ANNUAL FINANCIAL STABILITY REPORT

National Bank of Serbia

2021

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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-2021.

The *Financial Stability Report* was reviewed and adopted by the National Bank of Serbia's Executive Board in its meeting of 9 June 2022. 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

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 side
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 side
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.

Key risks	Mitigating measures
External risks:	
– uncertainty associated with the pace of global economic recovery from the coronavirus crisis and consequences of the Ukraine conflict; – availability of energy and primary commodities and the strength of inflationary pressures globally; – monetary policy tightening by leading central banks amid the build-up of inflationary pressures globally and rising interest rates; – uncertainty in the international financial market, increased investor risk aversion and dented capital flows to emerging markets; – sluggish recovery of international capital markets and aggravated corporate funding conditions amid increased bank risk aversion; – declining solvency of parent banks and strained access to sources of funding; – impact of climate change on interconnected economies and financial systems and the spillover of risks to the domestic financial system; – a higher number of cyber incidents and the related operational risks for financial institutions.	– supporting the corporate and household sectors by adopting economic policy measures to mitigate the effect of external risks; – continued favourable conditions of borrowing with international financial organisations; – adequate conduct of macroprudential policy, along with application of relevant instruments, in order to strengthen the achieved financial stability; – maintaining relative stability of the exchange rate; – cooperation with international financial institutions and supervisors of parent banking groups; – ensuring additional liquidity by central banks through swap and repo transactions; – maintaining banks' domestic deposit base and continued efforts to ensure the coverage of loans by domestic deposits; – analysis of the impact of climate change and defining pre-emptive and risk mitigation measures; – enhancing the resilience of information systems of all financial market participants.

Key risks	Mitigating measures
Internal risks:	
– build-up of inflationary pressures, surging energy prices and the impact on domestic inflation and inflation expectations of market agents;	– adoption of economic measures to cap the prices of energy and basic foodstuffs in order to alleviate inflationary pressures; – tightening of monetary conditions to prevent the second-round effects on goods and services prices through inflation expectations; – maintaining relative stability of the exchange rate;
– protracted uncertainty fuelled by mounting global geopolitical tensions, and further evolution of the pandemic and their effects on the domestic macroeconomic environment and the labour market;	– defining economic packages and other measures to support the corporate and household sectors; – measures easing the debtors' financial position and access to funding in case of need; – maintaining the provisional repo line with the ECB to ensure additional euro liquidity to the domestic financial system if needed; – adoption of macroprudential measures to reinforce financial stability;
– 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; – application of regulations and measures in the field of microprudential, macroprudential and monetary policies, to additionally encourage lending in the domestic currency; – further promotion of higher profitability of dinar compared to FX savings, dinar financial instruments and FX hedging instruments; – more issues of dinar government securities in the domestic securities market to further reduce the currency risk; – including dinar government securities in renowned international indices to facilitate access of foreign investors to the domestic government securities market; – integrating the domestic capital market in international clearing and settlement systems, thus positively impacting the liquidity and development of the local securities market; – differentiation of reserve requirement ratios on dinar and FX reserve bases;

Key risks	Mitigating measures
Internal risks:	
– a potential rise in new NPLs;	– prescribing measures and activities that financial institutions are obliged to apply in order to ensure adequate credit risk management; – stepped-up monitoring of bank asset quality, particularly in the sectors most severely hit by the pandemic and those experiencing a rise in NPLs;
– an upturn in real estate prices against the backdrop of rising global real estate prices;	– monitoring and analysing real estate prices, along with upgraded collection and distribution of data from the mortgage market; – monitoring the credit risk in the banking sector through adequate valuation of real estate as collateral; – introduction of adequate micro- and macroprudential instruments which target borrowers in order to increase resilience to borrower risks and limit indebtedness;
– impact of climate change on the economy and, by extension, on the financial sector through materialisation of physical and transition risks.	– development of a climate change analysis framework in the context of impact on the financial sector, based on recommendations of relevant international bodies; – defining measures and instruments to mitigate the consequences of climate risks for the financial system.

Contents

Overview

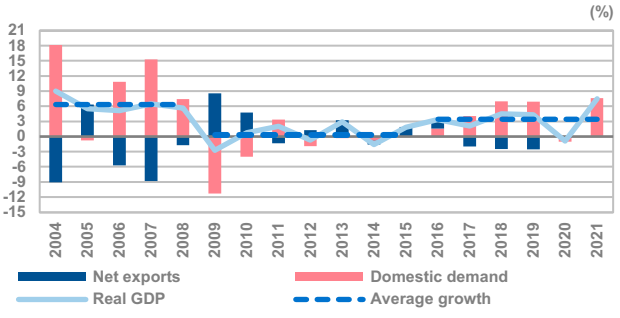
The year 2021 was marked by persistent uncertainty over new coronavirus strains, but also by the initiated mass vaccination and a rise in global demand. As the supply could not adjust in the short run, a demand-supply gap opened, pushing up the prices of primary commodities and energy and disrupting global supply chains. In such an environment, after a longer period inflation soared globally.

Despite elevated cost-push pressures and the worsening of the epidemiological situation in some countries, global growth came at 6.1% in 2021. Amid continued uncertainty associated with the Ukraine conflict, the IMF expects lower global growth rates in 2022 (3.6%), as well as in 2023. Slower growth compared to 2021 is expected in Europe. The GDP growth rate projected for the euro area is 2.8%.

In contrast to a 3.1% downturn in 2020, the global economy grew 6.1% in 2021. The growth is expected at 3.6% both in 2022 and 2023. Europe is likely to witness slower growth in 2022 compared to 2021. The GDP growth rate for the euro area is forecast at 2.8%, while emerging and developing European economies are expected to contract by 2.9%, mainly due to the projected significant decline in activity in Ukraine and Russia. In 2021, the ECB kept its key interest rates unchanged – the main refinancing rate at 0%, the rate on the marginal lending facility at 0.25%, and the rate on the deposit facility at -0.50%. In H1, the ECB did not change the scope of its Pandemic Emergency Purchase Programme (PEPP) and the Asset Purchase Programme (APP), which is scheduled to end in Q3 2022. The ECB has still not announced when it plans to embark on monetary policy tightening, but has stated that monetary policy decisions in 2022 will depend on developments going forward. In 2021, the Fed kept its target range for the fed funds rate at 0–0.25%. In the first three quarters, it maintained the dynamics of QE asset purchases, while in Q4 it decided to gradually reduce the scope. Amid stepped-up inflationary pressures and the tightening of labour market conditions, in March 2022, the Fed began and in May continued to raise its key interest rates.

The coronavirus pandemic and the global recession had a weaker impact on Serbia than on most other European countries. In 2021, Serbia's GDP grew 7.4%, this being one of the best results in Europe. In 2021, headline inflation averaged 4.0% and core inflation 2.3%.

Real GDP growth – demand contributions



Sources: NBS and SORS.

Serbia recorded one of the best results in Europe in terms of the GDP growth rate, which came at 7.4% in 2021, owing mainly to the expansion in the sectors of services, construction, manufacturing and mining. A negative contribution to growth came only from agricultural production, which fell by 5.4% in 2021, due to the drought. During the two pandemic years, cumulative GDP growth was 6.4%. The pandemic and the global recession had a weaker impact on Serbia than on most other European countries. This is owed primarily to the achieved macroeconomic, financial and fiscal stability, a timely and large-scale support package for corporate and household sectors, a preserved labour market, sufficient fiscal space for manoeuvre and the current structure of the economy. In the middle of last year, y-o-y inflation began to rise, trending above the upper bound of the target tolerance band as of September. Inflation's upturn in 2021

is attributable to supply-side factors, mainly from the international environment, such as hikes in primary commodity prices, the European energy crisis and disruptions to global supply chains. Moreover, more than three quarters of inflation were down to rising food and energy prices, with core inflation remaining within the target band. Given such an interplay of inflation factors, there was no need for a more aggressive monetary policy response in 2021. The NBS key policy rate was kept on hold at 1% in 2021, as were the deposit facility (0.10%) and credit facility (1.90%) rates.

In 2021, relative stability of the dinar exchange rate against the euro was preserved owing to adequate NBS interventions in the interbank FX market, despite the continued global uncertainty and inflationary pressures from the international environment. Significant results were also achieved with the issuance and promotion of government securities in the domestic and international markets.

Since October 2021 the NBS has been gradually raising the weighted average repo rate at repo securities sale auctions, while at the same time discontinuing the repo dinar securities purchase auctions through which it was supplying banks with dinar liquidity on favourable terms. Thus, the NBS used the flexibility of the current monetary policy framework, which allows that monetary conditions be changed without altering the main interest rates. In 2021, Moody's upgraded Serbia's credit rating, Fitch affirmed it, while Standard & Poor's revised the investment rating outlook from stable to positive, confirming macroeconomic stability, a favourable growth outlook, and the adequacy of economic policy before and during the crisis. In June 2021, J.P. Morgan included Serbia's dinar bonds in its renowned bond indices. In October, Clearstream, as the international central securities depository of Deutsche Börse Group, included the Serbian capital market into its global network. In mid-September, for the first time in history, Serbia issued the green eurobond worth EUR 1 bn, thus becoming one of the few European countries and the first non-EU European country issuing the green instrument. In addition, by adopting the Law on Digital Assets and the new Law on the Capital Market, Serbia improved its regulatory framework, which lays ground for further development of the capital market.

Owing to vibrant economic growth, the public debt share in GDP declined in 2021 despite the prolonged pandemic and a comprehensive package of measures adopted to mitigate negative effects of the pandemic. The share of central government public debt in GDP declined from 57.0% in late 2020 to 56.5% in late 2021, while the share of external debt in GDP went up to 68.5%. The 2021 fiscal deficit amounted to 4.1% of GDP, much below the last year's figure.

As the coronavirus pandemic continued into 2021, it was necessary to adopt a new package of economic measures supporting corporates and households. In 2021, the general government fiscal deficit came at RSD 259.4 bn, or 4.1% of GDP, which is significantly less than last year, when it stood at 8.0% of GDP. The central government debt share in GDP was 56.5% at end-2021, down by 0.5 pp from end-2020. External debt reached EUR 36.5 bn or 68.5% of GDP at end-2021. In February 2021, Serbia issued in the international financial market the 12-year euro-denominated eurobond worth EUR 1.0 bn. In mid-September, it issued for the first time the green eurobond worth EUR 1.0 bn, and a 15-year conventional euro-denominated eurobond worth EUR 750 mn, which is a eurobond of longest maturity ever issued by the country.

In 2021, the current account deficit measured EUR 2.3 bn, or 4.4% of GDP. For the seventh year in a row, it was fully covered by FDI – the coverage of 154.7% at end-2021 was the highest on record, underpinning the sustainability of the country's external position. Capital investment hit a record high level of 7.4% of GDP, contributing to the long-term sustainability of economic growth.

NBS FX reserves rose by EUR 3.0 bn in the course of 2021 to EUR 16.5 bn in gross and EUR 13.7 bn in net terms at year-end, thus 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-2021 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 touched their record high, end-of-year. In late December 2021, they equalled EUR 16.5 bn, up by EUR 3.0 bn y-o-y, while net FX reserves stood at EUR 13.7 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, domestic corporate loans picked up by 9.9% in 2021. The share of dinar in total corporate receivables rose by 3.0 pp to 24.0% compared to a year before. The strongest impetus came from the sectors of transport and warehousing, accommodation and food, information and communications, mining, manufacturing and water management. In terms of maturity, long-term receivables, with an 80.6% share, prevailed, indicating a low refinancing risk. The share of NPLs in total corporate loans fell by 0.2 pp y-o-y, to 2.9% in December 2021. As the pandemic continued into 2021, there was a need for a new package of economic measures supporting the corporate sector. The new set of measures implied direct assistance to entrepreneurs, micro-, small- medium-sized and large enterprises, support to the hospitality sector, hotels, travel agencies, passenger and road transport, and one-off monetary assistance to citizens, including the extension of the scope and lengthening the deadline for the first guarantee scheme and adoption of the second one, with the aim of maintaining private sector liquidity.

Corporate lending continued up in 2021 despite the pandemic, aided by an additional package of measures and favourable conditions of financing both in the domestic and international money markets. An increase in working capital and investment loans suggests that lending activity supported production and investment. The share of NPLs in total corporate loans declined further.

Labour market performance improved in 2021. The unemployment rate subsided in the final quarter of 2021 relative to Q4 2020 and remained single digit. Dinar savings of households (residents) continued up, reaching RSD 103.7 bn at year end. As shown by the analysis of the profitability of savings, in the past nine years it has been more profitable to save in dinars than in euros, in both the short and the long term. At end-2021, total household receivables were 10.6% higher in nominal terms than in 2020. Some measures taken by the NBS to facilitate households' repayment of existing obligations and access to new sources of funding were extended into 2021 as well. The share of NPLs in total gross household loans edged up slightly, to 4.1% in December 2021.

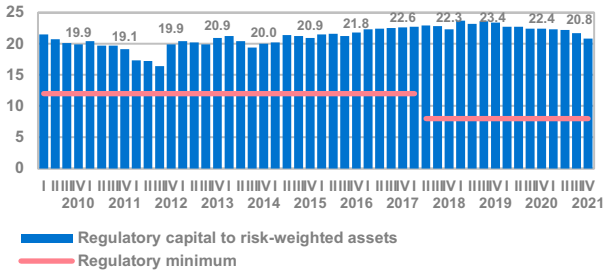
Key labour market indicators were favourable in 2021. The real disposable income and domestic demand continued to rally in 2021, supported by additional packages of RS government measures. Being more profitable than FX savings, dinar savings increased further to RSD 103.7 bn at year end, up by RSD 11.2 bn from end-2020.

Both prices and trade in the real estate market increased in 2021 amid elevated demand, favourable terms of lending and sound labour market developments. Though the negative impact of the pandemic was extended, the value of construction works in the territory of the Republic of Serbia in constant prices went up by 15.1% in 2021 from a year earlier. According to data of the Republic Geodetic Authority, 2021 saw a record number of total sales/purchases, and a record-high amount of money in the real estate market. Of this, 15% of all traded real estate properties and 34% of all traded flats were financed from loans.

Demand for housing loans continued up in 2021, according to the results of the bank lending survey. Banks assessed that demand growth was significantly supported by households' need to buy real estate. On the supply side, household lending standards were eased during most of 2021, mostly on account of banking sector competition, positive outlook in the real estate market, labour market recovery and greater risk propensity. Purchases of 15% of all traded real estate properties or 34% of traded flats in Serbia were financed from loans. Another indicator of construction sector growth in 2021 is the continued increase in loans approved to corporates in this sector and the fact that registered employment in construction reached its highest level since 2012.

Serbia's banking sector, accounting for around 91% of financial sector assets, was stable in 2021, thanks to adequate capitalisation, high liquidity and profitability.

Banking sector capital adequacy
(%)

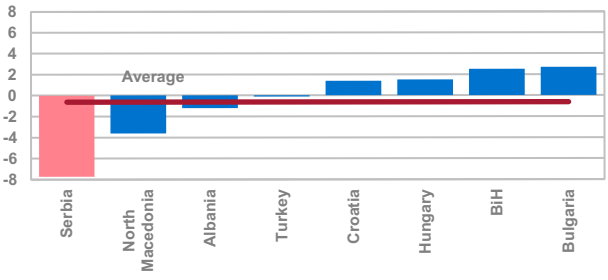


Source: NBS.

With a capital adequacy ratio of 20.8% at end-2021, Serbia's banking sector capitalisation was above the regional average. The average monthly liquidity ratio of the banking sector was 2.1, well above the prescribed minimum (1.0). The banking sector posted a positive financial result in 2021: ROA equalled 1.2% and ROE – 7.8%. Even in the conditions of the coronavirus pandemic, the share of NPLs in total banking sector loans continued its downward trend, measuring 3.6% at end-2021. The fact that the share of NPLs is below its pre-pandemic level indicates that the NBS's measures were timely and effective in preventing a greater negative effect on corporates and households and, by extension, on financial stability. The decline in the share of NPLs in total loans was also facilitated by higher lending to the non-monetary sector which, excluding the exchange rate effect, measured 9.9%. Domestic lending activity growth was supported by both demand and supply-side factors. The results of the bank lending survey suggest that banks eased their corporate and household credit standards, especially for dinar loans. 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 2021, 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.

The long-term trend of decline in the share of NPLs continued in 2021, even in the conditions of the COVID-19 pandemic, as a result of systemic NPL resolution. Domestic deposits were banks' dominant source of funding.

Change in gross NPL ratios, countries of the region
(2021 relative to 2008, pp)



Sources: NBS and IMF – GFSR.

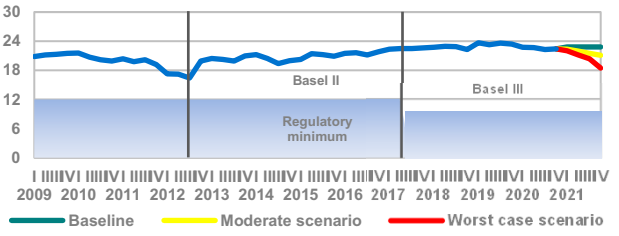
In 2021, Serbia's banking sector remained resilient, capitalised and highly liquid. The banking sector CAR meets all of the prescribed capital adequacy regulatory minimums and all of the requirements for the coverage of capital buffers. According to the results of macroprudential solvency stress-testing, the banking sector CAR would remain above the regulatory minimum even in the worst-case scenario. Also, the banking sector would remain highly liquid even in the conditions of extreme deposit withdrawal. Based on banking system analysis, the results of network modelling show that there

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.

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 insurance sector ended the year 2021 with a positive net result after tax of RSD 11.1 bn. A positive trend was recorded in total premium, which equalled RSD 119.4 bn in 2021, up by around 8.6% from 2020. The Serbian insurance sector is adequately capitalised given the risks to which it is exposed. The main capital adequacy ratio was 244.57% for non-life insurance and 224.97% for life insurance, which indicates high capital adequacy of insurance undertakings. During the prior period, the NBS adopted a set of measures to prevent, mitigate and eliminate the negative fallout from the COVID-19 pandemic. The aim was to secure the rights and interests of insurance beneficiaries and preserve operational stability of all players in the insurance market, as well as to ensure the continuity of NBS supervision over this market segment.

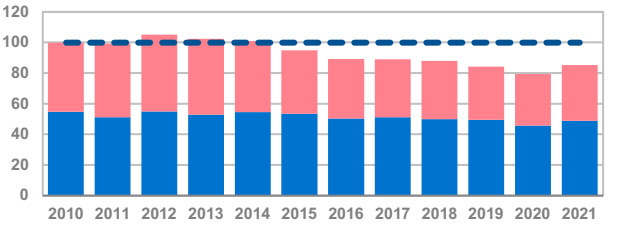
CAR by stress scenario*



* NBS estimate.
Source: NBS.

The insurance sector continued to post positive results in 2021 – it is adequately capitalised and profitable, with growth in total premium. (Re)insurance undertakings recorded balance sheet growth, maintaining almost the same share in the financial sector balance sheet as in a year earlier. Non-life insurances continued to account for the bulk of total premium. The year was marked by heightened uncertainty regarding the impact of the pandemic and the emergence of new strains on the pace of global recovery, which only added to the significance of the role played by the insurance sector in protecting households and the insured.

Combined ratio in insurance



Source: NBS.

At end-2021, net assets of VPFs measured RSD 49.1 bn, up by 4.3% from end-2020. Net assets increased by slightly over RSD 2.0 bn in 2021, while return on investment was somewhat higher than last year (by 14.6%), measuring RSD 608 mn. The FONDex index reached 3,134.18 points at end-2021, up by 39.66 points from end-2020. The annual return on FONDex, which is the weighted average return of all funds, equalled 1.3% in 2021, which is slightly more than in 2020 (1%), but much lower than the return on FONDex since the start of VPFs until end-2021 (7.8%).

Though the COVID-19 pandemic reflected on the results achieved by the VPF sector in Serbia to some degree, it recovered in 2021 relative to a year earlier. Net assets of VPFs continued to grow in 2021 and return on investment was somewhat higher at around RSD 608 mn.

Balance sheet assets of financial lessors continued to grow. At end-2021, balance sheet assets stood at RSD 123.5 bn, up by 7.1% from end-2020. The share of non-performing in total receivables decreased further. At end-2021, gross past due outstanding receivables (RSD 2.1 bn) made up 1.8% of gross financial lease receivables (2.4% at end-2020). As in earlier years, the structure of lessees remained dominated by non-financial companies, accounting for 83.1% of total investments. The financing

The financial leasing sector continued to post positive results in 2021. The sector's balance sheet assets increased further and their quality improved thanks to an additional decline in NPLs.

of freight vehicles, minibuses and buses, which had previously held the highest share in the composition of investments by the lease asset, subsided in 2021 (from 39.5% at end-2020 to 37.7% at end-2021). The financing of passenger vehicles went up (from 38% in 2020 to 39.4% in 2021) and is currently dominant in the composition of investments by the lease asset.

The number of e- and m-banking users went further up in 2021. According to data on payment services provided and e-money issuance in 2021, Serbia saw further growth in cashless payments and in the use of other modern payment services.

In the prior period, the NBS worked actively on enabling new methods of payment and introducing technological innovations in the payment services market to achieve further modernisation and improvement of payment transactions in Serbia. At end-2021, 13 payment institutions were licensed by the NBS to provide payment services. According to data for 2021, there was an increase in the number of almost all payment services provided, particularly in cashless payments, observing all payment service providers taken together. Relative to 2020, the total number of e-banking users increased by 10.68%, and that of m-banking users – by 31.36%.

Amid the extended pandemic, the NBS continued to take numerous measures in 2021 to preserve price and financial stability.

In 2021, the NBS continued to take measures to mitigate the fallout from the pandemic and to preserve and reinforce financial stability. Among other things, the validity of measures aimed at adequate credit risk management amid the COVID-19 pandemic for banks and financial lessors was extended. These measures enabled timely detection of potential difficulties faced by borrowers and the taking of appropriate steps. Measures facilitating natural persons' access to financing were also extended. In order to facilitate access to dinar sources of funding, the NBS supported dinar lending to corporates by making dinar loans approved by banks under guarantee schemes of the Republic of Serbia even more favourable than initially envisaged.

The composite systemic stress indicator and other financial soundness indicators signal that financial stability has been preserved despite numerous pandemic-induced challenges.

Movements in the systemic stress indicator reveal that the effects of the COVID-19 pandemic which originated in 2020 were offset by the implemented fiscal, monetary and macroprudential policy measures aimed at preserving Serbia's financial system stability. Overall, the systemic stress indicator in 2021 was low, recording a stable systemic component, which signals high resilience and stability of the financial system at large.

I International and domestic environment

2021 was marked by uncertainty caused by the emergence of new coronavirus strains and the easing of restrictive measures, which affected the speed of global economic recovery and pushed up the prices of primary commodities. This, coupled with disrupted supply chains, led to a rise in global inflation. Serbia was not spared from these global economic developments. However, the previously achieved macroeconomic and financial stability, the fiscal space created and the implementation of a timely and comprehensive set of economic measures for corporates and households helped Serbia face the consequences of the coronavirus pandemic much better than the majority of European countries. In 2021, Serbia recorded real GDP growth of 7.4%, fully driven by domestic demand, and also one of the best results in Europe. Serbia's EMBI risk premium on the dollar debt stood at 139 bp at end-December 2021, and on the euro debt it equalled 195 bp. The average annual inflation in 2021 measured 4%, and the average core inflation 2.3%. At end-2021, gross FX reserves equalled EUR 16.5 bn, up by EUR 3 bn from end-2020, while net FX reserves at end-2021 stood at EUR 13.7 bn. Adequately pursued economic policy before and during the coronavirus crisis ensured that in 2021, Moody's raised Serbia's credit rating (March 2021), Fitch kept its credit rating (March and September 2021, and February 2022), and Standard & Poor's (December 2021) revised the prospects for obtaining investment grade up from stable to positive.

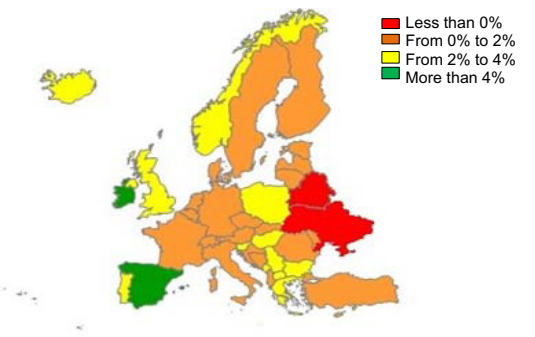
I.1 International environment

International environment is still characterised by elevated uncertainty in commodity and financial markets due to the emergence of new coronavirus strains, heightened by geopolitical tensions. This brought about an additional significant increase in the prices of energy, and global prices of primary agricultural commodities and metals which came close to their historically highest levels, or even exceeded them. Nonetheless, it is encouraging that the global economic recovery has continued despite strong cost-push pressures and the worsening of the epidemiological situation in some countries. At the same time, countries across the world have shown a high degree of adjustment to the changed doing business conditions amidst the pandemic.

Relative to 2020, when a global fall of 3.1% was recorded, in 2021 the global economy recorded growth of 6.1%. Economic activity in developed countries posted a 5.2% growth rate. For 2022, growth rate is expected to be 3.6%, and growth for 2023 is forecast at 3.6%.[1]

Growth in the euro area, with which we have key financial and trade relations, stood at 5.4%[2] in 2021 (2020 recorded a fall of 6.4%). According to April 2022 WEO, the IMF estimated that in 2021 the biggest growth in the euro area was recorded by Ireland (13.5%), Malta (9.4%), Andorra (8.9%), Greece and Estonia (8.3% each) and Slovenia (8.1%). Growth in the largest euro area economies in 2021 picked up relative to 2020, hence Germany's GDP growth rate reached 2.8%, France's 7.0%, and Italy's 6.6%. According to European Economic Forecast from May 2022, GDP growth in the EU and the euro area is estimated at 2.7% in 2022, and at 2.3% in 2023.[3]

Chart I.1.1 **GDP growth projections for 2022 – European countries**
(%)



Source: IMF.

[1] IMF WEO, April 2022.
[2] According to Eurostat's estimate.
[3] European Economic Forecast.

The IMF's April 2022 report states that economic activity in emerging and developing countries in Europe[4] rose 6.7% in 2021, with the highest growth rates recorded in Moldova (13.9%) and Turkey (11.0%). In the Balkan region,[5] GDP growth was most vigorous in Montenegro (12.4%), Croatia (10.4%), Albania (8.5%) and Serbia (7.4%). As for 2022, Europe is expected to see slower growth in economic activity compared to 2021, with 2.8% GDP growth projected for the euro area, while emerging and developing countries in Europe are expected to undergo a 2.9% fall in economic activity (Chart I.1.1), mainly due to a significant slump in Ukraine and Russia.

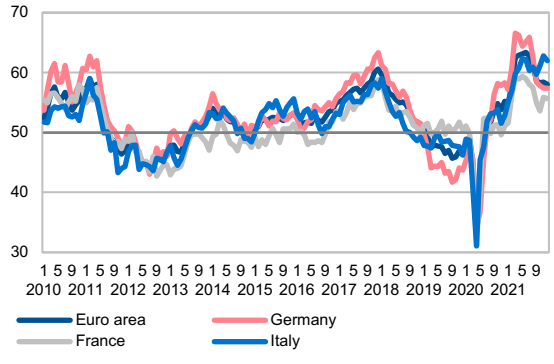
The year 2021 was marked by elevated uncertainty in the international environment as to the impact of the future course of the pandemic and the emergence of new virus strains on the pace of global economic recovery, global prices of primary commodities and, by extension, global inflation as well. Global economic recovery has been losing pace since H2 2021. In addition to continued disruptions in global value chains, movements in Q4 were also under the impact of significant hikes in energy prices and the spread of new virus strains, accompanied by a reinstatement of containment measures in some European countries, which was reflected in unfavourable global growth prospects in 2022. This primarily pertains to emerging and developing countries where vaccine rollout was slower and room for economic policies to take effect was limited. The global prices of energy and primary agricultural commodities touched their multiyear maximums, thus leading to a higher increase in inflation than anticipated. Still, in some countries, despite elevated cost-push pressures and the worsening health situation, economic growth was recorded in 2021.

Annualised, real GDP growth in the USA in 2021 stood at 5.7% relative to 2020, when a fall of 3.4% was recorded.[6] According to the IMF's estimate from April 2022,[7] economic growth for this year is forecast at 3.7%, and for 2023 at 2.3%.

The euro area PMI Manufacturing in December 2021 measured 58.0 points,[8] higher than at end-2020 (55.2 points). The highest value of this indicator at end-2021 was recorded in Italy (62.0 points), and the lowest in France (55.6 points). During 2021, PMI Manufacturing dropped to its lowest value in January, measuring 51.6 points (France), while the lowest value in the euro area was also recorded in January and equalled 54.8 points (Chart I.1.2). PMI Services for the euro area stood at 53.1 points in December 2021, which is higher than at end-2020 (46.4 points). The highest value of PMI Services at end-2021 was recorded by France (57.0 points), and the lowest by Germany (48.7 points) (Chart I.1.3). PMI Services fell to its lowest value in January and measured 44.7 points (Italy), while the lowest value in the euro area was also recorded in January (45.4 points).

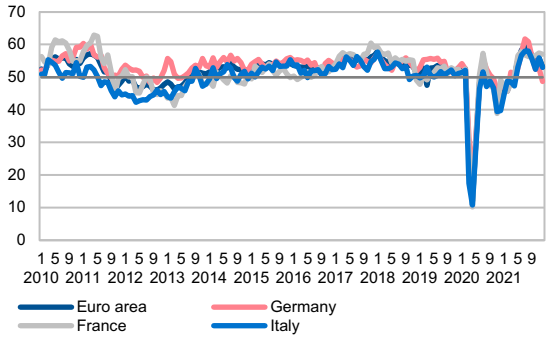
As of mid-2021, the euro area unemployment rate struck a downward path and dropped to 7.0% in December, which is below the pre-crisis level from December 2020, when it measured 8.2%. The unemployment rate in the EU

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



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

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



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

[4] Russia, Turkey, Poland, Romania, Ukraine, Hungary, Belarus, Bulgaria, Serbia, Croatia, Albania, Bosnia and Herzegovina, Moldova, North Macedonia and Montenegro.

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

[6] Bureau of Economic Analysis.

[7] IMF WEO, April 2022.

[8] Index value above 50 points indicates expansion, and below 50 a decline in economic activity.

equalled 6.4%, which is lower than at end-2020 (7.5%). The lowest unemployment rates in December 2021 were recorded in the Czech Republic (2.2%), Poland (3.1%), Germany and Malta (3.2%), and the highest in Spain (13.4%), Greece (12.8%), Italy (8.8%) and Sweden (7.9%).[9] The participation rate, i.e. the share of the working population who are employed or actively seeking employment, has been gradually recovering since early 2021.

According to the Fed, the situation in the US labour market improved during Q4, as attested by the unemployment rate dropping to 3.9% in December 2021, from 6.7% in December 2020.

Movements in the price of crude oil were extremely volatile throughout 2021. As a result of growing oil demand and slower adjustment of oil supply from OPEC+ members to such demand, global oil prices were above the pre-crisis levels in 2021 and averaged USD 70 per barrel (USD 77 per barrel at the end of the year), up by over 60% y-o-y. During December, some countries resorted to stricter epidemic measures which, according to the International Energy Agency (IEA), had an adverse effect on the recovery of global oil demand. In such conditions, the price of oil at end-Q4 equalled around USD 78 per barrel. At the start of 2022, the price of oil was again on the rise amid elevated investor optimism as to the health situation, a sharper fall in crude oil inventories in the USA, and heightened geopolitical tensions globally, therefore at end-January it rose to around USD 90 per barrel.

The effects of limited mobility of population and the health impact of the spread of a new coronavirus strain differed from country to country depending on the introduced containment measures and the anticipated effect of the virus on labour force supply. These effects are expected to reflect on economic growth in Q1 2022, and then wane off starting from Q2.

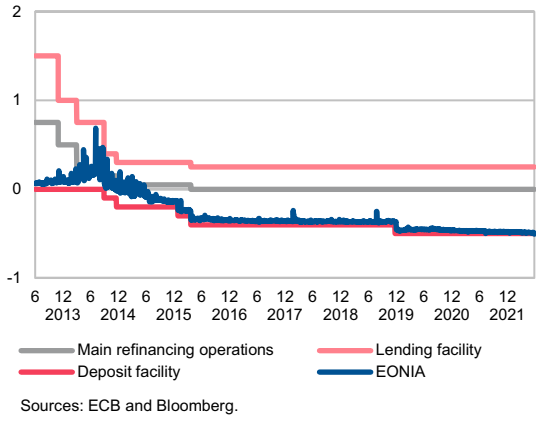
I.1.1 ECB and Fed's monetary policy and overview of economic developments in 2021

During 2021, the ECB kept its interest rates unchanged – the rate on main refinancing operations at 0%, the marginal lending facility rate at 0.25%, and the deposit facility rate at -0.50%. In the first half of the year, the ECB did not change the volume of its Pandemic Emergency Purchase Programme (PEPP), whose completion was planned for end-March 2022, or the volume of net asset purchases within the Asset Purchase Programme (APP), which is planned to conclude during Q3 2022. In 2021 the Fed also kept its federal funds range unchanged (0–0.25%). In the first three quarters, the Fed maintained the current dynamics of asset purchases within the QE programme, only to decide during Q4 to gradually start winding down the asset purchases within the QE programme. As announced in January, amid heightened inflationary pressures and tightened labour market conditions the Fed raised its federal funds rate in March 2022, and an additional hike followed in the May meeting.

During 2021, the ECB kept its interest rates unchanged – the rate on main refinancing operations at 0%, the marginal lending facility rate at 0.25%, and the deposit facility rate at -0.50%. In Q1 and Q2, it did not change the volume of its Pandemic Emergency Purchase Programme (PEPP), which totals EUR 1,850 bn, or the monthly volume of net asset purchases within the Asset Purchase Programme (APP) of EUR 20 bn. However, the pace of purchases within the PEPP was much faster than at the start of the year. In early July the ECB announced the results of its monetary policy strategy review. According to the new strategy, instead of aiming for the target inflation of below, but close to 2%, the ECB set a symmetric inflation target of 2% over the medium term. The ECB stated that when making monetary policy decisions, it would also take climate change into account. The next assessment of the adequacy of monetary policy strategy has been announced for 2025. In accordance with the new strategy, in its July meeting the ECB revised its forward guidance on interest rates. The new guidance envisages that the rates would remain at their current or lower levels until the ECB in its projections starts expecting the inflation within the projection horizon to reach 2% and stay there until the end of the horizon, as well as until the ECB estimates that core inflation movements are consistent with inflation target achievement. In the December meeting, the ECB decided to wrap up the asset purchases within the PEPP at the end of March 2022, which indeed occurred, while the deadline for reinvesting maturing principals of securities purchased within the programme has been extended at least until end-2024. The ECB also continues to ensure liquidity via its targeted longer-term refinancing operations to banks (TLTRO III). Monetary policy tightening has still not been

[9] According to Eurostat's preliminary flash estimate, as at early May 2022.

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



Sources: ECB and Bloomberg.

announced, but in January 2022 the ECB stressed that its future monetary policy decisions will depend on how developments unfold in the coming period.

During 2021, the Fed kept its federal funds rate range unchanged (0–0.25%). In the course of Q1 and Q2 it maintained the current dynamics of asset purchases within the QE programme (monthly purchases of government securities of USD 80 bn and mortgage-backed bonds of USD 40 bn). During Q4, the Fed decided to start gradually downsizing the volume of asset purchases within the QE programme. At the January 2022 meeting, it announced that against the backdrop of inflation trending significantly beyond 2% and labour market conditions tightening, conditions have been created for a federal funds rate increase, which took place in the March and May 2022 meetings, when the federal funds rate was raised cumulatively by 75 bp, to the range of 0.75–1.0%. Also, it hinted at a possibility of a further rate hike during 2022 and 2023.

Amid rising inflationary pressures during 2021, almost all observed central banks of CESEE countries responded by lifting their policy rates. During 2021, the central bank of Hungary raised its policy rate from 0.6% to 2.4%. The central bank of Poland lifted the rate from 0.1% to 1.75% at end-2021, while in the same period the central bank of the Czech Republic increased its policy rate in several instances, from 0.25% to 3.75% at end-2021. During 2021, after the initial decrease (to 1.25% in January), the central bank of Romania lifted its policy rate on several occasions, hence it measured 1.75% at the end of the year. In contrast, the central bank of Turkey is the only one among observed banks that trimmed its policy rate during 2021. Namely, in March 2021 it first increased the policy rate by 200 bp, from 17.0% to 19%, only to cut it to 14.0% in several instances from September until end-2021.

Euro area inflation in 2021 averaged 2.6% y-o-y, which is significantly above the 2020 average (0.3% y-o-y) as well as above the target. While in the first half of the year euro area inflation moved around its target value, it picked up its y-o-y growth during Q3 and Q4, reaching 5.0% in December, of which a half is owed to the strong rise in energy prices, and the rest to the higher prices of services and industrial products excluding energy, which also dictated the increase in core inflation. Euro area core inflation measured 2.6% y-o-y in December 2021, which is significantly higher than 0.2% y-o-y where it stood in December 2020. The IMF's April 2022 projections expect inflation to pick up to 5.3% y-o-y in 2022, while 2.3% y-o-y is forecast for 2023.

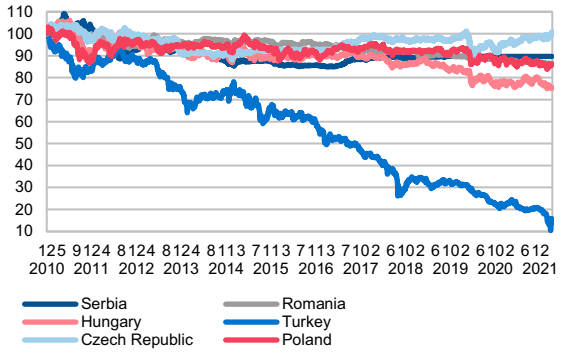
At end-2021, headline inflation in the USA measured 7.0% (measured by the CPI[10]), considerably above the target and above the inflation level in December 2020 of 1.4% y-o-y. Inflation rose during the year on the back of a strong increase in energy prices, as well as the rising prices of goods and services, which also drove core inflation up to 5.5% y-o-y in December 2021 (from 1.6% y-o-y in December 2020). The Fed's preferred inflation measure, measured by the personal consumption index, excluding food and energy prices, equalled 4.7% y-o-y in December 2021 (1.5% y-o-y in 2020). According to the IMF's projections from April 2022, inflation in the USA in 2022 is forecast at 7.7%, and in 2023 at 2.9%.

The euro lost 4.7% against the dollar in Q1 2021.[11] The dollar strengthened primarily on the back of the increase in the yield on US Treasuries and the anticipated faster economic recovery. At end-Q2, the euro gained 1.7% vis-à-vis the dollar. After dipping slightly in July, the dollar gained against the euro in August and September, hence the appreciation of the dollar vis-à-vis the euro in Q3 measured 2.5%. The appreciation of the dollar in Q3 is largely attributable to the anticipated changes in the Fed's monetary policy. The beginning of the Fed's narrowing of monetary policy expansiveness and its anticipated further tightening was reflected in the dollar gaining on the euro by 2.5% in Q4. In annual terms, the euro lost 8% to the dollar. The appreciation of the dollar against the euro is also attributable to market participants' expectation that the speed at which US interest rates would go up would

[10] CPI – Consumer Price Index.

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

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.

almost certainly be faster than the rise in euro area interest rates.

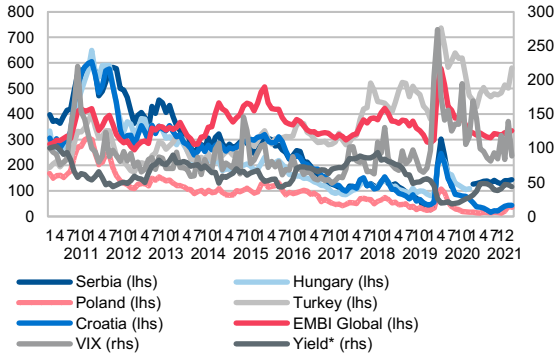
During 2021, the dinar remained almost unchanged vis-à-vis the euro. In the same period, due to the euro depreciating against the dollar, the dinar also lost 8.0% to the dollar at the annual level. The currencies of observed countries in the region displayed diverging movements against the euro. The currencies that gained ground at the level of the year were the Czech koruna (5.5%) and the Polish zloty (0.3%), while the Hungarian forint weakened by 1.0%, the Romanian leu by 1.7%, and the Turkish lira by 41.1% (Chart I.1.5).

Volatility in the international financial market, measured by the implicit measure of financial market volatility (VIX),[12] moved between 37.2% (January 2021) and 15.0% (October 2021) during 2021, which is a considerably narrower range than a year earlier, when this indicator recorded its highest levels (82.7% in March 2020). At end-2021, VIX measured 17.3% (Chart I.1.6).

The EURO EMBIG Composite went up by 5 bp in 2021, to 163 bp at end-December. Serbia's risk premium based on the euro debt, EURO EMBIG, contracted in the first half of the year to 144 bp, whereby it dropped below the EURO EMBIG Composite. In H2, due to the emergence of a new coronavirus strain, the euro debt risk premium of Serbia and other emerging countries increased. EURO EMBIG for Serbia measured 195 bp at end-2021 (143 bp at end-2020). EMBI Composite went up by 7 bp and reached 330 bp at end-year (323 bp at end-2020). Serbia's dollar risk premium, which was almost unchanged in H1, rose slightly in Q3 and then edged down in Q4, measuring 139 bp at end-year (128 bp at end-2020), whereby it continued to trend significantly below the EMBI Composite. In financial markets of countries in the region, the values of stock market indices at end-2021 were higher than at end-2020 (Chart I.1.7).

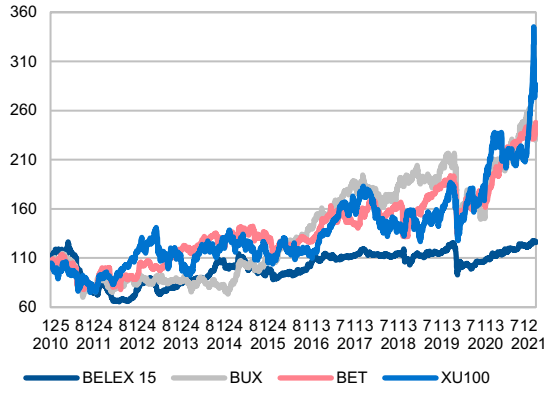
According to the January 2022 euro area Bank Lending Survey, corporate credit standards tightened slightly in Q4 2021.[13] As for households' housing loans, euro area banks disclosed unchanged credit standards, while credit standards for consumer and other loans to households decreased moderately. Banks held a generally optimistic view of corporate and household credit risks based on the generally positive assessment of economic prospects, despite the pandemic and the mitigation of the impact of

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.

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



Sources: Stock exchange websites.

[12] Chicago Board Options Exchange (CBOE), based on the S&P 500 (SPX) index.

[13] https://www.ecb.europa.eu/stats/ecb_surveys/bank_lending_survey/html/ecb.blssurvey2021q4~43deabc06e.en.html

supply bottlenecks. In Q1 2022, banks expect credit standards to remain mostly unchanged for corporate loans, moderately tightened for housing loans, and additionally eased for consumer loans. Moreover, banks reported a considerable increase in corporate loan demand in Q4 2021, propped by a stronger positive contribution of corporates' financial needs for both working capital and fixed investments, compared to the previous quarter. During Q4 2021, housing loan demand went up, and to a somewhat lesser degree household consumer loan demand, as well. Consumer confidence and low interest rates continued to support household loan demand across all loan categories. Moreover, prospects in the real estate market had a positive effect on housing loan demand, while durable goods consumption had a smaller negative impact on consumer loans. Going forward, banks anticipate a continued rise in corporate and household loan demand.

I.1.2 Lending in CESEE countries

During 2021, supply-side credit standards in the CESEE region were eased, and loan demand went up. Banking groups' exposure trend to the region was mildly positive throughout 2021.

According to the CESEE Bank Lending Survey,[14] published in June[15] and November[16] 2021 by the EIB, following a sharp drop in 2020, loan demand went up between April and September 2021. The increase in loan demand was primarily supported by working capital loans, bright prospects in the housing real estate market and loan user confidence. Debt restructuring began to yield a positive contribution to loan demand during 2020, while the contribution in the years before the pandemic was negligible. After a sharp drop in investment loans in 2020 and early 2021, their contribution to loan demand was significant, indicating improvement of real economic conditions for companies. In the period ahead, banks expect loan demand to continue up, and fixed investments are expected to yield a significant contribution.

Credit standards were eased in the period between April and September 2021, after the tightening in 2020. They were eased for the household sector, but remained almost unchanged for the corporate sector and SMEs. Going forward, supply-side credit standards are expected to ease further for both corporate sector and SMEs.

Local funding conditions, local markets and banks' outlooks contributed to the easing of supply-side credit standards. As for international factors, prospects in the global market and NPLs somewhat restricted conditions for loan supply, while financing and capital conditions worked towards their easing, though EU regulations were not designated as a limiting factor on the loan supply side.

Banking groups in CESEE countries had easier access to sources of financing between April and September 2021 thanks to constant improvement in household and corporate financing, as well as a significant positive contribution of liquidity supplies by central banks. Unlike in 2020, interbank markets played a role in improving liquidity conditions. This indicates that the monetary and regulatory policies formed reserves to mount a defence against potential instabilities caused by the coronavirus. Going forward, the trend of easier access to sources of financing is expected to continue. 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 crisis triggered by the coronavirus turned around the positive trend from 2017 in terms of the improvement of asset quality, with growth of NPL ratios in CESEE countries. Between April and September 2021, NPL ratios improved in both the corporate and household segments. This suggests that the adequate policy response and the strategic adjustment of banks played a role in mitigating negative consequences on the value of NPL ratios. In contrast, no improvement in NPL ratios is expected in the period ahead, which implies that a high level of uncertainty is still present. According to November 2021 survey results, the share of subsidiaries anticipating an increase in NPL ratios is around 22%, which is lower than the 43% recorded in the previous six months.

According to June and November 2021 survey results, banking groups stated they had a stable loan-to-deposit ratio (LtD) and expect the ratio to go up relative to 2020, indicating that the response of the monetary and fiscal policies to the negative effects of the coronavirus pandemic was adequate.

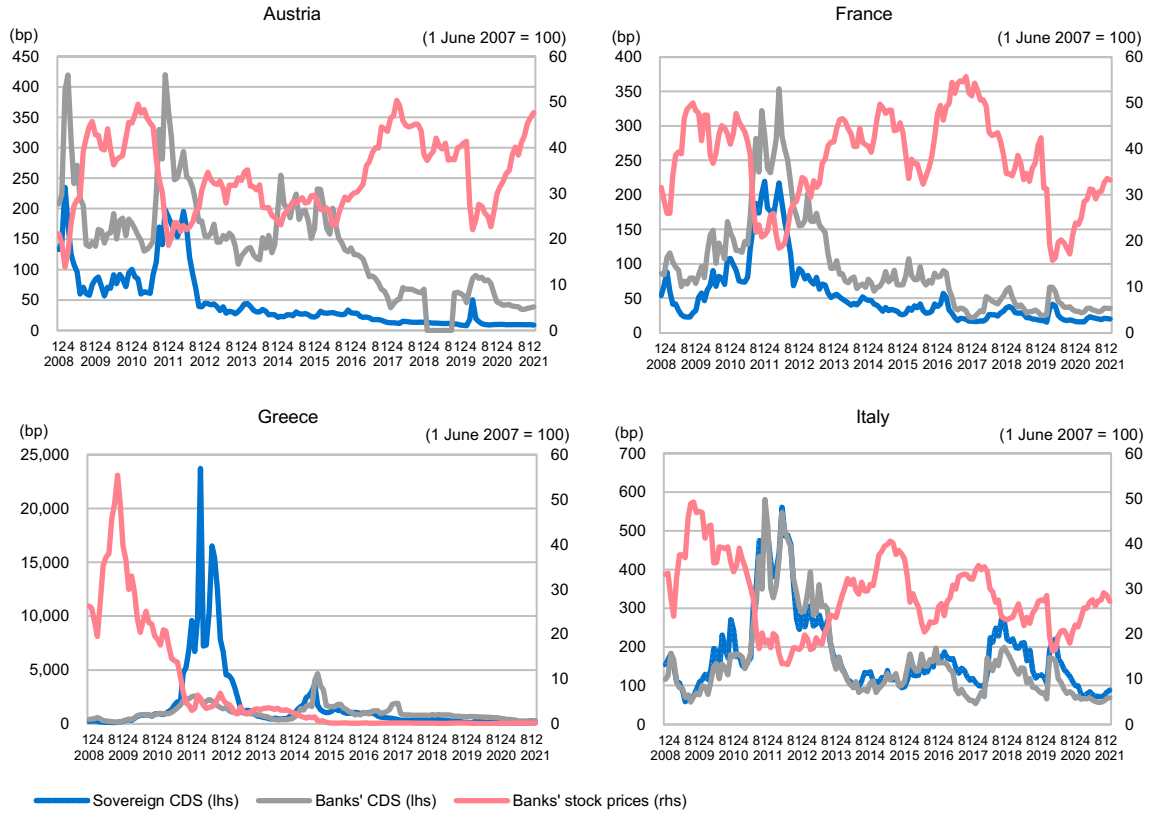
November 2021 survey results showed that the trend of total cross-border exposure was mildly positive, as the

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

[15] https://www.eib.org/attachments/efs/economics_cesee_bls_2021_h1_en.pdf

[16] https://www.eib.org/attachments/publications/economics_cesee_bls_2021_h2_en.pdf

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



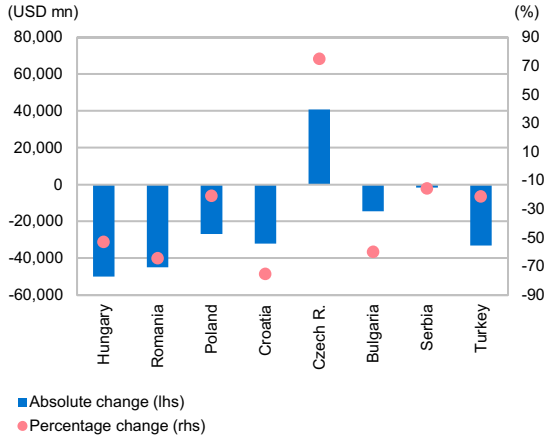
* Note: CDS spreads and stock prices are non-weighted average values for parent banks originating from each country. Monthly data represent daily data averages.

Sources: Bloomberg and Reuters.

number of banks that announced an increase in exposure was higher than the number of those that reported a reduction in exposure, relative to the sudden fall in exposure after the outbreak of the coronavirus pandemic. All banking groups reported that they kept or increased their capital exposure to subsidiaries, while a mild decrease is expected only for group financing (financing within a group). Going forward, the net balance of the region's overall exposure is expected to be mostly positive.

According to the BIS data, in Q4 2021 relative to the beginning of the global financial crisis (Q3 2008), euro area banks reduced their cross-border exposure to countries of 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 Turkey, Poland and Serbia (Chart I.1.9). Relative to end-2020, in Q4 2021 the exposure was reduced in the case of Turkey, Romania, Poland, Croatia, Bulgaria and

Chart I.1.9 **Change of cross-border exposure to selected countries, Q3 2008 – Q4 2021**



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

Serbia, and increased for the Czech Republic and Hungary. Chapter II.1 offers a more detailed analysis of credit growth and an overview of the situation and developments in the Serbian banking sector.

Deleveraging of foreign banks in the period after the global financial crisis of 2008 in the CESEE region did not have any major consequences on Serbia's financial stability, thanks to the strengthened domestic deposit base, as well as adequate and timely measures of the NBS. Relative to end-2019, exposure to Serbia and some countries in the region was increased (Hungary, Poland, Czech Republic, Bulgaria and Romania), and decreased in the case of Turkey and Croatia.

Text box 1: Role of financial stability in the ECB's new monetary policy strategy

Article 127(1) of the Consolidated Version of the Treaty on the Functioning of the European Union[17] (hereinafter: Treaty) states that the primary objective of the European System of Central Banks (hereinafter: ESCB) shall be to maintain price stability. In addition to price stability, the ESCB shall support the general economic policies in the European Union with a view to contributing to the achievement of the objectives of the European Union as laid down in Article 3 of the Treaty on European Union.[18] The role of financial stability in the ECB is set forth in Article 127(5) of the Treaty which lays down that the ESCB shall contribute to the smooth conduct of policies pursued by the competent authorities relating to the stability of the financial system.

On 13 October 1998, the Governing Council of the ECB adopted the first monetary policy strategy and agreed on the main elements of the ESCB strategy.[19] These elements concern: (1) the quantitative definition of the primary objective of the single monetary policy, i.e. price stability; (2) a prominent role for money with a reference value for the growth of monetary aggregates; and (3) a broadly-based assessment of the outlook for future price developments. The maintenance of price stability is the primary objective of the ESCB, defined in the said strategy as: "a year-on-year increase in the Harmonised Index of Consumer Prices (HICP) for the euro area of below 2%." This strategy underlines the strong commitment of the ECB to the achievement of price stability as the primary goal, along with ensuring of the transparency of the ESCB's decision-making. Though the strategy does not stipulate explicitly the obligation for integrating financial stability consideration in monetary policy decision-making, it considers indirectly financial stability as it sets forth the obligation to communicate the euro area financial situation assessment to the public.

In December 2002, the ECB decided to conduct a comprehensive review of the monetary policy strategy, which was confirmed on 8 May 2003.[20] The revised strategy preserved maintenance of price stability as the primary objective of monetary policy, but the definition of HICP was amended since quantitative limitations were introduced. Further, the revised ECB strategy did not explicitly state that financial stability should be analysed in monetary policy decision-making, which undermines the importance of financial stability analysis through the prism of this policy.

At end-January 2020, the Governing Council of the ECB launched a new review of the monetary policy strategy[21], which resulted in the approval of the new strategy in July 2021.[22] The revised monetary policy strategy adopted a symmetric inflation target of 2% in the medium term and any deviations – neither upward nor downward are desirable. The ECB interest rates (the rate on the main refinancing operations and the interest rates on the marginal lending facility and the deposit facility) remain the primary monetary policy instrument. Other instruments, such as forward guidance, asset purchase programme and longer-term refinancing operations remain an integral part of the ECB toolkit, to be used as appropriate. HICP index remains the appropriate measure of inflation in the euro area and the recommendation is to include the cost of owner-occupied housing. The new strategy also recognises the potential deep implications of climate change on the price stability and announces accordingly the implementation of an ambitious climate-related action plan.[23] The revised monetary policy strategy reflects the changes the ECB's economic and monetary analyses have undergone since 2003, the importance of monitoring the transmission mechanism in calibrating monetary policy instruments with one great novelty: recognition that financial stability is a precondition for price stability.[24] Bearing in mind this amendment, it is obvious that the global financial crisis of 2007–2008 contributed significantly to the incorporation of financial stability in the revised monetary policy strategy.

[17] https://eur-lex.europa.eu/resource.html?uri=cellar:2bf140bf-a3f8-4ab2-b506-fd71826e6da6.0023.02/DOC_2&format=PDF

[18] https://eur-lex.europa.eu/resource.html?uri=cellar:2bf140bf-a3f8-4ab2-b506-fd71826e6da6.0023.02/DOC_1&format=PDF

[19] https://www.ecb.europa.eu/press/pr/date/1998/html/pr981013_1.en.html

[20] https://www.ecb.europa.eu/press/key/date/2003/html/sp031120.en.html

[21] https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200123~3b8d9fc08d.en.html#:~:text=ECB%20launches%20review%20of%20its%20monetary%20policy%20strategy,toolkit%2C%20economic%20and%20monetary%20analyses%20and%20communication%20practices

[22] https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210708~dc78cc4b0d.en.html

[23] https://www.ecb.europa.eu/press/pr/date/2021/html/ecb.pr210708_1~f104919225.en.html

[24] https://www.ecb.europa.eu/home/search/review/html/ecb.strategyreview_monpol_strategy_statement.en.html

The revised ECB monetary policy strategy included an assessment of whether financial stability considerations should play a role in monetary policy decisions[25] – and if yes, in what form. The analyses covered a wide range of relevant issues, including the effects of monetary policy on financial stability, the interactions between monetary and macroprudential policies, whether the medium-term orientation of the ECB's price stability objective can cater for financial stability considerations in decision-making and how relevant financial stability analyses could be integrated into the analytical framework based on which monetary policy decisions are taken. The pursuit of price stability through monetary policy, and of financial stability through macroprudential policy, can be seen as complementary. Financial crises tend to be associated with sharp de-risking and deleveraging, with negative repercussions for economic growth and the inflation outlook. By preventing systemic crises and increasing the resilience of the financial sector, prudential policies (macroprudential, supervisory policies as well as a well-designed regulatory framework for financial institutions) safeguard smooth monetary policy transmission mechanism and support price stability. During recessions, financial stability stabilises the economy, thereby reducing the losses for the financial sector, as well as inflation, which mitigates the risk of debt-deflation spirals. In the long run, and in most cases also over the short to medium term, the actions of the two policy domains are complementary.

The practical approach demonstrated in ECB analysis "The role of financial stability considerations in monetary policy and the interaction with macroprudential policy in the euro area"[26], published in September 2021, suggests that financial stability may be considered for expansion of the list of monetary policy indicators and instruments used for monitoring of potential financial instability. Financial stability analysis would improve monetary policy and aim at improving the result of this policy pursuit. In this way, the uncertainty of price stability would be reduced in a situation when there is a simultaneous high risk jeopardising financial stability. In this regard, the appropriate quantitative toolkit is required. First, accumulated financial vulnerabilities need to be considered as they have an adverse impact on the output gap and inflation not only in the medium, but also in the long term. Second, the role of adopted and planned macroprudential measures needs to be assessed, including their interconnection with the monetary policy. An option is to consider financial stability while using flexibility over the medium-term horizon during which price stability needs to be achieved. This means that temporary deviation from the price stability over the long run might be tolerated if the result is a considerably lower risk for financial stability and finally – for the future price stability. Quantitative analysis suggests that adjustment to medium-term horizon would require long periods of deviation from price stability, thus jeopardising the anchoring of inflation expectations. In this regard, careful analysis of costs and benefits of such an approach is needed to balance the current and future risks for price stability.

It is desirable that monetary policy take into account financial stability and macroprudential policy measures. Monetary and macroprudential policies are applied through common transmission channels, indicating a significant interaction between the two. For example, an increase in capital buffers may improve the resilience of the financial system and mitigate the consequences for inflation stemming from financial shocks. Yet, depending on the state of the economy, such a move may be associated with a lower supply of bank credit and create a disinflationary impulse.

Monetary policy, through both conventional and unconventional measures, can influence financial stability.[27] For instance, lower interest rates create incentives to engage in more risk-taking, which could lead to the build-up of systemic risk. However, potential financial stability side effects should not be ruled out. They can arise as financial institutions assume more credit, liquidity and interest risks in their search for yield.

In a financial crisis, an appropriate monetary policy response is required to preserve the functioning of the transmission mechanism. Microprudential and macroprudential policies remain the first line of defence against the build-up of systemic risk and the appropriate and timely measures will limit risks in the financial system as confirmed by numerous empirical evidence. Further, in times of crisis, the ability of the macroprudential policy to act countercyclically in the bank lending

[25] https://www.ecb.europa.eu/pub/financial-stability/fsr/focus/2021/html/ecb.fsrbox202111_08~d3131413c2.en.html

[26] "The role of financial stability considerations in monetary policy and the interaction with macroprudential policy in the euro area", Occasional Paper Series, No 272, ECB, September 2021 (https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op272~dd8168a8cc.en.pdf)

[27] The use of unconventional monetary policy measures can adversely influence financial markets, financial intermediaries and the real economy. For more information on assessing the efficiency and potential adverse effects of ECB monetary policy instruments since 2014, see the paper "Assessing the efficacy, efficiency and potential side effects of the ECB's monetary policy instruments since 2014", Occasional Paper Series, No 278, ECB, September 2021 (https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op278~a1ca90a789.en.pdf)

activity is limited (by releasing macroprudential capital buffers). The above said indicates that the need for more considerable adjustment of monetary policy faced with unfavourable developments in terms of price stability may intensify, with implementation of both conventional and unconventional measures.

Achieving price stability in the medium term enables the ECB to consider financial stability in monetary policy decision making whenever relevant for meeting this goal. Accordingly, the interaction between monetary policy and financial stability will be thoroughly examined at regular intervals as a part of monetary and financial analysis and considered at ECB Governing Council monetary policy meetings. At a meeting held in March 2022, the ECB Governing Council announced that it would take all the necessary measures to meet the ECB mandate related to price and financial stability.[28] The said estimates will enable a more systematic assessment of financial vulnerability and potential impact on output gap and inflation. In addition, these estimates will include the consideration of how much macroprudential policy is able to mitigate systemic risks for financial stability, relevant from the monetary policy perspective.

[28] https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.mp220310~2d19f8ba60.en.html

I.2 Overview of domestic macroeconomic developments

Despite the economic slowdown of Serbia's key trade partners, GDP maintained a relatively strong growth momentum even in Q4. In 2021, GDP added 7.4%, this being one of the best outcomes in Europe and above our expectations. Average annual inflation measured 4.0% and average core inflation 2.3%.

Serbia's GDP growth outturn in 2021 was one of the best in Europe. GDP was up 7.4%, owing mainly to the expansion of the service sectors, followed by construction, manufacturing and mining sectors. A negative contribution came only from agricultural production, which dropped by 5.4% in 2021 due to the drought. On the expenditure side, growth was driven by fixed investment, reflecting high FDI inflows and stepped-up government capital expenditure, as well as personal consumption, owing to favourable labour market trends.

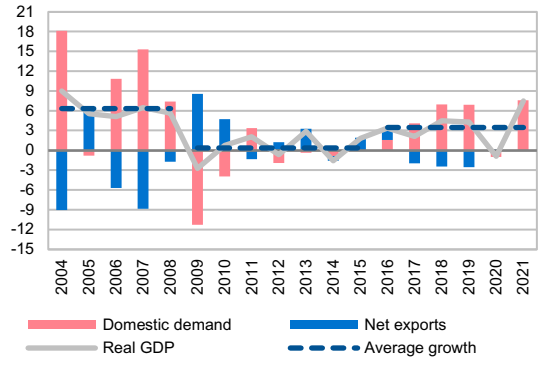
During the two pandemic years, cumulative GDP growth was 6.4%. The coronavirus pandemic and the global recession had a weaker effect on Serbia than on the majority of other European countries. This is owed primarily to the achieved macroeconomic, financial and fiscal stability, a timely and comprehensive package of measures supporting corporate and household sectors, a preserved labour market, sufficient fiscal room for manoeuvre and the current structure of the economy. The timely application of restrictive health measures at the start of the pandemic enabled earlier easing of most restrictions and opening of the economy. Economic growth in 2021 exceeded NBS projections, which ranged between 6.5% and 7%. The pre-crisis level was achieved already in Q1, one quarter ahead of expectations. Following growth of 1.5% and 13.7% y-o-y in Q1 and Q2 respectively, Q3 and Q4 witnessed real growth of 7.6% and 7.0% y-o-y, respectively.

A favourable medium-term growth outlook, projected in the annual range of 4–5%, is supported not only by 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.

In January and February 2021 inflation moved below the lower bound of the target tolerance band, only to return within the target band in March, measuring 1.8% y-o-y. Inflation's upturn since April 2021 was led by the hikes in vegetable prices and the global oil price, including its exceptionally low base from the same period of the year before. As of September, inflation moved above the upper bound of the target tolerance band. As in other countries, y-o-y inflation in Serbia continued up in Q4 2021 and reached 7.9% in December, led chiefly by higher food and energy prices, alongside the low base effect. Conversely, core inflation remained much lower than headline inflation. In Q4, it moved around the 3.0% midpoint on average, measuring 3.5% y-o-y in December. According to the SORS estimate, at the level of 2021 average annual inflation was 4.0%, and average core inflation 2.3%.

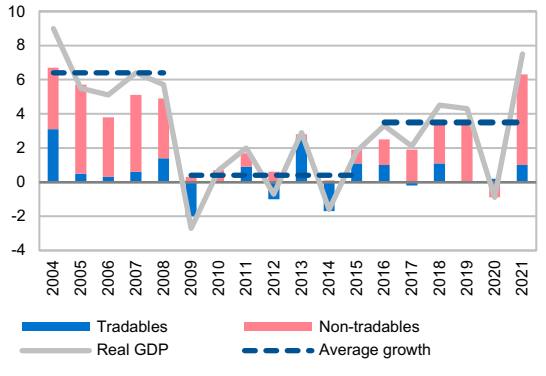
Inflation growth was powered by supply-side factors, mainly from the international environment: higher prices of primary commodities, European energy crisis and disrupted supply chains. This is corroborated by the fact that over three-quarters of inflation reflected the rise in food and energy prices, while core inflation stayed within

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



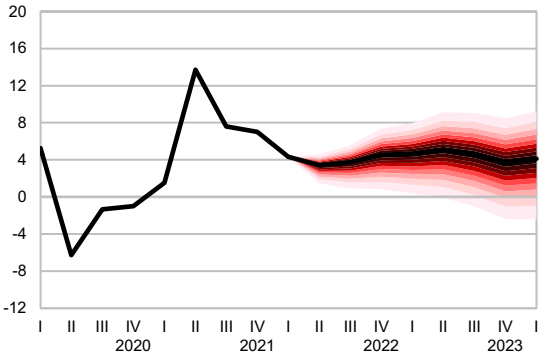
Sources: NBS and SORS.

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



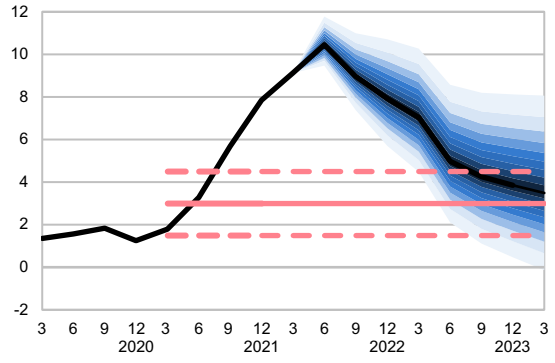
Sources: NBS and SORS.

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



* May 2022.
Source: NBS.

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



* May 2022.
Source: NBS.

the target band. Given the described inflation factors, there was no need for a more agressive monetary policy response in 2021.

Under the May 2022 central projection, y-o-y inflation is expected to decline starting from H2 this year and return within the target tolerance band in H2 next year (Chart I.2.4). The heightening of geopolitical tensions and the outbreak of the Ukraine conflict pushed up significantly the already strong inflationary pressures, fuelled by global prices of primary commodities, energy, agricultural products and metals, which is why inflation will most probably return within the target tolerance band in H2 2023.

Over the past several years, the improvement of the business environment and positive trends in the real sector positively reflected on labour market trends as well. In Q4 2021, the unemployment rate fell to 9.8%, down by 0.7 pp q-o-q. At 50.0% in Q4, the employment rate stayed at a record high level, which was reached in Q3 2021. At the level of entire 2021, the average unemployment rate was 11.0%, while the average employment rate stood at 48.6% (up by 1.5 pp relative to 2020).[29] Gross wage growth came at 9.4% in nominal and 5.2% in real terms. Net wages were up by 9.6% in nominal and 5.4% in real terms, primarily on account of private sector wage growth.

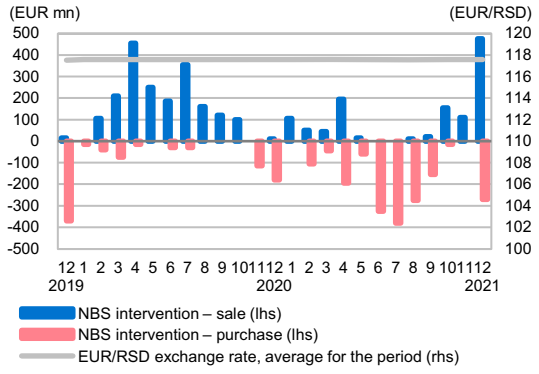
In 2021, the NBS key policy rate stayed unchanged at 1%, as did the deposit facility rate (0.10%) and the credit facility rate (1.90%). As the main risks to inflation and other economic trends remain associated with the international environment and given the announced tightening of monetary policies of leading central banks (the ECB and Fed) in 2022, the NBS will continue to monitor and analyse trends in the international commodity and financial markets and assess their impact on the Serbian economy.

The relative stability of the dinar exchange rate against the euro was preserved throughout 2021, despite persisting global uncertainty caused by the spread of new coronavirus variants and rising inflation. The dinar remained broadly unchanged vis-à-vis the euro in 2021. Relative to end-2020, it lost 8.0% against the US dollar, which gained strength against the euro. Following short-term moderate depreciation pressures in early 2021 as a result of stepped-up foreign currency demand of domestic energy importers, appreciation pressures prevailed in the first nine months of 2021. Appreciation pressures were triggered by the renewed effect of factors which generated structural appreciation pressures before the pandemic as well and whose common denominator is the improved macroeconomic performance of our country. Q4 saw the predominance of depreciation pressures, fuelled mainly by elevated foreign currency demand of domestic energy importers over soaring global energy prices and their higher imports.

Amid appreciation pressures that marked most of 2021, the NBS intervened in the IFEM by buying EUR 645 mn net (it bought EUR 1,825 mn and sold EUR 1,180 mn) (Chart I.2.5). The NBS intervened to mitigate excessive

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

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



Source: NBS.

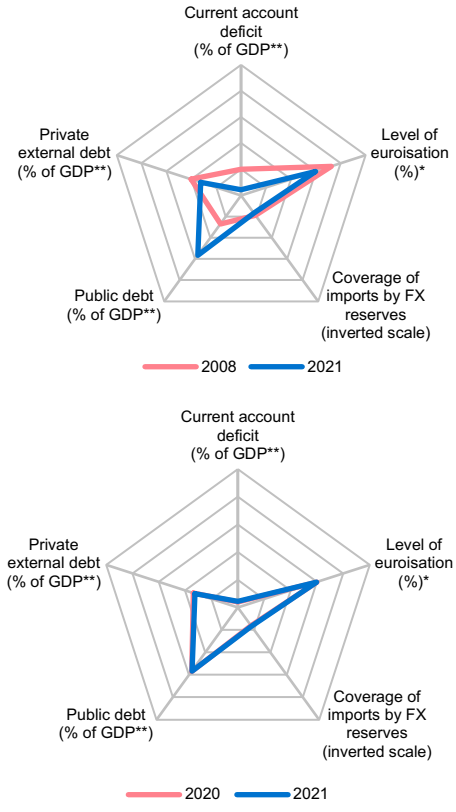
short-term volatility of the exchange rate, with the aim of maintaining price and financial stability.

At end-2021, gross FX reserves reached record EUR 16.5 bn (EUR 13.7 bn net), up by EUR 3.0 bn from end-December 2020. The rise reflected primarily government eurobond issues, additional SDR allocation by the IMF, and net FX purchase in the interbank FX market. Such level of FX reserves ensured a 138.1% coverage of money supply M1 and six months' worth of goods and services imports, which is twice the level prescribed by the adequacy standard.

The emergence of new coronavirus variants deepened the uncertainty in commodity and financial markets, driving up the risk premium on both euro and dollar debt. US-dollar EMBI for Serbia stood at 139 bp at end-December 2021 (vs. 128 bp at end-2020). EURO EMBIG for Serbia was 195 bp at end-2021 (vs. 143 bp at end-2020) and was lower than in most regional peers.

In March and September 2021 and February 2022, Fitch Ratings affirmed Serbia's long-term foreign and local currency issuer default rating at BB+ (one step away from investment grade), with a stable outlook, owing to Serbia's solid economic performance which continued even during the pandemic. In June 2021, Standard & Poor's affirmed Serbia's long-term foreign and local currency sovereign credit rating at BB+, and in December it increased outlook from stable to positive, bringing Serbia even closer to investment grade. In March 2021, Moody's upgraded Serbia's rating from Ba3 to Ba2. The main factors behind

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.

the upgrade include the resilience of the Serbian economy to consequences of the pandemic, a stable level of medium-term growth, and expectations that fiscal sustainability indicators in Serbia will remain above the average of Ba peers.

A comparison of financial vulnerability indicators[30] in 2021 and 2020 shows diminished vulnerability and stronger financial system resilience, as reflected in a reduction of the ratio of private external debt to GDP (from 33.8% to 32.6%) and the ratio of public debt to GDP (from 57.0% to 56.5%).

Increased resilience of the domestic economy to potential exchange rate volatility is also supported by higher dinarisation of the domestic financial system as the share

[30] 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.

of FX and FX-indexed corporate and household loans in total bank loans fell by 1 pp to 61.7% at end-2021. The share of FX and FX-indexed corporate and household deposits in total bank deposits also declined (from 59.9% in late 2020 to 59.7% in late 2021). Resilience is also boosted by elevated FX reserves of the country, which touched their record high at end-2021 (EUR 16.5 bn), and by the coverage of goods and services imports by FX reserves of around six months, which remained largely unchanged from the year before.

Reflecting a widened trade deficit, the current account deficit share in GDP picked up slightly, from 4.1% in 2020 to 4.4% in 2021. Despite elevated energy imports in late 2021, the deficit increased only marginally owing to export capacities which expanded thanks to past investment and higher external demand.

Table I.3.1 **Indicators of FX reserves adequacy, end-2021**

Indicators of adequacy	Adequate level (EUR bn)	Coverage of adequate level with gross FX reserves
Average three-month imports of goods and of services	8.3	199%
Short-term external debt at remaining maturity	6.2	265%
20% money supply M3	6.4	256%
"Right measure for Serbia"	8.0	206%
FX reserves		
Gross	16.5	
Net	13.7	

Source: NBS.

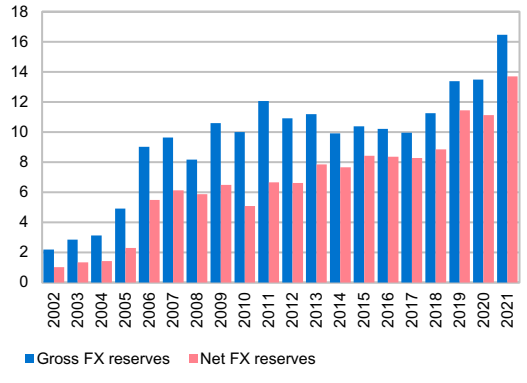
I.3 Foreign exchange reserves as insurance against shocks

FX reserves increased in 2021 as well, strengthening further the resilience of the domestic financial system to the continued coronavirus pandemic and shocks from the international environment. Gross FX reserves reached their highest end-of-year level, equalling EUR 16.5 bn at end–2021, up by EUR 3.0 bn from the end of the previous year, while net[31] FX reserves amounted to EUR 13.7 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 shocks.

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.

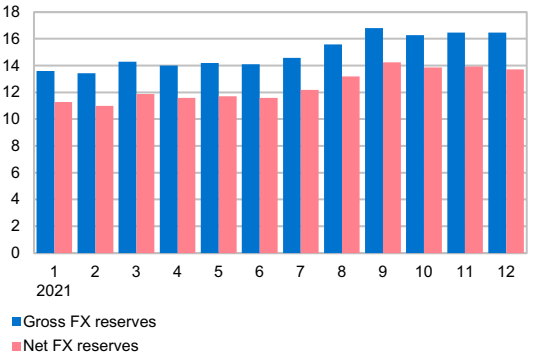
The adequacy of FX reserves is assessed by various analyses and indicators, from the aspect of materialisation of an individual risk or a mix of several risks. The most common risks, based on which relevant indicators are constructed are: hindered financing of imports of goods

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



Source: NBS.

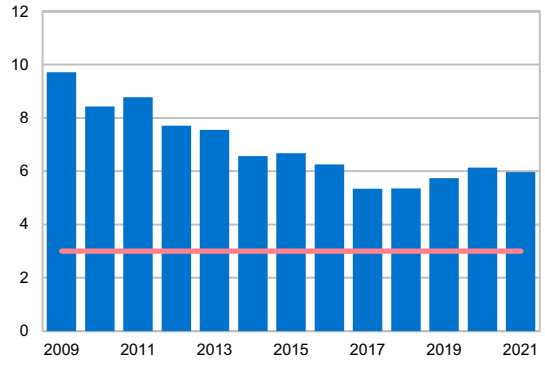
Chart I.3.2 **National Bank of Serbia FX reserves in 2021**
(EUR bn)



Source: NBS.

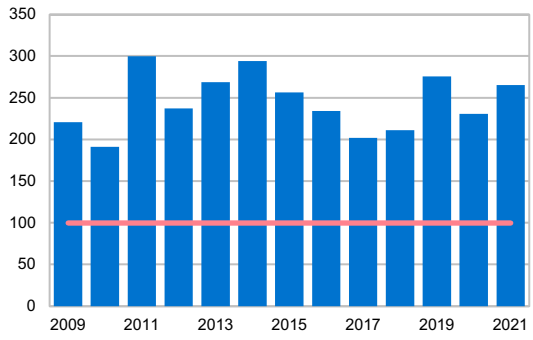
[31] Net reserves are total reserves less banks' FX required reserves and other reductions.

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.

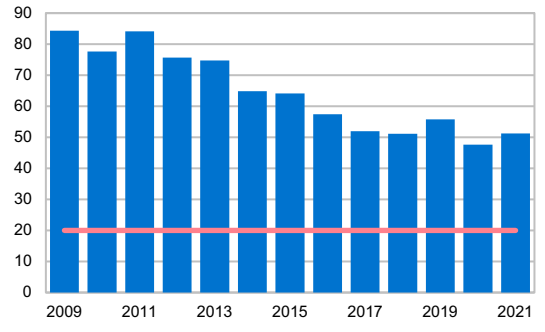
and services and external debt of one-year maturity in the event of reduced capital inflows from abroad due to limited access to international capital markets, and the withdrawal of a portion of deposits from the banking sector.

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 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–Guidotti rule,[32] 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.

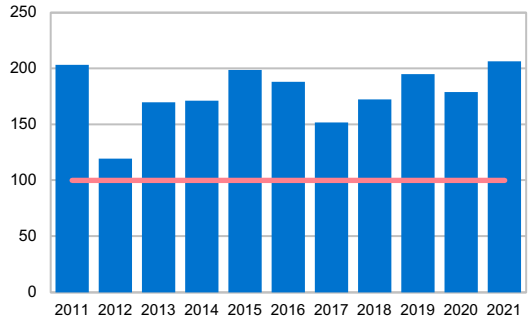
To measure the degree of protection against the risk of withdrawal of domestic currency deposits, we use an indicator that shows the connection between FX reserves and monetary aggregates. The optimal level is achieved if FX reserves cover at least 20% of broad money (M3). At end-2021, Serbia's FX reserves were at an adequate level to serve as the protection against individual risks. They provided for the financing of six months' worth of

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.

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

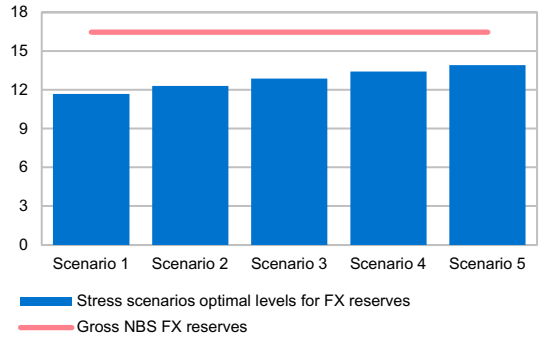
[33] For more details on this indicator, see the *Annual Financial Stability Report – 2011*.

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	0.5%	0.25%	0%	-0.25%	-0.5%
g	Average GDP growth	4.0%	3.5%	3.0%	2.5%	2.0%
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 bn)	11.7	12.3	12.9	13.4	13.9
Gross NBS FX reserves (2021, EUR bn)		16.5				

Source: NBS.

Chart I.3.7 **Optimal levels of FX reserves under stress scenarios, December 2021**
(EUR bn)



Source: NBS.

imports of goods and services, as well as 265.4% coverage of external short-term debt at remaining maturity and 51.2% 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.[33] 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-2021, "the right measure for Serbia" indicator was also considerably above the optimal 100% (206.2%) and higher than last year (178.8%), largely on account of the increase in gross FX reserves.

The Jeanne–Ranciere[34] 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).

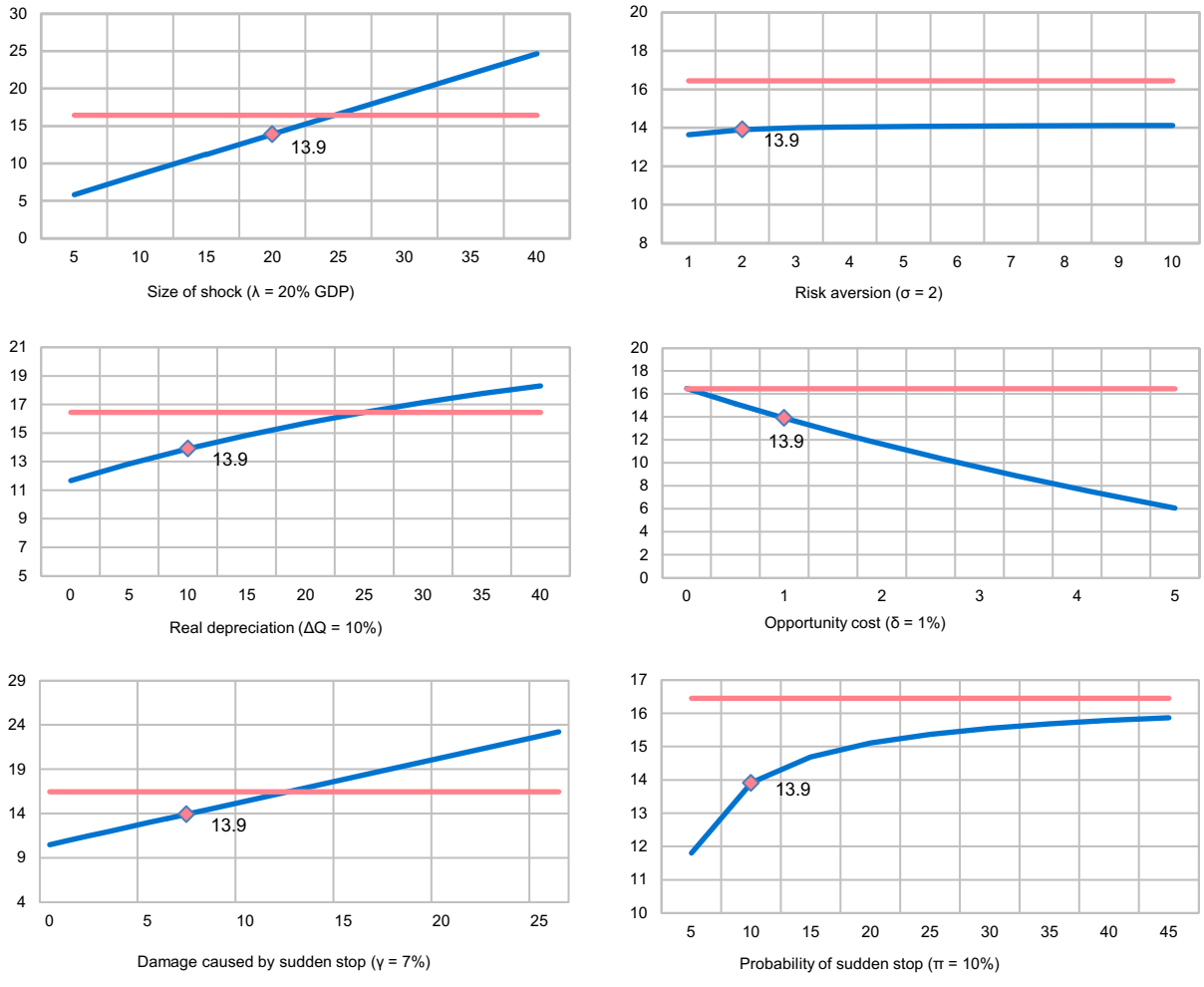
The model assumes that in a small, open economy, vulnerable to sudden stops to capital flows, economic policy makers set the adequate level of FX reserves. In the event of a sudden stop to capital flows, resulting in the impossibility of external debt rollover, it is assumed that a higher level of FX 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-2021 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.

[34] 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

Fiscal policy measures alleviated adverse economic consequences of the coronavirus in 2021 as well. Fiscal deficit came at 4.1% of GDP, much lower than a year earlier (8.0% of GDP), despite the sizeable aid package extended to corporates and households. The share of central government public debt in GDP dropped from 57.0% at end-2020 to 56.5% at end-2021, while the share of external debt in GDP went up to 68.5% (65.8% at end-2020).

I.4.1 Fiscal policy

Uncertainty caused by the coronavirus pandemic prevailed in 2021 as well. With the coronavirus persisting, a new package of economic aid for corporates and households was passed, to ensure the preconditions for economic rebound and growth. Thanks to the consolidation achieved in the past period, the increased fiscal policy accommodation did not threaten the sustainability of public finance.

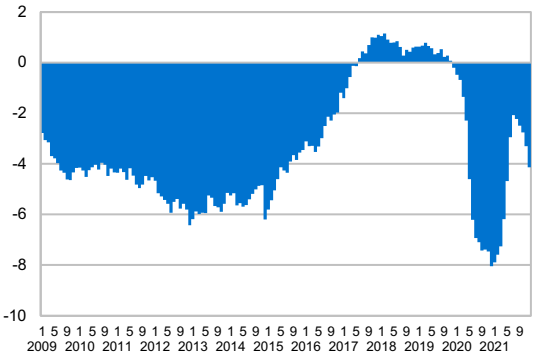
The year 2020 saw the adoption of comprehensive aid packages for corporates and households, aimed at alleviating the negative effects of the coronavirus pandemic. Their value is estimated at around 13% of GDP. The need to mitigate the consequences of the pandemic persisted into 2021, so the start of the year saw a new package of measures for corporates and households. Direct aid to corporates to preserve jobs, amounting to one half of the minimum wage, during three months, was ensured for all interested companies, on condition that they limit employment cuts to below 10% until the expiry of the three-month deadline since the last aid payment. Apart from general aid for the corporate sector, further assistance was envisaged for particularly vulnerable sectors (catering, transport, hotels industry and tourism). The government also ensured funds to provide additional liquidity to corporates by setting up the second guarantee scheme and extending the deadline for the use of the first guarantee scheme. Also, by stimulation of aggregate demand, support for the most vulnerable population categories was provided. The third corporate and household aid package is estimated at around 4.2% of GDP. The measures helped to boost the liquidity of companies and facilitated their operation, which resulted in a better corporate result, especially in comparison with other European economies, while also helping to avoid turbulences in the labour market. The adopted measures also encouraged domestic demand, thus boosting economic activity.

General government fiscal deficit amounted to RSD 259.4 bn, or 4.1% of GDP in 2021, which is much lower than the 8.0% posted a year earlier (Chart I.4.1). Looking at government levels, the highest deficit was recorded in the republic budget – RSD 286.1 bn.

The primary fiscal result,[35] an indicator of efficiency of the current fiscal policy and its impact on public debt trends, was also negative in 2021, at RSD 150.6 bn or 2.4% of GDP (2020 saw a primary deficit of 6.0% of GDP).

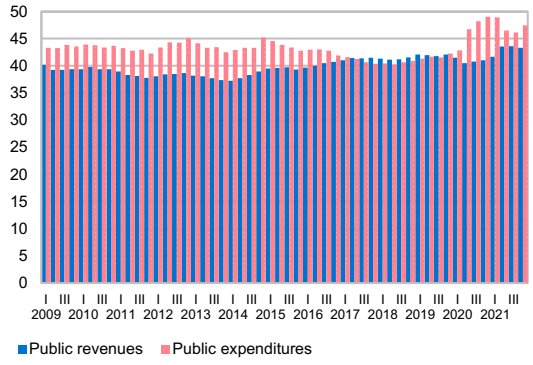
Fiscal deficit in 2021 was recorded in conditions of both fiscal revenues and expenditures increasing relative to the

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



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

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.

[35] 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.

year before. Total public revenues of general government rose by RSD 457.0 bn from 2020, thanks to the better collection of revenues, primarily tax receipts amid a faster than expected economic growth. The greatest increase in public revenues was recorded in current revenues (by RSD 448.8 bn), with contributions posting the sharpest increase (RSD 188.2 bn compared to the year before). Tax receipts went up in 2021 by RSD 429.4 bn and value added tax also increased significantly, on account of import VAT (by RSD 113.4 bn).

In 2021, total public expenditures of general government increased by RSD 273.6 bn from the year before. The implementation of the corporate and household aid package accounted for the largest share of the increase. The remaining part were the expenditures for measures aimed at mitigating the adverse effects of the pandemic, raising the country's medical care capacities and a significant increase in capital expenditures. In 2021, current expenditures rose by RSD 92.7 bn from the year before, the greatest contributions coming from personnel expenditures (RSD 50.0 bn) and outlays for the purchase of goods and services (RSD 49.3 bn).

Capital investments reached the record level in 2021, rising by RSD 173.4 bn from 2020. The share of capital expenditures in total expenditures of the general government in 2021 (15.7%) was much higher than in 2020 (10.9%), as well as their share in GDP, measuring 7.4% in 2021 (5.3% in 2020). Given the importance of infrastructure improvement for long-term sustainable economic growth, and the planned infrastructure investments, the increase in capital expenditures remains the priority of fiscal policy in the coming period. Greater expenditures are also planned for new and existing infrastructure projects, primarily in road, railway and utility infrastructure, as well as higher investments in new medical care capacities and equipment with a longer lifespan.

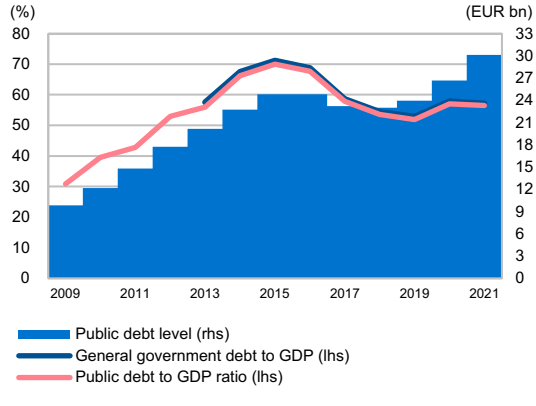
In 2021, expenditures for subsidies dropped by RSD 45.2 bn and their share in GDP to 3.3% (4.6% in 2020). Though lower than the year before, subsidies in 2021 significantly exceeded those in pre-pandemic years, due to the implementation of crisis-coping measures. The greatest share of subsidies refered to the payout of direct aid to companies and entrepreneurs. The remaining part were mainly agricultural subsidies.

Fiscal policy sustainability, even during the coronavirus pandemic, was affirmed by one of the most important international financial institutions. First in January 2021 the IMF Executive Board made the decision on successful completion of the fifth, final review of the Policy Coordination Instrument – PCI approved in July 2018, assessing that programme implementation was successful throughout its lifespan. In June 2021 a new PCI was approved, to last until end-2023. Same as the previous one, the new programme is advisory in nature and does not envisage the use of funds. Programme approval affirmed the successful economic policy which the Republic of Serbia conducted during the coronavirus-induced crisis. Priorities envisaged under the new programme include strengthening the fiscal policy framework, enhancing governance in state-owned enterprises, further development of the capital market and the rise in dinarisation, better social safety nets and transition to the green economy. Given the sound implementation of economic policy measures and good macroeconomic results, in December 2021 the IMF made the decision on successful completion of the first programme review. Apart from the abovesaid, in June 2021 the IMF Executive Board concluded regular consultations with the Republic of Serbia under Article IV of the IMF's Articles of Agreement. Based on the conducted comprehensive analyses, the Board assessed that Serbia navigated the coronavirus pandemic well and that the economic recovery will continue going forward.

I.4.2 Public debt

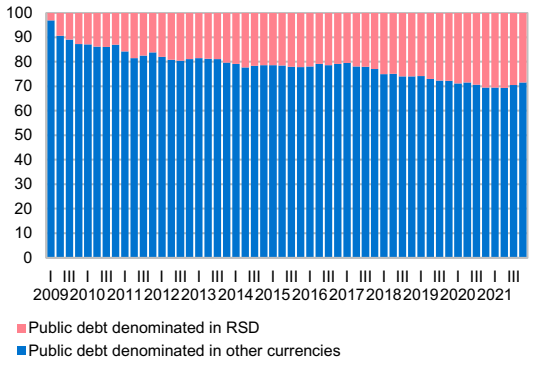
Thanks to the vibrant economic growth, public debt to GDP ratio declined in 2021, despite the protracted pandemic and the ample aid package adopted to mitigate the negative effects of the pandemic. The share of central government debt in GDP at end-2021 came at 56.5%, down by 0.5 pp compared to end-2020 (Chart I.4.3). The share of general government debt, including the non-guaranteed debt of local governments and AP Vojvodina, amounted to 57.1% of GDP, down by 0.7 pp compared to

Chart I.4.3 **Public debt dynamics**



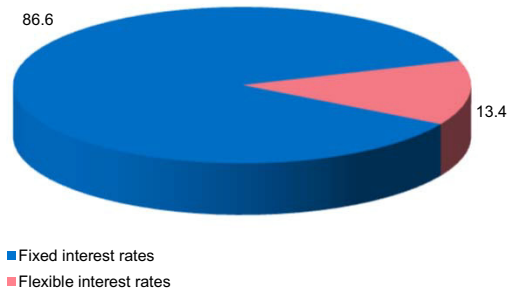
Source: Ministry of Finance.

Chart I.4.4 **Public debt by currency**
(%)



Source: Ministry of Finance.

Chart I.4.6 **Public debt interest rate composition, 31 December 2021**
(%)



Source: Ministry of Finance.

the year before. This data indicate that 2020 was characterised by a one-off debt increase, as the inevitable consequence of interventions aimed at alleviating the effects of the coronavirus-induced crisis.

In absolute amounts, central government debt at end-2021 came at EUR 30.1 bn (EUR 26.7 bn at end-2020), and general government debt at EUR 30.5 bn (EUR 27.1 bn at end-2020).

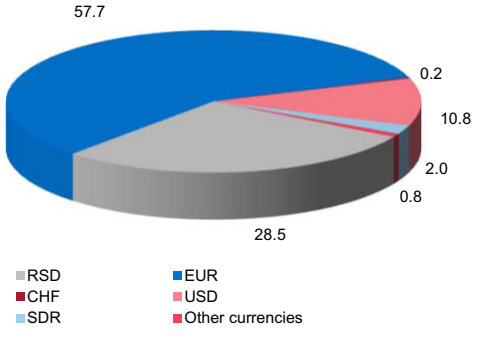
The high share of foreign currency debt at 71.5% at end-2021 signals foreign currency risk (Charts I.4.4 and I.4.5). Relative to the previous year, the dinar share of public debt dropped by 2.0 pp to 28.5%, while the euro share gained 8.1 pp, climbing to 57.7%. The euro debt increased, among other things, due to the issues of government bonds in euros in the international market, in the total amount of EUR 2.75 bn. Also, public debt is exposed to the risk of volatility in the euro/dollar value, though increasingly less so, because relative to 2020, the share of public debt in US dollars shrank by 2.4 pp to 10.8%. The lower share of the US dollar debt resulted from the maturing of dollar eurobonds issued in 2011 and the hedging transaction of a cross-currency swap, which generated significant savings through reduced interest expenses until maturity.

The share of debt repaid at a fixed interest rate at end-2021 increased from the year before by 0.4 pp, to 86.6% (Chart I.4.6), which indicates a relatively low interest rate risk.

The maturity structure of public debt is also favourable, given that the government borrowed mainly in long-term instruments in 2021.

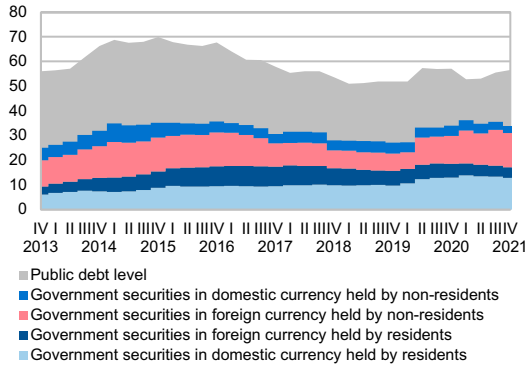
In 2021, the government partly borrowed also by selling securities in the domestic and international market. The share of government securities in total public debt of central government was 59.9% (Chart I.4.7). Interest rates

Chart I.4.5 **Public debt currency composition, 31 December 2021**
(%)



Source: Ministry of Finance.

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

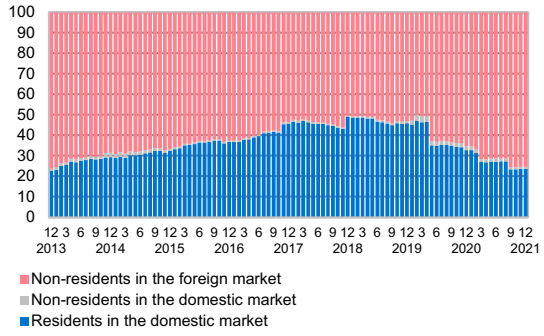


Source: NBS, based on data of the Ministry of Finance.

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.4.9 **Ownership structure of government securities denominated in foreign currency**



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

on government borrowing in dinars and euros continued down during the year. The Public Debt Administration of the Ministry of Finance organised eight auctions for the early buyback of a part of three-, seven- and twelve-year dinar securities, where securities in the total nominal amount of RSD 34.0 bn were bought.

The role of foreign investors in the government securities market is very important. At end-2021 they participated with 49% in the portfolio of securities issued in the domestic and international market (46% at end-2020). During 2021 the non-resident share in the segment of dinar government securities dropped by 6.3 pp relative to the year before, to 18.0% (Chart I.4.8). The non-resident share in FX securities rose by 9.2 pp to 76.5% during 2021 (Chart I.4.9). This increase resulted from the issuance of eurobonds in euros in the international market in 2021. In February 2021, the Republic of Serbia issued a twelve-year eurobond in euros in the international market, with the issue size of EUR 1.0 bn, the coupon rate of 1.65% and yield rate of 1.92%. In mid-September 2021 Serbia placed a dual-tranche issue of eurobonds in euros in the international financial market. It issued for the first time a green eurobond worth EUR 1.0 bn, with the maturity of seven years. This eurobond was issued at the lowest coupon rate so far – 1.00% and the yield rate of 1.262%. Serbia thus became one of the few European countries and the first European country outside the EU to issue a green instrument. It simultaneously issued a fifteen-year conventional eurobond in euros worth EUR 750 mn, at the coupon rate of 2.05% and the yield rate of 2.3%, this being the longest-maturity eurobond issued by Serbia thus far. On the other hand, September 2021 saw a reduction in the dollar debt owing to the USD 700 mn repayment of the dollar eurobond issued in 2011 at the coupon rate of 7.25% and the yield rate of 7.50%. The total debt under this bond amounted to USD 1.6 bn, of which USD 900 mn was early repaid in November 2020.

Greater resilience of the Serbian economy during the pandemic was confirmed also by rating agencies. In March 2021, Moody's upgraded Serbia's rating from Ba3 to Ba2, with a stable outlook. Moody's assessed that the Serbian economy demonstrated resilience in pandemic conditions and that it has a sound growth outlook in the medium-term as well. In March and September 2021, as well as in February 2022, in the face of the coronavirus pandemic, Fitch Ratings kept Serbia's credit rating at BB+, one notch below investment grade, retaining a stable outlook. In June 2021, Standard & Poor's kept Serbia's credit rating at BB+, one notch to investment grade, affirming a stable outlook, while in December it upgraded Serbia's outlook from stable to positive.

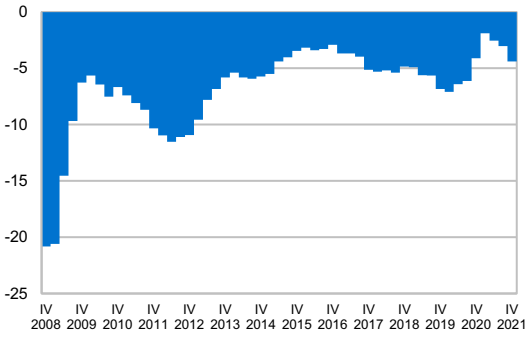
I.4.3 External debt

Current account deficit in 2021 came at EUR 2.3 bn or 4.4% of GDP, up by RSD 0.4 bn from 2020 due to increased energy imports around year-end and a higher primary income deficit. The rise in the surplus on trade in services, as well as in secondary income worked to improve the current account relative to the year before (Chart I.4.10).

In 2021 Serbia's key foreign trade partners were EU countries, which accounted for 64.5% of total exports and 57.1% of total imports.[36] Goods and services exports in 2021 rose by 28.2% from the year before (exports

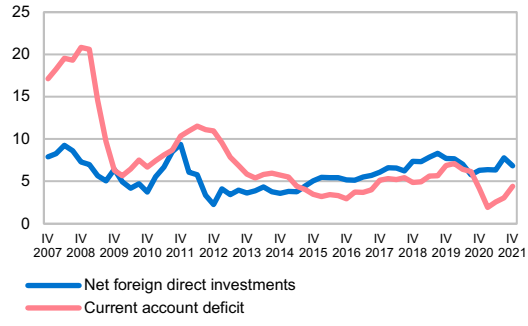
[36] Public Finance Bulletin, December 2021.

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



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

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



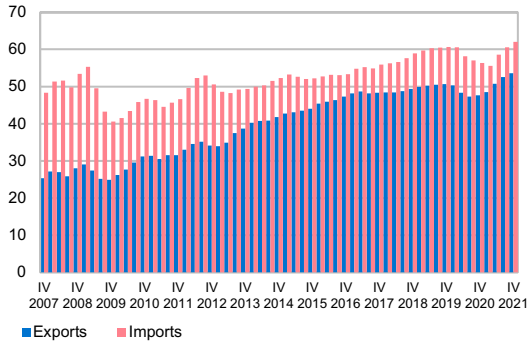
* Moving sums for the last four quarters.
Source: NBS.

dropped by 4.6% in 2020). According to the codes of the Standard International Trade Classification (SITC), the greatest share in exports in 2021 was that of electrical machines, apparatus and appliances (12%). A considerable share was that of vegetables and fruit, iron and steel, metal ores and waste, and cereals and cereal preparations, which together with electrical machinery made up 30.8% of total exports. Goods and services imports at the annual level increased by 25.4% (in 2020 they declined by 5.7%) (Chart I.4.11). The imports of electrical machinery and apparatus, oil and petroleum products, road vehicles, medical and pharmaceutical products, as well general industrial machinery accounted for 26.4% of total imports in the year observed.

For the seventh year in a row, the current account deficit was fully covered by FDI – with the record coverage of 154.7% at end-2021, which also contributes to the sustainability of the country's external position (Chart I.4.12). Net FDI inflow in 2021 came at EUR 3.6 bn, rising by 23.4% from the year before. It thus returned to its pre-pandemic level, i.e. exceeded the record-high inflow from 2019 and kept a relatively high share in GDP (6.8% in 2021). Investments remained broadly project-diversified and channelled mainly to export-oriented sectors. The bulk of investments, almost one third, was channelled to manufacturing, followed by construction, mining and transport. Around 56% of capital inflow was equity capital and the bulk of investments came from the EU (close to 60%) and Asian countries (around 20%).

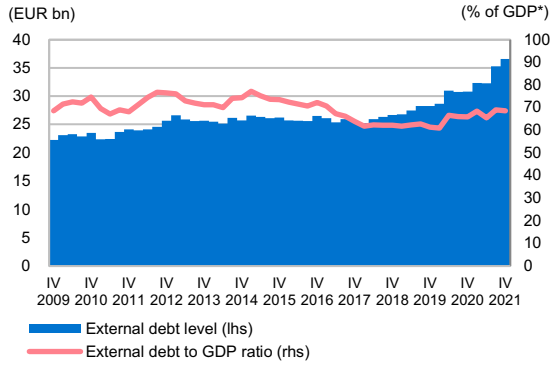
Due to increased imports of energy and equipment driven by the implementation of investment projects (primarily in road, railway and utility infrastructure), and to a lesser

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



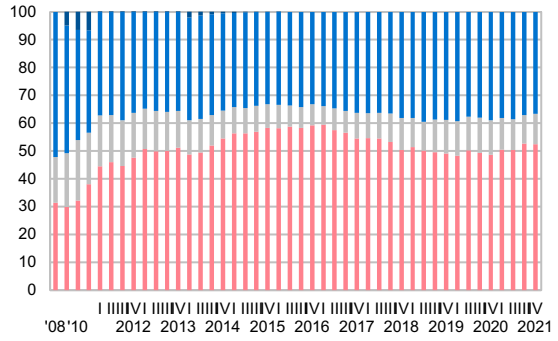
* Moving sums for the last four quarters.
Source: NBS.

Chart I.4.13 **External debt dynamics**



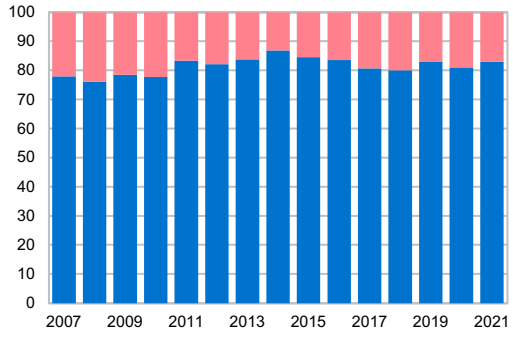
* Moving sums for the last four quarters.
Source: NBS.

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



Source: NBS.

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



Source: NBS.

extent also due to lower external demand, net exports are expected to give a negative contribution to GDP in 2022. For 2022, the NBS projects the current account deficit share in GDP at around 6.5%. External sustainability will be supported by a large coverage of the current account deficit by net FDI inflows. Over the medium-term, the current account deficit is expected to gradually subside toward 5% of GDP, thanks to more favourable terms of trade, among other things.

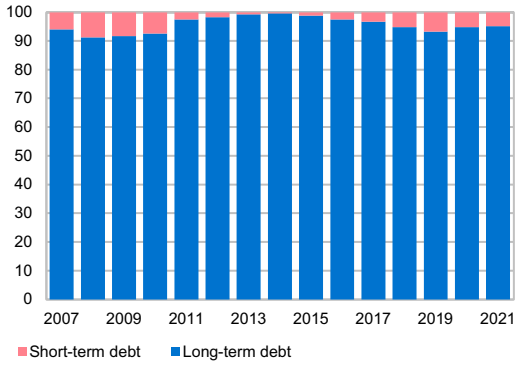
At end-2021 external debt amounted to EUR 36.5 bn, or 68.5% of GDP. Relative to end-2020, total external debt rose by around EUR 5.7 bn, while its share in GDP edged up by 2.7 pp (Chart I.4.13).

External debt growth reflects both public and private sector borrowing. External debt of the public sector increased by EUR 4.2 bn at end-2021. Private sector debt went up by EUR 1.6 bn in 2021, of which banks' borrowing accounted for EUR 163.8 mn (Chart I.4.14).

The external debt's refinancing risk is relatively low, given its favourable maturity structure. The share of external debt with original and remaining maturity of over one year is high, at 95.2% (Chart I.4.15) and 83.0% respectively (Chart I.4.16) at end-2021.

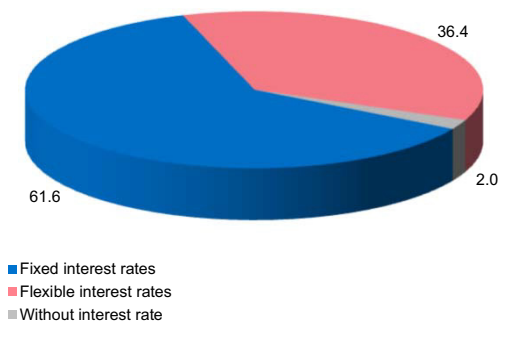
The share of external debt repaid at a fixed interest rate is favourable, measuring 61.6% (Chart I.4.17). This share increased by 6.2 pp from the previous year. The effective interest rate has been relatively low and stable over a longer period, primarily owing to a significant share of loans extended by international financial institutions in the total external debt. External debt paid out at a variable interest rate (36.4%) is mainly concentrated in the banking sector (86.7%), which may pose a risk if leading central banks change interest rates to a significant degree.

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



Source: NBS.

Chart I.4.17 **External debt interest rate composition 31 December 2021**
(%)



Source: NBS.

I.5 Corporate sector

Supported by an additional package of measures and favourable financing conditions, corporate lending continued up in 2021 despite the coronavirus pandemic. Favourable borrowing conditions in the domestic and international money markets aided the rise in investment loans, indicating a favourable lending structure from the point of view of support to sustainable economic growth. The share of NPLs in total loans granted to the corporate sector went further down.

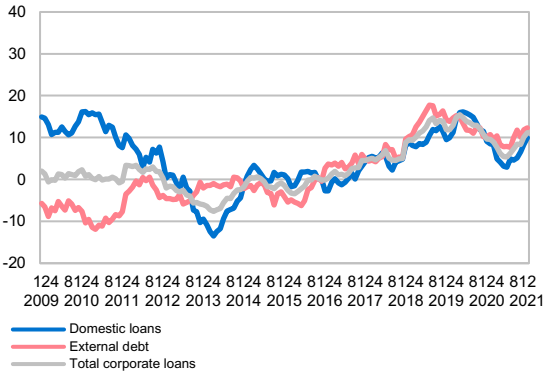
Amid favourable financing conditions in the domestic and international money markets, corporate lending continued up in 2021, supported by economic policies aimed at mitigating the adverse impact of the coronavirus pandemic. Past NBS monetary policy easing and continuation of favourable financing conditions under the guarantee schemes, which brought the interest rates on new dinar corporate loans closer to the interest rates on euro-indexed loans, contributed to a faster rise in dinar corporate lending in 2021. The said trend reflected positively on the rise in the degree of dinarisation and thus on monetary policy efficiency and additional strengthening of financial stability.

Corporate lending was on the rise throughout the year. By the end of the year, the y-o-y growth in corporate loans accelerated on account of solid loan disbursement in the last quarter and waning of the high base effect, as well as a moratorium on corporate loan repayment.[37] Domestic corporate loans,[38] excluding the exchange rate effect,[39] went up by 9.9% y-o-y in late 2021 (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, including external debt, measured 11.1% at end-2021. At the same time, external corporate debt equalled EUR 13.1 bn, up by 12.3% from 2020 excluding the exchange rate effect, with the amount of external debt being adjusted for intercompany loans (Chart I.5.1).

Sector-wise (Chart I.5.2), the bulk of bank receivables from corporates at end-2021 were receivables from the sector of mining, manufacturing and water supply worth RSD 410.7 bn (26.2% of total receivables), followed by the sector of wholesale and retail trade, and repair of motor vehicles and motorcycles worth RSD 403.3 bn (25.7% of total receivables), as well as transport and warehousing, accommodation and food services, and ICT worth RSD 256.8 bn (16.4% of total receivables).

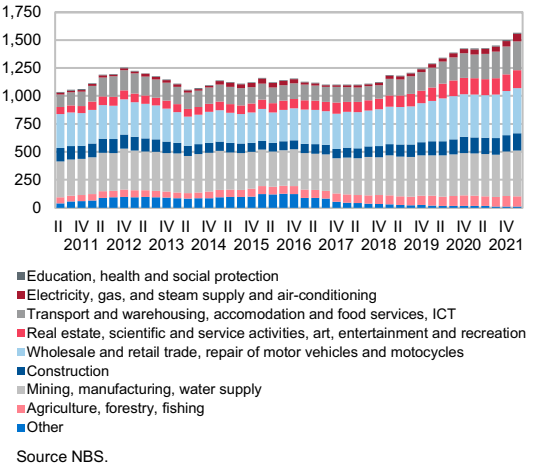
Total bank receivables from the corporate sector at end-December 2021 increased by 9.9% in nominal terms relative to end-2020, driven mostly by transport and warehousing, accommodation and food services, ICT (3 pp), as well as mining, manufacturing and water supply (2.3 pp). Sector-wise, the highest y-o-y growth was recorded by electricity, gas, steam supply and air-

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



* Excluding the exchange rate effect.
Source: NBS.

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



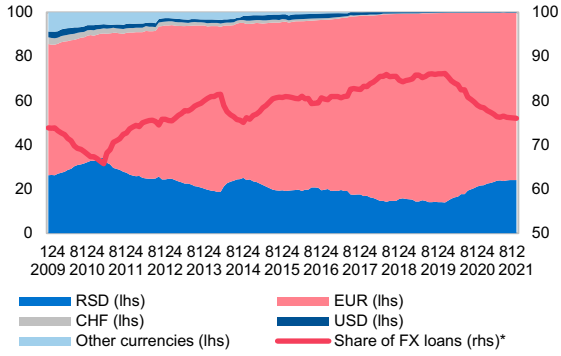
Source NBS.

[37] In March 2020, the NBS enabled the first moratorium on loans and financial leases for all debtors for the duration of at least 90 days. In July it approved the second moratorium which covered liabilities maturing in August and September 2020, as well as outstanding liabilities which came due in July.

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

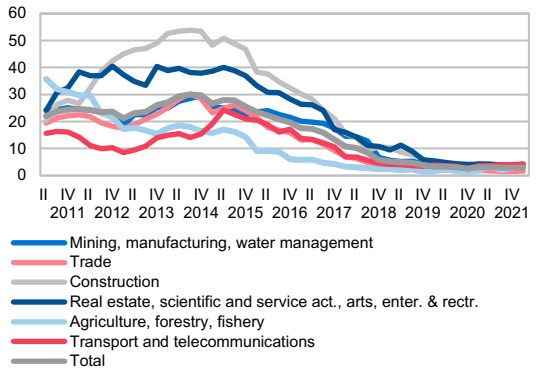
[39] Calculated at the dinar exchange rate against the euro, Swiss franc and US dollar as at 30 September 2014 (the so-called programme exchange rate used for monitoring the performance under the arrangement with the IMF), taking into account the currency structure of loan receivables.

Chart I.5.3 **Currency structure of domestic corporate loans**



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

Chart I.5.4 **NPL share in total loans of corporates by sector**



Source: NBS.

conditioning (53.7%), followed by education, health and social protection (20.6%).

Corporate need for liquidity intensified in 2021 amid the coronavirus pandemic. Extension of the validity and increase in the volume of corporate loans of commercial banks granted with the government guarantee under the first guarantee scheme[40], along with the adoption of the second guarantee scheme,[41] provided additional liquidity to the corporate sector. Since the start of implementation of the first guarantee scheme until December 2021, EUR 2.34 bn worth of loans were approved under both guarantee schemes. New loans accounted for 89.11% of all loans approved, while rollover and refinancing loans made up 10.89%. Loans granted in dinars accounted for 61.56% of all loans. In terms of the size, small enterprises received 45.35% of all loans approved under guarantee schemes until 31 December 2021. Medium-sized enterprises received 28.12%, while the remainder, i.e. 26.52% went to micro enterprises and entrepreneurs. A total of 38,842 loans were disbursed at the banking sector level.

In terms of loan purpose, liquidity and working capital loans posted the sharpest y-o-y nominal growth of RSD 97.4 bn, accounting for the largest portion of corporate loans (46.3%) at end-2021. Owing to the previously relaxed borrowing conditions in the domestic market, investment loans continued up in 2021, and their share in total corporate loans came at 41.7% at the end of the year.

In addition to the need for liquid assets, the financing of capital investments became a significant factor of the rise in corporate loan demand in 2021, which is a good foundation for increased economic activity in the coming period.

Support measures for corporates implemented in 2021 contributed to the relaxation of credit standards for dinar corporate loans, largely for SMEs. In the first half of the year, corporate loan demand was driven by SMEs and was more pronounced for long-term than for short-term loans and more for FX-indexed than for dinar loans. In the second half of the year, corporate loan demand targeted more dinar than FX-indexed loans and was almost equally distributed across small, medium-sized and large enterprises.[42]

At end-2021, loans granted to micro enterprises and SMEs recorded a 6.8% y-o-y growth,[43] accounting for somewhat more than two thirds of total corporate loans.

In terms of maturity, long-term receivables were dominant at end-2021, accounting for 80.6% and indicating a low risk of refinancing. This share went down by 0.4 pp from 2020.

In 2021, the share of dinar receivables in total bank receivables from corporates went up. At end-2021, this indicator reached 24.0%, up by 3 pp from end-2020. The share of euro receivables dropped by 3.0 pp, and the share

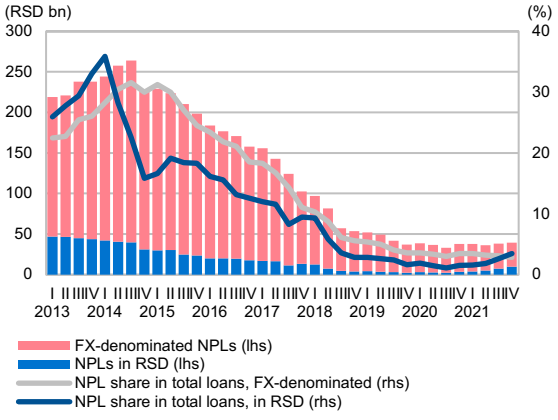
[40] Law on Establishing a Guarantee Scheme as a Measure of Support to the Economy for Mitigating the Effects of the COVID-19 Pandemic Caused by the SARS-CoV-2 Virus (RS Official Gazette, Nos 153/2020 and 40/2021).

[41] Law on Establishing the Second Guarantee Scheme as a Measure of Additional Support to the Economy due to the Prolonged Negative Impact of the COVID-19 Pandemic Caused by the SARS-CoV-2 Virus (RS Official Gazette, Nos 40/2021 and 129/2021).

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

[43] https://www.nbs.rs/export/sites/NBS_site/documents-eng/publikacije/kab/kab_rep_IV_2021.pdf

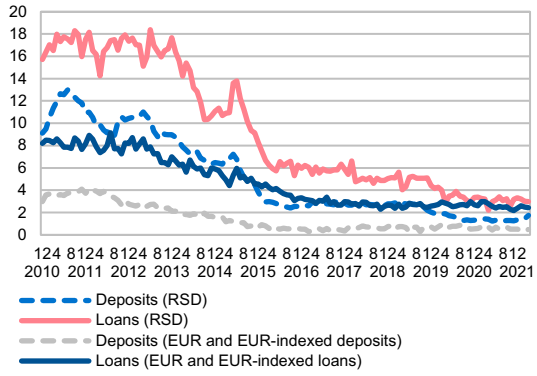
Chart I.5.5 **Corporate NPLs by currency**



Source: NBS.

Chart I.5.6 **Interest rates on corporate loans and deposits – new business**

(weighted average, annual, %)



Source: NBS.

of dollar and Swiss franc receivables remained almost unchanged. To reduce the corporate sector's exposure to the currency risk, the NBS is actively promoting the use of FX risk hedging instruments with the intention to mitigate the risk of exchange rate volatility and thus contribute to the strengthening of financial stability. FX risk hedging instruments on offer are forward agreements (FX forwards), covered FX forward purchase (covered forwards) and currency swaps.

The NPL Resolution Strategy and the NPL Resolution Programme created the conditions for solving the NPL issue. The NBS's timely measures and facilities aimed at preserving the financing conditions for corporates amid the coronavirus pandemic,[44] enabled maintenance of the quality of bank assets and slowed down the occurrence of new NPLs, which pushed the NPLs further down in 2021. This is confirmed by corporate NPL ratios at end-2021. The share of NPLs in total corporate loans (companies and public non-financial sector) equalled 2.9% at end-2021, down by 0.2 pp relative to end-2020. The share of NPLs in total loans was lowered both in the corporate and public non-financial sector. The share of NPLs in total loans to companies declined by 0.1 pp, to 3.0%, and the share of NPLs in total loans to public non-financial sector by 1.1 pp, to 1.9% at end-2021.

Overall in 2021, the sharpest decline in the share of NPLs at the level of the company and public non-financial sector was recorded in mining, manufacturing and water supply (by 1.0 pp, to 3.3%) on account of a decrease in NPLs (by RSD 2.5 bn) and an increase in total gross loans (by RSD 33.3 bn). The said decline is particularly significant if one takes into account that at end-2021 the largest share in both total gross loans (27%) and total NPLs (31%) of corporates was recorded by this sector. On the other hand, the share of NPLs in 2021 increased the most in agriculture, forestry and fishing (by 2.6 pp, to 4.3%), which, at the same time, recorded the most pronounced rise in the level of NPLs (by RSD 2.4 bn), while total gross loans to this sector went up by RSD 1.8 bn.

Since August 2015 when the NPL Resolution Strategy was adopted, the share of NPLs in total loans to companies (Chart I.5.4) decreased the most in construction (by 44.6 pp) and real estate, scientific and service activities, art, entertainment and recreation (by 33.8 pp), while in 2021 the share of NPLs in the same sectors went up by 0.6 pp and down by 0.6 pp, respectively.

In terms of the currency structure (Chart I.5.5), the share of FX-denominated NPLs of companies stood at 2.9% at end-2021, down by 0.6 pp y-o-y. The share of dinar NPLs equalled 3.4%, up by 1.9 pp y-o-y.

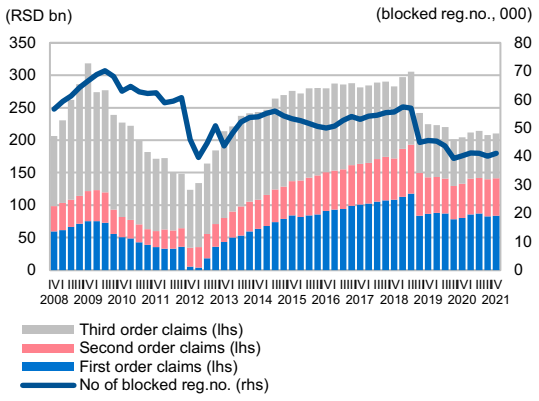
In 2021, banks wrote off RSD 8.4 bn and sold to non-bank entities RSD 3.4 bn worth of NPLs of the corporate sector.[45]

The borrowing costs of corporates declined in 2021 (Chart I.5.6). Observing the costs of borrowing in dinars, in December 2021, the weighted average interest rate on new dinar loans stood at 2.98%, down by 0.24 pp from

[44] See footnote 37.

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

Chart I.5.7 **Movement of claims through enforced collection by priority**



Source: NBS.

December 2020. The weighted average rate on new euro and dinar euro-indexed loans also dropped, to 2.42% in December 2021 (vs. 2.99% in December 2020).

At end-2021, 41,102 companies had blocked accounts (Chart I.5.7), up by 2.1% from end-2020. The amount of funds in the blocked accounts increased by 2.8% from 2020, to RSD 210.2 bn at end-2021.

In 2021, the NBS Enforced Collection received from commercial courts 397 decisions to open bankruptcy proceedings against debtors (up by 31 from 2020), and 350 decisions to close bankruptcy proceedings (up by 13 from 2020). It also received: 11 decisions to suspend bankruptcy proceedings (14 in 2020), 67 decisions to suspend bankruptcy proceedings due to the sale of the bankruptcy debtor (47 in 2020), 50 decisions to open preliminary bankruptcy proceedings with security measures (33 in 2020), and 14 decisions to adopt pre-pack reorganisation plans (18 in 2020).

Continued coronavirus pandemic in 2021 conditioned the need for a new package of economic support measures for corporates.

A new set of measures included direct aid to entrepreneurs, micro enterprises, small, medium-sized and large enterprises, support to the catering sector, hotels, travel agencies, passenger and road transport sector, as well as one-off assistance to citizens, extension of the first guarantee scheme, and adoption of the second guarantee scheme aimed at preserving private sector liquidity.

Based on the Decree Establishing the Programme of Direct Aid from the Budget of the Republic of Serbia to Private Sector Companies Aimed at Mitigating the Economic Consequences of the COVID-19 Caused by SARS-CoV-2,[46] adopted in February 2021, direct aid was provided to corporates to preserve jobs. The amount of the aid equalled a half of the minimum wage and lasted for three months. It was provided to every company that showed interest on condition they do not reduce staff numbers by more than 10% three months after the expiry of assistance.

In addition to general aid provided to corporates, additional aid was also provided for vulnerable sectors (catering, transport, hotel business and tourism sector) in line with the Decree Establishing the Programme of Earmarking and Using Subsidies to Support the Work of Catering and Travel Companies due to Difficulties Faced as a Result of COVID-19 Caused by SARS-CoV-2,[47] adopted in February and then amended in March and April. The main goal of the Programme was the preservation of catering business, preservation of employment in catering, preservation of tourism industry, preservation of other economic branches related to catering and tourism and providing conditions for the recovery and planning of tourism industry for next season.

In May 2021, additional liquidity support was provided to the corporate sector, based on the Decree Establishing the Programme to Support Night Bars and Night Clubs due to Difficulties Faced as a Result of COVID-19 Caused by SARS-CoV-2.[48] The Programme was aimed at sustaining night bars and night clubs and the funds, established by a special Government decision, were given as a grant.

In addition to direct aid, funds for additional liquidity were also provided by extending the deadline for assistance under the first guarantee scheme and by establishing the second guarantee scheme as a new form of assistance.

Extension of the first guarantee scheme in April 2021, in the amount of EUR 500 mn meant that commercial banks could grant loans to micro enterprises, SMEs and entrepreneurs, with a government guarantee in the total amount of EUR 2.5 bn for liquidity and procurement of working capital. The deadline for the disbursement of these loans is end-July 2022.

[46] RS Official Gazette, No 11/2021.

[47] RS Official Gazette, Nos 11/2021, 23/2021 and 38/2021.

[48] RS Official Gazette, No 51/2021.

The second guarantee scheme was established to preserve private sector liquidity and extend additional support to the sectors particularly affected by the pandemic. The loans targeted enterprises from vulnerable sectors (transport, catering, travel agencies and hotels in cities) and enterprises with a fall in operating income of more than 20% in 2020. A total of additional EUR 500 mn worth of loans could be approved under the second guarantee scheme. These are loans for liquidity and working capital which should be implemented until end-July 2022.

To provide even more favourable conditions for loans under the first guarantee scheme, in July 2020 the NBS adopted an additional measure to pay a 0.50 pp higher remuneration rate to banks which approve guarantee scheme dinar loans to their clients at an interest rate that is at least 0.5 pp lower than the stipulated maximum interest rate.[49] These conditions were in force in 2021 as well and were applied to loans approved under the first and the second guarantee scheme.

In July 2021, the Law on Establishment of Financial Support to Legal Entities for Maintaining Liquidity and Working Capital in Difficult Economic Conditions due to COVID-19 Pandemic Caused by SARS-COV-2[50] was adopted. Eligible for financial support are entrepreneurs, cooperatives and other entities in manufacturing, services, trade and agriculture whose loan applications filed with the Development Fund by 10 December 2020 were not addressed until the entry into force of this law.

As in the previous years, in 2021 the Government adopted a series of decrees aimed at stimulating the development of entrepreneurship by providing financial support to startups and by means of development projects. The Government adopted the Decree on Establishing the Programme for Stimulating Entrepreneurship through Development Projects which was implemented in the form of grants worth RSD 200 mn.[51] The aim of the programme was to increase the value and volume of output and turnover, foster balanced regional development, support employment, strengthen competitiveness and protect the environment.

Further, in 2021 the Law Amending the Law on Corporate Income Tax was adopted.[52] The amendment pertains to legal entities – payers of corporate income tax who invest their intellectual property rights in the capital of a resident legal entity. The amendment also indirectly affects legal entities who thus become the owners of the said rights, in the sense of yielding income from using those rights while doing their business, i.e. by ceding those rights to other entities for use.

I.6 Household sector

Key labour market indicators showed favourable trends in 2021, despite the spread of new coronavirus variants. Owing to the additional packages of government measures, real disposable income and domestic demand continued their recovery in 2021. Dinar savings growth persisted as a result of higher lucrativeness of dinar savings relative to FX savings. Some NBS measures, adopted to facilitate the settlement of liabilities for households and access to new sources of financing continued into 2021.

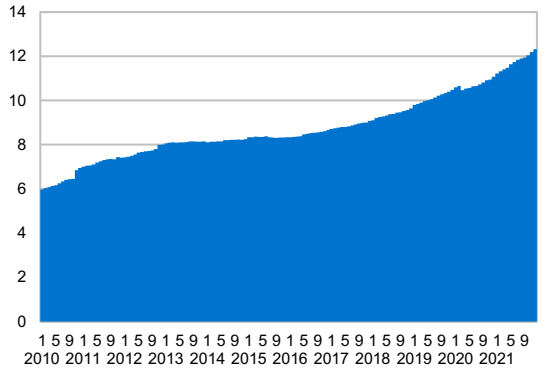
In 2021, labour market performance improved after the initial shock caused by the coronavirus pandemic. According to the revised Labour Force Survey data, the unemployment rate went up in Q1, only to drop later, and finish the year at 9.8% (Q4 2021), lower by 0.9 pp compared to the same period in 2020. At the same time, the employment rate increased by 2.4 pp, to 50.0% which is its highest level on record. The average monthly net wage in 2021 in the Republic of Serbia equalled RSD 65,864, having risen 9.6% in nominal and 5.4% in real terms, relative to 2020.[53] The average pension in 2021 equalled RSD 29,377, which is an increase of 5.8% in nominal terms from the previous year.[54]

In February 2021, Serbian Government adopted the third package of aid to corporates and households alleviating further the adverse effects of the coronavirus pandemic. The said package of economic measures provided direct support to households, contributing to a rise in disposable income and consumer demand.

Despite heightened uncertainty caused by the spread of new coronavirus variants, total savings continued up, strengthening the deposit base of the banking sector as the main source for lending activity. Residents' foreign currency savings reached record EUR 12.3 bn at end-2021, up by EUR 1.2 bn from end-2020 (Chart I.6.1).

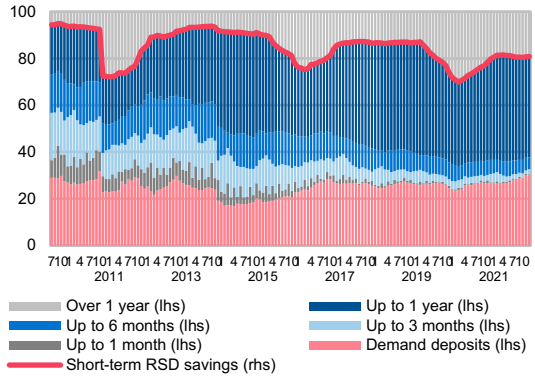
[49] One-month BELIBOR + 2.5 pp.
[50] RS Official Gazette, No 76/2021.
[51] RS Official Gazette, Nos 5/2021 and 44/2021.
[52] RS Official Gazette, No 118/2021.
[53] Source: SORS.
[54] Source: Pension and Disability Insurance Fund of the Republic of Serbia.

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



Source: NBS.

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



Source: NBS.

Maturity structure of FX savings shows that the share of short-term savings in total savings went up by 3.3 pp, to 88.2% in 2021 (Chart I.6.2).

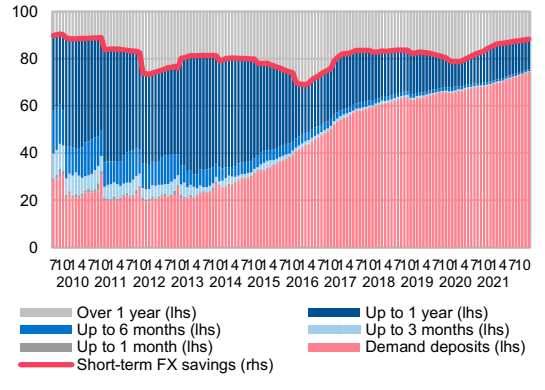
Dinar household savings continued up in 2021, reaching RSD 103.7 bn at the end of the year, which is higher by RSD 11.2 bn compared to end-2020. Promoting savings in the local currency and emphasizing their higher profitability is a part of the NBS strategy of dinarisation of the financial system. This reinforces financial stability given that a higher degree of dinarisation of the financial system ensures greater resilience to the risk of exchange rate volatility and lower impacts from the international environment.

The analysis of savings[55] shows that in the past nine years dinar savings were more profitable than euro savings both in the short and long run reflecting the relative stability of the exchange rate of the dinar against the euro, relatively higher interest rate on savings in dinars compared to the rates on savings in euros, more favourable tax treatment of dinar savings and timely measures aimed at reducing the adverse impact of the coronavirus pandemic.

Chart I.6.3 shows that similar as in the case of FX savings, in 2021 the maturity composition of dinar savings changed slightly and the share of short-term savings in total dinar savings increased, equalling 80.9% at the end of the year.

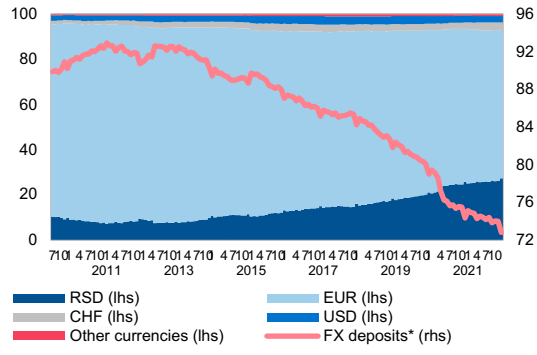
At end-2021, the share of dinar deposits in total household deposit[56] rose by 1.5 pp from end-2020, to 27.2%. Though euro deposits continued to account for

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



Source: NBS.

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

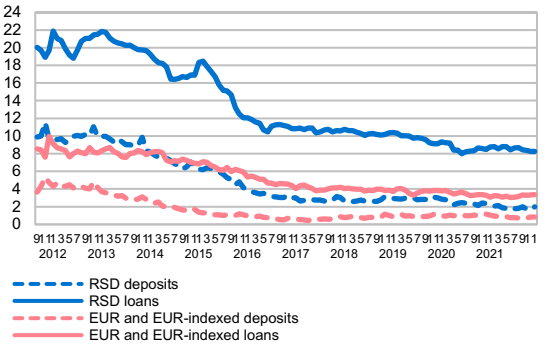


* The share of FX and FX-indexed deposits in total household deposits.
Source: NBS.

[55] https://www.nbs.rs/export/sites/NBS_site/documents-eng/publikacije/dinarizacija/analize/analiza_isplativosti_dds_e_II_2021.pdf

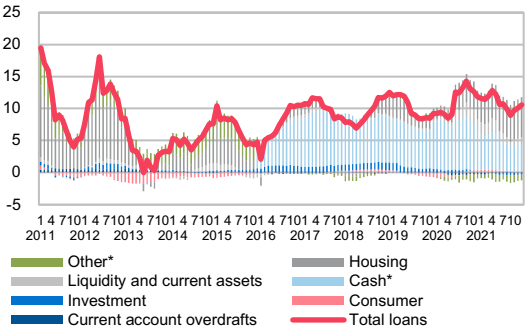
[56] The calculation includes household sector without non-profit institutions providing services to households.

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



Source: NBS.

Chart I.6.6 **Contributions to growth of bank claims on households by purpose**
(y-o-y growth rates, pp)



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

the bulk of deposits (65.9%), their share was 2.0 pp lower than at end-2020. At end-2021, the share of dollar and Swiss franc deposits was low and amounted to 2.9% and 3.3%, respectively (Chart I.6.4).

The interest rates on new dinar deposits were lowered by 0.37 pp, amounting to 1.98% in December 2021. The interest rates on euro household deposits were cut by 0.34 pp from December 2020 to 0.82% in December 2021.

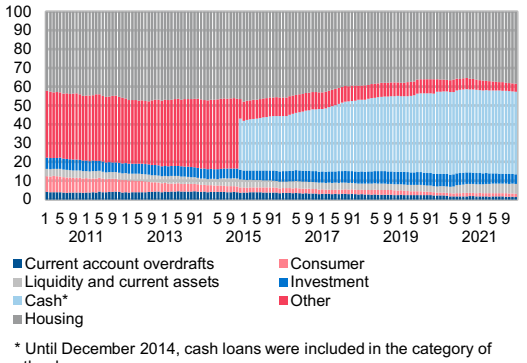
The cost of dinar household borrowing in 2021 dropped by 0.21 pp, to 8.25% in December. At the same time, the interest rates on new euro-indexed and euro loans went up by 0.08 pp, to 3.38% (Chart I.6.5), but on average, they were at their lowest level on record in 2021 (3.20%). The results of the previous NBS monetary policy easing, low interest rates in the international money market and heightened interbank competition contributed largely to better borrowing conditions.

Total receivables[57] from the household sector[58] at end-2021 rose 10.6% in nominal terms from a year earlier (Charts I.6.6). Broken down by purpose, the highest contribution to nominal growth in household receivables came from the rise in housing and cash loans (6.3 pp and 4.4 pp, respectively).

The volume of new household loans in 2021 rose by 28.7% from 2020 when containment measures were at their peak. The composition of new loans shows that cash loans took predominance (57.9%) in 2021. Housing loans also accounted for a considerable portion of new lending. Their share in new household loans equalled 25.2% in 2021, up by 3.8 pp from 2020. Disbursement of housing loans was boosted by higher demand for real estate and continued rise in the supply of apartments.[59] At end-2021, the number of housing loans totalled 161,178 and their gross value measured RSD 528.7 bn, while their share in total bank receivables reached 38.5%, which is 2.2 pp more than in 2020. The share of receivables from cash loans in total household loans was insignificantly reduced (by 0.3 pp) to 44.0% at end-2021 (Chart I.6.7).

As for the lending currency composition, the bulk of new household loans (67.9%) was granted in dinars (down by 1.9 pp from 2020) and NBS regulations contributed to

Chart I.6.7 **Structure of bank claims on households by purpose**
(%)

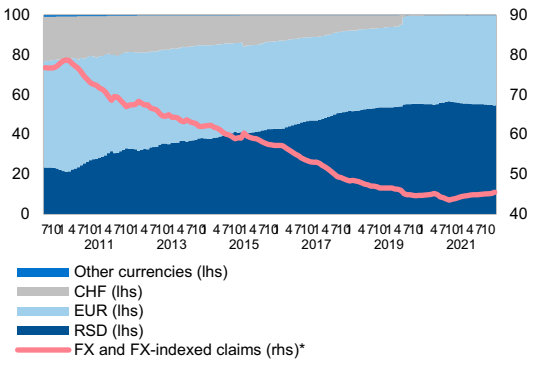


* Until December 2014, cash loans were included in the category of other loans.
Source: NBS.

[57] Receivables include loans, interests, fees and other receivables.
[58] The household sector comprises domestic natural persons, foreign natural persons – residents, private households with employed persons, registered farmers and entrepreneurs.

[59] https://www.nbs.rs/export/sites/NBS_site/documents-eng/publikacije/trendovi/trend_rep_IV_2021.pdf

Chart I.6.8 **Currency structure of bank claims on households**



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

such situation,[60] as they stimulate borrowing in dinars. New dinar cash loans made up over 99% of total new loans in 2021, which is conducive to the dinarisation process. Relative to end-2020, the share of dinar receivables in total household receivables decreased by 1.3 pp to 54.6% (Chart I.6.8), as a result of robust growth in housing loans, which is still predominantly euro-indexed. This share moved above the share of FX and FX-indexed receivables (45.4%) among which euro-indexed and euro loans take prevalence (accounting for 45.2% of total bank receivables from households).

The share of gross NPLs in total household loans (gross NPL ratio) was 4.1% in December 2021, up by 0.5 pp from end-2020. At end-2021 gross NPL ratio for housing loans dropped by 0.5 pp relative to the previous year, to 2.0%, while it went up by 1.6 pp, to 5.8% for cash loans.

In August 2020, the NBS adopted the Decision on Temporary Measures for Banks to Facilitate Access to Financing for Natural Persons.[61] This Decision reduced the minimum degree of completion of a residential building required in order for its purchase to be financed from a housing loan with preferential treatment, allowed the housing loan repayment period to be extended by maximum five years, and facilitated the granting of loans of up to 90,000 dinars to a natural person who does not receive his/her pension via an account with that bank, with the maturity of up to two years. In December 2021, the effect of these measures was extended until December 2022. In addition, the Decision enables a bank to exclude exposures from a new housing loan to a natural person secured with mortgage and entered in the cadastre even if the natural person is using the loan to buy the real estate from an investor, for the purposes of establishing capital conservation buffer and systemic risk buffer. The implementation of regulations which allows banks to lower downpayment necessary for the approval of loans for first-time home buyers from 20% to 10% continued into 2021.[62]

At end-2020 the NBS adopted two decisions aimed at facilitating the settlement of liabilities for bank clients and lessees facing difficulties due to the adverse effects of the coronavirus pandemic. Pursuant to the Decision on Temporary Measures for Banks to Enable Adequate Credit Risk Management Amid COVID-19 Pandemic, a bank is obliged to approve facilities in the repayment of liabilities for borrowers not able to settle their liabilities at their request filed before 30 April 2021.[63] The said facilities covered, among other groups: the unemployed, debtors whose average net monthly income in the last three months was below the average wage in the Republic of Serbia, as well as debtors with an average net monthly income in the last three months up to RSD 120,000, whose net monthly income was lower by 10% or more relative to the income before 15 March 2020 and whose debt-to-income ratio was above 40%. Pursuant to the Decision on Temporary Measures for Financial Lessors to Enable Adequate Credit Risk Management amid COVID-19 Pandemic, all debtors fulfilling the stipulated conditions were able to apply for facilities with financial lessors by 30 April 2021.[64] It needs to be pointed out that banks and financial lessors are not allowed to charge fees for the measures and activities undertaken in line with these decisions nor the pertaining costs including costs of handling a client's request. The NBS will keep on monitoring the developments in such circumstances and take timely actions aimed at preserving financial system stability.

The highest number of housing loans (65.26%) were insured by the National Mortgage Insurance Corporation. At end-2021, 105,179 loans were insured (up by 765 from end-2020). The initially insured amount was EUR 3.54 bn,

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

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

[62] Decision Amending the Decision on Measures for Safeguarding and Strengthening Stability of the Financial System (RS Official Gazette, No 84/2020).

[63] The Decision on Temporary Measures for Banks to Enable Adequate Credit Risk Management amid COVID-19 Pandemic (RS Official Gazette, Nos 150/2020 and 21/2021).

[64] Decision on Temporary Measures for Leasing providers to Enable Adequate Credit Risk Management Amid COVID-19 Pandemic (RS Official Gazette, Nos 150/2020 and 21/2021).

of which EUR 2.48 bn was outstanding. At the end of 2021, the Corporation portfolio contained 429 past due loans worth EUR 16.3 mn. These loans were declared past due because of events of default, and until the mortgaged property is sold, the Corporation is the one paying the annuities. Compared to 2020, the number of insured past due loans decreased by 139, while their amount went down by EUR 4.8 mn. Since the Corporation began to operate, 600 mortgages under insured housing loans were foreclosed. It is important to stress, among other things, that only few NPLs are declared due.

The table below contains the main indicators for the household sector for the period 2010–2021.

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

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Bank claims on households												
RSD bn	571.2	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
EUR mn	5,414.4	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
Total deposits of households												
RSD bn	792.9	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
EUR mn	7,515.5	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
FX bank claims to total claims[1]	72.4	67.4	65.0	62.1	59.0	57.2	53.0	48.3	46.4	44.7	44.1	45.4
FX to total deposits[1]	92.4	90.7	92.1	89.4	88.7	87.1	85.1	84.2	81.8	79.0	74.3	72.8
FX deposits to FX bank claims[1]	177.2	191.2	214.7	223.3	233.4	233.9	241.0	246.2	241.3	248.1	237.7	232.1
LTV ratio[2]	65.4	65.6	65.7	65.9	66.1	66.4	66.8	67.4	67.8	67.2	64.9	65.5
Average loan per resident												
RSD thousand	76.3	81.0	87.8	91.0	99.9	105.3	117.4	127.7	144.5	158.8	177.9	197.1
EUR	722.8	773.9	771.9	793.4	826.3	865.7	950.5	1,077.6	1,222.8	1,350.8	1,513.3	1,676.6
Average loan amount												
RSD thousand	427.6	439.6	460.4	489.9	511.1	472.2	483.9	483.8	516.3	553.1	564.0	575.8
EUR	4,052.8	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	4,896.6
Average loan per user												
RSD thousand	509.0	530.9	570.1	612.0	644.7	614.6	634.7	646.9	701.7	747.9	786.7	825.1
EUR	4,824.9	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	7,017.4

[1] FX claims and deposits include FX-indexed claims and deposits.

[2] Average LTV for total initially secured housing loans with the National Mortgage Insurance Corporation.

Sources: SORS, ASB, National Mortgage Insurance Corporation and NBS.

II Financial sector

Accounting for around 91% of financial sector assets, the banking sector of the Republic of Serbia was stable in 2021 owing to adequate capitalisation, high liquidity and profitability. Lending activity of domestic banks recorded a 9.9% rise at end-2021 (almost double-digit growth for the fourth consecutive year). Though the coronavirus pandemic slowed the downward trend of the share of NPLs in total loans, this indicator additionally dropped over the year and is below the pre-pandemic level, suggesting the timeliness of NBS measures which prevented a more serious adverse impact on corporates and households and thus on financial stability. In 2021, a positive net financial result was posted, with 1.2% RoA and 7.8% RoE.

II.1 Banking sector

II.1.1 Capital adequacy

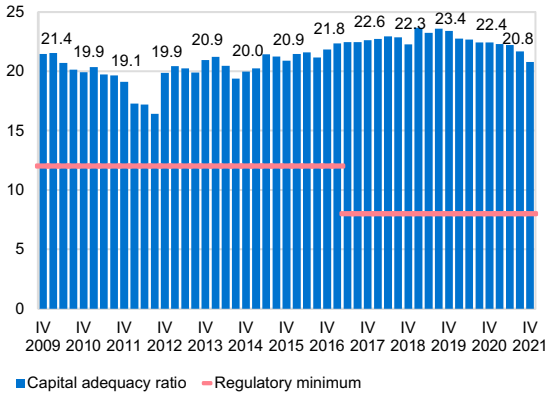
In 2021, the Serbian banking sector was adequately capitalised, as confirmed by CARs, which moved considerably above the prescribed regulatory minimums. At end-2021, CAR stood at 20.8% (Chart II.1.1).

At end-2021, capitalisation of the banking sector was above the average of the region (Chart II.1.2). Owing to the quality capital base, high levels of Common Equity Tier 1 (CET 1) capital ratio (19.6%) and Tier 1 capital adequacy ratio (19.7%) were recorded.

At end-2021, CAR went down by 1.7 pp y-o-y owing to the sharper growth in total risk-weighted assets compared to regulatory capital. Regulatory capital increased by RSD 2.1 bn, to RSD 626.9 bn at end-2021, while banks' CET 1 decreased by RSD 6.8 bn, to RSD 593.2 bn. In 2021, risk-weighted assets rose by RSD 231.9 bn, to RSD 3,018.9 bn, largely on account of elevated bank lending.

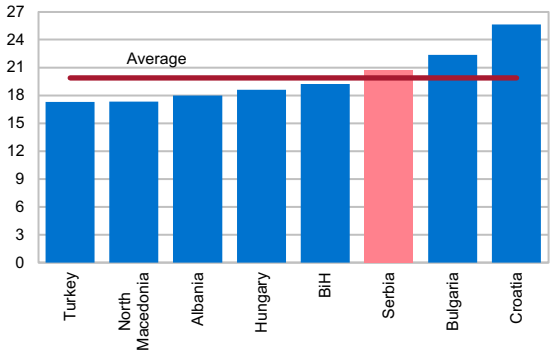
Judging from end-2021 reports, banks allocated RSD 166.5 bn worth of CET 1, or 5.5% of risk-weighted assets by means of the combined capital buffer.[65] Maintenance of capital buffers above the prescribed regulatory minimum increases banks' resilience to losses, decreases excessive exposures and limits capital distribution to contain

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



Source: NBS.

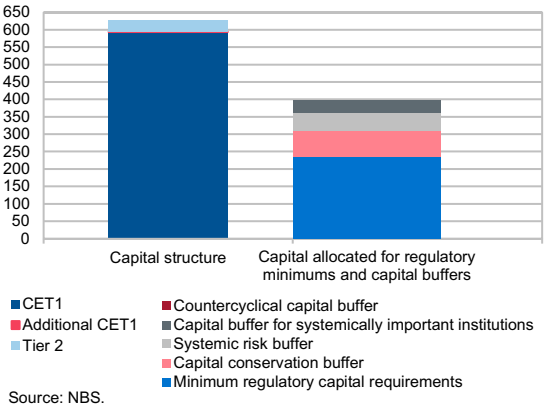
Chart II.1.2 **Regulatory capital to risk-weighted assets, countries of the region**
(2021, latest available data, %)



Sources: NBS and IMF.

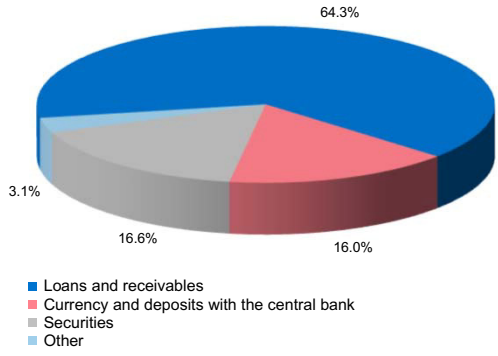
[65] The combined capital buffer consists of capital conservation buffer, countercyclical buffer, capital buffer for systemically important banks, and systemic risk buffer.

Chart II.1.3 **Structure of regulatory capital and capital buffers**
(2021 eop, RSD bn)



Source: NBS.

Chart II.1.4 **Structure of assets of the Republic of Serbia's banking sector**



Source: NBS.

systemic risks in the financial system. Relaxing the requirements for maintaining capital buffers in case of a shock, such as 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 part of allocated capital buffers (capital conservation buffer and systemic risk buffer) for financing this form of lending. In December 2021, the application of this measure was extended by another year, until the end of 2022.[66]

In view of the traditional bank business models, based on lending to corporates and households, in 2021 credit risk was the most dominant risk in the Serbian banking sector. Credit risk accounted for the largest share in risk-weighted assets (87.4%), while the shares of operational risk and market risk were lower (11.8% and 0.8%, respectively).

High solvency of the banking sector is also evidenced by the leverage ratio,[67] introduced in Serbia's regulatory framework by Basel III implementing regulations. Its value at end-2021 stood at 11.1%.

II.1.2 Level, structure and quality of assets

At end-2021, net assets of the banking sector amounted to RSD 5,048.0 bn (around 81% of GDP). In terms of the ownership structure of the banking sector, the largest share was held by foreign-owned banks (87%), while domestic state-owned banks and domestic private banks accounted for 7% and 6%, respectively.

Loans and receivables accounted for the largest portion of total net assets (64.3%), reflecting bank business models oriented toward traditional credit-deposit activities. Around 16.0% of assets related to cash and deposits with the central bank and 16.6% to securities, primarily securities of the Republic of Serbia.

At end-2021, the credit portfolio was worth RSD 2,941 bn. The bulk of the portfolio related to corporate (49.5%) and household loans (44.7%). Total net corporate loans stood at RSD 1,455 bn, of which 78.4% was in foreign currency (78.1% in euros). Total net household loans were worth RSD 1,316 bn, of which RSD 574 bn (44%) related to cash loans and RSD 520 bn (40%) to housing loans. The share of household loans in foreign currency was 46.4% of total household loans, and these were almost entirely denominated in the euro.

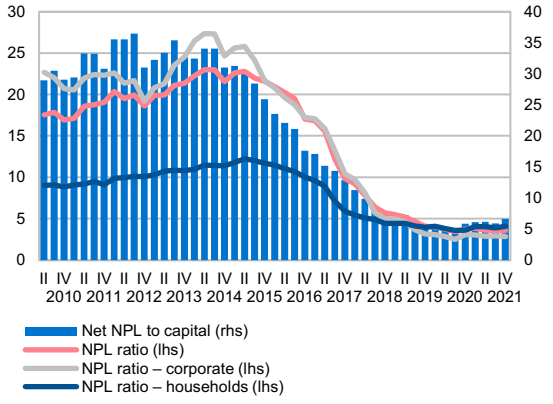
As loans account for a dominant share of total balance sheet assets of the domestic banking sector, the share of NPLs in total loans is a significant measure of asset quality. Following record low values of the share of NPLs in total loans in 2020, the coronavirus pandemic slowed the downward trend of this indicator. At end-2021, it stood at 3.6%. In y-o-y terms, this indicator was reduced by 0.14 pp when total gross loans went up by 10.7% or RSD 293.9 bn, while gross NPLs increased by 6.5% or RSD 6.6 bn. The fact that this share is below the pre-pandemic level indicates that NBS measures[68] were timely, thus preventing a stronger negative effect on corporates and households, and in turn on financial stability.

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

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

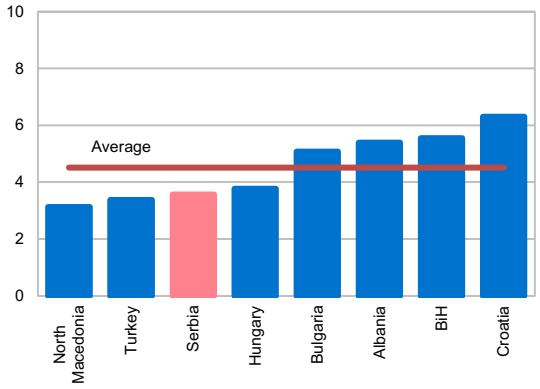
[68] In 2020, the NBS introduced moratoriums to facilitate settlement of liabilities to banks for debtors affected by the coronavirus pandemic and prevent occurrence of new NPLs. The first moratorium was adopted in March and lasted for 90 days, and a new one in July which lasted for 60 days. Further, in December 2020, an obligation was stipulated for banks to approve facilities in repayment of liabilities for borrowers in difficulties at their request.

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



Source: NBS.

Chart II.1.6 **NPL ratios, countries of the region**
(2021, latest available data, %)



Sources: NBS and IMF: GFSR.

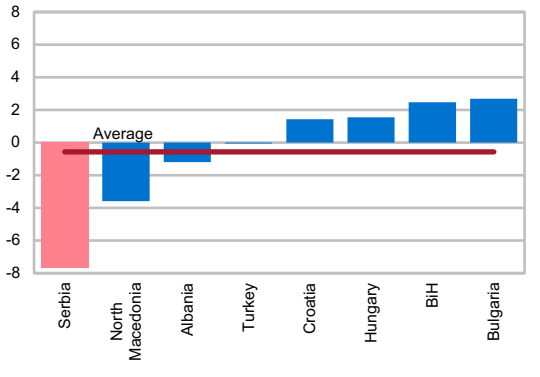
Several years' long downward trend of NPLs, even amid the pandemic, is a result of a systemic approach to addressing NPLs (initiated in 2015 with the adoption of the NPL Resolution Strategy), which continuously yielded excellent results. At end-2021, the share of NPLs was reduced by 18.7 pp relative to August 2015, when the NPL Resolution Strategy was adopted.

In 2021, RSD 14.8 bn worth of gross NPLs were written off and RSD 3.4 bn assigned/sold.

The share of NPLs in total loans to corporates (companies and public non-financial sector) edged down by 0.2 pp y-o-y, to 2.9% in December 2021. The share of NPLs in total loans to companies declined by 0.1 pp, to 3.0% and the share of NPLs in total loans to the public non-financial sector by 1.1 pp y-o-y, to 1.9% at end-2021. Observed by sector, the highest absolute rise in NPLs in 2021 was recorded in the agriculture, forestry and fishing sector. Total NPLs of this sector went up by RSD 2.4 bn and their share in total gross loans by 2.6 pp, to 4.3%. On the other hand, the amount of NPLs was reduced the most in mining, manufacturing, water supply, sewerage, waste management and remediation sectors, etc. NPLs of this sector went down by RSD 2.5 bn and their share in total gross loans by 1.0 pp, to 3.3%. Relative to the period before the NPL Resolution Strategy, the most pronounced drop was recorded in construction, where the share of NPLs in total loans of this sector went down by 46.6 pp, and real estate business and trade sector whose share was lowered by 34.8 pp.

At end-2021, the share of NPLs in total gross loans to households[69] came at 4.1%, up by 0.5 pp from end-2020. The increase in the share in y-o-y- terms is a result of a more significant rise in gross NPLs which went up by 24.9% (RSD 11.2 bn) in 2021, while total gross loans to households increased by 10.4% (RSD 130.3 bn). The strongest contribution to y-o-y growth in the share of NPLs of the household sector came from cash loans. At end-2021, the NPL ratio for cash loans increased by 1.6 pp y-o-y, to 5.8%. This was a result of the increase in the amount of NPLs to households of RSD 10.6 bn in 2021. At the same time, total cash loans went up by RSD 20.8 bn.

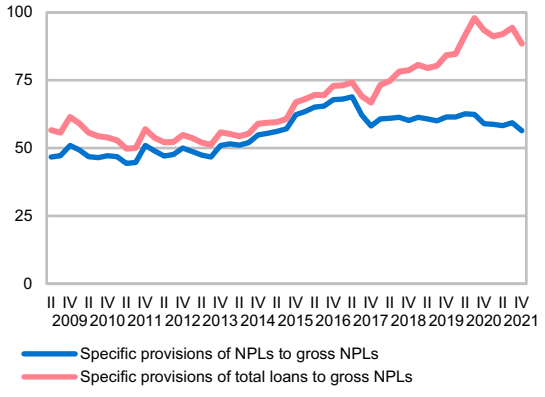
Chart II.1.7 **Change in the NPL ratio, countries of the region**
(2021 relative to 2008, pp)



Sources: NBS and IMF: GFSR.

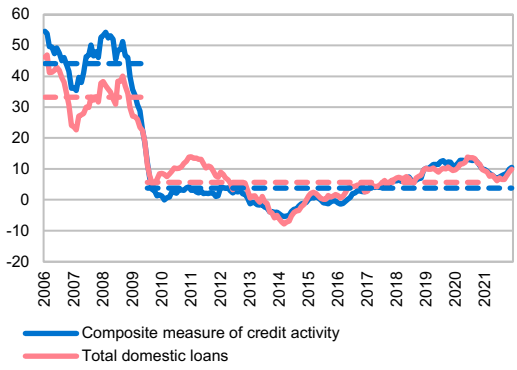
[69] The household sector includes, in addition to households, entrepreneurs, private households with employed persons and registered farmers.

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.

On the other hand, NPLs in housing construction declined by RSD 0.6 bn y-o-y, which, coupled with the increase in total housing loans by RSD 78.5 bn, pushed down their share in total housing loans by 0.5 pp y-o-y, to 2.0%.

At end-2021 the coverage of total gross NPLs with allowances for impairment stood at 56.3% on average, and the coverage of total loans with allowances for impairment measured 88.5%. 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 share over a one-year horizon in order to assess the resilience of the banking sector. The banking sector would remain adequately capitalised even under the worst-case scenario.[70]

II.1.3 Lending activity

In 2021, the domestic lending activity continued up, driven by both supply- and demand-side factors. The supply of loans went up on the back of NBS monetary policy in the previous period, extension of validity and increase in the amount of loans granted under the Guarantee Scheme, favourable financing conditions in the domestic and international money market, as well as interbank competition. On the other hand, the demand for loans expanded owing to greater needs for liquidity, debt restructuring and purchase of real estate.

At end-2021, total domestic loans, excluding the exchange rate effect,[71] grew by 9.9% y-o-y, recording almost double-digit growth for the fourth consecutive year. After a slowdown in lending in the first half of 2021, growth in loans accelerated in Q3 and intensified in Q4 as the high base effect from 2020 as a result of the moratorium waned and lending increased, primarily to the real sector. In this period, the accelerated growth of domestic lending stemmed from the rise in economic activity and favourable terms of financing, which reflected on higher lending, especially to the corporate sector.

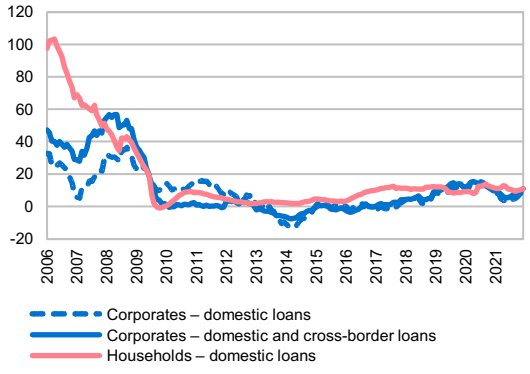
The rise in corporate lending in 2021 was driven by liquidity and working capital loans, which are the dominant loan category, followed by investment loans. Excluding the exchange rate effect, domestic corporate loans increased by 9.9% from a year earlier. The continuation of favourable financing conditions under guarantee schemes, which implied approval of loans largely in dinars, coupled with low interest rates in the international money market and NBS monetary policy easing contributed to the rise in the degree of dinarisation and thus to the strengthening of financial stability.

The rise in domestic household loans was driven primarily by housing and cash loans, as the two dominant loan categories. Excluding the exchange rate effect, domestic household loans increased by 10.8% from a year earlier. Favourable borrowing terms and the rise in disposable income, higher demand for real estate and continued growth in completed apartments, as well as NBS measures

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

[71] Calculated applying the dinar exchange rate against the euro, Swiss franc and dollar as at 30 September 2014 (the so-called programme exchange rate used for monitoring the performance under the arrangement with the IMF), taking into account the currency structure of loan receivables.

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



* Excluding the exchange rate effect.
Source: NBS.

aimed at facilitating conditions for the approval of housing loans, contributed to the rise in household demand for housing loans. Since mid-2021, housing loans contributed the most to the increase in y-o-y growth in household lending, unlike the situation in previous years when the rise was driven by cash loans which were primarily used for the financing of current spending.

The Bank Lending Survey shows that in Q1 2021, for the first time since the pandemic, banks relaxed their standards for approving corporate loans despite the still heightened risk perception and lower risk appetite. The relaxation affected dinar loans more than FX-indexed loans, i.e. SMEs more than large enterprises. Tightening of conditions for approving loans in Q1 pertained to standards not related to costs – collateral requirements, except for small enterprises, reduction in maximum loan amount, and shortening of loan maturity. After that, in Q2 2021, banks eased standards for approving dinar loans to corporates, which is partly a result of loan approval under guarantee schemes at favourable conditions, while the tightening of standards affected FX-indexed loans. Such trend continued throughout the year. The tightening largely pertained to cost-related conditions (interest margins and accompanying loan costs), though interest margins for SMEs were reduced in Q4 2021 only, which is attributable to favourable financing conditions under guarantee schemes.

Standards for approving household loans in early 2021 were the same as at end-2020, as a result of a general increase in perceived risk, just as in the case of corporates. Afterwards, credit standards were eased, on the back of a positive outlook in the real estate market and higher interbank competition. Standards for FX-indexed housing loans remained unchanged only in Q4 2021. Relaxation mainly affected the most dominant loan categories – dinar cash loans (and refinancing loans) and FX-indexed housing loans.

The degree of dinarisation increased as a result of continued favourable financing conditions under guarantee schemes and past NBS monetary policy easing, which brought the interest rates on new dinar loans to corporates closer to interest rates on euro-indexed loans.

In 2021, corporate loan demand went up. For the first time since the pandemic, banks estimated that capital investment contributed to the growth in corporate loan demand in Q1 and this continued in the remainder of the year. In addition, the rise was driven by the need for financing working capital and debt restructuring. At the end of the year, banks assessed that accumulated assets of enterprises and loans from non-banking institutions no longer curtailed the loan demand, as a result of the reduced need for the provision of direct government fiscal aid in the form of subsidies. Banks estimated that the demand for dinar cash loans and dinar refinancing loans as well as for FX-indexed housing loans went up. This rise reflected the need of households to refinance their liabilities and to purchase real estate.

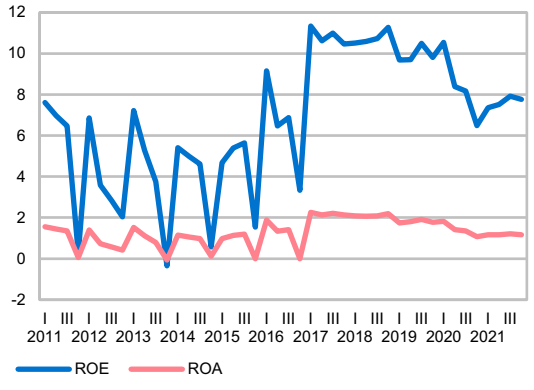
II.1.4 Profitability

The Serbian banking sector posted a positive financial result in 2021. Banking sector profit at year end resulted in RoA of 1.2% and RoE of 7.8%. RoA was below the region's average, as well as RoE owing to high capitalisation of the Serbian banking sector.

In 2021, 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).

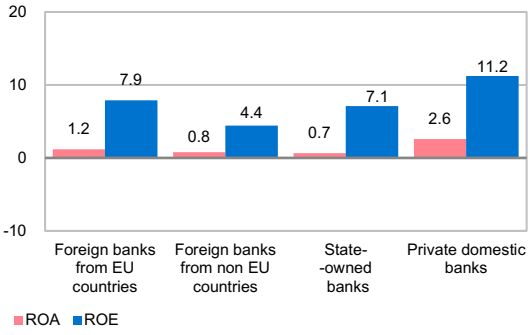
Banking sector's net profit before tax amounted to RSD 53.9 bn in 2021, increasing by RSD 7.8 bn (or 16.9%) from 2020. Total profit of RSD 54.7 bn was made by 20 banks (99.1% of banking sector net assets), while three banks operated at a loss of RSD 0.8 bn.

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



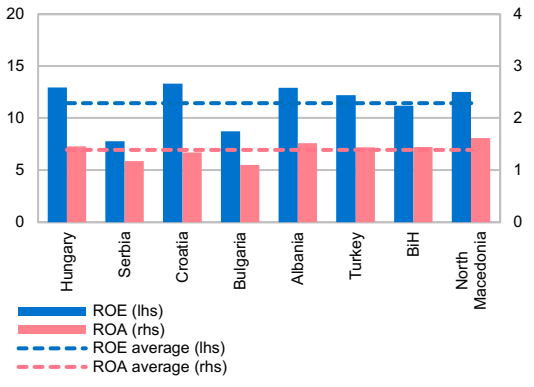
Source: NBS.

Chart II.1.13 **Profitability indicators, by majority shareholder's country of origin and ownership structure in 2021**
(%)



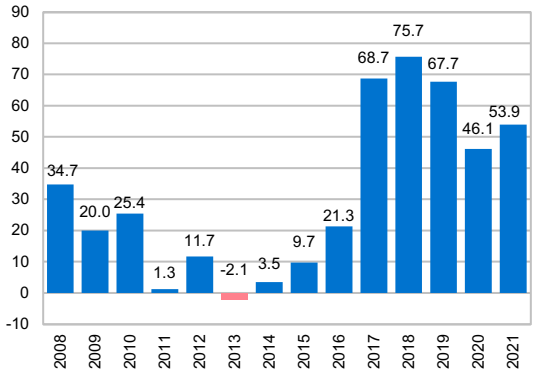
Source: NBS.

Chart II.1.12 **ROE and ROA, countries of the region**
(2021, latest available data, %)



Sources: NBS and IMF: GFSR.

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



Source: NBS.

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. Observing the y-o-y change, the burden of the net credit losses on banks' financial result was reduced. Net losses from impairment of financial assets not carried at fair value through income statement dropped by RSD 15.1 bn, contributing to a better financial result. Net profit from fees and commissions contributed to the y-o-y growth (by RSD 15.1 bn) in banks' net profit in 2021. What worked in the opposite direction was the increase in other expenses by RSD 9.9 bn in 2021 compared to the previous year and the effect of exchange rate differences and contracted currency clause worth RSD 12.1 bn.

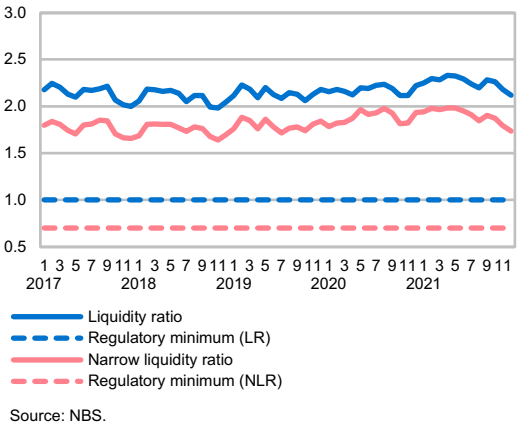
II.1.5 Liquidity

Serbian banking sector liquidity remained high in 2021, with no adverse impact of the coronavirus pandemic in this business segment.

At end-2021, the average monthly liquidity ratio stood at 2.1, 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 199.8%, the liquidity coverage ratio was also considerably above the limit set by the regulator (100%).

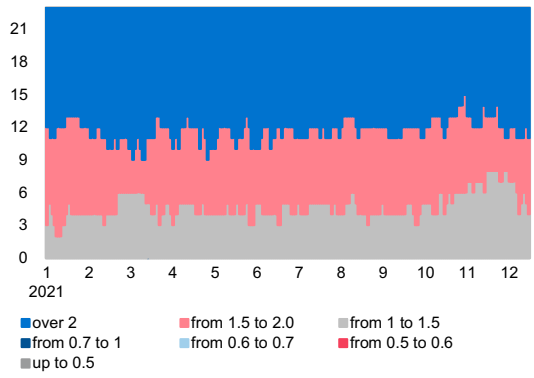
According to the results of macroprudential stress-tests, Serbia's banking sector would remain highly liquid even in the conditions of extreme deposit withdrawal. A

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



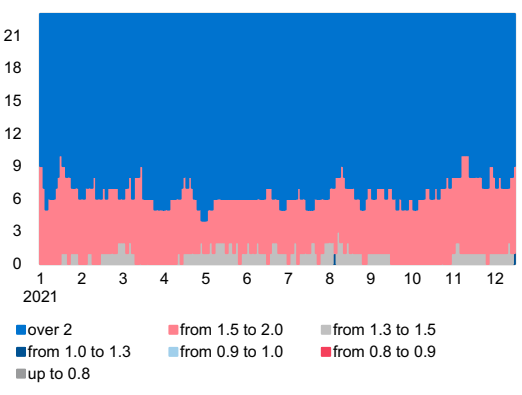
Source: NBS.

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



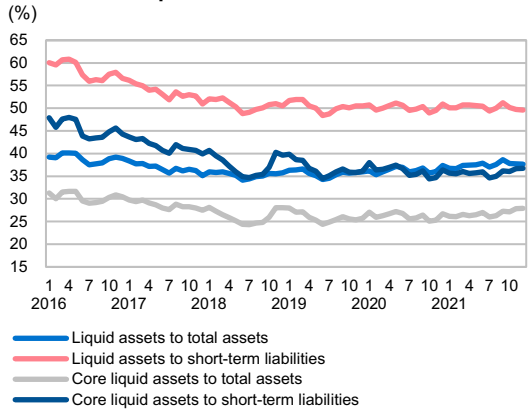
Source: NBS.

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



Source: NBS.

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



Source: NBS.

decline in the liquidity ratio, observed in October each year, is due to the maturing of deposits termed during the "Savings Week", the remaining maturity of which then drops to under a month. In 2021, this fall was not as pronounced as in previous years. The average monthly liquidity ratio can be seen in Chart II.1.15, while Charts II.1.16 and II.1.17 show the distribution of liquidity ratio by banks.

At end-2021, liquid assets accounted for 37.7% of total assets and covered 49.6% of short-term liabilities. The share of liquid assets in the narrow sense in total assets and the coverage of short-term liabilities was 27.9% and 36.8%, respectively. 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.

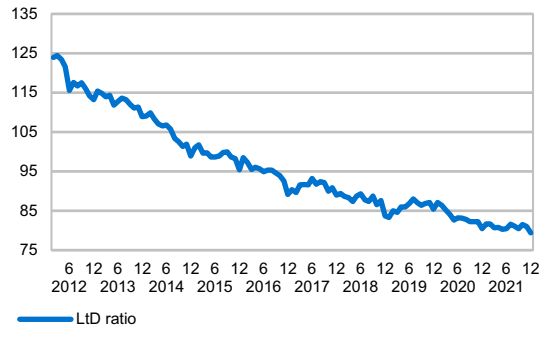
II.1.6 Sources of funding

Banks operating in the Republic of Serbia rely mostly on domestic, stable sources of funding. Loan-to-deposit ratio measured 79.4% at end-2021 (Chart II.1.19). In 2021, the amount of deposits was sufficient to cover the entire amount of loans. Strengthening of the domestic deposit base has helped banks reduce their reliance on other sources of funding, e.g. on parent bank financing. This decreases 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 post-crisis period.[72]

Total deposits accounted for 75.7% and capital for 14.3% of the total banking sector liabilities at end-2021 (Chart

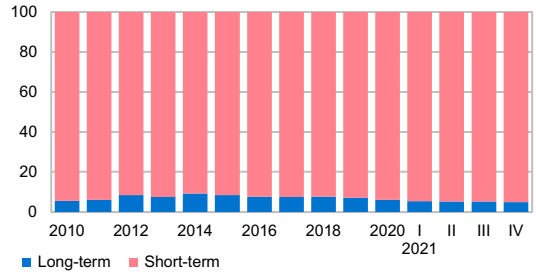
[72] *Annual Financial Stability Report – 2012*, Section I.1 International Environment.

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



Source: NBS.

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

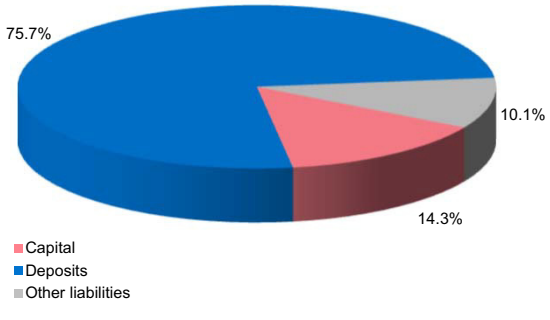


* Long-term deposits consist of deposits maturing in over 1 year, while short-term deposits consist of deposits maturing within the next year, matured and sight deposits.

Source: NBS.

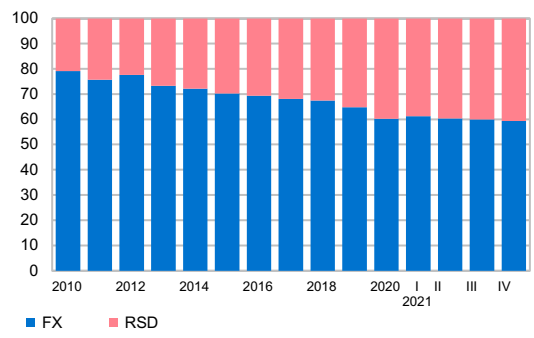
II.1.20). The share of total FX deposits (which are mainly in euros) was at almost the same level – 59.4% at end-2021, compared to 60.2% at end-2020 (Chart II.1.21). In terms of maturity composition, short-term deposits made up the largest share (95.1%) (Chart II.1.22).

Chart II.1.20 **Sources of banking sector funding**



Source: NBS.

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



Source: NBS.

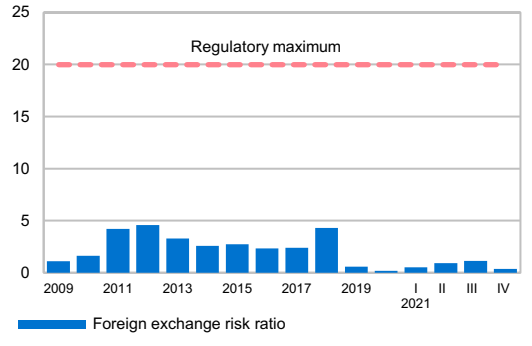
II.1.7 Sensitivity to market risks

Serbia's banking sector exposure to market risks in 2021 was minimal.[73] Exposure to market risks was lower than the year before, accounting for only 0.8% of total risk weighted assets.

At end-2021, the FX risk indicator, expressed as net open FX position relative to regulatory capital (Chart II.1.23) was 0.4%,[74] 0.2 pp higher than the year before, well below the regulatory ceiling of 20.0%.

Bank assets and liabilities were matched in terms of currency structure. 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

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



Source: NBS.

[73] Market risks are: price, exchange rate and commodity risks.
[74] Calculated at net principle.

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.

Table II.1.1 **Serbia: Key macroprudential indicators**
(in % unless otherwise indicated)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
Sectoral distribution of loans to total loans – 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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

Source: NBS.

Table II.1.2 **Serbia: Financial sector structure**

	2014			2015			2016			2017			2018			2019			2020			2021		
		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	76	3,226	100	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
(in % of GDP)		*77.5%*			*77.1%*			*78.5%*			*78.0%*			*82.4%*			*83.6%*			*92.3%*			*89.2%*	
Banking system	29	2,969	92.0	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
State-owned banks	6	571	17.7	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
Local private banks	2	187	5.8	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
Foreign-owned banks	21	2,211	68.5	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
Greek	4	418	13.0	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
Italian	2	738	22.9	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
French	3	304	9.4	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
Austrian	3	441	13.7	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
Hungarian	1	41	1.3	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
Slovenian	2	39	1.2	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
Other	6	230	7.1	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
Nonbank financial institutions	47	257	8.0	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
Insurance companies	25	168	5.2	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
Pension funds	6	24	0.7	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
Leasing companies	16	65	2.0	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

Source: NBS.

II.2 Macroprudential stress testing

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.

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 were tightened in 2021 due to the heightened uncertainty amid the coronavirus spreading and geopolitical tensions.

Basel III standards[75] and NBS regulations require that banks also 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 on 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 macroeconomic scenarios based on assumed developments in the macroeconomic environment. *The*

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

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,[76] with the potential to impact the monthly movement of NPLs, three showed reliable predictive power: (1) nominal exchange rate, (2) seasonally-adjusted 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 exchange rate (elasticity coefficient of 0.66), in s-a real net wages (-0.20) and in the key policy rate (0.03).

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 assumed scenarios: -0.08 pp, 3.05 pp and 6.36 pp, respectively.

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

Table II.2.1 **Elasticity coefficients of NPLs and contributions of independent variables from Q4 2020 to Q4 2021**

	Elasticity coefficients	Contributions of independent variables (pp)
Nominal exchange rate	0.66	0.00
Seasonally-adjusted real net wages	-0.20	-0.17
Key policy rate	0.03	-0.24

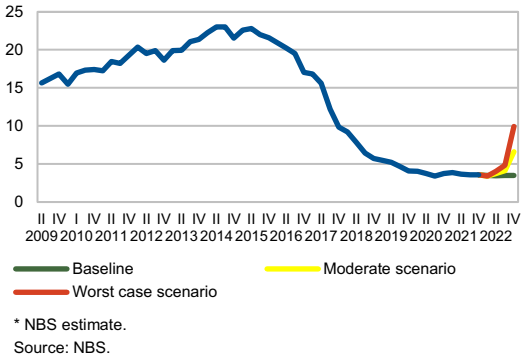
Source: NBS.

Table II.2.2 **Overview of scenarios**

	Baseline	Moderate	Worst case
Y-o-y growth in NPL ratio (pp)	-0.08	3.05	6.36
Y-o-y depreciation of RSD against EUR (%)	0.11	16.49	34.02
Y-o-y change in key policy rate (pp)	/	11.25	21.75
Y-o-y growth in real net wages (%)	-3.68	-12.95	-20.95

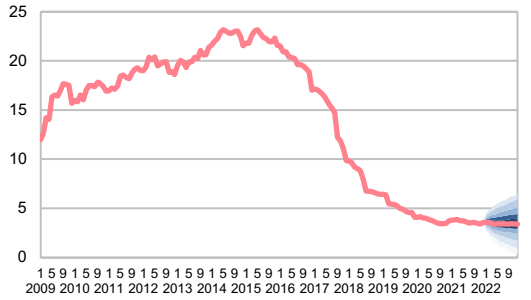
Source: NBS.

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.

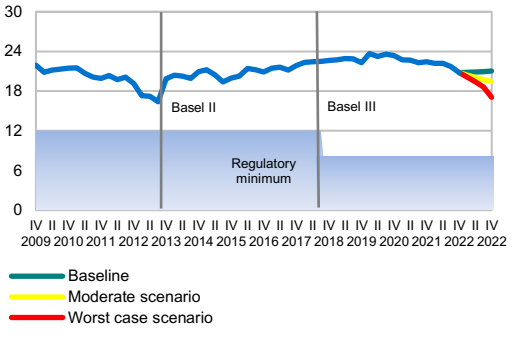
[76] A detailed explanation of the applied econometric model is available in the *Financial Stability Report – 2017*, Text box 3.

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.

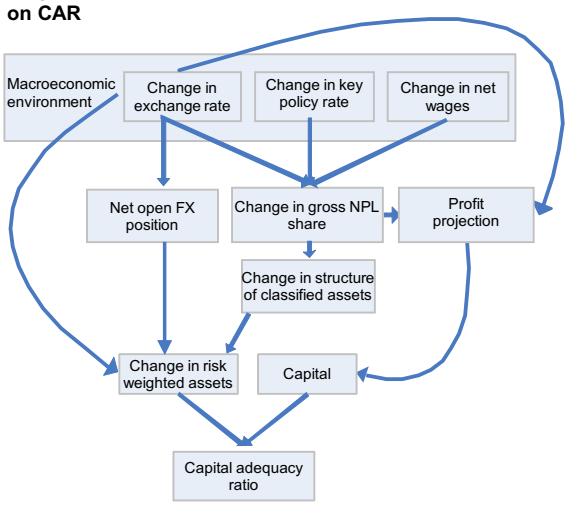
The CAR level is directly affected by the changes in risk-weighted assets, as well as by the changes in capital positions due to the inclusion of the financial result, issuance of new shares or, for instance, increase in deductibles from capital. However, there are also significant indirect effects, 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.

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



* NBS estimate.
Source: NBS.

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



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). 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 National Bank of Serbia, 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:[77]

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

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

– 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 2021, Common Equity Tier 1 capital adequacy ratio and regulatory capital adequacy ratio for the Serbian banking sector measured 19.65% and 20.77%, respectively.

Under the baseline scenario, Common Equity Tier 1 capital adequacy ratio would be 19.89%, and regulatory capital adequacy ratio – 21.00%

Under the moderate scenario, these ratios would measure 18.40% and 19.44%, respectively.

Under the worst-case scenario, implying a powerful but highly improbable shock, Common Equity Tier 1 capital adequacy ratio would be 16.10%, and regulatory capital adequacy ratio – 17.07%.

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

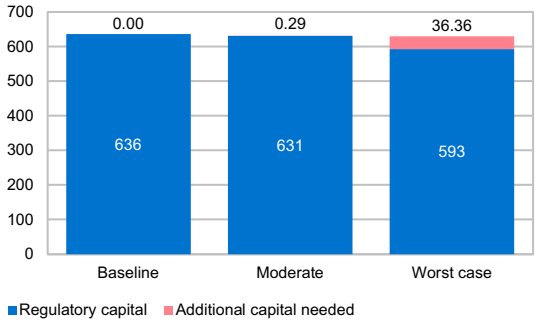
Based on data as at 31 December 2021, and under the **baseline scenario** assumptions, there is no need for the recapitalisation of banks in order to meet the requirements for Common Equity Tier 1 capital ratio of 4.5% of risk-weighted assets, Tier 1 capital ratio of 6% of risk-weighted assets and regulatory 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,[78] 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 0.29 bn, or 0.05% of the regulatory capital at the banking sector level. An alternative to capital increase would be a RSD 1.75 bn decrease in risk-weighted assets, which accounts for 0.05% of the banking sector's risk-weighted assets.

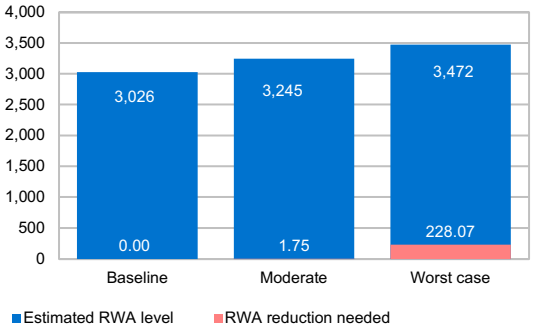
Under the assumptions of the **worst-case scenario**, banks would need additional capital of around RSD 36.36 bn, or 6.13% of the regulatory capital at banking sector level. An alternative to capital increase would be a RSD 228.07 bn decrease in risk-weighted assets, which accounts for 6.57% of the banking sector's risk-weighted assets.[79]

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



* NBS estimate.
Source: NBS.

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



* NBS estimate.
Source: NBS.

[78] 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.

[79] Banks which fail to meet the combined capital buffer requirement are subject to restrictions in profit distribution and are obligated 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 and 59/2021).

NPLs that bring 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 significant deterioration in the macroeconomic environment which would drive the share of gross NPLs in total loans up by 6.35 pp, the banking sector's regulatory capital adequacy ratio could drop from the initial 20.77% to the threshold level of 17.08% 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 extremely low, i.e. the calculated probability that such event would materialise is close to zero.

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 reports about the ratio of their Tier 1 capital and total exposure amount – the leverage ratio.[80] 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-2021 equalled 11.07%. Under the baseline scenario, the leverage ratio would measure 11.17%, while under the moderate and worst-case scenarios, this ratio would amount to 10.12% and 8.66%, 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 a temporary loss of confidence in the European parents of banks operating in Serbia indicates the importance of monitoring this risk.[81]

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 405 bn (11% of total deposits) and the same structure of deposit withdrawal 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 566 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 802 bn (21% of total deposits).

For the purposes of this 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.

In the scenarios described above, the banking sector liquidity ratio would range from 2.14, where it stood on 31 December 2021, to 1.28 in the worst-case scenario (Chart II.2.6).

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

According to the déjà vu scenario, as well as under the risk spillover scenario, the liquidity ratio would fall below

[80] 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 and 59/2021).

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

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)	405	566	802
Share in total deposits (%)	11%	15%	21%

Source: NBS.

the regulatory minimum for a bank holding 6.3% of total banking sector balance sheet assets, while in the worst-case scenario, assuming a severe shock, it would fall below the regulatory minimum for banks accounting for 32.3% 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 introduced in order to ensure a bank's resilience to liquidity shocks over a 30-day span.[82] According to bank reports, as at 31 December 2021, all banks disclosed the liquidity coverage ratio, aggregately by all currencies, above the regulatory minimum, while at banking sector level this ratio stood at 2.00.

Liquidity needs

Based on reported data as at 31 December 2021, there was no need for additional first-order liquidity.

Under the déjà vu and risk spillover scenarios, first-order liquidity needs would equal around RSD 3.1 bn and RSD 9.9 bn, respectively.

Under the worst-case scenario, first-order liquidity needs would be RSD 45.6 bn, or 2.8% of the initial first-order liquidity.

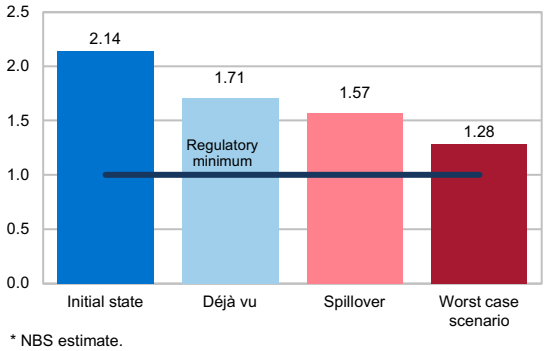
If the assumed scenarios materialised, the NBS could react by providing additional liquidity or by exercising its lender of last resort function.[83]

Deposit withdrawal values that bring the liquidity ratio to threshold

The present 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 reported 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).

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



* NBS estimate.

Source: NBS.

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

	Déjà vu
Withdrawal of demand deposits	76%
Withdrawal of time deposits	24%
Structure of total demand deposit withdrawal	
Banks	0%
Other depositors	80%
Household savings	20%

Source: NBS.

[82] In order to assess a bank's resilience over a longer term (one year), the introduction of the Net Stable Funding Ratio (NSFR) has been envisaged.

[83] 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 systemic crisis in the financial system.

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 616.6 bn or 16.2% of total deposits (RSD 470.1 bn demand and around RSD 146.4 bn time deposits). In case of a withdrawal of RSD 1,163.9 bn, i.e. 30.6% of total deposits (of which around RSD 887.4 bn are demand and around RSD 276.5 bn time deposits), the liquidity ratio would fall to 1.

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.

Banking sector survival period in case of sudden deposit withdrawal

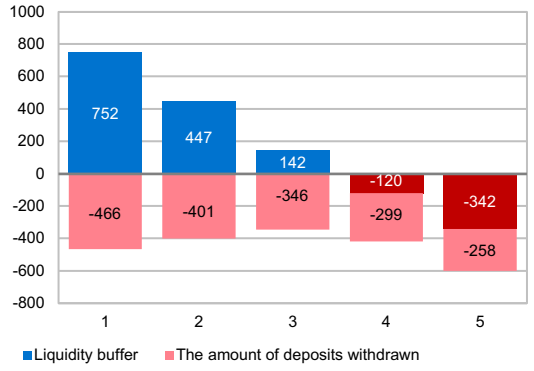
The period in which we observe the effects of a strong shock is defined as the survival period, and it consists of two stages. The first is a short period of high-intensity stress, lasting for several days. During that time evaluation is made of the bank's ability to cover liquidity outflows amid reduced possibility of obtaining new liquidity 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 scenarios. Charts II.2.9 and II.2.10 give the deposit structure by day.

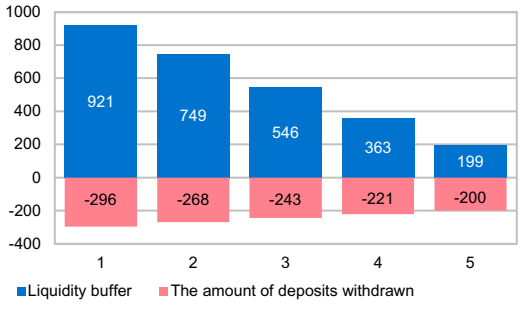
According to the results of liquidity stress tests as at 31 December 2021, the entire banking sector can withstand

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



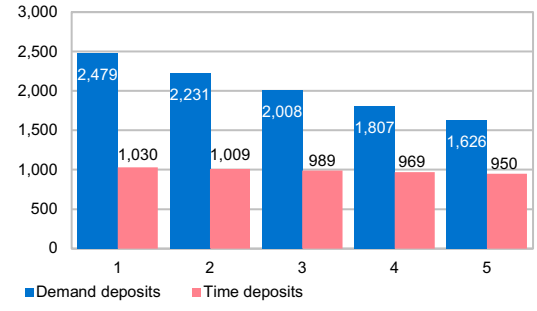
* NBS estimate.
Source: NBS.

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



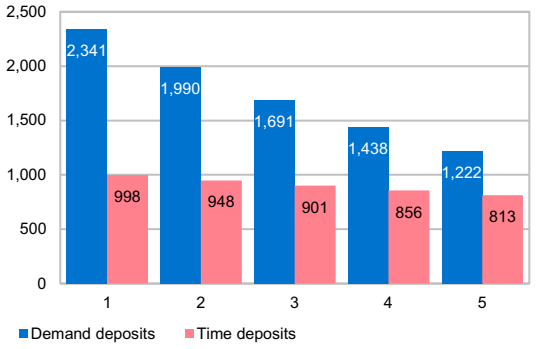
* NBS estimate.
Source: NBS.

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



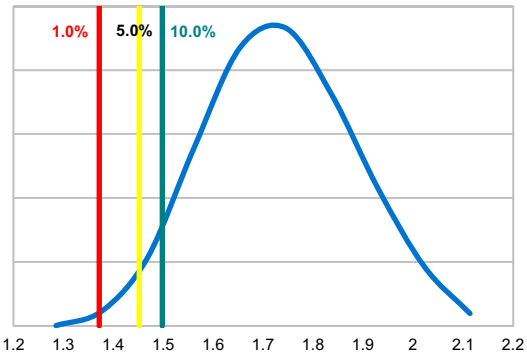
* NBS estimate.
Source: NBS.

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



* NBS estimate.
Source: NBS.

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



* NBS estimate.
Source: NBS.

seven business days[84] in conditions of daily deposit withdrawal in the moderate scenario or four 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).

With the given confidence interval of 10%, the liquidity ratio equals 1.50, while for confidence intervals of 5% and 1% it equals 1.45 and 1.37 respectively.

In other words, it can be asserted with a 90% certainty that the liquidity ratio will not fall below 1.50 in various combinations of deposit withdrawal assumptions. Moreover, there is a certainty of 99% that the ratio will not fall below 1.37.

Network modelling in the assessment of banking sector systemic risk

The 2008 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

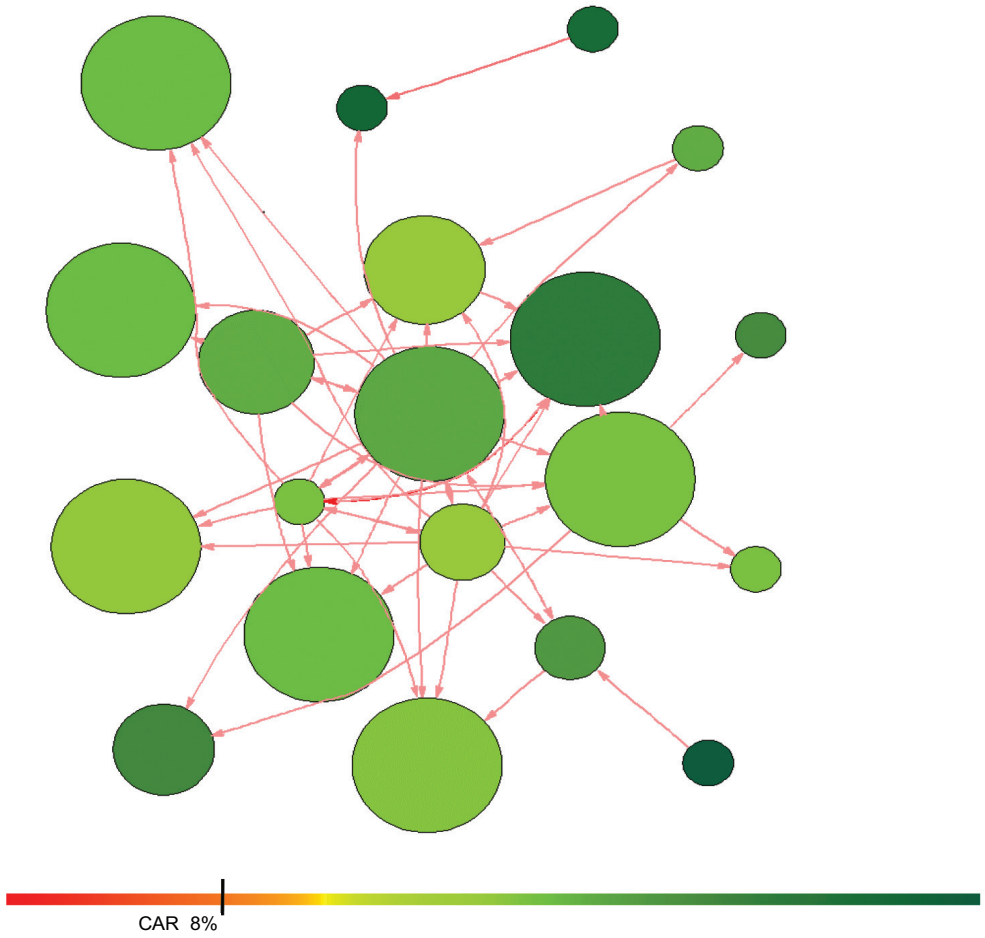
[84] The IMF's recommendation about bank survival period after deposit withdrawal is a period of five business days. After this period, it is believed that a bank will have sufficient time to consolidate its operations.

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 the maximum observed 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 predetermined 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 the regulatory capital and risk-weighted assets of any of the banks. Assuming the insolvency of an individual bank and the transmission of a

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



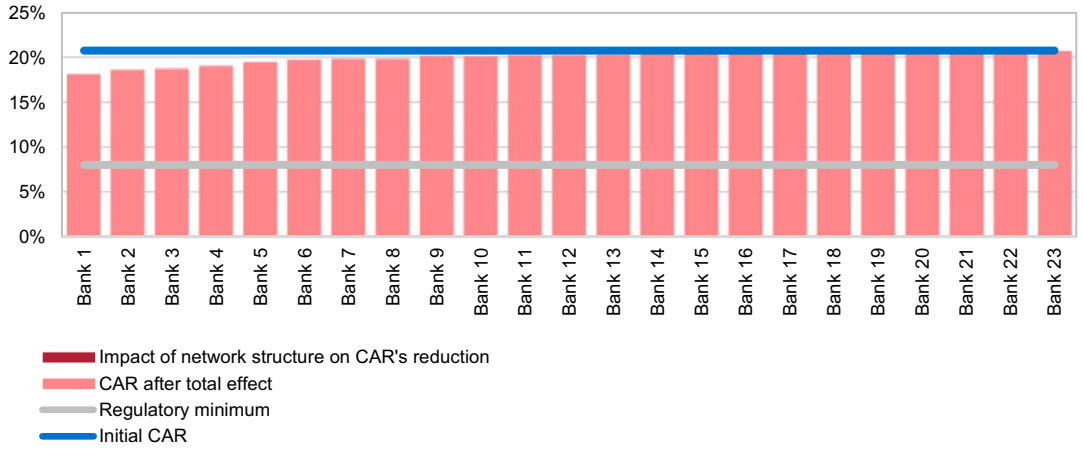
Source: NBS.

particular shock through the system, as we 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 transmission, reflected in a reduction in the CAR of individual banks and/or sector, in all iterations following the first one.

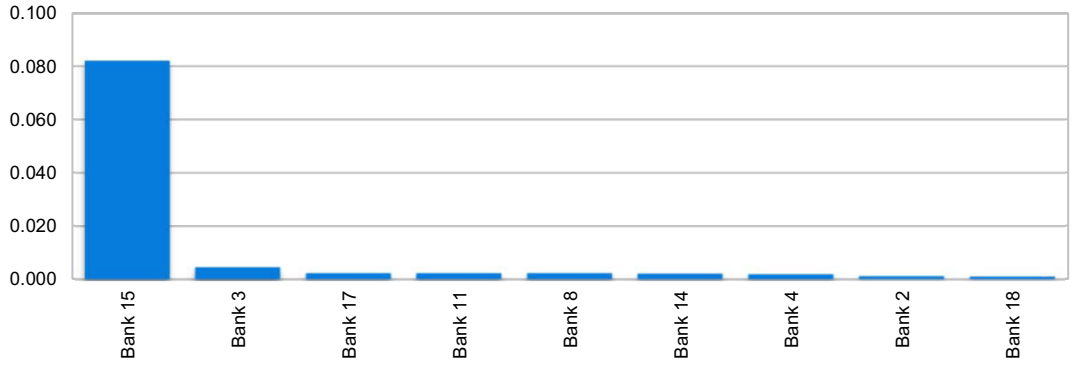
The results shown in Charts II.2.13 and II.2.14 indicate that, in case of insolvency of any bank, the banking sector's CAR would stay in the safe zone, i.e. above the regulatory minimum. Also, the impact of the network structure on shock transmission is relatively weak, which is conducive to the maintenance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

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.

Conclusion

The Serbian banking sector has remained resilient, capitalised and highly liquid despite the shocks during the pandemic and the escalation of geopolitical tensions in 2021. New challenges during the disruptions in the international commodity and financial markets mandate 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. Under the assumed worst-case scenario, a certain number of banks could enter the zone of liquidity risk. 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 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 in the banking sector may lead to a contagion or shock transmission, 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, priority in the future period should be the prevention and curbing of new NPLs, especially by strengthening the risk management function in banks and further improving macroeconomic stability.

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, which included further activities to downsize NPLs, at end-December 2021 the NPL ratio equalled 3.6%, which is 0.1 pp lower relative to end-2020 despite the pandemic in 2021. NPLs are currently low and, given the high capitalisation of the banking sector and high coverage of NPLs, they do not pose a threat to financial stability. On the other hand, it is necessary to monitor further potential growth in NPLs as a materialisation of credit risk after the gradual lifting of measures aimed to mitigate the consequences of the coronavirus pandemic on the financial position of debtors and the monetary policy tightening by leading central banks.

As part of its activities, the NBS is considering 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, etc. 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 effect.

During 2020 and 2021, the NBS responded in a timely and firm manner, resorting to a number of different monetary, micro and macroprudential policy tools. Thus, it preserved banking system liquidity and stability, as well as unhindered access to sources of funding and favourable conditions for financing the government, banks and the private sector.

Text box 2: ECB macroprudential stress tests of the euro area banking system amid the coronavirus pandemic

The European financial system has proven to be resilient during the coronavirus pandemic, primarily thanks to economic measures that have supported lending to the economy and contained risks in the financial system. Even though they rely on the same scenario assumptions, the ECB macroprudential stress tests complement the macroprudential and supervisory stress tests run by the EBA and ECB in three important aspects. First, macroprudential stress tests are based on a dynamic balance sheet perspective, i.e. they include banks' potential reactions to the assumed scenario. Second, they consider feedback effects between bank solvency and funding costs and the feedback between the banking sector and the real economy. Finally, they incorporate the gradual phasing-out of COVID-19 mitigation policies. The ECB macroprudential stress test for 2021–2023,[85] run on the data as at end-2020, aimed to provide insight into the resilience of the European banking sector following the pandemic-induced crisis, and to assess the solvency of banks, their profitability and lending activity based on two assumed scenarios which reflect different future macroeconomic outlooks. The baseline scenario assumes a rebound in economic activity by mid-2022, as well as the recovery of labour market by end-2023, while the adverse scenario assumes a prolonged recession together with negative effects of the coronavirus pandemic in a low interest rate environment and persisting problems in the functioning of the global financial market. Under these assumptions, banks would adjust their balance sheets in response to assumed economic trends, which could feed back into the real economy. The results of macroprudential stress tests cover 19 euro area economies and 89 systemically important banks, making up around 70% of the euro area banking sector.

Economic scenarios of macroprudential stress tests

The baseline scenario assumes the relaxation of COVID-19 containment measures starting from Q2 2021, along with the increasing availability of vaccines. This scenario also assumes a return of GDP to its pre-crisis level by mid-2022. According to this scenario, the unemployment rate would first increase to 9.3% in 2021 only to fall to its pre-crisis level of 7.5% by end-2023. It features the growth of real estate prices by 2.3% on average y-o-y and persisting low interest rates in the money market (three-month EURIBOR -0.5% and ten-year bond yields below 0.2%).

The adverse scenario sees a decrease in real GDP in all three years of the projection horizon, with the cumulative contraction in the said period amounting to 3.6%, while GDP in 2023 would remain 10.6% lower than in the pre-pandemic 2019. The unemployment rate would increase to 12.4% by end-2023, while interest rates would be close to those in the baseline scenario (the three-month EURIBOR is higher by mere 5 bp on average when compared with the baseline scenario, and ten-year bond yields increase moderately and remain above 0.2%). The scenarios also take into account the effects of certain measures taken during the coronavirus pandemic. The coronavirus pandemic and the associated economic effects have called on the ECB and national authorities to take continuous action to ensure a sustainable flow of financing for the real economy and preserve financial stability. The measures included profit distribution restrictions until September 2021, favourable treatment of exposures to central banks, which was extended until mid-2022, and extensions of moratoria and guarantee schemes in many euro area jurisdictions. Macroprudential stress tests assessed the effect of these measures and their impact on lending activity of the non-financial sector in comparison with the results which assumed that most of the COVID-19 mitigation policies had been suspended at end-2020. Compared with lending volumes in the absence of policy measures, at end-2023 lending would be around 1.2% higher in cumulative terms in the baseline scenario and 1.6% higher in the adverse scenario.

Results of the macroprudential stress tests analysis

Under the baseline scenario, CET1 capital ratio would go down from 15.5% at end-2020 to 14.4% at end-2023, i.e. it would lie between 14% and 14.8% (90% confidence interval). The greatest negative effect on this indicator would come

[85] Macroprudential stress test of the euro area banking system amid the coronavirus (COVID-19) pandemic (europa.eu).

from the expansion of banks' assets and the payout of dividends, while the increase in capital would have a positive effect. In the adverse scenario, CET1 capital ratio would drop to 10.3% at end-2023, i.e. it would lie between 9.4% and 10.8% (90% confidence interval). The greatest negative impact on the decline of this ratio would come from the 32% fall in CET1. Under the adverse scenario, the part of banks that would cover around 40% of the sample assets would report the CET1 capital ratio below their capital buffers (profit distribution restrictions would apply to these banks), while only 5% would report this indicator below their minimum capital requirements (Pillar I and Pillar II Requirements).[86]

In addition, the contribution of COVID-19 mitigation policies is reflected in the accumulation of bank capital in both scenarios. The direct effect on banks' CET1 capital derives from the negative impact of the moratoria and guarantee schemes on credit losses and the direct impact on profit distribution restrictions.[87] The second-round effect relates to the positive impact of higher banks' capitalisation on funding costs and further on lending and economic activity. If measures were removed at end-2020, the CET1 capital ratio would be 0.9 pp lower in the adverse scenario.

Additional findings – effects on lending activity, NPLs and profitability of banks

According to the findings of the baseline scenario, the dynamics of lending activity is positive on both supply and demand side. The strongest effect of the loan supply side factors was pronounced in 2021 due to the COVID-19 mitigation measures. Under the adverse scenario, a negative supply side effect was identified due to the weaker capital position, reduced profits, rising financing costs and poorer asset quality. An additional contrast between the two scenarios is reflected in the loan structure. Under the baseline scenario, the loan structure would be stable, while in the adverse scenario, banks would seek to reduce exposure to the riskier segment (corporate clients and households, excluding housing loans), and increase exposure to the public sector and the housing loan segment.

The share of NPLs in total loans[88] would decrease from 3.8% at end-2020 to 3.3% at end-2023 in the baseline scenario, with high certainty surrounding the projected estimate. At the same time, the NPL ratio would increase to 6.2% at end-2023 in the adverse scenario, as a consequence of new NPLs, lower write-offs and a decrease in the loan portfolio.

Most banks would experience positive profitability in the baseline scenario, while in the adverse scenario most would operate with losses. Under the adverse scenario, the evolution of profitability would also be more diverse across banks. The fall in profitability would be most pronounced for banks with a focus on corporate banking. Observing the movements of profitability relative to initial CET1 capital ratio, banks with higher initial capitalisation would have better potential to restore their profitability indicators in the adverse scenario.

Capital buffer use and its impact on the stress tests results

During the coronavirus pandemic, the ECB and national supervisors supported the use of capital buffers to boost lending and avoid contractions due to the banks' need to meet their regulatory requirements. The level of capital achieved in the previous period allowed supervisors more flexibility in mitigating certain measures so that banks could avoid pro-cyclicality.[89] The main test results were derived under the assumption that banks would remain reluctant to reduce their capital buffer requirements below the regulatory minimum and thus be exposed to the profit distribution restrictions. If this assumption is ignored, the results in terms of capital adequacy would not change significantly, while the results in terms of lending activity would be significantly better, especially in the adverse scenario. The use of capital buffers would have positive second-round effects due to the impact of accelerated lending, which would lead to a reduction in NPLs, credit losses and an increase in bank profitability and, consequently, GDP growth.

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[86] According to Basel standards, a single minimum adequacy indicator is applied to all banks - Pillar I, as well as an additional requirement - Pillar II in order to cover risks not covered by the Pillar I requirement or underestimated risks.
[87] *ECB asks banks to refrain from or limit dividends until September 2021,* ECB, December 2020.
https://www.bankingsupervision.europa.eu/press/pr/date/2020/html/ssm.pr201215%7E4742ea7c8a.en.html
[88] Includes non-financial private sector.
[89] *MD Pariès, C Kok, E Rancoita, Macroeconomic impact of financial policy measures and synergies with other policy responses, Financial Stability Review, 2020.*

Comparison of assumptions and results of macroprudential and supervisory stress tests

Compared with the EBA/SSM stress test,[90] the macroprudential stress test assumes a lower CET1 capital ratio in the baseline scenario (14.4% compared to 15.8% at end-2023), whereas in the adverse scenario it envisages a higher CET1 capital ratio (10.3% compared to 10.1% at end-2023). If we look at the causes of these differences in the case of the baseline scenario, the -1.4 pp difference in the level of CET1 capital ratio was mostly affected by the assumption on the dynamic balance sheet (-1.4 pp), followed by feedback loops (-0.3 pp), while the assumption on phasing-out of COVID-19 mitigation policies had a positive effect (+0.3 pp). In the adverse scenario, the +0.2 pp difference in macroprudential stress test results is affected the most by the assumption on dynamic balance sheet (+1 pp) and the assumption on phasing-out of COVID-19 mitigation policies (+0.9 pp), while feedback loops have a negative impact (-1.7 pp).

Macroprudential stress tests enable the assessment of the resilience of the banking system to the effects of the pandemic-induced crisis and its ability to continue to operate adequately in the context of economic recovery. This refers to the adequate capitalisation of banks, but also to the banks' capacity to continue lending to the economy even when they are faced with the gradual phasing-out of coronavirus mitigation measures. The results indicate that the measures taken to mitigate the effects of the pandemic had a positive effect on lending activity, with loans from guarantee schemes having a strong effect on lending in the adverse scenario, given the higher corporate demand for this type of loans in adverse economic conditions. The measures also had a positive effect on the profitability and capitalisation of banks thanks to lower credit losses. Macroprudential stress tests, as mentioned, represent an upgraded version of existing stress tests, but there is room for their further improvement, in line with developments in the macroeconomic environment. One of the possibilities for improvement relates to the inclusion of climate risks and consequent extension of the stress test time horizon, while another possibility would be to include new risks associated with the pandemic crisis and its consequences.

[90] Stress tests made by the EBA and Single Supervisory Mechanism (SSM).

II.3 Non-bank financial sector

II.3.1 (Re)insurance undertakings

Despite the coronavirus-induced crisis, liquidity and solvency of the Serbian insurance sector were preserved, ensuring stable development of the insurance market. In 2021, the insurance sector again posted positive results, adequate capitalisation and profitability, and the rise in the total premium. The balance sheet of (re)insurance undertakings went up, while the sector's share in financial sector's balance sheet remained unchanged from the year before and non-life insurance continued to account for the bulk of the total premium.

At end-2021, 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)[91] remained unchanged from 2020 (6.0%). After the dominant banking sector, insurance is the second largest segment of the Serbian financial system.

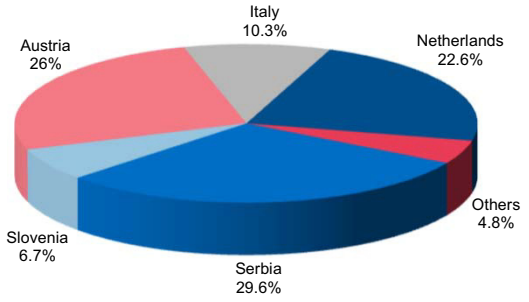
At end-2021, there were 16 insurance and four reinsurance undertakings in Serbia.[92] Among insurance undertakings, four were engaged in life insurance, six in non-life, and six provided both life and non-life insurance services. Of the total number of undertakings, 15 were in majority foreign ownership. Major foreign owners are from Austria (26%) and the Netherlands (22.6%). Insurance undertakings in majority domestic ownership account for 29.6% of all insurance undertakings[93] (Chart II.3.1), which is a rise of 4.1 pp relative to 2020.

Apart from insurance undertakings, the sales network also included 16 banks, six financial lessors, and one public postal operator, all of them holding approval to carry on insurance agency activities, as well as 105 legal persons (undertakings for insurance brokerage and insurance agency activities) and 77 insurance agents (natural persons – entrepreneurs).

Compared with both EU member states and the neighbouring countries, Serbia's insurance sector is still underdeveloped, with potential for further growth. According to data of the Swiss Re Institute, the penetration ratio (gross written premium as a percengate of GDP) at the EU level in 2020[94] stood at 6.9%,[95] while the same ratio in Serbia measured 2.0%.[96] Also, the EU's density ratio (the average premium per capita spent on insurance) in 2020[97] measured USD 2,335,[98] much higher than Serbia's USD 155[99] (Chart II.3.2).

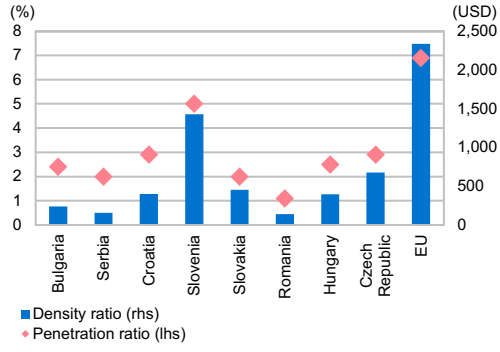
A positive trend was also recorded in the total premium, which reached RSD 119.4 bn in 2021, having risen by around 8.6% from 2020. Serbia still lags behind the neighbouring countries in terms of the absolute amount of the total premium (Chart II.3.3).

Chart II.3.1 **Insurance undertakings* ownership structure, as at 31 December 2021**



* Does not include reinsurance undertakings.
Source: NBS.

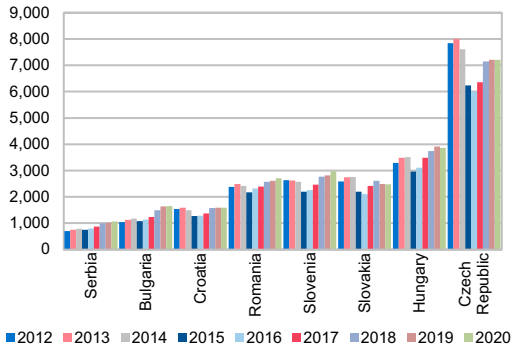
Chart II.3.2 **Insurance sector development indicators as at 31 December 2020***



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

[91] Excluding payment institutions and e-money institutions.
[92] https://nbs.rs/sr_RS/finansijske-institucije/osiguranje/registar/
[93] Excluding reinsurance undertakings.
[94] Latest available data.
[95] Source: Swiss Re Sigma 3/2021.
[96] Source: NBS.
[97] Latest available data.
[98] Source: Swiss Re Sigma 3/2021.
[99] Source: NBS.

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



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

Owing to faster growth in non-life than in life insurance premium, the share of the life insurance premium in total premium declined from 23.8% in 2020 to 22.7% in 2021 (Chart II.3.4).

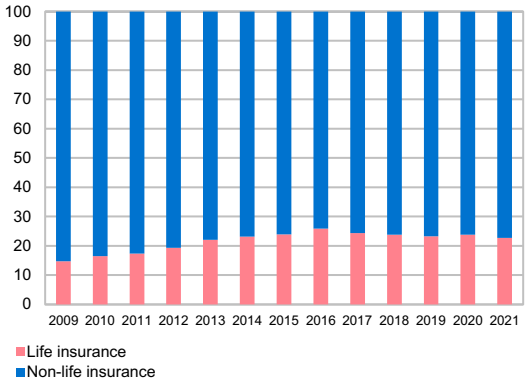
Within the total premium, motor third party liability insurance was still dominant (30.9%), followed by life insurance (22.7%), property insurance (19.9%) and full-coverage motor vehicle insurance (10.1%) (Chart II.3.5).

The Serbian insurance sector is adequately capitalised, given the risks to which it is exposed. According to the Insurance Law, the available solvency margin (guarantee reserve) must be at the level of at least the required solvency margin (core CAR). Given that in 2021 the core CAR was 244.57% for non-life, and 224.97% for life insurance, it can be concluded that the capital adequacy of Serbian insurers was high.

The leverage ratio (capital to asset ratio) reflects the level of exposure of insurers' capital to risks. At end-2021, this ratio dropped slightly in both non-life and life insurance: to 25.1% and 22.7%, respectively (from 25.3% and 23.3% in 2020). These data indicate that the Serbian insurance sector is highly capitalised.

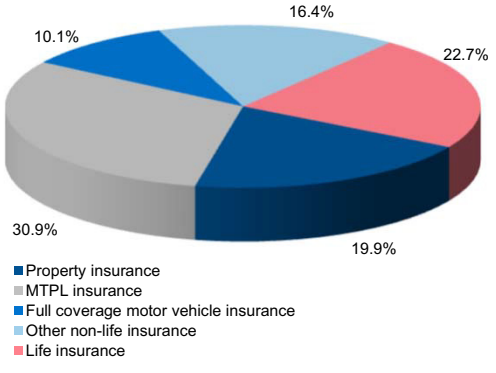
For an undertaking to be able to protect the interests of the insured and injured third parties, i.e to timely settle claims, it must create an adequate amount of technical provisions and invest them in such a way as to ensure that their real value is maintained and increased so that the undertaken insurance obligations may be fully and timely met. To be able to settle its liabilities, an undertaking must invest its assets taking due account of the risk profile and risk tolerance limits by pursuing its investment policy. Technical provisions must be invested into the prescribed types of assets. At end-2021, technical provisions of all (re)insurance undertakings stood at RSD 219.2 bn, up by 5.3% in nominal terms relative to end-2020. Mathematical reserves[100] kept their dominant share in technical provisions, recording a growth rate of 5.0% at end-2020.

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



Source: NBS.

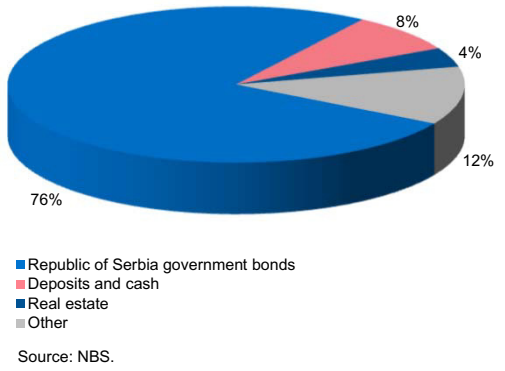
Chart II.3.5 **Total premium according to types of insurance as at 31 December 2021**



Source: NBS.

[100] Mathematical reserve means technical provisions 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).

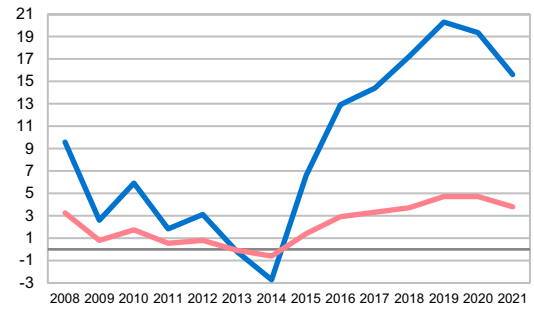
Chart II.3.6 **Non-life insurance technical provisions coverage as at 31 December 2021**



Source: NBS.

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

(%)



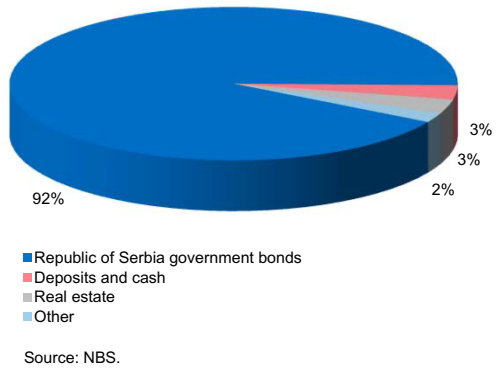
Source: NBS.

The bulk of technical provisions of non-life insurance was invested in government securities (76% at end-2021) (Chart II.3.6). Technical provisions of life insurance were also predominantly invested in government securities (92% at end-2021) (Chart II.3.7). The high share of Serbian government securities in non-life and life insurance investments signals a low level of investment credit risk.

The liquidity of insurance undertakings is an important factor in assessing the quality of assets. Setting an adequate liquidity level is extremely important for timely and regular 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 2021, the indicator of less tradable assets (share of less liquid assets in total assets) in undertakings mainly engaged in non-life insurance equalled 18.32%, slightly higher than in 2020 (16.30%). In undertakings engaged mainly in life insurance, this indicator also went up, to 7.21% (5.6% at end-2020).

The insurance sector ended 2021 with a positive after-tax net result[101] amounting to RSD 11.1 bn. Return on equity in non-life insurance undertakings in 2021 was 15.6% (19.4% in 2020), and return on assets 3.8% (4.7% in 2020) (Chart II.3.8). Life insurers posted somewhat lower profitability indicators compared to 2020. Their return on equity was 7.4% (9.1% y 2020), and return on assets 1.7% (2.1% in 2020) (Chart II.3.9).

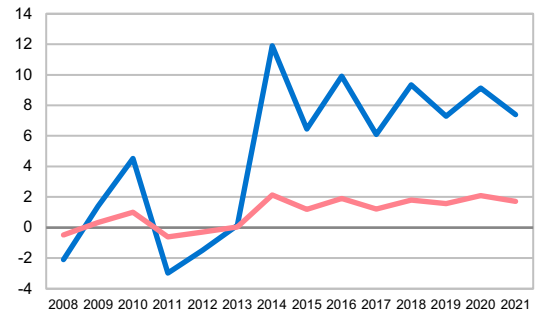
Chart II.3.7 **Life insurance technical provisions coverage as at 31 December 2021**



Source: NBS.

Chart II.3.9 **Profitability ratios of life insurance undertakings**

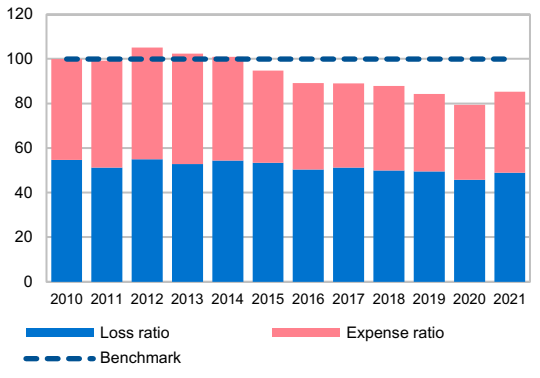
(%)



Source: NBS.

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

Chart II.3.10 **Combined insurance ratio**



Source: NBS.

The profitability of insurance undertakings is indicated by the combined ratio.[102] The ratio value below 100% 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-2021 increased from the year before, to 85.3% (end-2020: 79.3%) (Chart II.3.10). The combined ratio movement resulted from the slower growth of premium earned compared to the growth of incurred losses and insurance administration expenses. The ratio value is a positive result indicating that the premium level is adequate to permanently meet the liabilities from insurance contracts and that 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) increased from 33.6% at end-2020 to 36.4% at end-2021, which indicates a somewhat lower 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. A low value of this ratio suggests an undertaking's bolstered ability to meet claim liabilities. The ratio value went up from 45.8% at end-2020 to 48.9% at end-2021.

In the regulatory area, in September 2021 the NBS adopted the Decision on Handling Complaints of Insurance Service Consumers (RS Official Gazette, No 87/2021), thus improving the protection of insurance service consumers. The Decision governs in more detail the manner in which an insurance service consumer files a complaint to an insurance service provider and to the NBS, the manner this complaint is to be handled by the insurance service provider and the NBS, mediation by the NBS and other issues relating to the procedure of protecting consumers' rights and interests.

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. Still, major changes in the insurance supervision are yet to be made, both when it comes to full alignment with the Directive (EU) 2016/97 – the Insurance Distribution Directive (IDD) and implementation of Solvency II (Directive 2009/138/EC of the European Parliament and of the Council on taking-up and pursuit of the business of Insurance and Reinsurance). In May 2021 the NBS adopted changes and amendments to the Strategy for Implementation of Solvency II in the Republic of Serbia. Given the importance and complexity of implementing Solvency II, the Strategy will be regularly reviewed and amended as needed, in response to new circumstances and challenges.

The previous year was marked by the heightened uncertainty as to the impact of the future course of the pandemic and the emergence of new virus strains on the pace of the global recovery, which placed even more importance on the role of the insurance sector in providing protection to citizens, i.e. insurance service consumers. The NBS took a series of measures to prevent, mitigate and remove the negative effects caused by the coronavirus pandemic in order to ensure the rights and interests of insurance service consumers and preserve the stability of operation of all professional participants in the insurance market, i.e. the continuity of the supervisory function over this market segment.

II.3.2 Voluntary pension funds

The uncertainty caused by the coronavirus pandemic and geopolitical tensions will continue to impact trends in financial markets, and thus also pension funds'

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

assets. While the coronavirus pandemic had a certain effect on the results of the Serbian VPF sector, 2021 saw a rebound compared to the year before. Net pension fund assets continued up in 2021, with a somewhat higher investment return of around RSD 608 mn. The total amount of contributions in VPFs in 2021 came at RSD 3.7 bn, exceeding the 2020 figure.

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 phase. VPFs are managed by management companies, which engage in the 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.[103]

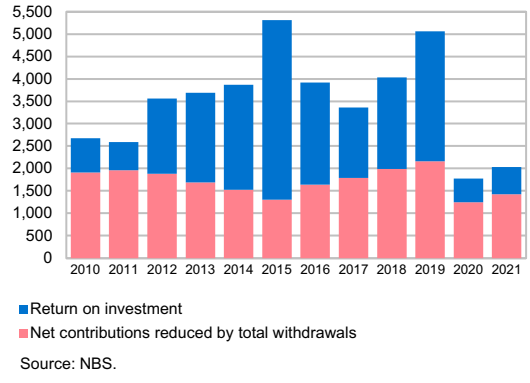
The number of management companies and VPFs did not change in 2021 – at the end of the year there were four management companies in Serbia, in charge of managing the assets of seven VPFs. The assets of all VPFs are kept in accounts with a single custody bank.

From the start of operation of VPFs in Serbia (2006), their total net assets have constantly been increasing. At end-2021 net assets came at RSD 49.1 bn, up by 4.3% from the year before. 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). Net contributions (minus total withdrawals) were the main drivers of the rise in net VPF assets in 2021. Net VPF assets went up by somewhat more than RSD 2 bn in 2021, while the return on investment was somewhat higher than the year before (by 14.6%), equalling RSD 608 mn. Given the structure of VPF investment, the return is influenced by: the change in the yield curve on government debt instruments,[104] 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.

At RSD 3.7 bn, total contributions in 2021 exceeded those from the year before (RSD 3.5 bn in 2020), and total withdrawals remained at the same level, equalling RSD 2.2 bn (Chart II.3.12). The structure of withdrawals was relatively unfavourable, i.e. not in line with the objective of saving in VPFs which assumes the use of accumulated assets over a longer period. Though lower by 4 pp than in the previous year, more than 81% of total withdrawals in 2021 were lump sum withdrawals, which are usually made as soon as the member reaches the age limit for the withdrawal of accumulated funds. On the other hand, with the lengthening of accumulation periods and growth of the accumulated sums, an increase in scheduled and other types of withdrawals can be expected as well.

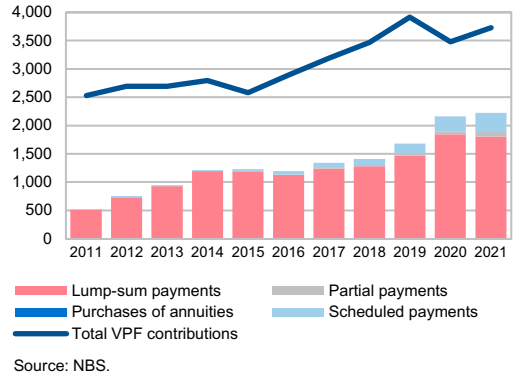
The total number of VPF users went up by 5,728 from the previous year, to 210,697 at end-2021. These users

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.

[103] 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.

[104] A decline in 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.

concluded a total of 288,734 contracts on membership. During the same period, 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 35.9% in December 2021 (35.3% in December 2020). 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 percent of users above the age of 53 was similar as in prior years, accounting for 29.8%. The share of VPF users in the total number of employees is 9.5%, which indicates that this sector is still underdeveloped, as well as that there is plenty of potential for its future development.

At end-2021 most assets of VPFs (77%) 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, pension funds are exposed to the country credit risk. Thanks to the preserved and reinforced macroeconomic and financial stability, this credit risk has been on decline in recent years, and Serbia is one step away from investment grade. Still, the domestic capital market and new long-term financial instruments need to be further developed. In view of the importance of this market, in October 2021 the Government adopted the Capital Market Development Strategy for the Republic of Serbia 2021–2026, setting the goals and measures for the development of the Serbian capital market. In this light, it should be kept in mind that the existing secondary legislation of the NBS, which govern the investment of VPF assets and are primarily aimed at protecting VPF users' interests and securing their assets leave enough room for diversification of VPF investments. Also, the same as in the case of insurance undertakings' technical provisions, the high share of Serbian government securities indicates low credit risk in the portfolio.

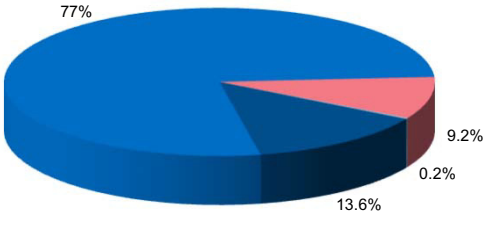
Shares accounted for a slightly higher portion of total VPF assets (rising from 12% in 2020 to 13.6% in 2021). At end-2021, time deposits and custody bank assets made up 9.2% of total assets.

At end-2021, 13.9% of total VPF assets were in euros (RSD 6.8 bn), and 86,1% in the domestic currency (RSD 42.3 bn).

At end-2021, FONDex[105] reached the value of 3,134.18 points (Chart II.3.14), which is 39.66 points higher than a year earlier. Annual FONDex return, which represents the weighted average return of all funds, equalled 1.3% in 2021, slightly higher than the last year (1%), but considerably lower than FONDex return since the start of VPF operations (7.8% at end-2021).

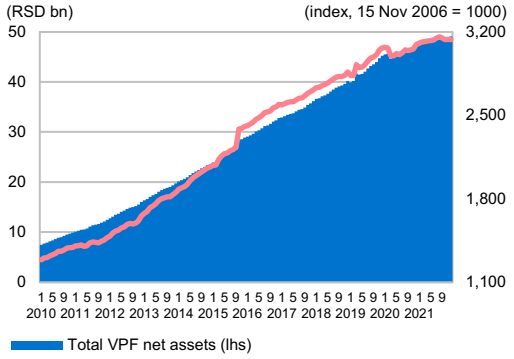
Fees charged by management companies include contribution fees and management fees. Though the contribution fee is front loaded, it is not the greatest cost for the members. The management fee is calculated daily and it made up 88% of total charged fees in 2021. Such structure of fees resulted from the increase in the net fund asset value and an increasingly higher base against which the management fee is charged.

Chart II.3.13 **Structure of VPF assets as at 31 December 2021**



* Including investment units of open-end investment funds and other receivables.
Source: NBS.

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



Source: NBS.

[105] FONDex indicates movements in 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.

VPF contributions were on a continuous increase 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. Investment tax incentives have also exerted a positive impact on the VPF sector. In 2021 payments made by employers in the amount of up to RSD 6,062[106] were exempt from personal income tax and contributions for mandatory social insurance, as well as payments in the same amount made by the employer through wage garnishment. This represents an additional incentive to employees and employers to direct a part of the wage to saving in VPFs.

II.3.3 Financial leasing

In 2021 the financial leasing sector continued to record positive results. The sector's balance sheet assets increased further and improved in quality, owing to the additional reduction in non-performing receivables.

Financial leasing is a type of financial intermediation. The lessor keeps the ownership of 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-2021, there were 16 lessors in the Serbian financial leasing sector, three of which are undergoing voluntary liquidation.

Financial lessors were mostly owned by banks, i.e. members of banking groups (as many as 11 lessors). Seven lessors were in 100% or majority ownership of foreign legal entities, while nine lessors were in majority ownership of domestic entities (of which eight were owned by domestic banks with foreign capital). Employment in the sector edged up relative to the year before (from 336 to 343 employees).

Lessors' balance sheet assets continued up. At end-2021, they stood at RSD 123.5 bn, up by 7.1% from end-2020 (RSD 115.3 bn).

The share of non-performing receivables in total investment was further reduced. At end-2021, gross receivables past due (RSD 2.1 bn) made up 1.8% of gross financial leasing receivables (2.4% at end-2020). The share of net carrying value of these receivables in total net receivables contracted mildly relative to end-2020 (0.5% at end-2021). Receivables past due more than 90 days made up the largest share of total receivables past due. At end-2021, these receivables amounted to RSD 1.4 bn. Their share in total gross receivables from financial leasing accounted for 1.2% (1.6% at end-2020). 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-2021 equalled RSD 10.1 bn, up by 8.5% from end-2020.

At RSD 1.5 bn, the pre-tax result of the financial leasing sector was higher than the result achieved in the previous year (RSD 616.1 mn). Net profit came at RSD 1.1 bn, with most lessors posting a positive net result (11 lessors). Total revenue and profit in 2021 equalled RSD 4.7 bn, up by 10.5% from the year before, and total expenses and losses – RSD 3.3 bn, down by 10.9% relative to 2020.

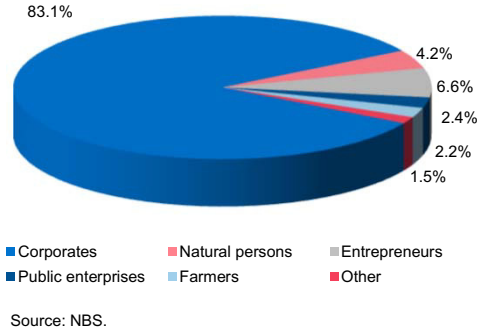
At end-Q4 2021, ROA and ROE were higher than at end-2020. ROA increased from 0.56% to 1.23%, and ROE from 6.58% to 15.12%.

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 83.1% share in total investment, slightly more than in 2020 (82.9%).

As can be seen in Chart II.3.15, entrepreneurs accounted for 6.6% of total investment (6.5% in 2020), public

Chart II.3.15 **Investment structure by lessee as at 31 December 2021**



Source: NBS.

[106] Under Government decree, this amount is adjusted for previous-year inflation once a year.

enterprises for 2.4% (2.6% in 2020), natural persons 4.2% (4.3% in 2020), and farmers 2.2% (2.0% in 2020).

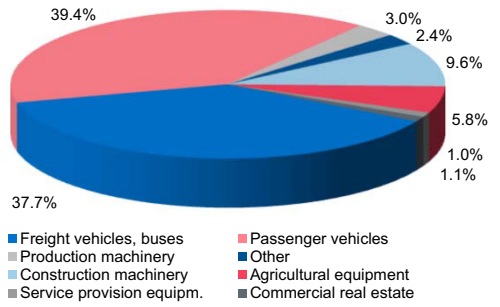
Structure of investment by lease asset

As Chart II.3.16 indicates, financing of freight vehicles, minibuses and buses, which in the prior period had the largest share in the structure of investment by lease asset, declined in 2021 (from 39.5% at end-2020 to 37.7% at end-2021). In contrast, the financing of passenger vehicles increased (from 38% in 2020 to 39.4% in 2021), hence their share is currently dominant in the structure according to the leasing object. The share of financing agricultural machinery and equipment remained almost unchanged (from 5.7% in 2020 to 5.8% in 2021).

The share of balance sheet assets of this sector in the country's financial system dipped slightly from end-2020, and equalled 2.2% at end-2021 (2.3% at end-2020). Given that this share is still low, potential risks in financial leasing operations would not have a significant effect on the stability of the financial system as a whole.

Amid potential risks caused by the emergency health situation due to the coronavirus pandemic, the NBS adopted a set of temporary measures in order to preserve financial system stability. In December 2020, the NBS adopted the Decision on Temporary Measures for Financial Lessors to Enable Adequate Credit Risk Management Amid COVID-19 Pandemic (RS Official Gazette, No 150/2020). This Decision sets out the measures and activities which a lessor is required to apply for the purpose of adequate credit risk management in conditions of the COVID-19 pandemic, by duly recognising potential difficulties in settling the liabilities of lessees (natural and legal persons) and applying facilities for repayment, in accordance with the prescribed conditions. In view of the extended coronavirus pandemic, in March 2021 the NBS adopted the Decision Amending the Decision on Temporary Measures for Financial Lessors to Enable Adequate Credit Risk Management Amid COVID-19 Pandemic (RS Official Gazette, No 21/2021). The amended Decision expanded the scope of debtors entitled to the repayment facility.

Chart II.3.16 **Investment structure by lease asset as at 31 December 2021**



Source: NBS.

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

In 2021, the rising trend in the number of users of electronic and mobile banking was maintained. Taking into account the data about payment services provided and electronic money issued in 2021, Serbia achieved continued growth in cashless payments and the use of other contemporary services. The positive dynamics of economic recovery is also confirmed in the rising number of transactions executed via m-banking and e-banking in all segments of the market (natural and legal persons, and entrepreneurs).

Pursuant to the Law on Payment Services, applied since the beginning of October 2015, special institutions registered to provide payment services[107] 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 issuing, the NBS pays special attention to the aspects of these applications relating to the prevention of money laundering and terrorism financing.[108] At end-2021 there were 13 payment

[107] 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.

[108] 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 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.

institutions[109] licensed by the NBS to provide payment services. Of these, 12 payment institutions also provided payment services through a network of their agents. Five leading international companies for fast money transfer carry out transactions via payment institutions, the public postal operator and their agents. Along with Western Union – already present in Serbia, MoneyGram, Ria Money Transfer, Unistream and Small World also operate in the domestic financial market, via the newly established payment institutions. Using these companies' services, it is possible to transfer money within a short period to a large number of countries and territories across the globe.

An e-money institution may only be a company headquartered in Serbia, in accordance with the company law. 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 present, four institutions licensed to issue e-money operate in the market.[110] In addition to e-money issuing, e-money institutions can also provide payment services both at their location and through a network of their agents. Unlike the domestic licensed e-money institutions, the services of e-money institutions 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 whose names are published by the NBS on its website[111] (e.g. PayPal, Skrill, Payoneer, Paysafe Financial Services Limited, Google PaymentCorp. and PayeerLtd.), may only be used in foreign payment transactions (for payments and collections with respect to e-purchase and sale of goods and services).

Pursuant to the Law on Digital Assets, applied since end-June 2021, the NBS performed an assessment of formal and essential validity of documentation which interested companies submitted along with seven applications for issuing licences for virtual currency service provision. Digital asset service provider may only be a legal person, in accordance with the law governing companies, headquartered in the Republic of Serbia and licenced by the NBS and/or the Securities Commission to provide one or more digital asset services. The NBS is in charge of issues under the Law on Digital Assets which pertain to decision-making in administrative procedures, adoption of bylaws, supervision over operations and achievement 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 supervision of all payment service providers and e-money issuers in the part of their operations relating to the provision of payment services and/or e-money issuing. In addition to licensing, the NBS also carries out supervision of virtual currency service providers and issuers and holders of virtual currency as a type of digital assets. The NBS website offers to users an overview of the 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 the users to get better information on the level of fees charged for the aforementioned services. At the same time, this contributes to stronger competition among payment service providers in terms of their price policy with the aim of providing competitive and reduced prices in the market so as to attract new and keep current clients.

According to the data for 2021, an increase was recorded for almost all payment services provided, and especially for cashless payments, if we observe all payment service providers. Relative to 2020, the total number of e-banking users grew by 10.68% and m-banking users by 31.36%. The rise in the relative importance of m-banking can be seen in the y-o-y increase in the number of transactions executed by natural and legal persons and entrepreneurs (41.29%). The number of e-banking transactions executed by natural and legal persons, and entrepreneurs grew by 10.81% y-o-y, which is almost twice the growth from 2020, when it stood at 4.05%.[112] At end-2021, the NBS marked full three years of the work of its instant payments system. Parallel with positive developments in 2021, activities continued aimed at further developing services based on instant payments and improvement of existing solutions. In addition to continued growth in the daily number of executed transactions, by developing new services this innovative payment system further contributes to optimisation of money flows among citizens and corporates.

As for the number of distance contracts on financial services concluded electronically, according to the data submitted by payment service providers, a total of 116,401 contracts were concluded in 2021, up by 62.76% from

[109] https://www.nbs.rs/en/finansijske-institucije/pi-ien/registar-pi/index.html
[110] https://www.nbs.rs/en/finansijske-institucije/pi-ien/registar-ien/index.html
[111] https://nbs.rs/export/sites/NBS_site/documents-eng/platne-institucije/lista_ien_trece_drzave_en.pdf
[112] An overview of data about payment services provision and e-money issuance for 2020–2021

2020, when the number stood at 71,519 contracts. Of the above number of distance contracts concluded in 2021, 18,300 contracts were concluded using video identification of users, which is a triple increase relative to the prior year, when 6,018 contracts were concluded. These results are the consequence of the NBS's timely efforts to put this question in order adequately, which turned out to be extremely important during the pandemic.

Payment institutions in Serbia have been doing business since October 2015, when the Law on Payment Services entered into force (RS Official Gazette, Nos 139/2014 and 44/2018). The NBS recognised the importance and potential of this financial market segment, which reflected through the improvement of the regulatory framework for payment services provision in order to achieve higher efficiency and transparency with the provision of these services, as well as to ensure higher level of information and protection of payment services users.

Given that the Law on Digital Assets has been in force since end-June 2021, the NBS, as one of the competent bodies for supervision of implementation of this law, adopted a series of bylaws during 2021 to establish and improve the regulatory framework in the part pertaining to virtual currencies as a type of digital assets.

The Law on the Protection of Financial Service Consumers in Distance Contracts (RS Official Gazette, No 44/2018), which was adopted in 2018 at the proposal of the NBS, and the Decision on Conditions and Manner of Establishing and Verifying Identity of a Natural Person through Means of Electronic Communication (RS Official Gazette, Nos 15/2019, 84/2020 and 49/2021) enable the conclusion of distance financial service contracts between banks and financial service users. This enables both legal persons and entrepreneurs to establish a business relationship with a financial institution supervised by the NBS online, without going to the financial institution's business premises. This was particularly significant during the pandemic, when it was important for clients to carry out as many of their regular activities as possible from home, including those related to financial services, through means of electronic communication and modern technologies.

In May 2021, the NBS adopted a Decision Amending the Decision on Conditions and Manner of Establishing and Verifying Identity of a Natural Person through Means of Electronic Communication and the Decision Amending the Decision on Guidelines for the Application of the Provisions of the Law on the Prevention of Money Laundering and Terrorism Financing for Obligors Supervised by the National Bank of Serbia (RS Official Gazette, No 49/2021), whereby the regulations within the remit of payment services provision have been expanded to include digital asset service providers in the part of the operations pertaining to virtual currencies.

The NBS was among the first central banks to recognise the importance of introducing novel payment methods and technological innovations in the payment services market. Adequate infrastructure and the regulatory framework are a result of years of continuous activities aimed at creating appropriate preconditions for modernisation and improvement of payment operations in Serbia.

III Financial markets

Despite persistent global uncertainty and inflationary pressures from the international environment in 2021 the relative stability of the RSD/EUR exchange rate was maintained owing to the NBS's adequate interventions in the interbank FX market (IFEM). Using the flexibility of the current monetary framework to change the monetary conditions without changing the main interest rates, in October 2021 the NBS started to gradually raise the weighted average rate at repo auctions of securities sale and discontinued auctions of dinar securities repo purchase which in the past period supplied dinar liquidity to banks under favourable conditions. As of 30 June 2021, J.P. Morgan included Serbia's dinar government bonds in its renowned indices, while in October, Clearstream, the international central securities depository of Deutsche Börse Group, included the Serbian capital market in its global network. Moreover, in mid-September for the first time in its history Serbia issued a green bond in the amount of EUR 1 bn, becoming thereby one of the few European countries and the only European country outside the EU to issue a green instrument. Macroeconomic stability and favourable growth prospects, as well as the adequacy of economic policy pursued before and during the crisis in 2021, were confirmed by all three rating agencies.

III.1 Money market

Serbia faced the pandemic-induced crisis and new coronavirus strains with sound macroeconomic fundamentals, which enabled a swift and adequate response. Thanks to timely and coordinated measures of the Serbian Government and the NBS, aimed at helping corporates and households, the pre-crisis level of economic activity was reached already in Q1 2021.

The NBS continued implementing the managed float exchange rate regime, intervening in the FX market with a view to easing excessive short-term volatility of the dinar against the euro, and maintaining price and financial stability and an adequate level of FX reserves. After moderate short-term depreciation pressures in early 2021, caused by the hike in FX demand of local energy importers, appreciation pressures prevailed in the first nine months of 2021. Upward pressures on the domestic currency reflected the renewed effect of factors which created structural appreciation pressures even before the pandemic, their common denominator being the country's improved macroeconomic performance. Q4 saw depreciation pressures, mainly due to heightened FX demand of domestic companies (energy importers) as a consequence of the rising energy prices in the global market and elevated energy imports. In 2021, the dinar's value against the euro remained almost unchanged, thus continuing its trend of relatively stable movements, as in prior years. Relative to end-December 2020, the dinar weakened against the dollar by 8.0% as a result of the euro's depreciation against the dollar. In 2021, the NBS intervened in the IFEM as a net buyer of EUR 645 mn (buying EUR 1,825 mn and selling EUR 1,180 mn). Gross FX reserves reached a record level of EUR 16.5 bn at end-2021 (EUR 13.7 bn in net terms), up by EUR 3.0 bn from end-December 2020. The increase in FX reserves reflected mostly the issuance of eurobonds, additional SDR allocation by the IMF, as well as the NBS's net purchase of FX in the IFEM. The emergence of new coronavirus strains heightened the uncertainty in commodity and financial markets, driving up Serbia's risk premium, both on the euro and dollar debt. US-dollar EMBI for Serbia measured 139 bp at end-December 2021 (128 bp at end-2020). At end-2021, EURO EMBIG for Serbia stood at 195 bp (143 bp at end-2020).

Owing to Serbia's good economic indicators, which were preserved even during the coronavirus pandemic, in March and September 2021, as well as in February 2022, Fitch Ratings affirmed Serbia's Long-Term Foreign and Local-Currency Issuer Default Ratings at BB+ (a step away from investment grade), with a stable outlook. Standard & Poor's affirmed Serbia's Long-Term Foreign and Local-Currency Issuer Default Ratings at BB+ in June

2021, and then changed the outlook from "stable" to "positive" in December, placing Serbia a notch below investment grade. In March 2021, Moody's improved Serbia's credit rating from Ba3 to Ba2, with a stable outlook, despite the global conditions marked by the coronavirus pandemic.

In 2021, the NBS key policy rate stayed unchanged at 1%. The rates on deposit (0.10%) and lending facilities (1.90%) also remained unchanged. However, heightened inflationary pressures from the international and domestic environment and the need to prevent the second-round effects of rising energy and food prices on other prices through inflation expectations led the NBS to tighten monetary conditions. The current flexible monetary framework gave room to the NBS to do so by increasing the weighted average interest rate at reverse repo auctions, without changing the key policy rate and the main interest rates corridor.

In 2021, 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. At end-2021, the average rate at one-week repo auctions[113] was 0.50% (0.10% at the last auction in 2020). Compared to end-2020, banks scaled up their investment in NBS reverse repo transactions (from RSD 30.0 bn to RSD 44.5 bn) at end-2021 (Chart III.1.1).

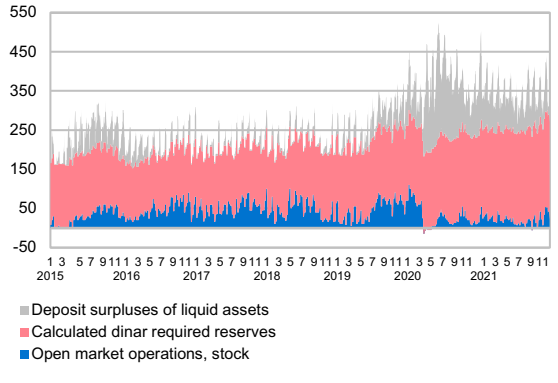
As of October 2021, the NBS no longer holds the auctions of securities repo purchase, whereby in the prior period banks were provided with dinar liquidity for a three-month term under very favourable conditions (0.10%, i.e. deposit facility rate). In 2021, the NBS held 38 auctions of repo purchase of securities at a fixed rate, which equalled the deposit facility rate, and supplied dinar liquidity in the total amount of RSD 86.0 bn.

Since October 2021, the NBS has been gradually reducing the degree of monetary policy accommodation by increasing the weighted average rate at one-week reverse repo auctions whereby excess dinar liquidity is withdrawn from the banking system. In the first auction in October, the average repo rate in one-week reverse repo operations was thus increased by 13 bp, from 0.11% (average rate since early 2021) to 0.24%. In the auctions that followed, the rate was gradually increased to the level of 0.50% as registered in the last auction in December 2021.

The NBS made the decision on monetary conditions bearing in mind that favourable financial conditions supportive of economic growth can be maintained even with a less accommodative monetary policy. In addition, caution in the pursuit of monetary policy was mandated by developments in the international environment, notably movements in the international commodity and financial market, which is also the breeding ground of the key risks to the achievement of Serbia's projected inflation and economic growth.

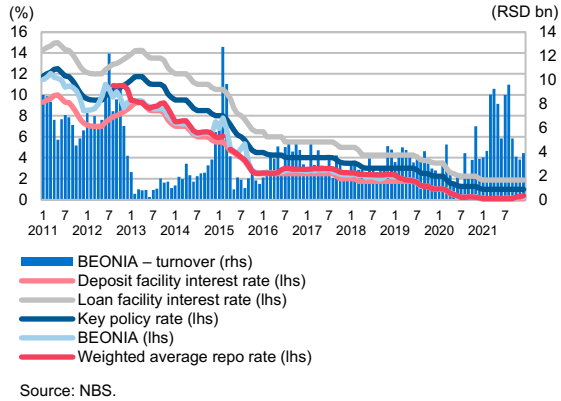
The average daily turnover in the interbank overnight money market in 2021 equalled RSD 6.1 bn, which is above the average daily turnover in 2020 (RSD 2.9 bn) (Chart III.1.2).

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



Source: NBS.

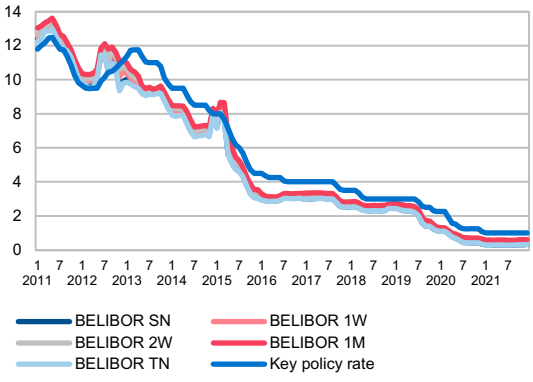
Chart III.1.2 **Key policy rate, BEONIA and interest rates on deposit and loan facilities**
(monthly averages of daily data)



Source: NBS.

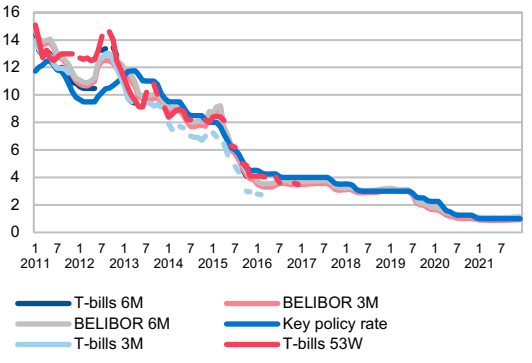
[113] The rate achieved at repo auctions weighted by the amount of securities sold.

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.

BEONIA[114] oscillated around the average repo rate until end-September 2021, and then moved below it in the remainder of the year. Average BEONIA rate in December 2021 measured 0.20% (almost unchanged from December 2020). Average BELIBOR rates in December 2021 ranged from 0.3% for the shortest to 1.1% for the longest maturity, which is almost the same as in December 2020 (Chart III.1.3).

To encourage the development of the interbank swap market and enable more efficient liquidity management by banks, the NBS organises regular two-week and three-month FX swap purchase/sale auctions. From mid-November 2020 to early March 2021, the NBS organised on a weekly basis additional three-month FX swap auctions of purchase at fixed swap points. In the additional three-month swap auctions held in 2021, the NBS swap bought EUR 165 mn, thus providing banks with dinar liquidity in the amount of RSD 19.4 bn. Overall in swap transactions with banks in 2021, the NBS swap bought EUR 518.0 mn and swap sold EUR 353.0 mn (in 2020, it swap purchased EUR 956.0 mn, and swap sold EUR 800.5 mn). The volume of interbank swap transactions in 2021 equalled EUR 256.2 mn, higher than in 2020 (EUR 162.0 mn).

In July 2020, the NBS and the ECB set up a precautionary repo line to provide additional euro liquidity to the Serbian financial system, in case of need. The initial deadline for using this repo line was until the end of June 2021, and in February 2021, that deadline was extended by nine months, i.e. until March 2022. In the March 2022 meeting, amid geopolitical tensions between Russia and Ukraine, the ECB decided to extend temporary repo operations with central banks from countries outside the euro area until 15 January 2023. There has been no need for the NBS to use the funds under the ECB precautionary repo line yet.

No dinar or euro T-bills were issued in 2021.

III.2 Bond and share market

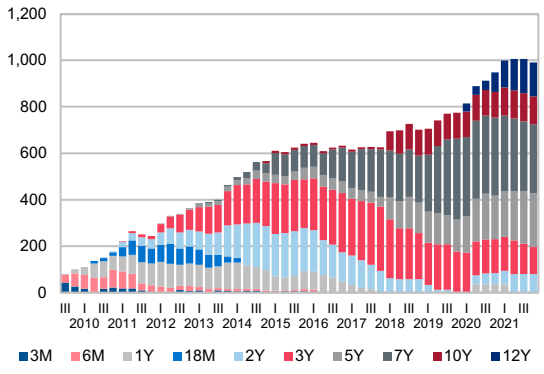
The government bond market is one of the most important segments of the domestic financial market. The primary sale of these securities is organised by the Ministry of Finance – Public Debt Administration, by the single interest rate auction method. The previous period saw an increase in the average maturity of dinar government securities and a reduction in financing costs on account of this type of borrowing.

Through the sale of dinar bonds, the government borrows in the domestic market under relatively favourable terms, thus reducing exposure to FX risk and contributing to further dinarisation of the financial system. In addition to the primary sale auctions, in 2021, the Ministry of Finance's Public Debt Administration organised eight early buyback auctions of a part of three-year, seven-year and twelve-year dinar government securities, which in total amounted to RSD 34.0 bn (RSD 10.2 bn in 2020).

The stock of sold dinar government bonds with maturity of over one year amounted to RSD 990.6 bn at end-2021,

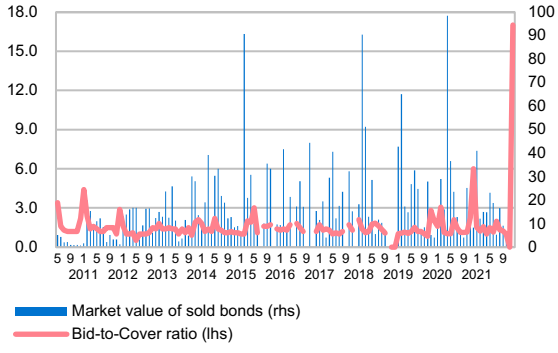
[114] The weighted average overnight rate in the interbank money market in the Republic of Serbia.

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



Source: Ministry of Finance.

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



Source: Ministry of Finance.

or 8.5% more than at end-2020 (Chart III.2.1). As for the structure of dinar government bonds, at end-2021, seven-year bonds made up the dominant share - 29.9%, which is less than at end-2020 (36.9%), while the share of five-year government bonds increased in 2021 from 20.5% to 23.2%.

The issuance of benchmark bonds, which started in 2016, continued in 2021. 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. Serbian government bonds are included in the J.P. Morgan GBI-EM Global Diversified Index as of end-June 2021. Serbia's dinar bonds are also included in the GBI-Aggregate (GBI-AGG) and GBI-AGG Diversified.[115] J.P. Morgan GBI-EM Global Diversified Index includes regularly traded government bonds issued in local currencies, at fixed coupon rates, which foreign investors can easily access. This index is one of the most frequently watched indices, i.e. one of the benchmark indices of bonds issued in local currencies of emerging economies, and by being included in this index, Serbia made a significant progress in strengthening the liquidity of the secondary market of government securities. The mentioned index includes three benchmark issues of dinar bonds, which mature on 11 January 2026 (seven-year maturity), 6 February 2028 (ten-year maturity) and 20 August 2032 (twelve-year maturity).

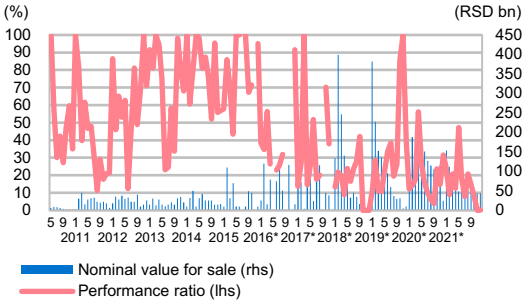
The bid-to-cover ratio at primary auctions of dinar government bonds was relatively favourable. It reached the highest value (17.0) in December, and the lowest (1.0) in April and October 2021 (Chart III.2.2).

In 2021, the government auctioned two-year, five-year, ten-year and twelve-year dinar bonds. The effective rates at primary auctions of government bonds recorded a further fall in 2021. The effective rate on two-year government bonds declined from 1.95% in 2020 to 1.57% in 2021. Five-year government bonds recorded a fall in the effective rate from 2.59% in 2020 to 2.50% in 2021, and ten-year bonds a fall from 4.80% (auction held in August 2018) to 2.50% (February 2021). The effective rate on twelve-year government bonds declined from 3.85% in 2020 to 3.24% in 2021. The coupon rate of two-year government bonds rose by 5 bp, to 1.75% in 2021, while the rate of five-year bonds stayed unchanged from 2020 (3.0%). The coupon rate of ten-year government bonds stayed at the level of 2018 (5.875%), when they were last auctioned, and of twelve-year bonds at the level of 2020 (4.5%).

In 2021, the government also auctioned twelve-year and twenty-year euro-denominated bonds. Their coupon rates also dropped, and at the last auction in 2021 twelve-year bonds were issued at a coupon rate of 1.5% (the coupon rate at the last auction in 2020 was 2.0%) and twenty-year bonds at the coupon rate of 2.25% (the coupon rate at the last auction in 2020 was 3.50%). The fall in coupon rates was accompanied by a decline in effective interest rates at the primary auctions of these bonds. The effective rate on

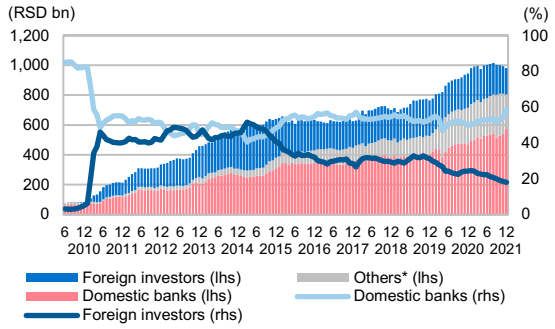
[115] The GBI-EM Global Diversified Index is one of the most frequently watched indices by international investors, i.e. one of the benchmark indices of bonds issued in local currencies of emerging economies. GBI-Aggregate (GBI-AGG) and GBI-AGG Diversified indices cover government bonds in local currencies of both advanced and emerging economies.

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.

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.

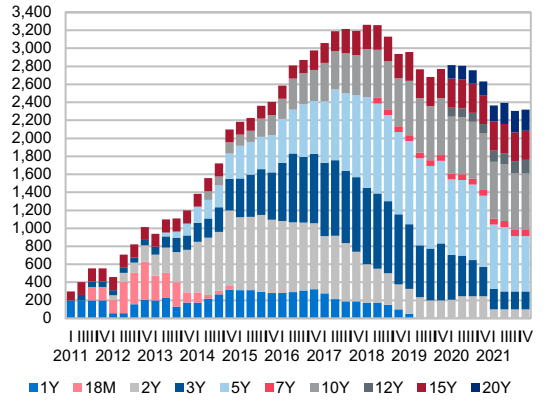
twelve-year euro-denominated government bonds fell by 29 bp to 1.60%, while the rate on twenty-year euro-denominated bonds declined by 75 bp to 2.25%.

In 2021, foreign investor participation in the dinar government bond portfolio shrank from 24.3% in December 2020 to 18.0% in December 2021. As shown in Chart III.2.4, as of end-2015 government bonds are predominantly owned by domestic banks. Their share in the portfolio of dinar securities at end-2021 went up by 8.6 pp relative to December 2020, and equalled 58.5%. 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 an important factor of improvement of the government bond market in the coming period, and of reducing the vulnerability of this market segment to movements in the international environment.

In February 2021, Serbia issued in the international financial market a twelve-year euro-denominated eurobond, in the amount of EUR 1.0 bn, at the coupon rate of 1.65% and the yield of 1.920%. In mid-September 2021, Serbia issued in the international financial market two eurobonds (dual-tranche). This is when Serbia issued for the first time a green eurobond worth EUR 1 bn, with the maturity of seven years, at the historically lowest coupon rate of 1.00% and a yield rate of 1.262%. Hence, Serbia became one of the few European countries and the first non-EU European country to issue a green instrument. Serbia also issued a 15-year conventional euro-dominated eurobond, in the amount of EUR 750 mn, at the coupon rate of 2.05% and the yield of 2.305%, this being the longest eurobond maturity issued by Serbia thus far.

In 2021, Serbia agreed to carry out three hedging transactions via cross-currency swaps,[116] thereby making significant budget savings on account of lower interest expenses before maturity. In doing so, Serbia also reduced exposure to interest and currency risks in public debt management.

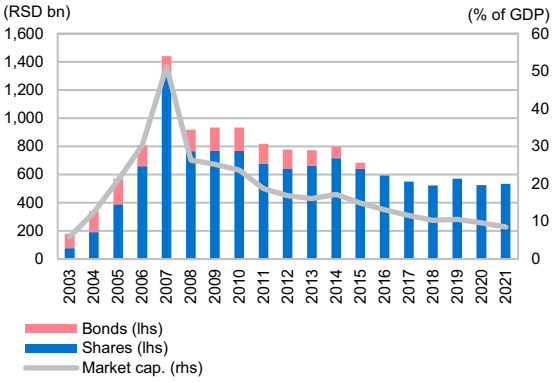
Chart III.2.5 **Stock of euro government bonds**
(nominal value, EUR mn)



Source: Ministry of Finance.

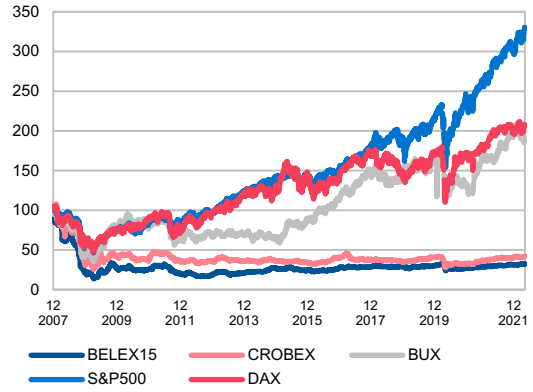
[116] In December 2020, Serbia carried out its first cross-currency swap, whereby it converted liabilities under this eurobond from the dollar into the euro.

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



Sources: Belgrade Stock Exchange and NBS.

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



Source: Bloomberg.

The volume of euro-denominated government bond issue[117] (EUR 0.4 bn) in the domestic market was lower in 2021 than in 2020 (EUR 0.7 bn). The stock of euro-denominated bonds with the maturity of over one year was EUR 312.0 mn lower in 2021 than in 2020, and equalled EUR 2.3 bn in December 2021 (Chart III.2.5). Accordingly, the currency structure of the issued government bonds was improved and government exposure to currency risk reduced. The biggest share in the total portfolio of euro-denominated government bonds was that of ten-year (27.3%), five-year (26.5%), fifteen-year (13.9%) and twenty-year bonds (10.2%).

Trading volume in the secondary market of dinar government securities in 2021 was higher than in 2020 (RSD 416.6 bn) and equalled RSD 549.9 bn. Secondary trading in euro-denominated securities amounted to EUR 472.9 mn (EUR 664.7 mn in 2020). The strategy of issuing benchmark bonds had a positive impact on trading volumes in the secondary market. As of November 2015, long-term government bonds were included in the Belgrade Stock Exchange (BSE) prime listing, and total trading in these bonds (both dinar- and euro-denominated) in the BSE in 2021 came at RSD 34.7 bn. The introduction of government bonds to regular trading in the BSE facilitates the access of individual investors to these instruments. The development of secondary trading in government bonds in the regulated market also contributes to greater transparency and liquidity of the secondary market of government bonds, and enables more efficient valuation of these securities.

Further development of the market of government securities can be expected as a result of the introduction of the function of primary dealers that should contribute to the improvement of the primary and secondary markets of government securities.[118]

The BSE market capitalisation at end-2021 came at RSD 533.3 bn (around 8.5% of GDP) (Chart III.2.6). Market capitalisation in 2021 expanded compared to 2020 in the listing segment by RSD 18.8 bn and in the open market segment by RSD 14.6 bn, while contracting in the MTP[119] segment by RSD 23.4 bn.

During the year, indices oscillated in both directions. At end-December 2021, BELEX15 (the index of the most liquid shares) measured 820.78, up by 9.6% from end-2020 (748.61). In the same period, BELEXline increased by 9.3% to 1,711.57 (Chart III.2.7).

Total shares turnover in the BSE in 2021 amounted to RSD 6.5 bn, up by RSD 1.5 bn from 2020. The largest share turnover was recorded by the shares traded in the MTP market segment (RSD 3.5 bn).

The low average value of the monthly share turnover ratio,[120] which in December 2021 measured only 0.07%, suggests low BSE liquidity (Chart III.2.8). The value of the ratio in December 2021 was lower than in December 2020 (0.15%) and lower than pre-crisis (1.3% in 2007). However, stock market liquidity is even more

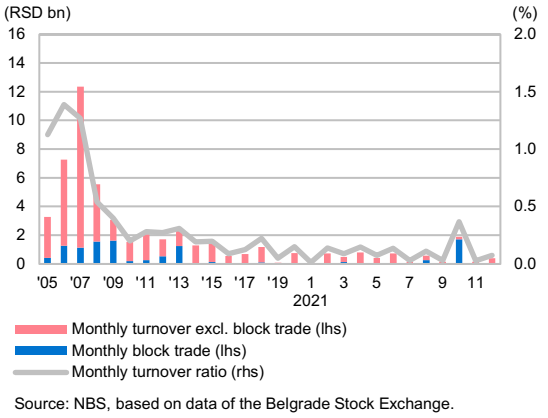
[117] Government securities with twelve-year and twenty-year maturity.

[118] 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.

[119] MTP – multilateral trading platform.

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

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



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

unfavourable if we take into account that the monthly share turnover ratio also includes block trading in total turnover. Yet, as a one-off purchase of shares, block trading is only formally registered on the stock exchange, and does not reflect its actual liquidity.

The number of transactions in the BSE mildly rose in 2021 (18,743) relative to 2020 (18,098).

Foreign investor participation in total turnover in the BSE in 2021 was 24.4%, down by 8 pp relative to 2020. Foreign investors were more active on the sale (39.5%) than on the purchase side (9.4%).

In early August 2021, the Athens Stock Exchange acquired 10.24% of the total number of shares of the BSE, making the BSE a member of the largest stock exchange in Eastern and Southeast Europe, which can contribute to the further development of the domestic capital market. To further improve the regulated capital market, domestic companies should be encouraged to finance their growth by raising capital through initial public offerings of shares. In addition, increasing the number of issuers whose shares are actively traded would further contribute to the development of the BSE, and to a greater presence of institutional investors interested in those instruments.

December 2020 saw the adoption of the Law on Digital Assets,[121] which entered into force on 29 June 2021. Thanks to the adoption of this law, Serbia is among the first countries in the world to create a regulatory framework for digital assets, providing a clear framework and legal certainty for investors and users of digital assets. The Law on Digital Assets enables financing with investment tokens, improves and develops the capital market using digital technology and strengthens the framework for combating abuses in the digital assets market, as well as money laundering and terrorism financing.

On 4 October 2021, Clearstream, the international central securities depository of Deutsche Börse Group, included the Serbian capital market in its global network (consisting of capital markets of 58 more countries), which facilitated access of foreign investors to the domestic securities market. Clearstream is the first international central securities depository that will enable foreign investors to carry out direct settlement of dinar government securities, and thus, contribute to further increasing of foreign investors' participation and liquidity of the domestic capital market.

In October 2021, the Ministry of Finance adopted the Capital Market Development Strategy for the period 2021-2026,[122] while in December it adopted the Action Plan for the period 2021-2023 for the implementation of the Capital Market Development Strategy for the period 2021-2026.[123] The Capital Market Development Strategy sets goals and measures for capital market development in Serbia, the implementation of which should lead to economic growth, improving the supply of financial instruments in the market and increasing domestic and foreign investments in Serbia's economic environment. The Action Plan is a public policy document adopted for the purpose of operationalisation and achievement of general and specific goals set by the Capital Market Development Strategy for the period 2021-2026.

In December 2021, a new Law on the Capital Market[124] was adopted with the aim of encouraging the development of the capital market and providing companies in Serbia with additional sources of financing. This is a completely new law that should accelerate the creation of a transparent, efficient and secure capital market, which will enhance the attractiveness of the domestic market and invite more investors.

New financial instruments can contribute to further development of the domestic financial market. To increase investment of domestic natural persons,

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

[122] RS Official Gazette, No 102/2021.
[123] RS Official Gazette, No 118/2021.
[124] RS Official Gazette, No 129/2021.

additional efforts are needed to educate citizens and continue promoting financial inclusion. What can also have a positive effect on further development of the domestic financial market is the improvement of current regulations and their alignment with capital market movements at the EU level.

Text box 3: Novelties in capital market development

Well-organised and liquid capital markets can play a key role in financing economic growth, as well as contribute to financial stability and efficient conduct of monetary policy. Developed capital markets enable adequate channelling of private sector funds for economic development. In this way, in market-oriented systems, new companies can obtain the needed capital more easily and quickly.

As in the majority of other developing countries, Serbia's financial system is bank-centric, with the dominant use of banking products as the prevalent sources of financing and savings. At end-2021, the share of banking sector assets in GDP was 80.5%, while the market capitalisation of the Belgrade Stock Exchange (BSE) was around 8.5% of GDP. Banks are the most important participants in stock exchange operations and dominant buyers of government securities. Most banks keep financial instruments in their portfolios until their mature, without actively trading in them. High liquidity of the Serbian banking sector suggests there is no need for banks to issue securities in order to collect liquid assets. A significant influence of domestic banks, whose investment in the capital market is not their primary activity, reduces incentives for the development of financial intermediaries who would focus chiefly on the capital market.

The domestic financial market features an inadequately diversified supply of liquid financial instruments. As the corporate and municipal bond markets are underdeveloped, banking loans are the most dominant form of financing. Following the inception of the domestic capital market development, the global financial crisis significantly brought down the number of market participants, i.e. broker-dealer companies and authorised banks in the period after 2008. The number of transactions in the regulated market, i.e. the Multilateral Trading Platform, also declined, as did turnover on the BSE. The global financial crisis dented investor appetite in the capital market, bearing down on both the supply and demand of financial instruments. The number of public companies whose securities are traded on the BSE declined and less and less new companies applied for approval of the public offering prospectus and admission to the market. So far, only one initial public offering has taken place on the BSE – in 2019. Still, the Athens Stock Exchange acquiring 10.24% of total BSE shares in 2021 may reflect positively on further development of the domestic capital market. The main objectives were to improve technological capacities and to potentially attract new investors, as in this way the BSE becomes visible on the global investment map. To this end, in November 2021 an agreement was signed on BSE's migration to the trading platform of the Athens Stock Exchange.[125]

Domestic regulatory authorities recognised in time the need to make the capital market safer, more diversified, more transparent and attractive for domestic and foreign investors, as well as to broaden the supply of quality financial instruments, and make the conditions for admission and trading in the market clear and recognisable for everyone. As a result, in October 2021, the **Strategy for Capital Market Development for the 2021–2026 Period**[126] was adopted, and in December 2021 the Action Plan for the 2021–2023 Period for the Implementation of the Strategy for Capital Market Development for the 2021–2026 Period[127] was adopted. The aim of the Strategy is for Serbia to develop a competitive, highly efficient, transparent and productive capital market, which will offer to institutional and individual investors and issuers a wide range of products and services, comparable with leading regional and European financial centres.

One of the activities envisaged by the Strategy was the new **Capital Market Law**,[128] which was adopted in December 2021, came into force on 5 January 2022, and will apply as of 6 January 2023, i.e. a year after coming into force. The new Law is further harmonised with EU regulations governing financial markets.[129] New arrangements are

[125] See the BSE press release: https://www.belex.rs/eng/proizvodi_i_usluge/vesti/86010

[126] RS Official Gazette, No 102/2021.

[127] RS Official Gazette, No 118/2021.

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

[129] Directive 2004/39/EC on markets in financial instruments (MiFID I), Directive 2014/65/EU on markets in financial instruments (MiFID II), Directive 2003/71/EC on the prospectus to be published when securities are offered to the public or admitted to trading (in the meantime repealed and replaced by Regulation 2017/1129/EU on the prospectus to be published when securities are offered to the public or admitted to trading on a regulated market), Directive 2004/109/EC on the harmonisation of transparency requirements in relation to information about issuers whose securities are admitted to trading on a regulated market, Directive 2010/73/EU on the prospectus to be published when securities are offered to the public or admitted to trading and on the harmonisation of transparency requirements in relation to information about issuers whose securities are admitted to trading on a regulated market, Directive 2013/50/EU on the harmonisation of transparency requirements in relation to information about issuers whose securities are admitted to trading on a regulated market, Directive 97/9/EC on investor-compensation schemes, Directive 2014/57/EU on criminal sanctions for market abuse (MAD), and Directive 98/26/EC on settlement finality in payment and securities settlement systems.

introduced and it is now possible to establish new market participants. The Law also regulates the right of pledge to financial instruments, introduces new obligations for market participants, new types of the prospectus, broadens and strengthens supervisory powers of the Securities Commission, regulates in more detail the transparency of reporting of public companies, i.e. issuers, etc. The new Law was drafted by the Ministry of Finance, with active participation of NBS, Securities Commission, Central Securities Depository and Clearing House, BSE, Deposit Insurance Agency and other members of the Working Group for Capital Market Development.

In addition to adoption of the new Capital Market Law, the regulatory framework that further encourages capital market development was significantly improved. Among others, the following laws were adopted: the Law on Alternative Investment Funds,[130] Law on Open-Ended Investment Funds Subject to Public Offering,[131] Law on Digital Assets,[132] Law on Financial Collateral,[133] and Law on Commodity Exchanges[134].

The upgrade of the regulatory framework was accompanied by the development and promotion of the government securities market. The average maturity of government securities increased and financing costs were reduced. Over the past years, Serbia invested great efforts to develop benchmark dinar bonds, which positively affected the increase in liquidity in the domestic financial market. Recognising Serbia's activities to develop the domestic financial market, on 30 June 2021 JP Morgan included Serbia's dinar-denominated bonds in its renowned GBI-EM family of indices. Serbia thus became more visible to a wide circle of international investors, which contributes to more favourable conditions of financing the government and domestic companies, attracts investment to the country and directly encourages faster economic growth.[135] Positive effects of inclusion of Serbia's dinar-denominated bonds in JP Morgan indices were felt already in July 2021, when trading in benchmark securities increased two to three times compared to June. Owing to substantial demand, the yield on these securities declined significantly already over the first days following inclusion. Compared with data from early June, yields on three benchmark dinar securities were lower by 33 to 41 bn in early July. Positive effects of this success were felt in the domestic financial market as well – demand for dinar government bonds included in indices increased, which led to a rise in their market value and the appearance of numerous new investors.[136]

Signing of the document defining the conditions of cooperation in January 2022 for the purpose of including Serbia's government securities in Euroclear has had a positive effect on the further development of money and capital markets.[137] Euroclear is the largest clearing house in the world, gathering a large number of renowned investors. Entering Euroclear is very important for Serbia in light of the need to broaden the investor base and increase the availability of government securities to the largest world institutional funds. It is expected that the first auction of government dinar securities will be realised via Euroclear already in January 2023.

Significant results were achieved in the international market as well. Serbia issued its first dollar **eurobond** in 2011. In 2019, it began to issue euro instead of dollar eurobonds, which along with swap transactions substituting liabilities based on eurobonds from the dollar to the euro (hedging), contributes to the reduction in the exchange risk, i.e. hedges against volatility of the euro against the dollar, which the NBS cannot influence. In addition, the costs of funding declined considerably and maturity was lengthened – in 2021, Serbia issued its longest maturity bond so far – a 15-year eurobond.[138]

Serbia became one of the few European countries and the only non-EU country that issued a green instrument. In September 2021, it issued the **green eurobond** at the lowest coupon rate on Serbian eurobonds ever. Investor demand was high. In line with the Framework Document on the Issuance of Green Bonds, the proceeds will be used only for the financing or refinancing of new and existing expenditure aimed at achieving even more sustainable growth of the domestic

[130] RS Official Gazette, No 73/19.
[131] RS Official Gazette, No 73/19.
[132] RS Official Gazette, No 153/20.
[133] RS Official Gazette, No 44/18.
[134] RS Official Gazette, No 52/19.
[135] See: https://nbs.rs/en/scripts/showcontent/index.html?id=17113
[136] See: https://nbs.rs/en/scripts/showcontent/index.html?id=17230
[137] See: https://www.srbija.gov.rs/vest/606805/drzavne-hartije-od-vrednosti-uskoro-u-sistemu-euroclear.php.
[138] See: https://nbs.rs/en/scripts/showcontent/index.html?id=17355

economy, through investment in the sectors of renewable energy, energy efficiency, transport, sustainable water management, and pollution prevention and control. The green eurobond issue is fully in line with the Green Bond Principles of the International Capital Market Association (ICMA).[139]

The NBS is one of the main institutions supporting the development of the domestic capital market. Apart from achieving its objectives – price stability has been achieved and preserved, and financial stability has strengthened, which contributes to overall macroeconomic stability – the NBS actively participated in improving domestic regulations and promoting domestic financial instruments. Moreover, just after the coronavirus pandemic broke out, dinar corporate bonds of domestic companies fulfilling relevant criteria were admitted to monetary operations providing liquidity to banks.[140] This encouraged more vibrant growth of the domestic economy, by creating an additional financing channel, and improved the domestic capital market. By issuing dinar bonds, domestic companies can achieve a number of advantages, such as lengthening the maturity of obligations, a broader distribution of their maturity, diversification of the manner of financing, and a reduction in the currency risk of financial sources.

The steps undertaken by competent authorities in the past period create the possibility for the development of a competitive, efficient and transparent market, with a wide range of financial instruments and services, which would be comparable with the leading regional and European financial markets. In addition, the perception of the Republic of Serbia and its financial market improved significantly. This was recognised by the leading rating agencies, which over the past years have been continuously raising the country's credit rating. Our country is now one step away from investment grade. However, for the domestic financial market to be able to exercise its main function in future – efficient allocation of financial resources of savings and investors towards companies for the sake of financing their development and supporting economic growth – the supply of financial instruments and services should develop further.

[139] See: https://nbs.rs/en/scripts/showcontent/index.html?id=17355

[140] Decision on the Conditions and Manner of Implementing Open Market Operations (RS Official Gazette, Nos 45/2011, 34/2013, 74/2020, 98/2020 and 4/2022).

III.3 Financial infrastructure

An efficient and safe payment system is one of the principal functions of central banking, as the critical pillar of financial and economic infrastructure of a country. Payment systems and systems for the settlement of financial instruments make up the financial market infrastructure, significant for timely execution of payment transactions and transfer of financial instruments.

In accordance with 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, oversees and promotes smooth performance of domestic and cross-border payment transactions.

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.

The Law on Payment Services (RS Official Gazette Nos 139/2014 and 44/2018) and regulations based on this Law governing the conditions and methods for payment service delivery, electronic money and payment systems, as well as settlement finality in important payment systems, identify the NBS RTGS and clearing systems as important payment systems.

NBS RTGS is a payment system for the transfer of dinar funds between participants in real time at gross principle. It is an efficient channel for implementation of monetary policy measures. It runs in line with Operating Rules of the NBS RTGS System.[141] All transfer orders can be executed in this system, with mandatory execution of transfer orders based on credit and direct debit transfers whose individual amounts exceed RSD 300,000, in accordance with the Decision on the Minimal Value of Payment Transactions which Must Be Executed in an Important Payment System (RS Official Gazette, No 78/2018).[142]

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, the operator of the financial instruments settlement system within the meaning of regulations governing the capital market, (4) the Association of Serbian Banks (ASB), as the operator of the direct debit and cheque clearing systems.

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 in central banking money, and central banks have the lowest credit risk and are a source of liquidity for the currency of settlement. Though participants are not exposed to credit and liquidity risk in terms of the funds used for settlement, as in all RTGS systems, they must have sufficient funds in their accounts for the smooth execution of transactions. Accordingly, RTGS participants can manage their liquidity risk as well, as the system enables them to view all their transactions, account balances and changes in the sequence of payment orders execution depending on priority.

An important indicator of significance of the RTGS system for the national economy is the value of payment transactions executed in this system over a period of time. In 2021, as much as 99.48% of the total value of payment transactions in the Serbian financial infrastructure were executed in this system, while only 0.52% of transactions were made in the clearing system.

The value of turnover in the RTGS system in 2021 measured RSD 98,783.9 bn, with 194.38 mn payments (81.7% of the total number of payments in NBS RTGS and clearing systems).[143] The highest monthly turnover was recorded in December (RSD 9,127.58 bn).[144]

One of the indicators 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 2021, RTGS turnover was 15.86 times the value of Serbia's GDP.

[141] Decisions on payment system and payment services: https://nbs.rs/en/drugi-nivo-navigacije/propisi/propisi-ps/index.html

[142] https://www.nbs.rs/export/sites/NBS_site/documents-eng/propisi/propisi-ps/minimalna_vrednost_platne_transakcije_e.pdf

[143] https://www.nbs.rs/export/sites/NBS_site/documents/platni-sistem/statistika/rtgs/stat_21.pdf

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

	Average for period 2010–2020	2021
NBS RTGS		
Value, RSD bn	53,208.21	98,783.93
Number of payments, mn	150.17	194.38

Source: NBS.

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

	Average for period 2019–2020	2021
NBS IPS		
Value, RSD bn	155.6	366.3
Number of payments, mn	16.01	42.26

Source: NBS.

The availability of the NBS RTGS and clearing systems is one of the key factors affecting the stability of the financial market. Thus it is worth noting that in 2021 (253 working days) the availability of these two systems was 99.81%.[145]

At end-2021, the NBS marked three full years of the NBS IPS system. The NBS established this system on 22 October 2018 to stimulate innovations in the financial sector and support digitalisation 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 corporates by the NBS.

The system works 24/7/365. Citizens and corporates can make easy and fast payments from any place at any time, including weekends, non-working days or at night and the money is available in just a few seconds.

Direct NBS IPS participants are banks with their head offices in Serbia, the NBS, Serbian ministry in charge of finance – Treasury Administration, i.e. participants which can have accounts in this system in line with operating rules of the RTGS.

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 constant rise in the number of payments. The total value of turnover in this system in 2021 measured RSD 366.3 bn with 42.26 mn payments, up to 1.7 times more than in 2020. The highest monthly turnover was recorded in December (RSD 41.5 bn).[146]

A newly introduced "Transfer" service is without a doubt contributing to a further rise in the use of instant payments. This service enables users to make money transfers by knowing only the mobile phone number that the payee has registered for this service without filling in or memorising the payee's account number. Banks will allow users to register their mobile phone number for the "Transfer" service and use this service for money transfer via existing mobile banking applications.

To timely inform citizens and corporates about instant payments and their advantages as one of the most modern and fastest forms of payments, the NBS launched the IPS webpage on its homepage in July 2021.[147]

The current instant payments method for online payments by scanning merchants' IPS QR code has been upgraded and online payments can now be made by simply using only one (mobile) device via deep link technology.[148]

In addition to being safe, the added value of online instant payments is reflected also in their low fees.[149] Low transaction processing costs and NBS price policy have enabled merchants to make significant savings by accepting this instrument, while those who accept cash only (retail merchants and craftsmen) can provide this form of payment at low cost.

[144] https://www.nbs.rs/export/sites/NBS_site/documents-eng/platni-sistem/statistika/rtgs/pp_12_21.pdf
[145] https://www.nbs.rs/export/sites/NBS_site/documents/platni-sistem/statistika/rtgs/stat_21.pdf
[146] https://www.nbs.rs/export/sites/NBS_site/documents-eng/platni-sistem/statistika/IPS/ips_12_21.pdf
[147] https://ips.nbs.rs/en
[148] Deep link is a type of link that directs users to an application instead of a website or an online store.
[149] The fee in the NBS IPS, charged by the NBS as the payment system operator against system participants, equals the fee charged for retail payments in the RTGS and clearing systems.

Introducing a new functionality of instant payments via m-banking applications, the NBS in cooperation with banks significantly improved online purchases with a simple and safe payment method in line with consumers' expectations. As such, online instant payments which use the IPS scan method are an additional incentive for further development of online trade in Serbia.

Network of interbank transactions of the 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 to potential shocks, and the effects of shock transmission in the network.

Network characteristics were analysed using daily data for January–December 2021, on the basis of reports on interbank transactions in the NBS RTGS payment system. During 253 business days, only MT202 and MT103[150] interbank messages were analysed and used for each business day to model separate networks. Table III.3.3 shows the results of the analysis and the values of indicators for the entire network.[151]

For 253 business days in 2021, for the observed sample of transactions (MT202 and MT103), the average daily turnover was RSD 81.54 bn. The average number of transactions per day was 18,098.7 and the average value per transaction was RSD 4.53 mn.

The size of a financial network is defined by the number of its participants. The number of banks actively participating in the NBS RTGS was 26 until May 2021 when it dropped to 25.[152] The daily average of direct interbank links was around 582, meaning that a large number of banks executed interbank MT202 and MT103 transactions on a daily basis. The average daily connectivity ratio of 72.57% was relatively high, which means that the interdependence of financial institutions was also high, as indicated by the low average path length of 1.24,[153] 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,

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

		Mean	Median	Maximum	Minimum	Standard deviation
Payments	Value (RSD mn)	81,540.63	80,537.25	90,553.06	67,551.04	6,477.56
	Number of transactions	18,098.66	17,695.31	21,797.65	14,443.79	1,895.26
	Average (RSD mn)	4.50	4.65	5.04	4.00	0.34
Network size	Nodes*	25.33	25.00	26.00	25.00	0.47
	Number of direct links	582.08	574.00	616.00	546.00	24.29
Distance measure	Average path length	1.24	1.24	1.27	1.23	0.01
Connectivity	Node degree	20.54	20.42	21.24	20.09	0.36
	Node out-degree	18.38	18.28	18.99	18.04	0.30
	Connectivity	72.57%	72.72%	74.07%	69.66%	1.07%
	Average clustering	90.73%	90.93%	91.11%	89.87%	0.36%
Others	Betweenness centrality	3.95%	4.00%	4.00%	3.85%	0.07%
	Dissimilarity index	0.35	0.27	0.91	0.26	0.18

* Calculations based on daily reports from the NBS RTGS system, for the period Jan-Dec 2021, 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.

[150] 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.

[151] A detailed explanation of the indicators is available in the *Financial Stability Report – 2015*, Text box 4 – Network modelling.

[152] Merger of OTP banka Srbija and Vojvođanska banka a.d. Novi Sad.

[153] The average path length lh 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 lenghts for each node and the number of nodes, $l = \frac{1}{n-1}\sum_i l_i$.

i.e. financial institutions expecting to receive payments. For the entire NBS RTGS network, the average daily degree out was 18.38, 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 90.73%, which means that the nodes' neighbours were connected to a larger extent.

The average betweenness centrality of 3.95% 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 the transmission of shock through the network.

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 0.35 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 take into account 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 was highly connected, but that there were several financial institutions that were more interconnected, which represents the basis for further analysis of network indicators at the level of individual institutions.

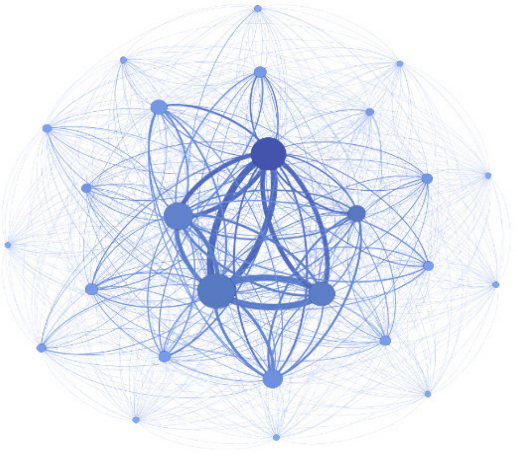
Identifying important banks in the payment system

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),[154] central banks, as well as the IMF,[155] have been increasingly including the stress testing of financial market infrastructure in their regular publications, taking into account the importance of the smooth operation of financial infrastructure.

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[156] carried out in the RTGS payment system during 2021, 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

Chart III.3.1 **Bank interconnectedness in the NBS RTGS network**



* Interbank payments (MT202 and MT103) for the period Jan-Dec 2021.
** 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.

[154] https://www.esma.europa.eu/press-news/esma-news/esma-updates-guidelines-stress-tests-money-market-funds
[155] https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2020/01/31/Stress-Testing-at-the-IMF-48825

[156] January–December 2021, interbank payments (MT202 and MT103).

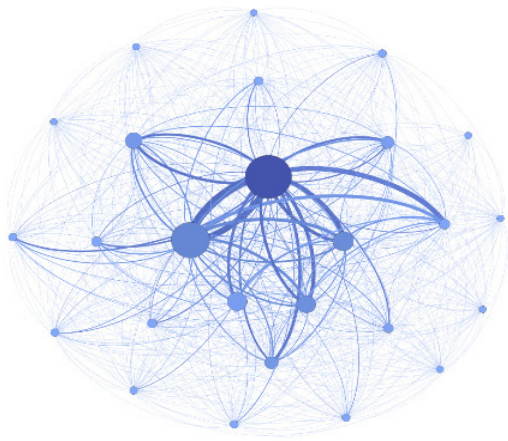
be determined according to centrality measures (degree of an individual node, betweenness centrality, closeness centrality and prestige[157]).

The NBS IPS system functionality[158] and the applied technical and technological solutions are in line with the trends in payment systems. The system is based on the latest and tested IT solutions and enables a very short processing time (in 2021 the transaction execution time averaged 1.2 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.[159] Chart III.3.2 shows two prominent banks which account for around 60% of total value and number of payments made in the IPS, and which can be considered systemically important banks from the point of view of this system.

Since the NBS set the instant system tariff policy at the lowest possible level, i.e. made space for banks to render this service to citizens and corporates at as favourable as possible conditions, a further rise in the number of payments in this system can be expected in the future.

Chart III.3.2 **Bank interconnectedness in the IPS NBS payment system**



* Interbank payments (MT202 and MT103) for the period Jan-Dec 2021.
** 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.

[157] 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.
[158] 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.
[159] 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: Development of fintech and regulation of digital assets in the Republic of Serbia

Techno-financial innovations are evolving so rapidly that the regulatory framework governing digital business requires continuous improvement to match current technological advances.[160]

The World Bank and the IMF use the term fintech to describe "advances in technology which have the potential to transform financial service provision, fostering the development of new business models, applications, processes and products."[161] Given the rapid development of information technology and financial instruments, the future of the financial market lies in the cooperation of fintech[162] companies and banks which will provide households and businesses with an even faster access to financial services. Fintech is mostly based on providing those services that are often complementary to traditional banking services, which encourages banks to improve their products. Smartphones have been innovative in this regard, as they have enabled millions of users around the world to carry out financial transactions instantly, without the need to go to a bank branch.

Technological changes and the accelerated development of finance have enabled new types of payments, in line with the need for contactless payment methods, which are fast, easy to use and often cheaper than traditional types of payments. The coronavirus pandemic has further accelerated this type of payment and changed the way consumers buy goods and services. Concerned that the virus could be spread by using cash, many consumers have shown some degree of reluctance to use it (COVID-19, cash, and the future of payments, BIS, 2020).[163] In an effort to avoid physical contact with a potentially contaminated area or object, many users have opted for contactless forms of payment, using cards or mobile phones. In addition, many customers have switched from in-store shopping to online platforms that are supported by digital payments. The Financial Stability Board, an international body that promotes financial stability at the global level, also outlines the transition from physical contact to digital, cashless and contactless business. In March 2022, a report was published analysing the potential impact of the bigtech[164] and fintech industry on financial stability in the context of the coronavirus pandemic (FinTech and Market Structure in the COVID-19 Pandemic, Implications for financial stability).[165] The report presents data on the market share of fintech, bigtech and other financial companies, and concludes that fintech and bigtech companies are increasingly participating in the financial services market segment. The expansion of bigtech and fintech companies in the financial services field can have the advantage of reducing customer fees and expanding access to financial services for more users, especially in the household and SME segment.

At the same time, there may be a negative impact on financial stability due to the dependence on a limited number of bigtech and fintech companies, which are the only service providers in some markets, as well as the non-transparency of their activities. The number of operational points that can be the subject of cyber attacks is also increasing. Problems can also arise due to a greater user dependence on technology, as well as data protection, e.g. unauthorised use or misuse of users' personal data. Given the huge potential benefits of the bigtech and fintech industry, it is necessary to constantly improve regulations in this area in order to reduce potential risks. The need for improvement was also pointed out by the

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[160] In order to improve the comparability of fintech regulations in different countries, the World Bank prepared and made public its Global Database of Fintech Regulations. It is an online library of laws, regulations and guidelines from almost 200 countries in a searchable and easy-to-use format. The database covers the countries' fintech-related regulations, in the field such as the prevention of money laundering and terrorism financing, the fight against cybercrime, as well as regulations specific to fintech business models such as digital banking and cryptocurrencies. The database was last updated with documents that were publicly available in July 2021.
(https://www.worldbank.org/en/topic/fintech/brief/global-fintech-enabling-regulations-database#:~:text=This%20database%20consists%20of%20nearly,contrast%20fintech%20related%20regulation%20globally).

[161] https://blogs.worldbank.org/psd/global-regulatory-database-help-policymakers-unlock-fintechs-potential

[162] A detailed explanation is available in the *Financial Stability Report – 2017*, Text box 5 – Development of Fintech and impact on financial stability.

[163] https://www.bis.org/publ/bisbull03.pdf

[164] BigTech are big technology companies whose business is focused on the direct provision of financial services or products very similar to financial products, such as Google, Facebook and Amazon.

[165] https://www.fsb.org/wp-content/uploads/P210322.pdf

Financial Stability Institute, when in July 2021 it published a paper entitled "Fintech and payments: regulating digital payment services and e-money",[166] which provides a cross-country overview of the regulatory requirements for digital payments, payment services and e-money.

Regulation of digital assets in the Republic of Serbia

In the last few years, virtual currencies and digital tokens have experienced a strong expansion. Their popularity among the younger generations and strong global support for digital transformation have further accelerated their development. In line with these developments and with the aim of encouraging innovation, while preserving financial stability and protecting investors from risk, legislators in some countries have worked towards recognising and regulating digital assets.

Examples of such countries at the EU level are Malta and France. Malta passed a law governing the area of digital assets – the Virtual Financial Assets Act[167] in 2018, while France adopted the Law on Entrepreneurship Development Plan and Transformation (*Plan d'Action pour la Croissance et la Transformation des Entreprises*)[168] in September 2019, prescribing a list of services which are considered digital asset services, in addition to several other topics laid down by this law.

The importance of regulating this area is also recognised at the EU level. In September 2020, the European Commission announced a plan to regulate digital assets at the EU level and proposed a Regulation on Markets in Crypto Assets.[169] This Regulation aims to identify basic solutions which should provide legal certainty to issuers and buyers of digital assets, as well as to speed up and harmonise the work of national legislators in this area.

Although traditionally in favour of the use of cash, the domestic market has significantly re-oriented to cashless forms of payment due to innovations, but also the coronavirus pandemic, when many users switched to online business.[170] These reasons have significantly influenced the development of digital currencies and e-wallets, e-banking applications and even payment cards.

At end-December 2020, the National Assembly of the Republic of Serbia passed the Law on Digital Assets (RS Official Gazette, No 153/2020) (hereinafter: Law), applied as of 29 June 2021, thus classifying Serbia as one of the few countries that have regulated issues regarding digital assets by law.

This Law is very important, since it defines digital assets in detail for the first time, thus introducing them into legal economic flows. Thus, digital assets are pulled out from the grey area and the digital assets market is regulated in our country. The Law enables financing with investment tokens, improves and develops the capital market using digital technology, and strengthens the framework for combating abuse in the digital assets market, as well as money laundering and terrorism financing. The Law also defines the process of issuing and exchanging digital assets, which leads to a greater legal security for investors and all other participants in the digital assets market.

Types of digital assets envisaged by the Law are virtual currency and digital token. Virtual currency is a type of digital assets that is not issued or guaranteed by a central bank or public authority, that is not necessarily attached to a legal tender and that does not have the legal status of money or a currency, but that is accepted by natural or legal persons as a means of exchange and that can be bought, sold, exchanged, transferred, and stored electronically. A digital token is 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. Digital tokens are especially important as a form of alternative financing for young and innovative companies and startups.

[166] https://www.bis.org/fsi/publ/insights33.pdf
[167] https://legislation.mt/eli/cap/590/eng/pdf
[168] https://www.economie.gouv.fr/files/files/2019/PACTE_Juin2019/bro-a4-pacte.pdf
[169] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020PC0593
[170] https://nbs.rs/sr_RS/scripts/showcontent/index.html?id=17812

Virtual currencies, with bitcoin as their most well-known representative globally, are innovative means of exchange that are not issued and guaranteed by central banks, unlike ordinary money. Cryptocurrencies are not money, they are exclusively a means of exchange, so they can be exchanged for goods, services or money. They are decentralised and their value depends on supply and demand in the market. Their supply and demand are under the effect of numerous factors, often beyond any impact, which makes them very risky for investment. However, the achieved income can be substantial, and hence the rising interest in investing in this type of digital assets.

The Law also regulates the issuance of digital assets and secondary trading in digital assets in the Republic of Serbia, the provision of services in connection with digital assets, as well as pledge and fiduciary rights on digital assets. As for the issuance of digital assets, the Law introduces a "white paper" document, which, in accordance with international practice, represents a document that the issuer must publish to set out the information that enables investors to make an informed decision, as well as the risks associated with investing in digital assets. The aim of issuing the "white paper" is to protect investors, as it is a document published when issuing digital assets and containing information on the issuer of digital assets, information on the digital assets, and the risks associated with the digital assets, so that investors are able to make informed decisions. As for the digital asset service providers, the Law introduces the "licence", as well as the minimum requirements for capital that a legal person must have when applying for the licence for the provision of digital asset services.

In addition, the Law regulates the competence over licensing and supervision over the application of this Law. The Securities Commission (hereinafter: Commission) and the NBS are responsible for the licensing and supervision of operations in connection with digital assets. The Securities Commission is responsible for approving the "white paper", secondary trading, licensing and supervision of digital token service providers, as well as for providing advisory services on the application of this Law, while the NBS is responsible for the same issues in connection with virtual currencies.

As the supervisory and regulatory authority responsible for virtual currencies, the NBS adopted a set of secondary legislation,[171] which regulates in detail, inter alia, the procedure for the issuance of a licence to provide virtual currency services and documents submitted with the application for such licence, as well as the method of calculating the minimum capital of virtual currency service providers, method of supervising virtual currency service providers and other subjects of supervision, conditions of managing the information and communication system of virtual currency service providers, establishing and keeping records of virtual currency holders, issuing virtual currencies and preventing abuse in the virtual currency market. In addition, the NBS adopted amendments and supplements to the secondary legislation supporting the Law on the Prevention of Money Laundering and Financing of Terrorism (RS Official Gazette, Nos 113/2017, 91/2019 and 153/2020) for the purpose of alignment with the provisions of that law concerning virtual currency service providers.

The Law also envisages the establishment of a special web-portal for the communication of supervisory authorities with digital assets service providers. This is of a special importance for legal persons providing both digital token and virtual currency services.

One of the most important elements regulated by the Law is the principle of technological neutrality, which stipulates that the provisions of the Law apply to all digital assets, regardless of the technology underlying such digital assets. This technology neutral approach is of crucial importance, because it provides legal certainty that the Law will not lose its significance due to the technological progress, i.e. the emergence of new digital assets in the future.

By adopting the Law, which is in line with international standards in the fight against crime and prevention of money laundering, the Republic of Serbia has sent a clear signal that it is committed to developing digital infrastructure and improving regulations in electronic communications, digital services and digital society.

[171] Digital asset regulations: https://nbs.rs/en/drugi-nivo-navigacije/propisi/propisi-di/index.html

III.4 Real estate market

The NBS closely monitors and analyses movements in the real estate market, as the fluctuations in real estate values can affect significantly the quality of bank credit portfolios and hence, financial stability and the real economy at large. The real estate market turnover and prices went up in 2021 on account of higher demand, favourable borrowing conditions and positive labour market trends. Despite the prolonged adverse impact of the pandemic, the value of executed works in the territory of the Republic of Serbia in constant prices increased by 15.1% in 2021 relative to 2020.

The turnover in the real estate market and property prices went up over the past years, which is in line with developments in this market segment in other countries as well. This is a result of increased demand for real estate, positive labour market trends and favourable borrowing conditions.

According to the Republic Geodetic Authority, the average price of flats in old buildings for the territory of the Republic of Serbia in 2021 equalled EUR 1,104 per square metre, and in new buildings EUR 1,450 per square metre, up by 10% and 9%, respectively, from 2020.[172]

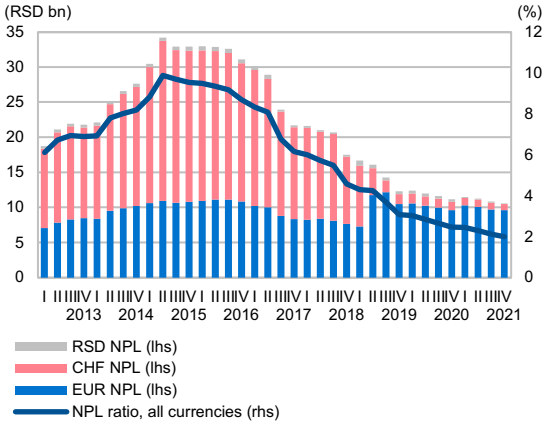
It is also important to note that, according to the same Authority in 2021, only 15% of all real estate transactions, i.e. only 34% of traded flats in Serbia were paid from loans.

The data of the Republic Geodetic Authority indicate that in 2021, a total of 138,180 purchase and sale transactions were made in this market, and this exceeded by 28.4% the previous record of 107,588 posted in 2020. Total turnover in the real estate market touched its record high of EUR 6.1 bn in 2021, rising by 47% from 2020. The bulk of the turnover related to flats (54%), the value of these transactions amounting to EUR 3.3 bn, up by 43% from 2020. Turnover in Belgrade accounted for the largest share in total turnover in 2021. It measured EUR 2.1 bn or 63% of the total volume of assets in the Serbian flats market.

The turnover of real estate transactions was affected by both demand and supply factors. The Bank Lending Survey[173] indicates a continued rise in the demand for housing loans in 2021. According to banks, the need for purchasing real estate was a significant driver of household demand in 2021. On the supply side, credit standards for household loans were eased throughout 2021 largely on account of interbank competition, positive real estate market outlook, labour market recovery and a greater risk appetite.

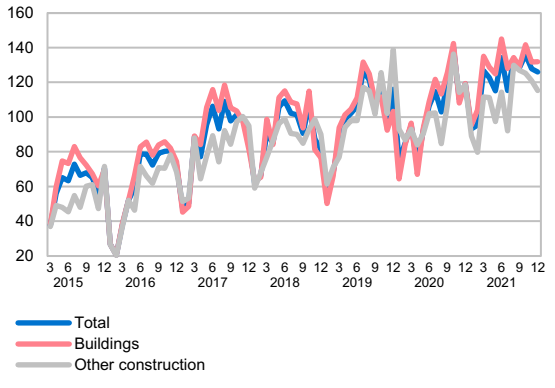
According to the SORS,[174] in 2021 total value of executed works in constant prices in the territory of the Republic of Serbia increased by 15.1% relative to 2020, and the value

Chart III.4.1 **Housing NPLs**



Source: NBS.

Chart III.4.2 **Indices of the number of issued new construction building permits**
(index, 2020 = 100)



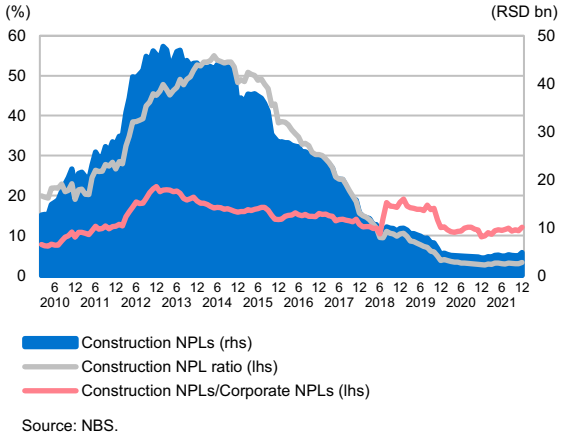
Source: SORS.

[172] https://www.rgz.gov.rs/content/Datoteke/masovna%20procena/2022/Godi%C5%A1nji%20izve%C5%A1taj%20o%20stanju%20na%20tr%C5%BEi%C5%A1tu%20nepokretnosti%20za%202021.%20godinu.pdf

[173] https://nbs.rs/en/drugi-nivo-navigacije/publikacije-i-istrazivanja/anketa-kreditna-aktivnost/index.html

[174] https://publikacije.stat.gov.rs/G2022/Html/G20221028.html

Chart III.4.3 **NPLs of the construction sector within corporate sector NPLs**



Source: NBS.

of works performed on buildings by 12.4%. Compared to 2020, in 2021 the total number of issued permits went up by 33.4%, the number of issued building permits by 39.0%, the number of issued permits for other constructions by 11.6%, and the number of issued construction permits for the building of flats by 19.3%, while the total flat floor area according to issued permits rose by 21.0%. The rising trend of issued construction permits may indicate further growth in supply.

Another indicator of construction sector growth is the further expansion of corporate lending in this area, as well as registered employment growth that reached its peak since 2012. On the other hand, in 2021, the share of NPLs in total loans to the construction sector went slightly up, to 3.3%, which is 0.6 pp higher than in December 2020, but is still close to the lowest levels.

The year 2021 saw a fall in the number of insured mortgage loans in default for which the National Mortgage Insurance Corporation pays the maturing annuities to banks until the mortgaged property is sold (number of insured loans in default). The rate of default on insured loans and the pertaining risk are relatively low. The average LTV[175] for total initially insured loans at end-2021 measured 65.5%, considerably below the prescribed level of 80%.[176]

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 volatility 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 – natural persons trained in real estate valuation holding 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 was adopted, introducing standardised real estate valuation which enables adequate valuation of credit risk for receivables secured by mortgage. According to the information contained in the List of Licensed Valuers on the Ministry of Finance website, at end-2021 there were 239 licensed valuers.

To provide conditions for higher quality real estate valuation, which diminishes the risk of new NPLs and contributes to the development of the market of mortgage-backed NPLs, 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 Official Gazette, Nos 34/2011, 114/2017 and 84/2020) to enable 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 (90% if the loan is approved as a measure of support to certain groups of natural persons) was eased for the approval of loans to first-time home buyers and banks can now grant housing loans in the amount of up to 90% of the value of the mortgaged real estate.

In August 2020, the NBS also adopted the Decision on Temporary Measures for Banks to Facilitate Access to Financing for Natural Persons (RS Official Gazette, Nos 108/2020 and 119/2021). The said Decision enabled banks to approve housing loans without having to wait for the facility to be completely or largely built. 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

[175] Loan-to-value (LTV) is the ratio of mortgage loan and real estate value used as loan collateral.

[176] If the loan is granted under government measures of support to certain groups of natural persons or if the loan is approved for the purchase of the first property, LTV is 90%.

construction regardless of the degree of completion. The condition is that the building is a 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 a project financed by another bank or a project of a legal entity 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 most. The original deadline for the said measures was 31 December 2021 but in view of the prolonged duration of the coronavirus crisis and to facilitate further access to housing loans for citizens and support the construction industry, the NBS extended the application of these measures in December 2021 by additional 12 months, i.e. until 31 December 2022

Text box 5: Residential real estate valuation in 2021

Past years have witnessed an increase in turnover in the Serbian real estate market (28% in 2021 relative to 2020, according to the data of the Republic Geodetic Authority)[177] and a rise in real estate prices,[178] consistent with movements in this market segment in other countries. According to the data of the Republic Geodetic Authority, and data from the database on valuation of mortgaged real estate (hereinafter: real estate database), created by the NBS in 2015, real estate prices went up in 2021 compared to 2020.

Since the start of bank reporting (October 2015) until late 2021, data on 162,006 pieces of real estate with the appraised value of RSD 5,277.6 bn were entered in the database. Most of these data concern residential real estate[179] (68.3% of the total). In terms of appraised real estate values, commercial real estate serving as mortgage was dominant (85.2% 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 2021 the average appraised value per square metre for the Republic of Serbia equalled EUR 1,067.

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 where residential real estate valuations were carried out in 2021.

There is a significant dispersion of real estate values across regions in the Republic of Serbia. The average appraised value per square metre in the Belgrade region of EUR 1,611 is above the double average appraised value per square metre in other regions (Vojvodina – EUR 751, Šumadija and Western Serbia – EUR 692 and Southern and Eastern Serbia – EUR 690). As the largest number of appraised real estate concerns the Belgrade region, it can be concluded that the average appraised value per square metre of real estate in the Republic of Serbia is largely determined by the movement in real estate valuations in the Belgrade region.

In the Belgrade region, there is a dispersion of the average appraised value per square metre 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 416 recorded for the Barajevo municipality versus above EUR 2,200 in the Belgrade downtown (Savski venac– EUR 2,531, Stari grad – EUR 2,439 and Vračar – EUR 2,275). Such dispersion of average appraised values per square metre of 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 1,222, other municipalities of the region – EUR 495), the region of Southern and Eastern Serbia (Niš – EUR 931, other municipalities of the region – EUR 554) and the region of Šumadija and Western Serbia (Kragujevac – EUR 765, other municipalities of the region – EUR 677).

The maximum individual real estate valuation per square metre was registered in the Savski venac municipality, and the lowest in Vojvodina.

[177] The number of purchase transactions increased from 107,588 in 2020 to 138,180 in 2021. See: https://www.rgz.gov.rs/content/Datoteke/masovna%20procena/2022/Godi%C5%A1nji%20izve%C5%A1taj%20o%20stanju%20na%20tr%C5%BEi%C5%A1tu%20nepokretnosti%20za%202021.%20godinu.pdf

[178] According to the data of the Republic Geodetic Authority, the average price of old apartments in Serbia in 2021 was EUR 1,104 per square meter and for newly constructed apartments EUR 1,450 per square meter, which is a rise of 10% and 9%, respectively, relative to 2020.

[179] For the purpose of this Text box, residential real estate means apartments and houses appraised for the purpose of collateralisation of housing loans.

Table O.5.1 **Appraised values of residential real estate in 2021**

	Average appraised value per m^2 in 2021 (in EUR)*	Average appraised value per m2 in 2020 (in EUR)	Change compared to previous year (in %)	Minimum appraised value per m^2 in 2021 (in EUR)	Maximum appraised value per m^2 in 2021 (in EUR)	Number of appraised pieces of real estate in 2021
Republic of Serbia	**1,067**	**973**	**9.7**	**70**	**7,633**	**12,524**
Belgrade region	**1,611**	**1,430**	**12.6**	**135**	**7,633**	**5,388**
Belgrade – Savski venac	2,531	2,328	**8.7**	973	7,633	142
Belgrade – Stari grad	2,439	2,272	**7.3**	883	3,942	206
Belgrade – Vračar	2,275	2,154	**5.7**	1,308	3,947	273
Belgrade – Novi Beograd	1,852	1,707	**8.5**	820	4,023	1,071
Belgrade – Voždovac	1,604	1,434	**11.9**	321	2,975	689
Belgrade – Zvezdara	1,584	1,392	**13.8**	362	3,218	731
Belgrade – Zemun	1,555	1,381	**12.6**	542	2,564	713
Belgrade – Palilula	1,408	1,243	**13.3**	310	3,361	530
Belgrade – Čukarica	1,389	1,236	**12.4**	352	4,023	404
Belgrade – Rakovica	1,157	1,101	**5.0**	405	1,875	307
Belgrade – Sopot	793	440	**80.1**	305	1,749	14
Belgrade – Surčin	744	688	**8.2**	371	1,689	25
Belgrade – Mladenovac	662	525	**25.9**	312	1,000	50
Belgrade – Obrenovac	650	608	**6.9**	172	1,307	49
Belgrade – Lazarevac	632	685	**-7.8**	250	2,167	82
Belgrade – Grocka	615	593	**3.6**	198	2,047	73
Belgrade – Barajevo	416	453	**-8.3**	135	1,099	29
Region of Vojvodina	**751**	**729**	**3.1**	**70**	**2,700**	**3,719**
Novi Sad	1,222	1,086	**12.6**	160	2,700	1,723
Other municipalities of the region	495	468	**5.6**	70	1,760	1,996
Region of Šumadija and Western Serbia	**692**	**653**	**6.1**	**104**	**3,740**	**2,199**
Kragujevac	765	777	**-1.6**	175	1,373	411
Other municipalities of the region	677	623	**8.7**	104	3,740	1,788
Region of Southern and Eastern Serbia	**690**	**671**	**2.9**	**91**	**2,559**	**1,218**
Niš	931	844	**10.2**	283	1,450	499
Other municipalities of the region	554	544	**1.8**	91	2,559	719

* Preliminary estimate; during Q1 2022 banks are expected to continue to submit appraisals from 2021.

** Data are based on first appraisals of apartments and houses in the housing loan approval procedure.

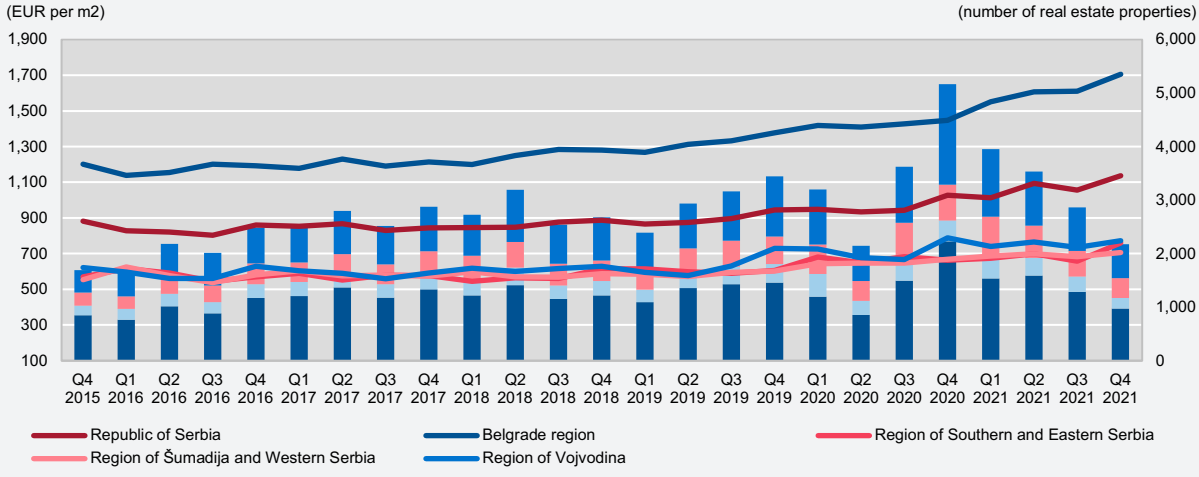
Source: NBS.

Based on data from the real estate database, the average appraised value per square metre in 2021 relative to the year before increased 9.7% in the Republic of Serbia, 12.6% in the Belgrade region, 6.1% in Šumadija and Western Serbia, 3.1% in Vojvodina and 2.9% in Southern and Eastern Serbia. In 2021, a total of 12,524 valuations were recorded in Serbia, down by 1,609 compared to 2020. Looking at quarterly movements in the number of valuations in 2021, a significant decline can be observed in all quarters (Q1 – 3,951, Q2 – 3,533, Q3 – 2,862 and Q4 –2,178) compared to Q4 2020, when 5,169 valuations were entered, the record number since the database was established. New valuations should be added in the first half of 2022, since a 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 went up in 2021, except in Q3 2021, when a mild decline was recorded (Chart O.5.1) due to the lower number of transactions involving apartments compared to houses.

Looking at apartment transactions only (excluding other types of residential real estate) in the territory of the Republic of Serbia (Chart O.5.2), it can be observed that the average appraised values per square metre of apartments in 2021 were on a constant rise. In Q4 2021, they equalled EUR 1,396 for the Republic of Serbia, EUR 1,787 for the Belgrade region, EUR 1,126 for Vojvodina, EUR 874 for Šumadija and Western Serbia and EUR 865 for Southern and Eastern Serbia.

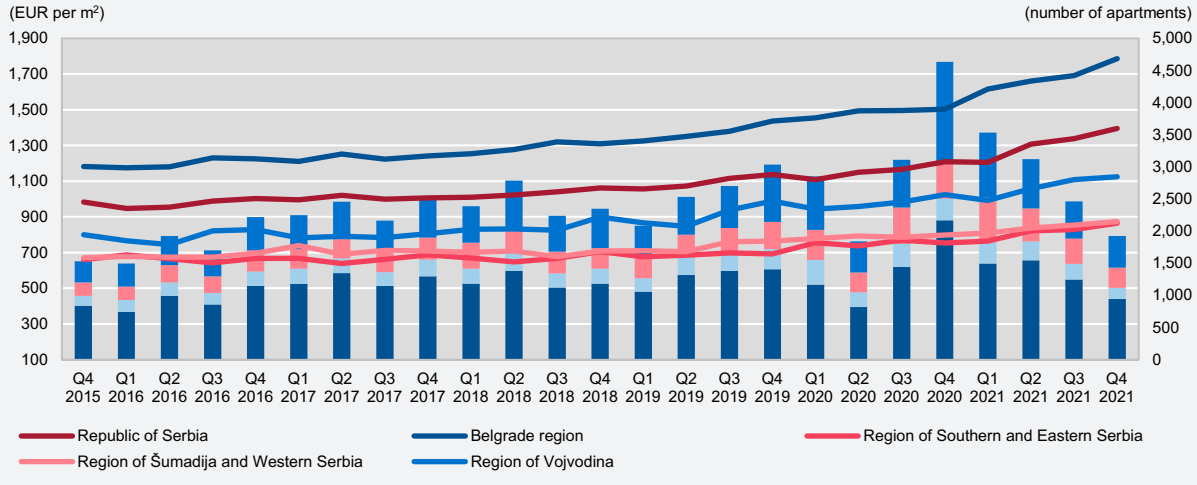
Chart O.5.1 **Appraised real estate values and number of properties per region**



* Data are based on first appraisals of apartments and houses in the housing loan approval procedure.

Source: NBS.

Chart O.5.2 **Appraised real estate values and number of apartments per region**



* Data are based on first appraisals of apartments in the housing loan approval procedure.

Source: NBS.

Based on data from the real estate database, the average appraised value per square metre can be determined not only by region and municipality but also depending on the year of construction, type of real estate (house/apartment), apartment structure etc. The results are shown in Table O.5.2.

Table O.5.2 **Average appraised values of residential real estate in 2021 (year of construction, type, structure)**

	Average appraised value per m^2 (in EUR)*	By year of construction		By type of real estate		By structure of apartment				
		New construction	Old construction	Apartment	House	0.5	1–1.5	2–2.5	3–3.5	4+
Republic of Serbia	**1,067**	**1,370**	**986**	**1,299**	**390**	**1,512**	**1,322**	**1,206**	**1,259**	**1,500**
Belgrade region	**1,611**	**1,885**	**1,541**	**1,679**	**666**	**1,787**	**1,599**	**1,595**	**1,638**	**1,923**
Belgrade – Savski venac	2,531	3,199	2,295	2,516	3,132	1,972	2,117	2,341	2,198	2,729
Belgrade – Stari grad	2,439	3,114	2,367	2,439	-	2,643	2,402	2,464	2,314	2,493
Belgrade – Vračar	2,275	2,623	2,201	2,275	-	2,339	2,137	2,183	2,217	2,403
Belgrade – Novi Beograd	1,852	2,187	1,800	1,852	-	1,963	1,813	1,824	1,769	2,053
Belgrade – Voždovac	1,604	2,061	1,473	1,660	827	1,828	1,719	1,646	1,567	1,794
Belgrade – Zvezdara	1,584	1,700	1,551	1,581	1,765	1,767	1,556	1,558	1,574	1,658
Belgrade – Zemun	1,555	1,717	1,409	1,559	1,357	1,416	1,547	1,539	1,650	1,433
Belgrade – Palilula	1,408	1,542	1,371	1,428	710	1,495	1,416	1,350	1,412	1,677
Belgrade – Čukarica	1,389	1,678	1,364	1,426	976	1,578	1,431	1,412	1,436	1,414
Belgrade – Rakovica	1,157	1,247	1,149	1,173	631	1,242	1,223	1,202	1,149	1,093
Belgrade – Sopot	793	1,336	618	708	828	667	611	776	-	-
Belgrade – Surčin	744	993	702	1,077	660	-	1,348	930	920	1,181
Belgrade – Mladenovac	662	855	583	749	390	-	725	782	751	637
Belgrade – Obrenovac	650	1,048	621	884	433	1,179	942	872	903	689
Belgrade – Lazarevac	632	839	614	779	388	899	928	778	752	692
Belgrade – Grocka	615	958	531	908	391	860	943	888	1,054	658
Belgrade – Barajevo	416	525	398	609	375	-	570	515	744	-
Region of Vojvodina	**751**	**1,151**	**645**	**1,058**	**357**	**1,431**	**1,169**	**1,010**	**1,023**	**1,034**
Novi Sad	1,222	1,278	1,187	1,299	613	1,609	1,297	1,315	1,254	1,282
Other municipalities of the region	495	905	444	756	332	864	825	757	768	679
Region of Šumadija and Western Serbia	**692**	**980**	**600**	**837**	**365**	**1,072**	**1,047**	**781**	**782**	**740**
Kragujevac	765	917	698	863	418	877	923	859	821	962
Other municipalities of the region	677	997	581	831	358	1,119	1,078	762	771	722
Region of Southern and Eastern Serbia	**690**	**914**	**639**	**812**	**351**	**1,020**	**859**	**813**	**810**	**737**
Niš	931	1,080	886	972	600	1,078	1,011	997	989	816
Other municipalities of the region	554	779	511	688	306	909	731	677	686	664

* Preliminary estimate, during Q1 2022 banks are expected to continue to submit appraisals from 2021.

** Data are based on first appraisals of apartments and houses in the housing loan approval procedure.

Source: NBS.

The average appraised value per square metre of newly constructed residential real estate (constructed in 2019, 2020 or 2021) equalled around EUR 1,370 in the Republic of Serbia (EUR 1,885 in the Belgrade region) and was higher than the average appraised value of older real estate, which stood at EUR 986 (EUR 1,541 in the Belgrade region).

Furthermore, average appraised values per square metre of apartments (EUR 1,299 in Serbia, EUR 1,679 in the Belgrade region) were significantly higher than average appraised values per square meter of houses (EUR 390 in Serbia, EUR 666 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 the structure of apartments, the highest average appraised value per square metre in Serbia was recorded for studio apartments (EUR 1,512) and apartments with four and more rooms (EUR 1,500). In the Belgrade region, the highest average appraised value per square metre was observed for apartments with four and more rooms (EUR 1,923), followed by studio apartments (EUR 1,787).

The NBS carefully analyses and processes valuation data from the real estate database, keeping in mind that inadequate real estate valuation is one of important systemic risks as the use of real estate as collateral exposes banks directly to the real estate pricing risk.

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 encouraged fast 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 future crises better prepared. New capital and liquidity requirements envisaged by the Basel III[180] 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 (notably those targeting the structural or cyclical dimension of systemic risk) has helped mitigate the risks caused by the pandemic-induced crisis, which has hit the non-financial sector particularly hard. By contrast, 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 the COVID-19 crisis than was the case in 2007–2008.

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 National Bank of Serbia 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[181] – 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[182] transposing into the domestic regulatory system the regulatory standard Basel

[180] For more information about Basel III see the *Annual Financial Stability Report – 2011*, pp. 75–77. (https://www.nbs.rs/export/sites/NBS_site/documents/eng/publikacije/fs/fsr_2011.pdf)

[181] https://nbs.rs/export/sites/NBS_site/documents-eng/finansijska-stabilnost/macroprudential_framework_201503.pdf

[182] This regulatory package includes NBS decisions published in the RS Official Gazette, No 103/16 of 22 December 2016, namely: 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 of the EU (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)).

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 in 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 and 59/2021). 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). 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 liquidity channel, which had proved significant for the unfolding of the 2007–2008 crisis, was thus recognised as important for financial crisis development.

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, 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 above Decision from 2019 was replaced by a new Decision (EU) 2021/1753 of 24 October 2021, once again confirming the previously established equivalence.

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. This recognition lies at the core of the macroprudential policy which must be clearly defined, while taking into account its interaction with microprudential, monetary[183] and fiscal policies, financial services consumer protection, etc. The COVID-19 crisis has only emphasized further the need for coordination of the above public policies.

IV.1.2 Regulatory measures to contain systemic risks

In addition to analysing and assessing systemic risks in the financial system, the *Annual Financial Stability Report* each year lists the measures that can be undertaken to contain the identified 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)[184] and the action plans of the Serbian Government and the NBS, which produced outstanding results in bringing down the level of NPLs. The share of gross NPLs in total loans in the domestic banking system measured 3.6% at end-2021 – one of the lowest levels on record. Such NPL level is 18.7 pp lower than in August 2015 when the Strategy was adopted and 0.1 pp lower than at end-2020. The decline in NPLs reflects excellent results achieved in this area in the Republic of Serbia and confirms that the measures taken by the NBS and the Government during the COVID-19 crisis were timely, 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

[183] For more on the interaction of financial stability and monetary policy, see: Text box 1. Role of financial stability in the ECB's new monetary policy strategy, p. 14.

[184] RS Official Gazette, No 72/2015.

liquid, and allowances for impairment account for as much as 56.3% of gross NPLs (December 2021), 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 a 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.[185]

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 are sustained. To that end, in December 2018, the Government of the Republic of Serbia adopted the NPL Resolution Programme for the Period 2018–2020[186] (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. To achieve that objective, several key areas were identified in which (1) regulatory framework, (2) capacity building and/or (3) enforcement of regulations need to be improved, namely:

– resolution of NPLs of state-owned financial creditors,

– improvement of the bankruptcy framework, and

– activities aimed at preventing new NPLs.

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[187] 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 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 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 light of the COVID-19 crisis, 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 (87%). Most of these banks are members of cross-border banking groups and, prior to the global

[185] See: Law on Establishing the Guarantee Scheme as a Measure to Support the Economy to Mitigate the Consequences of COVID-19 Pandemic Caused by the SARS-CoV-2 Virus (RS Official Gazette, Nos 153/2020 and 40/2021).

[186] http://www.pravno-informacioni-sistem.rs/SlGlasnikPortal/eli/rep/sgrs/vlada/drugiakt/2018/105/1/reg/

[187] 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 and 67/2020 – other decision.

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 the Vienna Initiative 1.0. Its aim was to maintain the agreed level of exposure of banking groups from Western European countries toward CESEE countries. However, as the crisis went on, it became clear that maintaining exposure in the long run was not the right solution, which led to Vienna Initiative 2.0 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 2021 they fell to 12.5%. The decrease in cross-border liabilities was offset by the rise in the local deposit base. The loan-to-deposit ratio declined from 1.14 at end-2008 to 0.80 at end-2021. 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 spill-over, which is particularly pronounced during crises. Serbia faced the new COVID-19 crisis in a much better macroeconomic situation, reflected in improved economic and financial indicators. 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 foreign currency-denominated debt, which diminishes the efficiency of monetary policy and limits the central bank's capacity to control this systemic risk.

To increase the level 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 existing Strategy. To this end, in December 2018 the Government and the NBS signed a new Memorandum on the Strategy of Dinarisation.[188] This Memorandum took stock of the 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 development of FX risk hedging instruments.

At end-2021, the indicators of dinarisation of household and corporate receivables and deposits reached their historical highs. 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 38.3%, up by 1 pp from end-2020 (37.3%). Measured by the share of dinar deposits in total corporate and household deposits, it equalled 40.3%, which is an increase of 0.2 pp relative to end-2020 (40.1%). Working in the same direction was the increase in the country's FX reserves, which in late 2021 reached a record high level (EUR 16.5 bn), covering six months'

[188] https://nbs.rs/export/sites/NBS_site/documents-eng/publikacije/dinarizacija/Memorandum_Dinarisation_Strategy_2018.pdf

worth of imports of goods and services, almost the same as the year before.

Greater profitability of dinar savings was supported by a longer period of monetary and financial stability, relatively higher interest rates on dinar than on euro savings, more favourable tax treatment of domestic currency savings, as well as timely monetary, prudential and fiscal measures taken to alleviate the effects of the pandemic-induced crisis. In cooperation with the Government, the NBS continues to support the process of dinarisation of the Serbian financial system, highlighting the importance of saving in dinars and its greater profitability relative to FX savings.

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 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 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. Due to emergency circumstances caused by the COVID-19 pandemic, the application of this measure was initially postponed until 1 January 2021, and later until 1 July 2022.[189]

[189] Decision Amending the Decision on Capital Adequacy of Banks (RS Official Gazette, No 59/2021).

The NBS's comprehensive approach to 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.[190]

The NBS has been gradually reducing its monetary accommodation since October 2021 without changing its main interest rates, using the flexibility of its monetary framework. However, in early 2022 the NBS raised its key policy rate twice by 50 bp each, to 2%. Interest rates on the NBS's deposit and loan facilities were also raised to 1% and 3%, respectively.

Taking into account the circumstances created by the COVID-19 pandemic, and in order to ease access to dinar sources of funding, in July 2020, the NBS adopted a measure[191] enabling more favourable terms of financing through loans approved under the guarantee scheme for entrepreneurs and SMEs. In January 2021, this measure was also applied to the guarantee scheme from the 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 and the guarantee scheme from the Law on Establishing the Second Guarantee Scheme as a Measure to Support the Economy Additionally due to Extended Duration of the Negative Effect of the COVID-19 Pandemic Caused by SARS-CoV-2 Virus. Namely, banks approving dinar loans under the guarantee scheme at interest rates which are lower than the maximum rate are paid a 0.50 pp higher remuneration rate by the NBS (on required reserves allocated in dinars). This has supported dinar lending to corporates, making dinar loans approved by banks under the guarantee scheme of the Republic of Serbia even more favourable than initially designed.

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 was adopted (RS Official Gazette, No 73/2019), 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 of insured deposits, depending on the deposit currency, and thus support the process of deposit dinarisation.

Regulatory measures to contain the consequences of the coronavirus pandemic

During the COVID-19 pandemic, the NBS took proactive measures and numerous steps to support the domestic economy, preserve jobs and disposable income. Measures were prescribed to preserve the achieved level of financial system stability and to reinforce the financial system further amid potential risks caused by the emergency health situation at home and worldwide.

In order to preserve financial stability, already in early 2020 the NBS adopted decisions on a suspension of debt repayment (moratorium) for bank and financial lease borrowers (RS Official Gazette, No 33/2020).

The above measures were particularly carefully calibrated, taking into account the potential difficulties in debt repayment and the need to overcome the negative consequences of the state of emergency caused by the COVID-19 pandemic on both households and corporates.

[190] https://www.nbs.rs/export/sites/NBS_site/documents-eng/propisi/propisi-fs/systemic_risk_buffer.pdf

[191] Decision Amending the Decision on Interest Rates Applied by the National Bank of Serbia in Implementation of Monetary Policy.

In July 2020 the NBS determined there is scope for taking further measures to facilitate debt repayment for borrowers facing difficulties and to ensure responsible credit risk management by banks and financial lessors in such circumstances. A further suspension of debt repayment for bank and financial lease borrowers was prescribed in the Decision on Temporary Measures for Banks for the Purpose of Mitigating the Consequences of COVID-19 Pandemic in Order to Preserve Financial System Stability and the Decision on Temporary Measures for Financial Lessors for the Purpose of Mitigating the Consequences of COVID-19 Pandemic in Order to Preserve Financial System Stability, published in the RS Official Gazette, No 103/2020.

In March 2021, amendments[192] were adopted to the Decision on Temporary Measures for Banks to Enable Adequate Credit Risk Management Amid COVID-19 Pandemic and to the Decision on Temporary Measures for Financial Lessors to Enable Adequate Credit Risk Management Amid COVID-19 Pandemic, allowing loan repayment facilities (including loan rescheduling and refinancing, with a six-month grace period and the possibility to extend the repayment period correspondingly, so that the monthly obligations of the borrower are not higher than before the facilities were approved) to be applied also to borrowers which as at 28 February 2021 were more than 30 days past due in a materially significant amount on any obligation to the bank arising from products to which the Decision applies, if they had previously been regular in settling their obligations to the bank.

In order to contain the negative consequences of the COVID-19 crisis on bank operations, unlock banks' additional operational capacities and create greater possibilities for the provision of liquidity to the real sector, in May 2020 the NBS adopted the Decision Amending the Decision on Capital Adequacy of Banks, published in the RS Official Gazette, No 67/2020. This Decision postponed by six months the application of measures discouraging the approval of new, non-purpose and non-investment FX-indexed and FX loans to corporates, entrepreneurs and farmers. The application of these provisions was postponed by another six months in November 2020 with the adoption of the Decision Amending the Decision on Capital Adequacy of Banks (RS Official Gazette, No 137/20). In June 2021, it was deferred by 12 months with the adoption of the Decision Amending the Decision on Capital Adequacy of Banks (RS Official Gazette, No 59/2021).

In July 2020, the NBS adopted regulations to facilitate the repayment of some loans approved to households until 18 March 2020 and adopted the Decision Amending the Decision on Capital Adequacy of Banks and the Decision Amending the Decision on Managing Concentration Risk Arising from Bank Exposure to Specific Products.[193] These amendments enabled the refinancing, by means of changing the due date of the final loan instalment by two years relative to the current due date for the specified loan categories, if the borrower has the appropriate creditworthiness for a given loan category. The new regulations came as a carefully weighed response of the NBS to a possible deterioration in the financial position of citizens who, before the onset of extraordinary circumstances brought on by the COVID-19 pandemic, took out consumer loans (including consumer loans intended for the purchase of motor vehicles), cash or other loans (except housing loans and current account overdrafts).

Amid pronounced risks due to the deepening of the COVID-19 crisis, in August 2020 the NBS adopted the Decision on Temporary Measures for Banks to Facilitate Access to Financing for Natural Persons (RS Official Gazette, No 108/2020), which facilitated access to finance for households until 31 December 2021.

Three sets of temporary measures were prescribed facilitating access to housing loans for citizens, creating a possibility for banks to offer facilities to borrowers by extending housing loan repayment periods for maximum five years and temporarily relaxing the approval procedure for household short-term dinar loans up to a certain amount. Whereas in practice housing loans were most often approved for the purchase of minimum 80% completed buildings, banks were now given an option to approve new housing loans for the purchase of residential buildings in construction, regardless of the degree of completion, in case of project financing by a bank, with the Building Directorate of Serbia as the holder of the construction permit or in case they are part of the measures of government support to specific categories of natural persons, as well as buildings in construction which are at least 60% completed in case of project financing of another bank or a project of a legal person investor. Also, to facilitate terms of housing loan repayment for households, banks were enabled to offer facilities to borrowers by extending the repayment period for housing loans by maximum five years. Further, a regulatory solution was introduced allowing banks to grant a loan of up to RSD 90,000 to a natural person who

[192] RS Official Gazette, Nos 150/2020 and 21/2021.

[193] RS Official Gazette, No 98/2020.

does not receive his/her wage or pension via an account with that bank, with the maturity of up to two years, and to accept, as relevant evidence of employment and wage or pension of the borrower in the past three months, the signed statement on such facts issued by such borrower under full criminal and financial liability.

Since the COVID-19 crisis extended into 2022 as well and in order to ensure continued facilitated access to financing for natural persons in 2022, in December 2021 the NBS adopted the Decision Amending the Decision on Temporary Measures for Banks to Facilitate Access to Financing for Natural Persons.[194] This Decision extended the validity of the temporary measures by 12 months.

All decisions and measures were timely and limited in duration, and have helped preserve the high capitalisation and liquidity of the banking sector. In the second year of the pandemic, the NBS maintained price and financial stability and met its legally defined objectives even in emergency circumstances.

[194] RS Official Gazette, No 119/2021.

Text box 6: Regulatory innovations relating to capital buffers introduced by CRD V

In November 2016 the European Commission presented a comprehensive banking reform package called the EU Banking Package, which was adopted in May 2019. It contains measures aimed at boosting the resilience of EU institutions, strengthening financial stability and banks' capacity to extend loans to support the real economy, as well as measures aimed at ensuring capital market liquidity, paving the way for a single EU-wide capital market.[195] Under this package of measures the Commission adopted the Directive 2019/878/EU (Capital Requirements Directive V – CRD V)[196] and the Regulation 2019/876/EU (Capital Requirements Regulation II – CRR II)[197], the cornerstones of the first pillar of a Single Rulebook.[198] The adopted directive and regulation enhanced the regulatory basis of the Single Supervisory Mechanism.

CRD V amends and complements CRD IV. The changes include the revised list of subjects exempt from the Directive, inclusion in implementation of financial holding companies and mixed financial holding companies, the remuneration policy, supervisory measures and authorizations, measures to preserve capital buffers and other macroprudential tools. It also specifies the obligation of EU member states to adopt and publish, by 28 December 2020, measures that will bring national banking regulations into alignment with the Directive.

As already mentioned, these changes also revised the framework of supervisory measures and authorizations (Pillar II). More precisely, they clarified the conditions for application of Pillar II add-ons, and the difference between the mandatory capital requirement under the Pillar II and supervisory expectations regarding Tier II capital, known as Pillar II Guidance. When it comes to regulating macroprudential measures, Pillar II add-ons were limited exclusively to micro prudential perspective, and thus segregated from macroprudential instruments focused on systemic risks.

Amendments to capital buffer regulations primarily concern improvements in their flexibility and scope of application. Regulators are allowed greater flexibility in applying systemic risk buffer and capital buffer for other systemically important institutions, and additional explanations are provided as to the potential scope of application of the systemic risk buffer.

The application of capital buffers in the Republic of Serbia, regulated by the Decision on Capital Adequacy of Banks[199] (hereinafter: Decision), incorporates relevant elements of new standards.

As regards the capital buffer for systemically important banks, the Decision prescribes the limit that the capital buffer rate for a systemically important bank may amount to up to 2% of the bank's risk-weighted assets. Under CRD V, the highest rate was raised to 3%, while allowing that an even higher rate may be applied if necessary, subject to the approval by the European Commission. In accordance with the Decision, a systemically important bank in the Republic of Serbia is obliged to apply only the highest rate among the prescribed capital buffer rates for a global systemically important bank, systemically important bank and a systemic risk buffer. In extraordinary circumstances, in accordance with CRD IV, if the systemic risk buffer is applied only to domestic exposures, i.e. if so prescribed by the NBS in accordance with the Decision, it is possible to cumulatively apply the capital buffer for a systemically important bank and systemic risk buffer. However, CRD V abolished this restriction, allowing for a cumulative application of the capital buffer for other systemically important banks and systemic risk buffer, regardless of the type of exposure, with the caveat that where the sum of the rates applied exceeds 5%, such application is subject to the European Commission's approval. CRD V loosened the additional restriction on the capital buffer for other systemically important banks which are subsidiaries of systemically important banks from other EU countries down to 3% of total risk-weighted assets or the capital buffer rate for a (global) systemically important bank applied to the banking group increased by 1%, depending on which rate

[195] https://ec.europa.eu/commission/presscorner/detail/en/IP_16_3731
[196] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0878&from=EN
[197] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0876&from=EN
[198] https://www.consilium.europa.eu/en/policies/banking-union/single-rulebook/
[199] RS Official Gazette, Nos 103/2016, 103/2018, 88/2019, 67/2020, 98/2020, 137/2020 and 59/2021.

is lower. The application of provisions of domestic regulations relating to the capital buffer for global systemically important banks is postponed until the Republic of Serbia accedes to the EU. CRD V amended the additional methodology for identifying these banks and lifted the restriction on allocations for this capital buffer from the maximum 3.5% of risk-weighted assets for the bank in the highest category, which is incorporated in the domestic legal framework in accordance with CRD IV.

CRD V introduced important innovations into the provisions pertaining to the systemic risk buffer. First, the purpose of the instrument is altered so that it is used to prevent and alleviate not only long-term, non-cyclical systemic (structural), but also all systemic risks (cyclical and structural). The most important innovation regarding the application of this capital buffer on structural systemic risk is the prescribed possibility of application to one or more types of exposures, i.e. allowing simultaneous application of several capital buffers relating to different structural systemic risks. CRD V specifies types of exposures to which this capital buffer may be applied and the formula for calculation of the total systemic risk buffer in case of application of different rates to different types of exposures. The application of the systemic risk buffer in the domestic regulations may be considered aligned with the latest changes, given that the prescribed rate of this capital buffer is applied directly to FX and FX-indexed corporate and household receivables in the Republic of Serbia, i.e. to exposures covered by the systemic euroisation risk and not to the overall risk-weighted assets of the bank, which enables the cumulative application in the manner provided for by CRD IV. The domestic regulations stipulate that systemic risk buffer rate may amount to at least 1% of exposures, however, CRD V abolished this restriction.

In terms of the countercyclical buffer rate, the changes concern the requirement that the competent authorities are obliged to determine, apart from the capital buffer rate, also the strength of the cyclical systemic risk and adequacy of the prescribed rate. Although not precisely stated in our regulations at this moment, in setting the countercyclical buffer rate for the Republic of Serbia, on a quarterly basis, the NBS assesses both the intensity of the cyclical systemic risk and whether the rate level is appropriate.

CRD V makes no significant amendments to the provisions which prescribe allocations for the capital conservation buffer.

Given that the establishment and implementation of a single regulatory framework is a continuous process, the latest package of measures is a significant step forward in improving the European regulatory framework aimed at containing the level of risks and strengthening the stability and resilience of the financial system. Still, it is important to note that the NBS transposed Basel III standards as early as 2016, introducing capital buffers to the domestic regulations. These standards have been introduced and applied consistent with the latest EU-wide banking regulations.

Taking into account that macroprudential policy is continuously improved, the NBS will continue to follow and analyse the best international practices in this area in order to timely and adequately transpose them into the domestic regulatory framework.

IV.2 Financial soundness indicators

Several methodological approaches have been used to assess the stability of the financial system in Serbia in the regional and historical context.

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 2021: a) capital adequacy, b) Tier 1 capital relative to balance sheet assets, c) NPL ratio, d) return on assets, and e) return on equity.

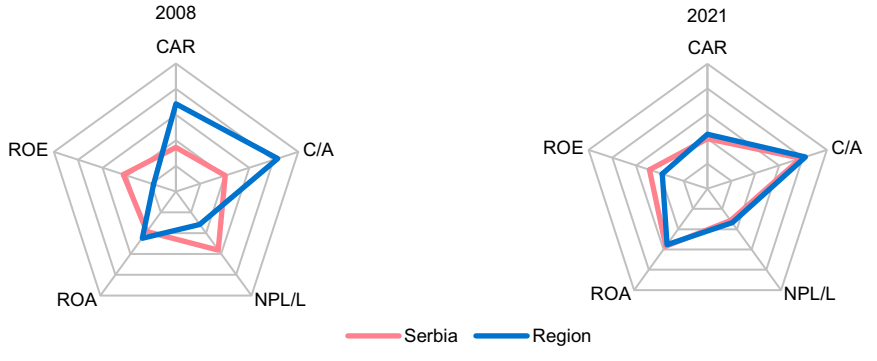
A major element of stability of the domestic banking system is the high capitalisation of the banking sector, reflected in the capital adequacy ratio, but also in the Tier 1 capital to balance sheet assets ratio, which are higher than the average for the region. The share of NPLs in total loans is lower than the regional average, owing to the significant NPL reduction in the last several years. In 2021, the share of NPLs in total loans declined by 0.14 pp, despite the pandemic, to 3.57% at year-end.[200] Profitability of the banking sector increased in 2021 as a result of lending growth and reduced net credit losses. The profitability of the countries in the region also went up. ROA was around 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.[201]

In addition to the above indicators, financial soundness is also measured by the Financial Stress Index (FSIX). FSIX is a composite index,[202] introduced to identify episodes of high financial stress, their culmination and duration, which is why it covers the relevant indicators of the Serbian financial sector 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.

Timely economic policy measures implemented during 2020 and 2021 in order to alleviate the consequences of the coronavirus pandemic were conducive to FSIX recording a below-average stress level also throughout 2021. The analysis of individual components indicates that the low level of financial stress is mainly a reflection of the relatively low volatility of the exchange rate and low level of EMBI EUR for Serbia (EMBI for euro-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

Chart IV.2.1 **Financial soundness of the Serbian banking sector compared to regional average**



* 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, Hungary, North Macedonia, Poland, Turkey and Croatia. Region FSIs are non-weighted averages of the individual countries' FSIs.

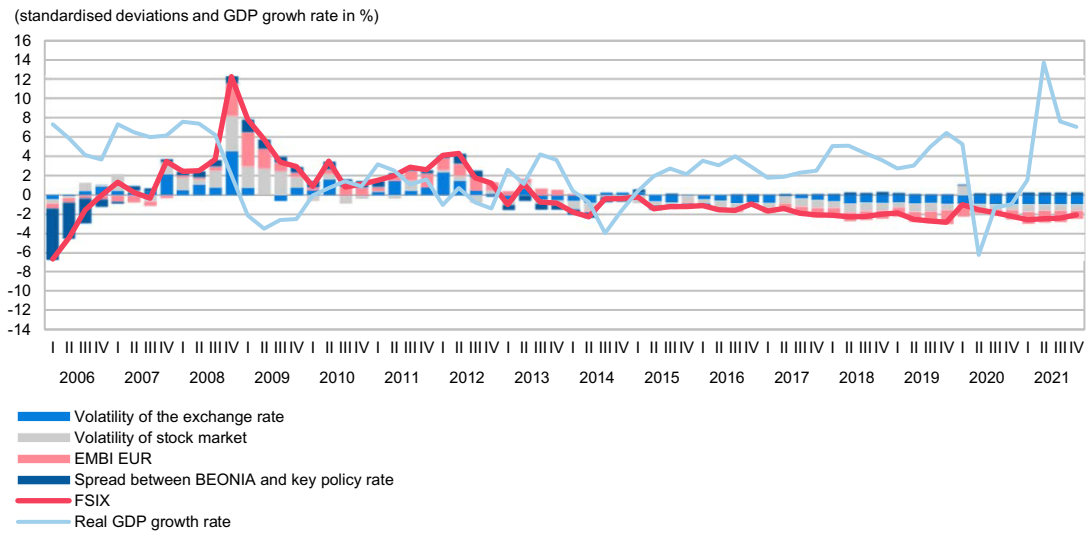
Sources: NBS and IMF.

[200] NPL indicator has been monitored since Q3 2008, when it was introduced as an integral part of the regulatory reporting requirements for banks.

[201] For more information on the characteristics of and trends in the Serbian banking sector, see Chapter II.1 Banking sector.

[202] For more information on indicator methodology, see the *Annual Financial Stability Report – 2012*.

Chart IV.2.2 **Financial Stress Index (FSIX) and GDP growth**



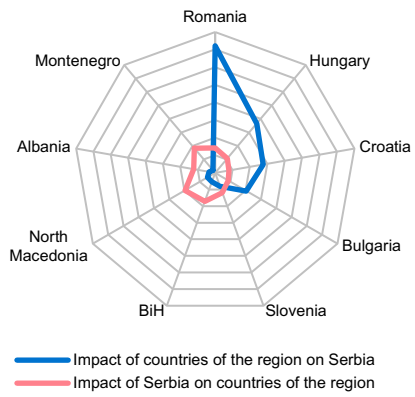
Source: NBS.

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[203] 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 of 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.

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.

Chart IV.2.3 **Shock transmission via common lender channel***



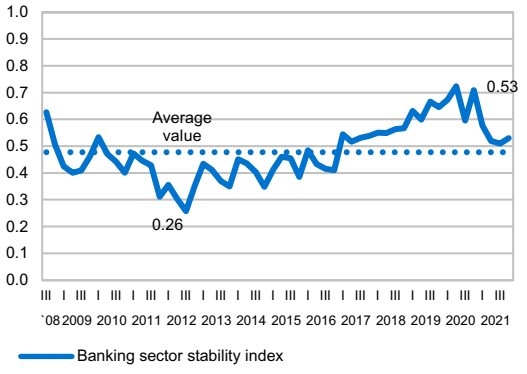
Sources: BIS and NBS.
* Data as of Q3 2021.

To capture potential risks to financial stability arising from the banking system, the banking sector stability index was created.[204] It is calculated based on indicators of

[203] For more information on indicator methodology, see the *Annual Financial Stability Report – 2013*.

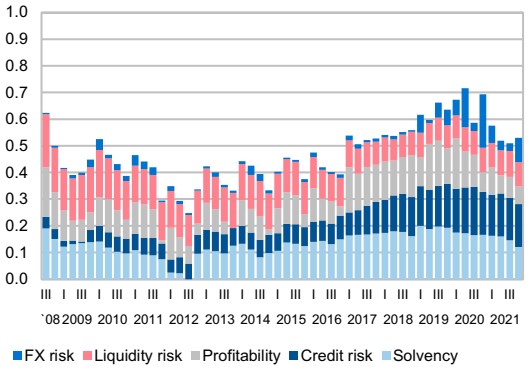
[204] For more information on indicator methodology, see the *Annual Financial Stability Report – 2014*.

Chart IV.2.4 **Banking sector stability index**
(composite measure)



Source: NBS.

Chart IV.2.5 **Aggregate elements of banking sector stability index**



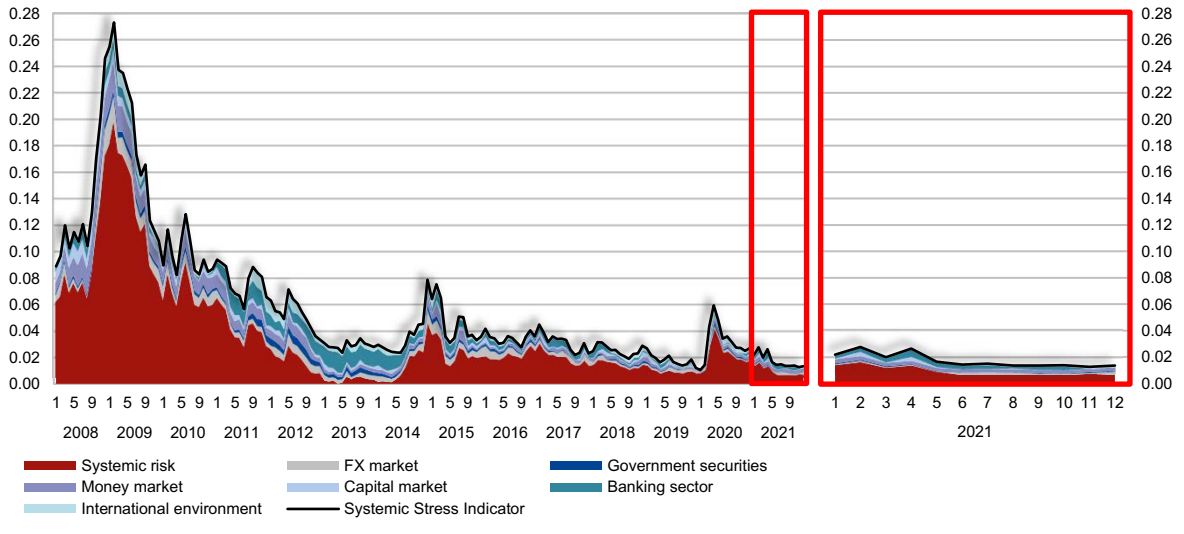
Source: NBS.

solvency, credit risk, liquidity risk, profitability and exchange rate risk.

At end-2021 the banking system stability index measured 0.53, which is a decline relative to the end of the previous year. However, its value still indicates a high level of banking sector stability.[205] In terms of individual components, it was the high capital adequacy and lower level of NPLs that contributed the most to banking sector stability in 2021. On the other hand, a lower level of banking sector stability in 2021 can be mainly attributed to exchange rate risk indicator, which reflects the banking sector's asset-liability currency mismatch and which increased from the previous year.

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

Chart IV.2.6 **Systemic Stress Indicator dynamics**



Source: NBS.

[205] Values above 0.5 indicate higher banking sector stability levels, whereas values below 0.5 indicate lower stability levels.

systemic stress. This indicator is based on the methodology 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 show 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.

The systemic stress indicator in H1 2021 reflected mainly the decline in the systemic risk component. In the remainder of 2021, the indicator recorded low values. Overall, the systemic stress indicator was at a low level and recorded a stable systemic component throughout 2021, indicating the resilience and preserved stability of the Serbian financial system at large.

Text box 7: ECB climate risk stress test

Climate change is a major source of systemic risk, particularly for banks with portfolios exposed to certain economic sectors, and/or geographical areas sensitive to physical risks. Accordingly, certain central banks conducted their first pilot climate stress tests to assess the implications of physical and transition risks[206] on financial institutions. ECB climate-related risk stress tests[207] rely on the previous analyses. The model rests on four key elements: (1) it is a centralised, top-down analysis[208]; (2) it is based on climate-specific scenarios and looks into interaction between physical and transition risks over a 30-year time horizon; (3) individual enterprises can be analysed; (4) the impact of climate change on the non-financial sector is assessed and banks apply different models including specific transmission channels of transition and physical risks. The stress-test covers roughly 1,600 banks with 80% share in total credit exposure of the euro area banking sector and four million enterprises which makes it the most comprehensive so far. It uses the "top-down" approach and static balance sheet assumption[209] to assess both physical and transition risks.

It is important to emphasize that scenarios used in ECB climate risk stress tests are based on the document of the Network of Central Banks and Supervisors for Greening the Financial System (NGFS),[210] both in terms of narrative and quantitative figures. There are three scenarios: orderly transition, disorderly transition, and hot house world.[211] The first is at the same time the most optimistic scenario as it assumes that climate policies are implemented in a timely and effective manner, limiting the rise in the average global temperature well below 2ºC, thus the costs arising from transition and physical risks are not high. The disorderly transition scenario assumes that the implementation of policies is late, starting from 2030, that policies are introduced abruptly and hence producing an adverse impact on costs. Hot house world scenario assumes the absence of an appropriate response to climate change and failure to meet the Paris Agreement targets in turn, causing pronounced physical risks.

ECB climate risk stress test is based on a set of data which combine information about financial and climate risks of enterprises with the data about bank exposure to them, which enables a detailed assessment of the impact of climate risks on bank balance sheets and of the spillover of climate risks of enterprises to the euro area banking system. The bulk of ECB sample is made up of microenterprises, though the greatest euro area bank exposures are to large enterprises. Large enterprises are the worst polluters with an almost 90% share in total CO_2 emission, while their share in total banking sector exposure is lower, at around 50%. In this sense, climate risk affects banks through their credit exposure to enterprises highly sensitive to physical and transition risks. At the country level, banks are largely exposed to domestic enterprises. Such composition determines the extent to which the country-level climate risk of the enterprises translates into country-level climate risk for banks.

The first segment of the stress test evaluates the resilience of an enterprise to transition and physical risks and how they affect individual enterprises' probability of default through changes in their profitability and leverage[212] under different assumptions of stress scenarios. The results can be interpreted for three subsamples of enterprises: the median European enterprise,[213] the highest CO_2 emitting enterprises (i.e. those firms that are most affected by transition risk), and the enterprises that are most sensitive to physical risk.

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[206] For more details on physical and transition risks, see the 2020 *Annual Financial Stability Report*, Text box 4.

[207] Alogoskoufis S., Dunz, N., Emambakhsh, T., Hennig, T., Kaijser, M., Kouratzoglou, C., Muñoz A M., Parisi L., & Salleo, C. (2021) ECB's Economy-Wide Climate Stress Test. *ECB Occasional Paper,* (2021/281), (https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op281~05a7735b1c.en.pdf).

[208] There are two approaches to exercising stress tests: top-down and bottom-up. The first relies on individual banks' reports used by regulatory authorities for conducting stress tests, while the bottom-up approach implies that stress tests are conducted by individual financial institutions using their own framework.

[209] Static balance sheet means that its size, structure and risk profile do not change over the observed time horizon.

[210] Network of Central Banks and Supervisors for Greening the Financial System (NGFS), NGFS Climate Scenarios for central banks and supervisors, June 2020, p. 6 (https://www.ngfs.net/sites/default/files/medias/documents/820184_ngfs_scenarios_final_version_v6.pdf).

[211] A world where the greenhouse effect causes global warming of 3˚C and higher is named the hot house world scenario in literature.

[212] Leverage is debt-to-total-assets ratio.

[213] The median European enterprise has a median probability of default over a year and under the appropriate sample scenario.

The median enterprise is less indebted, more profitable and has a lower probability of default (by 2.5% and 5.5%) over the long run, under the orderly transition scenario as compared with the two other scenarios. The sectoral breakdown of CO_2 high-emitting enterprises reveals a higher concentration of transition risk in specific sectors, particularly agriculture, mining, manufacturing and electricity and gas, which together account for almost 70% of the high-emitting enterprises. Their leverage is less favourable compared to a median enterprise and reflects the need of these enterprises to raise more capital in order to replace their technologies and reduce emission. The profitability of high-emitting enterprises is also significantly impacted in the short run in the case of transition to green economy, while transition would have a positive effect in the long run. Accordingly, the probability of default for these enterprises is higher at the beginning of the transition period than for a median enterprise. The enterprises which are most vulnerable to physical risks would benefit highly from timely and systemic transition to green economy as the repercussions of climate change would considerably affect their financial output. The probability of default of high-physical risk enterprises is projected to increase by 2050, by almost 25% under the **hot house world scenario**, a figure that is five times higher than what is observed for median and high-emitting enterprises.

The second part of ECB climate change stress test is an assessment of climate risk impact on the euro area banking system through change of credit and market risk. First, exposure through credit channel was quantified by changes in the probability of default (PD) and loss given default. By 2050, the probability of default for a median euro area bank[214] would have increased by 7% in a hot house world relative to the orderly transition scenario. If appropriate measures are not taken to mitigate physical risks, the increasing trend is expected to continue even beyond 2050. Under a delayed-transition scenario, the relative higher PDs peak in 2035 due to the assumption that enterprises would finance their transition through debt, while PD would measure around 3% more as compared with the orderly transition scenario in the second half of the projection horizon. The average PD under the orderly transition scenario would be approximately 2.1% by 2050, while in the hot house world the average PD would be around 2.3%. In the short run, transition to green economy is costly. However, in the long run, benefits exceed the initial costs. Euro area banks would face expected losses higher by around 8% in the hot house world scenario compared to orderly transition. The impact of climate change in terms of expected losses is mainly driven by physical risks that differ the most across scenarios as, due to their geographical location, certain countries are more exposed to physical risks and thus their expected losses are higher. In addition, market risks were analysed through the impact of climate change on the prices in bank portfolio corporate bonds. This part of the analysis had to define risks arising from the climate change. Market losses are significantly higher under the hot house world scenario relative to orderly transition. However, in view of the small size of corporate bond portfolio (EUR 80 bn) relative to total bank assets (EUR 30 tn), the impact of market risk is rather limited, especially compared to credit risk.

The results of ECB climate change stress tests show the importance of early action. The costs of transition pale in comparison with the costs of climate change risks in the medium to long term. The early adoption of policies to drive the transition to a zero-carbon economy would not only ensure that the targets of the Paris Agreement are met but it would also stimulate investments in energy-efficient technologies. The results also show that if timely measures are not taken, climate risks would concentrate in certain geographical areas and sectors of economy until 2050, on average. In particular, the outcomes of the analysis show that activities relating to the mining and electricity and gas sectors would have to bear significant costs to reduce emissions in line with the Paris Agreement targets, with a subsequent increase in their probability of default in the short to medium term in the event of a green transition. At the same time, enterprises located in geographical areas that are most exposed to physical risk would face a considerable decline in their creditworthiness as a consequence of more frequent natural disasters. In the absence of adequate policies, physical risks will become increasingly higher over time. Additionally, the highest expected loan losses are faced by banks located in countries with either low levels of collateral protection (real loan collateral – e.g. mortgage) or high exposure to physical risk.

[214] The median bank is a bank with median probability of default over a year and under the appropriate sample scenario.

ECB Banking Supervision has announced a new round of stress tests on climate change for 2022[215] to thoroughly analyse individual banks' internal stress test practices and thus raise awareness on climate risk. The results of these tests will be used to develop appropriate climate scenarios and support future bottom-up analyses. The current framework is planned to be additionally improved in the period to come, primarily by introducing new scenarios published in June 2021 by the NGFS. The static balance sheet assumption will be relaxed to extend the scope of the current analysis and look into a feedback loop between banks and the real economy arising from dynamic reactions by banks to changes in their counterparties' creditworthiness. Also, a methodological set-up for stress scenarios might be extended to incorporate the effects of transition and physical risks on other financial intermediaries and bank loans to households.

[215] Alogoskoufis S., Dunz, N., Emambakhsh, T., Hennig, T., Kaijser, M., Kouratzoglou, C., Muñoz A M., Parisi L., & Salleo, C. (2021) ECB' s Economy-Wide Climate Stress Test. ECB Occasional Paper, (2021/281), p. 65 (https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op281~05a7735b1c.en.pdf).

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