–2021	2022
NBS IPS		
Value, RSD bn	225.8	517.4
Number of payments, mn	24.76	53.50

Source: NBS.

Direct participants in the NBS IPS system are: (1) banks with their head offices in Serbia; (2) the NBS; and (3) the ministry in charge of finance – Treasury Administration, i.e. participants which, in line with regulations and operating rules of the RTGS, can have accounts in this system.

Other payment service providers can be indirect participants if they render services which include credit transfer. There are two forms of indirect participants – entities directly linked to the NBS IPS payment system delivering and/or receiving transfer orders in the NBS IPS system directly, and entities with indirect access and thus without a direct link to the system, with the payments made for them by direct participants.

The NBS IPS payment system is extremely successful with a high and constantly rising number of payments. The total value of turnover in this system in 2022 measured RSD 517.4 bn, with 53.50 mn payments, by up to 27% more than in 2021. The highest monthly turnover was recorded in December (RSD 56.2 bn).[127]

Instant payment offers special facilities to all merchants, especially small merchants at points of sale with low average value of transaction. The reason lies in the simplicity of implementation and low costs of acceptance of instant payments for all participants in the IPS system, meaning that merchants pay considerably lower fees for accepting instant payments compared to payment cards. In that way, the NBS contributes to the use of this innovative and cost-effective manner of payment, which is important for further development of e-commerce.

By introducing a new functionality of instant payment via m-banking applications, the NBS – in cooperation with banks, significantly improved online purchases by this safe and simple manner of payment. As such, online instant payments via IPS scan[128] are an additional impetus for further development of e-commerce in the Republic of Serbia. Besides, as of March 2023, first newsstands in the country started to accept instant payments, so buyers can make cashless payments for goods and services at newsstands by using solely their m-banking apps. The IPS scan method is used, requiring the buyer to scan the merchant's IPS QR code when executing payment.

Innovative services are being continuously introduced in the NBS IPS system, with a view to further optimising and advancing cashless payments. Apart from the existing option to scan the merchant's IPS QR code, as of February 2022 online payments can also be made via deep link technology. This method enables payments without leaving the data about the payment instrument on the merchant's website, which is required in case of payment cards. Also, at end-2022, seven banks enabled the Transfer service, whereby funds are transferred simply by choosing the mobile phone number which the payee registered for this service. Such improvements in services, based on instant credit transfer, contribute to the overall development of the national system for cashless payments.

Instant payments bear strategic importance for further modernisation of Serbia's payment system. The regulatory framework, the established NBS IPS system and the relevant fee policy enable standardisation in the provision of instant payment services and cost-efficiency which payment service providers may use for the introduction of new services and considerable upgrades to existing services.

Network of interbank transactions of NBS RTGS payment system

Network indicators of the RTGS system are calculated to assess the connectedness of participants and create the basis for analysing the network's stability against potential shocks, and the effects of shock transmission in the network.

Network characteristics were analysed using daily data for January–December 2022, on the basis of reports on interbank transactions in the NBS RTGS payment system. During 251 business days, only MT202 and MT103[129] interbank messages were analysed and used for each business day to model separate networks. Table III.3.3

[127] https://www.nbs.rs/export/sites/NBS_site/documents-eng/platni-sistem/statistika/IPS/ips_12_22.pdf

[128] https://nbs.rs/sr_RS/novac-i-placanja/platne-usluge/QR_kod/index.html

[129] Under the SWIFT standard, MT202 messages are used for the transfer of funds between payment system participants, and MT103 messages for single transfer orders for the account of payment service users. In addition, MT102 messages – group orders for retail payments – are also executed in the NBS RTGS system.

Table III.3.3 **RTGS payment indicators (network-level)**

		Mean	Median	Maximum	Minimum	Standard deviation
Payments	Value (RSD mn)	101,217.29	99,414.13	139,822.71	74,035.90	19,474.77
	Number of transactions	21,095.00	21,362.32	24,642.41	16,360.53	1,909.55
	Average (RSD mn)	4.79	4.66	6.75	3.83	0.74
Network size	Nodes*	24.33	24.00	25.00	24.00	0.47
	Number of direct links	538.81	535.60	577.67	505.27	23.49
Distance measure	Average path length	1.25	1.24	1.26	1.24	0.01
Connectivity	Node degree	18.17	17.92	20.00	17.51	0.68
	Node out-degree	16.26	16.03	17.78	15.69	0.57
	Connectivity	66.80%	66.55%	71.12%	65.37%	1.41%
	Average clustering	86.87%	86.66%	90.28%	86.07%	1.06%
Others	Betweenness centrality	4.11%	4.17%	4.17%	4.00%	0.08%
	Dissimilarity index	0.40	0.33	0.69	0.29	0.12

* Calculations based on daily reports from the NBS RTGS system, for the period Jan-Dec 2022, interbank payments (MT202 and MT103). Payment value and number of transactions in all columns were calculated based on average values, analyzed on a monthly basis.

Source: NBS.

shows the results of the analysis and the values of indicators for the entire network.[130]

For 251 business days in 2022, for the observed sample of transactions (MT202 and MT103), the average daily turnover was RSD 101.2 bn. The average number of transactions per day was 21,095 and the average value per transaction was RSD 4.79 mn.

The size of a financial network is defined by the number of its participants. After status changes, i.e. merger of two banks, at end-2022 the number of banks participants in the Serbian banking system was reduced from 23 to 21 banks[131] (and the number of banks' accounts from 25 to 24[132]). The daily average of direct interbank links was around 539, meaning that a large number of banks executed interbank MT202 and MT103 transactions on a daily basis. The average daily connectivity ratio of 66.80% was relatively high, which means that the interdependence of financial institutions was also high, as indicated by the low average path length of 1.25,[133] i.e. the mean value of all the shortest paths to any node.

Important parameters for analysing a network of this type are the mean value of the node degree and the value of the degree of the out node, which denotes the number of banks to which a specific bank makes payments. If a financial institution with a high value of this indicator faces operational risk, i.e. inability to make payments, there is a higher probability of contagion to related nodes, i.e. financial institutions expecting to receive payments. For the entire NBS RTGS network, the average daily degree out was 16.26, which is relatively high given the number of banks participating in the system.

The average clustering coefficient, as the "potential" for clustering, was also high, averaging 86.87%, which means that the neighbouring nodes were connected to a larger extent.

The average betweenness centrality of 4.11% is rather low. However, following an analysis across banks, it can be ascertained that there were several nodes with high values of betweenness centrality and a large number of nodes with low values. The betweenness centrality reflects the frequency with which an individual institution is on the shortest path between other nodes of the network. Banks with high betweenness centrality are important in the payment system as they participate significantly in shock transmission through the network.

[130] A detailed explanation of the indicators is available in the *Financial Stability Report – 2015*, Text box 4 – Network modelling.

[131] On 30 April 2022, NLB banka merged with Komercijalna banka, changing the name into NLB Komercijalna banka, and NLB banka's account was closed. On 1 December 2022 Naša AIK banka merged into AIK banka, whereby the account of Naša AIK banka continued to function as an interim account of AIK banka. After this status change, 21 banks participated in the NBS RTGS system.

[132] AIK banka, Banka Poštanska štedionica, Eurobank direktna operated also via interim accounts.

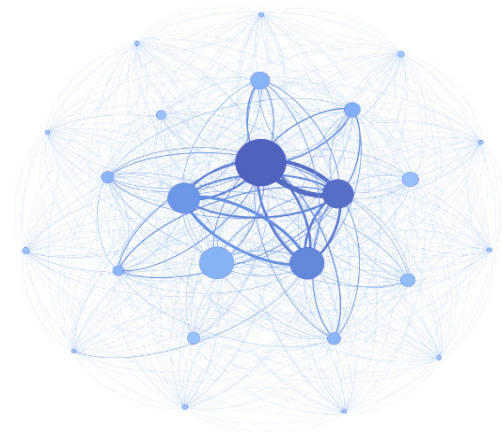
[133] The average path length l_h for node h is the mean of all shortest paths to any node i, $l_h = \frac{1}{n}\sum_{h \neq i} d_{hi}$. At the network level, the average path length is defined as the ratio between the mean of average path lengths for each node and the number of nodes, i.e. $l = \frac{1}{n-1}\sum_i l_i$.

The average mean of the dissimilarity index, which is used to compare the entire network from the perspective of all pairs of related nodes, equalled 0.40 for the RTGS network. This means that from the perspective of any two neighbouring nodes, the RTGS network behaved in a homogeneous way and that the network looks similar from the perspective of most nodes.

Network indicators used to describe the characteristics of the payment system network consider interbank connectedness, while the turnover value in the form of a weight branch factor is also considered for the assessment of importance of a financial institution in the payment system network.

The analysis shows that the RTGS network is highly connected, but that there are several financial institutions that are more interconnected, which represents the basis for further analysis of network indicators at the level of individual institutions.

Chart III.3.1 **Bank interconnectedness in the NBS RTGS network**



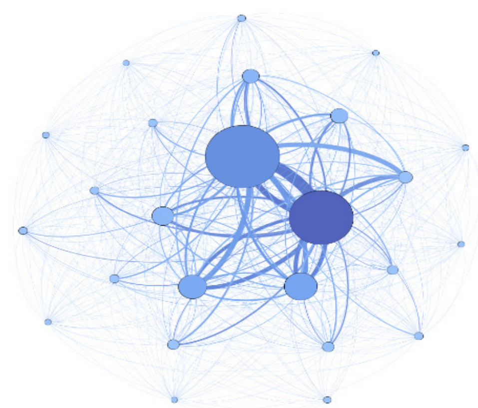
* Interbank payments (MT202 and MT103) for the period Jan-Dec 2022.
** The size of the node is proportionate to the bank's share in total turnover, the line thickness is proportionate to the value of interbank payments, while the darker colour of the node indicates a larger number of executed orders.
Source: NBS.

Identifying important banks in the payment system

A safe and efficient financial infrastructure is a prerequisite for the stability of the financial market and the financial system. It is therefore crucial to identify which banks are important payment system participants, considering the impact of their potential inability to perform payment transactions on payment system stability.

The European Securities and Markets Authority (ESMA),[134] central banks, as well as the IMF,[135] have been increasingly including the stress testing of financial market infrastructure in their regular publications, considering the importance of the smooth operation of financial infrastructure.

Chart III.3.2 **Bank interconnectedness in the NBS IPS payment system**



* Interbank payments (MT202 and MT103) for the period Jan-Dec 2022.
** The size of the node is proportionate to the bank's share in total turnover, the line thickness is proportionate to the value of interbank payments, while the darker colour of the node indicates a larger number of executed orders.
Source: NBS.

Being an integral part of the financial infrastructure, the payment system offers the network, structural and time perspective for the analysis of interbank relations. Based on the analysis of network indicators of banks in view of the number and values of interbank transactions as well as their mutual transactions[136] carried out in the RTGS payment system during 2022, it is possible to identify groups of banks whose importance in the NBS RTGS can be determined based on their position in the network. As shown in Chart III.3.1, a small number of important nodes can be identified in the network, i.e. a small number of important participants in this payment system, which can be determined according to centrality measures (degree of an individual node, betweenness centrality, closeness centrality and prestige[137]).

[134] https://www.esma.europa.eu/press-news/esma-news/esma-updates-guidelines-stress-tests-money-market-funds
[135] https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2020/01/31/Stress-Testing-at-the-IMF-4882
[136] Period January–December 2022, interbank payments (MT202 and MT103).
[137] Prestige as the measure of centrality takes into account the characteristics of neighbouring nodes, i.e. a node is important if connected to other significant nodes.

The NBS IPS system functionality[138] and the applied technical and technological solutions are in line with payment system trends. The system is based on the latest IT solutions and enables a very short processing time (in 2022 the transaction execution time averaged 1.1 seconds in the IPS) and a high degree of availability.

Network, structural and time dimension of interbank relations can be considered through the NBS IPS system[139] as well. Chart III.3.2 shows two prominent banks which account for around 50% of total value and number of payments made in the IPS, and which can be considered systemically important from the point of view of this system.

Since the NBS set the instant system fee policy at the lowest possible level, i.e. enabling banks to render this service to citizens and corporates at as favourable conditions as possible, it is reasonable to expect a further rise in the number of payments in this system in the future.

[138] For more details on the NBS IPS system, see the *Financial Stability Report – 2018*, Text box 4: New payment system in the Republic of Serbia – Instant Payments System.

[139] Information about the characteristics of the NBS IPS payment system can be found on the NBS website (https://nbs.rs/en/ciljevi-i-funkcije/platni-sistem/nbs-operator/ips-nbs/index.html).

Text box 4: Central bank digital currencies and the digital euro project

Digitisation has brought about numerous changes in the area of financial services in recent years, particularly during the pandemic. The most important ones occurred in the digital currencies domain, where cryptocurrencies turned out to be the most popular. The first and the best-known cryptocurrency – the bitcoin appeared in 2009 and is based on blockchain technology.[140] In line with the key functionalities and features of this technology, the bitcoin is a decentralised, encrypted data string that denotes a unit of currency. Though cryptocurrencies as a means of exchange represented a technological novelty, the fluctuations in their value made them a very risky investment. In response to the risks associated with cryptocurrencies and the tendency to combine "the best of the two worlds", stable cryptocurrencies (stablecoins) appeared. They have the features of other decentralised private currencies, but they have resolved the issue of high volatility (oscillations in value) as they have a backing, enhancing their level of security typical for centralised currencies. This backing can be in the form of traditional currencies, other traditional assets (bonds, real estate, precious metals, etc.), but also in other decentralised digital assets. Though there are mechanisms which help eliminate volatility, the disadvantage of stablecoins is the high level of reserves backing their value. If the reserves are not adequate or transparent, users may lose confidence.

In step with the latest trends, central banks worldwide have started exploring the possibility of issuing central bank digital currencies (CBDCs) to supplement cash and cashless forms of payment. The purpose of these analyses was to look at the advantages and disadvantages of issuing digital currencies, determine their design and technological solution, and the necessary regulatory adjustments. CBDCs may potentially offer greater resilience, security, availability and lower costs than private digital currencies. This is particularly obvious when comparison is made with unsecured cryptocurrencies, which have proved to be extremely unstable. Special attention was paid to analysing the matter of greater financial inclusion, protection of privacy and greater efficiency relative to electronic and digital banking and electronic money. The CBDC system offers a possibility for governments and central banks to achieve their financial inclusion objectives, cutting payment system costs, and improving public services provision and public budget management. Another topical issue is the use of digital currencies to improve the execution of cross-border transactions by developing the infrastructure for connecting solutions from different countries.

A central bank digital currency is the digital form of the national currency which serves as a medium of exchange, unit of currency and a store of value.[141] By contrast to private digital currencies, central bank digital currencies are a liability of the central bank. CBDC issuance can be centralised, where all transactions are recorded in ledgers managed by central banks, or decentralised, where the central bank sets rules and requirements for the settlement of CBDC transactions that are then recorded by users and/or financial intermediaries. Regardless of the approach, the underlying infrastructure should be controlled by the central bank.

At present, 114 countries, representing over 95% of global GDP, are exploring a CBDC. Of this, 60 countries are in an advanced phase of exploration, while 11 countries have fully launched a digital currency.[142]

Digital euro – the European Union's digital currency

After the Report on a digital euro was published in October 2020,[143] the ECB held a public consultation on the expected features and functionalities of the digital euro.[144] In July 2021, the ECB's Governing Council decided to launch the two-year investigation phase of a digital euro project.[145] The investigation phase began in October 2021 and aims at

---

[140] Blockchain is a database which is not in one place, but comprises smaller units of data (blocks) which are digitally connected and contain information on different digital transactions. The exchange of data about transactions is done in the network itself, with no other regulators, and the network contains information on all transactions ever performed.

[141] *Central bank digital currencies,* Bank for International Settlements, March 2018 (https://www.bis.org/cpmi/publ/d174.pdf).

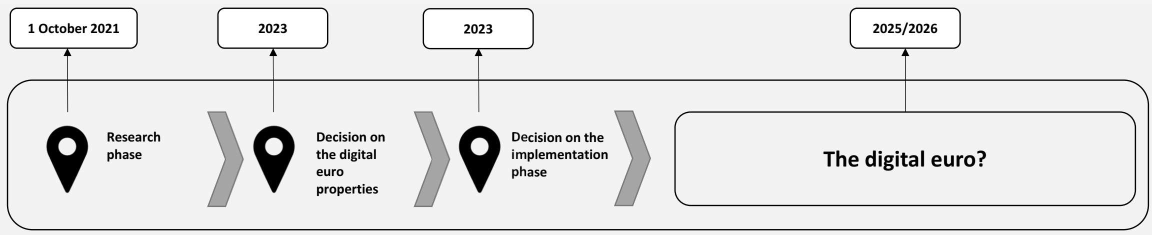
[142] https://www.atlanticcouncil.org/cbdctracker/, page accessed on 1 April 2023.

[143] https://www.ecb.europa.eu/paym/digital_euro/report/html/index.en.html

[144] https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210414~ca3013c852.en.html

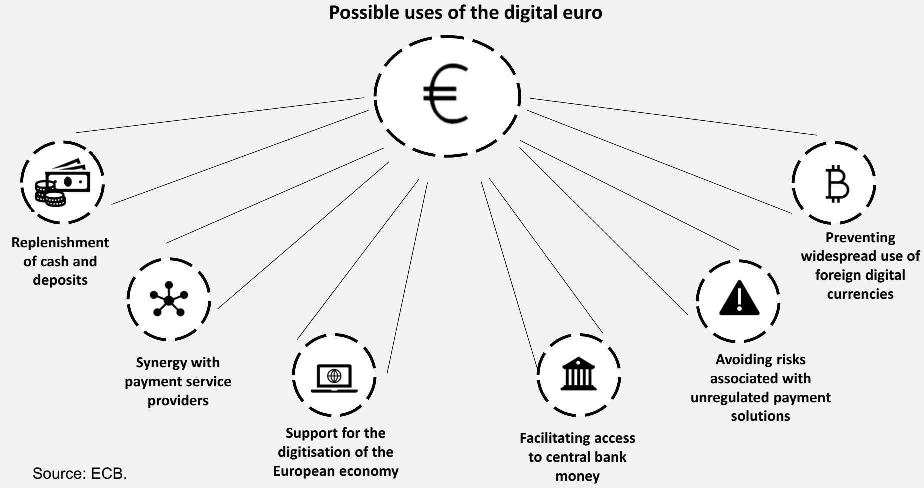
[145] https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210714~d99198ea23.en.html

exploring digital euro issuance and providing answers to the key questions, such as: what the digital euro would look like, what it would be used for and when it could be available. Based on the findings of the investigation phase, in 2023 it will be decided whether to continue to the implementation phase which is expected to last for three years. If after successful completion of the implementation phase, decision is made to issue the digital euro, it could be available to users in late 2025 or early 2026.



There are multiple reasons to issue a digital euro. A digital euro could be a viable option for the Eurosystem in order to achieve the objectives related to core central bank functions and the general economic policies of the EU. A digital euro could be issued: 1) to support the digitisation of the European economy and the strategic independence of the EU; 2) in response to a significant decline in the role of cash as a means of payment, 3) if there is significant potential for foreign CBDCs or private digital payments to become widely used in the euro area, 4) as a new monetary policy transmission channel, 5) to mitigate risks to the normal provision of payment services, 6) to foster the international role of the euro, and 7) to support improvements in the overall costs and ecological footprint of the monetary and payment systems.[146] A digital euro is also a good opportunity to deepen cooperation among central banks, the private sector and the development of payment services in general, as its issuance could further promote innovation in the field of retail payments.

Possible uses of the digital euro



Source: ECB.

Digital euro implementation and possible consequences

The digital euro should be designed so as to avoid potential undesirable consequences of its issuance, i.e. to limit any adverse effects on monetary policy, financial stability, and banking sector services. An advantage of issuing a digital currency is that it would be easier to satisfy liquidity needs, but this could open new risks for financial stability if digital currency issuance triggers a withdrawal of traditional deposits from the banking sector, greatly reducing banks' liquidity

[146] https://www.ecb.europa.eu/pub/pdf/other/Report_on_a_digital_euro~4d7268b458.en.pdf#page=10

and lending potential. For this reason, excessive use of the digital euro as a form of investment and the associated risk of rapid shifts from banking deposits to the digital euro should be avoided. As, due to technological innovation, this is one of the most important initiatives in recent years which will inevitably lead to changes in the financial sector, this matter should be approached with a good deal of caution and moderation.

The intermediaries distributing the digital euro should be supervised, while the risks relating to information technology (e.g. delays and unexpected expenses) should be minimised. Digital euro-related services should be very resilient to cyber security risks. It is also necessary to address legal considerations, including the legal basis for issuance and the applicability of EU legislation to the Eurosystem as the issuer. Digital euro's use should be safe and accessible and guarantee the privacy of payment, despite being based on the blockchain technology. It is necessary to respond to users' requirements, while at the same time preventing illegal activities such as money laundering. The digital euro must not negatively affect financial stability and monetary policy and it should be completely integrated into the existing payment system. The value of the digital euro should not oscillate, like that of private cryptocurrencies, and the ECB should guarantee that one digital euro has the same value as the one-euro coin.

Investigation phase of a digital euro

In 2022, the ECB published two reports on progress on the investigation phase of a digital euro, in September[147] and December[148] 2022. In the latter, the ECB highlighted key areas on which work is in progress.

The first refers to the design of the digital currency and the functioning of the monetary system. Cooperation of the public and private sector is key for success in this project phase. It is also important to detail the role of the Eurosystem as digital currency issuer and of supervised intermediaries in the market, as well as who would be responsible for distributing the digital euro to end-users and how. In that case, the digital euro would be a liability on the balance sheet of the Eurosystem, which would perform all settlement activities on behalf of the supervised intermediaries that distribute the digital euro to end-users.

The second key area is the settlement model, i.e. checking that the payer has the money available for transfer to the recipient, and funding and defunding functionalities that would enable the end-user to convert cash or account holdings into digital euro, and vice versa.

Third, the transition from cash to digital euro should be easy, and the system should function smoothly and around the clock.

Finally, it is necessary to establish a set of common rules according to which digital euro payments would function in the entire euro area, regardless of the national payment systems. In Q2 2023, the European Commission plans to propose a regulation to govern the digital euro. Preparations are already under way, including a public consultation, to issue a proposal of this regulation.[149]

In April this year[150] the ECB published the third report on progress on the digital euro project and findings of the study on digital wallet features.[151] The report states that the digital euro could be available to euro area residents, merchants and governments in its initial releases. Non-resident euro area citizens may also have access, provided they have an account relation with a euro area payment service provider (PSP). Access for consumers from selected third countries could be part of the subsequent releases, depending on digital euro accessibility rules to be set in the legislative framework. The digital euro should be distributed by PSPs, and end-users could access the digital euro either through PSPs' existing apps or through a digital euro app provided by the Eurosystem.

147 https://www.ecb.europa.eu/paym/digital_euro/investigation/governance/shared/files/ecb.degov220929.en.pdf?8eec0678b57e98372a7ae6b59047604b

148 https://www.ecb.europa.eu/paym/intro/news/html/ecb.mipnews221221.en.html

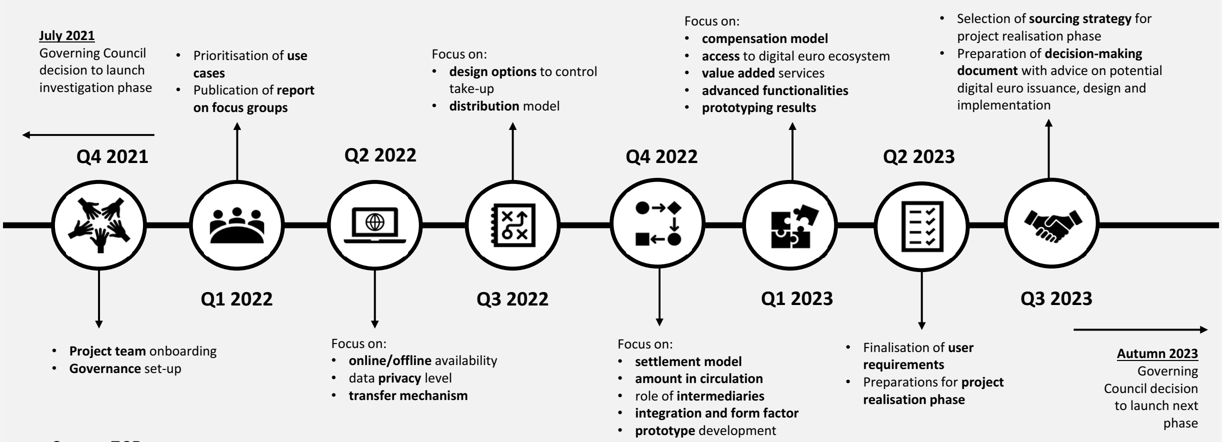
149 https://www.ecb.europa.eu/paym/digital_euro/investigation/governance/shared/files/ecb.degov221221_Progress.en.pdf?f91e0b8ff8cbd6654d7e6b071a8f7071

150 https://www.ecb.europa.eu/paym/digital_euro/investigation/governance/shared/files/ecb.degov230424_progress.en.pdf

151 https://www.ecb.europa.eu/press/pr/date/2023/html/ecb.pr230424_1_annex~93abdb80da.en.pdf

The ECB also published the findings of a study on the features of a potential digital app. This qualitative study, based on focus group sessions and interviews, was carried out in all euro area countries from December 2022 to January 2023, and included the general population, tech-savvy participants, retail and wholesale merchants, and underbanked participants. The study revealed that most participants were interested in trying some of the digital wallet features presented, while the P2P transfer functionality was the most highly valued for most participants. Participants also thought the offline payment functionality to be very important. This functionality is not widely available at present, but it is considered useful, e.g. in case of limited internet coverage.

Digital euro project investigation phase timeline



Source: ECB.

Finally, it should be noted that different functionalities offered by private digital currencies, the risks they involve and the related challenges to the current monetary system have prompted banks to engage actively in exploring the ways to develop their own digital currency. Such digital currency should repair the shortcomings of cryptocurrencies and improve the current e-money system, enhancing the efficiency of financial infrastructure without jeopardising financial services consumer protection or financial system stability.

III.4 Real estate market

The NBS monitors and analyses the real estate market given that fluctuations in the real estate value affect the quality of bank credit portfolios, which can also significantly influence financial stability and the real economy. In 2022, the turnover in the real estate market went up as did the prices of real estate. Uncertainty as to the overall economic situation reflected on the reduced value of performed construction works and on the decline in the number of issued construction permits.

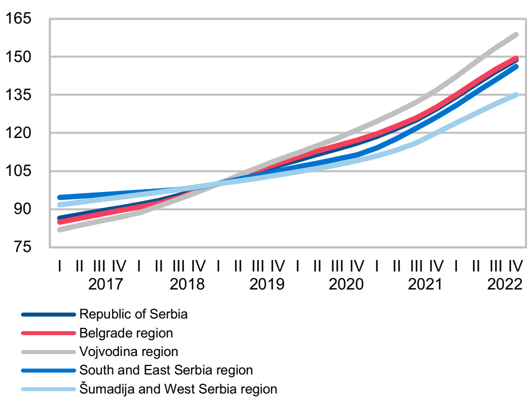
In the preceding years, the turnover in the real estate market and property prices went up, in line with the developments in this market segment in other countries as well. This is a result of increased demand for real estate primarily as a reflection of positive labour market trends and favourable borrowing conditions.

In the Republic of Serbia, the rise in real estate prices continued and additionally intensified in 2022. According to the Republic Geodetic Authority, the average price of flats in old buildings for the territory of the Republic of Serbia in 2022 equalled EUR 1,325 per square metre, and in new buildings it measured EUR 1,688 per square metre, up by 20% and 16%, respectively from 2021.[152]

Since November 2022, the Republic Geodetic Authority has been publishing the Housing Price Index. This Index was developed in line with international methodological guidelines, based on the model for mass valuation of flats which takes into account different qualitative characteristics of real estate from relevant sources in addition to the prices quoted in sale contracts.[153] This Index indicates a continuous trend of the rising prices during the observed period. The Housing Price Index for the Republic of Serbia[154] measured 148.79[155] in Q4, up by 14.90% from Q4 2021. By region, Q4 saw the steepest rise in the prices of flats, measured by the Housing Price Index, in Vojvodina (16.02% y-o-y) and the city of Belgrade (14.91% y-o-y).

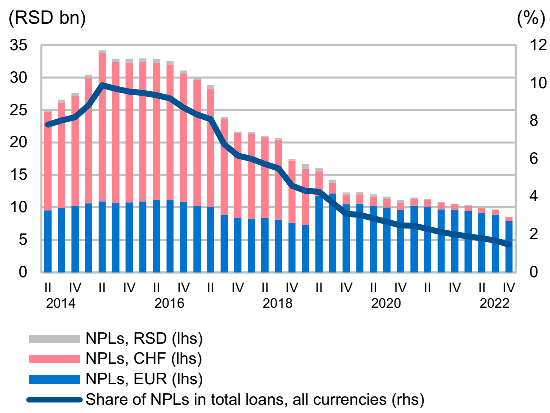
Based on the data of the Republic Geodetic Authority, in 2022, 140,561 sales of real estate were made, up by 1.8% from 2021. The total volume of assets in the real estate market in 2022 measured EUR 7.5 bn, up by 22% from 2021. This is the highest level of assets in the real estate market since 2014. The value of trade in flats accounted for the bulk (55%) of total assets in the real estate market, amounting to EUR 4.1 bn, up by 26% from 2021. The highest share (65%) in the total turnover in 2022 was recorded in Belgrade. Nevertheless, one should also take into account the data of the Republic Geodetic Authority, according to which, in 2022 only 11% of all traded real estate, and only 26% of traded flats were financed with loans, which is a decline from 2021 when these figures were 13% and 31%, respectively.

Chart III.4.1 **Housing Price Index**
(index, I 2019 = 100)



Source: Republic Geodetic Authority.

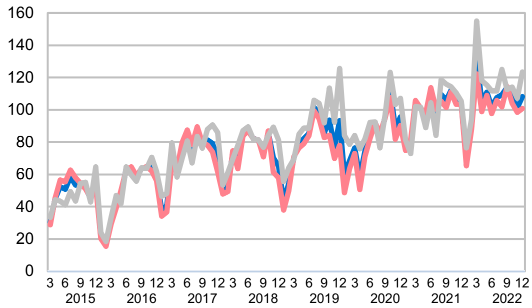
Chart III.4.2 **NPLs in housing construction**



Source: NBS.

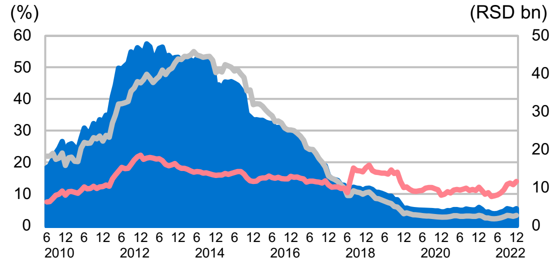
[152] https://www.rgz.gov.rs/content/Vesti/2023/03/Izvestaj%20o%20kretanjima%20na%20trzistu%20nepokretnosti%20za%202022.%20godinu.pdf
[153] https://www.rgz.gov.rs/usluge/procena-i-vo%C4%91enje-vrednosti-nepokretnosti/indeks-cena-nepokretnosti/metodologija-izrade-rgz-indeksa-cena-stanova
[154] https://www.rgz.gov.rs/usluge/procena-i-vo%C4%91enje-vrednosti-nepokretnosti/indeks-cena-nepokretnosti/rgz-indeks-cena-stanova
[155] The base period is Q1 2019, when the Index value was 100.

Chart III.4.3 **Indices for the number of issued construction permits for new buildings**
(index, 2021 = 100)



Source: SORS.

Chart III.4.4 **NPLs of the construction sector, companies**



Source: NBS.

The turnover of housing real estate was affected by both demand and supply side factors. The Bank Lending Survey[156] indicates a decline in demand for housing loans in H2 2022.

Banks estimate that a rise in the prices of housing real estate and interest rates lies behind the decline in household loan demand in 2022. On the supply side, standards for household loan approval were tightened in 2022 starting from H2, mostly on account of higher costs of sources of borrowing, lower banking sector competition, and uncertainty as to the overall economic situation, which reflected on reduced risk propensity.

According to the SORS[157], in 2022, the total value of executed construction works in constant prices in the territory of the Republic of Serbia decreased by 11.2% relative to 2021, and the value of works performed on buildings by 11.6%. Compared to 2021, in 2022 the total number of issued construction permits fell by 2.8% and the number of issued building permits by 5.4% while the number of issued permits for other construction increased by 10.0%. The decreasing trend of the number of issued construction permits may indicate a potential decline in the supply of real estate in the future.

Despite the said trends, the share of NPLs in total loans of the construction sector in 2022 remained the same as in 2021 (3.3%).

Real estate is widely used as loan collateral in the Serbian banking sector. For this reason, an adequate valuation of real estate is particularly important, as banks are directly exposed to the risk of price fluctuations in the real estate market. The Law on Real Estate Valuers (RS Official Gazette, Nos 108/2016 and 113/2017 – other law) was adopted in 2016, establishing the regulatory framework which improved legal security and enabled adequate valuation of real estate. This Law introduced licensed valuers as natural persons trained in real estate valuation with a relevant licence for the job. Further, in 2017, the Book of National Standards, Code of Ethics, and Rules of Professional Conduct for Licensed Valuers (RS Official Gazette, No 70/2017) was adopted, introducing standardised real estate valuation which enables adequate assessment of credit risk for receivables secured by mortgage. According to the information contained in the List of Licensed Valuers[158] on the Ministry of Finance website, at end-2022 there were 258 licensed valuers.

To provide conditions for higher quality real estate valuation, which diminishes the risk of new NPLs and develops the market of NPLs secured by mortgage, since 2015 the NBS has kept the database of valuations of mortgaged real estate and mortgage loans. This database is continuously updated to enable comprehensive collection, storage and distribution of data from the mortgaged real estate market and access to data by the NBS, banks and licensed valuers.

Amid the coronavirus pandemic, in June 2020 the NBS amended the Decision on Measures for Safeguarding and Strengthening Stability of the Financial System (RS

[156] https://nbs.rs/en/drugi-nivo-navigacije/publikacije-i-istrazivanja/anketa-kreditna-aktivnost/index.html

[157] https://publikacije.stat.gov.rs/G2023/PdfE/G20238001.pdf
[158] https://mfin.gov.rs/usluge/imenici

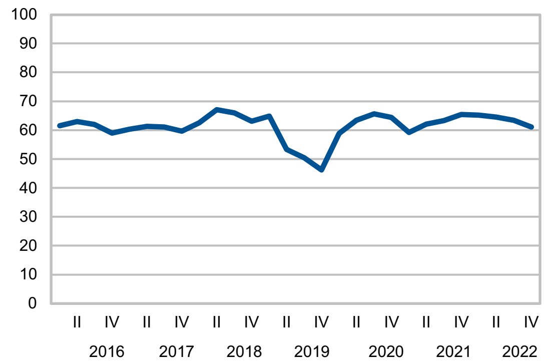
Official Gazette, Nos 34/2011, 114/2017 and 84/2020) to facilitate access to housing loans for citizens and to support the construction industry as one of the main drivers of the economy. The up-to-then 80% limit on LTV was eased to 90% if the loan is approved as a measure of government support to certain groups of natural persons and if the loan is approved to first-time home buyers.

The LTV[159] ratio, measured as the ratio of the value of mortgaged housing loans for which the flat was mortgaged and the estimated value of those flats in 2022, recorded a y-o-y fall. In Q4 2022, it measured 61.1% (65.4% in Q4 2021).[160] The average LTV is considerably below the prescribed level of 80%.[161]

In December 2022, the NBS extended the implementation of the Decision on Temporary Measures for Banks to Facilitate Access to Financing for Natural Persons (RS Official Gazette, Nos 108/ 2020, 119/2021 and 137/2022), which was adopted in August 2020. The said Decision allowed banks to approve housing loans in the event that the facility is not completely or largely finished. Housing loans under preferential treatment are granted for the purchase of fully built flats, but they may also be approved for the purchase of residential buildings under construction regardless of the degree of completion. The condition is that the building is project-financed by a bank and the Building Directorate of Serbia is the holder of the construction permit or the loan is a measure of government support to certain groups of natural persons. This also applies to residential buildings under construction which are at least 60% completed if they are project-financed by another bank or a project of a legal entity's investor. Also, to facilitate the repayment of housing loans for citizens, banks were enabled to offer facilities to debtors by extending payment terms for housing loans by five years at the longest. The original deadline for implementation of the said measures was 31 December 2021, but, in view of the duration of the multidimensional crisis and to facilitate further access to housing loans for citizens and support the construction industry, the NBS extended their application in December 2021 by 12 months, and then amending the Decision in December 2022, by additional 12 months, i.e. until 31 December 2023.

Chart III.4.5 **LTV ratio**

(value of housing loans for which flat was mortgaged in relation to estimated value of those flats, in %)



Source: NBS.

[159] Loan-to-value – LTV is the ratio of mortgage loan and real estate value used for securing the loan.

[160] Source: the NBS real estate database about the estimated values of real estate that are mortgaged and loans secured with a mortgage.

[161] If the loan is granted under government measures of support to certain groups of natural persons or if the loan is approved to first-time home buyers, the LTV is 90%.

Text box 5: Residential real estate valuation in 2022

Turnover in the Serbian real estate market increased in recent years (22% in 2022 relative to 2021, according to the data of the Republic Geodetic Authority),[162] consistent with movements in this market segment in other countries. Local real estate prices increased at the global pace, reflecting contributions from a range of factors – favourable labour market trends, low interest rates, search for alternative investments, increased remote work due to the pandemic etc. Contrary to a bulk of European countries, where real estate prices lost steam or even turned downward, Serbia has seen a rise in real estate prices in 2022 relative to 2021, judging by data from the Republic Geodetic Authority and the database on valuation of mortgaged real estate (hereinafter: real estate database).

Since the start of bank reporting (October 2015) until late 2022, data on 179,258 real estate properties with the appraised value of RSD 6,223.7 bn were entered in the database. Most of these data concern residential real estate[163] (74.4% of the total). In terms of the appraised real estate values, commercial real estate serving as mortgage was dominant (81.7% of the total appraised value of all types of real estate entered in the database). In accordance with data on the first valuation of residential real estate serving as mortgage for housing loans entered in the database, in 2022 the average appraised value per square metre for the Republic of Serbia equalled EUR 1,278.

Table O.5.1 **Appraised values of residential real estates in 2022**

	Average appraised value per m^2 in 2022 (EUR)*	Average appraised value per m^2 (EUR)	Change compared to the previous year (%)	Minimum appraised value per m^2 in 2022 (EUR)	Maximum appraised value per m^2 in 2022 (EUR)	Number of appraised pieces of real estate in 2022
Republic of Serbia	**1,278**	**1,077**	**18.7**	**80**	**6,453**	**9,715**
Belgrade region	**1,894**	**1,632**	**16.1**	**162**	**6,453**	**4,384**
Belgrade – Stari grad	2,788	2,453	**13.7**	1,548	4,403	192
Belgrade – Vračar	2,547	2,285	**11.5**	1,473	4,425	227
Belgrade – Savski venac	2,383	2,544	**-6.3**	1,104	6,453	146
Belgrade – Novi Beograd	2,236	1,871	**19.5**	1,000	4,072	885
Belgrade – Zvezdara	1,954	1,599	**22.2**	724	4,252	560
Belgrade – Voždovac	1,867	1,621	**15.2**	435	3,586	686
Belgrade – Zemun	1,777	1,560	**13.9**	404	2,983	364
Belgrade – Cukarica	1,642	1,397	**17.5**	280	3,137	346
Belgrade – Palilula	1,631	1,434	**13.7**	284	3,356	394
Belgrade – Rakovica	1,390	1,165	**19.3**	474	2,311	242
Belgrade – Surčin	1,130	744	**51.8**	378	1,850	70
Belgrade – Grocka	946	609	**55.4**	276	2,339	70
Belgrade – Sopot	890	841	**5.8**	231	1,732	19
Belgrade – Mladenovac	794	682	**16.4**	267	1,254	56
Belgrade – Obrenovac	762	651	**17.0**	212	1,509	54
Belgrade – Lazarevac	672	655	**2.6**	201	1,319	54
Belgrade – Barajevo	465	416	**11.8**	162	1,388	19
Vojvodina	**901**	**759**	**18.6**	**80**	**3,353**	**2,881**
Novi Sad	1,539	1,214	**26.8**	220	3,353	1,228
Other municipalities of the region	576	487	**18.4**	80	2,273	1,653
Southern and Eastern Serbia	**796**	**693**	**14.9**	**123**	**2,500**	**986**
Niš	1,101	932	**18.1**	227	2,500	439
Other municipalities of the region	592	554	**6.8**	123	1,897	547
Sumadija and Western Serbia	**784**	**688**	**13.9**	**96**	**2,971**	**1,464**
Kragujevac	890	776	**14.6**	267	2,971	295
Other municipalities of the region	759	670	**13.3**	96	2,897	1,169

* Preliminary estimate, during 2023 banks are expected to continue to submit appraisals from 2022.
** Data are based on first valuations of apartments and houses in the housing loan approval procedure.
Source: NBS.

[162] The number of purchase transactions in 2022 came at 140,561, up by only 1.8% from 2021. See: https://www.rgz.gov.rs/content/Vesti/2023/03/Izvestaj%20o%20kretanjima%20na%20trzistu%20nepokretnosti%20za%202022.%20godinu.pdf.

[163] In this Text box, residential real estate means apartments and houses appraised for the purpose of collateralisation of housing loans.

Table O.5.1 shows the average appraised value of residential real estate per square metre, and the maximum and minimum appraised value per square metre in the territory of the Republic of Serbia, by statistical region, town and municipality in the Belgrade region in 2022.

There is a significant dispersion of residential real estate values across regions in the Republic of Serbia. The average appraised value per square metre in the Belgrade region of EUR 1,894 is double the average appraised value per square metre in other regions (Vojvodina – EUR 901, Southern and Eastern Serbia – EUR 796 and Šumadija and Western Serbia – EUR 784). As the largest number of appraised residential real estate concerns the Belgrade region, it can be concluded that the average appraised value per square metre of residential real estate in the Republic of Serbia is largely determined by the movement in residential real estate valuations in the Belgrade region.

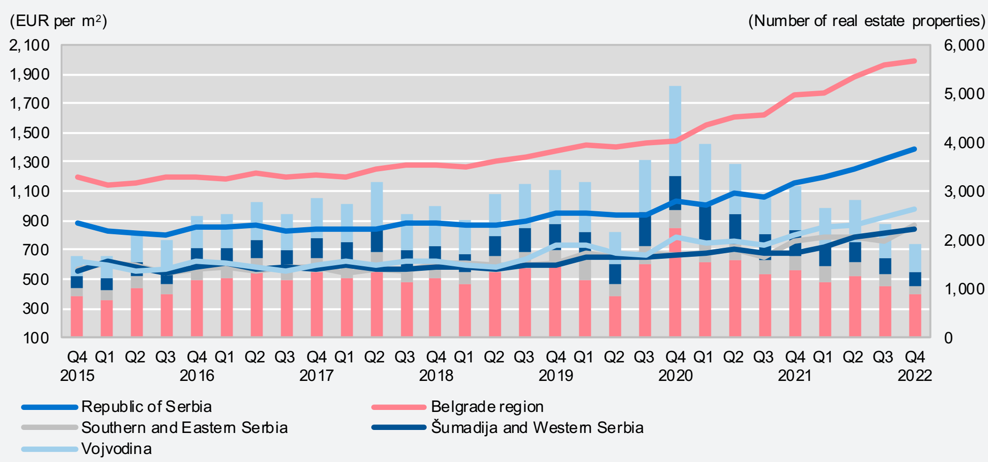
In the Belgrade region, there is a dispersion of the average appraised value per square metre of a residential real estate by municipality – relatively lower average valuations were made for suburban municipalities and municipalities in the periphery of the city, with the lowest value of EUR 465 in the municipality of Barajevo versus above EUR 2,200 in the Belgrade downtown (Stari grad – EUR 2,788, Vračar– EUR 2,547 and Savski venac – EUR 2,383) and in Novi Beograd (EUR 2,236). Such dispersion of average appraised values per square metre of residential real estate is not present only in the Belgrade region, but can be seen in other regional centres as well – in Novi Sad compared to other municipalities in Vojvodina (Novi Sad – EUR 1,539, other municipalities of the region – EUR 576), the region of Southern and Eastern Serbia (Niš – EUR 1,101, other municipalities of the region – EUR 592) and the region of Šumadija and Western Serbia (Kragujevac – EUR 890, other municipalities of the region – EUR 759).

The maximum individual residential real estate valuation per square metre was registered in the Savski venac municipality, and the lowest in Vojvodina.

Relative to the year before, the average appraised value per square metre increased in 2022 by 18.7% in the Republic of Serbia, 18.6% in Vojvodina, 16.1% in the Belgrade region, 14.9% in Southern and Eastern Serbia and 13.9% in Šumadija and Western Serbia. In 2022, a total of 9,715 valuations were recorded in Serbia, down by 3,860 compared to 2021.The lower number of valuations reflects a declining trend of loan-financed residential real estate purchases, except that the number of valuations recorded in 2022 is expected to be complemented by new valuations, since valuation is prepared more than one month prior to mortgage entry, which is why the data on the valuation are submitted later to the NBS.

The average appraised values per square metre of residential real estate from October 2015 until end-2022 were on an almost constant rise in both Serbia and the region (Chart O.5.1).

Chart O.5.1. **Appraised real estate and number of residential properties per region**



* Data are based on first valuations of apartments and houses in the housing loan approval procedure.
Source: NBS.

Based on data from the real estate database, the average appraised value of a residential real estate per square metre can be determined not only by region and municipality but also by the year of construction, type of real estate (house/apartment), apartment structure etc. The results are shown in Table O.5.2.

The average appraised value per square metre of a newly constructed residential real estate in 2022 (constructed in 2020, 2021 or 2022) equalled around EUR 1,665 in the Republic of Serbia (EUR 2,166 in the Belgrade region) and was higher than the average appraised value of older real estate, which stood at EUR 1,185 (EUR 1,825 in the Belgrade region).

Furthermore, average appraised values per square metre of apartments (EUR 1,588 in Serbia, EUR 1,990 in the Belgrade region) were significantly higher than those of houses (EUR 479 in Serbia, EUR 903 in the Belgrade region). This can be explained by the fact that the surface of houses is usually higher than the average surface of apartments, which is why the average price per square metre of this type of real estate is significantly lower.

In terms of apartment structure, the highest average appraised value per square metre in Serbia and in the Belgrade region was recorded for apartments with four and more rooms (EUR 1,809 and EUR 2,199, respectively) and for studio apartments (EUR 1,748 and EUR 2,081, respectively).

Table O.5.2 **Average appraised values of residential real estate in 2022**
(year of construction, type, structure)

	Average appraised value per m^2 (EUR)*	By year of construction		By type of real estate		By structure of apartment				
		New construction	Old construction	Apartment	House	1	1–1.5	2–2.5	3–3.5	4+
Republic of Serbia	**1,278**	**1,665**	**1,185**	**1,588**	**479**	**1,748**	**1,607**	**1,480**	**1,542**	**1,809**
Belgrade region	**1,894**	**2,166**	**1,825**	**1,990**	**903**	**2,081**	**1,916**	**1,888**	**1,964**	**2,199**
Belgrade – Stari grad	2,788	3,212	2,674	2,785	3,392	3,030	2,788	2,774	2,680	2,847
Belgrade – Vračar	2,547	2,700	2,521	2,548	2,500	3,287	2,649	2,526	2,303	2,615
Belgrade – Savski venac	2,383	2,374	2,390	2,785	1,205	2,576	2,504	2,679	2,700	2,902
Belgrade – Novi Beograd	2,236	2,789	2,128	2,237	1,000	2,405	2,274	2,180	2,211	2,312
Belgrade – Zvezdara	1,954	2,080	1,912	1,934	2,371	1,955	1,923	1,904	1,964	1,980
Belgrade – Voždovac	1,867	2,161	1,791	1,901	1,097	1,903	1,982	1,839	1,828	2,026
Belgrade – Zemun	1,777	2,087	1,700	1,798	945	1,912	1,728	1,754	1,855	1,863
Belgrade – Čukarica	1,642	2,012	1,609	1,731	732	1,744	1,764	1,683	1,712	1,812
Belgrade – Palilula	1,631	1,743	1,602	1,662	1,173	1,842	1,707	1,542	1,666	1,816
Belgrade – Rakovica	1,390	1,526	1,381	1,434	787	1,512	1,502	1,499	1,407	1,297
Belgrade – Surčin	1,130	1,449	832	1,476	753	1,464	1,515	1,463	1,273	1,170
Belgrade – Grocka	946	1,330	701	1,121	725	1,320	1,250	1,115	1,007	843
Belgrade – Sopot	890	1,153	583	913	884	-	-	1,169	867	-
Belgrade – Mladenovac	794	1,020	620	937	393	1,242	942	951	882	993
Belgrade – Obrenovac	762	1,185	687	1,042	380	-	1,076	1,132	1,014	850
Belgrade – Lazarevac	672	896	648	892	405	772	928	852	939	889
Belgrade – Barajevo	465	1,388	437	801	374	-	-	727	856	-
Vojvodina	**901**	**1,387**	**785**	**1,322**	**420**	**1,711**	**1,435**	**1,260**	**1,282**	**1,350**
Novi Sad	1,539	1,606	1,505	1,657	808	1,939	1,761	1,639	1,594	1,646
Other municipalities of the region	576	1,073	509	922	377	1,108	966	923	924	864
Region of Southern and Eastern Serbia	**796**	**1,085**	**737**	**975**	**384**	**1,182**	**1,080**	**981**	**944**	**881**
Niš	1,101	1,219	1,060	1,219	545	1,349	1,307	1,227	1,196	1,102
Other municipalities of the region	592	882	554	754	335	938	847	737	743	723
Region of Southern and Eastern Serbia	**784**	**1,191**	**686**	**983**	**426**	**1,395**	**1,190**	**922**	**930**	**861**
Kragujevac	890	1,052	796	1,002	495	1,177	1,038	994	992	998
Other municipalities of the region	759	1,268	667	978	417	1,401	1,229	900	907	826

* Preliminary estimate, during 2023 banks are expected to continue to submit appraisals from 2022.
** Data are based on first valuations of apartments and houses in the housing loan approval procedure.
Source: NBS.

In 2022, the majority of apartments – collaterals under housing loans were in buildings with four, five and three floors (1,580, 1,487 and 1,148, respectively), accounting for 50.2% of the total number of valued apartments (8,404) and indicating also that three-, four- and five-floor buildings make up the bulk of the building stock in Serbia. Also, the majority of these apartments are on the last (2,306) and penultimate floor (1,591), making up 46.4% of the total number of valued apartments. As for building floors, the majority of valuations were made for apartments on the first (1,488), second (1,404) and third floor (1,298), which together account for 49.9% of total valuations. The results are shown in Table O.5.3.

Table O.5.3 **Number of apartment valuations in 2022 by apartment floor and number of floors in the building**

(Building floor) / (Apartment floor)	Ground floor building	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	28	29	31	40	41	Total valuations by apartme-nt floor
Lower ground floor			2	3	6	1	1																										13
Ground floor	48	80	193	221	210	147	56	50	21	16	12	12	4	6	12	1		1	1			1			1								1093
Upper ground floor									1																								1
1		154	275	239	271	212	123	86	30	26	14	16	9	13	5	5	2	5	1	1					1								1488
2			321	290	274	197	98	68	47	41	15	12	7	12	6	7	1	2		2	2			1					1				1404
3				395	311	251	137	80	29	29	16	16	9	6	6	4	4		1	2	1			1									1298
4					508	273	127	99	24	27	15	9	4	5	7	2	3	1	2		1	1	1										1109
5						406	99	81	34	37	22	16	6	7	2	4	2		2		1	1			2		1						723
6							158	105	35	35	22	11	11	8	9	4	4	3	3	1	1	2											412
7								113	49	33	22	16	5	3	3	4	3	5	2	2	1	1	1										263
8									54	31	25	19	9	6	5	6	1	1	2	3	1	1		1	2			2				1	170
9										39	24	16	5	10	2	5	2	1	3	2								1					110
10											23	16	7	10	5	4	3	2	1	1	1		2	3									78
11												24	7	5		3	3	1	2		1	1											47
12													12	12	4	4	4	2			1	1											40
13														10	2	7	5	4	1		4	2								1			36
14															12	3	4	3	4	2		2			2						1		33
15																8	2	2	6	2	6			1				1					28
16																	5	5	2	1	4	2	1										20
17																		6	2	1	1			1									11
18																			4	2	4	1	1							1			13
19																				2	1	1											4
20																						1					1						2
21																										1							1
22																							2										2
23																								1				1					2
28																												1					1
29																															1		1
30																														1			1
Total valuations by number of building floors	48	234	791	1148	1580	1487	799	682	324	314	210	183	95	113	80	71	48	44	39	24	31	18	8	9	8	1	2	6	1	3	2	1	8404

Data are based on first apartment valuations in the housing loan approval procedure.

Source: NBS.

In terms of the number of rooms, the majority of valuations in 2022 were of two-room apartments (1,781 – average apartment size 53m2), two-and-a half room (1,369 – average apartment size 61 m2) and three-room (1,327 – average apartment size 71 m2), these three categories representing 53.3% of all apartment valuations. The average apartment size for all valuations is around 61m2, while the median stands at 58 m2, suggesting there is a larger number of smaller-size apartment mortgages.

The data from the real estate database are relevant as they help to determine the relationship between the disbursed loan and the value of mortgaged real estate, which is very important for monitoring the assumption of credit risk by banks and enables timely decision-making on adequate application of macroprudential tools to contain the risks. This confirms the justifiability and usefulness of the complementary analysis of the mentioned data for monitoring trends in the real estate market and assessment of risks that banks assume under mortgage loans.

Based on real estate purchases, the Republic Geodetic Authority keeps the Real Estate Price Register for the Republic of Serbia and as of November 2022 publishes the index of apartment prices. According to the data of the Republic Geodetic Authority, the average price of an older apartment in 2022 was EUR 1,325 per square metre, and of a newly constructed apartment EUR 1,688 per square metre, which is a y-o-y rise of 20% and 16%, respectively. The apartment price index was developed in line with the international methodological guidelines, based on the model for mass valuation of apartments which, apart from prices from purchase contracts, also takes into account various qualitative characteristics of real estate from the relevant sources. In order to neutralise the effects of changes in turnover structure and quality of apartments sold from one period to another and to shed light exclusively on market changes, in calculating the apartment price index the hedonic regression model was used, taking into account a greater number of characteristics of a real estate, such as: year of construction, type of heating, apartment size, number of rooms, floor, elevator, type of roof, fire-protection system, air-conditioning system, cadastre municipality, residential zone and geospatial data.[164]

The apartment price index of the Republic Geodetic Authority reflects relevant movements in the overall real estate market in the Republic of Serbia, given that apartments account for around 70% of the residential real estate market and apartment turnover around 55% of the total turnover in the real estate market in the past five years. The data underlying the index are comprehensive, as they capture all purchase transactions, regardless of the type of financing.

The apartment price index is published quarterly for the Republic of Serbia, for four regions, separately for new construction (first sale of the apartment) and old construction (apartment resale). It is expressed as a base index relative to Q1 2019, when its value equalled 100. The apartment price index for the Republic of Serbia in Q4 2022[165] stood at 148.79, up by 14.9% y-o-y. The movement in index value signals a continuous rise in apartment prices over the period observed, from Q1 2016 until Q4 2022, with a particularly pronounced growth during 2021 and 2022.

[164] For more detailed information, see: https://www.rgz.gov.rs/usluge/procena-i-vo%C4%91enje-vrednosti-nepokretnosti/indeks-cena-nepokretnosti/metodologija-izrade-rgz-indeksa-cena-stanova

[165] https://www.rgz.gov.rs/content/Datoteke/masovna%20procena/2023/RGZ%20indeks%20cena%20-%20prvi%20kvartal%202023.pdf

IV Financial stability

IV.1 Regulatory framework as support to financial stability

IV.1.1 Macroprudential policy

The global financial crisis of 2007–2008 revealed the high cost of financial instability for the financial system, public finances and the real economy. It also clearly showed that in order to achieve financial stability it is not enough to ensure just the stability of individual financial institutions, but also the stability of the financial system at large.

All of this accelerated the development of an entirely new area of public policy – macroprudential policy, which aims to limit the risks to which the financial system as a whole is exposed (the so-called systemic risks) in order to preserve financial system stability. The timely development of macroprudential policy measures and instruments in the wake of the global financial crisis helped the global financial system and the financial systems of individual countries to face potential future crises better prepared. Capital and liquidity requirements envisaged by the Basel III[166] regulatory standard make the financial system more resilient to the consequences of the crisis both in terms of liquidity and solvency. The implementation of macroprudential policy measures to contain the build-up of risks in the financial system has helped mitigate the risks caused by the multidimensional global crisis, which lasts for three years already and which broke out with the Covid-19 pandemic and continued with the intensification of geopolitical tensions and the Ukraine conflict. Still, it is precisely due to the application of the risk containment measures, which will be discussed below, that the financial sector was better prepared for these crises than was the case on the eve of the 2007–2008 global financial crisis.

In accordance with Article 14, paragraph 1, item 11 of the Law on the National Bank of Serbia (RS Official Gazette, Nos 72/2003, 55/2004, 85/2005, 44/2010, 76/2012, 106/2012, 14/2015, 40/2015 – CC Decision and 44/2018), the legal mandate of the NBS is to determine and implement, within its scope of competence, activities and measures aimed at preserving and strengthening financial system stability. This legal mandate enables the NBS to take measures to achieve one of its main objectives – maintaining and strengthening the stability of the financial system (Article 3, paragraph 2 of the Law on the National Bank of Serbia). To define the elements of macroprudential policy in more detail, in 2015 the NBS published the Macroprudential Framework[167] – a consultative document which sets out detailed macroprudential policy objectives, instruments and the decision-making process. After the Macroprudential Framework was published, the NBS adopted regulations[168] transposing into the domestic regulatory

[166] For more information about Basel III see the *Annual Financial Stability Report – 2011*, p. 69–71, (https://www.nbs.rs/export/sites/NBS_site/documents-eng/publikacije/fs/fsr_2011.pdf)

[167] https://nbs.rs/export/sites/NBS_site/documents-eng/finansijska-stabilnost/macroprudential_framework_201503.pdf

[168] This regulatory package includes NBS decisions published in the RS Official Gazette, No 103/16 of 22 December 2016, namely: the Decision on Capital Adequacy of Banks, Decision on Disclosure of Data and Information by Banks, Decision on Reporting on Capital Adequacy of Banks, Decision Amending the Decision on Reporting Requirements for Banks, Decision on Liquidity Risk Management by Banks and Decision Amending the Decision on Risk Management by Banks. These decisions transpose into domestic legislation the requirements prescribed by the relevant regulation and/or directive (Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012 (CRR), Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC (CRD IV)).

system the regulatory standard Basel III, which was one of the most important regulatory responses to the global financial crisis of 2007–2008. These regulations were adopted in December 2016 and their application began on 30 June 2017. An integral part of this regulatory package is the Decision on Capital Adequacy of Banks (RS Official Gazette, Nos 103/2016, 103/2018, 88/2019, 67/2020, 98/2020, 137/2020, 59/2021, 67/2022 and 137/2022). Among other things, this Decision regulates capital buffers, which represent additional CET 1 capital that banks are required to maintain above the regulatory minimum in order to contain systemic risks in the financial system. Capital buffers may be used to contain risks that are cyclical (capital conservation buffer and countercyclical capital buffer) or structural in nature (capital buffer for systemically important banks and systemic risk buffer) (Table IV.1.1). Capital buffers are among the most important capital-based macroprudential instruments. Also, the Decision on Liquidity Risk Management by Banks (RS Official Gazette, No 103/2016) introduced a new liquidity requirement – the liquidity coverage ratio. Compliance with this requirement enables banks to sustain a presumed liquidity shock over a 30-day period. The importance of adequate liquidity risk management in preventing a financial crisis was thus recognised.

The harmonisation of Serbia's supervisory and regulatory requirements with European requirements based on Basel III was also confirmed by the Commission Implementing Decision (EU) 2019/2166 on the harmonisation of regulatory and supervisory frameworks in late 2019. This Decision included Serbia in the list of countries whose supervisory and regulatory requirements for banks are considered equivalent for the purposes of the treatment of exposures in accordance with Regulation (EU) No 575/2013 on prudential requirements, which introduced Basel III standards in the EU. Based on a comprehensive analysis, it was assessed that the framework for bank operation created by the NBS was established in a manner which ensures the stability and integrity of the financial system, adequate protection of depositors and other financial services consumers, independence and effectiveness of bank supervision, and effective application of relevant international standards. The new Decision (EU) 2021/1753 of 24 October 2021 once again confirmed the previously established equivalence.

Table IV.1.1 **Capital buffers in Serbia**

Capital conservation buffer

Pursuant to the Decision on Capital Adequacy of Banks (RS Official Gazette, Nos 103/2016, 103/2018, 88/2019, 67/2020, 98/2020, 37/2020, 59/2021, 67/2022 and 137/2022), the capital conservation buffer is set at 2.5% of risk-weighted assets.

Countercyclical capital buffer

Pursuant to the Decision on the Countercyclical Buffer Rate for the Republic of Serbia (RS Official Gazette, No 58/2017), the CCyB rate is set at 0%.

In 2022, the CCyB rate was reviewed at a quarterly level and was kept at 0% given that, according to data for end-December 2022, the reference guide for the CCyB rate is 0%; the credit-to-GDP ratio is 86.0%; and the deviation of credit-to-GDP ratio from its long-term trend is 1.1 pp.

By keeping the CCyB rate at 0%, the NBS supports lending activity and thus mitigates the impact of global uncertainties on the financing conditions for corporates and households.

Capital buffer for systemically important banks

The Decision on Establishing a List of Systemically Important Banks in the Republic of Serbia and Capital Buffer Rates for Those Banks of 16 June 2022 establishes systemically important banks and the capital buffer rates that those banks are obligated to maintain as of 30 June 2022.

Bank	Rate
BANCA INTESA AD BEOGRAD	2%
OTP BANKA SRBIJA AD NOVI SAD	2%
RAIFFEISEN BANKA AD BEOGRAD	2%
NLB KOMERCIJALNA BANKA AD BEOGRAD	2%
AGROINDUSTRIJSKO KOMERCIJALNA BANKA AIK BANKA AD	2%
UNICREDIT BANK SRBIJA AD BEOGRAD	1%
BANKA POŠTANSKA ŠTEDIONICA AD BEOGRAD	1%
ERSTE BANK AD NOVI SAD	1%
EUROBANK DIREKTNA AD BEOGRAD	1%

Systemic risk buffer

Pursuant to the Decision on the Rate and Manner of Maintaining the Systemic Risk Buffer (RS Official Gazette, Nos 58/2017 and 3/2018), all banks whose share of foreign currency and foreign currency-indexed placements approved to corporates and households in the Republic in Serbia in total placements of that bank approved to corporates and households in the Republic of Serbia exceeds 10% must maintain the systemic risk buffer at the level of 3% of total foreign currency and foreign currency-indexed placements of a bank approved to corporates and households in the Republic of Serbia.

The systemic risk buffer was introduced to limit the risk of euroisation, one of the key structural non-cyclical systemic risks to the stability of the financial system of the Republic of Serbia. The obligation of maintaining the systemic risk buffer rate is reviewed at least once every two years.

By introducing Basel III capital buffers and liquidity requirements into banking legislation, systemic risks have been recognised as a special type of risks, calling for special, tailored measures. Macroprudential policy aims to contain these risks, while taking into account its interaction with microprudential and monetary[169] policies. The Covid-19 crisis, the energy crisis and the Ukraine conflict, which have played out in the last three years, have only emphasised further the need for coordination of the above public policies.

[169] For more information about the interaction of financial stability and monetary policy, see Text box 1: Role of financial stability in the ECB's new monetary policy strategy, *Annual Financial Stability Report – 2021*, p. 15–17.

IV.1.2 Regulatory measures to contain systemic risks

In addition to analysing and assessing systemic risks in the financial system, each year the *Annual Financial Stability Report* lists the measures that can be undertaken to contain systemic risks.

Non-performing loans

A high level of NPLs can pose both a systemic risk to the financial system from the macroprudential aspect and a risk for individual institutions (microprudential aspect). A rising share of NPLs in total loans is a typical manifestation of a financial crisis and does not reflect on the financial system alone, but also on the real economy, as it may negatively affect lending activity, thereby slowing or deferring economic growth. A high NPL ratio may also deepen the severity and extend the duration of a financial crisis. Namely, financial resources are in that case tied down until an NPL is liquidated, which may prolong economic stagnation that goes hand in hand with the financial crisis.

Due to a rise in NPLs in the aftermath of the global financial crisis, there was a need to adopt an NPL Resolution Strategy (hereinafter: Strategy)[170] and the action plans of the Serbian Government and the NBS, which produced outstanding results in containing this systemic risk and bringing down the level of NPLs. The share of gross NPLs in total loans in the domestic banking system measured 3.0% at end-2022 – one of the lowest levels on record. Such NPL level is 19.2 pp lower than in August 2015 when the Strategy was adopted and 0.6 pp lower than at end-2021. Such decline in NPLs, even amid a crisis environment and rising interest rates, reflects excellent results achieved in this area and confirms that the measures taken by the NBS and the Government were well-timed, preventing major negative consequences for the economy and households and, by extension, for the financial sector. Since the domestic banking system is adequately capitalised and highly liquid, and allowances for impairment account for as much as 58.1% of gross NPLs (December 2022), the direct negative effect of NPLs on lending activity is considerably limited, so we are primarily talking about an indirect effect. This effect may play out through the banks' risk aversion, present even in the most advanced markets. Risk aversion manifests itself in the tightening of credit standards and lending conditions, such as limitation of the loan amount and maturity and stricter collateral requirements. Risk aversion heightens particularly during a crisis, which is why Serbia, just like many other countries, undertook, as the guarantor, to settle bank receivables under corporate loans approved to finance liquidity and working capital in order to mitigate the economic and financial fallout from the Covid-19 pandemic, in line with the established guarantee scheme.[171]

As the implementation of the Strategy was successfully completed in 2018, further activities were taken to prevent new NPLs and ensure that the achieved results were sustained. To that end, in December 2018, the Government adopted the NPL Resolution Programme for the Period 2018–2020[172] (hereinafter: Programme) and the Action Plan for its implementation. The objective of this Programme and the implementing Action Plan was to remove, in cooperation with the NBS, the identified obstacles which prevent timely NPL resolution, as well as to pre-empt the accumulation of NPLs and negative effects on lending and, by extension, on potential economic growth.

Presented below are recommendations which, if implemented, could help keep the NPL share at a low level.

Drafting of plans by banks to reduce and/or maintain a low share of NPLs. The Decision Amending the Decision on Risk Management by Banks[173] from 2016 upgraded the process of bad asset management in banks. The process was further improved by the drafting of specific plans to reduce the share of NPLs. Below are some of the elements to be included in these plans:

– a quantifiable target share of NPLs in total loans of a given bank;

– the expected timeframe for achieving this objective, which may also be defined in stages;

– ways to downsize the share of NPLs (sale, write-off, forbearance or enforced collection of receivables);

– sources of financing the implementation of the plan: recapitalisation by shareholders, and/or by the parent

[170] RS Official Gazette, No 72/2015.

[171] See: Law on Establishing the Guarantee Scheme as a Measure to Support the Economy to Mitigate the Consequences of COVID-19 Pandemic Caused by SARS-CoV-2 Virus (RS Official Gazette, Nos 153/2020 and 40/2021).

[172] http://www.pravno-informacioni sistem.rs/SlGlasnikPortal/eli/rep/sgrs/vlada/drugiakt/2018/105/1/reg/ (Serbian only).

[173] RS Official Gazette, Nos 45/2011, 94/2011, 119/2012, 123/2012, 23/2013 – other decision, 43/2013, 92/2013, 33/2015, 61/2015, 61/2016, 103/2016, 119/2017, 76/2018, 57/2019, 88/2019, 27/2020, 67/2020 – other decision 89/2022.

bank in case of a foreign bank subsidiary; debt or capital financing by IFIs; sale of NPLs to private asset purchase and management companies, etc.

Promoting a framework for consensual financial restructuring. Consensual financial restructuring is a redefining of the debtor-creditor relationship between a company and/or entrepreneur in financial distress, as a debtor, and its creditors. The Law on Consensual Financial Restructuring (RS Official Gazette, No 89/2015) was adopted in 2015 in order to improve the procedure of consensual financial restructuring of companies. The Law created preconditions for speeding up and simplifying the current procedure and entrepreneurs were allowed to apply for the procedure.

However, in addition to regulatory improvements, active efforts need to be made to educate corporates and other stakeholders about consensual financial restructuring and to promote the procedure itself, including education about the possibility to resolve disputable relations through mediation. This is particularly significant in the current polycrisis environment, when it is important to make sure everything is done so that economic entities facing financial difficulties due to the crisis should continue operating. On its part, the NBS has always participated actively in different initiatives aimed at promoting and developing the consensual financial restructuring procedure.

Cross-border deleveraging of banks

Foreign-owned banks account for the bulk of the Serbian banking sector (83.6%).[174] Most of these banks are members of cross-border banking groups and, prior to the global financial crisis of 2007–2008, they were financed mainly by borrowing from their parent banks. When the crisis broke out, and parent banks became financially strained, the majority of emerging markets were exposed to deleveraging. In order to avoid financial instability caused by deleveraging in the host countries of international banking groups' subsidiaries, the year 2009 saw the launch of Vienna Initiative 1.0. Its aim was to maintain the agreed level of exposure of banking groups from Western European countries towards CESEE countries. However, as the crisis went on, Vienna Initiative 2.0 was launched in 2012 in order to coordinate the process of deleveraging of foreign banking groups. It became evident that the domestic financial system could not rely on external sources of funding only and that domestic sources needed to be strengthened as well. At end-2008, when the global financial crisis broke out, cross-border liabilities of the banking sector accounted for 19.7% of total liabilities, while in December 2022 they fell to 13.2%. This decrease was offset by the rise in the local deposit base. The loan-to-deposit ratio declined from 1.14 at end-2008 to 0.81 at end-2022. A loan-to-deposit ratio below 1 means that banks largely rely on domestic, stable sources of funding, such as deposits, signalling greater resilience of the banking system, which allows it to preserve its lending activity in crisis conditions regardless of trends in foreign markets. This also limits the effect of cross-border risk spillover, which is particularly pronounced during crises. Serbia faced the Covid-19 crisis in a better macroeconomic situation, reflected in improved economic and financial indicators. Owing to preserved macroeconomic and financial stability, and timely and comprehensive measures supporting corporate and household sectors, the spillover of external shocks triggered by the escalation of the Ukraine conflict and disruptions to global supply chains onto the domestic banking sector was prevented. However, cross-border exposure of the domestic banking sector should continue to be monitored.

Strengthening domestic dinar sources of funding. Reliance on domestic, primarily dinar sources of funding, limits the exposure to external risks, particularly in the conditions of global crises. Also, stable domestic sources of funding enable an adequate risk diversification. As our financial system is bank-centric, efforts should be made to develop alternative, long-term sources of funding. An example of these sources in the domestic market are VPFs, whose potential in Serbia remains insufficiently used.

Degree of dinarisation

A euroised financial system is exposed to the FX risk which may materialise in case of a sudden drop in the value of the domestic currency relative to major world currencies. Such a scenario would lead to an increase in FX liabilities expressed in the local currency and, as most borrowers receive their income in the local currency, their debt would go up. In this way, the FX risk can give rise to problems with borrowers' solvency and liquidity. Also, in a highly euroised economy, changes in the key policy rate cannot fully influence the cost of servicing FX-denominated debt, which diminishes the efficiency of monetary policy and limits the central bank's capacity to control this systemic risk.

[174] As at end-December 2022.

To increase the degree of dinarisation of the domestic financial system, the Government and the NBS signed the Memorandum on the Strategy of Dinarisation of the Serbian Financial System in 2012. Since, in the period after the conclusion of the Memorandum in 2012, macroeconomic stability was ensured and financial stability strengthened, it was agreed that preconditions were in place for upgrading the Strategy. To this end, in December 2018 the Government and the NBS signed a new Memorandum on the Strategy of Dinarisation.[175] This Memorandum took stock of the results of past measures and activities and defined additional measures and activities that would boost dinarisation further and mitigate the FX risk in the system. The Strategy of Dinarisation rests on three key pillars:

– the first pillar includes monetary and fiscal policy measures aimed at preserving macroeconomic stability and ensuring conditions for sustainable economic growth;

– the second pillar includes activities aimed at further development of the market of dinar securities and introducing new dinar products into the domestic financial market;

– the third pillar includes activities aimed at the development of FX risk hedging instruments.

The degree of dinarisation of the domestic financial system, measured by the share of dinar receivables in total receivables from corporates and households, amounted to 35.1% in late 2022, down by 3.2 pp from end-2021 (38.3%). Measured by the share of dinar deposits in total corporate and household deposits, it equalled 40.1%, which is a decrease of 0.2 pp relative to end-2021 (40.3%). The country's gross FX reserves reached a record high level in late December 2022 (EUR 19.4 bn). The coverage of goods and services imports by FX reserves, including other reserve adequacy metrics, significantly exceeded the standard level, diminishing the risk of euroisation and strengthening our country's resilience to external shocks.

As part of its Strategy of Dinarisation of the Serbian Financial System, in cooperation with the Government, the NBS promotes domestic currency savings, emphasising their importance and greater profitability compared to FX savings. Greater profitability of dinar savings was supported by a longer period of macroeconomic and financial stability, relatively higher interest rates on dinar than on euro savings, a more favourable tax treatment of domestic currency savings, as well as timely monetary, prudential and fiscal measures taken to alleviate the effects of the crisis. Though the global uncertainty fuelled by the tightening of geopolitical tensions and the outbreak of the Ukraine conflict dented dinar savings from end-February until mid-April 2022, since June 2022 dinar savings have been rising again. In late Q1 2023, they came close to the level recorded before the geopolitical tensions erupted, which confirms that depositors' confidence in the local currency and financial stability has been preserved.

The NBS is continuously taking different monetary, microprudential and macroprudential policy measures to advance dinarisation. In terms of macroprudential measures, already in 2011 the NBS adopted the Decision on Measures for Safeguarding and Strengthening Stability of the Financial System (RS Official Gazette, No 34/2011). This Decision prescribes measures for mitigating risks in the financial system arising from the high share of FX or dinar FX-indexed loans. The Decision defines the following three measures:

– 80% LTV (loan-to-value) limit for FX or FX-indexed housing loans was introduced. The Decision Amending the Decision on Measures for Safeguarding and Strengthening Stability of the Financial System (RS Official Gazette, No 114/2017) from December 2017 relaxed the LTV limit to 90% exceptionally if a loan is approved as a government-support measure for some groups of natural persons. The Decision Amending the Decision on Measures for Safeguarding and Strengthening Stability of the Financial System (RS Official Gazette, No 84/2020) from June 2020 relaxed this limit in a way which allows banks to approve a mortgage-backed housing loan to a natural person, if the loan amount does not exceed 90% of the value of such real estate, and the loan is approved to a first-time home buyer;

– banks are allowed to approve FX-indexed loans to natural persons, only if the currency of indexation is the euro;

– mandatory downpayment or deposit of 30% has been introduced for FX-indexed or FX loans to natural persons, but this requirement does not apply to housing loans or credit cards.

To further support financial system dinarisation, at its meeting of 12 December 2019, the NBS Executive Board adopted new measures for banks in order to change the currency structure of corporate lending to ensure a higher

[175] https://nbs.rs/export/sites/NBS_site/documents-eng/publikacije/dinarizacija/Memorandum_Dinarisation_Strategy_2018.pdf

share of dinar loans in total loans approved in the Republic of Serbia. These measures aim to create an environment conducive to more favourable financing of the corporate sector, particularly of SMEs – in dinars. The measures are defined in the decisions published in the RS Official Gazette, No 88/2019 of 13 December 2019:

1. Decision Amending the Decision on Capital Adequacy of Banks, and

2. Decision Amending the Decision on Risk Management by Banks.

The Decision Amending the Decision on Capital Adequacy of Banks aims to encourage banks to lend in dinars (without an FX-clause) and approve all other loans to micro enterprises and SMEs, entrepreneurs and farmers in dinars. Unlike the previous solution, which treated all bank loans to these entities in the same way, regardless of the currency, this measure provides for a more favourable regulatory treatment of all dinar loans, i.e. banks allocate less capital to cover risks in respect of dinar loans than in respect of FX and FX-indexed loans to these categories of borrowers. These incentives represent an additional measure to ensure better terms of lending to this important part of the corporate sector which drives the economic growth of each country.

The Decision also aims to encourage dinar lending by introducing measures to discourage the approval of new, non-purpose, non-investment, FX-indexed and FX loans to corporates, entrepreneurs and farmers. Maximum percentage shares of such loans were defined. If they are exceeded, the bank's capital would be correspondingly reduced. This measure involves a gradual approach and does not feature any form of prohibition of lending, as a bank may freely approve a non-purpose and non-investment FX or FX-indexed loan to any client, if it is able to maintain an appropriate capital level thereafter, i.e. if it has enough own funds to meet regulatory requirements at all times. To mitigate the fallout from the global multidimensional crisis on banks' operations, release further operational capacities of banks and create more room to provide liquidity for the banking sector, the NBS postponed the application of this measure several times.[176] In June 2022, by amending the Decision on Capital Adequacy of Banks (RS Official Gazette, No 67/2022), it postponed the application by additional 12 months, from 1 July 2023.

The NBS's comprehensive approach to limiting FX-indexed and FX lending has also resulted in an improved regulatory framework for risk management by banks in this segment of operation. The Decision Amending the Decision on Risk Management by Banks defines risk management requirements for banks concerning FX-indexed and FX loans. This has helped improve the regulatory framework in order to strengthen financial system resilience to the risks which may arise from a high share of FX-indexed and FX loans in bank balance sheets.

In addition, the Decision on the Rate and Manner of Maintaining the Systemic Risk Buffer (RS Official Gazette, Nos 58/2017 and 3/2018) introduced the systemic risk buffer to contain the systemic risk of euroisation. All banks in the Republic of Serbia with a degree of euroisation above 10% are required to maintain the systemic risk buffer at 3% of their FX and FX-indexed placements approved to corporates and households in the Republic of Serbia.[177]

Considering the introduction of different insured amounts and insurance premiums for FX and dinar deposits. The Law on Deposit Insurance (RS Official Gazette, Nos 14/2015, 51/2017 and 73/2019) envisages the same insured amounts for both FX and dinar deposits. As requests for insurance-based deposit payments are often filed during a systemic crisis, when the domestic currency can depreciate considerably, depositors with FX deposits are in a more favourable position than depositors with local currency deposits. Moreover, when it comes to determining the deposit insurance premium, the Law does not stipulate higher premiums for FX deposits, even though they entail a higher risk for the insurer. Namely, FX deposits entail a higher risk of occurrence of the insured event than dinar ones, as there is no FX risk involved in the investment of dinar funds.

In October 2019, the Law Amending the Law on Deposit Insurance (RS Official Gazette, No 73/2019) was adopted, introducing the possibility to calculate the insurance premium also on the basis of the level of risk in the operations of each individual bank. Despite this improvement, however, the Law does not explicitly prescribe the obligation to determine a higher premium for FX deposits. Going forward, it would therefore be desirable to differentiate between the premiums and sums

[176] Decision Amending the Decision on Capital Adequacy of Banks (RS Official Gazette, No 67/2020), Decision Amending the Decision on Capital Adequacy of Banks (RS Official Gazette, No 137/2020), Decision on Capital Adequacy of Banks (RS Official Gazette, No 59/2021).

[177] https://www.nbs.rs/export/sites/NBS_site/documents-eng/propisi/propisi-fs/systemic_risk_buffer.pdf

of insured deposits, depending on the deposit currency, and thus support the process of deposit dinarisation.

Regulatory measures to facilitate debt repayment and access to financing. During the Covid-19 pandemic, the NBS took proactive measures and numerous steps to support the domestic economy and households, preserve jobs and disposable income. Measures were prescribed to maintain the achieved level of stability and to reinforce the financial system further amid potential risks caused by the emergency situation at home and worldwide. This helped preserve the liquidity and stability of the financial sector, an adequate access to financing, and relatively favourable conditions of financing for the government, banks and the private sector. The NBS was among the first central banks to introduce a moratorium on the repayment of loan and financial lease obligations, while at the same time, by means of various measures, supporting and facilitating access to financing for citizens, notably in regard to solving the housing issue.

Like the rest of the world, since February 2022 Serbia has faced the consequences of heightened geopolitical tensions and the Ukraine conflict, which are slowing economic growth and fuelling inflationary pressures and uncertainty. Still, the effects on Serbia are weaker than in most European economies owing to preserved macroeconomic and financial stability during the Covid-19 pandemic, vigorous economic growth in the past period, economic structure, created fiscal room, and the timely and large-scale set of measures supporting businesses and households. In coordination with the Government, the NBS responded in a timely fashion, facilitating the operation of businesses amid disrupted global supply chains and thus alleviating the spillover effect of rising global primary commodity prices on the domestic market.

In June 2022, the NBS adopted the Decision on Temporary Measure Regarding the Calculation of Bank Capital,[178] which enabled banks to mitigate the negative effects of changes in securities prices on capital, triggered by disruptions in the international financial market. The temporary measure pertains to debt securities issued by the Republic of Serbia, autonomous province or local government unit, and measured at fair value through other comprehensive income in accordance with the IFRS 9. Pursuant to this Decision, a bank may exclude from the calculation of Common Equity Tier 1 capital 70% of unrealised gains/losses based on valuation of debt instruments. The measure lasted until 31 December 2022 and was extended, amid heightened global uncertainty, until 31 December 2023.

To durably protect the citizens' standard in terms of payment services needed for everyday life, in August 2022 the NBS adopted the Decision on the Payment Account with Basic Features.[179] The maximum amount of the monthly fee for the payment account with basic features is set at RSD 150, and the guaranteed services are defined. The Decision also regulates consumers' rights to the payment account with basic features and the types of services covered.

In August 2022 the NBS adopted the Decision Amending the Decision on Risk Management by Banks[180], laying down banks' obligation to regulate, by means of its relevant internal acts, the process of adoption and/or amendments to its acts governing the fees it charges for the provision of payment services. A bank must notify the NBS of the tariff change by no later than 45 days before the planned adoption of the change. The NBS will thus be timely informed about the planned changes to banks' tariffs, which will enable timely identification whether banks' operations are appropriate, and taking of relevant measures, if needed.

Aware of the strategic importance of agricultural production for citizens and businesses, in October 2022 the NBS adopted:

1. Decision on Temporary Measures for Banks Aimed at Adequate Management of Credit Risk in Agricultural Loans Portfolio in Conditions of Aggravated Agricultural Production[181] and

2. Decision on Temporary Measures for Lessors Aimed at Adequate Management of Credit Risk in the Portfolio of Leases of Agricultural Machinery and Equipment in Conditions of Aggravated Agricultural Production.[182]

Pursuant to these two Decisions, the debtors of banks and financial lessors in the field of agriculture can reschedule their obligations. They can choose a grace period of six to 12 months for the settlement of their obligations on account of the principal. The repayment period of the loan/lease agreement is extended so that the amount of the annuity (periodic obligation to be paid upon the expiry of the grace period) determined when the

[178] RS Official Gazette, Nos 72/2022 and 124/2022.
[179] RS Official Gazette, No 89/2022.
[180] RS Official Gazette, No 89/2022.
[181] RS Official Gazette, Nos 111/2022 and 5/2023.
[182] RS Official Gazette, Nos 111/2022 and 5/2023.

rescheduling was approved is not higher than the same amount in the period before the rescheduling. During the grace period, debtors pay the contracted interest only. The rescheduling is open for farmers entered in the Register of Agricultural Households within the meaning of the law governing agriculture and rural development, i.e. a natural person who is the holder of a commercial family agricultural household, an entrepreneur, a legal person (an agricultural cooperative with minimum five cooperative members entered into the Register as holders or members of five different agricultural households entered in the Register), other legal person classified as a micro or small legal person in accordance with the law governing accounting.

In December 2022, the NBS adopted the following regulations:[183]

1. Decision Amending the Decision on Capital Adequacy of Banks and

2. Decision Amending the Decision on Temporary Measures for Banks to Facilitate Access to Financing for Natural Persons.

Pursuant to the Decision Amending the Decision on Capital Adequacy of Banks, banks are able, without impacting their capital, to restructure receivables from financially distressed natural persons arising from consumer, cash or other loans over a period three years longer than the maturity envisaged by valid regulatory arrangements. Banks will be able to extend the deadline for the repayment of these types of loans to distressed borrowers so that the deadline for cash and consumer loans is shorter than nine years, and the deadline for consumer loans for the purchase of motor vehicles is shorter than 11 years. Within these deadlines, the deductible will be applied regardless of the degree of borrower's debt-to-income ratio at the moment of restructuring.

Under the Decision Amending the Decision on Temporary Measures for Banks to Facilitate Access to Financing for Natural Persons, the application of the measure aimed at easing the conditions of the repayment of housing loans for citizens was extended. Throughout the next year, banks will be able to offer facilities to borrowers, i.e. extend the deadline for the repayment of housing loans by five years at most, without affecting the regulatory treatment of receivables. Banks are thus further encouraged to extend the deadline for the repayment of housing loans by additional five years compared to the initially contracted maturity. In the current environment of rising EURIBOR, this can reduce pressure on the beneficiaries of variable-rate housing loans in the short run and prevent a build-up of non-performing housing loans. Apart from the option of extending the deadline for the repayment of housing loans, the temporary measures stipulated by the Decision on Temporary Measures for Banks to Facilitate Access to Financing for Natural Persons (RS Official Gazette, Nos 108/2020, 119/2021 and 137/2022) enable easier access to housing loans (a lower minimum degree of construction of a facility for the purchase financed by a housing loan is required) and facilitate the procedures for citizens' access to short-term dinar loans up to RSD 90,000. The amendments to the Decision extended the application of temporary measures by additional 12 months, until 31 December 2023. Support to facilitated access to financing for natural persons is thus extended into 2023.

Furthermore, under the same Decision, for the purposes of calculating the capital conservation buffer and the systemic risk buffer, within the meaning of the decision governing capital adequacy of banks, when calculating risk-weighted assets, a bank may exclude risk-weighted exposures arising from specific new housing loans approved to natural persons defined by that decision.

All decisions and measures were timely and have helped preserve adequate capitalisation and high liquidity of the banking sector, while at the same time facilitating the repayment of loans and access to financing sources for citizens and businesses. In this way, even amid heightened global uncertainty, the NBS has preserved and reinforced financial stability.

[183] RS Official Gazette, No 137/2022.

Text box 6: Macroprudential policy and the real estate market

The real estate market is extremely important in terms of macroeconomic and financial stability. The 2008 global financial crisis showed that movements in this market segment can have significant adverse effects such as creating the price bubble in this market and, by extension, impacting the real and financial sectors. The importance of real estate market trends for financial stability arises from the fact that a significant part of households' property pertains to residential real estate, and the financial sector plays an important role in financing real estate construction and purchase, the real estate being also one of the major means of securing loans.[184]

Over the last several years, special attention was paid to movements in the real estate market. The period of low interest rates and a shortage of investment opportunities, followed by rising employment and wages, led to accelerated growth in real estate prices across Europe. The growth was additionally impacted by the coronavirus pandemic, as increased opportunities for distance work significantly inflated demand for residential space. A majority of European countries recorded continued growth in real estate demand, accompanied by a rise in household borrowing. Estimating that risks related to the real estate market are on the rise in some European countries, and bearing in mind accelerated real estate price growth and the possible overpricing, as well as the level and dynamics of household borrowing, at end-2021 the European Systemic Risk Board (ESRB)[185] issued a warning to countries where weaknesses were detected in this market segment. In February 2022, the ESRB issued two recommendations regarding risk monitoring and implementation of certain macroprudential measures to countries that previously received warnings, and did not adequately eliminate the risks identified in the real estate market.[186]

However, in 2022 the global real estate market was under a strong impact of the Ukraine conflict, global slowdown, rising inflation and upward trending interest rates. At end-2022, a number of European countries recorded slower price growth in the real estate market or a downward trend, especially bearing in mind the number of transactions and the overall turnover. On the other hand, robust growth in the real estate market in Serbia continued in the past year, as confirmed by the number of executed transactions and the total value of sales.[187] Still, reliance on loans for financing real estate purchase was lower in 2022 than a year ago (11% of all real estate in Serbia was purchased through a loan, while in 2021 it was 13%), and the share of flats purchased on a loan stood at 26% (31% in 2021).

To mitigate the risks arising from the real estate market, a number of macroprudential instruments is available. In the wake of the global financial crisis, this set of tools was additionally fortified with established macroprudential policy frameworks and introduction of new instruments aimed at mitigating the risks to overall financial stability. Among other, macroprudential policy instruments aim to build resilience to these risks in households and banks and to prevent a large build-up of risks in the real estate market.

Macroprudential instruments that can impact the real estate market are divided into debtor- and capital-based instruments. Borrower-based instruments directly limit the amount of loans, usually relative to the value of the mortgaged real estate or relative to the debtor's monthly income (Table O.6.1). These instruments are applied in case of a major hike in the prices of real estate, housing loans and household borrowing. Though they do not directly impact banks' capacity to absorb losses, they do lower the probability of debtors' default and limit excessive growth in loans and borrowing, lower the exposure to risks of a fall in income or real estate prices, and of growth in interest rates. In contrast, capital-based instruments increase banks' capacity to absorb losses by augmenting capital reserves (Table O.6.1).[188] Capital-based instruments are regulated by EU regulations (CRR/CRD[189]), while borrower-based instruments are subject to national

---

[184] ECB (2019) Macroprudential analysis of residential real estate markets, https://www.ecb.europa.eu/pub/financial-stability/macroprudential-bulletin/html/ecb.mpbu201903_03~16f6101896.en.html#toc1

[185] European Systemic Risk Board

[186] https://www.esrb.europa.eu/news/pr/date/2022/html/esrb.pr220211~9393d5e991.en.html

[187] https://www.rgz.gov.rs/content/Vesti/2023/03/Izvestaj%20o%20kretanjima%20na%20trzistu%20nepokretnosti%20za%202022.%20godinu.pdf

[188] https://www.ecb.europa.eu/pub/financial-stability/macroprudential-bulletin/html/ecb.mpbu202210_1~53d521bde7.hr.html

[189] Regulation 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms

regulations and are not aligned at the EU level. Borrower-based macroprudential policy measures, just as the capital-based ones, can be efficient in limiting risk and supporting the preservation of financial stability, especially if their application is aligned. Also, the toolbox is constantly developing, and detailed analyses are continuously being done on proper calibration and degree of interaction with existing macroprudential instruments. Moreover, macroprudential instruments that were timely introduced can be relaxed or fully released in case of a crisis. This encourages lending activity and economic growth, thus contributing to the preservation of financial stability.

Table 0.6.1 **Macroprudential policy instruments for the residential real estate market**

Instrument category	Description	Examples of instrument application	Impact on:	Main goal
Borrower-based instruments	Borrower-based instruments impose restrictions on certain credit standards thus limiting the riskiness of new housing loans that can be approved to households	Limitations: – ratio of the loan and the value of mortgaged real estate (LTV); – limiting the loan-to-income ratio (LTI); – limiting the debt service-to-income ratio (DSTI); – loan maturity.	New household loans	Limiting the risk of new loans taken by households, thus increasing households' resilience to potential negative shocks
Capital-based instruments	Capital-based instruments increase bank capital needed for financing certain exposures thus boosting banks' capacity to absorb losses	Sectoral systemic risk buffer Countercyclical capital buffer (CCyB) Risk weights	Stock of outstanding bank loans	Boosting banks' resilience to identified risks by requiring a higher amount of bank capital used for financing exposure to outstanding bank loans

Source: ECB.

Implementation of macroprudential policy instruments greatly varies across European countries. Central and Eastern European countries are leading the way in implementation and intensity of different macroprudential policy instruments. The majority of European countries applies a combination of different borrower-based instruments, or applies a limitation on the Loan-to-Value (LTV) ratio coupled with the limitation on the Debt Service-to-Income (DSTI) ratio and limitation on maximum loan maturity.

In EU countries, the LTV limit for mortgage loans in the local currency is usually in the 80–90% range, with many countries applying a milder limit for first-time home buyers. During the coronavirus pandemic, most EU countries used LTV limits primarily as a structural measure, or a measure that ensures adequate loan collateral, which contributes to the preservation of financial system resilience. In this period, only a small number of countries loosened their LTV limits.[190] In recent years, a number of countries also began to apply capital-based instruments for risks emanating from the real estate market. Growth in real estate prices was one of the main reasons why countries announced the introduction of a countercyclical capital buffer, and some countries also introduced the obligation to maintain a sectoral systemic risk buffer for exposures to residential real estate, as well as higher risk weights for these exposures.[191]

The NBS is in charge of defining and implementing macroprudential policy, and it implements macroprudential policy activities and measures with the aim of preserving Serbia's financial system stability. The Decision on Measures for Safeguarding and Strengthening Stability of the Financial System,[192] adopted in 2011, introduced the LTV limit for FX and FX-indexed housing loans up to 80%, which was later mitigated to 90% for loans approved as part of support measures for certain categories of natural persons, and in case of first-time home buyers. The average LTV ratio, measured as a ratio of the value of mortgage housing loans secured through a mortgaged flat and the estimated value of these flats, is significantly lower than the prescribed limit and it measured 61.1% in Q4 2022.[193] The NBS used the DSTI limit as of

[190] https://www.esrb.europa.eu/national_policy/other/html/index.en.html
[191] https://www.esrb.europa.eu/national_policy/html/index.en.html
[192] RS Official Gazette, Nos 34/2011, 114/2017 and 84/2020.
[193] Source: Real estate database of the NBS on estimated values of mortgaged real estate and mortgage loans.

2004. It was introduced to limit the risks of excessive lending growth. During the implementation of this instrument, various limits and scopes were used, before the instrument was abolished at end-2012, when the credit cycle in Serbia was in the downward phase. Different limits were applied for dinar and FX loans, which indicates that the instrument was also used to limit the structural systemic risk of euroisation. The DSTI limit, defined as a ratio of total monthly credit obligations and regular monthly net income of a debtor, was reintroduced at end-2018, in the amount of 60%.[194] If the limit is exceeded, the bank must classify all exposures to the particular debtor in the least favourable category when calculating the capital adequacy or risk-weighted assets ratios.

Experiences of many European countries show that borrower-based macroprudential policy measures and instruments, supported by measures based on banks' capital, helped restrict the share of riskier mortgage loans in total mortgage loans. These experiences confirm that macroprudential policy instruments primarily aim to limit systemic risks and boost financial system resilience, and not to manage real estate prices. However, assessing the efficiency and adequacy of these instruments remains a challenge given that they need constant monitoring during implementation and potential adjustments to ensure efficient application of an adequate combination of instruments at any point, in line with the specific situation in the real estate market of each country.

[194] Decision Amending the Decision on Classification of Banks' Balance Sheet Assets and Off-balance Sheet Items (RS Official Gazette, No 103/2018).

IV.2 Financial soundness indicators

Several methodological approaches have been used to assess the stability of the financial system in Serbia, which enable comparison of financial stability indicators in the regional context and an overview of their dynamics during the observed period.

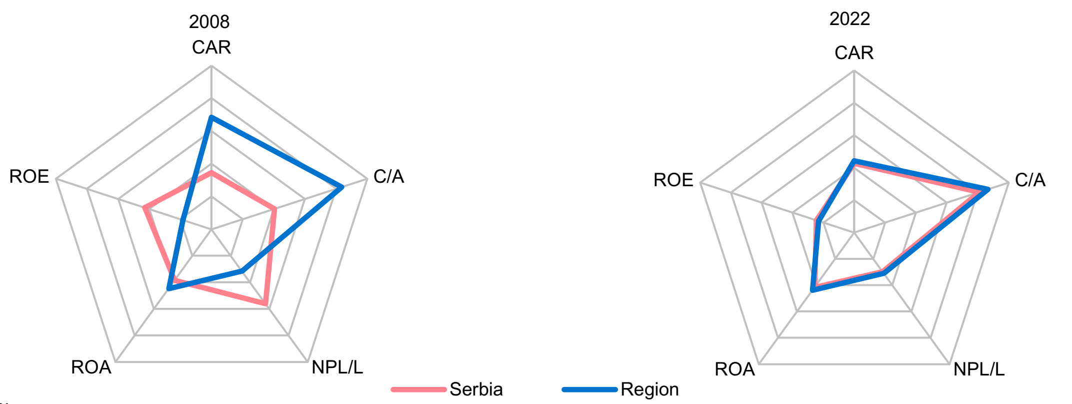
The comparison of financial system stability in the international context relies on selected financial soundness indicators. The stability network (Chart IV.2.1) shows five representative indicators for Serbia and the region at the end of 2008 and 2022: a) capital adequacy, b) Tier 1 capital relative to balance sheet assets, c) NPL ratio, d) return on assets, and e) return on equity.

Financial soundness indicators show that the capitalisation of the Serbian banking sector is above the regional average in terms of capital adequacy ratio, but also in terms of the Tier 1 capital to balance sheet assets ratio. The share of NPLs is lower than in the region, which testifies to the quality of bank assets. Owing to the significant NPL reduction in the last several years, the share of NPLs in total loans measured 3.0% at end-2022, this being its lowest level on record.[195] Profitability of the banking sector in Serbia and the region increased in 2022. The banking sector in Serbia posted positive results throughout 2022. ROA was above the region's average, while ROE, as in the previous year, remained below the regional average due to higher capitalisation of the banking sector in Serbia.[196] The banking sector can be assessed as stable owing to adequate asset quality, high capitalisation and profitability.

In addition to the above indicators, financial soundness is also measured by the Financial Stress Index (FSIX). FSIX is a composite index,[197] introduced to identify episodes of high financial stress, their culmination and duration, which is why it covers the relevant indicators of the Serbian financial market and economic activity trends. Positive values of the indicator suggest an above-average financial stress level, while negative values point to a below-average stress level.

FSIX recorded below-average values in 2022 as well. The analysis of individual components indicates that the low level of financial stress is mainly a reflection of the stable exchange rate and relatively low volatility

Chart IV.2.1 **Financial soundness of the Serbian banking sector compared to regional average**



Notes:

* The Chart shows standardised values of the most common financial soundness indicators: CAR – Capital Adequacy Ratio (regulatory capital to risk-weighted assets); C/A – Tier 1 Capital to Assets; NPL/L – gross NPLs to total gross loans; ROA – Return on Assets; ROE – Return on Equity.

** Greater distance from the network centre indicates greater risk.

*** The region refers to CEE countries: Bosnia and Herzegovina, Bulgaria, Romania, Hungary, North Macedonia, Poland, Turkey and Croatia. Region FSIs are non-weighted averages of the individual countries' FSIs.

Sources: NBS and IMF.

[195] NPL indicator has been monitored since Q3 2008, when it was introduced as an integral part of the regulatory reporting requirements for banks.

[196] For more information on the characteristics and trends in the Serbian banking sector, see Chapter II.1 Banking sector.

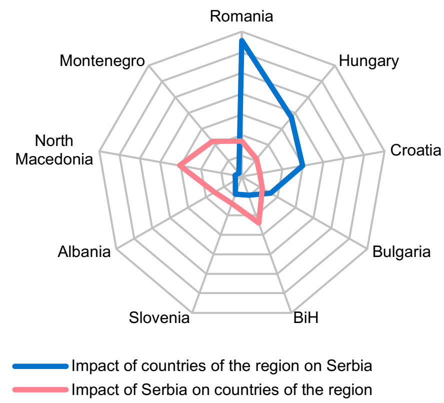
[197] For more information on indicator methodology, see the *Annual Financial Stability Report – 2012*.

of the stock exchange measured by the BELEX 15 index. FSIX was higher than a year earlier due to a higher level of EMBI for Serbia (EMBI for dollar-denominated debt).

The common lender channel indicator is applied to measure financial crisis contagion across countries reliant on the same source of funding. This channel of risk contagion is particularly pronounced in small and open economies, i.e. in financial sectors dominated by foreign banks or their subsidiaries. The indicator's value depends on the exposure of the lender's country to the private and public sectors of the borrower's country and the share of debt to the common lender in total indebtedness of the financial sector of the borrower's country. The obtained indicator[198] is proportionate to the probability of financial crisis contagion from one country of the region to Serbia, or probability of the crisis spilling over from Serbia to other countries in the region.

The analysis is based on consolidated BIS reports on cross-border exposures of global banking groups. These reports cover a large number of banks and countries and are therefore highly suitable for comparative analyses of cross-border exposures. We analysed the exposures of banks from eleven countries to Serbia and other CESEE countries.

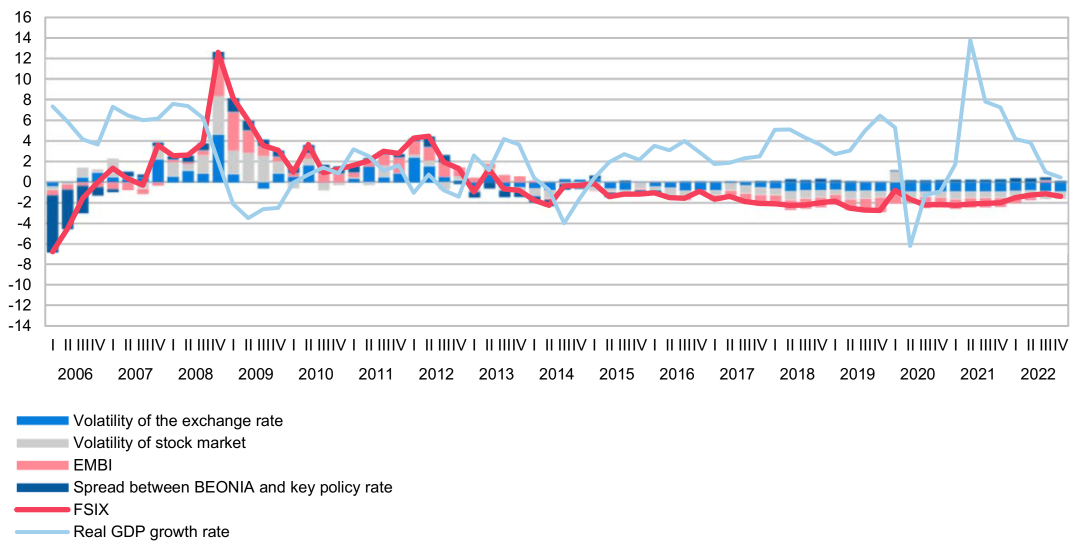
Chart IV.2.3 **Shock transmission via common lender channel***



Sources: BIS and NBS.
* Data as of Q3 2022.

Chart IV.2.2 **Financial Stress Index (FSIX) and GDP growth**

(standardised deviations and GDP growth rate in %)



Source: NBS.

[198] For more information on indicator methodology, see the *Annual Financial Stability Report – 2013*.

The results of the analysis are shown in the network in Chart IV.2.3, which indicates that in the event of a financial shock in any of the countries in the region, the greatest impact on Serbia, through the common lender channel, would be exerted by Romania, Hungary and Croatia, while Serbia would exert the greatest impact on North Macedonia, Bosnia and Herzegovina and Montenegro.

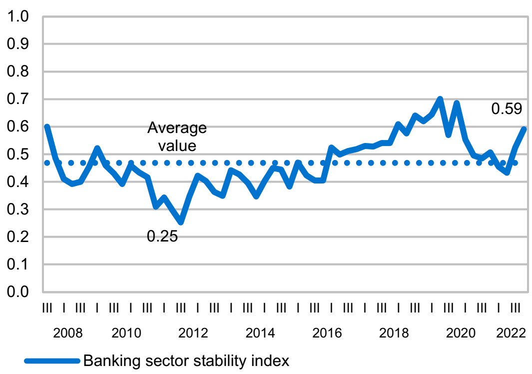
To capture potential risks to financial stability arising from the banking system, the banking sector stability index was created.[199] It is calculated based on indicators of solvency, credit risk, liquidity risk, profitability and exchange rate risk.

The banking sector stability index rose relative to the previous year and measured 0.59 at end-2022, indicating a high level of banking sector stability.[200] In terms of individual components, it was the high profitability and lower level of NPLs that contributed the most to banking sector stability in 2022. On the other hand, headwinds to banking sector stability in 2022 came mainly from the higher exchange rate risk indicator, which reflects the increase in banking sector's asset-liability currency mismatch relative to the previous year, and, to a smaller degree, from lower capital adequacy than a year ago. Liquidity risk component remained unchanged relative to 2021, and therefore did not impact the movements of the banking sector stability index.

To identify crisis periods and assess the level of systemic stress in the Serbian financial system, a methodology was developed in order to construct a composite indicator of systemic stress.[201] This indicator is based on the methodologies developed by the European Systemic Risk Board and the ECB to analyse the risks in various segments of the financial system and to assess the level of overall systemic stress. The indicator of systemic stress covers 25 indicators which reflect the magnitude of financial stress in six major segments of the Serbian financial system: the FX market, government securities market, money market, capital market, banking sector and the international environment.

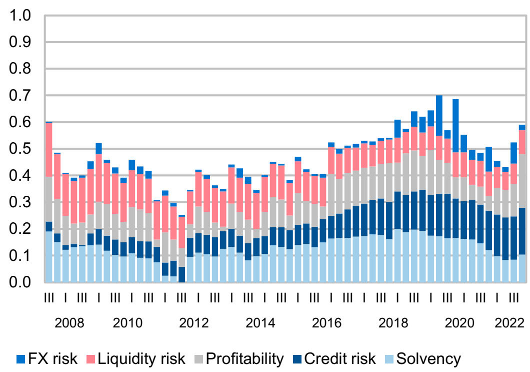
Systemic stress indicator suggests that 2022 overall was a period of low risk, with a low and stable systemic component. After relatively low levels, which were most pronounced in early 2022, systemic stress indicator was on a mild rise from May to October. In the period thereafter, it again recorded a slight decrease. The value of this indicator reflected mainly trends in the government securities market, trends and risks from the international environment, as well as developments in the home markets of banks operating in Serbia. Overall, the systemic stress indicator was at a low level and recorded a stable systemic component throughout 2022, indicating the resilience and preserved stability of the financial system at large, despite considerable uncertainties which marked the past year.

Chart IV.2.4 **Banking sector stability index**
(composite measure)



Source: NBS.

Chart IV.2.5 **Aggregate elements of banking sector stability index**



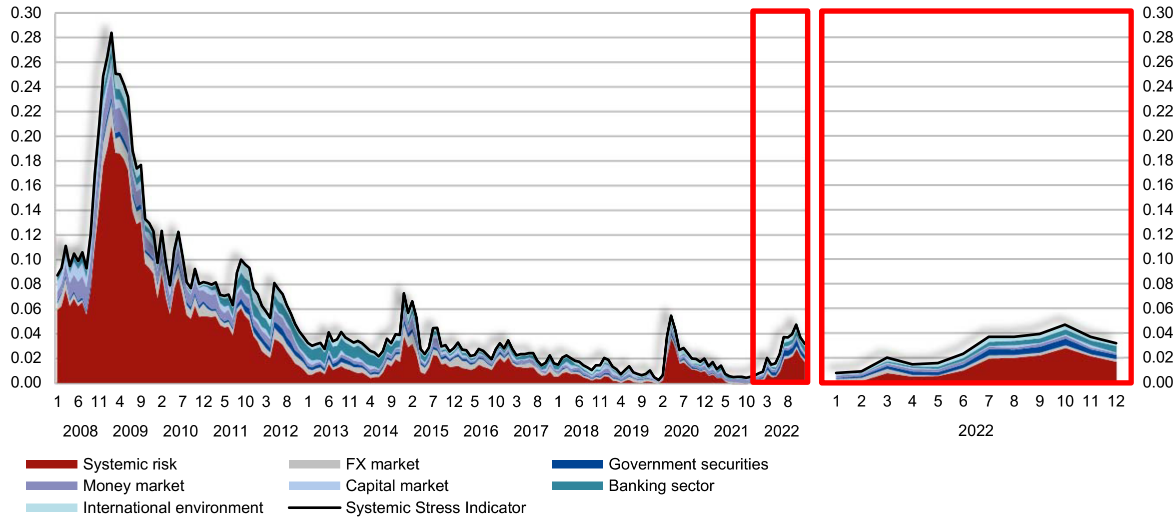
Source: NBS.

[199] For more information on indicator methodology, see the *Annual Financial Stability Report – 2014*.

[200] The values above 0.5 indicate higher stability level, while those below 0.5 indicate lower banking sector stability level.

[201] Kovačević Darko (2021) "Assessment of the Republic of Serbia's Systemic Risk and the Likelihood of a Systemic Crisis", Working Papers Bulletin, 73–119. National Bank of Serbia.

Chart IV.2.6 **Systemic Stress Indicator dynamics**



Source: NBS.

Text box 7: Banking sector concentration and financial stability

Banking sector consolidation leads to changes in the market impact of individual banks and in the concentration of the banking business. The findings of the analysis of the relationship between financial stability and banking sector concentration for a sample of 156 developed and developing countries, including Serbia, during the period 1980–2011 reveal that concentration has no direct effect on financial system stability.[202] A World Bank analysis[203] indicates that the relationship between banking sector concentration and financial stability is ambiguous. More concentrated banking systems may entail larger banks, enabling the economy of scale and higher profitability. This decreases the risk-taking incentives for banks, making the banking sector more resilient. A higher market impact of some banks, however, enables them to charge higher interest rates, encouraging borrowers to take greater risks and potentially making the banking sector less stable.[204]

According to the World Bank analysis, higher concentration at low concentration levels increases banking sector stability through the profitability channel. At higher levels of concentration, increasing concentration may affect banking sector stability negatively, due to higher cost of credit, market diversification and reduced ease of monitoring. For intermediate levels, concentration has no significant impact on financial stability as the competing mediators cancel each other out. Moreover, the findings suggest that an intermediate level of market concentration may be optimal for banking sector welfare.[205]

The most frequently used measure of concentration is the Herfindahl-Hirschman Index (HHI)[206], calculated by summing the squares of the market shares of each analysed category (such as balance sheet assets, loans or deposits) of individual banks in the total analysed category at banking sector level. An HHI value of under 1,000 indicates low concentration, values between 1,000 and 1,800 indicate an intermediate (moderate) concentration level, while an HHI value of over 1,800 indicates high market concentration. Low market concentration reflects high competition, where a larger number of banks have a similar market share, while high concentration suggests that a small number of banks have a high market share. Generally speaking, rising HHI indicates reduced competition and greater market impact of individual banks, while its decline points to the opposite. It approaches zero when a market is occupied by a large number of banks and reaches its maximum of 10,000 points when a market is controlled by a single bank.

Over the past six years, there has been significant consolidation in the Serbian banking sector, leading to changes in banks' market shares. There were 30 banks operating in the Republic of Serbia at end-2016 and their total balance sheet assets measured RSD 3,242 bn. Of this, 76.7% (22 banks) were mainly foreign-owned, 17.3% (six banks) were in the majority ownership of the Republic of Serbia, while 6.0% (two banks) were banks with mostly domestic, private capital. Five largest banks accounted for 54.7% of the balance sheet total at end-2016. At end-2022, the number of banks operating in the Republic of Serbia fell to 21 and their balance sheet total was worth RSD 5,455 bn, of which 83.6% referred to foreign banks, 7.8% to state-owned banks and 8.6% to private domestic banks. The share of the five largest banks in the balance sheet total equalled 59.3% at end-2022. In terms of balance sheet assets, banking sector concentration moved within the low value zone throughout the observed period, though there was a noticeable increase in index value within this zone as a result of banking sector consolidation. We come to the same conclusion if we look at the HHI for total deposits. In terms of total loans, HHI also increased within the low value zone in the observed period, until end-2022 when its value entered the moderate zone. Such movements in the concentration indicator reveal that

[202] Ben Ali, M., Intissar, T. & Zeitun, R. (2018). "Banking Concentration and Financial Stability. New Evidence from Developed and Developing Countries", Eastern Economic Journal 44, 117–134.

[203] https://documents1.worldbank.org/curated/en/953311539698216215/pdf/WPS8615.pdf

[204] https://ssl.nbp.pl/publikacje/materialy_i_studia/272_en.pdf

[205] https://documents1.worldbank.org/curated/en/953311539698216215/pdf/WPS8615.pdf

[206] The HHI index was developed independently by two economists, Albert Otto Hirschman in 1945 and Orris Clemens Herfindahl in 1950. It has achieved an unusual degree of visibility for a statistical index because of its use by the Department of Justice and the Federal Reserve in the analysis of the competitive effects of mergers and firms operating in the same product and geographic markets.
https://fraser.stlouisfed.org/files/docs/publications/FRB/pages/1990-1994/33101_1990-1994.pdf

Serbia's banking sector is not highly concentrated and that its consolidation would not significantly reduce competition. Also, banking sector consolidation helps preserve banking sector stability by enabling large banks to use the advantages of the economy of scale and record profitability growth, decreasing their risk-taking incentives.

Table O.7.1 **Overview of the number of banks and banking sector concentration index**

	Change in banking sector structure банкарског сектора	Change in number of banks relative to previous year	Number of banks at year end	Banking sector assets (HHI)	Total loans (HHI)	Household loans** (HHI)	Corporate loans* (HHI)	Total deposits (HHI)	Household deposits** (HHI)	Corporate deposits* (HHI)
2017	Bank of China Srbija began operating in January 2017 On 1 July 2017, Direktna banka a.d. Beograd acquired Findomestic banka a.d. Beograd. On 23 December 2017, AIK banka a.d. Beograd acquired Jubanka a.d. Beograd.	-1	29	813	788	772	823	827	981	885
2018	On 2 April 2018, the NBS revoked the operating licence of Jugobanka Jugbanka a.d. Kosovska Mitrovica. On 26 October 2018, Direktna banka acquired Piraeus banka.	-2	27	779	791	777	831	798	971	819
2019	On 25 April 2019, Vojvođanska banka merged with OTP banka (under the name Vojvođanska).	-1	26	800	802	799	831	840	971	866
2020	No change	0	26	786	777	802	827	809	961	829
2021	On 29 April 2021, OTP banka (from September 2019, Societe Generale Srbija continued to operate under a new name - OTP banka) merged with Vojvođanska banka (under the name OTP). On 30 June 2021, Banka Poštanska štedionica acquired MTS banka a.d. Beograd. On 10 December 2021, Direktna banka a.d. Kragujevac merged with Eurobank EFG into Eurobank - Direktna a.d. Beograd.	-3	23	867	916	997	952	873	1,021	916
2022	On 29 April 2022, NLB banka a.d. Beograd merged with Komercijalna banka a.d. Beograd, under the name NLB Komercijalna banka a.d. Beograd. On 1 December 2022, AIK banka a.d. Beograd acquired Naša AIK banka a.d. Beograd.	-2	21	936	1,003	1,077	1,018	950	1,069	956

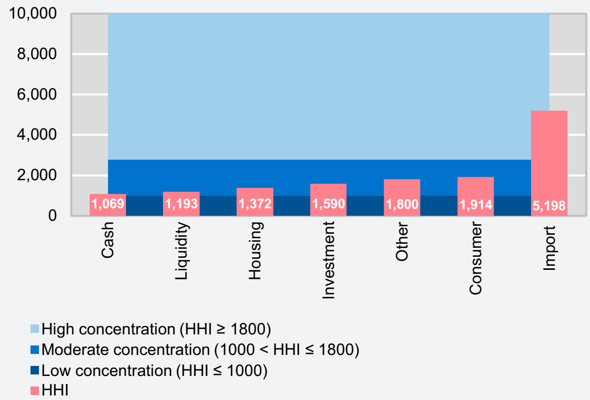
* The corporate sector includes the public non-financial sector, companies and non-financial sector in bankruptcy.
** The household sector includes domestic natural persons, foreign natural persons - residents, private households with employed individuals, registered agricultural producers, entrepreneurs and entrepreneurs in bankruptcy.

Loan concentration

The index of concentration of household and corporate loans also increased within the low value zone in the observed period, until 2022 when the concentration level became moderate.

The HHI for household loans measured 1,077 at end-2022. Household loans can be divided into seven categories: liquidity loans, consumer loans, investment loans, housing loans, cash loans, import loans and loans for other purposes. In December 2022, the HHI for cash loans, liquidity loans, housing and investment loans pointed to moderate interbank competition (Chart O.7.1). At end-2022, cash and housing loans together made up 84% of total household loans. From early 2017 until November 2021, the concentration of household cash loans was low, reflecting well-balanced loan distribution and high interbank competition. Since December 2021, HHI values for these loans were moderate, measuring 1,069 in December 2022. The HHI for housing loans indicated low concentration until November 2018. Thereafter, its value pointed to moderate concentration, measuring 1,372 at end-2022. A high HHI at end-2022 was recorded for import loans and consumer loans, which however made up less than 2% of household loans.

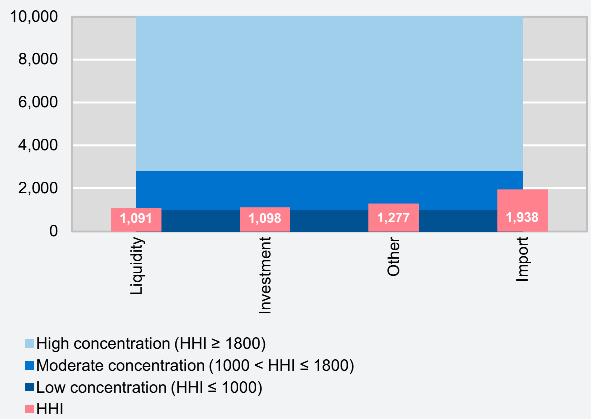
Chart O.7.1 **Herfindahl–Hirschman index – household sector, by loan purpose, December 2022**



Source: NBS.

The HHI for corporate loans measured 1,018 at end-2022. Corporate loans can be divided into five categories: liquidity, export, investment, import and other loans. Liquidity and investment loans made up around 88% of total corporate loans at end-December 2022. Of this, 47.3% referred to liquidity loans and 40.5% to investment loans. The HHI for liquidity and investment loans in December 2022 equalled 1,091 and 1,098, respectively, indicating moderate interbank competition. A high HHI (of 1,938) was recorded for loans approved for the import of goods and services. These loans, however, account for only 3.6% of total loans to the corporate sector and reflect the business model of individual banks. Within other loans approved to the corporate sector, concentration was moderate at end-2022 (HHI of 1,277) (Chart O.7.2). If we look at data on corporate lending by purpose from early 2017 until December 2022, it can be concluded that banking sector competitiveness did not change much in the observed period, except in the case of liquidity loans. Namely, since April 2021, moderate HHI values (of over 1,000) have pointed to moderate concentration of liquidity loans, whereas previously the concentration indicator for these loans was low. Increased bank concentration in the case of liquidity loans was recorded for some banks, due to higher lending under the guarantee schemes which were a part of the package of measures to support corporate lending during the pandemic.

Chart O.7.2 **Herfindahl–Hirschman index – corporate sector, loans by purpose, December 2022**



Source: NBS.

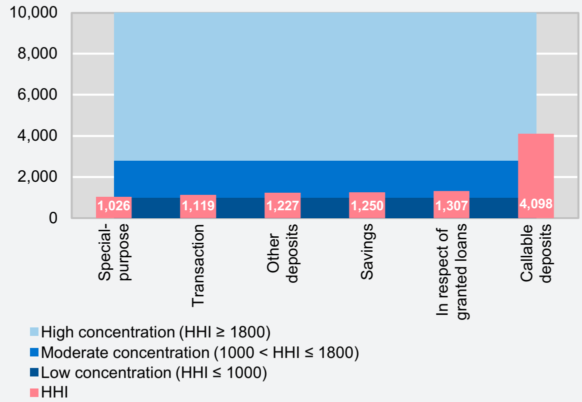
Deposit concentration

The HHI for household deposits measured 1,069 at end-2022. Household deposits can be classified into: special-purpose deposits, transaction deposits, savings deposits, deposits in respect of granted loans, callable and other deposits. From early 2017 until 2022, interbank competition did not change much for any of the deposit categories. In December 2022, the level of concentration was moderate for all categories except callable deposits (Chart O.7.3). Transaction deposits made up 57% of total deposits at end-2022 (HHI was 1,119). Savings deposits accounted for 22% of total deposits and were present in almost all banks (HHI of 1,026). The HHI was high only for callable deposits, which made up 1% of total deposits.

The HHI for corporate deposits was 956 at end-2022. End-2022 corporate deposits included transaction, other, special-purpose, callable deposits and deposits in respect of granted loans. The HHI was moderate for transaction and other deposits (94% of total corporate deposits). The concentration indicator was low for special-purpose deposits at end-2022, while callable deposits and deposits in respect of granted loans were in the high concentration zone. The HHI for callable deposits (which make up only 1% of total deposits) was constantly high between 2017 and 2022, measuring 5,535 at end-2022, while deposits in respect of granted loans moved to high concentration levels in late 2022 (Chart O.7.4).

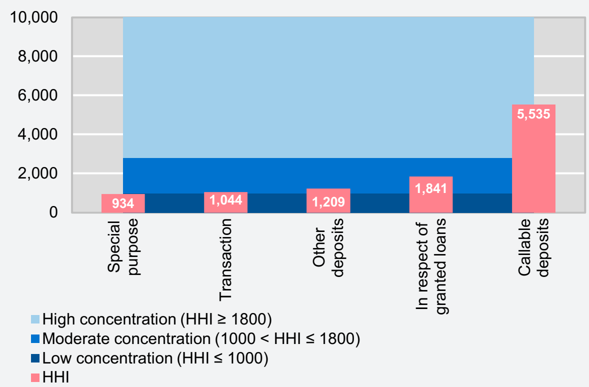
Baking sector concentration increased as a result of market consolidation in the previous period. The above analysis of the HHI of concentration shows that Serbia's banking market is not highly concentrated. The HHI values of the banking sector are at the lower bound of the moderate range. Based on analyses, this is the optimal level for doing business without negatively affecting financial stability. There is still satisfactory interbank competition in the case of the most dominant loan and deposit categories in the household and corporate sector. This has helped preserve relatively favourable financing conditions even amid major global uncertainty in recent years, ensuring appropriate diversification and contributing to banking sector stability.

Chart O.7.3 **Herfindahl–Hirschman index – household deposits, December 2022**



Source: NBS.

Chart O.7.4 **Herfindahl–Hirschman index – corporate deposits, December 2022**



Source: NBS.

List of charts, tables and diagrams

Charts

Tables

Diagrams

Charts in text boxes

Tables in text boxes

CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

336

ANNUAL Financial Stability Report / National Bank of Serbia. - 2010- . - Belgrade (Kralja Petra 12) : National Bank of Serbia, 2011- (Beograd : Zavod za izradu novčanica i kovanog novca). - 30 cm

Godišnje. - Je nastavak: Financial Stability Report = ISSN 1820-9106. - Ima izdanje na drugom jeziku: Годишњи извештај о стабилности финансијског система = ISSN 2217-6306
ISSN 2217-6942 = Annual Financial Stability Report
COBISS.SR-ID 186688012