ANNUAL FINANCIAL STABILITY REPORT

National Bank of Serbia

2018

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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-2018.

The *Financial Stability Report* was adopted by the National Bank of Serbia's Executive Board in its meeting of 6 June 2019. 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 scale
IPS – Instant Payments Serbia
LtD – Loan-to-Deposit ratio
LtV – Loan-to-Value ratio
mn – million
NPL – non-performing loan
pp – percentage point
Q – quarter
rhs – right hand scale
RTGS – Real Time Gross Settlement
s-a – seasonally adjusted
VAT – value added tax
VPFs – voluntary pension funds
y-o-y – year-on-year

Other generally accepted abbreviations are not cited.

Key risks	Mitigating measures
External risks:	
– global economic slowdown and deterioration of financial conditions; – heightening trade tensions and withdrawal of major world economies from multilateral trade agreements; – softer growth in the euro area and Serbia's other important trade partners; – changes in the Fed and ECB's monetary policies and their impact on capital flows to developing markets; – volatile risk premium over global uncertainties; – volatile prices in global financial and commodity markets; – the development of real estate bubbles in an environment of low yields on other types of assets; – a rise in non-regulated financial sector risk taking and the reduced role of the formal banking sector in financial intermediation; – elevated risk of financial investment in an environment of low interest rates in the global market; – dented profitability and liquidity of EU parent banks; – rising variable rates on FX-indexed loans after a period of exceptionally low rates of leading central banks; – climate risks to financial and macroeconomic stability; – frequency and sophistication of cyber-attacks on financial institutions' IT systems.	– continued implementation of structural reforms and sustaining fiscal results to preserve and strengthen macroeconomic stability and increase the domestic economy's resilience to external shocks; – cautious conduct of monetary policy to support macroeconomic stability and ensure a basis for sustainable economic growth; – consistent implementation of macroprudential policy to increase financial system resilience to external risks; – cooperation with international financial institutions to strengthen support to the domestic banking sector; – cooperation with home supervisors of banking groups to coordinate activities and undertake measures towards these groups; – strengthening the domestic investor base (pension and investment funds etc.); – advancing the capital market and introducing new financial instruments; – implementing the new Dinarisation Strategy and supporting the use of the domestic currency; – simulation of annuity plans for new variable-rate loans concerning interest rate and currency risks; – raising awareness about potential consequences of climate risks; – coordination at the international and inter-institutional level to develop a toolkit for climate risk analysis and management; – increasing the resilience of information systems to cyber risk.

Key risks	Mitigating measures
Internal risks:	
– high euroisation of the domestic financial system;	– implementing measures and activities envisaged by the new Dinarisation Strategy; – implementing microprudential, macroprudential and monetary policy measures aimed at limiting euroisation risk and promoting the use of domestic currency; – further strengthening of macroeconomic stability to support vigorous and sustainable economic growth; – maintaining low, predictable and stable inflation and relative stability of the exchange rate; – further promoting dinar savings and financial instruments;
– the build-up of new NPLs as banks take on more risk;	– implementing the NPL Resolution Programme for the Period 2018–2020 and the Action Plan; – preventing the build-up of new NPLs by transposing EU regulations; – stepped-up monitoring of banks' asset quality;
– unsecured non-purpose household lending at unreasonably long maturities;	– implementing NBS measures targeting this segment of household lending segment, without unwanted consequences on overall lending; – analysing the effects of the introduced concentration risk indicator and the debt-to-income limit;
– increased financial system procyclicality.	– further implementation of macroprudential tools to mitigate the cyclical dimension of systemic risk.

Contents

Overview

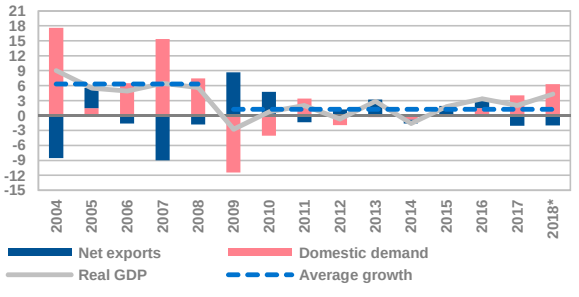
Developments in the international environment in 2018 were marked by the slowing of economic activity in both advanced and emerging economies. The economic slackening of the euro area fed through into higher risk premia of CESEE countries. The US economy continued to grow at a relatively brisk pace, supported by the pick-up in personal consumption and investment. The pace of monetary policy normalisation by leading central banks, the Fed and ECB, is expected to be slower due to the softening of global economic growth. Movements in international commodity and financial markets remained uncertain amid trade tensions between major world economies and protectionism in international trade.

Economic movements across the world in 2018 indicate a slowdown in global growth. The slowdown was registered in both advanced (from 2.4% in 2017 to 2.2% in 2018) and emerging economies (from 4.8% in 2017 to 4.5% in 2018). Euro area growth softened from 2.4% in 2017 to 1.9% in 2018. The positive trend in the euro area labour market extended into 2018 – the unemployment rate declined to 7.9% in December 2018, touching its lowest level since 2008. In 2018 the ECB kept its interest rates unchanged and continued with the asset purchase programme, trimming the monthly asset purchases in order to end the programme in December. On the other hand, the Fed proceeded with monetary policy normalisation, raising the federal funds rate four times during the year.

Serbian GDP grew 4.3% in 2018, led mainly by investment, private consumption and exports. Throughout the year inflation was low, stable and, with the exception of March and April, within the target band (3.0%±1.5 pp). Strong economic growth, low and stable inflation, relative stability of the exchange rate and excellent fiscal policy results contributed to a further increase in employment and a decrease in unemployment.

GDP growth in 2018 was led by investment, private consumption and exports. The rise in household consumption was supported by higher employment and wages, as well as by the growth in lending to households. Serbia's economic growth is expected to reach around 3.5% in 2019 and to step up in the years thereafter to around 4%. Low inflationary pressures continued in 2018, and throughout the year inflation was low, stable and, with the exception of March and April, within the target band. Medium-term inflation expectations of the financial and corporate sectors were anchored within the target band all year round. The NBS proceeded with cautious monetary easing, lowering the key policy rate in two 0.25 pp steps, to 3.0%.

Real GDP growth – demand contributions (%)



* SORS estimate as the sum of four quarters.
Source: NBS.

Positive fiscal trends from 2017 extended into 2018. The year ended with a fiscal surplus of around 0.6% of GDP. The share of central government debt in GDP was cut to 53.8%, while general government debt was slashed from 58.7% at end-2017 to 54.5% of GDP at end-2018. The share of external debt also declined, to 62.9% of GDP.

After successful completion of the three-year stand-by arrangement in February 2018, Serbia concluded a new arrangement with the IMF in the form of a Policy Coordination Instrument in July. In 2018 Serbia posted a fiscal surplus of RSD 32.2 bn or 0.6% of GDP. The public debt-to-GDP ratio remained on a downward path in both 2017 and 2018. The share of central government debt in GDP amounted to 53.8% at end-2018, down by 4.1 pp from a year earlier. The share of general government debt, which includes non-guaranteed debt of local government units and AP Vojvodina, contracted by 4.2 pp y-o-y, to 54.5% of GDP at end-2018. The currency

structure of public debt improved significantly, as the share of debt in US dollars shrank by 2.9 pp and the share of dinar debt expanded by 3.0 pp relative to the previous year. Though FX risk exists, given that 74% of public debt is denominated in foreign currency, it declined owing to the rising dinar portion of debt. In addition, the presence of FX risk underlines the importance of relative stability of the exchange rate of the dinar against the euro, which the NBS has successfully maintained. At end-2018 the current account deficit amounted to EUR 2.2 bn or 5.2% of GDP. For the fourth year in a row, the current account deficit was fully covered by the net FDI inflow. At end-2018 external debt came at 62.9% of GDP, down by 2.3 pp relative to 2017. Solid results of overall economic policy were mirrored also in a credit rating upgrade and the country risk premium fall to a historical low in the course of 2018.

The level of NBS FX reserves guarantees adequate protection of domestic system stability, not only in the favourable conditions that prevailed in 2018, but in conditions of extreme individual shocks and stress scenarios as well.

At end-December 2018, NBS FX reserves equalled EUR 11.3 bn in gross or EUR 8.9 bn in net terms. All adequacy indicators, including the one factoring in Serbia's specificities, show that the level of FX reserves at end-2018 was adequate. This is also confirmed by the results of stress tests. FX reserves give the financial system sufficient resilience against extreme shocks and support macroeconomic stability.

The recovery of domestic and external demand, preservation of macroeconomic stability, consistent fiscal consolidation and structural reforms, along with keeping interest rates at relatively low levels, significantly contributed to the profitable operation of corporates in 2018 as well. The corporate sector continued to operate at a profit. Standing at around RSD 500 bn, the net positive result of companies was higher by a third from last year's. Further reduction in the average cost of dinar and FX borrowing underpinned the rise in domestic and overall lending activity.

Domestic corporate lending, excluding the exchange rate effect, went up in 2018. This rise contributed to the accelerated recovery of overall domestic lending activity. The absolute rise in receivables was recorded in almost all sectors. Observed by purpose, the bulk of new loans were liquidity and current assets loans, followed by investment loans. Y-o-y growth in total corporate loans was 10.2% at end-2018, excluding the exchange rate effect. The structure of FX receivables changed slightly relative to 2017. In terms of maturity, long-term receivables were dominant. They increased mildly compared to 2017, with a share of 76.3%, which suggests a low risk of refinancing. In 2018, corporates recorded a higher positive net financial result than in 2017 (around RSD 500 bn vs. RSD 374 bn). The majority of sectors were more profitable than the year before, with the highest rate of return recorded among medium-sized enterprises. At end-2018, the NPL share in total loans to public enterprises and companies reached 5.0%, down by 5.4 pp relative to end-2017. The NPL ratio fell in all sectors and is currently at historical lows.

NBS monetary policy easing, continued monetary accommodation by the ECB, higher interbank competition and a lower country risk premium prompted a fall in household borrowing costs. Dinar savings were on a robust rise, indicating the strengthening of citizens' trust

Positive tendencies in the household sector were recorded in an environment of vigorous economic growth, low and stable inflation, relative stability of the exchange rate and solid fiscal results. Dinar household savings continued rising in 2018 and reached RSD 60.46

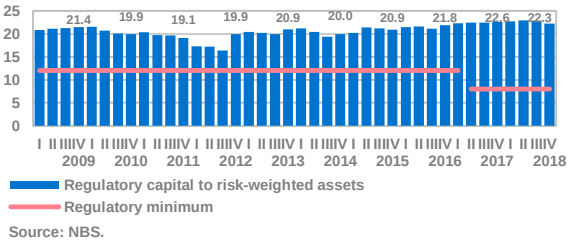
bn, up by RSD 10.97 bn y-o-y. In 2018, the volume of new household loans was higher by 8.4% y-o-y, as a result of favourable labour market trends and falling interest rates, with total receivables from households up by 12.5% in nominal terms. Cash and housing loans were dominant. In the course of 2018, the government paid out EUR 11.5 mn worth of public debt in respect of frozen FX savings. The maturity structure of FX savings changed slightly in favour of longer maturities, whose share in total FX savings went up to 17.7%. The share of NPLs in total gross household loans stood at 4.4%, down by 1.5 pp from end-2017. Responding to unsecured non-purpose household lending at unreasonably long terms, in December 2018 the NBS adopted a set of regulatory measures to preclude negative consequences on financial stability.

in the dinar. In late 2018, the NBS adopted regulatory measures responding to unsecured non-purpose household lending at unreasonably long terms, to pre-empt new NPLs in the banking system.

The 22.3% CAR exceeded significantly the prescribed regulatory minimum and stayed broadly unchanged in the course of the year. Banking sector capitalisation was among the highest in the region. Lending activity continued to grow – it expanded 9.9% y-o-y, excluding the exchange rate effect. On the supply side, lending was driven by continued NBS monetary policy easing, which began in 2013, and by banks' measures and activities concerning the resolution of NPLs, supported by NBS regulatory activity and low interest rates in the international money market. On the demand side, lending was prompted by favourable trends in the corporate sector, particularly in the labour market.

The Serbian banking sector is adequately capitalised, liquid and profitable. The ongoing regulatory effort of the NBS bolstered the relevant indicators of the banking sector in 2018 as well, increasing the resilience of the financial system to potential shocks.

Banking sector capital adequacy
(%)

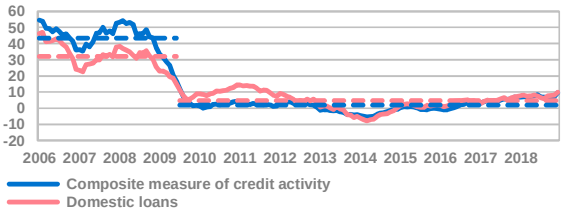


Source: NBS.

Serbia's banking sector remained highly liquid at end-2018. The average monthly liquidity ratio was 2.0 and much above the minimum prescribed (1.0). At 213.3%, the liquidity coverage ratio was also significantly above the regulatory minimum. The net financial result improved from the year before, with ROA of 2.2% and ROE of 11.3%. A significant reduction in NPLs at end-2018 further boosted the profitability of the banking sector. At end-2018, the NPL ratio stood at 5.7%, down by 16.7 pp since the adoption of the NPL Resolution Strategy, this being its lowest level since September 2008 when it was introduced as a mandatory element of bank reporting. The drop in Serbia's NPL ratio since 2008 is the largest in the region. In addition to NPL resolution efforts, lending growth also contributed to a further drop in the NPL ratio in 2018.

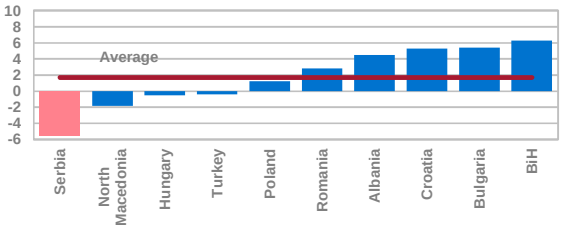
The NPL ratio, which declined further in 2018, touched its lowest level on record.

*Credit activity**
(y-o-y growth rates, %)



* Excluding the exchange rate effect.
Source: NBS.

NPL ratio, countries of the region
(2018 relative to 2008, pp)



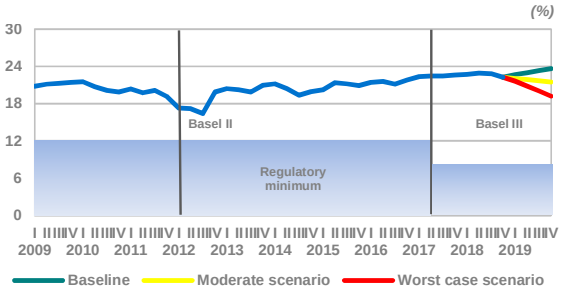
Sources: NBS and IMF - GFSR.

Serbian banks rely predominantly on domestic, stable sources of funding, with deposits comfortably covering the amount of loans in 2018 as well. The strengthening of the domestic deposit base reduces banks' dependence on external sources of funding, and the exposure to risks from the international environment.

Domestic deposits were dominant among the sources of funding.

The results of macroprudential stress tests indicate that the banking sector as a whole would remain resilient even in the case of assumed extreme shocks, in a one-year period. The results of the banking sector's network modelling suggest an extremely low risk of contagion in conditions of existing interconnectedness among banks.

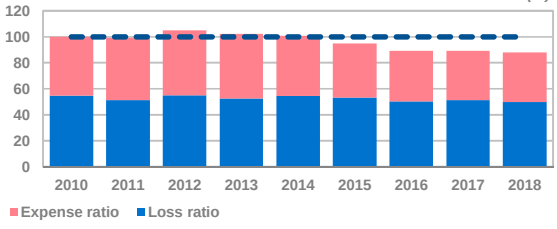
CAR by stress scenario (%)*



* NBS estimate.
Source: NBS.

The insurance sector recorded positive developments in 2018, characterised by good capital adequacy and growth in the total premium and yield. Insurance undertakings posted balance sheet growth, thereby continuing a positive trend of increasing this sector's share in the financial sector balance sheet. The NBS's activities in 2018 aimed to strengthen the stability of the insurance sector and ensure conditions for its further development.

Combined ratio in insurance (%)



Source: NBS.

In 2018, the voluntary pension funds sector continued to post positive results, reflected primarily in the further rise in net assets. The total number of users and regular contributors increased from the year before.

The balance sheet assets of the financial leasing sector continued up in 2018. Their quality also improved owing to a further drop in NPLs. The positive result recorded at the sector-level contributed to, among other things, a significant increase in total capital.

The results of macroprudential stress tests indicate that the banking sector's CAR meets not only all of the prescribed capital adequacy regulatory minimums, but all the requirements for the coverage of capital buffers as well, even in case of the assumed worst-case scenario. Also, liquidity stress tests, which are used to assess liquidity risk in case of the loss of depositor confidence and/or unfavourable macroeconomic conditions, suggest that the liquidity ratio would remain above the regulatory minimum even under the extreme scenario, which implies a much bigger deposit withdrawal than the largest one ever recorded in the Serbian banking sector. The results of the network modelling of interconnectedness between individual banks show that the structure of the banking sector's interconnectedness does not pose a source of systemic risk and is not conducive to shock transmission.

In 2018, insurance sector profitability rose relative to a year earlier, with a positive net result after tax of RSD 8.9 bn. The Serbian insurance sector is adequately capitalised given the risks it is exposed to. Technical provisions of all insurance undertakings at end-2018 equalled RSD 197.3 bn, which implies nominal growth of 22.8% from 2017, with the investment of the full amount in prescribed forms of assets. In April 2018, the NBS adopted the Guidelines on Minimal Standards of Conduct and Good Practice of Insurance Market Participants, ensuring fair and transparent operations of participants in this market towards insurance service consumers, as well as a higher level of protection of their rights and interests.

At end-2018, net assets of voluntary pension funds stood at RSD 40.2 bn, up by 11.05% y-o-y. The annual return of FONDex was 5.5% in 2018. Low inflation contributed to a positive real rate of return. Positive trends in the domestic economy and wage growth led to an increase in contributions over the past several years. Tax incentives for investment in VPFs also have a positive impact on the sector.

The growth in balance sheet assets of financial lessors continued. At end-2018, balance sheet assets stood at RSD 86.7 bn, up by 15.2% from end-2017. The NPL ratio declined further. At end-2018, the share of outstanding gross receivables was 3.7% (6.5% at end-2017). The pre-tax result of the financial leasing sector, worth RSD 1.6 bn in 2018, exceeded significantly the result achieved in 2017. The structure of lessees was still dominated by non-financial companies, with freight vehicles, minibuses and buses being most often financed.

New payment methods and technological innovations in the payment services market result from the NBS's ongoing efforts to create adequate regulatory and other preconditions for the modernisation and upgrade of payment operations in the Republic of Serbia. At end-2018, a total of 13 payment institutions were licensed by the NBS to provide payment services. Along with Western Union (present in Serbia for a longer time), since 2017 MoneyGram, Ria Money Transfer and Unistream Money Transfer have also been active through newly established payment institutions.

The Law Amending the Law on Payment Services, adopted in 2018, introduced numerous novelties, reflected mainly in higher transparency of fees charged by payment service providers for payment account-linked services, and better protection of payment service users.

In 2018, the relative stability of the dinar exchange rate against the euro was preserved. The key policy rate was cut twice – in March and April, by 0.25 pp in each month, to 3.0%. The cycle of rate cuts, which began in May 2013, brought the key policy rate to its lowest level in the inflation targeting regime, triggering a fall in BEONIA as well.

Owing to further monetary policy easing in an environment of vigorous fiscal and structural adjustment and the improvement of macroeconomic indicators, interest rates and borrowing costs in the domestic market declined. In early 2018, the country risk premium, measured by EMBI, touched its new record low, while the credit rating outlook upgrade led to a fall in the costs of FX borrowing.

Owing to the improved fiscal position, government borrowing needs declined. Further market development can be expected with the use of financial derivatives and the introduction of the primary dealer function, which should contribute to the upgrade of the primary and secondary market of government securities. Following successful benchmark bond issues in 2016, the same strategy continued in 2017 and 2018. In November and December, the Public Debt Administration of the Ministry of Finance made an early purchase of a portion of three-year dinar government securities at two auctions, in the total amount of RSD 20 bn, in order to reduce obligations on account of the maturing portion of public debt in 2019. In 2018, seven-year euro government bonds were issued for the first time, while in December the dollar eurobond fell due (USD 1 bn), leading to a contraction in public debt and improvement of its currency structure. In 2018, the Belgrade Stock Exchange initiated significant projects to streamline its operation and encourage further development of the capital market.

Significant progress was achieved in the market of government bonds, with an increase in the average maturity of government dinar bonds and a reduction in the costs of funding. To streamline its operation, in 2018 the Belgrade Stock Exchange launched the project "IPO Go", funded by the EBRD Shareholder Special Fund.

The real estate value, measured by DOMex, went up by 2.3% y-o-y in Q4 2018, with the highest rise recorded in Vojvodina (11.3%). According to the results of the Bank Lending Survey, in 2018 demand for housing loans increased, with banks expecting the trend to continue. According to banks, demand was driven by the improvement of the overall economic situation, reflected in rising wages and employment. The recovery of the construction sector, as a supply-side factor, contributed to a rise in the number of real estate transactions.

At end-Q4 2018, the average price of real estate, measured by DOMex for Serbia, was up by 2.3% y-o-y, suggesting further recovery of the real estate market. As confirmed by the results of the Bank Lending Survey from 2018, the period ahead is also likely to see a rise in demand for housing loans, reflecting the expected rise in wages and employment in the private sector. On the supply side, the recovery of the construction sector is also indicated by the value of construction works performed, which exceeded the 2017 figure by 13.9%.

According to data of the Serbian Statistical Office for 2018, the value of construction works in Serbia was up by 13.9% in constant prices y-o-y, and the value of works on buildings by 18.1%. At end-2018, the price-to-income ratio equalled 8.5 years and remained below a multi-year average (9.6), owing to positive labour market trends.

In 2018, the NBS adopted a set of regulations, in order to ensure a proactive stance towards non-purpose unsecured household lending.

In the prior period, the NBS adopted a number of regulatory measures in order to support and strengthen financial stability. Responding proactively to the increasing trend of non-purpose unsecured household lending at unreasonably long terms, the regulations (applied as of 1 January 2019) introduced, among other things, a new concentration risk ratio and the debt-to-income limit of 60% with the aim of limiting risk exposures of households.

In 2018 the NBS and the Government signed a new Memorandum on the Dinarisation Strategy with a view to further increasing the degree of dinarisation of the domestic financial system.

Having in mind that macroeconomic stability was ensured and financial stability reinforced since the signing of the 2012 Memorandum, and appreciating the gradual and long-term nature of the dinarisation process, the NBS and the Government signed a new Memorandum on the Dinarisation Strategy in December 2018. The new Memorandum reflects on the results of past measures and activities, and, based on them, defines additional steps that will further increase dinarisation and reduce FX risk in the financial system.

Starting from the excellent results of the 2015 NPL Resolution Strategy, in December 2018 the Government adopted the new NPL Resolution Programme for the Period 2018–2020.

Considering that the 2015 NPL Resolution Strategy was implemented continuously over the span of three years and completed in 2018, it was necessary to take further steps to prevent new NPLs and ensure sustainability of the results achieved. With this in mind, in December 2018 the Government adopted the NPL Resolution Programme for the Period 2018–2020, as well as the supporting Action Plan. The objective of the Programme and the Action Plan is to remove the obstacles identified in the system which prevent timely solving of NPLs and to establish a system that will prevent a build-up in NPLs and the negative effects on lending undermining potential economic growth. To achieve this objective, the documents envisage different NPL resolution activities, including resolution of non-performing claims of state-owned financial creditors, enhancement of the bankruptcy framework and prevention of new NPLs.

A comprehensive assessment of financial stability, based on the composite indicator of systemic stress and financial soundness indicators, shows that the Serbian financial system is stable and resilient.

Systemic stress and financial soundness indicators for 2018 reveal a period of exceptionally low risk, with a low and stable systemic component. Low inflationary pressures, favourable fiscal trends, capital inflow, cautious monetary policy and a stable banking system contributed positively to the maintenance and strengthening of the resilience of the domestic financial system and bolstered the country's macroeconomic stability at large.

I International and domestic environment

In 2018, the international environment was characterised by a global economic slowdown in both advanced and emerging economies. The deceleration of euro area growth was mirrored by the increase in the risk premium of Central, East and South-East European countries. In early 2018, Serbia's risk premium was at the lowest level since EMBI is recorded for Serbia (85 bp in January), and for the remainder of the year the premium posted growth, which was among the lowest in the region. For the majority of the year (except in March and April), y-o-y inflation trended close to the lower bound of the target tolerance band (3%±1.5 pp). For quite some time, financial and corporate sectors' inflation expectations have been anchored within the band. FX reserves, as a safety and stability buffer, remained high at the end of 2018 as well. Owing to improved macroeconomic fundamentals and better prospects going forward, Serbia is today more resilient to potentially adverse effects from the international environment. This is confirmed by Standard & Poor's decision to upgrade the country's outlook from stable to positive and its credit rating to BB. Such decision was made on the grounds of robust economic growth and the effectiveness of monetary policy in maintaining price and financial stability. In February 2018, Serbia successfully concluded its precautionary stand-by arrangement with the IMF and in July signed a new programme of cooperation in the form of the Policy Coordination Instrument (PCI).

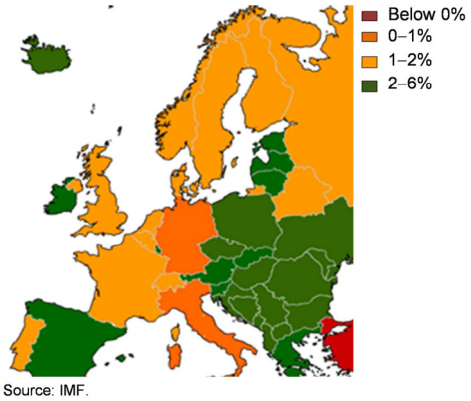
I.1 International environment risks

Subdued external demand and specific factors on the supply side in some EU member countries resulted in a slower growth rate of the euro area's GDP in 2018. The Central and Southeast European regions recorded lower growth rates in 2018 compared to 2017. The US economy continued to post relatively strong growth owing to an increase in personal consumption and investment. Due to the global economic downturn, leading central banks, the Fed and the ECB, are expected to slow down their monetary policy normalisation. Trade tensions between leading countries, present throughout the year, and protectionism in international trade resulted in the persisting uncertainty of movements in the international commodity and financial markets.

Economic movements across the world in 2018 indicated a slowdown in global growth to 3.6% in 2018. Slower growth was also recorded by advanced economies (from 2.4% in 2017 to 2.2% in 2018) and emerging countries (from 4.8% in 2017 to 4.5% in 2018). The trend is expected to continue in the period ahead with the global growth rate of 3.3% in 2019, while in 2020 growth will pick up slightly to 3.6%.[1]

The euro area, with which Serbia has the most important financial and trade links, saw its growth slacken to 1.9%[2] in 2018 (2.4% in 2017). According to the IMF data,[3] the strongest growth rates in the euro area in 2018 were posted by Ireland (6.8%), Malta (6.4%), Latvia (4.8%), Slovenia (4.5%) and Slovakia (4.1%).

Chart I.1.1 **GDP growth projections for 2019 - European countries**
(%)



Source: IMF.

[1] IMF WEO, April 2019.

[2] According to Eurostat estimate.

[3] IMF WEO, April 2019.

Speaking of the largest euro area economies, compared to 2017, economic growth accelerated in Austria (2.7%), and decelerated in others. The recovery in the price of oil, present until October 2018, contributed to the further economic rebound in Russia (2.3%) and Belarus (3.0%).

According to the IMF data from April 2019, emerging and developing European countries[4] posted a much higher growth rate in 2018 (3.6%) than euro area countries, hence the highest growth was recorded in Poland (5.1%) and Hungary (4.9%). In the Balkan region,[5] Montenegro and Serbia had the highest GDP growth rates (4.5% and 4.4%, respectively).

Economic recovery in Europe is expected to unfold at a slower pace in 2019 as well, with lower rates anticipated in emerging and developing European countries (0.8%) than in the euro area (1.3%) (Chart I.1.1).

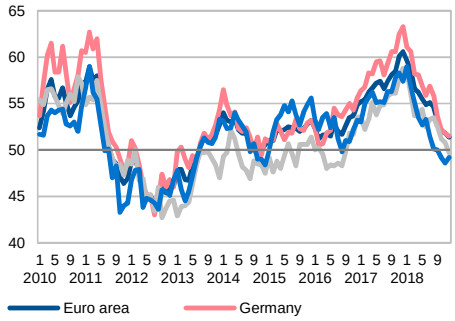
According to the European Commission's May 2019 forecast, after decelerated growth in the second half of 2018, euro area economic activity is likely to continue up in both 2019 and 2020, though at slightly more moderate rates of 1.2% and 1.5%, respectively. However, prospects of EU economic growth are based on decreasing uncertainties and the gradual mitigation of temporary domestic factors, which are currently exerting the main impact resulting in weaker domestic growth. Considerable risks are still present, arsing mainly from the likelihood of political insecurity across the world. Even if they are mitigated to a degree, trade tensions and uncertainty surrounding their further development pose a huge risk to the global economy. Also, Britain's Brexit is still uncertain. On the bright side, greater reliance on EU funds by some countries could be mirrored in additional investments and could help improve labour market conditions, thereby bolstering domestic demand.

The EU economy is still plagued by uncertainty arising from the trade policy. As for the uncertainties at home, they pertain to future economic relations between the EU and the UK. Trade tensions are exerting an impact on global economy as well, mostly on the trade relations between the US and China, and on China's economic downturn.

In the period ahead, EU economic growth is expected to post moderate growth rates. Private consumption will most likely remain the main driver of growth, while labour market conditions will continue to improve, albeit at a slower rate. Wage increase is also anticipated. Lower energy prices are having a positive influence on the household sector's purchasing power and it is expected that the disposable income will be supported by expansionary fiscal measures, implemented by a number of EU members.

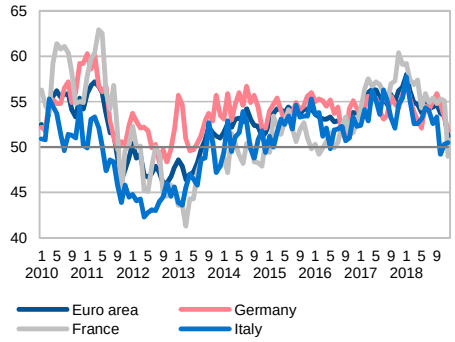
Labour market conditions improved across the euro area. The positive trend in the euro area labour market extended into 2018 as well – unemployment rate declined to 7.9% in December 2018 (8.6% in December 2017), touching its lowest level in the euro area since 2008. At the EU level, unemployment rate at end-2018 was lower than the euro area rate and equalled 6.6% in December.

Chart I.1.2 **Economic activity indicator* (manufacturing)**
(index points)



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

Chart I.1.3 **Economic activity indicator* (services)**
(index points)



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

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

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

The lowest unemployment rates were recorded in the Czech Republic (2.1%), Germany (3.2%), Malta (3.4%) and the Netherlands (3.6%), and the highest in Greece (18.4%), Spain (14.3%) and Italy (10.5%).

In December 2018, PMI Manufacturing equalled 51.4 points,[6] lower than at end-2017 (60.6 points). The highest value of this indicator was recorded in Germany (51.5 points in December), and the lowest in Italy (49.2 points). PMI Services in the euro area was also lower in 2018 than at the end of 2017, measuring 51.2 points at year-end. As shown in Chart I.1.3, country-wise, the lowest PMIs in the services sector at end-2018 were recorded in France (49.0 points) and the highest in Germany (51.8 points) and the euro area (51.2 points).

The primary commodity indices were lower at end-2018 relative to end-2017. After the Brent oil price rose during most of 2018, it posted a sharp fall as of October, ending the year at figures (USD 56.5 per barrel) 12% below end-2017. The oil price hike was affected by the implementation of the agreement on capping production by OPEC countries and other leading exporters, as well as by the decline in global oil inventories, notably in the USA (which fell below the five-year average for the first time), but also by the rising geopolitical tensions in the wake of the US decision to leave the Iran nuclear deal and then re-impose sanctions on Iran. At end-June, OPEC countries and Russia agreed to increase the supply by 1 mn barrels per day – with the Libya's announced increase in production, this was mirrored in the oil price decline. Other factors affecting the formation of the oil price were heightened geopolitical tensions in the Middle East and the contracted oil production in Venezuela and Africa. October saw the oil price post its biggest monthly fall since July 2016, under the impact of increased supply (in the wake of stepped-up production in Saudi Arabia and the USA) and dampened demand in the global market (due to decelerated global growth).

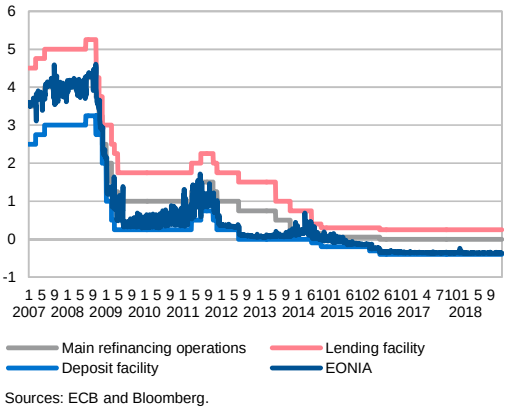
I.1.1 ECB and Fed monetary policy in 2018

In 2018 the ECB kept its interest rates unchanged and continued with the asset purchase programme, trimming the monthly asset purchases in order to end the programme in December. On the other hand, the Fed continued its monetary policy tightening, raising the federal funds rate four times during the year.

The ECB kept its key interest rates unchanged in 2018. The main refinancing rate was maintained at 0% throughout 2018, while the deposit facilities rate remained -0.40%, and marginal lending facilities rate 0.25%. The ECB's monetary policy accommodation in this period was reflected in the continued implementation of non-standard monetary policy measures. Between January and September, monthly asset purchases under the asset purchase programme (APP) stood at EUR 30 bn. At its June meeting, the ECB decided to lower the monthly purchases to EUR 15 bn from October to December, when the APP was completed. At the meeting in December, the ECB stated it would reinvest the principal payments from maturing securities over a longer period past the date when it starts raising its policy rate. Following meetings in March and April 2019, the ECB announced it would keep interest rates at record-low levels at least through 2019.

In 2018, economic growth in the euro area decelerated to 1.9%, its lowest real growth rate since 2014 (1.4%). Due to slower euro area growth, countries in Central, East and Southeast European region are also faced with dampened growth prospects. Measured by EMBI, risk premiums of countries in the Central, East and Southeast European region at end-2018 were higher than at the end of 2017. Serbia's risk premium in January, measured by EMBI, recorded its lowest level (85 bp) since EMBI is monitored for Serbia, while during the remainder of the year, risk premium was on the rise. At end-2018, risk premium reached 159 bp and was among the lowest in the region (Chart I.1.5).

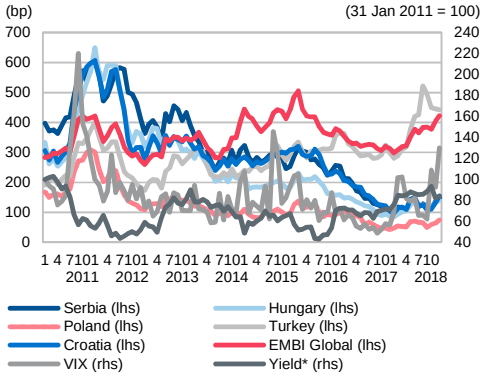
Chart I.1.4 **ECB's interest rates and EONIA**
(%)



Sources: ECB and Bloomberg.

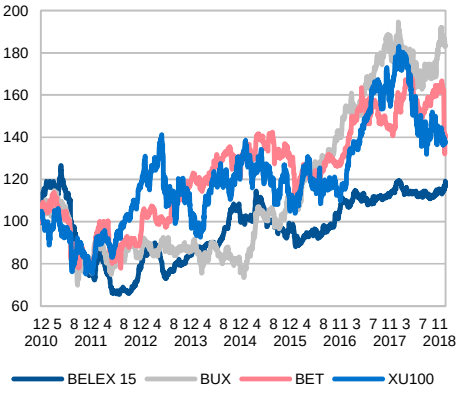
[6] A reading of 50 or higher indicates economic expansion, whereas a reading of below 50 indicats economic contraction.

Chart I.1.5 **EMBI for Serbia and its regional peers, VIX and yields on US bonds**



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

Chart I.1.6 **Selected stock exchange indices**
(index points, 31 Dec. 2010 = 100)



Sources: Stock exchange websites.

On the other hand, despite accommodative monetary policy measures and slower economic growth than in 2017, y-o-y inflation in the euro area trended below the target tolerance band in the first four months of 2018. After that, it recovered and was within the target tolerance band from May until November. At the end of the year, y-o-y inflation in the euro area measured 1.5%. Core inflation (excluding the prices of food, energy, alcohol and cigarettes) was relatively stable throughout the year and equalled 0.9% y-o-y in December.

Increased volatility in the international financial market, measured by the implicit measure of financial market volatility (VIX[7]), rose from 10% in January to 37% in early February 2018, its highest level since August 2015. At the end of the year, VIX measured 36% (Chart I.1.5).

At financial markets of countries in the region, the values of stock indices at end-2018 declined relative to end-2017 (Chart I.1.6).

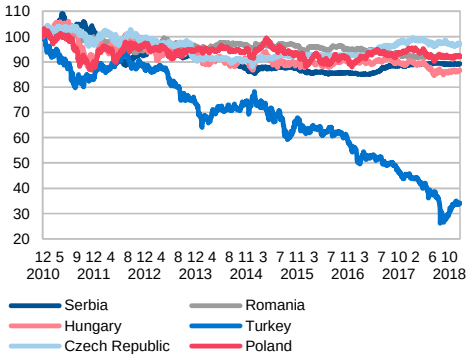
According to the IMF's April 2019 projections, euro area inflation in 2019 should remain close to its level from 2018, while its moving closer to the target of "below, but close to, 2%" is expected only in the medium term (2024).

According to the January euro area bank lending survey for Q4 2018, which covered the sample of 147 banks, credit standards remained mostly unchanged for corporate loans and housing loans for the household sector. Given that credit standards are being loosened since 2014, banks' lending conditions continued to support credit growth. Loan demand remained on the rise across all loan categories. Credit standards for corporate loans remained mostly unchanged in Q4 2018, which is in accordance with expectations based on a research from Q3 2018. Credit standards for housing loans to households also remained stable relative to expectations from the previous quarter which suggested the continued loosening of credit standards.

In 2018, of all Central, East and South-East European countries running inflation targeting regimes, only Hungary and Poland kept their key policy rates on hold (Hungary – 0.9% and Poland – 1.5%). Romania raised its key policy rate three times in 2018 (in January, February and May), each time by 0.25 pp, ending the year with the rate of 2.5%. The Czech Republic continued with key policy rate hikes, which began in 2017, and during 2018 it rose the rate five times (in February, June, August, September and November), each time by 25 bp, hence its rate at the end of the year equalled 1.75%. Turkey raised the reference interest rate three times (in May, June and September) and at the end of the year it was 24% (8% at end-2017). The reason behind such large increase is the high inflation rate of 20.3% y-o-y at end-2018, significantly above the inflation target of 5.0%±2 pp. The cycle of monetary policy easing, launched in May 2013, continued in Serbia and during 2018 its key policy rate was trimmed twice (in March and April), each time by 0.25 pp, to 3.0% at the end of the year, its lowest level in the inflation targeting regime. In April 2018, the NBS Executive Board narrowed the interest rate corridor relative to the key policy rate from ±1.5 to ±1.25 pp.

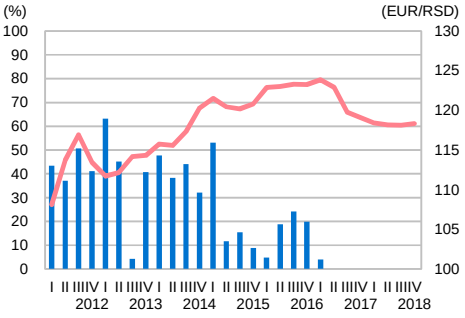
[7] Chicago Board Options Exchange index (CBOE), based on the S&P 500 (SPX) index.

Chart I.1.7 **Exchange rates of selected national currencies against the euro***
(daily data, 31 Dec. 2010 = 100)



* Growth indicates appreciation.
Sources: Central bank websites.

Chart I.1.8 **Exchange rate movements and participation of foreign investors in auctions of dinar government bonds, quarterly average**



Source: NBS.

During 2018, the dinar gained 0.2% against the euro in nominal terms and the Romanian leu by only 0.03%, while the majority of currencies of countries in the region pursuing a similar exchange rate regime weakened against the euro – the Turkish lira by 24.5%, Hungarian forint by 3.5%, the Polish zloty by 2.9% and the Czech koruna by 0.9% (Chart I.1.7).

In Q1 2018, the euro strengthened against the dollar by 2.2% (at end-quarter, the EUR/USD rate was 1.23[8]). This was facilitated by better prospects for euro area growth, as confirmed in the ECB's projections which were revised up in March. Another positive impact came from increased investment in debt securities of some euro area countries due to their improved credit rating. During Q2 2018, the dollar appreciated relative to leading global currencies, which can be put down to different phases of the economic cycle and the rise in the interest rate differential between the USA and other advanced countries. Observed at end-period, the dollar gained 5.4% against the euro in Q2 2018, thus reversing its downward trend against the euro which was present in 2017 and early 2018. The dollar continued to strengthen against most of the leading global currencies during Q3 2018, on account of good data in the real sector and in the US labour market, as well as due to the further normalisation of the Fed's monetary policy. Another reason for the euro's weakening against the dollar (by 1.8% in Q4) is the euro area's dampened growth, as well as tensions surrounding Brexit, Italy's budget crisis and political uncertainty in France.

Amid rising economic activity and further strengthening of the US labour market, the Fed raised its federal funds target range four times in 2018 (in March, June, September and December), each time by 0.25 pp, to 2.25–2.50% at end-year. As of October 2017, the Fed started unwinding its balance sheet (which had increased during the period of monetary policy accommodation, through the purchase of government and mortgage securities) by gradually reducing monthly reinvestments of matured principal payments. In 2018 the Fed continued with balance sheet normalisation – reinvestments of matured principal payments were reduced by USD 30 bn in June, as of July by USD 40 bn per month and from October until end-2018 by USD 50 bn.

The US unemployment rate remained on a downward path in 2018, reaching 3.9% in December (4.1% in December 2017), while in September and November it touched its lowest level in 2018 – 3.7%. Inflation in the USA rose moderately in Q1 and averaged 2.2% y-o-y, only to increase further in Q2, when the average inflation rate measured 2.7% y-o-y. In June and July, inflation reached 2.9% y-o-y, its highest level since February 2012. After reaching 2.6% y-o-y in Q3, inflation in the USA slowed down to 2.2% y-o-y on average in Q4, due to the fall in global oil prices, only to dip further, to 1.9% y-o-y in December.

In annualised terms, GDP growth in the USA in 2018 (2.9%) accelerated relative to 2017 (2.2%), mostly in response to increased personal consumption and investments. According to the IMF's April 2019 forecast,[9] 2019 and 2020 are likely to see subdued growth prospects (2.3% and 1.9%, respectively).

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

[9] IMF WEO, April 2019.

I.1.2 Lending in CESEE countries

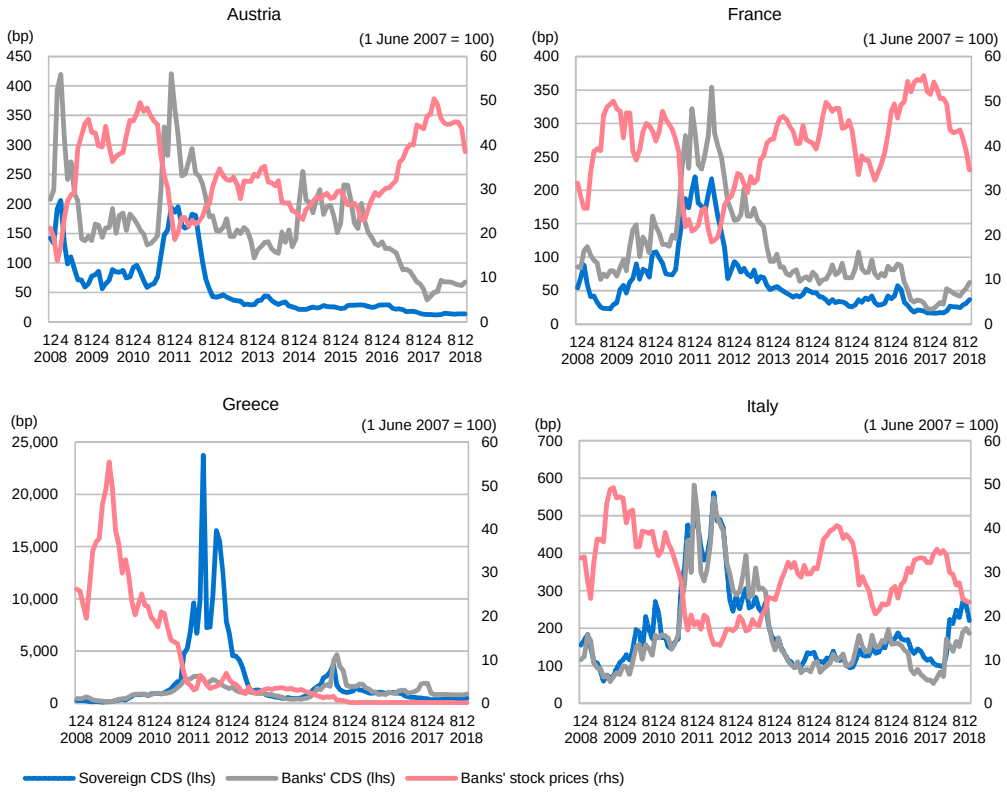
In 2018, aggregate credit conditions in the CESEE region, on both the supply and demand sides, maintained the positive trend from a year earlier. In the second half of 2017, deleveraging in the banking sectors of CESEE countries began to decline, and this trend continued in 2018 as well.

According to the CESEE Bank Lending Survey published in May and November 2018 by the EIB, loan demand increased throughout 2018, thus marking the eleventh consecutive half-year of positive developments. During the previous year, credit conditions on the supply side in the SME lending segment were relaxed, as were loan conditions for consumer loans, while mortgage loan conditions were tightened. Loan supply conditions were loosened for short-term loans and, to a lesser degree, for long-term loans, mostly in the local currency, therefore banks expect loan demand to continue to increase going forward.

All factors influencing loan demand were positive contributors to lending activity. The major part of loan demand increase was driven by investments, while debt restructuring loans gave a negligible contribution.

Financing conditions for banking groups in CESEE countries improved during 2018, in response to the simplified access to domestic sources of financing which mostly come from household and corporate deposits. A positive contribution to facilitated access to sources of financing for banking groups also came from international financial institutions. Considering the high percentage of foreign-owned banks in the domestic market, the financing of subsidiary banks in Serbia is greatly affected by developments in the euro area and trends in lending activity. Developments in home markets of banking groups present in Serbia are shown in Chart I.1.9.

Chart I.1.9 **Developments in the home markets of 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.

Conservative regulations and the level of banking group NPLs still exert a negative effect on loan supply, though their impact is lesser than in the prior period. A region-wide fall in NPLs is evident, however, the level of NPLs still has a dampening effect on supply conditions. According to the results of the EIB's research from November 2018, only few of the surveyed banks expected a rise in NPLs over the next six months, i.e. in the first half of 2019.

In 2018, around 20% of banking groups reported that they expected a decrease in group-level LTD (loan-to-deposit) ratios in the period ahead. This is a significant step forward relative to 2017, when around 25–30% of banking groups reported that they expected a decrease in LTD. At the same time, the same percentage of banking groups (20%) expected an increase in LTD going forward, which indicates balanced expectations in terms of the deleveraging process.

According to the EIB's CESEE Bank Lending Survey, deleveraging in the banking sectors of these countries, which began in the second half of 2017, continued in 2018.

The deleveraging of foreign banks in the post-crisis CESEE region did not have major consequences on Serbia's financial stability owing to a strong domestic deposit base, which increased significantly in the post-crisis period, as well as to the NBS's well-calibrated measures.

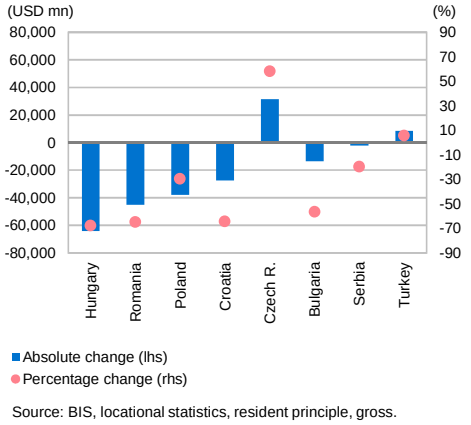
According to BIS data, in Q4 2018 relative to the beginning of the crisis (Q3 2008), euro area banks reduced their cross-border exposure to countries of the region, except to the Czech Republic and Turkey. Percentage-wise, exposure was reduced the most for Hungary, Romania, Croatia and Bulgaria, and the least for Poland and Serbia (Chart I.1.10). Relative to end-2017, Q4 2018 saw lower cross-border exposure in all countries in the region, except Serbia. Chapter II.1 offers a more detailed analysis of credit growth and an overview of the situation and developments in the banking sector.

I.2 Overview of domestic macroeconomic developments

In 2018, GDP grew by 4.3%, which is the highest growth rate in the last ten years. Due to the high base effect in agriculture and the slowdown in the euro area, 2019 is expected to see economic growth of around 3.5%. In the coming years, growth is expected to accelerate to around 4%, driven by investment, exports and a viable rise in household consumption. Low inflationary pressures continued in 2018, and throughout the year inflation was low, stable and, with the exception of March and April, within the target band.

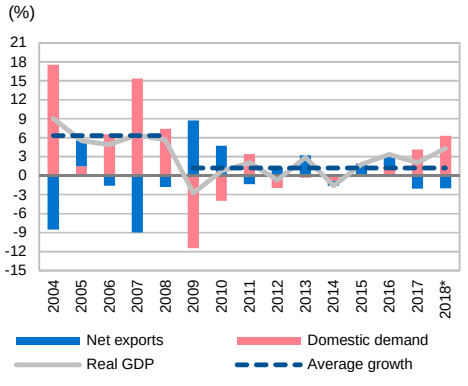
According to SORS data, annual GDP growth in 2018 measured 4.3% and was driven mainly by investment, private consumption and exports. The fastest growing component within investment was government investment (43.1%), adding 1.2 pp to GDP growth. Besides investment, total consumption added significantly to GDP growth, especially household

Chart I.1.10 **Change of cross-border exposure to selected countries, Q3 2008 – Q4 2018**



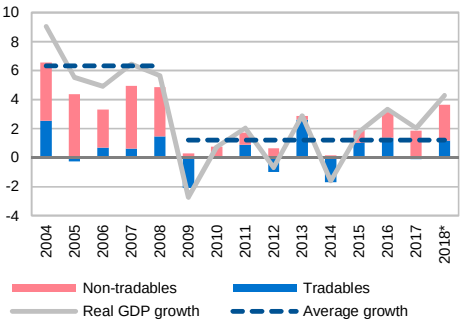
Source: BIS, locational statistics, resident principle, gross.

Chart I.2.1 **Real GDP growth – demand contributions**



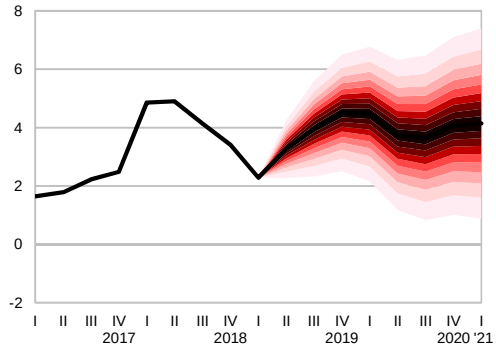
* SORS estimate as the sum of four quarters.
Source: NBS.

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



* SORS estimate as the sum of four quarters.
Source: NBS.

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



* May 2019.
Source: NBS.

consumption, mainly owing to positive labour market trends, i.e. increase in employment and wages. Household consumption is expected to continue up in 2019, as well as fixed investment, contributing to the acceleration of Serbia's economic growth.

In the aftermath of the 2008 crisis, the composition of GDP growth changed, as the trend of unviable growth led by consumption shifted towards a slower, but more stable and sustainable growth, supported by increasing contribution of tradable sectors. This was also aided by the improved structure and volume of investment channelled into these sectors (Charts I.2.1 and I.2.2).

By implementing fiscal consolidation, launching structural reforms and improving the investment climate over several previous years, Serbia created the basis for economic growth acceleration in the medium run. It is therefore expected that, after a temporary slowdown in 2019 due to the high base in agricultural production and the economic slowdown of the euro area, Serbia's GDP will speed up to around 4% in the years to come (Chart I.2.3).

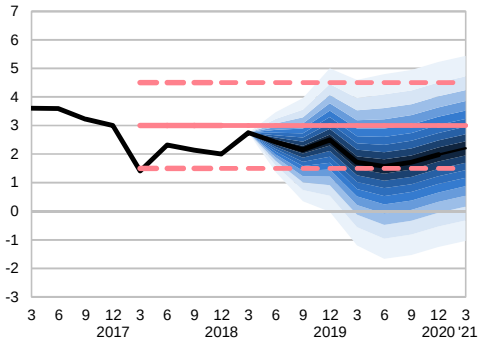
In 2018, inflation was low and stable, moving within the target tolerance band (3±1.5%), with the exception of March and April, when it slipped below the lower bound. In December 2018, inflation measured 2.0%. Inflationary pressures remained low, as suggested also by low and stable core inflation, which measured 1.0% y-o-y in December, while medium-term inflation expectations of the financial and corporate sectors were anchored within the target band throughout the year.

Under the May 2019 central projection, y-o-y inflation will continue to move within the target tolerance band (3.0±1.5%) until the end of the projection horizon, i.e. over the next two years (Chart I.2.4). In 2019, inflation will probably move in the lower part of the target band, approaching in some months its lower bound. Inflation is expected to gradually rise and return to the target midpoint (3.0%) in H2 2020, staying close but below that value until the end of the projection horizon. The key factors behind such inflation profile are the rise in aggregate demand, the low base for some products and the waning of the effects of past appreciation of the dinar.

Positive movements were recorded also in the labour market, with employment rate measuring 47.6% at the level of 2018 and unemployment rate 12.7%. Strong economic growth, low and stable inflation, relative stability of the exchange rate and exceptional fiscal policy results helped employment to go up and unemployment to fall to its lowest levels.

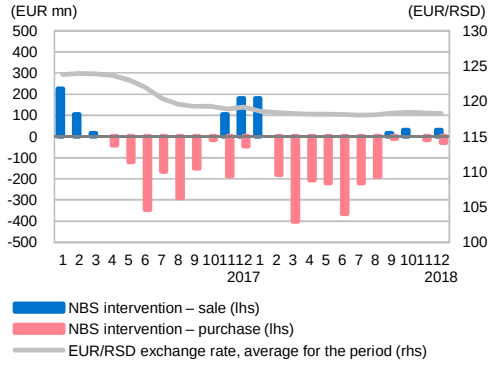
The NBS proceeded with cautious monetary policy easing in 2018, trimming the key policy rate twice, by 0.25 pp each – in March and April, to 3.0%. Further monetary policy easing was based on the outlook for inflation, primarily the weakening of inflationary pressures on account of both domestic and external factors and the fact the actual fiscal movements proved much more favourable than expected. Besides, the NBS narrowed the interest rate corridor in April 2018, from ±1.5 pp to ±1.25 pp. Key policy rate cuts reflected on a further decline in interest rates in the interbank money market and on the prices of dinar government securities. At the same time, uncertainties in the international commodity and financial markets, primarily in respect of movements in global oil prices and diverging monetary policies of the ECB and the Fed, mandated caution in monetary policy relaxation.

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



* May 2019.
Source: NBS.

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



Source: NBS.

As for developments in the FX market, in 2018 the dinar gained 0.2% against the euro and weakened 4.1% against the dollar, due to the concurrent strengthening of the dollar vs. the euro. Appreciation pressures in the FX market, which prevailed for the greater part of the year, reflected primarily reduced macroeconomic imbalances and more favourable macroeconomic prospects, which also helped boost the confidence of foreign investors concerning long-term investment in Serbia and contributed to the decline in the risk premium and the improvement in the country's credit rating outlook.

Serbia's risk premium averaged 123 bp in 2018, down by 30 bp relative to 2017. It remained on a downward path in 2018, recording in January its lowest value since EMBI is monitored for Serbia (85 bp). Serbia's risk premium picked up in the rest of the year, reaching 159 at year-end, which is an increase of 57 bp from end-2017. Although increased, Serbia's risk premium at the end of 2018 was among the lowest in the region. In all the countries observed, the rise in the risk premium was caused by a slowdown in economic activity in H2 2018.

At end-2018, Standard & Poor's upgraded Serbia' credit rating outlook for long-term borrowing in the local and foreign currency from stable to positive. The upgrade was motivated by an improvement in fiscal results and a decrease in public debt, favourable and stable economic growth outlook and narrowing of external imbalances. Further contributing factors were the maintenance of price stability, favourable trends in the banking sector and the results achieved in NPL reduction. In November 2018, Fitch affirmed Serbia's credit rating at BB, as well as a stable outlook, while Moody's Investors Service changed neither the level of credit rating nor outlook in 2018 (Ba3 and stable outlook).

The NBS bought EUR 1,580.0 mn net in the interbank FX market in 2018 (buying EUR 1,835 mn and selling EUR 255.0 mn), thereby additionally boosting the country's FX reserves (Chart I.2.5). The NBS intervened in the IFEM to ease excessive short-term volatility of the exchange rate, without any intention to influence the exchange rate level or trend.

Due to the possible effect of the changes in the dinar exchange rate on the balance of payments on the one hand, and on inflation, dinar equivalent of foreign currency public and private debt and NPLs on the other, the NBS strives to maintain relative stability of the EUR/RSD exchange rate, and thus diminish the exchange rate effect on overall financial stability. In such circumstances, a timely response of the central bank also entails maintaining an adequate level of FX reserves, a task in which the NBS has proved successful, with gross FX reserves of EUR 11.3 bn at end-2018.

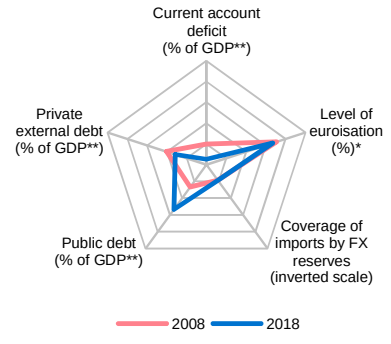
Key macroeconomic indicators of vulnerability[10] of the financial system of the Republic of Serbia in 2018 suggest lower vulnerability compared to the pre-crisis year 2008, based on: a significant reduction in the current account deficit, lower share of private external debt in

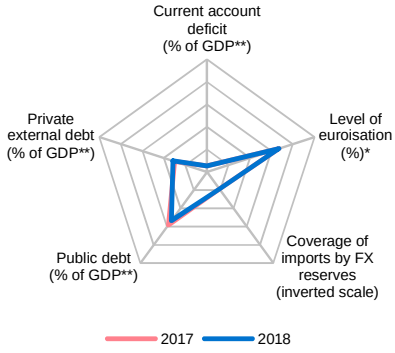
[10] The key financial system vulnerability indicators for the Republic of Serbia are shown in Chart I.2.6. The Chart shows changes in the current account deficit, private external debt, public debt, euroisation level and adequacy of FX reserves – as the inverse value of the number of months of the gross FX reserves/imports coverage. Any increase in the indicator's distance from the centre of the Chart signals elevated risk and a threat to stability. The further away from the centre an indicator is, the greater the vulnerability of the economy.

GDP and a decrease in the euroisation of receivables[11]. The increase in the public debt-to-GDP ratio in post-crisis period worked in the opposite direction. Based on the graphic overview of all dimensions of vulnerability, it can be concluded that in 2018 vulnerability decreased the most owing to a considerable contraction in the share of public debt in GDP. The declining trend of the public debt-to-GDP ratio continued in 2018, when this ratio dropped by an additional 4.1 pp. The degree of euroisation, current account deficit and coverage of imports by FX reserves stayed almost unchanged relative to the past year. A higher share of private external debt in GDP worked in the opposite direction.

In the coming period, the current account deficit is expected to return to 4–5%, which will further reduce financial system vulnerability. Also, according to the Fiscal Strategy for the period 2019-2021, the general government deficit is forecast at 0.5% of GDP until 2021. The projected level of deficit will contribute to a further reduction of the public debt-to-GDP ratio to below 50%, and hence, to a decrease in financial vulnerability on that account.

Chart I.2.6 **Key macroeconomic risks**





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

** GDP is compliant with ESA 2010 methodology.

Source: NBS.

I.3 Foreign exchange reserves as insurance against shocks

At end-December 2018, NBS foreign exchange reserves were at a level adequate to ensure financial stability, equalling EUR 11.3 bn, that is, EUR 8.9 bn in net terms[12]. Different stress scenarios show that FX reserves are high enough to safeguard the domestic system even in case 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, which in times of crises should serve to finance balance of payments imbalances, settle the state's liabilities towards foreign creditors, and preserve the stability of the financial sector.

The adequacy of FX reserves is assessed by various analyses and indicators, primarily from the aspect of materialisation of an individual risk or a mix of several risks. The most common risks, based on which relevant indicators are constructed are: hindered financing of the imports of goods and services and of external debt maturing within a year in conditions of reduced capital inflows from abroad due to the limited access to international capital markets, as well as sudden deposit withdrawals.

Traditional FX reserve adequacy indicators analyse the degree of protection against individual risks. The indicator of FX reserves import coverage shows the link

Table I.3.1 **Levels of FX reserves adequacy, end-2018**

Adequacy indicators	Adequate level (EUR bn)
Three months of imports coverage	6.3
Short-term external debt at remaining maturity	4.0
20% money supply M3 coverage	4.4
"Right measure for Serbia"	5.3
FX reserves	
Gross	11.3
Net	8.9

Source: NBS.

[11] Measured as a share of FX and FX-indexed loans in total loans granted to the corporate and household sectors.

[12] Net reserves are FX reserves less banks' FX balances on account of required reserves and other requirements.

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 the 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,[13] 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 capital, 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-2018, Serbia's FX reserves were at a level guaranteeing protection from individual risks, providing for 5.3 months' coverage of the imports of goods and services, 281.4% coverage of external debt at remaining maturity, and 51.1% 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.[14] It implies the coverage of the sum total of short-term debt at remaining maturity, current account deficit adjusted for FDI, 15% of FX and FX-indexed deposits and 5% of dinar deposits.

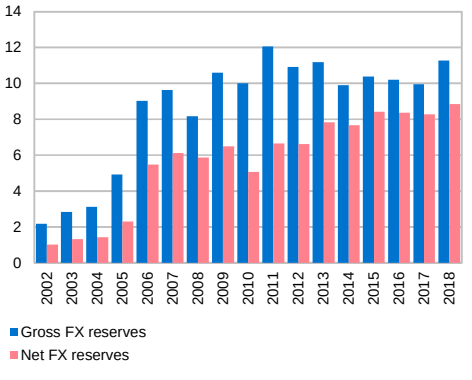
At end-2018, "the right measure for Serbia" indicator stood at a significantly higher level than the optimal 100% (211.1%). The indicator significantly improved in comparison to the previous year (150.1%), mainly due to the increase in FX reserves and higher FDI inflows relative to the current account deficit.

The Jeanne–Ranciere[15] model determines an optimal level of FX reserves as a share in GDP (ρ), depending on the size of the shock (λ), probability of a sudden stop (π), damage caused by the sudden stop of capital flows (γ), real depreciation (ΔQ), risk aversion (σ), return on reserves (r), opportunity cost of holding reserves (δ) and real GDP growth (g).

The model assumes that in a small and open economy, vulnerable to sudden stops in capital flows, economic policy makers are risk averse and make decisions on the level of FX reserves with a view to maximizing the general welfare. In the event of a sudden stop in capital flows, resulting in the impossibility to roll over external debt, it is assumed that a higher level of FX reserves mitigates the fall in output and ensures smooth consumption. In this model, the optimal level of reserves is determined by the size and likelihood of a sudden stop, a potential loss in output and consumption, the opportunity cost of holding reserves, and the degree of risk aversion.

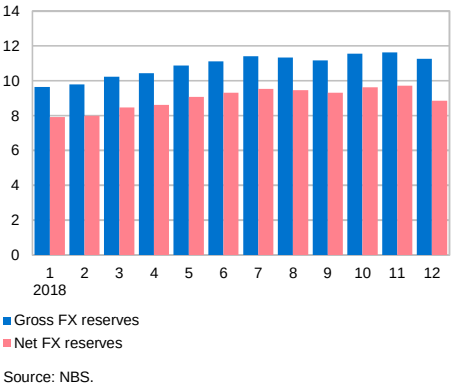
Table I.3.2 shows stress scenarios for FX reserves, according to the Jeanne Ranciere model, where the fifth scenario is extreme, i.e. least likely to occur given the current economic developments. The dynamics between the factors on which the adequate level of FX reserves

Chart I.3.1 **NBS FX reserves**
(EUR bn)



Source: NBS.

Chart I.3.2 **NBS FX reserves in 2018**
(EUR bn)



Source: NBS.

[13] Guidotti, Pablo, Sturzenegger, Federico and Augustin Villar (2004), On the Consequences of Sudden Stops, Economia Vol. 4, No. 2, p. 171–203.

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

[15] 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 2011 Annual Financial Stability Report.

depends is also taken into consideration when assessing the adequacy of FX reserves.

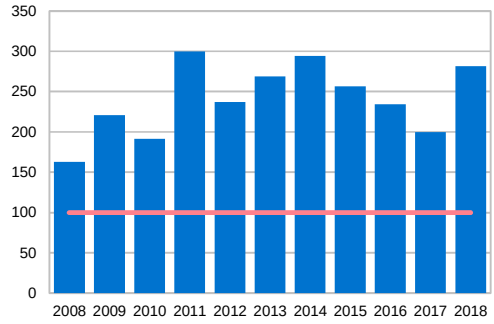
At end-2018, FX reserve adequacy was confirmed by all relevant indicators, as well as the five stress scenarios of the used adequacy model. Chart I.3.8 shows the optimal level of FX reserves in the event the fifth (most extreme) scenario materialises.

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%	0%	0%	-0.5%	-1%
g	Average GDP growth	3.5%	2.6%	1.8%	0.9%	0.0%
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 bln)	9.4	9.9	10.3	10.8	11.2
Gross NBS FX reserves (2018, EUR bn)				11.3		

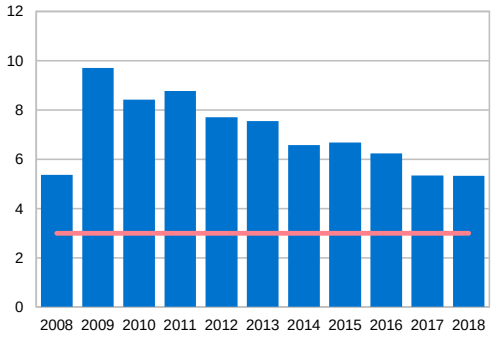
Source: NBS.

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



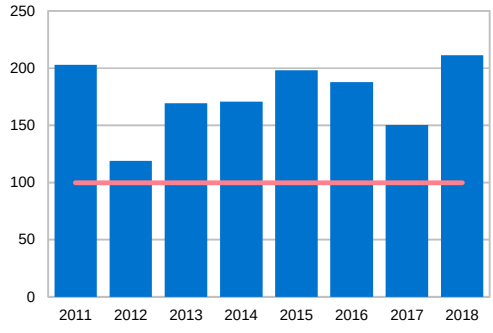
Source: NBS.

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



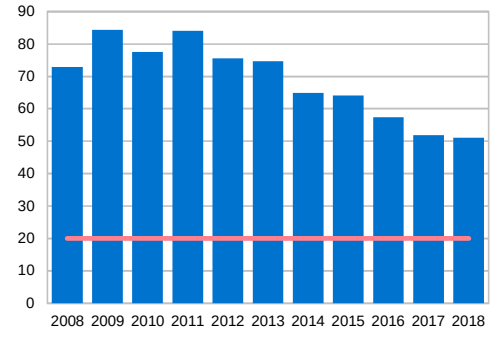
Source: NBS.

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



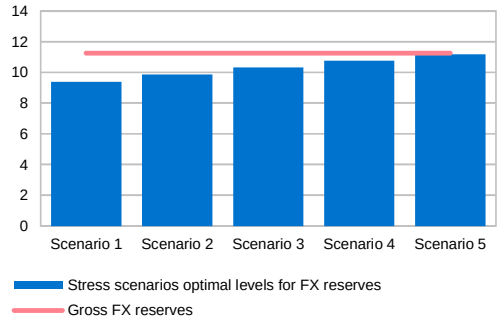
Source: NBS.

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



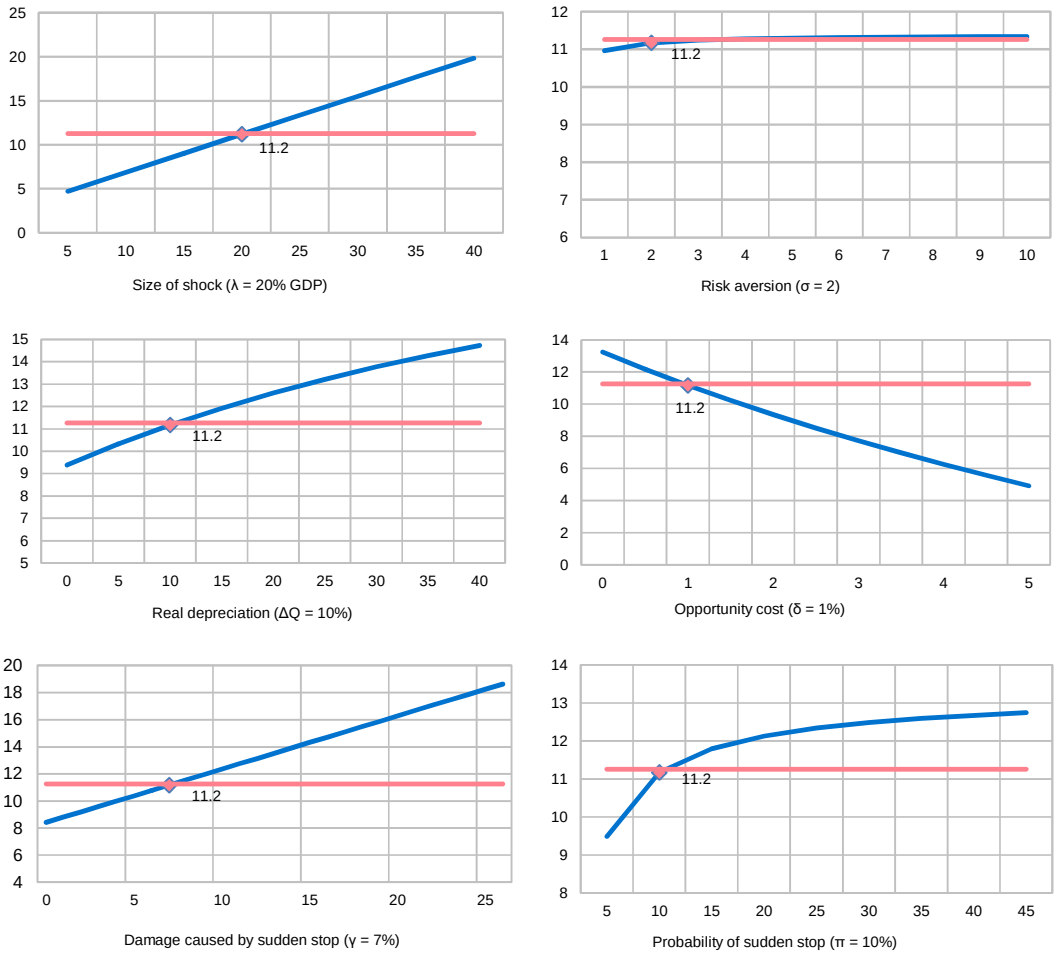
Source: NBS.

Chart I.3.7 **Optimal levels of FX reserves under stress scenarios, December 2018**
(EUR bn)



Source: NBS.

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



Source: NBS.

I.4 Fiscal policy, sustainability of public and external debt

Positive tendencies from 2017 – fiscal surplus and downward trajectory of the public and external debt share in GDP – continued into 2018. Fiscal result was positive, at around 0.6% of GDP. The share of central government debt in GDP was cut from 57.9% at end-2017 to 53.8%. General government debt (including the non-guaranteed debt of local governments and AP Vojvodina) fell from 58.7% of GDP at end-2017 to 54.5% at end-2018. The share of external debt in GDP also dropped, to 62.9% of GDP (65% at end-2017).

I.4.1 Fiscal policy

In February 2018 the Republic of Serbia successfully completed a three-year stand-by arrangement with the IMF. The focus of the arrangement was fiscal consolidation and Serbia met the set objectives even ahead of the deadline. A better fiscal result reflects successful fiscal consolidation on the expenditure side and the rise in income due to a faster GDP growth and better tax collection. In 2018 the IMF approved a new programme to Serbia – Policy Coordination Instrument which represents the continuation of structural reforms aimed at preservation of macroeconomic and financial stability, job creation and economic growth acceleration. The

arrangement will last 30 months and Serbia's progress in its implementation of the agreed economic agenda will be monitored through five semi-annual reviews. Policy Coordination Instrument is the new IMF support mechanism for member countries. It is an advisory tool and does not envisage financial assistance.

Fiscal developments remained positive in 2018. As the year before, 2018 also saw a fiscal surplus in the amount of RSD 32.2 bn, or 0.6% of GDP (RSD 52.3 bn, or 1.1% of GDP in 2017) (Chart I.4.1). In terms of government levels, the largest contribution to the general government surplus came from the surplus in the Republic of Serbia's budget (RSD 32.2 bn).

In 2018 the primary fiscal result[16] was positive at RSD 140.9 bn, or 2.8% of GDP (3.6% of GDP in 2017). As interest expenses reflect the fiscal policy and deficit from the past period, the primary fiscal result shows whether the achieved fiscal revenue suffices to cover fiscal expenditure other than the cost of public debt servicing. Primary fiscal result is an indicator of the efficiency of the current fiscal policy and the impact of that policy on public debt. Accordingly, it can be expected that the achieved primary and overall surplus will continue to contribute to public debt reduction in the coming period.

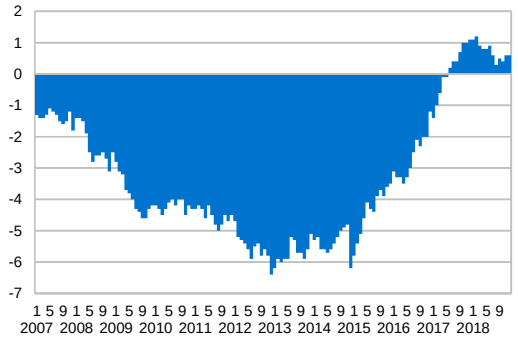
The fiscal surplus was posted amid an increase in both fiscal revenue and expenditure compared to the year before. Overall general government revenue in 2018 was by RSD 131.9 bn higher than in 2017. Tax revenues outperformed the last years' by as much as RSD 104.3 bn (3.5% real growth), with the rise in almost all tax revenue categories. VAT from imports recorded the highest growth, while personal income taxes also rose due to labour market recovery. Non-tax revenues were by RSD 21.4 bn higher than in 2017.

A contribution to the positive fiscal result also came from falling interest expenses against the background of a reduction in debt, government borrowing needs and cost of borrowing, owing to monetary policy easing by the NBS and a lower country risk premium. Interest expenses dropped by RSD 12.6 bn in 2018 (real reduction by 12.1%), reaching RSD 108.6 bn. Their share in the overall general government expenditures reached 5.2% in 2018 (6.3% in 2017). The fact that interest expenses dropped is extremely important as in the past this government expenditure diminished or neutralised the effects of implemented fiscal consolidation measures. The preservation of the current fiscal policy position will lead to a further contraction in the share of interest expenses in the coming period.

General government expenditures in 2018 went up by around RSD 151.9 bn compared to the year before. However, the structure of public expenditures improved significantly since interest expenses dropped, while capital expenditures rose. Pensions and public sector wages also increased.

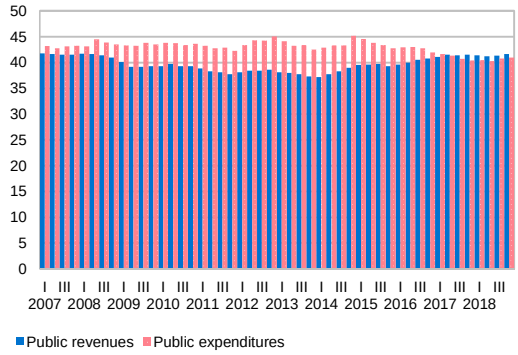
In 2018 the share of capital expenditures in total general government expenditures (9.6%) and GDP (3.9%) rose more than projected by the Fiscal Strategy. Capital

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.

[16] Primary fiscal result is the fiscal result adjusted for the impact of paid and charged interest.

expenditures went up by RSD 65.4 bn, or by 45.9% in real terms. Considering the importance of better infrastructure for long-term sustainable economic growth, as well as the planned infrastructure investment, the increase in capital expenditures will remain a fiscal policy priority in the period to come.

Subsidy expenditures were at a similar level as in the previous year in nominal terms and up by 1.5% in real terms. Agriculture and railways received the largest share of subsidies, as did public utility companies at the local level.

A responsible fiscal policy and favourable macroeconomic environment enabled a moderate fiscal policy easing, an increase in capital investment and the removal of austerity measures in case of wages and pensions. Relatively low fiscal deficit (0.5% of GDP) will remain the goal of fiscal policy in the coming period, enabling further reduction in public debt, but also the use of fiscal room for boosting economic growth.

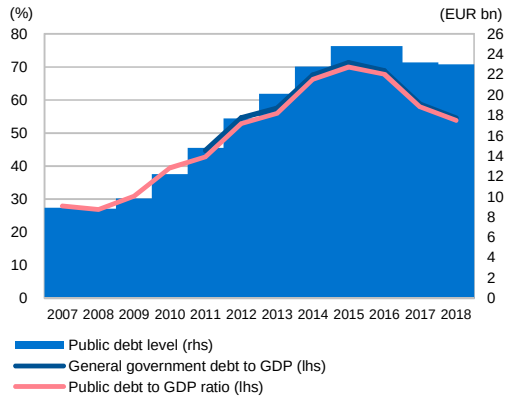
I.4.2 Public debt

After trend reversal in 2016, the share of public debt in GDP remained on a downward path throughout 2017 and 2018. The share of central government debt in GDP amounted to 53.8% at end-2018, down by 4.1 pp from 2017 (Chart I.4.3). The share of general government debt, which includes non-guaranteed debt of local governments and AP Vojvodina, stood at 54.5% of GDP in the same period, down by 4.2 pp of GDP compared to the year before. Owing to the continuation of fiscal consolidation and achieved overall and primary surplus, 2018 also saw a further decrease in the volume of public debt.

At end-2018 central government debt reached EUR 23.0 bn (EUR 23.2 bn at end-2017) and general government debt – EUR 23.3 bn (EUR 23.5 bn at end-2017). The achieved primary surplus was one of the most significant factors of public debt reduction. Public debt and currency risk were reduced largely on account of the December payment of matured eurobond issued in the international market in 2013 in the amount of USD 1 bn. Also, the accelerated fall of the share of public debt in GDP was significantly aided by the economic growth in 2018.

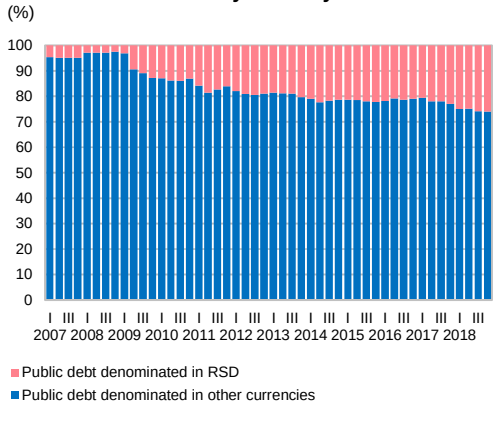
Public debt currency composition significantly improved in 2018, since the share of debt in US dollars decreased by as much as 2.9 pp from the previous year, while the dinar share rose by 3.0 pp. Even though the exchange rate risk exists, given that 74% of public debt is denominated in foreign currency, this risk is diminishing owing to the increasing share of the dinar portion of debt. The exchange rate risk also indicates the significance of the relative stability of the dinar exchange rate against the euro, which is successfully maintained by the NBS (Charts I.4.4 and I.4.5). In addition to the high share of public debt in euros (40.0% at end-2018), additional risk comes from a relatively high share of public debt in US dollars (26.5% at end-2018). Consequently, beside the risk of EUR/RSD volatility, there is also the risk of EUR/USD volatility, which emanates from the international environment.

Chart I.4.3 **Public debt dynamics**



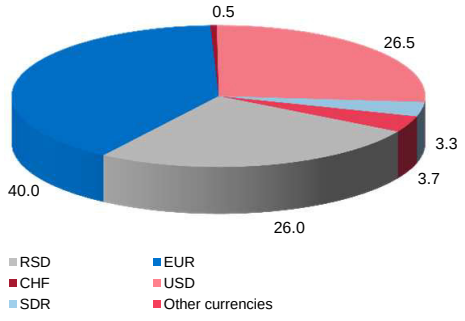
Source: Ministry of Finance.

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



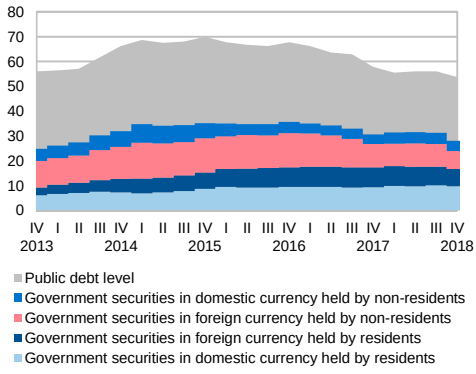
Source: Ministry of Finance.

Chart I.4.5 **Public debt currency composition, 31 December 2018**
(%)



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.

The share of debt repaid at the fixed rate was 81.2% at end-2018 (Chart I.4.6), suggesting a relatively low interest rate risk.

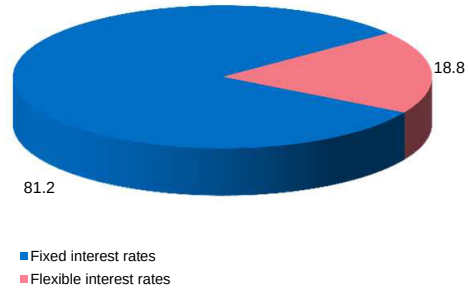
Public debt maturity composition was also favourable as in 2018 the government primarily borrowed by using long-term instruments.

In 2018, the government borrowed chiefly by selling securities in the domestic market. The share of government securities in total central government public debt was around 52% (Chart I.4.7).

During the year interest rates on government borrowing in both dinars and euros continued to decline, primarily owing to low country risk premium, low and stable inflation, past monetary policy easing by the NBS and increased interest of non-residents in dinar securities with the longest maturities. Lower borrowing needs played a significant role in cutting down the costs of government borrowing. In Q4 2018, two early buyback auctions of three-year dinar securities were organised, with the buyback volume of RSD 10 bn each (RSD 20.0 bn in total).

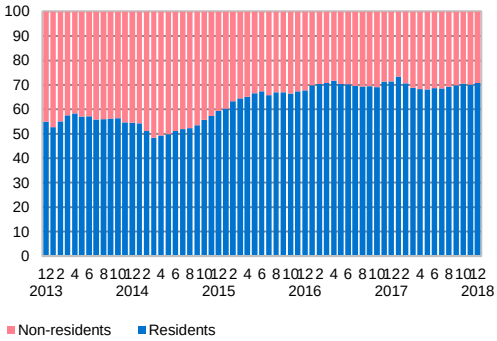
The role of foreign investors in the government securities market is very important. At end-2018, they accounted for 40% of the portfolio of securities issued in the domestic and international market (around 43% at end-2017). The non-resident share in dinar government securities stood at 29.2%, up by 0.6 pp in 2018 from the year before (Chart I.4.8). The increased share of foreign investors is largely a result of improved macroeconomic fundamentals and achieved macroeconomic stability. The said increase occurred even though in Q4 2018 the government did not organise auctions to sell but to buy government securities back – a portion of them from non-residents. On the other hand, the share of non-resident FX

Chart I.4.6 **Public debt interest rate composition, 31 December 2018**
(%)



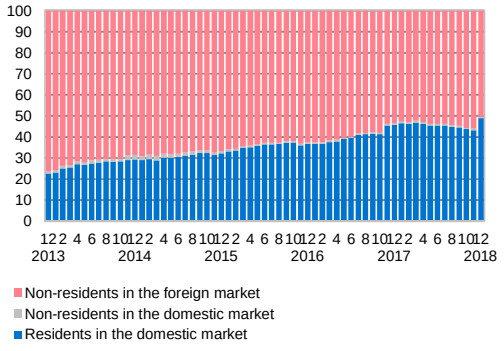
Source: Ministry of Finance.

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



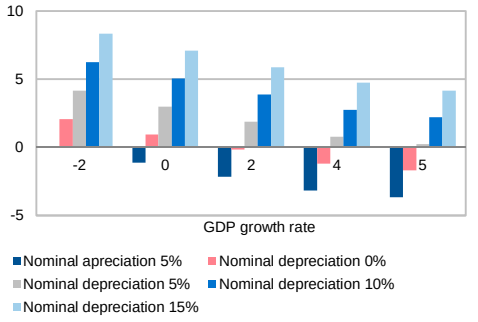
Source: NBS, based on data of the Ministry of Finance.

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



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

Chart I.4.11 **Primary fiscal result which enables stabilisation of public debt in 2019 at the level of 2018, depending on nominal depreciation and growth rate of GDP**
(% of GDP)

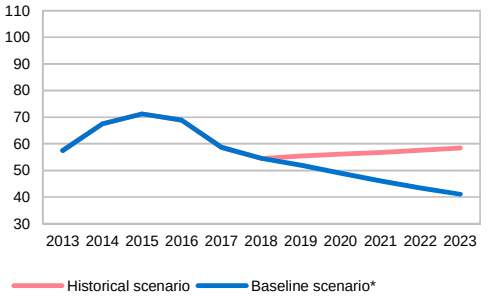


Source: NBS.

securities in 2018 was cut by 3.3 pp, to 51.0% (Chart I.4.9). The cut was mainly caused by the payment of the matured eurobond issued in the international market in 2013 in the amount of USD 1 bn. In addition, the Fed announced that monetary policy normalisation would be slower than previously expected, which could increase foreign investors' interest in government securities of developing countries, including Serbia.

The government's access to the international capital market led to the widening of the investor base. However, in addition to the access, the cost of borrowing was also important, largely depending on government credit risk insurance premium, which takes into account the credit risk assessment by rating agencies. The success of the implemented fiscal consolidation measures was also confirmed by international rating agencies. In June and November 2018, Fitch Ratings confirmed Serbia's credit rating at the BB with a stable outlook, while Standard & Poor's in December 2018 also affirmed a BB credit rating but upgraded the outlook from stable to positive. The decision to revise the outlook reflects Serbia's strong economic growth and the results of monetary policy in terms of preservation of price and financial stability. Better position of the country in the international financial market accompanied with the lowering of interest rates and higher investor confidence will provide cheaper sources of finance, enable public debt reinvestment at favourable interest rates, and thus reinforce the country's fiscal position.

Chart I.4.10 **General government debt projections: baseline vs historical scenario**
(% of GDP)



* According to projections from the first review of the IMF arrangement under PCI.
Source: NBS.

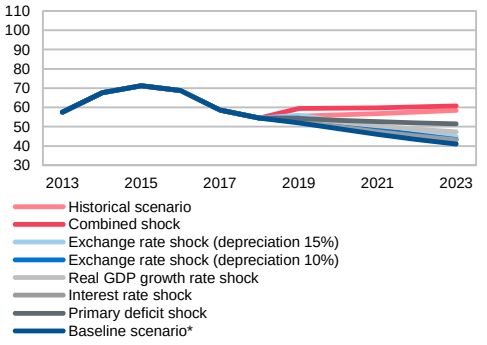
1.4.3. Public debt sustainability

The share of general government debt in GDP will continue to fall if the baseline scenario materialises. The scenario is in line with the projections from the report on the first review under the IMF Policy Coordination Instrument.[17] The baseline scenario implies: a) real economic growth at the level of 3.5–4.0% y-o-y; b) y-o-y rate of inflation at 3.3–3.6%; c) primary fiscal surplus of 1.4% or 1.6% of GDP; and d) government borrowing costs at the rates between 3.9% and 4.8%. Materialisation of the said baseline scenario could bring the share of the general government debt in GDP down by around 13 pp within the span of five years (Chart I.4.10).

However, there are certain fiscal risks which might jeopardise the realisation of the baseline scenario. That is why the impact of fiscal risk materialisation on the amount and dynamics of the debt must be integrated in the analysis of its sustainability. Relatively unfavourable debt currency structure indicates that the strengthening

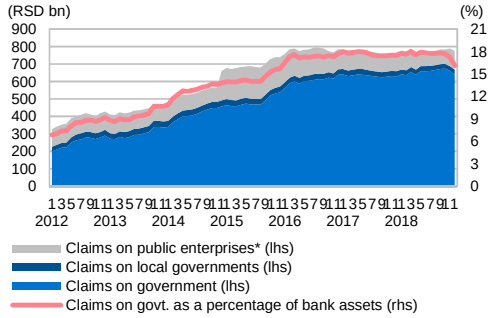
[17] IMF Country Report No 18/375, First Review under the Policy Coordination Instrument–Press Release; and Staff Report.

Chart I.4.12 **General government debt projections – alternative and stress scenarios**
(% of GDP)



* According to projections from the eighth review of the IMF arrangement.
Source: NBS.

Chart I.4.13 **Bank claims on government, local governments and public enterprises**



* As of end-2014, the criterion of ownership, control and management is used to determine whether an enterprise is a public enterprise or not.
Source: NBS.

of the euro or the dollar could pose a fiscal risk. The exchange rate differences caused by depreciation have increased the share of debt by around 13% of GDP since 2008. An additional fiscal risk could arise from weak economic growth, particularly combined with depreciation. The materialisation of the scenario of weak economic growth and depreciation would result either in less favourable debt dynamics or greater necessary fiscal adjustment for the purpose of debt stabilisation. Simulations presented in Chart I.4.11 indicate that the primary fiscal deficit may stabilise public debt in the appreciation environment or stable exchange rate regardless of economic growth, while the stabilisation of public debt amid depreciation would require a primary surplus even if economic growth was dynamic.

Macrofiscal stress tests (Chart I.4.12) show that public debt can be managed in conditions of individual shocks such as: (a) a primary fiscal deficit of 1% of GDP in 2019, followed by fiscal policy that generates a primary fiscal deficit of 0.5% of GDP; (b) a rise in the effective nominal interest rate by 1 pp in 2019 compared to that in 2018, followed by a rise of 0.25 pp a year; (c) a 1% GDP drop in 2019 and later growth at 50% lesser intensity compared to the baseline scenario growth; (d) 10% depreciation; (e) 15% depreciation. If one of the above shocks materialised, the share of public debt in GDP would fall by 3–11 pp in a five-year period. However, if several robust fiscal risks materialised at the same time (e.g. return to the primary fiscal deficit, 10% depreciation and a 1% drop in economic activity), the public debt would continue to rise.

I.4.4 Macroprudential policy and sovereign risk

In the aftermath of the global financial crisis, the share of government securities in the balance sheets of financial institutions increased significantly, largely on account of relevant EU regulations (Basel II, Basel III and the Capital Requirements Directive). In accordance with these regulations, banks' local currency sovereign exposures are considered risk-free investment, while foreign currency sovereign exposures are assigned an appropriate (low) risk weight. At the same time, government securities of EU member states are fully exempted from the limit on maximum exposure to a single person or a group of related persons. Finally, they are considered highly liquid assets.

As of 30 June 2017, bank operations in Serbia have been governed by the domestic regulations that are aligned with Basel III standards. Banks' exposures to the Republic of Serbia, regardless of the currency, are still considered risk-free. Also, government securities are exempted from the limit on maximum exposure to a single person or a group of related persons and are treated as highly liquid assets.

The share of receivables from the government in the Serbian banking sector assets reached 16.2% at end-December 2018, which is a slight decrease from last year when it stood at 17.5% (Chart I.4.13). In addition, domestic banks have been the most important investors in government securities.

The role of prudential policy is, among other things, to carefully assess the exposure of financial institutions and systems to the sovereign risk, while responsible fiscal policy is key to mitigating or eliminating that risk.

Potential future amendments to EU regulations include different changes (tightened capital requirements, stricter central government debt treatment in the regulation of liquidity risk and alike)[18] with a large impact on banks' business strategy, which is why they should be implemented gradually and over a longer period.

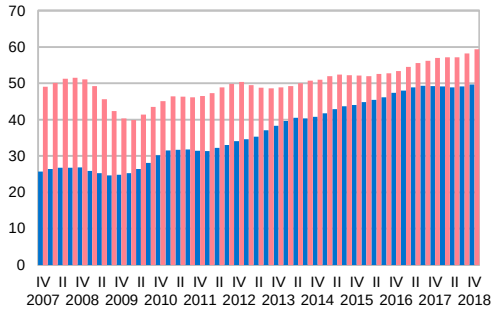
I.4.5 External debt

Serbia's external imbalance significantly decreased in the past six years owing to a robust and broad-based growth in exports. The current account deficit at end-2018 amounted to EUR 2.2 bn or 5.2% of GDP, almost unchanged from the year before (Chart I.4.14).

Exports of goods and services kept rising in 2018 (10.0% y-o-y), primarily led by manufacturing. Imports of goods and services rose by 13.6% in 2018, with the bulk of the increase coming from capital and intermediate goods (oil and gas sector imports) (Chart I.4.15).

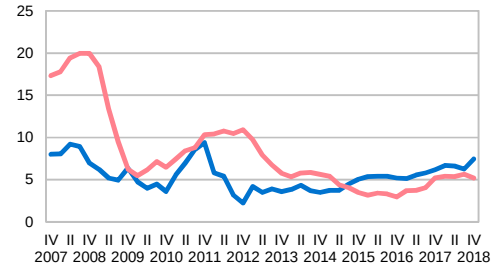
The current account deficit has been fully covered by the net FDI inflow for the fourth year in a row (around 143% coverage in 2018) (Chart I.4.16). Macroeconomic stabilisation and improvement of business environment contributed to a further rise in FDI in 2018. Net inflow of FDI in 2018 exceeded NBS expectations, amounting to EUR 3.2 bn, which is by one third higher than in 2017 and

Chart I.4.15 **Exports and imports***
(% of GDP)



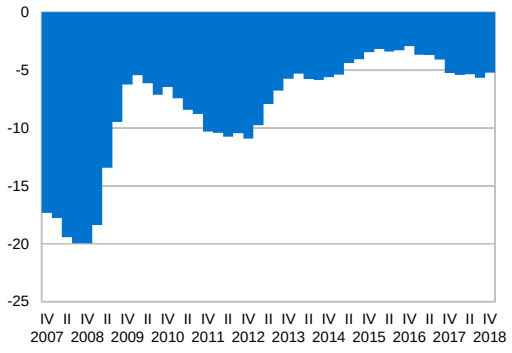
* Moving sums for the last four quarters.
Source: NBS.

Chart I.4.16 **Current account deficit financing via FDIs***
(% of GDP)



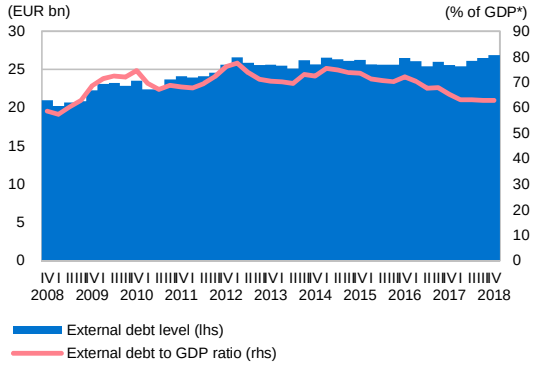
* Moving sums for the last four quarters.
Source: NBS.

Chart I.4.14 **Current account***
(% of GDP)



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

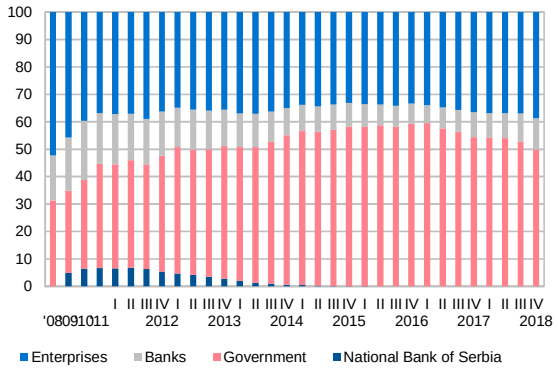
Chart I.4.17 **External debt dynamics**



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

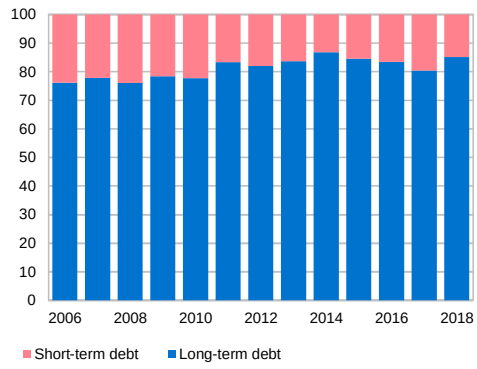
[18] In accordance with the ESRB report on the regulatory treatment of sovereign exposures, March 2015.

Chart I.4.18 **External debt by borrower**
(%)



Source: NBS.

Chart I.4.20 **External debt by remaining maturity**
(%)



Source: NBS.

the highest since 2011. FDIs were highly diversified by project and geography and directed primarily towards export-oriented sectors.

Structural reforms created a stimulating business environment. Progress in the European integration and continued economic growth of the countries which are Serbia's main trade partners should ensure current account deficit at the level of 4–5% in the medium term, as well as FDI inflow that will remain sufficient to cover it.

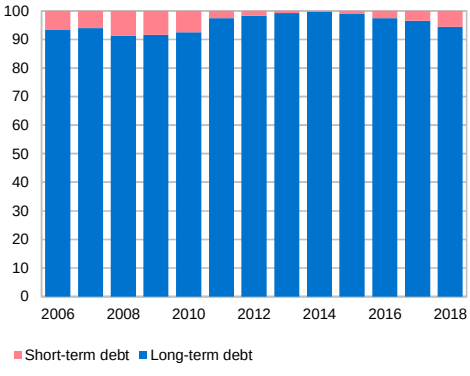
External debt reached 62.9% of GDP at end-2018, down by 2.3 pp from end-2017 (Chart I.4.17).

The rise in external debt in 2018 is a result of private sector borrowing. Namely, the private sector increased its external debt by EUR 1.8 bn, with banks accounting for around EUR 0.7 bn. At the same time, the public sector reduced its debt by EUR 0.5 bn (Chart I.4.18). If the government keeps the current fiscal policy stance, the need for new external borrowing will be reduced in the future. The restructuring and/or privatisation of large public and socially-owned enterprises might fuel FDI and exports, which will additionally reduce the balance of payments imbalance and the need for new borrowing.

The risk of external debt refinancing is relatively low given the favourable maturity structure of external debt. At end-2018, the share of external debt at original and remaining maturity over one year was high, standing at 94.4% (Chart I.4.19) and 85.1% (Chart I.4.20), respectively.

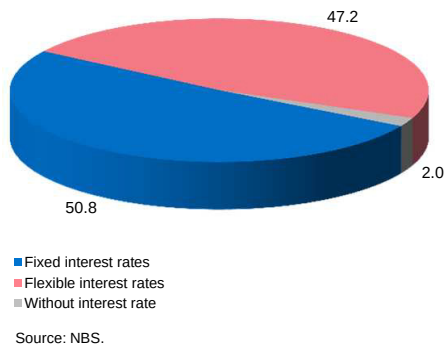
The share of external debt repaid at a fixed rate was relatively favourable at around 51% (Chart I.4.21). This share negligibly dropped from the previous year primarily on account of public sector debt reduction, this debt mainly being repaid at a fixed rate. The effective interest

Chart I.4.19 **External debt by original maturity**
(%)



Source: NBS.

Chart I.4.21 **External debt interest rate composition, 31 December 2018**
(%)



Source: NBS.

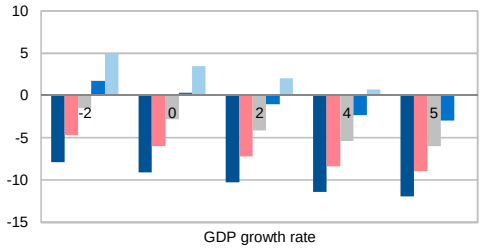
rate was relatively low and stable over an extended period, primarily due to the significant share of loans of international financial institutions in total external debt. The fact that the share of external debt paid at a variable rate (47%) is mainly concentrated in the banking sector may be a source of risk in view of the normalisation of the Fed's monetary policy and a potential increase in the ECB's interest rates.

I.4.6 External debt sustainability

With the materialisation of the baseline scenario of macroeconomic developments, consistent with projections from the report on the first review under the IMF Policy Coordination Instrument, the share of external debt in GDP could fall by as many as 20 pp in the next five-year period (Chart I.4.22). However, certain balance of payments risks may jeopardise the materialisation of the baseline scenario. As in the case of public debt, the realisation of the scenario of weak economic growth and depreciation would bring about either less favourable debt dynamics or a stronger balance of payments adjustment needed for debt stabilisation. The simulations in Chart I.4.23 show that in conditions of a stable exchange rate, even a higher current account deficit than expected (4–5% of GDP) could stabilise external debt regardless of economic growth. In conditions of depreciation of over 15%, the stabilisation of external debt would require robust economic growth or considerable balance of payments adjustment.

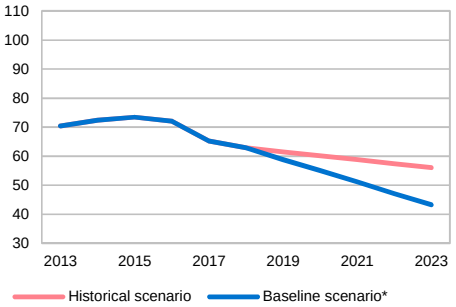
According to the results of macro balance of payments stress tests (Chart I.4.24), external debt can be managed in conditions of individual shocks such as: (a) an unplanned rise in the primary current account deficit (the current account deficit minus external debt interest expenses) to 5% of GDP in 2019, and a return to the primary deficit of around 3% of GDP; (b) a 1 pp rise in the effective nominal interest rate in 2019 compared to the 2018 rate, and an annual rise of 0.25 pp thereafter; (c) a real 1% drop in GDP in 2019, with 50% lesser intensity of growth later on compared to the baseline; (d) 10% depreciation; (e) 15% depreciation; (f) a reduction in net FDI to mere 2.5% of GDP. Even if these shocks materialised, external debt could fall by 5–19% of GDP in the next five years, depending on the scenario. If several strong balance of payments shocks materialised (an increase in the primary current account deficit, falling FDI, 10% depreciation and 1% drop in economic activity, followed by weaker than expected growth), the share of external debt in GDP would increase relative to 2018.

Chart I.4.23 **Current account which enables external debt stabilisation in 2019 at the level of 2018, depending on nominal depreciation and growth rate of GDP**
(% of GDP)



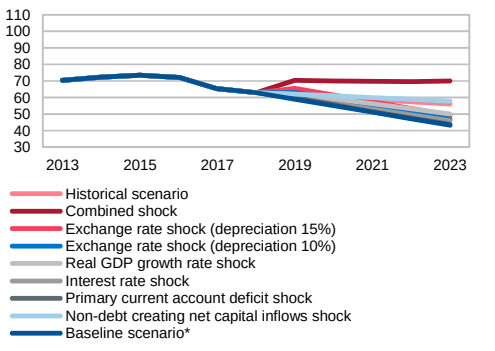
Source: NBS.

Chart I.4.22 **External debt projections: baseline vs historical scenario**
(% of GDP)



* According to projections from the eighth review of the IMF arrangement.
Source: NBS.

Chart I.4.24 **External debt projections – alternative and stress scenarios**
(% of GDP)



* According to projections from the eighth review of the IMF arrangement.
Source: NBS.

I.5 Corporate sector

The recovery of domestic and external demand, preservation of macroeconomic stability, consistent fiscal consolidation, structural reforms, and relatively low interest rates gave a further strong boost to the profitable operation of corporates in 2018. The corporate sector continued to operate at a profit, recorded as of 2015, with the positive net result up by a third relative to 2017. Domestic and overall lending activity picked up. The reduction in average dinar and FX borrowing costs continued, with the exposure to the FX risk remaining high.

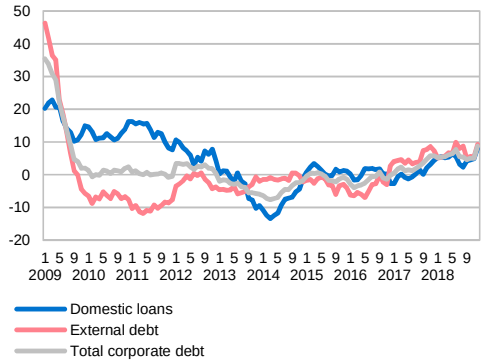
Domestic corporate loans[19] went up by 8.1% in 2018, excluding the exchange rate effect.[20] Banks wrote off corporate NPLs worth RSD 21.4 bn and sold NPLs worth RSD 34.7 bn to non-banking sector entities. Excluding the effect of NPL write-off and sale, in December y-o-y growth in corporate lending was 11.6%.[21] The growth in corporate lending against the backdrop of cleaning bank balance sheets from NPLs, which diminishes the stock of loans, confirms accelerated recovery of domestic lending activity. The highest absolute rise in receivables was registered in the sectors of mining, manufacturing and water management. An upturn was also recorded in: (a) trade, (b) transport and telecommunications, (c) real estate, scientific and catering activities, arts, entertainment and recreation. Observed by purpose, liquidity and current assets loans made up the bulk of new loans, followed by investment loans.

Corporate external debt stood at EUR 10.4 bn at end-2018, up by 11.6% from 2017. This rise, along with the increase in domestic corporate loans in the face of balance sheet clean-up, resulted in the rise in total corporate debt compared to the year before. Y-o-y growth in total corporate loans was 10.2% at end-2018, excluding the exchange rate effect. In calculating overall corporate lending activity, the amount of external debt was adjusted for intercompany loans.

The share of dinar corporate loans of 15.4% in December 2018 was lower by 2.1 pp than at end-2017. The structure of FX receivables was slightly changed compared to 2017. The share of euro receivables went up by 3.0 pp, while the share of receivables in dollars, Swiss francs and other currencies fell by 0.6 pp, 0.2 pp and 0.1 pp, respectively. Given the high share of FX debt in total corporate debt, the corporates' exposure to the exchange rate risk remained high.

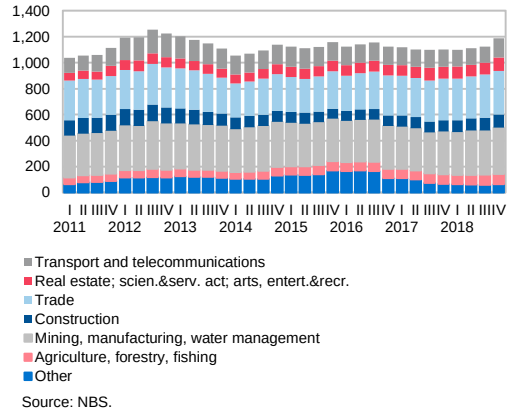
In terms of maturity, long-term receivables were dominant, with a share of 76.3%, which suggests a low refinancing risk. These receivables also increased slightly (by 1.4 pp) from 2017.

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



* Excluding the exchange rate effect.
Source: NBS.

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



Source: NBS.

[19] The corporate sector includes companies, public enterprises and a part of the other clients sector relating to legal persons and clients engaged in social activities not financed from the budget, and other legal persons – non-financial sector in bankruptcy.

[20] 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 the purpose of monitoring the implementation of the last IMF arrangement), according to the currency composition of loan receivables.

[21] Excluding the effect of NPL write-off and sale since the start of 2016. As at December 2018, banks wrote off corporate NPLs worth RSD 135.6 bn and sold RSD 86.7 bn which were in their balance sheets at the time.

In 2018, corporates[22] recorded a higher net financial result[23] than in 2017 (RSD 500 bn vs. RSD 374 bn). Their ROE[24] stood at 9.1% (vs. 7.5% in 2017) (Chart I.5.4). The sectors of mining, manufacturing and water management saw the highest profitability in 2018, with the ROE of 14.8%. Much higher profitability than in the year before was recorded by the sectors of construction (5.2% in 2018), transport and telecommunications, real estate, scientific and service activities, while the sector of agriculture had a negative rate of return. In terms of the enterprise size, large, medium-sized and small enterprises continued to operate at a profit in 2018 (Chart I.5.5). Unlike 2017, the profitability of microenterprises was in the positive zone. Medium-sized enterprises recorded the highest rate of return in 2018 (11.2%).

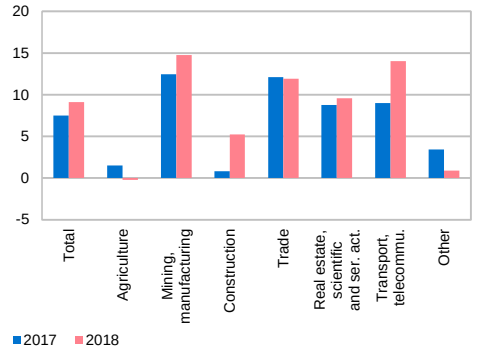
The NPL share in total loans to public enterprises and companies fell by 5.4 pp y-o-y, to 5.0% in December 2018. Similarly, the NPL share in total loans to companies went down by 5.6 pp to 5.2% at end-December 2018. The reduction in the NPL ratio was seen among public enterprises as well (by 2.6 pp to 3.5%). The NPL ratio declined in all sectors and is currently at historical lows.

Since August 2015, when the NPL Resolution Strategy was adopted, the largest drop in the corporate NPL ratio was recorded in the following sectors: (a) construction, (b) real estate, scientific and catering activities, arts, entertainment and recreation and (c) trade – by 37.4 pp, 28.0 pp and 21.6 pp, respectively, of which in 2018 alone this reduction equalled 5.2 pp, 6.6 pp and 4.1 pp.

In terms of the currency structure, the y-o-y reduction in the NPL ratio was smaller for FX than for dinar loans (5.5 pp vs. 6.6 pp).

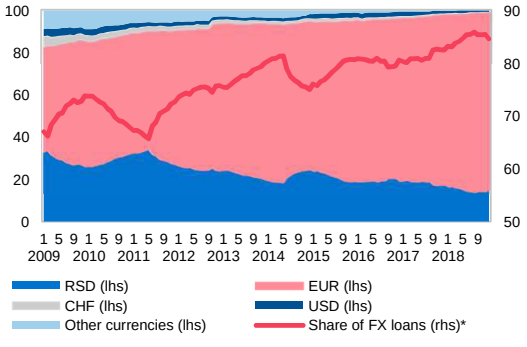
The decline in the NPL ratio in 2018 reflects the NBS regulatory activities envisaged by the NPL Resolution Strategy and the Decision on the Accounting Write-off of Bank Balance Sheet Assets. The Decision stipulates an

Chart I.5.4 **Corporates' return on equity (post-tax) by selected sectors**
(%)



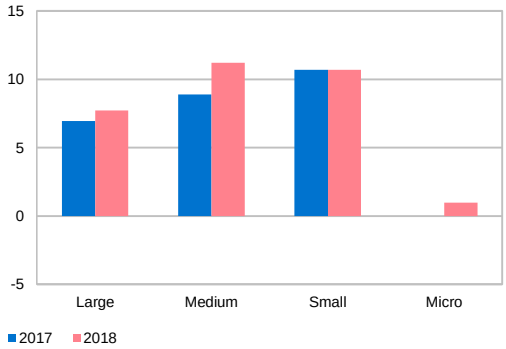
Source: Business Registers Agency.

Chart I.5.3 **Currency structure of domestic corporate loans**
(%)



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

Chart I.5.5 **Corporates' return on equity (post-tax) by size**
(%)



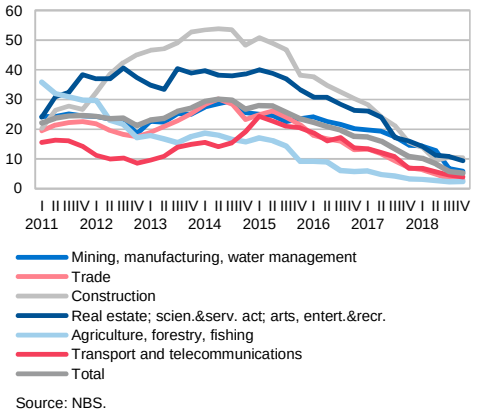
Source: Business Registers Agency.

[22] According to data of the Business Registers Agency.

[23] In calculating ROE, the amount of capital minus the amount of losses above the level of capital was used.

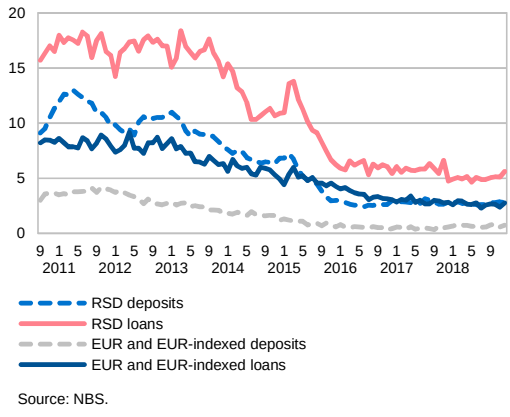
[24] According to the Classification of Activities, with the exception of the following sectors: financial and insurance activities, public administration and defence, compulsory social security and activities of extraterritorial organisations and bodies.

Chart I.5.6 **NPL share in total loans of corporates, by sector**
(%)



Source: NBS.

Chart I.5.8 **Interest rates on corporate loans and deposits – new business**
(weighted average, annual, %)



Source: NBS.

obligation for banks to carry out the accounting write-off of an NPL if allowances for impairment equal 100% of its gross book value. Elevated corporate lending also contributed to the drop in the NPL ratio.

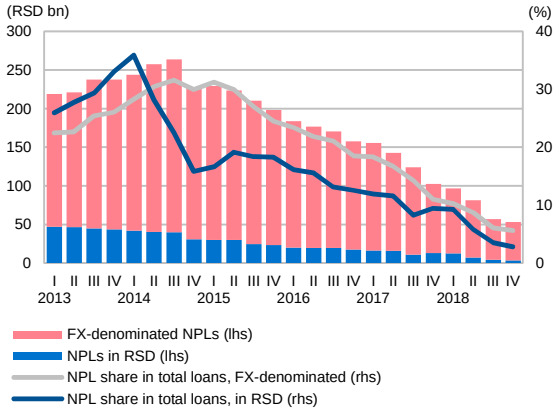
The costs of corporate sector borrowing continued down in 2018 in the segment of FX loans, while dinar loans went up. At year-end, the weighted average rate on new dinar loans stood at 5.62%, up by 0.87 pp y-o-y. Weighted average rates on new euro loans fell from 2.81% to 2.75%, primarily due to the continued monetary accommodation by the ECB, higher interbank competition and a lower country risk premium.

Despite the considerable lowering of NPLs, at end-2018 the accounts of 55,658 corporates were blocked, up by 4.8% relative to 2017. The lingering problems with illiquidity and reduced solvency of the corporate sector are indicated by the continued rise in the amount by which the accounts are blocked, equalling RSD 282.6 bn in 2018, up by 0.39% from 2017.

In 2018, the NBS Enforced Collection received from commercial courts 465 decisions to initiate bankruptcy proceedings against debtors (up by 61 from 2017), and 343 decisions to close bankruptcy proceedings (up by 77 from 2017). It also received seven decisions to suspend bankruptcy proceedings (18 in 2017), 37 decisions to suspend bankruptcy proceedings due to the sale of the bankruptcy debtor (44 in 2017), 95 decisions to initiate preliminary bankruptcy proceedings with security measures (156 in 2017), and 30 decisions to adopt prepack reorganisation plans (33 in 2017).

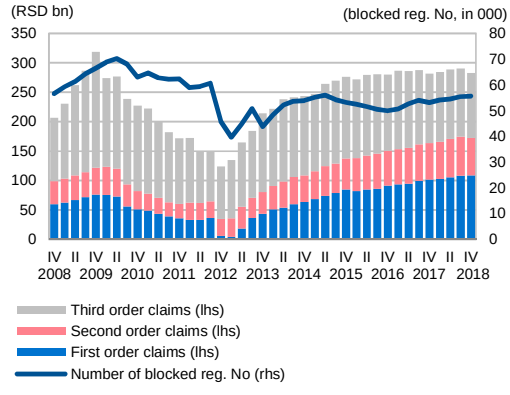
In 2018, several laws were adopted to enhance the environment conducive to investment, job creation and economic growth.

Chart I.5.7 **Corporate NPLs by currency**



Source: NBS.

Chart I.5.9 **Movement of claims through enforced collection by priorities**



Source: NBS.

The Law on Financial Collateral (RS Official Gazette, No 44/18) transposes Directive 2002/47/EC on financial collateral arrangements. The Law lays down the conditions and manner of providing specific security for the performance of financial obligations subject to financial collateral arrangements. The scope of this Law is to achieve and improve the legal certainty and efficiency relating to the performance of obligations in the financial market in order to preserve and strengthen the stability of the financial system. The NBS oversees whether the entities subject to supervision implement the provisions of this Law and separate laws which regulate its supervisory powers.

The Law Amending the Law on Bankruptcy (RS Official Gazette, No 44/18) was also adopted, in order to ensure the implementation of the Law on Financial Collateral.

The Law on the Protection of Financial Service Consumers in Distance Contracts (RS Official Gazette, No 44/18) regulates the rights of financial service consumers in negotiating distance contracts on the provision of financial services by using means of distance communication, as well as the terms and manner of exercising and protecting those rights. This Law transposes Directive 2002/65/EC concerning the distance marketing of consumer financial services. The NBS supervises the implementation of the provisions of this Law relating to distance contracts in respect of financial services provided by banks, lessors, insurance undertakings, voluntary pension fund management companies, payment institutions, e-money institutions and the public postal operator – in accordance with laws governing the business operations of these legal persons, the law governing the status, organisation, powers and tasks of the NBS and the law governing the protection of financial service consumers. In addition to natural persons in the narrow sense, the Law also applies to farmers and entrepreneurs.

The Law Amending the Law on Investment (RS Official Gazette, Nos 89/2015 and 95/2018) aims to improve the investment environment in the country and encourage direct investment in order to bolster economic development and job creation. The Law upgrades the legal framework for investment, defines investment support entities ensuring efficient provision of services to investors, and regulates the establishment and operation of the Economic Development Council and the Development Agency of Serbia.

The Law on Companies was amended twice (RS Official Gazette, Nos 44/18 and 95/18), introducing new legal forms of companies and regulating the status of a European company (SE) and the European Economic Interest Grouping (EEIG). It also regulates cross-border merger of companies incorporated in the Republic of Serbia with those in EU member states – these provisions will apply as of January 2022. To improve the protection of rights of minority company members, the legislator changed the deadline for publishing the notification on the concluded legal transaction, i.e. legal transaction undertaken with a personal interest. The Law also envisages the measure of temporary limitation of the right to discharge the function of a director, supervisory board member, representative or procurator in a one-year period in the complaint procedure. In addition, to eliminate any dilemmas and avoid different interpretations in practice, when entering into legal transactions, i.e. undertaking legal transactions by companies – courts, government authorities and other legal entities subject to public and private law cannot give objections as to the non-use of stamps and these objections cannot be used as the reasons for the cancellation, termination, i.e. invalidity of the concluded/undertaken legal transaction even in the case when a company's internal acts stipulate that the company has and uses the stamp.

The Law Amending the Law on Corporate Profit Tax (RS Official Gazette, No 95/18) simplifies the method of calculating depreciation recognised as expenditure in the tax balance sheet of the entrepreneur, for tax purposes. Starting from 1 January 2019, depreciation is calculated by applying the proportional method, not only for real estate, but also for other fixed assets subject to depreciation and classified into depreciation groups.[25]

The Law Amending the Law on Personal Income Tax (RS Official Gazette, No 95/18):

– regulates the tax treatment of the revenue recorded by a natural person from the provision of catering services;

– regulates the tax treatment of the revenue recorded by a natural person – employee based on the programme of participation of employees in investment;

– regulates the tax treatment of the revenue of a natural person in the event of a write-off of the remaining part of bank's loan receivables when a loan to the natural person is not collected in entirety, but the bank agreed with the client to regulate the remaining debt, i.e. write it off in the manner agreed in out-of-court settlement;

[25] https://www.paragraf.rs/dnevne-vesti/271118/271118-vest8.html.

– introduces a tax exemption for solidarity aid for the birth of a child up to the average wage in the Republic.

The main rationale behind the amended Law is curbing the grey economy, finding a systemic solution for more efficient tackling of illegal work of natural persons that provide accommodation services. With this aim, the tax treatment of revenue recorded by a natural person from the provision of catering services in a handicraft business facility and a village tourist household facility is regulated. The regulation of the tax treatment of the above types of revenue should create favourable taxation conditions in order to encourage the entities subject to the Law to legalise their operation in this area. Positive effects on the revenue of local self-government units are also expected.

The Law Amending the Law on Factoring (RS Official Gazette, No 30/18) defines the necessary documentation submitted to the Ministry of Finance, along with the request to issue approvals for factoring business.

The Law Amending the Law on Foreign Exchange Operations (RS Official Gazette, No 30/2018) fully liberalises resident investment in short-term securities of issuers from the EU, and investment of non-residents with permanent/temporary residence in EU member states in short-term securities in Serbia, in accordance with the commitments under the Stabilisation and Association Agreement between the European Communities and their Member States on the one hand, and the Republic of Serbia on the other. To ensure free capital movement concerning financial loans with the maturity shorter than a year, the Law contains the provision stipulating that residents – natural persons and branches of foreign legal persons can borrow on short term from a non-resident creditor with permanent/temporary residence in EU member states. The Law abolishes the earlier requirement of majority ownership for the approval of financial loans to non-residents and granting of collateral under credit operations between two non-residents and prescribes that resident legal person may approve financial loans to non-resident borrower and provide warranties and other collateral under foreign credit operations and credit operations between non-residents under the terms and conditions prescribed by the NBS. These activities can be limited for the purpose of protecting public interest and/or preserving financial stability.

In addition to ensuring harmonisation of the domestic legal framework with EU law, the above laws improve the business environment and help encourage economic growth.

I.6 Household sector

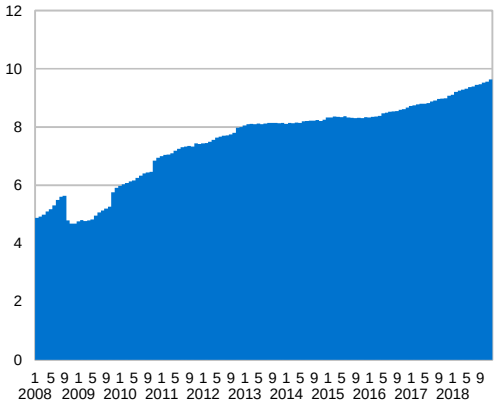
The NBS's monetary policy easing, continued monetary policy accommodation by the ECB, increased competition among banks and Serbia's lower country risk premium were conducive to a decline in the cost of household borrowing. The sustained recovery of the labour market, where the lowest unemplyoment rate was recorded, and increased wages contributed to growth in household consumption. Dinar savings rose significantly, reflecting bolstered confidence in the local currency. On the other hand, interest rate risk associated with the potential increase in reference interest rates of leading central banks remains a source of risk to the household sector in the medium term. At the end of the year, the NBS adopted regulatory measures to prevent the occurrence of new NPLs in the banking system and thereby maintain financial stability. This was the NBS's response to the increasingly recurrent approval of unsecured non-purpose loans to households at unreasonably long maturities.

In an environment of strong economic growth, low and stable inflation, relative stability of the exchange rate and excellent results of fiscal policy, the household sector saw positive trends: rising employment, with unemployment declining to its lowest levels, a further rise in savings and higher average wages in all economic activities. According to the Labour Force Survey, unemployment rate declined further in 2018, to 12.7%, or 0.8 pp lower than a year earlier. The average monthly net wage in 2018 in the Republic of Serbia equalled RSD 49,650, having risen 6.5% in nominal and 4.4% in real terms, compared to 2017.[26] The average pension equalled RSD 25.317, which is a nominal increase of 5.9% from the previous year.[27] Results of the Household Budget Survey show that personal consumption of Serbian households in 2018 amounted to RSD 64,481, up by 3.5% in nominal terms. The structure of consumption remained unchanged, hence the majority of expenses were related to food and non-alcoholic beverages (34.3%) and dwelling, water, electricity, gas and other fuels supply (16.7%). As household income grew faster than expenses, total

[26] Source: SORS.

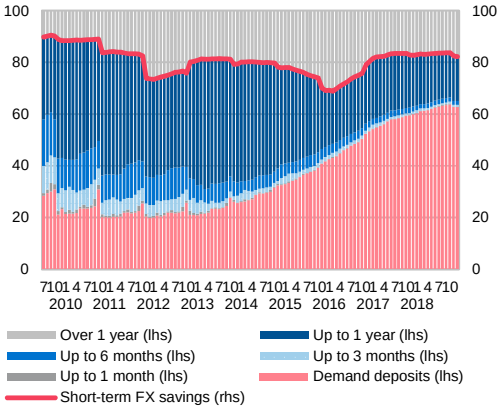
[27] Source: Pension and Disability Insurance Fund of the Republic of Serbia.

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



Source: NBS.

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



Source: NBS.

household savings continued up, strengthening the deposit base of the banking sector as the main source for lending activity. FX savings came at EUR 9.6 bn, up by EUR 574.1 mn in 2018 (Chart I.6.1).

In the course of 2018, the government paid out a total of EUR 11.5 mn to cover public debt obligations in respect of frozen FX savings bonds.[28] Since the start of the redemption of these bonds in 2002 until end-2018, a total of EUR 3,645.80 mn was paid out. The Law on the Settlement of the Public Debt of the Republic of Serbia Arising from Unpaid Foreign Exchange Savings of Citizens Deposited with Banks Having Their Head Office in the Territory of the Republic of Serbia and Their Branches in the Territories of Former SFRY Republics entered into force on 30 December 2016. The obligation of the Republic of Serbia in respect of unpaid FX savings under this Law equals maximum EUR 310 mn and will constitute the public debt of the Republic of Serbia on the day of the issuance of bonds for the settlement of these obligations. Obligations to persons that are eligible under this Law to receive the payment will be executed in 10 equal semi-annual instalments, starting from 31 August 2019 and ending with 29 February 2024.

In 2018, the maturity structure of FX savings changed slightly in favour of long-term savings, whose share in total FX savings increased by 0.4 pp to 17.7% (Chart I.6.2).

Promoting savings in the local currency and emphasizing their higher profitability is a part of the NBS strategy of dinarisation of the financial system. This bolsters financial stability given that a higher degree of dinarisation of the financial system ensures greater resilience to the risk of exchange rate volatility and impacts from the international environment. Dinar household savings displayed a positive growth trend during 2018 and equalled RSD 60.46 bn at year-end, up by RSD 10.97 bn relative to end-2017. When observed over a longer time span, dinar savings posted an evident increase, hence it may be concluded that citizens' confidence in saving in domestic currency is on the rise. This came as a result of low and stable inflation, relatively stable EUR/RSD exchange rate, as well as higher interest rates and more favourable tax policy on dinar vs FX savings.[29]

In December 2018, the NBS and the Serbian Government adopted a new Memorandum on the Strategy of Dinarisation of the Serbian Financial System,[30] bearing in mind the achieved macroeconomic stability and bolstered financial stability in the period prior to the signing of the 2012 Memorandum on the Strategy of Dinarisation of the Serbian Financial System. The goal of the Strategy is to encourage greater use of the dinar and reduce FX risk in the financial system, thus helping to strengthen the country's financial stability.

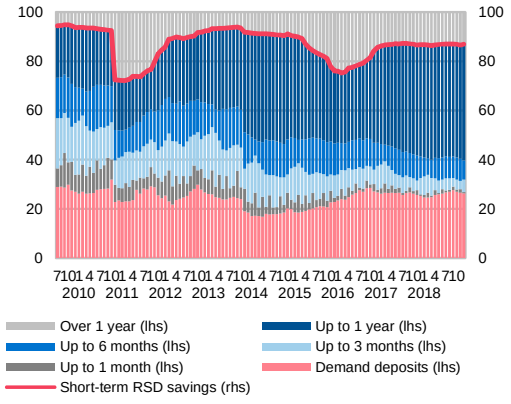
Chart I.6.3 shows that the maturity structure of dinar savings in 2018 was almost unchanged, hence the share of long-term in total dinar savings edged down slightly, from 13.3% at end-2017 to 13.1% at end-2018.

[28] Bonds of the Federal Republic of Yugoslavia (FRY) and the Republic of Serbia issued in order to settle the FRY's public debt in respect of FX household savings and contracts on FX household deposits termed with Dafiment bank ad Belgrade, undergoing liquidation, and FX household balances deposited with Banka privatne privrede Montenegro DD Podgorica.

[29] Interest income is subject to a 15% tax rate in case of FX savings and is tax-exempt for dinar savings.

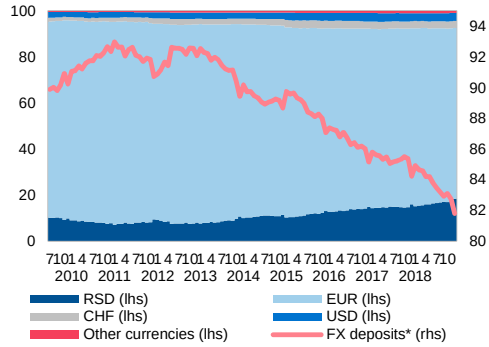
[30] https://www.nbs.rs/internet/english/30/Memorandum_Dinarisation_Strategy_2018.pdf

Chart I.6.3 **RSD 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.

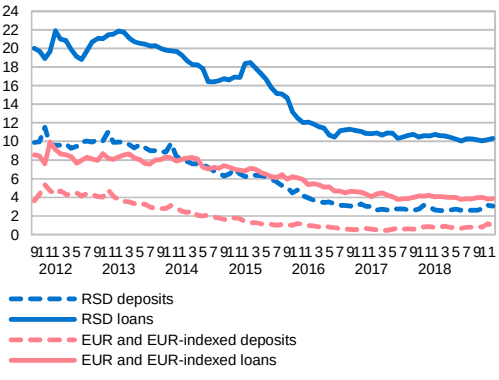
What is positive in terms of financial stability is that, relative to end-2017, the share of FX deposits in total household deposits declined by 2.4 pp to 81.8% at end-2018. Though euro deposits still account for the bulk of deposits (74.5%), their share is 2.2 pp lower than last year. At end-2018, the share of dollar and Swiss franc deposits was low and amounted to 3.6% and 3.0%, respectively (Chart I.6.4).

Monetary policy easing that brought about a reduction in dinar interest rates, low rates in the international money market and higher interbank competition contributed to the continued decline in household borrowing costs in 2018. The cost of dinar borrowing of the household sector declined by 0.24 pp to 10.34%. In the same period, interest rates on new euro and euro-indexed loans dropped by 0.34 pp to 3.87%. However, interest rates on savings were not reduced. At end-2018, interest rates on dinar household deposits were almost at the same level as at end-2017. Interest rates on euro household deposits were slightly higher, though still close to the lowest level recorded since the current interest rate statistics was introduced (Chart I.6.5).

Although household borrowing is low, the anticipated turn in the ECB's monetary policy stance in the medium term poses a risk, which is particularly pronounced with long-term housing loans approved at a variable interest rate.

The volume of new household loans in 2018 rose by 8.4% from 2017 as a result of favourable trends in the labour market and a decline in interest rates. Cash loans were the dominant type, accounting for as much as 59.2% of total new loans in 2018. Also, a significant amount of new

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



Source: NBS.

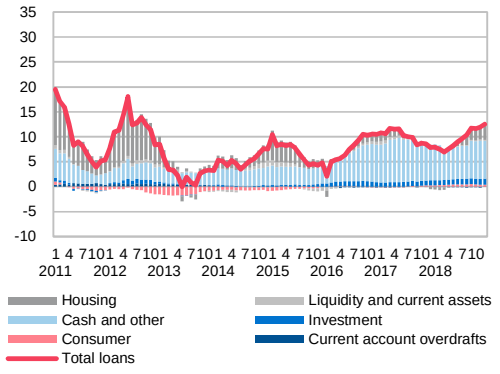
lending were housing loans, whose share in new household loans equalled 16.5% in 2018.

Total receivables[31] from the household sector at end-2018 rose 12.5% in nominal terms relative to a year earlier (Chart I.6.6). Broken down by purpose, the highest contribution to nominal growth in household receivables came from the rise in cash loans (7.0 pp). Consumer and investment loans were also conducive to growth (3.1 pp and 1.2 pp respectively), as were liquidity and current assets loans[32] and consumer loans (0.3 pp and 0.4 pp respectively). Excluding the exchange rate effect,[33] total household loans increased by 12.5% from 2017.

At end-2018, the total number of housing loans amounted to 124,020 worth RSD 383.9 bn, accounting

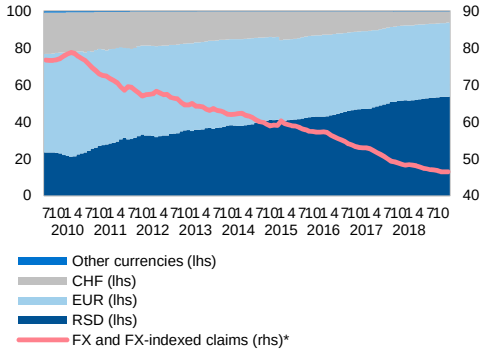
[31] Receivables include loans, securities, interests, fees and other receivables.

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



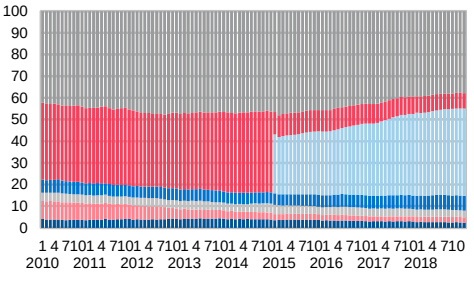
Source: NBS.

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.

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.

for 37.7% of all receivables. The share of cash loans increased by 2 pp during the year, which was lower than in 2017 (5 pp), hence their share at end-2018 equalled 40.3% (Chart I.6.7).

Around 73% of new household loans were dinar loans, much as a result of NBS regulations[34] which favour borrowing in dinars. Considering the prevalence of dinar loans to households, the increase in the share of banks' dinar receivables in total receivables due from households continued into 2018. Relative to end-2017, the share of dinar receivables in total household receivables rose by 1.8 pp to 53.6% (Chart I.6.8).

The growth of dinar loans can be attributed to the increase in cash household loans, since they are almost fully approved in dinars. The share of banks' dinar household receivables in 2018 (53.6%) was higher than the share of FX-indexed receivables (46.4%), where euro-receivables were dominant (40.3%). At the same time, the share of receivables indexed to the Swiss franc dipped by 1.6 pp from end-2017 and came at 6.1%.

Consistent implementation of the NPL Resolution Strategy continued to yield positive results in 2018, leading to a further decline in household NPLs. Their share in total loans to the household sector was also decreased due to the contraction in NPLs, as well as to increased household lending.

The share of NPLs in total household loans was 4.44% in December 2018, down by 1.46 pp from end-2017. Relative to a year earlier, the share of housing NPLs declined 1.59 pp to 4.57% at end-2018. The NPL ratio of Swiss franc-indexed housing loans, though lower by 4.26 pp from 2017, and equalling 15.57%, was higher than the NPL ratio of euro-indexed housing loans (2.39%).

As for Swiss franc-indexed NPLs, a gradual decrease in their share can, among other, be attributed to a special decision adopted by the NBS in February 2015[35] to help citizens overcome the difficulties in repaying Swiss franc-indexed loans. Under this decision, banks are required to offer modalities for changing loan repayment terms to users of Swiss franc-indexed loans.

[32] Investment loans and liquidity and current assets loans relate to loans approved to entrepreneurs that are shown within the household sector.

[33] 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 latest arrangement with the IMF), taking into account the currency structure of loan receivables.

[34] Decision on Measures for Safeguarding and Strengthening Stability of the Financial System (RS Official Gazette, No 34/2011).

The fact that the bulk of housing loans (78.6%) is ensured with the National Mortgage Insurance Corporation exerts a positive effect on financial system stability. At end-2018, the number of insured loans reached 97,513 (up by 4,700 from end-2017). The initially insured amount is EUR 3.58 bn, of which EUR 2.57 bn is outstanding. At the end of 2018, the Corporation portfolio contained 1,152 past due loans worth EUR 55.66 mn. These loans were declared due because of events of default, and until mortgaged property is sold, the Corporation is the one paying the annuities. Compared to 2017, in 2018 the number of these loans decreased by 70, while the amount of insured past due loans decreased by EUR 3.18 mn. Since the Corporation began to operate, 412 mortgages under insured housing loans were foreclosed. In 2018 alone, 124 mortgages were enforced, of which 87 under Swiss franc-indexed loans.[36] The share of insured housing loans declared due because of events of default, where the Corporation pays the annuities, was still significantly below the share of housing NPLs, which means that the risk of deterioration of the degree of collectibility is relatively low.

In December 2018, the NBS adopted a set of regulatory measures which, inter alia, aim to prevent the occurrence of new NPLs in the banking system and to ward off the negative consequences on financial stability and citizens, which can be caused by risks typically associated with non-purpose loans to households approved for terms that are not synchronised with the risk entailed by this product type and by the creditworthiness of each individual borrower.[37]

The table below contains the main indicators for the household sector for the period 2010–2018.

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

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Bank claims on households									
RSD bn	571.2	601.7	652.7	673.7	724.6	759.1	838.7	904.2	1,017.3
EUR mn	5,414.3	5,750.5	5,739.5	5,876.2	5,990.6	6,240.9	6,802.8	7,589.7	8,606.9
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
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
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
FX to total deposits[1]	92.4	90.7	92.1	89.4	88.7	87.1	85.1	84.2	81.8
FX deposits to FX bank claims[1]	177.2	191.2	214.7	223.3	233.4	233.9	240.9	246.2	241.3
LTV ratio[2]	65.4	65.6	65.7	65.9	65.8	68.5	70.2	70.2	71.0
Average loan per resident									
RSD thousand	76.0	81.0	88.2	91.4	100.4	105.9	118.5	125.0	144.5
EUR	720.6	773.9	775.7	797.3	830.3	870.4	959.9	1,034.1	1,222.8
Average loan amount									
RSD thousand	427.6	439.6	460.4	489.9	511.1	472.2	488.7	472.3	516.3
EUR	4,052.8	4,201.4	4,049.0	4,273.1	4,225.3	3,882.5	3,957.6	3,908.0	4,368.4
Average loan per user									
RSD thousand	509.0	530.9	570.1	612.0	644.7	614.6	641.0	631.5	701.7
EUR	4,824.9	5,073.9	5,012.9	5,338.8	5,329.8	5,053.1	5,191.4	5,225.4	5,936.6

[1] FX claims and deposits include FX-indexed claims and deposits.
[2] For housing loans insured with the National Mortgage Insurance Corporation.
Sources: SORS, ASB, National Mortgage Insurance Corporation and NBS.

[35] Decision on Measures for Preserving Stability of the Financial System in the Context of Foreign Currency-Indexed Loans (RS Official Gazette, Nos 21/2015 and 51/2015).

[36] Data of the National Mortgage Insurance Corporation.

[37] https://www.nbs.rs/internet/latinica/scripts/showContent.html?id=13706&konverzija=yes

Text box 1: Ten years after the global financial crisis

At the very beginning of the 21st century, the bankruptcy of the fourth largest American investment bank – Lehman Brothers, marked the outbreak of the global financial crisis, a phenomenon unprecedented since the Great Depression of the 1930s. Among numerous underlying causes, one of the most important was the prevalence of subprime mortgages, which created a speculative bubble in the US real estate market.

At the start of the new century, the Fed pursued an accommodative monetary policy, keeping the federal funds rate at its multi-decade minimum in 2003 and 2004. Low investment yields led to the development of a subprime mortgage market. Underestimating the risk of these loans, banks reduced risk premia, giving tailwinds to the subprime market. The loans were approved without adequate proofs on client employment, income or property. Chasing additional yield, banks also securitised these loans, turning them into mortgage-backed securities which they further sold to interested investors. This is clearly evidenced by the fact that the value of financial derivatives trading expanded multiple times.[38] The problem of asymmetric information and moral hazard also emerged in this period. Namely, in order to boost their yields, banks approved loans of low collectibility and financial intermediaries participated in further sale of these bonds. Among other things, rating agencies looked favourably on the issuers, assigning the highest investment ratings to such bonds. While real estate prices went up, mortgage sales sufficed to cover the costs of these securities and of financial intermediaries. However, as the Fed embarked on a rate hike cycle in the second half of 2004, ending in 2006 when the federal funds rate reached its maximum, the prices went up, and so did the non-performing receivables. Hence, the servicing of issued bonds was also put into question. The number of mortgage foreclosures increased, triggering a rise in the supply and consequently a fall in the prices of real estate. Due to the Fed's and US Treasury's decision not to guarantee for Lehman Brothers' liabilities toward their creditors, the bank went bankrupt, despite its excellent investment ranking up to that point. The collapse of such a bank sent waves of panic across the financial markets, entailing numerous consequences: distrust among market participants, bankruptcy of other large banks, sharp contraction in lending and crisis spillover into the real sector. This in turn triggered a recession in the US, which quickly spilled over to the European financial sector, since it was European banks that were exposed to these bonds. One of the Fed's first responses to the crisis and the new situation was the introduction of the so-called Troubled Asset Relief Program which, among other, assumed bank recapitalisation in order to prevent the collapse of the financial system. However, the crisis of such scale called for more far-reaching measures aimed at rebuilding public trust in the overall financial system.[39]

Given the integration of the domestic market in global economic flows, the Republic of Serbia felt the indirect effects of the crisis. However, as opposed to large and developed financial systems, the balance sheets of the domestic banking sector contained no assets related to the US mortgage market and suffered no losses on that account. Nevertheless, the impact of the crisis materialised in the form of a sudden stop to capital flows to the region of Central, East and South-East Europe and a sharp contraction in international trade, which put strong depreciation pressures on national currencies. Due to the change in investor expectations and impact of psychological factors, these countries faced the flight of FX-deposits and higher cost of financing.

Ten years after the crisis the question arises as to whether such a scenario could repeat. The majority of economists have no doubt that it could, and they are focused only on the question as to what extent the scope and duration of potential new crises could be moderated. One fact cannot be denied – the importance of safeguarding financial stability has been recognised at the international level. One[40] of the most important responses to the global financial crisis is the defining of the Basel III regulatory standard, introducing new macroprudential policy tools – capital buffers. Capital buffers shift the focus from the stability of individual institutions to the preservation of the stability of the financial system as a whole. One of the novelties brought by Basel III are the minimum liquidity and leverage criteria, aimed at ensuring adequate liquidity in case of financial shocks and determination of the general measure of risk, without taking into account risk-weighted assets, which did not always prove as an adequate measure of asset risk during the crisis. The

[38] https://www.bis.org/press/p090519.htm

[39] See: https://www.federalreserve.gov/supervisionreg/tarpinfo.htm

[40] See: https://www.bankofengland.co.uk/-/media/boe/files/speech/2018/true-finance-ten-years-after-the-financial-crisis-speech-by-mark-carney.pdf..

problem which surfaced during the crisis, relating to the resolution of systemically important entities ("too big to fail"), was addressed by the requirement of the Financial Stability Board (FSB[41]) for countries to introduce the Key Attributes of Effective Resolution Regime for Financial Institutions into their legislation. Legislating of those attributes should enable competent authorities to efficiently resolve financial institutions, without incurring costs to the taxpayers, while maintaining the continuity of critical functions of those institutions. The FSB also adopted the standard regarding the total loss-absorbing capacity (TLAC),[42] assuming that systemically important institutions must have a certain capacity to cover the losses that would ensure their business continuity in case of resolution, without jeopardising public finance and financial stability. The lack of transparency in the over-the-counter market, one of the causes of the crisis, was addressed at the EU level by adoption of the European Market Infrastructure Regulation (EMIR).[43] This regulation reduced the risks in derivatives trading, primarily by setting the mandatory terms of trading between counterparties and the requirements regarding transparent reporting to the supervisory authority. Basel III also tried to address the problem of shadow banking, as an important factor conducive to the crisis, by raising capital requirements for banks exposed to shadow banking entities. The domestic regulatory framework is aligned with the banking regulations in the EU. As of 30 June 2017, banking in Serbia is governed by Basel III-aligned domestic regulations.[44]

The mounting of countries' public debt in the post-crisis period, coupled with low interest rate policy of leading central banks, significantly narrowed the manoeuvring space for the adequate response of fiscal and monetary authorities to a potential crisis. The imposed regulatory requirements oblige banks to rely more on core capital than on debt in terms of financing, which strengthened the capital base globally. Also, banks have become subject to regular stress testing in order to assess the impact of potential risks on the financial system in case of materialisation of adverse events. Despite conservative regulations in the financial sector, introduced in response to the crisis, a low interest rate environment has again sparked real estate demand and put upward pressures on prices, suggesting that the next crisis might again originate in the real estate market, same as ten years ago. Given the potential implications for financial system stability, it is critical that the movements in the real estate market be monitored carefully. One of the ways to mitigate these risks are macroprudential measures aimed at limiting debt-to-income ratio, and/or loan-to-value ratio.

Due to these risks, in addition to the primary objective – achieving and maintaining of price stability, central banks also adopted the objective of achieving and maintaining financial stability, which is becoming equally important as the stability of prices. The precondition for sustainable economic growth is a robust and sound financial system, which, along with the alignment of different policies and measures and timely and efficient exchange of data and information in the area of financial stability – remains an imperative for the period ahead.

[41] The FSB is an international body which monitors and proposes actions regarding the global financial system.

[42] See: Financial Stability Board (2015) Principles on Loss-absorbing and Recapitalisation Capacity of G-SIBs in Resolution, Total Loss-absorbing Capacity (TLAC) Term Sheet

[43] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52017PC0331

[44] See: Annual Financial Stability Report – 2017

II Financial sector

Accounting for over 90% of financial sector assets, the banking sector of the Republic of Serbia remained highly capitalised and liquid in 2018. Domestic bank lending stepped up, boosted by both supply- and demand-side factors. Lending picked up despite write-offs, assignment and sale of receivables to non-banking sector entities resulting from continued bank efforts to resolve NPLs. At end-2018 the share of NPLs in total loans amounted to 5.7%, the lowest level since this indicator is monitored. A decrease in NPLs helped improve banks' portfolio quality and profitability. A better net financial result was posted in 2018 than the year before, with 2.2% RoA and 11.3% RoE.

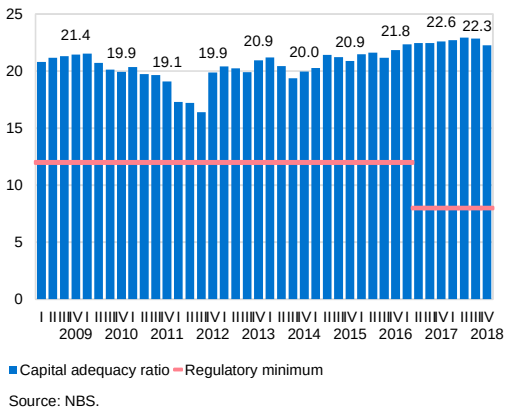
II.1 Banking sector

II.1.1 Capital adequacy

Throughout 2018 the Serbian banking sector was adequately capitalised, as confirmed by CARs which moved considerably above the prescribed regulatory minimum.[45] At end-2018 CAR stood at 22.3%. Owing to a strong capital base, high levels of Common Equity Tier 1 (CET 1) capital ratio (21.07%) and Tier 1 CAR (21.13%) were recorded. Capitalisation of the Serbian banking sector in 2018 was among the highest in the region.

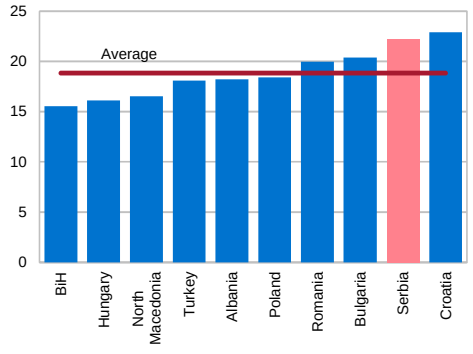
The higher increase in risk-weighted assets (as a consequence of the rise in lending) than in regulatory capital during 2018 brought CAR slightly down by 0.3 pp y-o-y. Regulatory capital rose by RSD 52.7 bn and amounted to RSD 537.1 bn at end-2018. The rise in regulatory capital was largely a result of the reduced

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



Source: NBS.

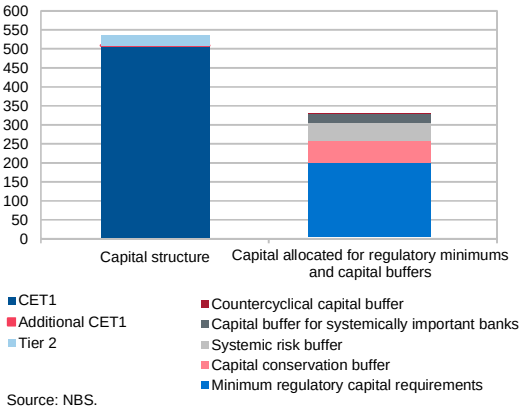
Chart II.1.2 **Regulatory capital to risk-weighted assets, countries of the region**
(2018, latest available data, %)



Sources: NBS and IMF.

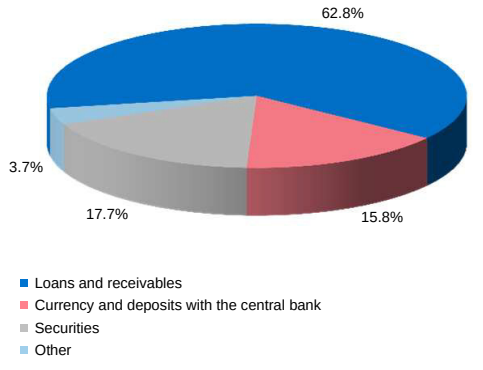
[45] As of 30 June 2017 Serbia applies the by-laws implementing Basel III standards. One of them is the Decision on Capital Adequacy of Banks (RS Official Gazette, Nos 103/2016 and 103/2018) which defines two new indicators in addition to CAR: Common Equity Tier 1 (CET 1) capital ratio and Tier 1 capital ratio.

Chart II.1.3 **Structure of regulatory capital and capital buffers**
(2018 eop, RSD bn)



Source: NBS.

Chart II.1.4 **Structure of assets of the Serbian banking sector**



Source: NBS.

regulatory loan loss provisions (RSD 28.3 bn), as a deduction from CET 1 which rose by RSD 46.7 bn to RSD 508.4 bn. In 2018 risk-weighted assets went up by RSD 270.3 bn to RSD 2,413.0 bn, largely on account of the rise in bank lending.

Judging by end-2018 reports, banks allocated RSD 129.9 bn worth of CET 1, or 5.4% of risk-weighted assets by means of the combined capital buffer[46]. The maintenance of capital buffers above the prescribed regulatory minimum increases bank resilience to losses, decreases excessive exposures and limits capital distribution in order to contain systemic risks in the financial system.

In view of the traditional bank business models, based on lending to corporates and households, in 2018 credit risk was the most dominant risk in the Serbian banking sector. Credit risk accounted for the largest share in capital requirements at the end of the year (85%), while the share of operational risk and market risk was smaller (13% and 2%, respectively).

II.1.2 Level, structure and quality of assets

At end-2018, net assets of the banking sector amounted to RSD 3,774 bn, or around 74.6% of GDP.

In terms of the ownership structure of the banking sector, the largest share was held by foreign-owned banks (75%), followed by state-owned banks (18%) and domestically-owned banks (7%).

Loans and receivables accounted for 62.8% of total net assets, reflecting bank business models oriented toward traditional credit-deposit activities. The remainder related to cash and deposits with the central bank (15.8%) and securities (17.7%), primarily securities of the Republic of Serbia.

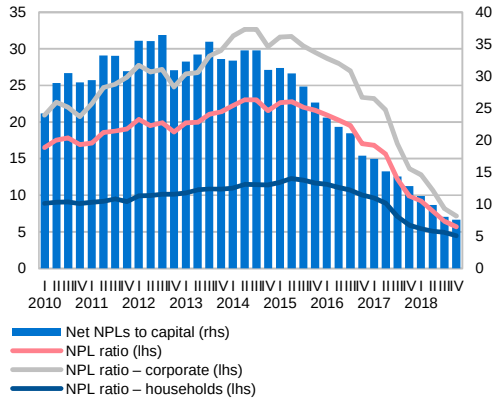
At end-2018, the credit portfolio was worth RSD 2,191 bn. The bulk of the portfolio related to corporate (around 50%) and household loans (around 45%). Total net corporate loans stood at RSD 1,087 bn, of which 87% was in foreign currency, i.e. 86% in euros. Total net household loans were worth RSD 976 bn, of which RSD 372 bn (38%) related to housing loans. The share of household loans in foreign currency was around 47%, i.e. the share of euro loans was around 41%.

As loans account for a dominant share of total balance sheet assets of the domestic banking sector, the NPL ratio is a significant measure of asset quality. In addition to NPL resolution efforts,[47] further fall in the NPL ratio was also aided by the rise in lending. At end-2018 the NPL ratio of the Serbian banking sector came at 5.7%, its lowest level since monitored and down by 16.7 pp since the adoption of the NPL Resolution Strategy. In y-o-y terms, NPL ratio was reduced by 4.2 pp. The y-o-y decrease is attributable

[46] The combined capital buffer consists of capital conservation buffer, countercyclical buffer, capital buffer for global systemically important banks, and capital buffer for systemic risk buffer. Capital buffers are stipulated, in line with Basel III standards, in the Decision on Capital Adequacy of Banks (RS Official Gazette, Nos 103/2016 and 103/2018) in effect since 30 June 2017.

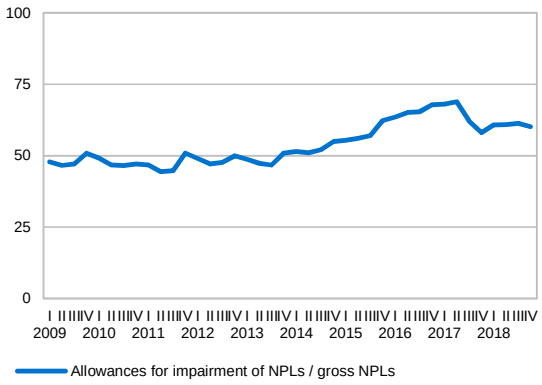
[47] Since August 2015 when the NPL Resolution Strategy was adopted, the NBS not only implemented all the activities envisaged under the accompanying NBS Action Plan, but also undertook many other measures not stipulated by the Plan and all of this resulted in the decrease in the NPL ratio to below the pre-crisis level. For more details on the undertaken measures see part IV.1.2 Possible regulatory measures to contain systemic risks, subtitle Non-Performing Loans.

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



Source: NBS.

Chart II.1.7 **NPL coverage**
(%)



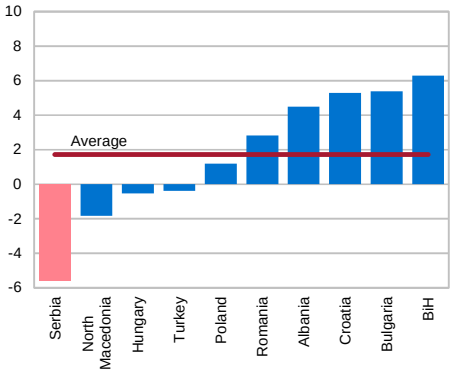
Source: NBS.

to the fact that total gross NPLs fell by 36.2% or RSD 74.3 bn, while total gross loans went up by 10.2% or RSD 212.8 bn. In 2018, RSD 36.0 bn worth of gross NPLs was written off and RSD 34.8 bn assigned/sold.

The share of NPLs in total loans to public non-financial sector and companies edged down by 5.4 pp, to 5.0% in December 2018. In terms of different loan categories, the share of NPLs in total loans to companies declined by 5.6 pp, to 5.2% at end-December. NPL ratio of the public non-financial sector also went down (by 2.6 pp, to 3.5%).

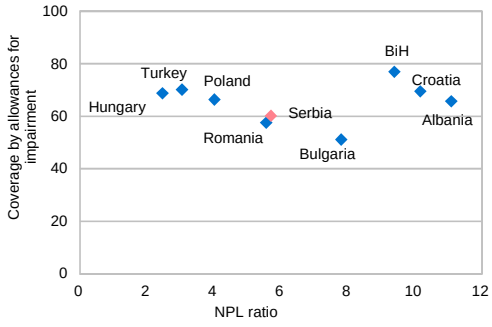
At end-2018, NPL share in total gross loans to households came at 4.4%, down by 1.5 pp relative to end-2017. In addition to the reduction in gross NPLs, the y-o-y drop in the ratio was also largely aided by the increase in total gross loans to households. NPLs to households went down by RSD 8.1 bn y-o-y (the dominant contribution to a decrease of around 54% came from housing construction). At end-2018, 60.2% of total NPLs were covered by allowances for impairment. A low share and satisfactory coverage of NPLs with allowances for 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. The banking sector would remain adequately capitalised even under the worst-case scenario.[48]

Chart II.1.6 **NPL ratio, countries of the region**
(2018 relative to 2008, pp)



Sources: NBS and IMF – GFSR.

Chart II.1.8 **Coverage of gross NPLs by allowances for impairment and NPL ratios, countries of the region**
(2018, latest available data, %)



Sources: NBS and IMF – GFSR.

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

II.1.3 Lending activity

The year 2018 saw a further recovery in lending, owing to both supply- and demand-side factors. Loan supply increased amid continued monetary policy easing in place since 2013, NPL resolution measures and activities undertaken by banks as a result of the NBS's regulatory activity and low interest rates in the international money market. Loan demand, on the other hand, rose on the back of favourable macroeconomic trends, especially those in the labour market.

Excluding the exchange rate effect[49], total domestic loans accelerated their y-o-y growth to 9.9% at end-2018. Lending activity of domestic banks accelerated in 2018 despite further bank NPL resolution efforts in the form of write-offs, assignment and sale to non-banking sector entities. Lending expanded largely on account of a considerable rise in domestic loans to corporates which, excluding the exchange rate effect, measured 8.1% y-o-y in December. Domestic household loans (excluding the exchange rate effect) also rose by 12.5% y-o-y. Cash loans accounted for around 59% of new loans. They were mainly approved in dinars, which mitigated the exchange rate risk to this segment of the loan market.

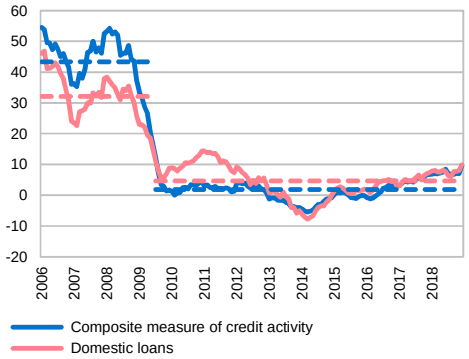
Excluding the NPL write-off and sale effect[50] and the exchange rate effect, the y-o-y rate of growth in total domestic loans, stood at 12.2% in December 2018. The growth rate for domestic loans to corporates was 11.6% and for loans to households 13.6%.

The domestic economy continues to borrow abroad in 2018. At end-2018 external debt recorded 11.6% y-o-y growth.

The results of the Bank Lending Survey indicate that corporate credit standards eased in 2018, due to pronounced competition in the banking sector and greater risk appetite. Credit standard easing is particularly pronounced in the SME segment. Also, owing to competition and lower costs of funding household credit standards were loosened in 2018. Corporate and household credit standards were more favourable in terms of lower interest margins and extended maturity, as well as less strict collateral requirements.

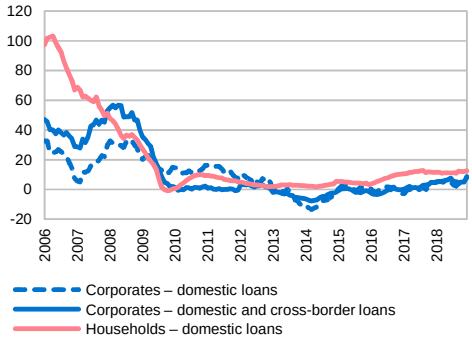
In 2018 corporate and household demand for loans went up. The corporate loan demand growth was mainly driven by SMEs, particularly by their demand for current asset loans and capital investment loans. Banks estimate that household demand for dinar consumer loans and FX housing loans went up, additionally underpinned by favourable conditions in the real estate market.

Chart II.1.9 **Credit activity***
(y-o-y growth rates, %)



* Excluding the exchange rate effect.
Source: NBS.

Chart II.1.10 **Corporates and households credit activity***
(y-o-y growth rates, %)



* Excluding the exchange rate effect.
Source: NBS.

[49] 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.

[50] The effect of write-off and sale of NPLs since early 2016 is excluded ending with December 2018.

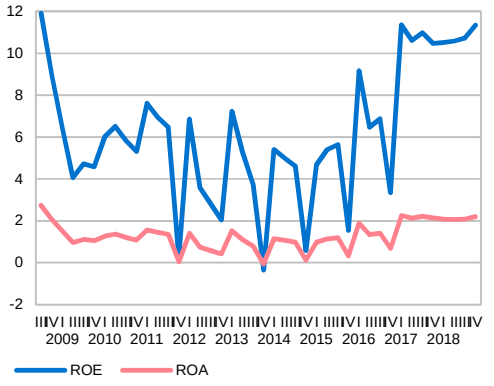
II.1.4 Profitability

The Serbian banking sector posted a positive financial result in 2018, better than in 2017. Return on assets was above the region's average, measuring 2.2%. On the other hand, 11.3% return on equity was below the region's average, as a result of high capitalisation of the domestic banking sector. The structure of profit, arising from net interest, fees and commissions, indicates that the business model of domestic banks is oriented to traditional banking.

In 2018, high profitability was recorded by domestic private banks, domestic state-owned banks and foreign banks from the EU, while foreign non-EU banks had somewhat lower profitability (Chart 2.1.13).

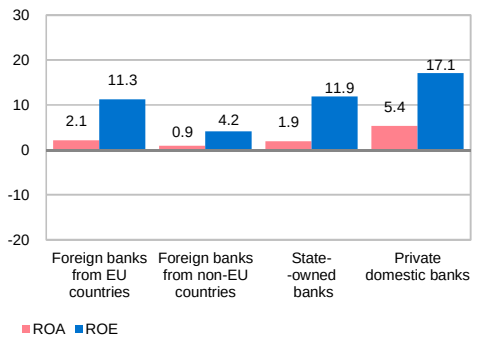
Banking sector net profit before tax amounted to RSD 75.5 bn in 2018, rising by RSD 7.0 bn from 2017.[51] Net profit before tax recorded in 2018 was the highest profit before tax since 2008. Total profit of RSD 76.7 bn was made by 25 banks (99.4% of banking sector net assets), while two banks recorded financial result totalling RSD 0.9 bn.

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



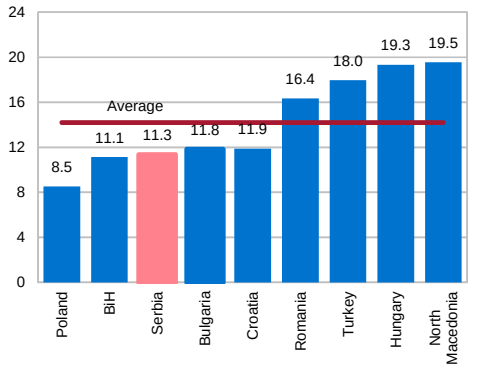
Source: NBS.

Chart II.1.13 **Profitability indicators, by majority shareholder's country of origin and ownership structure in 2018**
(%)



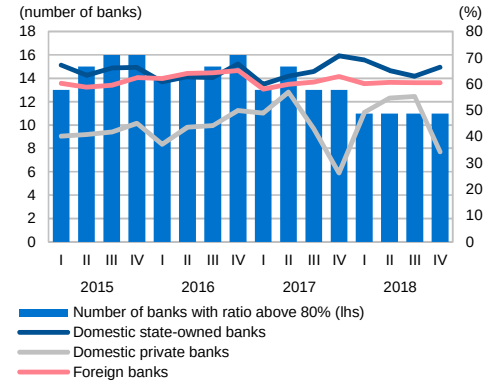
Source: NBS.

Chart II.1.12 **ROE, countries of the region**
(2018, latest available data, %)



Sources: NBS and IMF – GFSR.

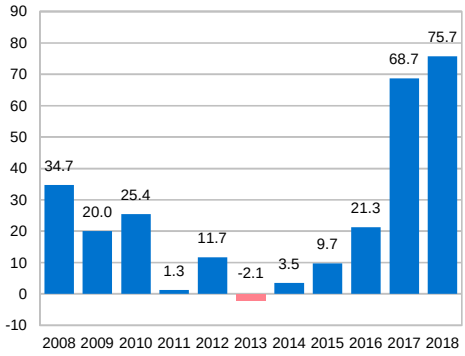
Chart II.1.14 **Ratio of operating expenses to total operating income, by origin of ownership**



Source: NBS.

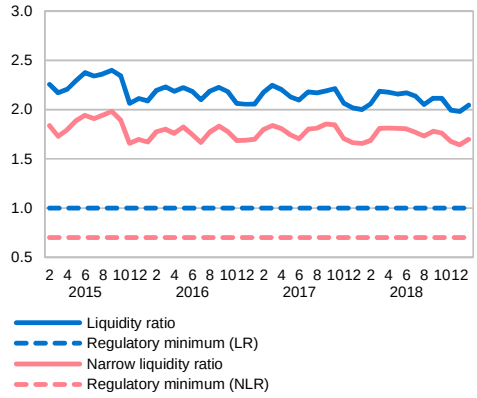
[51] A new Decision on Forms and Content of Items in Financial Statement Forms to be Completed by Banks entered into force on 1 January 2018, due to the simultaneous coming into force and application of the new International Financial Reporting Standard 9 – IFRS 9, which changed the valuation and disclosure of certain categories of the balance sheet and income statement, thereby influencing, to a certain extent, the comparability of categories before and after that date.

Chart II.1.15 **Pre-tax profit/loss of the banking sector**
(RSD bn)



Source: NBS.

Chart II.1.16 **Average monthly liquidity ratio**

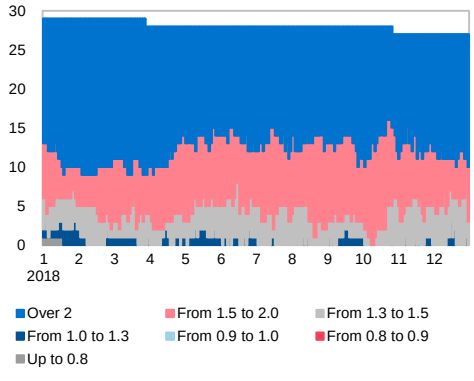


Source: NBS.

At end-2018 the net financial result was better than at the end of the year before. What contributed to such a financial result was the net interest income and net income from fees and commissions which grew by RSD 6.0 bn and RSD 2.7 bn, respectively. In 2018 total net credit losses dropped as a result of more favourable macroeconomic and economic developments and income made from the write-off of uncollectible receivables in the past years.

The final result changed also due to the y-o-y reduction in other income, attributable to some extent to the process of consolidation in the banking market in 2018. Other categories in the income statement had a less pronounced effect on the overall financial result.

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



Source: NBS.

II.1.5 Liquidity

In 2018, liquidity of the Serbian banking sector remained very high, thus posing no threat to financial stability.

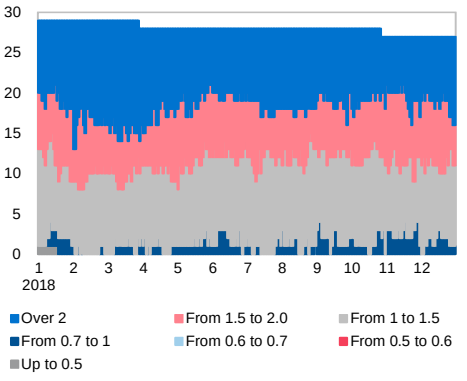
At end-2018, the average monthly liquidity ratio stood at 2.0, well above the regulatory minimum (1.0). The average monthly narrow liquidity ratio of 1.7 was also above the regulatory minimum (0.7). At 213.3%, liquidity coverage ratio[52] was also considerably above the limit set by the regulator.

According to the results of stress tests, Serbia's banking sector would remain highly liquid even in the conditions of extreme deposit withdrawal. A 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. The effects of the "Savings week" on the average monthly liquidity ratio are visible on Chart II.1.16, while Charts II.1.17 and II.1.18 show the distribution of liquidity ratio by individual banks.

At end-2018, liquid assets covered 35.7% of total assets and 50.5% of short-term liabilities. The share of liquid assets in the narrow sense in total assets and the coverage of short-term liabilities was 28.0% and 39.6%, respectively. The fact that the Serbian banking sector holds substantial provisions of liquid assets contributes to

[52] In addition to existing liquidity indicators for the Serbian banking sector, the Decision on Liquidity Risk Management (RS Official Gazette, No 103/2016), applied as of 30 June 2017, introduced a new liquidity coverage ratio, in line with Basel III regulatory standards.

Chart II.1.18 **Distribution of narrow liquidity ratio**
(number of banks)

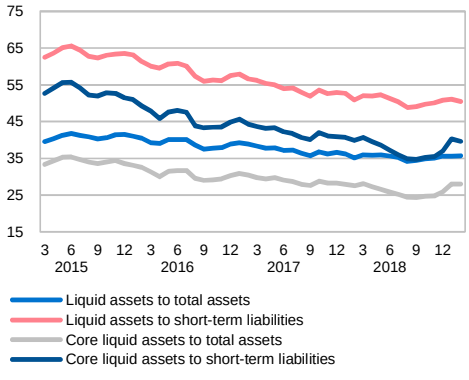


Source: NBS.

Chart II.1.20 **Loan-to-deposit ratio**
(%)

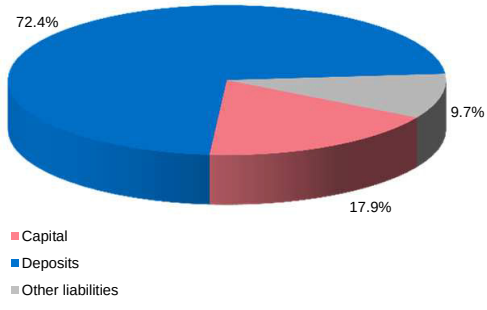
Source: NBS.

Chart II.1.19 **Liquid assets**
(%)



Source: NBS.

Chart II.1.21 **Sources of banking sector funding**



Source: NBS.

its stability, but may also decelerate lending activity. The high share of liquid assets carries low risk, but also lower returns on equity and assets.

II.1.6 Sources of funding

Banks operating in the Republic of Serbia rely mostly on domestic, stable sources of funding. In 2018 the amount of deposits was sufficient to cover the 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 sudden withdrawal of money by parent banks, which was one of the challenges faced by countries of the region during the crisis.[53]

Of the total banking sector liabilities, deposits accounted for 72.4% and capital for 17.9%. The share of FX-denominated deposits (mainly in euros) was brought down from 68.0% to 67.5%. In terms of maturity, short-term deposits made up the largest share (92.4%).

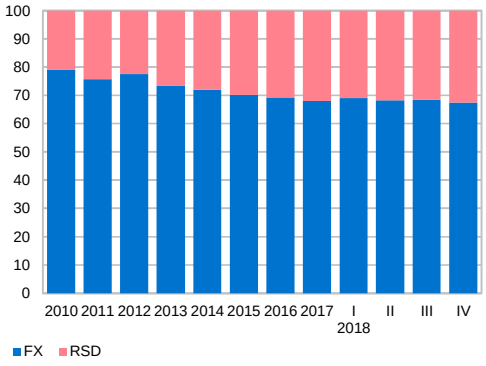
II.1.7 Sensitivity to market risks

Serbia's banking sector exposure to market risks was minimal.[54] It referred to less than 2% of total risk-weighted assets.

[53] Annual Financial Stability Report – 2012, I.1 International environment.

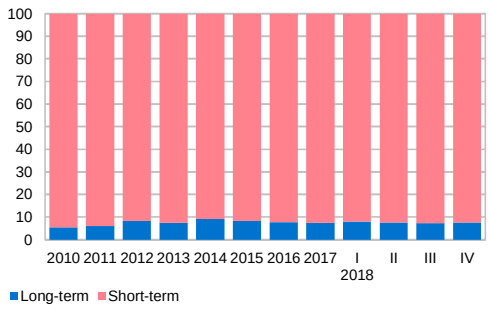
[54] Market risks include price risk, foreign exchange risk and commodity risk.

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



Source: NBS.

Chart II.1.23 **Maturity structure of deposits***



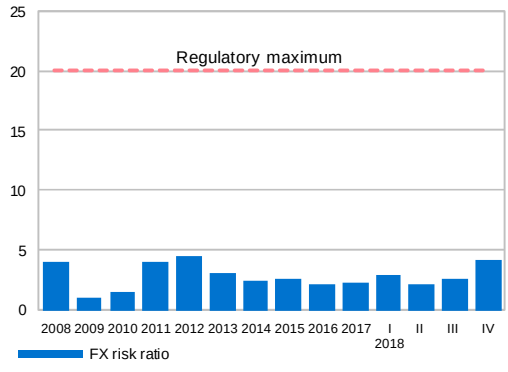
* Long-term deposits consist of deposits with the remaining maturity of over one year, while short-term deposits consist of deposits maturing within the next year, matured and sight deposits.

Source: NBS.

At end-2018, the FX risk indicator was 4.3%,[55] 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. Looking from that angle, banks' FX positions were well-balanced and they were not directly exposed to the FX risk. However, they were exposed to this risk indirectly, as the approval of FX clause-indexed loans to clients with a debt-income currency mismatch may generate FX-induced credit risk. In view of the structure of banks' portfolio, the risk of negative effects on banks' financial result and capital due to the direct impact of interest rate and exchange rate changes is judged to be minimal.

Chart II.1.24 **FX risk ratio**



Source: NBS.

[55] Calculated under net principle.

Table II.1.1 **Serbian banking sector indicators**
(%, unless otherwise indicated)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
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
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
Net NPLs 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
Tier 1 capital to total assets	16.8	13.1	12.8	11.5	11.6	11.2	10.1	10.7	11.6	13.7	13.5
Large exposures to regulatory capital	-	-	-	110.1	104.5	90.4	130.5	115.7	86.0	69.3	77.4
Regulatory capital to total assets	20.5	17.1	16.1	12.2	12.2	12.2	11.4	11.9	12.7	14.4	14.2
Asset quality											
NPLs 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
Sectoral distribution of total loans – banks	1.1	0.6	0.1	0.1	0.3	0.3	0.8	0.1	0.5	0.3	0.4
Sectoral distribution of 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
Sectoral distribution of total loans – public sector	0.9	1.7	3.5	3.4	3.0	2.3	2.3	1.7	1.5	1.3	1.1
Sectoral distribution of total loans – other financial institutions	0.7	0.5	1.2	1.6	1.6	1.6	0.5	0.7	0.9	0.9	0.8
Sectoral distribution of total loans – corporate sector	52.4	53.3	57.0	54.9	58.2	54.1	56.3	55.9	52.6	50.5	50.0
Sectoral distribution of 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
Sectoral distribution of 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
Sectoral distribution of 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
Sectoral distribution of 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
Sectoral distribution of total loans – other corporate sectors	8.1	9.8	11.3	13.9	16.5	14.9	15.6	16.2	14.1	12.2	11.8
Sectoral distribution of 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
Sectoral distribution of total loans – Households and NPISH of which: mortgage loans	13.9	13.7	15.4	15.0	16.1	16.8	18.0	18.1	17.9	16.9	16.8
Sectoral distribution of 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
Allowances for impairment of 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
Allowances for impairment 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
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
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
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
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
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
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
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
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
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
Deposits to loans (non-monetary sectors)	82.7	88.3	80.1	83.1	84.9	92.3	95.7	99.7	108.1	106.9	110.6
FX 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
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
Average monthly 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
Sensitivity to market risk											
Net open FX position 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
FX 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
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

Source: NBS.

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

	2010			2011			2012			2013			2014			2015			2016			2017			2018		
		Assets			Assets			Assets			Assets			Assets			Assets			Assets			Assets			Assets		
	No.	RSD bn	%	No.	RSD bn	%	No.	RSD bn	%	No.	RSD bn	%	No.	RSD bn	%	No.	RSD bn	%	No.	RSD bn	%	No.	RSD bn	%	No.	RSD bn	%
Financial sector	84	2,759	100	87	2,868	100	85	3,108	100	80	3,081	100	76	3,226	100	77	3,329	100	76	3,556	100	73	3,714	100	72	4,180	100
(% of GDP)		84.9%			79.4%			81.6%			74.8%			77.5%			77.2%			78.7%			78.1%			82.6%	
Banking sector	33	2,534	91.8	33	2,650	92.4	32	2,880	92.6	30	2,846	92.4	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
State-owned banks	8	454	16.4	8	472	16.5	8	522	16.8	6	534	17.3	6	571	17.7	6	550	16.5	6	561	15.8	6	544	14.6	5	660	15.8
Local private banks	4	217	7.9	4	213	7.4	3	194	6.3	3	196	6.4	2	187	5.8	1	179	5.4	2	195	5.5	2	236	6.4	2	266	6.4
Foreign-owned banks	21	1,863	67.5	21	1,965	68.5	21	2,163	69.6	21	2,117	68.7	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
Greek	4	427	15.5	4	393	13.7	4	426	13.7	4	409	13.3	4	418	13.0	4	395	11.9	4	403	11.3	2	210	5.6	1	169	4.1
Italian	2	526	19.1	2	591	20.6	2	657	21.1	2	679	22.0	2	738	22.9	2	796	23.9	2	884	24.8	2	928	25.0	2	1,008	24.1
French	3	202	7.3	3	263	9.2	3	287	9.2	3	299	9.7	3	304	9.4	3	316	9.5	3	327	9.2	2	375	10.1	2	415	9.9
Austrian	4	469	17.0	4	493	17.2	3	449	14.4	3	429	13.9	3	441	13.7	3	453	13.6	3	494	13.9	2	427	11.5	2	495	11.8
Other	8	238	8.6	8	225	7.8	9	345	11.1	9	301	9.8	9	310	9.6	11	359	10.8	10	378	10.6	13	651	17.5	13	760	18.2
Other financial institutions	51	226	8.2	54	218	7.6	53	228	7.4	50	235	7.6	47	257	8.0	47	281	8.4	46	315	8.8	44	344	9.3	45	406	9.7
Insurance undertakings	26	117	4.2	28	126	4.4	28	140	4.5	28	148	4.8	25	168	5.2	24	192	5.8	23	216	6.1	21	233	6.3	21	279	6.7
Pension funds	8	10	0.4	9	12	0.4	9	16	0.5	6	20	0.6	6	24	0.7	7	29	0.9	7	33	0.9	7	36	1.0	7	40	1.0
Leasing companies	17	99	3.6	17	80	2.8	16	72	2.3	16	67	2.2	16	65	2.0	16	60	1.8	16	66	1.9	16	75	2.0	17	87	2.1

Source: NBS.

Text box 2: Climate change as a challenge to financial stability

Climate change can lead to new types of risk to the financial system, two of which particularly stand out from the perspective of central banks.[56] The first type includes physical risks, such as natural disasters caused by inclement weather, which can have an adverse effect on the finances of the household and corporate sectors, banks and insurance undertakings, and can lead to financial and macroeconomic instability. The second type comprises transition-related risks that can pertain to the tightening of the regulatory policy on technological processes, e.g. reductions in carbon-dioxide emissions could lead to an unscheduled reassessment of assets of companies whose production process entails carbon-dioxide emission, as well as lead to additional supply-side shocks. These two risk types can cause financial losses that could be significantly augmented in conditions of strong global connectedness between financial systems. Also, changes in climate patterns and increased reliance on resources that depend on weather conditions can add to food and energy price instability and in turn to inflation, which can pose a challenge to central banks in terms of maintaining price stability.

Central banks (such as the Bank of England[57] and the Bank of the Netherlands[58]) are already looking into the impact of climate change on financial system stability. In addition, over the past years financial risks associated with climate change have been analysed through macroeconomic modelling[59] and climate stress-testing[60] as instruments for the assessment of the impact of assumed events on financial stability. To conduct climate stress-testing, the following is required:

– to formulate an unlikely but possible scenario that can impact the financial system negatively;

– to identify sectors with the biggest exposure to financial losses caused by inclement weather and climate change;

– to analyse available data and define new data that are required;

– to model an adequate transmission mechanism of potential shocks.

Some of the identified problems refer to the lack of relevant data and their standardisation, difficulties when defining which assets are exposed to climate risk and the fact that the assessment of financial risks associated with climate change requires the modelling of insufficiently explored dynamic interactions between the macroeconomic, financial, climate and environmental policies.

The relevant institutions may contribute to the development of data bases, taxonomy and methodology that would enable a consistent and comparable way to analyse the financial sector's exposure to climate risks. In regard to this, some central banks and financial supervisors joined forces and established the Network for Greening the Financial System (NGFS),[61] which aims to contribute to the development of environment and climate risk management in the financial sector, and to mobilise mainstream finance in order to support the transition toward a sustainable, green economy. In April 2019, the Network published its first comprehensive report *A call for action – Climate change as a source of financial risk*,[62] in which it outlined recommendations to the relevant supervisors and market participants in terms of integrating climate-related risks into their financial system risk assessments.

Also, one of the proposals put forth by the EU High-Level Expert Group on Sustainable Finance relates to the fact that central banks and supervisors should consider providing direct support to "a greener financial system" using available instruments, such as defining differential capital requirements (this would mean that banks could use less capital to secure loans for financing projects that could mitigate environmental risks in the long term). According to

[56] See: Sandra Batten, Rhiannon Sowerbutts, Misa Tanaka (2016), Let's talk about the weather: the impact of climate change on central banks, Bank of England, Staff Working Paper, No. 603.

[57] Also: Bank of England, Prudential Regulation Authority (2015). The impact of climate change on the UK insurance sector, A Climate Change Adaptation Report by the Prudential Regulation Authority.

[58] See: De Nederlandsche Bank (2017). Waterproof? An exploration of climate-related risks for the Dutch financial sector.

[59] See: Yannis Dafermos, Maria Nikolaidi, Giorgos Galanis (2018), Climate Change, Financial Stability and Monetary Policy, Ecological Economics, Vol. 152, 219–234.

[60] See: Stefano Battiston, Antoine Mandel, Irene Monasterolo, Franziska Schütze, Gabriele Visentin. (2017), A climate stress-test of the financial system, Nature Climate Change, Vol. 7, 283–288.

[61] https://www.banque-france.fr/node/50628

[62] https://www.banque-france.fr/sites/default/files/media/2019/04/17/ngfs_first_comprehensive_report_-_17042019_0.pdf

Basel III regulatory standard, when assessing banks' exposure to credit and operating risks, banks are required to take into account the impact of specific environmental risks as well. A recent report endorsed by the UN Environment Programme (UNEP) and Cambridge University[63] suggests that Basel III guidelines are not utilised to their full extent for the resolution of environmental risks.

Some central banks have already used measures within their competence to promote environmentally-sensitive sectors. For instance, the central bank of Bangladesh introduced a credit quota whereby at least 5% of commercial banks' banking loans should be channelled to these sectors.[64]

It is also important to note the financing of green projects by commercial banks, which implies granting loans for large infrastructure projects to clients from the corporate and investment banking sector. Green projects which secured the biggest amounts of funds in the prior period were projects in telecommunications, petrochemicals, natural resources, renewable energy sources, and more efficient energy use.[65]

In terms of its geographical position, Serbia is susceptible to climate changes and environmental risks such as earthquake, floods and similar. In 2014 Serbia was hit by floods and the most severely affected sectors were agriculture, distribution of electricity, mining and road infrastructure. Aiming to boost its preparedness in case of crisis and improve the system of protection against the consequences of any future natural disasters, Serbia undertook a number of initiatives. Among other, it adopted the National Disaster Risk Management Programme in order to establish a long-term system for managing disaster risk, coordinating institutions, channelling funds, and mitigating and managing these risks, whereby Serbia became one of the first Balkan countries to make the first steps towards establishing a comprehensive risk management framework. In order to implement this programme, it also composed an Action Plan for the implementation of the National Disaster Risk Management Programme (2017–2020),[66] which defined an entire array of activities, including the relevant institutions, deadlines and indicators that should point at the successfulness of the programme's implementation.

Also, some commercial banks in Serbia created specific financial products to encourage energy efficiency. Supported by the credit lines of the European Bank for Reconstruction and Development, within the second phase of the project themed Western Balkans Sustainable Energy Financing Facility, corporates and municipalities in Serbia can be granted specific-purpose loans for ecological and technological solutions developed with local partner banks.

Considering the potential impact of climate change and environmental risks on the financial system, the first steps are being taken to understand and grasp these influences, which implies that the analysis and introduction of measures for limiting these risks will develop at an accelerated pace at both global and national levels.

[63] *S*ee: Stability and Sustainability in Banking Reform: Are Environmental Risks Missing in Basel III? (CISL & UNEP FI, 2014).

[64] See: Bangladesh Bank (2011). Policy Guidelines for Green Banking (https://www.bb.org.bd/mediaroom/circulars/brpd/feb272011brpd02e.pdf).

[65] Slobodan Rakić (2016). Ispitivanje uticaja društveno odgovornog poslovanja na profitabilnost banaka u Evropskoj uniji, Univerzitet Edukons, Fakultet poslovne ekonomije, Sremska Kamenica.

[66] https://www.cadri.net/sites/default/files/SERBIA-National-Plan-DRR-final-29-02-16-ENG.pdf

II.2 Macroprudential stress tests

The results of macroprudential stress tests indicate that the banking sector as a whole would remain adequately capitalised and highly liquid even in case of extreme shocks. The sector has sufficient capacity to absorb the consequences of risks it might be exposed to. Also, the structure of interbank exposure indicates a low component of systemic risk, i.e. the system's high resilience in case of individual shocks.

The NBS conducts quarterly macroprudential stress tests in order to assess the vulnerability and resilience of the financial system as a whole, as well as to assess the impact of macroprudential variables on individual financial institutions and on banking groups. Also, in order to assess Serbia's banking sector systemic risk, based on network modelling, the dynamics of banks' mutual relations is taken into account and potential risks these financial institutions might face are analysed.

Basel III[67] standards and NBS regulations[68] require that banks use stress tests to assess their capital adequacy. Stress tests are based on plausible but highly improbable assumptions, or events that may produce negative effects on the entire 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 unlikely events. To avoid misinterpretation, results for individual banks are usually not published.

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 assumed 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 non-financial sector systemic risk and systemic importance of groups of connected enterprises.

Table II.2.1 **Elasticity coefficients of NPLs and contributions of independent variables from Q4 2017 to Q4 2018**

(%)

	Elasticity coefficients	Contributions of independent variables (pp)
Nominal exchange rate	0.47	-0.04
Seasonally-adjusted real net wages	-0.22	-0.09
Key policy rate	0.20	-0.47

Source: NBS.

This report sets out *three parts* of the analysis of the impact of assumed economic turbulences on banking sector stability. *The first* part involves credit risk assessment in relation to predefined macroeconomic scenarios based on macroeconomic projections. *The second* involves the assessment of whether, in case of significant deposit withdrawals, the banking sector is able to ensure its smooth operations. *The third* part involves 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,[69] with the potential to impact the monthly movement of NPLs, three showed reliable predictive power: (1) the 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. As indicated in the Table, a 1% depreciation of the dinar against the euro causes a 0.47% rise in the gross NPL ratio, a 1% drop in seasonally-adjusted real net wages results in 0.22% growth in the gross NPL ratio, while a 1% increase in the key policy rate causes a 0.20% increase in the gross NPL ratio.

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

[67] Guidelines on stress testing and supervisory stress testing, EBA/CP/2015/28

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

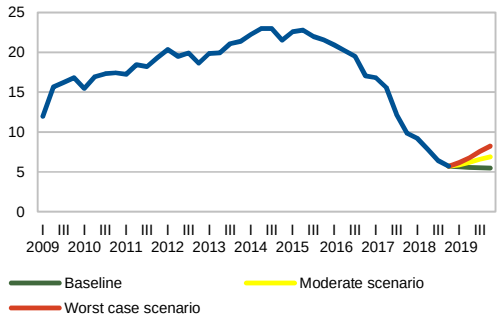
[69] A detailed explanation of the applied econometric model is available in the *Annual Financial Stability Report for 2017*, Text box 3.

net wages was made independently, based on the ARIMA model. The projection of real net wages was made by excluding the impact of projected inflation on wage growth, under relevant scenarios.

Chart II.2.1 shows the projected change in the share of NPLs in total loans for the three scenarios: -0.21 pp, 1.19 pp and 2.53 pp, respectively. Additionally, when assessing the impact of these scenarios, the projected change in the NPL ratio was adjusted in accordance with allowances for impairment for 2018. This more or less neutralised the effect of the netting of new and collected or assigned NPLs on the level of NPLs.

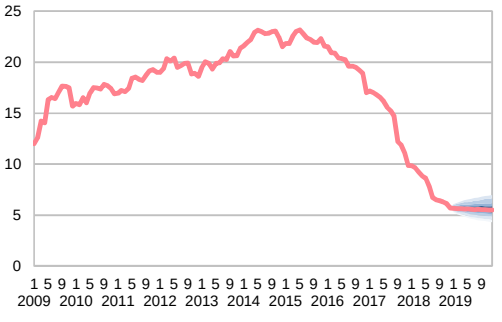
The projected movement with confidence intervals of 90% for the baseline scenario (the most probable scenario) is presented in Chart II.2.2.

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.

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 changes in risk-weighted assets, the amount of the required reserve for estimated losses on balance sheet assets and off-balance sheet items by which Common Equity Tier 1 capital is reduced, as well as by changes in capital position. However, there are also significant indirect effects, the most important being those of the exchange rate and projected profit, amendments to regulations, etc.

The impact of the exchange rate on NPL growth and thereby on a rise in loan loss provisions 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 the banking sector profit which serves as a buffer against losses.

According to the Decision on Capital Adequacy of Banks, banks are required, at all times, to maintain their CAR at levels not below:
– 4.5 %, for Common Equity Tier 1 capital ratio,
– 6 %, for Tier 1 capital ratio,
– 8 % for capital ratio.

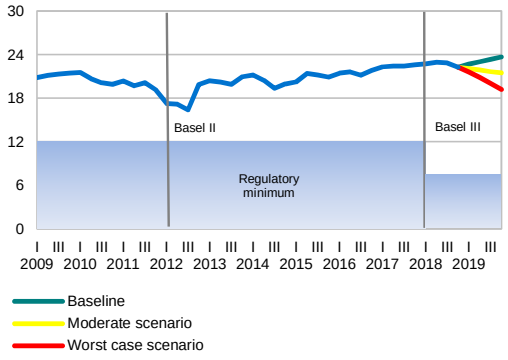
In addition to the prescribed capital adequacy ratios, banks are obligated to maintain their capital buffers, in the

Table II.2.2 **Overview of scenarios**

	Baseline	Moderate	Worst case
Y-o-y growth in NPL ratio (pp)	-0.21	1.19	2.53
Y-o-y depreciation of RSD against EUR (%)	1.40	16.48	33.99
Y-o-y change in key policy rate (pp)	0.00	2.00	5.00
Y-o-y growth in real net wages (%)	4.31	-6.72	-12.71

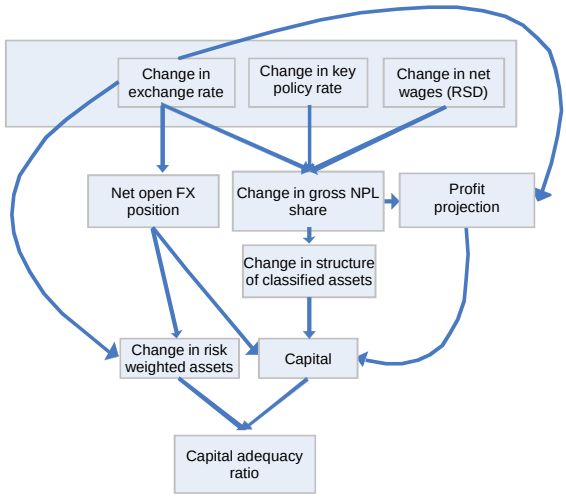
Source: NBS.

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



* NBS estimate.
Source: NBS.

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



form of Common Equity Tier 1 capital, above the regulatory minimum. The goal of the introduction of capital buffers is to mitigate the cyclical dimension of systemic risk (countercyclical capital buffer and capital conservation buffer) and the structural dimension (systemic risk buffer and capital buffer for systemically important banks).

The following capital buffers are used:

– Capital conservation buffer (2.5% of risk-weighted assets),

– Countercyclical capital buffer (0% of risk-weighted assets),

– Systemic risk buffer (3% of foreign currency and foreign currency-indexed bank exposures to corporates and households in the Republic of Serbia), and

– Capital buffer for a systemically important bank (1% or 2% of risk-weighted assets).

On 31 December 2018, Common Equity Tier 1 capital ratio and regulatory capital adequacy ratio for the Serbian banking sector measured 21.07% and 22.26%, respectively.

Under the baseline scenario, Common Equity Tier 1 capital ratio would be 22.50%, and regulatory capital adequacy ratio 23.68%.

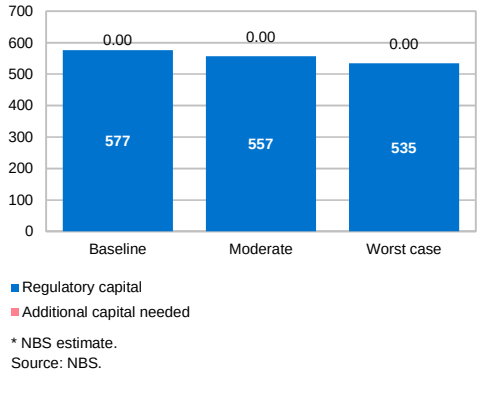
Under the moderate scenario, these ratios measure 20.37% and 21.48%, respectively.

Under the worst-case scenario, implying an exceptionally strong albeit highly improbable shock, Common Equity Tier 1 capital ratio is 18.20%, and regulatory capital adequacy ratio 19.23%.

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

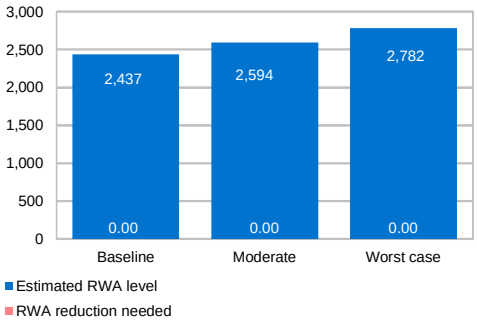
Based on data as at 31 December 2018, there is no need for the recapitalisation of banks in order to meet the requirements for Common Equity Tier 1 capital ratio of 4.5% of risk-weighted assets, Tier 1 capital ratio of 6% of risk-weighted assets and regulatory capital adequacy ratio of 8% of risk-weighted assets. Also, all banks had sufficient Common Equity Tier 1 capital for the coverage of all prescribed capital buffers.

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.

Assuming a profit buffer,[70] 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 baseline, moderate and worst-case scenarios, all banks meet the requirements for the above regulatory minimums and the combined capital buffer.[71]

NPLs that bring the CAR to threshold

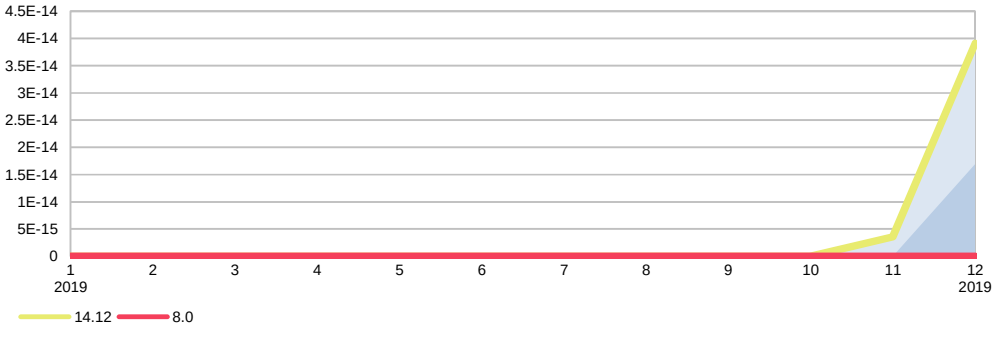
The final stage of solvency stress tests aims to determine the share of NPLs that would bring the regulatory capital down to the threshold, and which would meet all of the prescribed regulatory minimums increased by the established capital buffers.

In conditions of a profit buffer, the increase of 5.94 pp in the share of gross NPLs in total loans will lower the banking sector's regulatory capital adequacy ratio from the initial 22.26% to 14.12% over a one-year span. With such CAR, all banks have sufficient capital for the coverage of regulatory minimums of Common Equity Tier 1, Tier 1 and regulatory capital, as well as for the coverage of capital buffers. The probabilities of increase in the gross NPL ratio in the period from Q4 2018 to Q4 2019 (Chart II.2.6) were calculated based on the above thresholds that would bring the CAR to 14.12% and 8%, and on the confidence interval of the projection of the gross NPL ratio in total loans. However, it should be noted that the probability of such an increase in the share of NPLs in total loans, which would bring the CAR down to the above threshold, is extremely low, i.e. the calculated probability that such event would materialise is around 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.[72] The introduction of the leverage ratio has two aims: to limit the amount of

Chart II.2.6 **Probability of gross NPL ratio increase in 2019 that would bring CAR to the levels of 14.12% and 8%***



* NBS estimate.
Source: NBS.

[70] Depending, inter alia, on macroeconomic variables, banks compose their projection of financial result before tax, 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.

[71] Banks which fail to meet the combined capital buffer requirement are subject to restrictions in profit allocation and are obliged to submit to the NBS a capital conservation plan in accordance with the Decision on Capital Adequacy of Banks, RS Official Gazette, Nos 103/2016 and 103/2018.

[72] RS Official Gazette, Nos 125/2014, 4/2015, 111/2015, 61/2016, 69/2016 and 103/2016.

borrowed capital which banks may use and ensure complementary measures for capital assessment regardless of the estimated risk. The recommendation of Basel III standards is to keep the leverage ratio at the minimum of 3%.

The leverage ratio for the Serbian banking sector at end-2018 equalled 12.64%. Under the baseline scenario, the leverage ratio would measure 13.42%, while under the moderate and worst-case scenario, this ratio at the banking sector level could amount to 11.95% and 10.51%, respectively.

Liquidity stress tests

The liquidity risk in Serbia's banking sector is far less pronounced than the credit risk. However, the sudden withdrawal of deposits, which took place at end-2008 as a result of a temporary loss of confidence in European parents of banks operating in Serbia, indicates the importance of monitoring this risk.[73]

The results of liquidity stress testing aim to determine whether the banking sector could continue to operate smoothly 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 that lasted from September 2008 to January 2009 served to create the following scenarios:

– Déjà vu scenario, envisaging a deposit withdrawal worth RSD 283 bn (10% 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 the lack of support from parent banks due to the international banking crisis, whereby the total deposit withdrawal would increase to RSD 395 bn (15% of total deposits);

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)	283	395	559
Share in total deposits (%)	10%	15%	21%

Source: NBS.

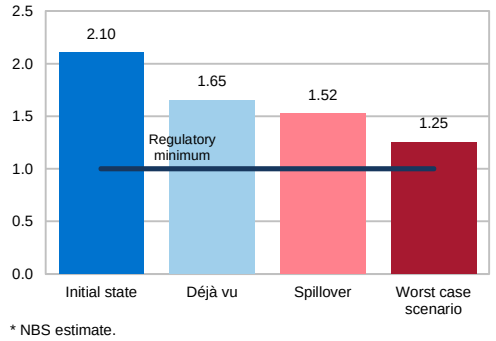
– Worst-case scenario, envisaging a shock two times stronger than that from October 2008, i.e. a deposit withdrawal of RSD 559 bn (21% of total deposits).

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

In the scenarios described above, the banking sector liquidity ratio would range from 2.10 – its actual level on 31 December 2018 – to 1.25 in the worst-case scenario (Chart II.2.7).

According to the initial data and the déjà vu scenario, the liquidity ratios of all banks are above the regulatory minimum.

Chart II.2.7 **Liquidity ratio for the banking sector by stress scenario***



* NBS estimate.

Source: NBS.

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

In the risk spillover scenario, the liquidity ratio would fall below the regulatory minimum for banks holding 8.0% of total banking sector balance sheet assets, while in the worst-case scenario, implying a severe shock, banks accounting for 28.2% of total assets would fall below the threshold. The largest number of banks would stay in the safe zone with liquidity ratios above 1.0.

The Decision on Liquidity Risk Management, in force 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.[74] According to bank reports as at 31 December 2018, all banks reported liquidity coverage ratio, aggregately by all currencies, above the regulatory minimum, while at the banking sector level this ratio stood at 2.1.

Liquidity needs

Based on report data as at 31 December 2018, as well as according to the déjà vu scenario, there is no need for additional first-order liquidity.

Under the risk spillover scenario, first-order liquidity needs would equal around RSD 2.1 bn or 0.2% of the initial first-order liquidity, whereas in the worst-case scenario, first-order liquidity needs would be RSD 37.3 bn or 3.1% of the initial first-order liquidity.

In case the assumed scenarios materialise, the NBS can react by extending liquidity loans, i.e. by exercising its function of the lender of last resort.[75]

Deposit withdrawal values that bring the liquidity ratio to threshold

The present analysis of liquidity risk 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 obtained for the déjà vu scenario (Table II.2.4).

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

	Déjà vu
Withdrawal of demand deposits	70%
Withdrawal of time deposits	30%
Structure of total demand deposit withdrawal	
Banks	0%
Other depositors	75%
Household savings	25%

Source: NBS.

The liquidity ratio would fall to 1.5 in case of a withdrawal of around RSD 415 bn or 15.2% of total deposits (of which around RSD 290 bn demand and around RSD 126 bn time deposits). In case of a withdrawal of RSD 691 bn or 25.3% of total deposits (of which RSD 482 bn demand and RSD 209 bn time deposits), the system as a whole would stay at the liquidity threshold, with a liquidity ratio of 1.0.

Banking sector survival period in case of sudden deposit withdrawal

The shock observation period is defined as the survival period. 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 with the reduced possibility of obtaining any new liquid funds 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

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

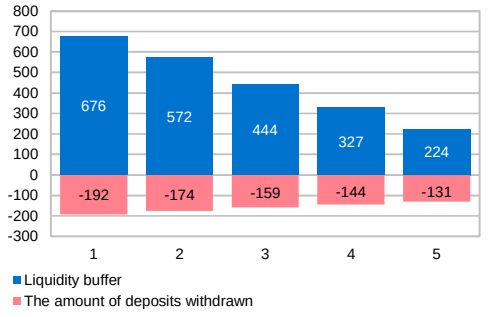
DEPOSIT WITHDRAWAL	Moderate scenario	Worst case scenario
Demand deposits – daily	10%	15%
Time deposits – daily	2%	5%
Availability of liquid assets – daily	95%	95%
Availability of non-liquid assets – daily	1%	1%

Source: NBS.

[74] 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.

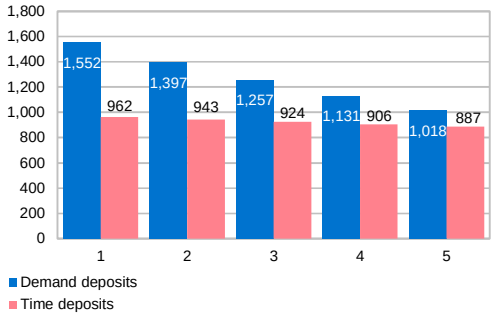
[75] The lender of last resort function is a standard function of central banks and is commonly defined as the readiness of the central bank to extend loans to banks that cannot access more favourable sources of liquidity available in the market, all with a view to protecting depositors and/or preventing a systemic crisis in the financial system.

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



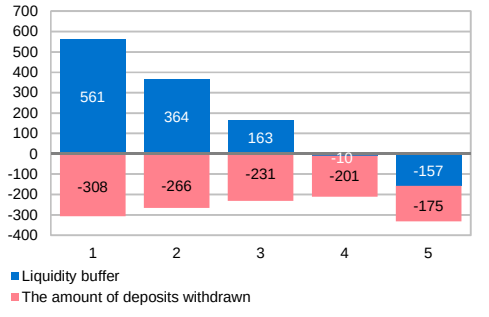
* NBS estimate.
Source: NBS.

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



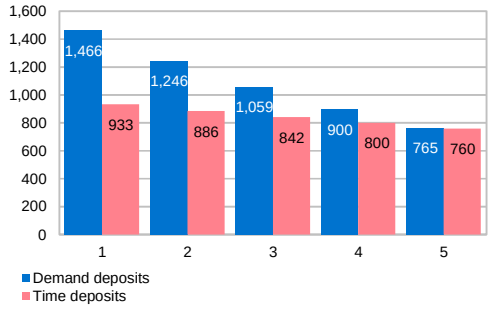
* NBS estimate.
Source: NBS.

Chart II.2.9 **Liquidity buffer – daily for worst case scenario***
(RSD bn)



* NBS estimate.
Source: NBS.

Chart II.2.11 **Structure of demand and time deposits – daily for worst case scenario***
(RSD bn)



* NBS estimate.
Source: NBS.

daily deposit withdrawals – in the stage of 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.2.8 and II.2.9 show available liquid assets and the amount of deposits withdrawn in the first five days (the amount of liquid assets remaining after liquidity needs are satisfied) for both scenarios. Charts II.2.10 and II.2.11 give the deposit structure by day.

According to the results of liquidity stress tests as at 31 December 2018, the entire banking sector can withstand eight business days[76] in conditions of daily deposit withdrawal in the moderate scenario, or four business days in the worst-case scenario.

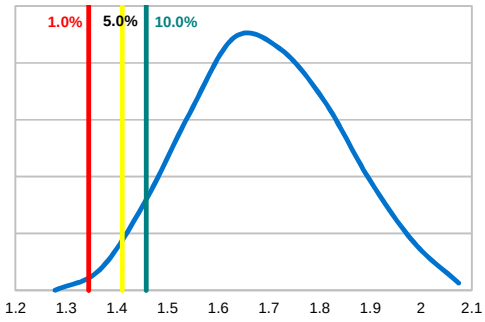
Simulations of liquidity shock

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 were obtained based on tens of thousands of different scenarios, which imply the sampling of assumptions of deposit withdrawal by sector, from zero to the worst-case scenario value (Table II.2.4).

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

Chart II.2.12 **Confidence intervals for banking sector liquidity ratio***



* NBS estimate.
Source: NBS.

These simulations produced the distribution of liquidity ratios of the banking sector at various combinations of assumptions (Chart II.2.12).

With the given confidence interval of 10%, the liquidity ratio equals 1.46, while for confidence intervals of 5% and 1%, it equals 1.41 and 1.34, respectively.

In other words, the liquidity ratio with a 90% certainty in various combinations of deposit withdrawal assumptions will not fall below 1.46. Moreover, there is a certainty of 99% that the ratio will not fall below 1.34.

Since only assumption values with a negative effect are observed, the tentative values of the variable under assumed negative effects were calculated. This enabled the efficient modelling of a large number of simulations of low-probability banking sector liquidity shocks for test purposes.

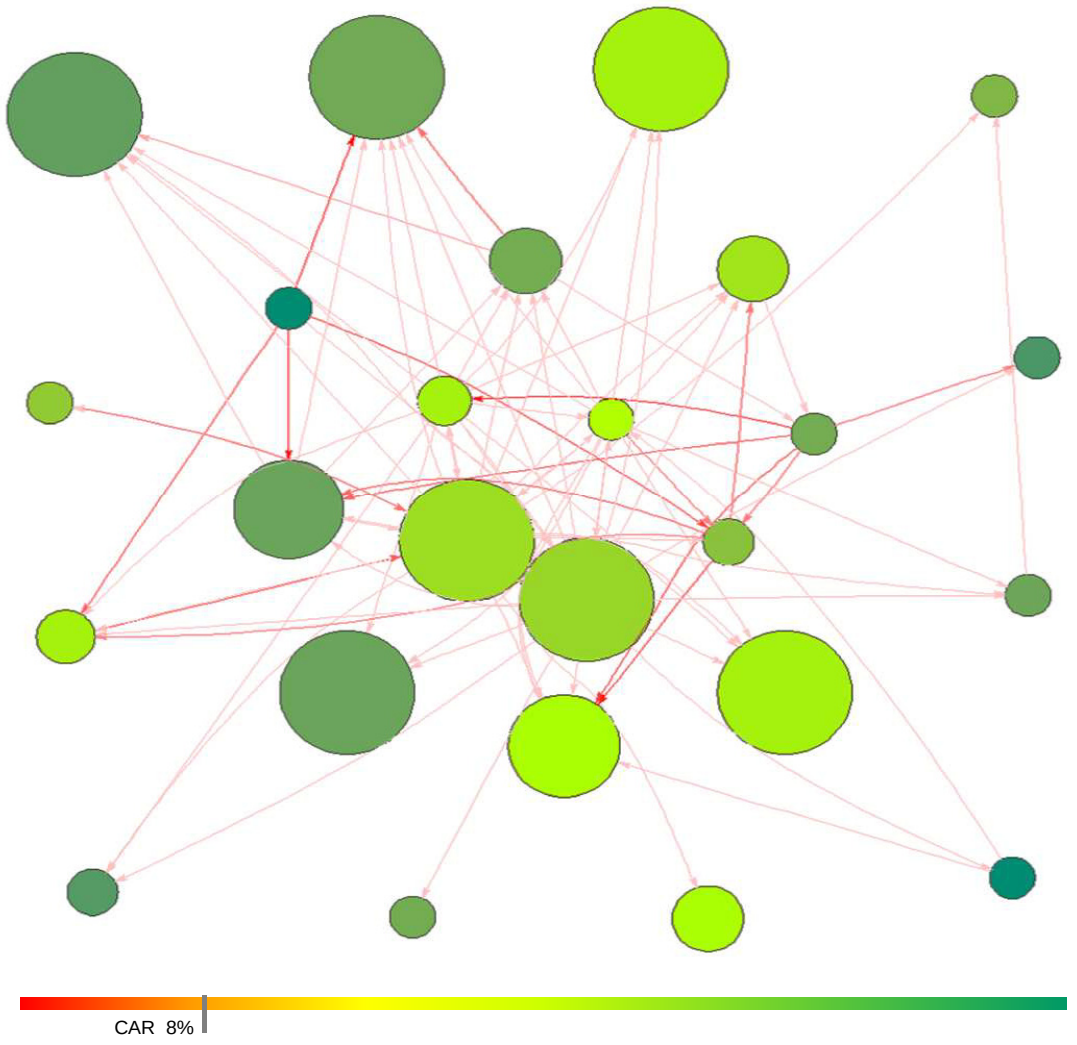
Network modelling in the assessment of banking sector systemic risk

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 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 required reserve 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.2.13. 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 required reserve relative to the regulatory capital of bank i in case of a decrease in the solvency of bank j. The size of the circle that represents the bank shows the amount of its regulatory capital – the greater the circle, the higher the amount of regulatory capital. The circle colour indicates the level of CAR. In the spectre 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 0.25. 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 0.25 does not indicate a high network potential in shock transmission.

The impact of the network structure on shock transmission is simulated as follows: assuming the insolvency of a pre-determined bank, for each bank in the system the expected increase in required reserve for estimated losses was calculated. An increase in reserve for estimated losses results in lower risk-weighted assets and capital, including CAR, in the first iteration of shock transmission. In each following iteration, based on the CAR values obtained in the previous iteration, new probabilities of defaults were obtained for each bank (which did not become undercapitalised up to that point). Based on this, the expected increase in reserves for estimated losses and a new reduction in risk-weighted assets, capital and the CAR were calculated again. A shock is considered neutralised when further iterations register no change in regulatory capital and risk-weighted assets of any of the banks. Assuming the insolvency of an individual bank and the transmission of a particular shock through the system, as was explained, the effect on each

Chart II.2.13 **Banking network of the Republic of Serbia**



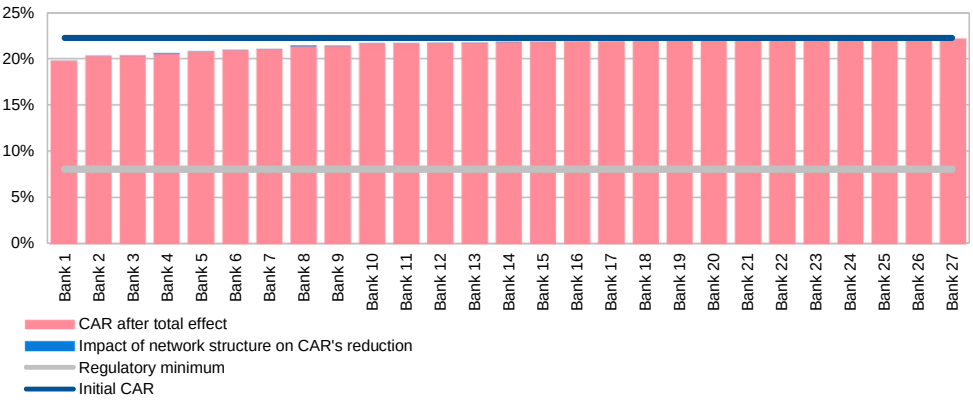
Source: NBS.

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.2.14 shows the banking sector's CAR immediately after assumed insolvency of each individual bank in the sector and the total effect of the existence of the network structure. Chart II.2.15 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.2.14 and II.2.15 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.

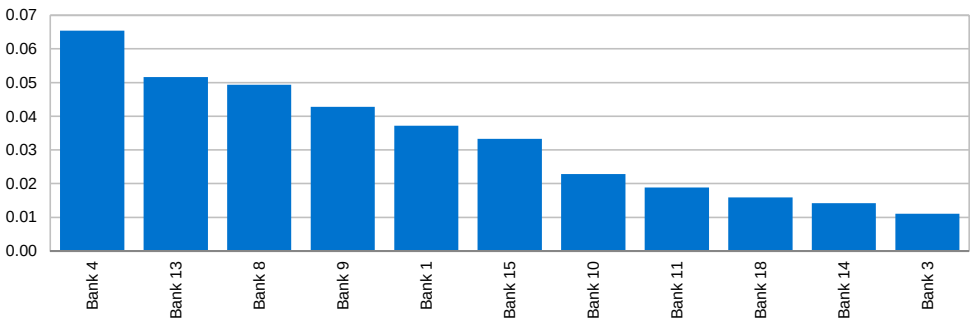
Chart II.2.14 **Banking sector CAR after the insolvency of an individual bank**



Source: NBS.

Chart II.2.15 **Impact of network structure on CAR's reduction after the insolvency of an individual bank**

(pp)



Source: NBS.

Conclusion

The banking sector of the Republic of Serbia is still highly resilient to assumed scenarios, even in case of the most extreme shocks.

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 and the need for additional liquidity arises, the NBS has instruments for maintaining an adequate level of bank liquidity, such as liquidity loans or the lender of last resort function. 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.

After the achievement of significant results in the resolution of existing NPLs, in the future period the priority should be the prevention and curbing of new NPLs by strengthening the risk management function in banks in the face of a further improvement in macroeconomic stability. Owing to the NPL Resolution Strategy, adopted in August 2015, and the implementation of the resulting activities and regulatory measures of the NBS, particularly the Decision on the Accounting Write-Off of Bank Balance Sheet Assets, effective as of end-September 2017,[77] at end-2018 the NPL ratio equalled 5.7%, which is a fall of around 16.7 pp from August 2015, when the Strategy was adopted.

Currently, NPLs are at the lowest level since this indicator of the quality of banks' portfolios is monitored and they do not pose a threat to financial system stability.

[77] RS Official Gazette, No 77/2017.

Text box 3: Results of the 2018 EU-wide stress tests

In cooperation with the ECB, European Systemic Risk Board (ESRB), European Commission, and national competent authorities, the EBA initiated and coordinated the preparation and exercise of EU-wide bank[78] stress tests in 2018. The stress test exercise was carried out on the sample of 48 banks operating in 15 countries in the European Union and European Economic Area at the highest level of consolidation. Of these, 33 banks are under the jurisdiction of the Single Supervisory Mechanism (SSM). These tests primarily assess the impact of risk on bank solvency, more specifically the impact of credit, market and operational risks.

In November 2017 the EBA published the Methodological Note on EU-Wide Stress Test[79]. Macroeconomic scenarios, published in January 2018,[80] were the starting point for the stress test exercise. The results were published in November 2018.[81] The major novelty introduced since the stress tests run in 2014 and 2016 relates to the effects of the implementation of the new International Financial Reporting Standard 9 (IFRS 9) on banks' balance sheets. Banks which applied this standard as of early 2018 were obliged to include expected credit losses in adverse scenarios in a way set forth by the Standard.

Stress tests provide supervisors, banks and market participants with a common analytical framework to assess and compare the resilience of banks to the assumed adverse market developments. The stress test is a constrained bottom-up exercise — i.e. the banks were required to run the tests on their own data in the identical group of reports, applying their own models, but using EBA methodology and scenarios so as to ensure an adequate level of conservativeness, consistency and comparability of projections.

The EU-wide stress test was conducted on the assumption of a static balance sheet. If the euro was not the official currency, any required restatements of balance sheet positions were translated by applying the exchange rate as of 31 December 2017. The exercise is not designed as a pass-fail test, i.e. no quantitative criteria are defined for the purpose of assessing the success of individual banks, since the obtained results serve as an input to the SREP in line with the EBA Guidelines.[82]

The baseline macroeconomic scenario was developed by the ECB, whereas the adverse scenario was a result of the ECB's cooperation with the ESRB, national regulators, EBA and national central banks.[83] Both scenarios cover a three-year horizon (from end-2018 to end-2020) taking the end-2017 data as the starting point. The stress test primarily focuses on the assessment of the impact of risk on bank solvency. Banks were required to stress test for credit risk (including securitisations), market risk, counterparty credit risk, credit valuation adjustment, operational risk, and conduct risk.

The key adverse scenario assumptions for the assumed three-year horizon pertained to a significant cumulative EU economic downturn (2.7%) with a rise in unemployment (9.7%) and inflation (to 1.7%). It was also assumed that the real estate market would be affected by considerable shocks over the three years, i.e. by the cumulative fall in the prices of housing and commercial property by 19.1% and 20%, respectively.

IFRS 9 application

One of the major novelties of the stress tests conducted in 2018 is the impact of IFRS 9[84] implementation on banks' financial positions. The new expected credit loss model prescribed by the new IFRS 9 requires comprehensive changes to

[78] Stress tests were run at the highest level of consolidation in a banking group in line with CRR/CRD.
[79] https://www.eba.europa.eu/documents/10180/2106649/2018+EU-wide+stress+test+-+Methodological+Note.pdf
[80] http://www.eba.europa.eu/-/eba-launches-2018-eu-wide-stress-test-exercise
[81] https://eba.europa.eu/documents/10180/2419200/2018-EU-wide-stress-test-Results.pdf
[82] EBA Guidelines on common procedures and methodologies for the SREP, EBA/GL/2014/13.
[83] https://eba.europa.eu/documents/10180/2106649/Adverse+macroeconomic+scenario+for+the+EBA+2018+Stress+Test.pdf
[84] For more details see the Annual Financial Stability Report for 2016, Text box 2 New International Financial Reporting Standard - IFRS 9.

banks' systems and processes as the implementation of this standard is not only a matter of accounting – the focus shifts from the question *was the loss incurred* to the question *will the loss be incurred*. As expected, the implementation of the new standard affects bank balance sheets adversely because it raises the level of impairments and recognises credit losses faster than was the case with the incurred loss model under IAS 39.

Banks were required to provide the opening balance sheet figures as at end-2017, that is to restate them under IFRS 9 in line with their estimates.

The negative impact of IFRS 9 on aggregate Common Equity Tier 1 (CET 1) capital ratio for the implementation of the Regulation of the European Parliament and of the Council on Capital Requirements (Capital Requirements Regulation, CRR), Capital Requirements Directive IV (CRD IV) and IFRS 9 on a transitional basis is 10 bp and 20 bp on a fully loaded basis. The weighted average CET 1 capital ratio moves from 14.5% transitional and 14.2% fully loaded as of end-2017, to 14.4% transitional and 14.0% fully loaded considering the IFRS 9 restated data.

For banks applying IFRS 9 as of 1 January 2018, the data from end-2017 had to be restated in line with IFRS 9 in order to provide a comparable baseline.

The impact of stress tests is measured as the difference between the restated CET 1 capital ratio and the ratio in adverse scenario for 2020. Since IFRS 9 is adopted in phases, the analysis presents transitional and fully loaded ratios. The first ratio presents relevant requirements and metrics for supervisory review, while the second one facilitates bank comparability.

EU-wide stress test results

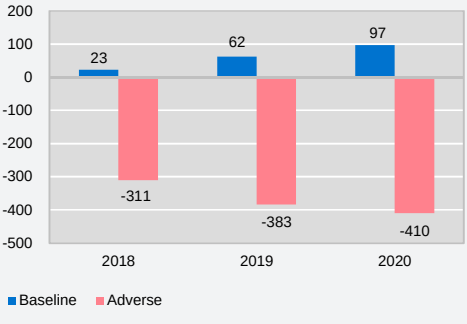
The aggregate CET 1 capital ratio used as the starting point value (according to the data from 2017) is above the 2016 stress test ratio which was 13.2% suggesting continuous strengthening of the EU banks' capital. For 48 banks participating in the stress test, the weighted average CET 1 capital ratio at end-2017 was 14.5%, and when taking into account the IFRS 9 restatement it was 14.4%.

The results of bank stress tests vary considerably as shown by the CET 1 capital ratio which ranges from a decrease of -30 bp fully loaded to a maximum decrease of -770 bp. While net interest income and net fee and commission income remained positive, the cumulative reduction of these two sources of income at end-2020 brought capital value down by 150 bp and 80 bp compared with the contribution of the starting point values.

The stress tested banks report minimum transitional levels of capital above Pillar 1 capital requirements, with a CET1 capital ratio above 4.5%, a Tier 1 capital ratio above 6% and total capital above 8%.

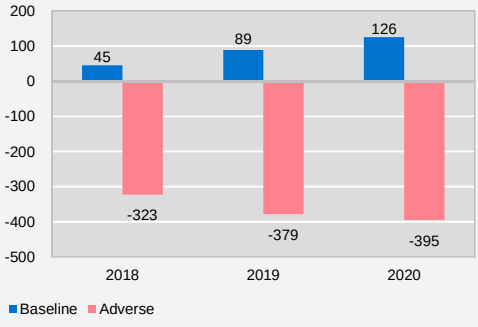
The aggregate impact of the scenario is measured as the difference between the starting CET 1 ratio and the ratio projected at the end of the stressed period. The adverse scenario suggests that the ratio reduction at end-2020 is 410 bp whereas on a fully loaded basis the CET1 reduction is 395 bp. (Charts O.3.1 and O.3.2). As of end-2020 aggregate CET1 capital ratio is 10.3% transitional and 10.1% fully loaded, i.e. banks' projections reflect a deviation of -520 bp compared to the baseline, fully loaded.

Chart O.3.1 **Change in transitional CET1 capital ratio from starting point 2017 restated**
(bp)



Source: NBS.

Chart O.3.2 **Change in fully loaded CET1 capital ratio from starting point 2017 restated**
(bp)



Source: NBS.

Banks which were stress tested report leverage ratios above 3% at end-2017.[85] At end-2018 under the adverse scenario two banks recorded this ratio below 3%, while in 2019 and 2020 three banks reported the ratio below the prescribed minimum.

The aggregate leverage ratio decreases from 5.4% (end-2017) to 4.4% (end-2020) on a transitional basis and from 5.1% to 4.2% for the same period on a fully loaded basis. This drop can primarily be described as the decline in CET 1, since exposures included in the calculation (denominator) remain constant in line with the static balance sheet assumption.

In supervisory review, supervisors will consider the impact on capital, taking into account bank management decisions and changes in capital which may occur until the moment of supervisory review to estimate bank capital position and decide on the potential use of Pillar 2 capital[86] for the provision of additional capital since the test results do not relate to bank activities after 31 December 2017.

Stress test results show that bank efforts in the previous period were directed at capital base increase which contributed to the strengthening of their resilience and ability to keep the ratios at satisfactory levels even after strong simultaneous shocks. Compared to the EBA 2016 stress test exercise, the sample of banks used increased the initial level of CET1 capital ratio. The impact of scenario on the CET 1 capital ratio was somewhat more relaxed in the 2016 stress test (-380 bp) compared to 2018 (-410 transitional, -395 fully loaded) which can be explained by the introduction of the expected loss concept. If taking into consideration the contributions to CET 1 capital ratio reduction, the results of both stress tests indicate that the greatest contribution is that of credit risk, followed by operational and market risks which yielded somewhat lower contributions.

[85] Minimum leverage ratio is 3% in line with Basel III regulation: Finalising post-crisis reforms paper, https://www.bis.org/bcbs/publ/d424.pdf.

[86] Pillar 2 introduces a new approach to risks and assessment of bank capital adequacy and indicates the necessity of efficient supervision focused on the analysis of internal assessment of bank capital adequacy.

II.3 Non-bank financial sector

II.3.1 Insurance undertakings

In 2018 the insurance sector recorded positive developments, characterised by good capital adequacy and growth in the total premium and yield. Insurance undertakings recorded growth in their balance sheet total, thereby continuing the upward trend of this sector's share in the balance sheet total of the financial sector. Non-life insurance maintained a dominant share in the total premium. The NBS activities in 2018 were aimed at increasing the stability of the insurance sector and ensuring conditions for its further development, especially in terms of activities related to the implementation of Solvency II in Serbia.

The balance sheet of the insurance sector had a 6.7% share in the balance sheet total of the financial sector supervised by the NBS (banks, financial lessors, insurance undertakings and VPFs),[87] which is slightly higher than last year (6.3% in 2017). The insurance sector is the second most important sector in the Serbian financial system.

At end-2018 the market consisted of 16 insurance undertakings and four reinsurance undertakings, one insurer fewer than the year before. 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.

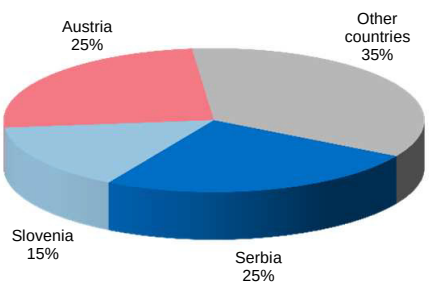
Breakdown by ownership shows that undertakings in majority domestic ownership accounted for 25% of all insurance undertakings (Chart II.3.1). Major foreign owners come from Austria (25%) and Slovenia (15%).

Apart from insurance undertakings, the sales network included 17 banks, seven financial lessors and one public postal operator, all of them with approval to carry on insurance agency activities, 90 legal persons (undertakings for insurance brokerage and insurance agency activities), and 84 insurance agents (natural persons – entrepreneurs).

Compared both with EU member states and the neighbouring countries, Serbia's insurance sector is still underdeveloped, with potential for further growth. In 2017,[88] the penetration ratio (gross written premium as a percentage of GDP) at the EU level stood at 7.2%,[89] while the same ratio in Serbia was several times lower, measuring 2.0%. Also, Serbia's density ratio (the average premium per capita spent on insurance) of USD 134[90] was much lower than the EU's USD 2,429[91] in 2017 (Chart II.3.2).

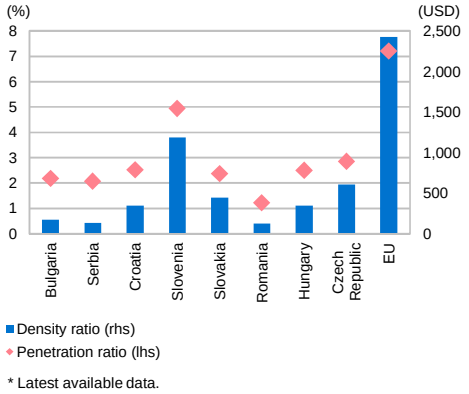
A positive trend was also recorded in the total premium,

Chart II.3.1 **Insurance undertakings ownership structure, by majority ownership, as at 31 December 2018**



Source: NBS.

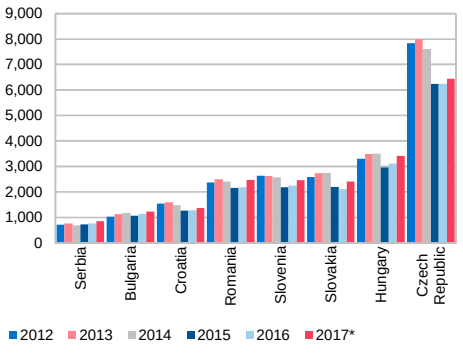
Chart II.3.2 **Insurance sector development indicators as at 31 December 2017***



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

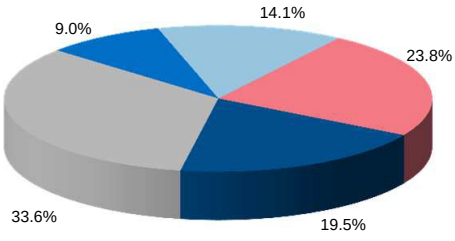
[87] Except for payment institutions and electronic money institutions.
[88] Latest available data.
[89] Source: Swiss Re Sigma 3/2018: World insurance in 2017: solid, but mature life markets weigh on growth.
[90] Latest available data.
[91] Source: Swiss Re Sigma 3/2018: World insurance in 2017: solid, but mature life markets weigh on growth.

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



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

Chart II.3.5 **Total premium according to types of insurance as at 31 December 2018**



Property insurance
MTPL insurance
Full coverage motor vehicle insurance
Other non-life insurance
Life insurance

Source: NBS.

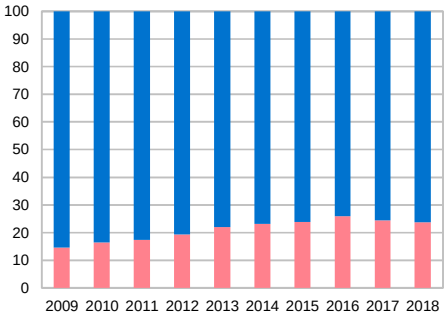
which reached RSD 99.9 bn in 2018, rising by around 6.8% from 2017. However, Serbia still lags behind the neighbouring countries in terms of the absolute amount of the total premium (Chart II.3.3).

In response to the deceleration in life insurance premium, the share of the life insurance premium in total premium decreased from 24.4% at end-2017 to 23.8% at end-2018 (Chart II.3.4).

Within the total premium, motor third party liability insurance was still dominant (33.6%), followed by life insurance (23.8%), property insurance (19.5%) and full-coverage motor vehicle insurance (9.0%), as shown in Chart II.3.5.

The Serbian insurance sector is adequately capitalised, given the risks to which it is exposed. According to the 2014 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 2018 the core CAR was 210.4% for non-life and 254.4% for life insurance, it can be concluded that the capital adequacy of Serbian insurance undertakings is satisfactory.

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



Life insurance
Non-life insurance

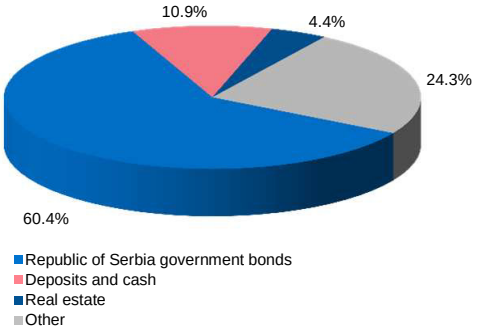
Source: NBS.

The leverage ratio (capital to asset ratio) reflects the level of exposure of insurance undertakings to risks typical for the insurance activity. At end-2018, this ratio equalled 22.9% in undertakings mainly engaged in non-life insurance (23.7% in 2017), and 21.2% in undertakings carrying out life insurance (19.9% in 2017).

For an undertaking to be able to protect the interests of the insured and injured 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 liquidity, security and profitability of the undertaking, settlement of its future liabilities and dispersion of risks. Technical provisions must be invested into the prescribed assets. Otherwise, an undertaking runs the risk of having difficulties in the settlement of liabilities toward the insured. At end-2018, technical provisions of all insurance undertakings stood at RSD 197.3 bn, up by 22.8% in nominal terms relative to 2017. The full amount of technical provisions was invested in the prescribed assets in both life and non-life insurance. In terms of composition, technical provisions were predominantly made up of mathematical reserves, which gained 9.2% in 2018.

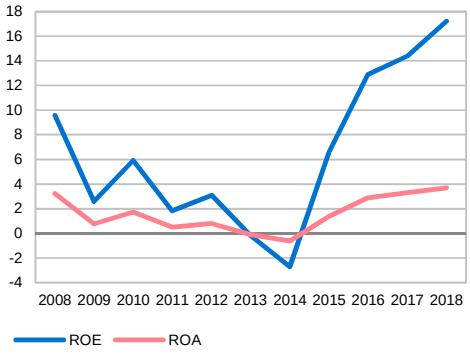
As Chart II.3.6 shows, the bulk of technical provisions of non-life insurance was invested in government securities (60.4% at end-December 2018). As indicated in Chart II.3.7, technical provisions of life insurance were also predominantly invested in government securities (91.9% at end-December 2018).

Chart II.3.6 **Non-life insurance technical reserves coverage as at 31 December 2018**



Source: NBS.

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



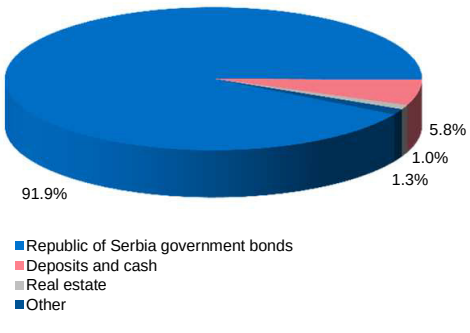
Source: NBS.

In assessing the quality of assets, particular attention is paid to the liquidity of insurance undertakings. Apart from liquid assets, insurance undertakings also invest in instruments of limited liquidity, such as intangible assets, real estate, non-tradable securities and receivables. Over the past years there has been a notable decline in the indicator of less tradable assets (share of less liquid in total assets). In undertakings mainly engaged in non-life insurance this indicator equalled 16.3% at end-2018 (17.9% at end-2017), while in undertakings mainly engaged in life insurance it increased by 3.8% (1.7% at end-2017).

The insurance sector ended 2018 with a positive net result after tax amounting to RSD 8.9 bn. Profitability indicators of undertakings engaged mainly in non-life insurance rose in 2018 relative to the year before. Return on equity was 17.2% (14.4% in 2017) and return on assets 3.7% (3.3% in 2017), as shown in Chart II.3.8. Undertakings engaged mainly in life insurance also saw an increase in the above profitability indicators in 2018. Their return on equity was 9.3% (6.1% in 2017) and return on assets 1.8% (1.2% in 2017), as can be seen in Chart II.3.9.

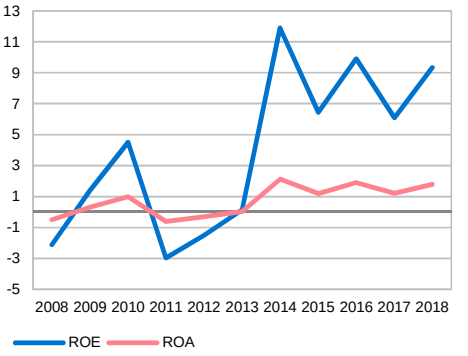
The profitability of insurance undertakings is also indicated by the combined ratio, as the sum of self-retained[92] incurred losses and expenses divided by the premium earned. The ratio value below 100% indicates that an undertaking is able to pay out claims and cover expenses from the collected premiums. If the ratio value is above 100%, it is assumed that an insurer determines the level of premium by taking into account the potential investment income from the financial and real estate markets, which makes it vulnerable to additional market

Chart II.3.7 **Life insurance technical reserves coverage as at 31 December 2018**



Source: NBS.

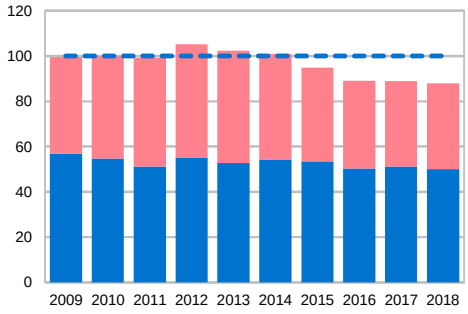
Chart II.3.9 **Profitability ratios of life insurance undertakings**
(%)



Source: NBS.

[92] 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.

Chart II.3.10 **Combined insurance ratio**
(%)



Source: NBS.

risks. In undertakings predominantly engaged in non-life insurance, the combined ratio dropped from 88.9% at end-2017 to 87.9% at end-2018 (Chart II.3.10). A decline in the combined ratio resulted from the somewhat faster growth of premium earned compared to the growth of incurred losses and insurance administration expenses.

The expense ratio (ratio of insurance administration expenses to premium earned) rose slightly from 37.8% at end-2017 to 38.0% at end-2018, which suggests an almost unchanged efficiency of the insurance administration process. The loss ratio (the ratio of losses incurred in claims to premium earned) is the indicator of adequacy of price policy of insurance undertakings. It is a measure of an undertaking's ability to cover claims from the premium income. A high value of this ratio can suggest that an undertaking is unable to meet claim liabilities. This ratio fell from 51.2% at end-2017 to 49.9% at end-2018.

For the purpose of alignment with recommendations of international bodies and contemporary standards in the area of the prevention of money laundering and terrorism financing, the NBS adopted amendments to the following secondary legislation: Decision on the System of Governance in an Insurance/Reinsurance Undertaking (RS Official Gazette, Nos 51/2015 and 29/2018), Decision on Implementing Provisions of the Insurance Law relating to the Issuance of Licence to Carry on Insurance/Reinsurance Activities and Specific Approvals of the National Bank of Serbia (RS Official Gazette, Nos 55/2015, /correction 69/2015/, 36/2017 and 29/2018), Decision on Implementing Provisions of the Insurance Law relating to Insurance Brokerage and Agency Activities (RS Official Gazette, Nos 55/2015 and 29/2018). Also, in accordance with the World Bank methodology, a national risk assessment in terms of money laundering and terrorism financing was carried out in the insurance sector, which assessed the sector as low-risk.

The NBS recognised the need for the additional improvement of some aspects of business operations of insurance market participants by establishing minimal standards of conduct and good business practice these participants should adhere to. In accordance with this, in April 2018 the NBS adopted Guidelines on Minimal Standards of Conduct and Good Practice of Insurance Market Participants, which define the framework and standards of conduct and good business practice in the insurance market. Adherence to these Guidelines will enable fair and transparent operations of participants in this market towards insurance service consumers, as well as a higher level of protection of their rights and interests.

The Strategy for the Implementation of Solvency II[93] in Serbia,[94] adopted by the NBS Executive Board on 7 July 2016, envisages phased implementation of Solvency II in the Serbian insurance sector. At its meeting on 14 March 2018, the Executive Board adopted amendments to the Strategy for the Implementation of Solvency II in Serbia. In view of the importance and complexity of implementation of Solvency II, the Strategy will be regularly reviewed and amended on an as-needed basis, in accordance with new circumstances and challenges. According to this Strategy, which envisages analyses to assess the readiness of insurance/reinsurance undertakings to respond to the regulatory requirements set out in Solvency II, the First Quantitative Impact Study (QIS 1) was carried out in Serbia.

Activities on composing draft and proposal regulations necessary for the establishment of a new regulatory framework for carrying out insurance/reinsurance activities, the aim of which is to ensure the full implementation of Solvency II prior to Serbia's EU accession, are scheduled to be completed in 2021.

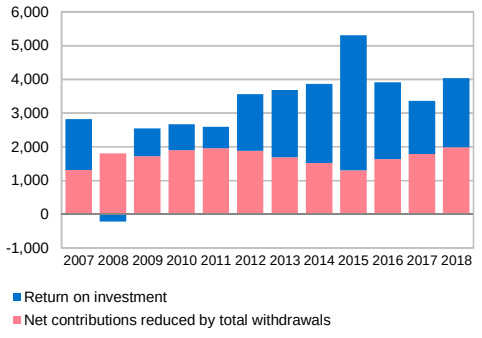
II.3.2 Voluntary pension funds

The Serbian VPF sector continued to show positive results in 2018, as seen primarily from the further growth in net assets. As the domestic economic activity picks up, contributions to VPFs may be expected to grow. However, this sector is still underdeveloped, with a small number of VPF users and an unfavourable structure of accumulated fund withdrawals.

[93] Directive 2009/138/EC of the European Parliament and of the Council on taking-up and pursuit of the business of Insurance and Reinsurance.

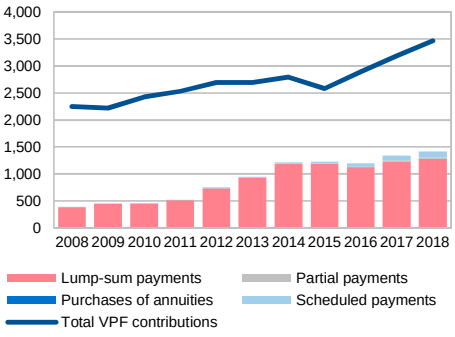
[94] http://www.nbs.rs/internet/english/60/60_5/implementation_of_solvency_II.pdf

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



Source: NBS.

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



Source: NBS.

VPFs are collective investment institutions that collect pension contributions and invest them into various types of assets in order to generate return and reduce investment risk. 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 setting up and managing 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.[95]

The number of management companies and VPFs did not change in 2018 – 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 been constantly increasing. At end-2018 they equalled RSD 40.2 bn, rising by around 11.05% from a year earlier. Changes in the value of net assets of funds depend on the amount of members' contributions, collected fees, withdrawals of accumulated funds and return on VPF investment (Chart II.3.11). Return on investment was the main driver of the rise in VPF net assets in 2018. VPF net assets went up by RSD 4 bn in the course of the year. Return on investment amounted to slightly more than RSD 2 bn and was higher than the year before. Given the composition of VPF investment, the return is influenced by: the change in the yield curve on government debt instruments[96], change in the prices of shares, level of the key policy rate and banks' interest rates, and changes in the dinar exchange rate against the euro and the dollar.

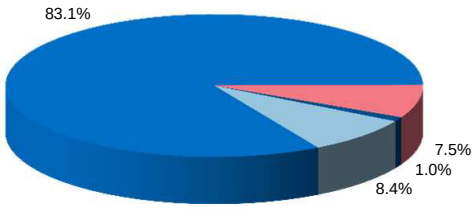
Total contributions amounted to RSD 3.5 bn (RSD 3.2 bn in 2017) and total withdrawals to RSD 1.4 bn (RSD 1.3 bn in 2017) (Chart II.3.12). The structure of withdrawals was relatively unfavourable, i.e. not in line with the objective of savings in VPFs which assumes the use of accumulated assets over a longer period. Though negligibly lower than in the previous year, as much as 91% of withdrawals were lump sum withdrawals, which are usually made as soon as the member reaches the age limit for withdrawal of accumulated funds. On the other hand, the next period is likely to see an increase in scheduled and other types of withdrawals with the lengthening of the accumulation periods and the increase in accumulated sums.

The total number of VPF users went up from the previous year to 192,295 at end-2018. These users concluded a total of 261,726 membership contracts. During the same period, the number of active users (users that regularly pay VPF contributions) increased, but their share in the total number of users in the accumulation stage stayed relatively low, at 33.4% in December 2018 (33.6% in December 2017). The average age of VPF users in Serbia is around 46 years. The share of VPF users in the total number of employees stood at 9%, which indicates that this sector is poorly developed, but has potential for future growth.

[95] A custody bank is 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 law.

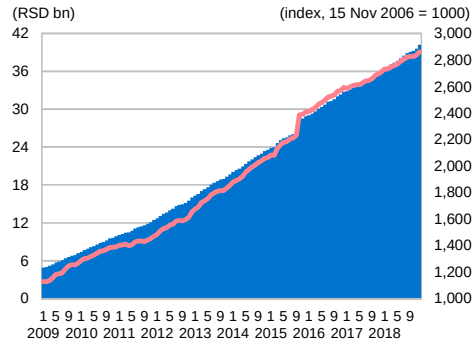
[96] A decline in interest rate leads to an increase in the prices of debt instruments and vice versa. The prices of longer-maturity instruments are more sensitive to interest rate changes.

Chart II.3.13 **Structure of VPF assets as at 31 December 2018**



* Including international financial institutions securities, investment units of open-end investment funds and other receivables.
Source: NBS.

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



Source: NBS.

At end-2018 most VPF assets were again invested in government bonds of the Republic of Serbia (83.1%), as can be seen in Chart II.3.13. Though they took a conservative approach to investment, VPFs achieved high yields. One should bear in mind that the high concentration of investment makes VPFs sensitive to market risks, primarily to interest rate risk and reinvestment risk, given that the current low interest rate environment negatively impacts the future yields of VPFs. It is therefore necessary to further develop the domestic capital market, as well as new long-term financial instruments, which will enable more diverse investment and thereby mitigate the above risk.

The portion of shares in total VPF assets decreased negligibly (from 8.5% in 2017 to 8.4% in 2018). Term deposits with banks and balances held in custody accounts made up 7.5% of total assets at the end of the year. The funds were also invested in other securities (0.3%) (bond issued by the EBRD) and investment units of open-end investment funds (0.5%). In late 2018, for the first time since they started operating in Serbia, VPFs invested in the shares of a foreign legal entity abroad (0.2%).

At end-2018, 12.5% of total VPF assets were in euros, 0.9% in US dollars and 86.6% in dinars (RSD 34.9 bn).

At end-2018, FONDex[97] reached the value of 2,862.92 points (Chart II.3.14), which is 149.53 points higher than a year earlier. Annual FONDex return, which represents the weighted average return of all funds, equalled 5.5% in 2018. Low inflation rate contributed to the positive real rate of VPF yield return, which was somewhat higher than last year (4.7%), but at the same time lower than FONDex return since the start of VPF operations (9.1% at end-2018).

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 87% of total collected fees in 2018. Such structure of fees resulted from the increase in the fund net asset value and an increasingly higher base with respect to which the management fee is collected.

The Law on Voluntary Pension Funds and Pension Schemes (RS Official Gazette, Nos 85/2005 and 31/2011) governs the organisation, management, establishment, activity and operation of VPF management companies. In addition to the above, this law also regulates the tasks and duties of custody banks, the competence of the NBS in the supervision of VPF management companies and other matters relevant for the operation of VPFs.

The Decision amending the Decision on the Method of Calculation of Fees Charged by a Voluntary Pension Fund Management Company (RS Official Gazette, Nos 60/2011 and 77/2017), applied as of 1 January 2018, set forth that the fee charged by management companies may not exceed 1.25% of the fund net asset value (earlier 2%), whereas the cap to the rate for the calculation of the contribution fee (earlier 3%) was removed. The maximum level of management fee was lowered given that the Decision on the Share of Net Value of Assets of

[97] FONDex reflects movements in investment units of all VPFs in the market. The initial FONDex value of 1,000 points was recorded on 15 November 2006 when the first VPF began to operate.

All Voluntary Pension Funds in the Estimated Value of GDP in the Republic of Serbia for 2016 (RS Official Gazette, No 77/2017) set forth that the mentioned share is 0.78% of GDP. Namely, Article 23, paragraph 2, item 2) of the Law on Voluntary Pension Funds and Pension Schemes stipulates that the above fee shall be limited to 1.25% when the NBS establishes that the net asset value of all VPFs amounts to 0.75% or above of the latest estimated GDP. Lowering of the management fee which is the most significant portion of the fees charged by management companies has a positive impact on net assets of funds and hence on members' accumulated funds. On the other hand, the removal of the cap on the contribution fee boosts market competition.

In April 2018 the NBS passed the Decision on Detailed Conditions and Manner of Issuing Licences and Approvals to Voluntary Pension Fund Management Companies (RS Official Gazette, No 29/2018). This Decision entered into force in June 2018 and repealed the Decision issued in 2011 (RS Official Gazette, No 60/2011). This Decision sets forth the detailed conditions and manner of issuing an operating licence to a voluntary pension fund management company and fund management licences to VPF management companies, as well as of granting the approval to acquire a qualified stake in a VPF management company, granting consent to the appointment of management members of management companies, the merger procedure of voluntary pension funds, procedure of the transfer of fund management rights from one management company to another, and the procedure of voluntary liquidation of a management company. In making the decision with regard to the application for an operating licence, the National Bank of Serbia also decides on the approval to acquire a qualified stake in a management company and approval of the appointment of a member of the management company's management.[98]

The payment of VPF contributions increased over the last couple of years reflecting positive economic trends in Serbia, as well as an increase in wages. Investment tax incentives have also exerted a positive impact on the VPF sector. In 2018 payments made by employers in the amount of up to RSD 5.757[99] were exempt from the payment of personal income tax and contributions for mandatory social insurance, as well as payments in the same amount made by the employer through wage garnishment.

The NBS published the "Guide to Your First Private Pension" where one can get all the relevant information on VPF operation. Namely, the guide presents how VPFs work, as well as the benefits from membership. The education of people in this area is expected to contribute to further development of the VPF sector in Serbia.

II.3.3 Financial leasing

In 2018 the financial leasing sector continued to record positive results. The sector's balance sheet assets increased further and improved in quality, owing to continued reduction in non-performing receivables. Total capital also went up considerably, thanks to, among other things, the sector's positive financial result.

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 for an agreed period of time, with all the risks and rewards of ownership.

At end-2018, 17 lessors operated in the Serbian financial leasing sector, four of which undergoing voluntary liquidation.

Financial lessors were mostly owned by banks, members of banking groups or other financial institutions (as many as 14 lessors). Seven lessors were in 100% or majority ownership of foreign legal entities, while other ten lessors were in majority ownership of domestic entities (of which eight were owned by domestic banks with foreign capital).

The employment in the sector edged down relative to the year before (from 363 to 360 employees).

Lessors' balance sheet assets continued their growth. At end-2018, they stood at RSD 86.7 bn, up by 15.2% from end-2017 (RSD 75.3 bn).

The share of non-performing receivables in total investment was further reduced. At end-2018, gross receivables past due (RSD 3.0 bn) made up 3.7% of gross financial leasing receivables (6.5% at end-2017). The share of net carrying value of these receivables in total net receivables also declined, from 1.2% (end-2017) to 0.7% (end-2018). Receivables past due more than 90 days made up the largest share of total receivables past due. At end-

[98] https://www.nbs.rs/internet/english/20/spf/issuing_licences_approvals.pdf

[99] The value is aligned with the consumer price index annually.

2018, these receivables amounted to RSD 2.3 bn. Their share in total gross receivables from financial leasing accounted for 2.8% (5.2% at end-2017). The net carrying value of receivables past due more than 90 days made up 0.1% of the total net portfolio.

The rise in lessors' capital resulted primarily from the positive result achieved, and from additional paid-in capital by the founders. Total lessors' capital at end-2018 equalled RSD 9.7 bn, up by 4.1% from the end of last year.

At RSD 1.6 bn in 2018, the pre-tax result of the financial leasing sector was significantly higher than the result achieved last year (RSD 671.4 mn). Net profit came at RSD 1.4 bn, with most lessors posting a positive net result (12 lessors). Total revenue and profit in 2018 equalled RSD 4.8 bn, increasing by 8.3% from the year before, and total expenses and losses – RSD 3.1 bn, down by 16.2% relative to 2017.

At end-Q4 2018, ROA and ROE were higher than at end-2017. ROA increased from 0.95% to 2.05%, while ROE recorded a significant upswing, from 7.62% at end-2017 to 17.53% at end-2018.

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 85% share in total investment, slightly more than in 2017 (84.2%).

As can be seen from Chart II.3.15, entrepreneurs accounted for 5.3% of total investment (4.5% in 2017), public enterprises for 2.8% (4.4% in 2017), natural persons 3.9% (3.3% in 2017) and farmers 2.3% (2.7% in 2017).

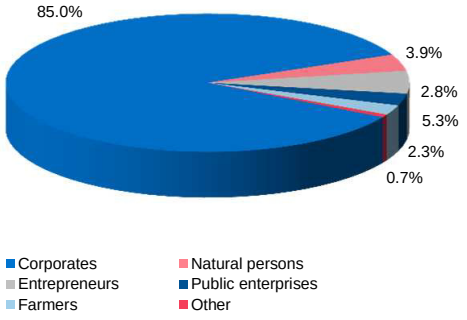
Structure of investment by lease asset

As Chart II.3.16 indicates, the financing of freight vehicles, minibuses and buses, which has the largest share in the structure of investment by lease asset, declined slightly in 2018 (from 43.1% at end-2017 to 41.2% at end-2018). The financing of passenger vehicles went up (from 33.2% in 2017 to 35.1% in 2018), while the share of financing of agricultural machinery and equipment edged down from 6.1% to 5.9%, which may be associated with the decreased farmers' share in the structure of lessees.

Though still underdeveloped, the financial leasing sector experienced positive trends, which drove the share of its balance sheet assets in the country's financial system slightly up (from 2.0% at end-2017 to 2.1% at end-2018). However, this share remained relatively low, which means that potential risks in financial leasing operations could not have a significant effect on the stability of the financial system at large.

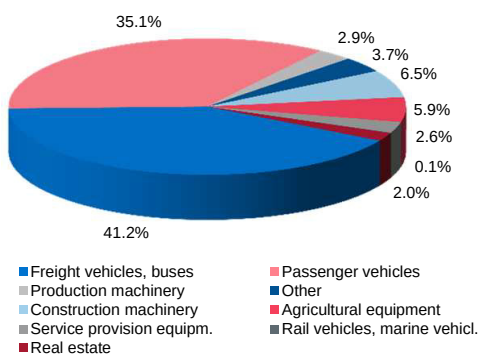
In the course of 2018 the NBS amended the Decision on Implementation of the Provisions of the Law on Financial Leasing Pertaining to Licensing and Consents of the National Bank of Serbia (RS Official Gazette, Nos 85/2011 and 29/2018). The Decision, which came into force on 1 June 2018, prescribes detailed terms, conditions and the manner of implementing provisions of the Law on Financial Leasing governing the issuance of licences to engage in financial leasing, granting consent to the acquisition of ownership of stakes/shares of lessors and granting consent to the appointment of members of the board of directors and executive board of the lessor by the National Bank of Serbia, as well as the terms, conditions and the manner of submitting the prescribed documentation and required evidence.

Chart II.3.15 **Investment structure by lessee as at 31 December 2018**



Source: NBS.

Chart II.3.16 **Investment structure by lease asset as at 31 December 2018**



Source: NBS.

II.3.4 Payment institutions and electronic money institutions

Payment institutions operate in the Republic of Serbia since October 2015, i.e. since the start of application of the Law on Payment Services which lays down a comprehensive legal framework for payment service provision. In 2018, the Law on Payment Services was amended, bringing many novelties, primarily in terms of greater transparency of fees charged by payment service providers for services linked to a payment account and better protection of payment service users.

Based on the Law on Payment Services, applied since the beginning of October 2015, special institutions registered to provide payment services and issue electronic money operate in Serbia – payment institutions and electronic money institutions. Payment institutions may only be companies, in accordance with the company law, headquartered in the Republic of Serbia and licensed by the NBS to provide payment services. 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 the transfer of funds to and from payment accounts, services of issuance and/or acceptance of payment instruments, money remittance services etc. At end-2018, there were thirteen payment institutions licensed by the NBS to provide payment services. Of these, nine payment institutions also provided payment services through a network of 2,263 agents. Four leading international companies for fast money transfer carry out transactions via payment institutions and their agents. Along with the Western Union, present in Serbia since 2017, MoneyGram, Ria Money Transfer and Unistream Money Transfer also started to operate in the domestic financial market, via the newly established payment institutions.

An electronic money institution may only be a company headquartered in Serbia, in accordance with the company law. It is authorised to issue electronic money subject to the NBS's licensing. The first licence to issue electronic money was granted in 2016, and the second one in 2019. Since this licence allows an institution to provide payment services as well, these e-money institutions also transfer funds in domestic payment transactions (payments between residents in Serbia). Unlike the domestic licensed e-money institutions, the services of foreign e-money institutions (e.g. Paypal, Skrill, Payoneer, Paysafe Financial Services Limited, Google Payment Corp. and Payeer Ltd.) may only be used in foreign payment transactions (for payments and collections with respect to electronic purchase and sale of goods and services).

In addition to licensing, the NBS also supervises all payment service providers and e-money issuers in the part of their operations that relates to the provision of payment services and/or electronic money issuance.

In 2018, the Law Amending the Law on Payment Services was adopted (RS Official Gazette No 44/2018). The Law came into force on 16 June 2018, and its provisions have been implemented as of March 2019 (i.e. after the expiry of nine months since the effective date of the Law), except for certain provisions that are applicable as of the date of Serbia's accession to the EU. The nine month interim period (until 17 March 2019) was envisaged so that payment service providers could align their operations with the new legal provisions. In accordance with these amendments, a set of secondary legislation was adopted in December 2018.

The Law Amending the Law on Payment Services, along with the accompanying secondary legislation, introduces numerous novelties, primarily concerning greater transparency of fees charged by payment service providers and enhanced protection of payment service users. The new legal solution standardises terminology for the most frequently used and most important services linked to a payment account so as to facilitate the understanding of the terms of provision of those services and comparison of providers' fees charged for services linked to a payment account.

In order to give users in single place an overview of the fees charged by different providers for specific services linked to a payment account, the NBS publishes on its website comparable data on fees, by payment account (package), for services from the list of representative services and the service of cash payment to other person's payment account.

All these measures will enhance the transparency and comparability of fees charged by payment service providers for services linked to a payment account and could also push the fees down, since the competitive price policy is in the interest of payment service providers, as they wish to keep the current clients and attract new ones.

In 2018 the NBS amended the Decision on Implementation of Provisions of the Law on Payment Services Relating to Issuing of Licenses and Approvals of the National Bank of Serbia (RS Official Gazette, Nos 55/2015, 82/2015 and 29/2018), which came into force on

1 June 2018. One of the newly introduced requirements is that when assessing applications and/or fulfilment of conditions under this Decision, the NBS particularly assesses whether there are indications that a payment institution and/or e-money institution is being established, and/or a holding therein is acquired for the purpose of money laundering or financing of terrorism. 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. The circumstances which may point to the existence of such indications are also listed in the Decision.

The enabling of new ways of payment and the introduction of technological innovations in the payment services market are the result of the NBS's continuous efforts over a number of years aimed at creation of appropriate regulatory and other preconditions for modernising and improving payment operations in the Republic of Serbia. By developing a modern Law on Payment Services and adopting a full set of secondary legislation, regulating multilateral interchange fees and other rules in payment card operations, setting up state-of-the-art payment infrastructure and continuous education of citizens and corporates, the NBS provides further stimulus to the development of cashless operations and expansion of electronic commerce and business in Serbia.

III Financial markets

Owing to further monetary policy easing in an environment of strong fiscal and structural adjustment and improvement of macroeconomic indicators, interest rates and costs of borrowing in the domestic market went down. The fall in the country risk premium, measured by EMBI, to the new historical low in January 2018 (85 bp), credit rating improvement by Standard & Poor's, and confirmation of the stable outlook by Fitch Ratings, were followed by the fall in euro interest rates in money and capital markets and the rising interest of foreign investors in Serbian long-term government securities. In November and December, the Ministry of Finance's Public Debt Administration organised two early buyback auctions of a part of three-year dinar government securities, with the total buyback volume of RSD 20 bn. In a bid to further improve and modernise its work, in 2018 the Belgrade Stock Exchange (BSE) launched Serbia: IPO Go! project, financed by the EBRD Shareholder Special Fund, while in July 2018, the company Fintel energija launched the first initial public offering in Serbia in as many as 78 years. A dollar eurobond worth USD 1 bn (EUR 905.8 mn) matured in December, which helped reduce public debt and improve its currency composition.

III.1 Money market

Weaker external demand and specific supply-side factors in some of the euro area members slowed down the bloc's GDP growth in 2018. Due to the global growth deceleration, the Fed and the ECB are expected to hold up the pace of normalisation of their monetary policies. Trade tensions between major world economies in 2018 and protectionism in international trade protracted the uncertainty in commodity and financial markets.

Against the background of economic growth and further labour market strengthening in the US, the Fed increased the target range for the federal funds rate four times in 2018 (in March, June, September and December), and as of October 2017 it started to unwind its balance sheet (which had been enlarged in the period of monetary policy accommodation through purchase of Treasuries and mortgage-backed securities) by gradually reducing the monthly reinvestment amount. On the other hand, the ECB kept its interest rates at the historical low and continued to implement the quantitative easing programme by net monthly purchases of EUR 30.0 bn from January to September and of EUR 15 bn from October to December, when it ended the quantitative easing programme.

In Serbia, cautious monetary policy accommodation, amid strong fiscal and structural adjustment, helped to improve macroeconomic characteristics of the economy and reduce the impact of shocks from the international environment.

Relative stability of the EUR/RSD exchange rate was maintained throughout the year. January saw depreciation pressures, chiefly due to the seasonal hike in FX demand of domestic companies (mainly energy importers). Appreciation pressures prevailed from February onwards, so the dinar strengthened during the major part of the year. Appreciation pressures were fuelled by better export results, high FDI inflow, increased foreign investor appetite for government securities, relatively high purchases of foreign cash, higher non-resident card payments in Serbia and growth of FX-indexed bank assets. The dinar gained ground against the euro until August, supported by the continued strong export growth and high FDI inflow. As of September, these appreciation pressures lost steam, with occasional emergence of depreciation pressures. In 2018, the dinar strengthened by 0.2% against the euro, and the NBS intervened to prevent excessive daily volatility of the EUR/RSD exchange rate by net buying EUR 1,580 mn (in total, it bought EUR 1,835 mn and sold EUR 255 mn), thereby additionally

boosting the country's FX reserves. At end-December 2018, FX reserves equalled EUR 11.3 bn. In the same period, the dinar weakened against the dollar by 4.1%, particularly as the US currency gained ground against the euro as of Q2 2018.

Strong fiscal adjustment helped to reduce the government's borrowing needs and owing to the budget surplus recorded in 2018, two early buyback auctions of dinar government securities were held in Q4. Monetary policy easing contributed to the decrease in interest rates and costs of borrowing in dinars. Favourable macroeconomic results and improved outlook were confirmed by Serbia's moving up by five notches on the Global Competitiveness Index of the World Economic Forum for 2018, to the 65th position out of 140 countries.

In mid-January 2018, Serbia's risk premium measured by EMBI dropped to 85 bp, its new historical low, while in the remainder of the year, it went up. At end-2018, the risk premium measured 159 bp and was among the lowest in the region. In December 2018, Standard & Poor's improved Serbia's credit rating outlook from stable to positive, and affirmed the country's credit rating at BB, explaining its decision by the country's robust economic growth and monetary policy results in the maintenance of price and financial stability. Moody's Investors Service kept its credit rating and outlook for Serbia at Ba3/stable outlook. Fitch Ratings confirmed in November 2018 Serbia's credit rating at BB, with a stable outlook, relying on the expectation that the economic policy would continue to support the strengthening of macroeconomic fundamentals, improvement of business environment and reduction of public debt. Such developments contributed to lower cost of borrowing in foreign currency. The quality of macroeconomic management, in the face of uncertain global capital flows amid divergent monetary policies of the leading central banks, boosted the interest of foreign investors in long-term Serbian government securities.

In 2018, inflation remained low and stable for most of the year (except temporarily in March and April due to the base effect), within the target band (3%±1.5 pp) and close to its lower bound.

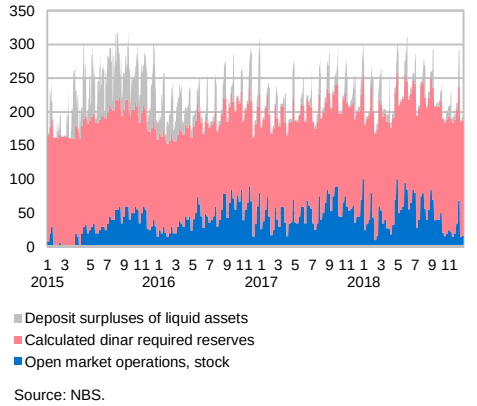
The key policy rate was lowered two times in 2018 – in March and April, by 0.25 pp each, to 3.0%. The cycle of cuts, begun in May 2013, resulted in the key policy rate being reduced to its lowest level in the inflation targeting regime. Apart from that, in April 2018 the NBS Executive Board narrowed the interest rate corridor from ±1.5 pp to ±1.25 pp, so the last key policy rate cut did not reflect on the lowering of the deposit facility rate. Monetary policy accommodation was primarily motivated by the weakening of inflationary pressures and the wish to spur lending and economic growth. On the other hand, the uncertainty in the international financial and commodity markets, mounting protectionism and trade tensions, as well as the uncertainty surrounding Britain's withdrawal from the EU, mandated caution in the conduct of monetary policy in the remainder of the year.

In 2018 the NBS continued to implement reverse repo transactions (repo sale of securities with maturity of one week) as its main open market operation, in order to absorb excess liquidity of the banking sector.

The average repo rate[100] was relatively stable throughout the year (2.36–2.55%). At the last repo auction in 2018, the repo rate was 2.39% (2.57% at the last auction in 2017). Compared to end-2017, at end-2018 banks reduced their holding of NBS repo securities (from RSD 45.1 bn to RSD 16.5 bn). At end-2018, dinar allocations of required reserves went up, as well as banks' overnight deposits with the NBS (Chart III.1.1).

Turnover in the interbank overnight money market in 2018 remained similar as in 2017 (Chart III.1.2). The average daily turnover in 2018 equalled RSD 2.9 bn, same as in the year before, except that it increased in Q4 2018 (RSD 3.8 bn).

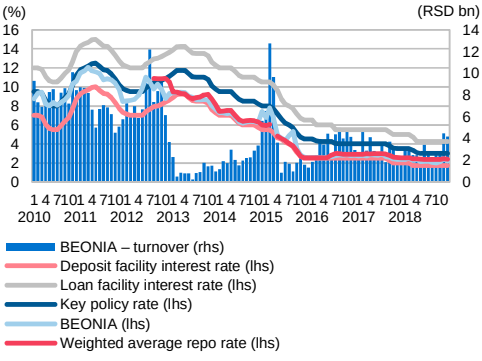
Chart III.1.1 **Selected NBS monetary policy instruments**
(RSD bn)



Source: NBS.

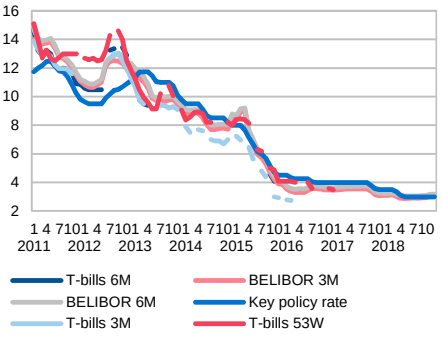
[100] The rate achieved at repo auctions weighted by the amount of securities sold.

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



Source: NBS.

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

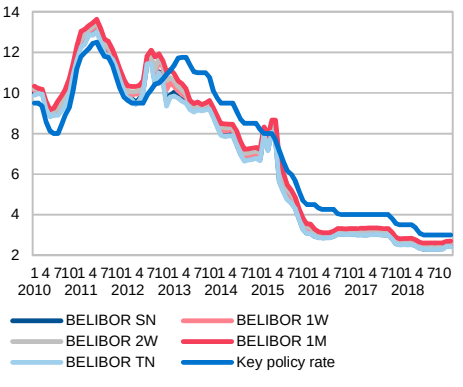


Sources: Ministry of Finance and NBS.

In 2018, BEONIA[101] edged down, reflecting the key policy rate cuts. Throughout the year BEONIA oscillated between the average repo rate and the deposit facility rate. In December 2018 BEONIA averaged 2.2% (2.4% in December 2017). Average BELIBOR rates in December 2018 ranged from 2.4% for the shortest to 3.2% for the longest maturity, similar to the range from December 2017: 2.5%–3.2% (Chart III.1.3).

To encourage the development of the interbank swap market and more efficient liquidity management by banks, the NBS organises regular two-week and three-month FX swap purchase/sale auctions, which provide additional FX/dinar liquidity. In 2018, the NBS swap bought and sold EUR 324.0 mn each, less than in 2017 (EUR 546.5 mn each). The volume of interbank swap transactions reached EUR 20.0 mn, decreasing from 2017 (EUR 202.7 mn).

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



Source: NBS.

Owing to improved macroeconomic fundamentals and with a view to reducing the refinancing risk, the government switched from short-term sources of financing to the issuance of financial instruments of longer maturities. In 2018, no short-term dinar T-bills were auctioned (in 2017 T-bill issues were worth only RSD 23.0 bn, with six-month T-bills accounting for RSD 3.0 bn and one-year for RSD 20.0 bn).

At end-2018, the stock of euro[102] T-bills was worth EUR 99 mn (end-2017: EUR 188.2 mn). During the year, two auctions of these T-bills were held, attracting an almost 100% demand. Interest rate on euro-denominated T-bills[103] was lowered by 3 bp (to 0.45%).

III.2 Bond and share market

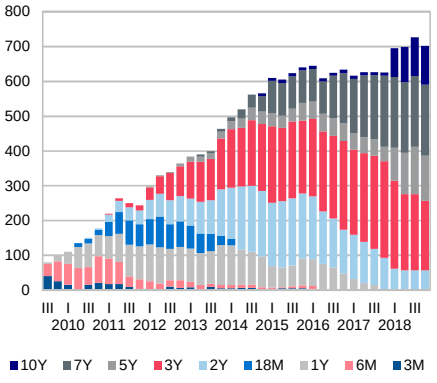
Government bond market is one of the most important segments of the domestic financial market. The primary sale of these securities in the domestic market is organised by the Public Debt Administration of the Ministry of Finance, by the auction method at a single interest rate. Considerable progress has been made in the previous period with regard to the increase in the average maturity of government dinar securities and the reduction of financing costs on account of this type of borrowing.

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

[102] 53-week government securities.

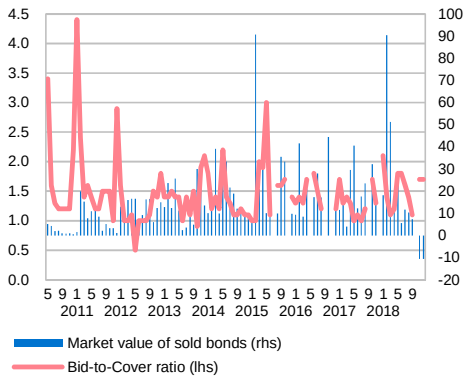
[103] 53-week government securities.

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.

Through sale of dinar bonds, the government borrows in the domestic market under relatively favourable terms, thus reducing exposure to currency risk and contributing to further dinarisation of the financial system. Owing to improved fiscal position, a reduction was noted in government borrowing needs, with less frequent auctions, smaller amount of securities offered for sale and favourable interest rates. The bulk of government bonds issued were dinar bonds of longer maturities. In November and December, the Ministry of Finance Public Debt Administration organised two early buyback auctions of a part of three-year government dinar securities, with the total buyback volume of RSD 20 bn, in order to reduce a portion of public debt liabilities maturing in 2019 (coupon rate of 6.00%, maturing on 22 February 2019). At the first auction (20 November), government bonds were purchased at the effective rate of 2.9%, and at the second (18 December) – at the effective rate of 3.0%.

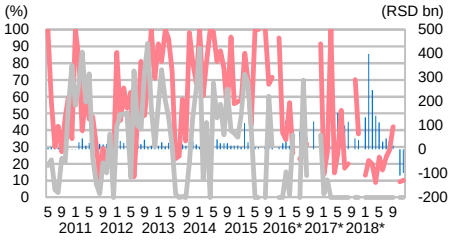
The stock of sold dinar government bonds with maturity of over one year amounted to RSD 701.3 bn at end-2018, or 12.5% more than at end-2017. (Chart III.2.1). As for the structure of dinar government bonds at end-2018, the dominant maturity category were seven-year bonds (29%), while the share of three-year bonds contracted (from 44% to 28%).

After the successful performance of benchmark bond issues in 2016, the same strategy was applied in 2017 and 2018. When issuing benchmark bonds, the planned sales volume is only a part of the total issue so that the issue of those bonds can be reopened multiple times throughout the year. These issues boost the volume of secondary trading, and push down the effective yield rates on reopenings. 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.

In 2018, the government auctioned three-year, five-year and ten-year dinar bonds. Reduced borrowing needs enabled the government to accept only offers with sufficiently low interest rates. The bid-to-cover ratio at primary auctions of dinar government bonds was relatively favourable. It reached the highest value (2.1) in January and lowest values (1.1) in March and September 2018 (Chart III.2.2). Also, the performance at primary auctions of dinar government bonds was extremely favourable relative to the planned trading volumes. Coupon rates and rates accepted at primary auctions of government bonds were reduced further in 2018.

Coupon rates on dinar government bonds fell from 8.0% to 4.50% on five-year bonds and from 10.0% to 5.875% on ten-year bonds. The interest rate at primary auctions of three-year government bonds declined during the year from 4.29% to 3.80%. The five-year (3.74%) and ten-year government bonds (4.80%) recorded a much sharper fall in effective rates (by 2.8 pp and 8.2 pp, respectively), given that the last auctions of these bonds before 2018 were held in 2015 and 2014, respectively. Coupon rates on euro-denominated government bonds also dropped, so at the last auction in 2018 three-year bonds were issued

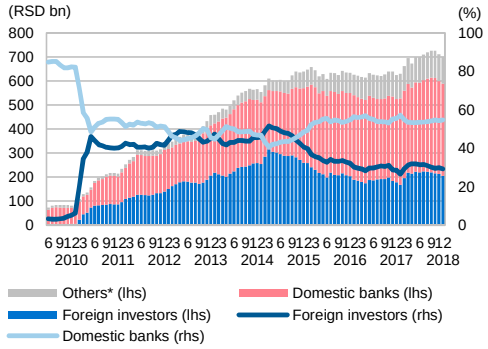
Chart III.2.3 **Performance ratio and foreign investor participation in auctions of dinar government bonds**



* 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.

at a coupon rate of 1.25% (the last auction in 2017: 1.50%), and five-year bonds at a coupon rate of 1.75% (at the last auction in 2017: 2.25%). As coupon rates declined, accepted rates in primary auctions of these bonds also went down. Rates on five-year euro-denominated government bonds declined the most (by 60 bp to 1.78%). Rates on three-year bonds fell by 29 bp (the last auction in 2018: the accepted rate 1.20%), on two-year bonds by 34 bp (the last auction in 2018: the accepted rate 0.65%), and on ten-year bonds by 50 bp (the last auction in 2018: the accepted rate 3.50%). The year 2018 saw the first issuance of seven-year euro-denominated government bonds (size of the issue EUR 100 mn, sale at face value – EUR 65.1 mn, coupon rate – 2.50%).

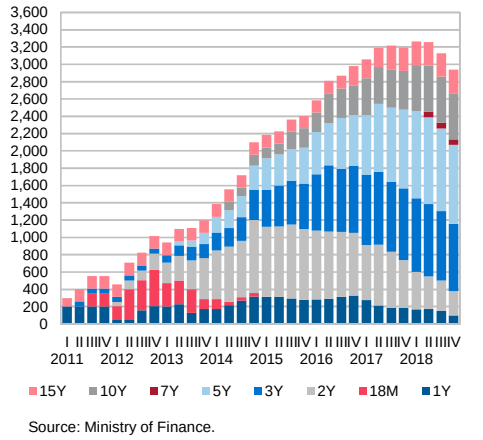
In 2018, foreign investor participation in the dinar government bond portfolio increased slightly, from 28.6% (in December 2017) to 29.2% (in December 2018). As shown in Chart III.2.4, as of end-2015 government bonds are predominantly owned by domestic banks. Their share in the portfolio of dinar securities[104] declined by around 0.7 pp in 2018, to 54.7% in December. Other domestic investors (insurance undertakings, pension and investment funds) still account for much lower holdings of dinar government bonds, but there has been a notable rise in their participation in recent years.

Further diversification and strengthening 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.

A dollar eurobond worth USD 1 bn (EUR 905.8 mn) matured in December, which helped reduce public debt and improve its currency composition.

The size of the issue of euro-denominated government bonds[105] (EUR 0.7 bn) was lower in 2018 than in 2017 (EUR 1.3 bn). Though auctions of these bonds attracted high demand and recorded a relatively high performance, the stock of euro-denominated bonds with the maturity of over one year declined by EUR 0.2 bn, to EUR 2.8 bn in 2018 (Chart III.2.5). The highest share in the total

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

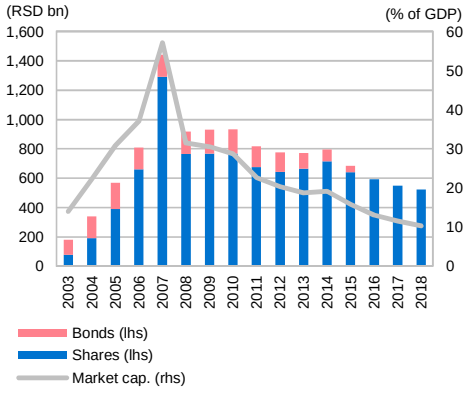


Source: Ministry of Finance.

[104] Including government bonds and 53-week T-bills.

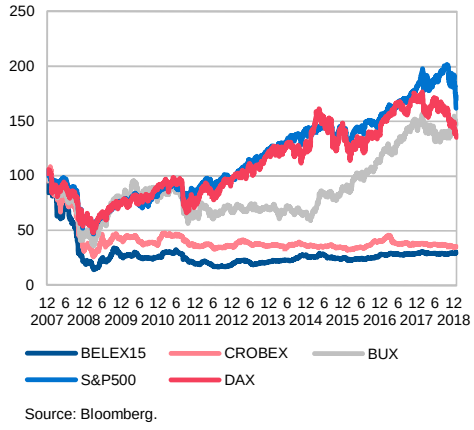
[105] Government securities with one-year, two-year, three-year, five-year, seven-year and ten-year maturity.

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.

portfolio of euro-denominated government bonds was that of five-year (31%) and three-year bonds (26%).

Trading volume in the secondary market of dinar government securities in 2018 was lower than in 2017 (RSD 410.1 bn) and equalled RSD 377.6 bn. Secondary trading in euro-denominated securities amounted to EUR 813.8 mn (EUR 899 mn in 2017). The strategy of issuing benchmark bonds positively impacted trading volumes in the secondary market. As of November 2015, long-term government bonds were included to the BSE prime listing, and total trading in these bonds (both dinar- and euro-denominated) in the BSE in 2018 came at RSD 55.0 bn. The introduction of government bonds to regular trading in the BSE facilitated 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 a more efficient valuation of these securities.

The introduction of benchmark bond issues had a positive impact on the volume and continuity of secondary trading and improved market efficiency in the sale of government bonds in the primary market. Further development of the market of government securities can be expected as a result of using financial derivatives and introducing the function of primary dealers that should contribute to the improvement of the primary and secondary market of government securities.[106]

The BSE market capitalisation at end-2018 reached RSD 522.7 bn (around 10% of GDP), or 5% less than at end-2017 (Chart III.2.6). Market capitalisation contracted mostly in the open market (by RSD 20.8 bn) and the MTP[107] segment (by RSD 19.7 bn) of the BSE, due to exclusion or withdrawal of a certain number of issuers, while market capitalisation of the prime listing was by RSD 9.7 bn higher than in the year before.

At end-December 2018, BELEX15 (the index of the most liquid shares) measured 761.7, up by 0.2% from end-2017 (759.8). In the same period, BELEXline index declined by 4.4% to 1,589.4. During the year, indices oscillated in both directions, and reached their yearly peaks in January (BELEX15 778.4 and BELEXline 1,667.5).

Indices in regional stock exchanges displayed divergent movements in 2018 (Chart III.2.7).

Total shares turnover on the BSE in 2018 amounted to RSD 7.8 bn, down by RSD 0.4 bn from 2017. The largest share turnover was recorded in the BSE open market segment (RSD 2.4. bn).

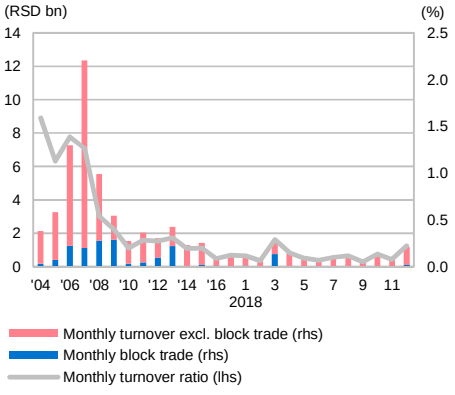
One of the indicators of market liquidity is the monthly share turnover ratio[108]. Low average value of this ratio, which in December 2018 measured only 0.22%, suggests low BSE liquidity (Chart III.2.8). The ratio slightly edged up from December 2017 (0.12%), but its value remained lower than pre-crisis. In 2007 it stood at 1.3%. However, stock market liquidity is even more unfavourable, taking

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

[107] MTP – multilateral trading platform.

[108] It is 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.

into account that the ratio of the monthly turnover of shares also includes block trading in the total turnover. However, as a one-off purchase of shares, block trading is only registered on the BSE and does not reflect its actual liquidity.

The declining trend in the number of transactions in the BSE continued. At 60,744 in 2018, it was lower than in 2017 (66,952), suggesting that the capital market is still insufficiently developed.

Foreign investor participation in the total turnover in the BSE in 2018 was 38.6%, increasing by 0.5 pp from 2017. Foreign investors were more active on the sale (47.3%) than on the purchase side (29.9%).

Bonds issued by the EBRD in the domestic market in December 2016 were also admitted to the BSE prime listing. In 2018, the BSE recorded three trading transactions in these bonds (one in January and two in May), in the total value of RSD 321.8 mn.

Municipal bonds issued by the City of Šabac and the Municipality of Stara Pazova can be traded in the MTP segment of the BSE. However, in 2018 these bonds were not traded.

The corporate bond market is still quite underdeveloped, with few enterprises that issued these bonds, chiefly under unfavourable terms. These bonds are not listed in the BSE. As corporate bonds are an alternative way to finance enterprises, which can be cheaper than borrowing from banks, the development of this segment can be very significant for domestic enterprises. Still, the development of this market requires activities that would contribute to higher supply of these instruments (e.g. lower costs of admission to the regulated market), but also further development of domestic institutional investors (insurance undertakings, pension and investment funds) interested in corporate bonds.

In order 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.

In a bid to further improve and modernise its work, in 2018 the Belgrade Stock Exchange launched Serbia: IPO Go! project, financed by the EBRD Shareholder Special Fund and implemented by the audit and consulting firm PwC. The company Fintel energija launched the first initial public offering (IPO) in the BSE in July. As of November 2018, shares of this company have been in the BSE prime listing and may be purchased by professional and private investors and natural persons. This was the first IPO in the BSE in 78 years.

The development of new financial instruments can contribute to further development of the domestic financial market. To increase investment of domestic natural persons, additional efforts are needed to educate citizens and to increase financial inclusion. The improvement of current regulations and their alignment with the movements of the capital market at the EU level can also have positive effects on further development of the domestic financial market.

III.3 Financial infrastructure

Payment systems play a key role in the financial market as they are the main component of the financial system's infrastructure. Therefore, stable and safe operations of payment systems are a prerequisite for the proper functioning of the whole financial and economic systems.

Efficient and reliable functioning of payment systems is particularly important for the NBS as a central bank, because of its key functions, notably maintaining confidence in the national currency and ensuring financial stability.

The NBS is the payment systems operator and regulator, as well as the "catalyst" of their development. It governs and improves payment systems, promotes their stability, safety and efficiency, and performs its supervisory function in a responsible manner. These roles are mutually connected and focused on ensuring the safe and efficient functioning of payment systems in the Republic of Serbia.

The following payment systems make up the infrastructure of Serbia's payment transactions:

– NBS RTGS system,

– NBS IPS system,

– NBS clearing system,

– system of international and interbank clearing of foreign exchange payments,

– DinaCard clearing system,

– ASB cheque clearing, and

– ASB direct debit clearing.

The NBS is the operator for five payment systems:

– RTGS system,

– IPS system,

– clearing system,

– system of international and interbank clearing of foreign exchange payments,

– DinaCard clearing system.

Under the Law on Payment Services, which governs the finality of settlements in important payment systems, and based on regulations adopted under that Law, the NBS RTGS and clearing systems are identified as important payment systems.

The NBS Real Time Gross Settlement System (RTGS) is the payment system for the transfer of dinar funds between its participants in real time and at gross principle. Its systemic importance lies in the fact that it is an efficient channel for the implementation of monetary policy measures, that it provides for the settlement of the pecuniary part of transactions in respect of trading in financial instruments, as well as that it enables the final settlement of all dinar payment transactions originating in other payment systems.

Participants in this system are the NBS, 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, the ministry in charge of finance – Treasury Administration, the Central Securities Depository and Clearing House, as the operator for the financial instruments settlement system, and the Association of Serbian Banks (ASB), as the operator of the direct debit and cheque clearing systems.

RTGS participants are able to adequately manage credit risk because settlement is carried out in real time and at gross principle. Given that the settlement of mutual transactions is carried out in central bank money, participants are not exposed to credit and liquidity risks.

On the other hand, to participate in the NBS clearing payment system, a participant is obligated to ensure a net debit cap.

RTGS participants are also able to manage their liquidity risk as the system enables them to view all their transactions, account balances and changes in the sequence of execution of payment orders depending on priority. Relying on its instruments, the NBS also enables banks to use intra-day interest-free loans. These are collateralised lending facilities granted at a bank's request. The collateral for this type of loans, as well as for all monetary operations, are dinar securities of the NBS, the Republic of Serbia and international financial institutions with the highest credit rating. The very ability of banks to obtain additional liquidity in this way is of vital importance for the smooth operation of payment systems.

One of the indicators of the importance of the RTGS system for the national economy is the value of payment transactions executed in this system over a certain period. In 2018, as much as 99.17% of the value of payment transactions in Serbia's financial infrastructure was executed in this system. A total of 175.32 mn payments

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

	Average for period 2010–2017	2018
NBS RTGS		
Value, RSD bn	44,874.58	48,419.43
Number of payments, mn	137.90	175.32

Source: NBS.

were carried out through the NBS RTGS system in 2018, with the total turnover amounting to RSD 48,419.4 bn. The highest monthly turnover was recorded in May (RSD 4,443.28 bn).

One of the indicators of the importance of this type of systems for the national economy is the value of payments executed (total value of turnover) relative to GDP. In 2018, the RTGS turnover was 9.57 times the value of Serbia's GDP.

The availability of the NBS RTGS and clearing systems is one of the key factors affecting the stability of the financial market. It is therefore important to note that the availability of these systems throughout 2018 was 100%.

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 2018, on the basis of reports on interbank transactions in the NBS RTGS payment system. During 252 business days, only MT202 and MT103[109] interbank messages were analysed and used for each business day to model separate networks. Table III.3.2 shows the results of the analysis and the values of indicators for the entire network.[110]

For 252 business days in 2018, for the observed sample of transactions (MT202 and MT103), the average daily turnover was RSD 64.2 bn. The average number of transactions per day was 16,468 and the average value per transaction was RSD 3.91 mn.

The size of a financial network is defined by the number of its participants. Until April 2018, when the NBS Executive Board decided to delicense Jugobanka Jugbank a.d. Kosovska Mitrovica, the NBS RTGS payment system numbered 29 banks as active participants. In October 2018, Direktna Banka acquired Piraeus Bank a.d, which is why in November and December there were 27 banks actively participating in the NBS RTGS system. The daily average of direct interbank links was around 563, meaning that a large number of banks executed interbank MT202 and MT103 transactions on a daily basis. The average daily connectivity ratio of 68.90% was relatively high, which means that the interdependence of financial institutions was also high, as indicated by the low average path length of 1.20,[111] i.e. the mean value of the shortest paths to any node.

Table III.3.2 **RTGS interbank payments (network-level)**

		Mean	Median	Maximum	Minimum	Standard deviation
Payments	Value (RSD mn)	64,212.28	63,851.60	76,292.48	50,421.43	9,711.50
	Number of transactions	16,468.75	16,303.92	18,156.53	14,400.24	1,115.65
	Average (RSD mn)	3.91	3.83	4.99	3.19	0.62
Network size	Nodes*	28.08	28.00	29.00	27.00	0.64
	Number of direct links	563.09	566.58	584.74	525.27	18.35
Distance measure	Average path length	1.20	1.19	1.24	1.17	0.02
Connectivity	Node degree	21.13	21.21	21.71	19.33	0.61
	Node out-degree	19.37	19.36	19.72	18.90	0.21
	Connectivity	68.90%	68.89%	69.99%	66.83%	0.91%
	Average clustering	82.71%	82.40%	84.44%	81.58%	0.92%
Others	Betweenness centrality	3.45%	3.45%	3.70%	3.23%	0.10%
	Dissimilarity index	0.41	0.33	0.69	0.29	0.13

* Calculations based on daily reports from the NBS RTGS system, for the period Jan-Dec. 2018, interbank payments (MT202 and MT103). On 2 April 2018, the NBS Executive Board adopted the decision to delicense Jugobanka Jugbank a.d. Kosovska Mitrovica. On 29 October 2018, Direktna banka acquired Piraeus bank a.d.

Source: NBS.

[109] 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.

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

[111] The average path length l_h for node h is the mean of all shortest paths to any node i, $l_h = \frac{1}{n}\sum_{h \neq i} d_{hi}$.At the network level, the average path length is defined as the ratio between the mean of average path lenghts for each node and the number of nodes, $l = \frac{1}{n-1}\sum_i l_i$.

Important parameters for analysing a network of this type are the mean value of the node degree and the value of the degree of the out node, which denotes the number of banks to which a specific bank makes payments. If a financial institution with a high value of this indicator faces operational risk, i.e. inability to make payments, there is a higher probability of contagion to related nodes, i.e. financial institutions expecting to receive payments. For the entire NBS RTGS network, the average daily degree out was 19.37, 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 82.71%, which means that the nodes' neighbours were connected to a larger extent.

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 shocks through the network.

The average betweenness centrality of 3.45% is rather low. However, following an analysis among 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 average mean of the dissimilarity index, which is used to compare the entire network from the perspective of all pairs of related nodes, equalled 0.41 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.

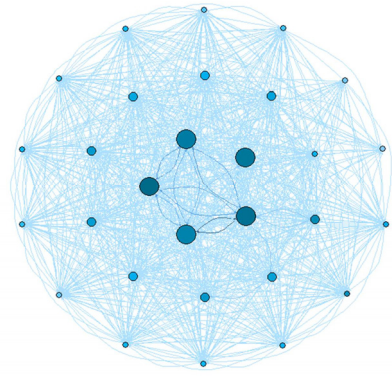
Identifying important banks in the payment system

A safe and efficient financial infrastructure is a prerequisite for the stability of the financial market and the financial system as a whole. 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.

Network modelling of payment systems and the identification of systemically important participants provide a suitable basis for conducting payment system stress testing. The ECB,[112] central banks, as well as the IMF[113] 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 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 and their mutual transactions[114] carried out in the NBS RTGS payment system during 2018, it is possible to identify groups of banks whose importance in the NBS RTGS can

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



* Interbank payments (MT202 and MT103) for the period Jan-Dec. 2018.
** 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.

[112] ECB, Stress-Testing of liquidity risk in TARGET2 (February 2017).
[113] Macrofinancial Stress Testing – Principles and Practices, IMF (2012).
[114] January–December 2018, interbank payments (MT202 and MT103).

be determined based on their position in the network. As shown in Chart III.3.1, a small number of important nodes can be identified in the network, i.e. a small number of important participants in this payment system, which can be determined according to centrality measures (degree of an individual node, betweenness centrality, closeness centrality and prestige).

Given that an efficient financial market infrastructure influences the speed of economic flows, costs and the liquidity of participants, and that it represents a monetary policy transmission channel, it is clear that central banks are particularly interested in ensuring its reliable and efficient functioning.

Text box 4: New payment system in the Republic of Serbia – Instant Payments Serbia –

4.1 NBS IPS – upgrade of financial market infrastructure

Instant payments are a state-of-the-art payment method, carried out 24 hours per day, within a few seconds only. The establishment of the Instant Payments Serbia (NBS IPS) system and introduction of instant credit transfers was an exceptionally important project of the NBS and an important step towards the digitisation of payment services. As the ECB also recognised the importance of instant payments, in November 2018 it launched a pan-European service for settling electronic payments instantly – TIPS[115] (TARGET instant payment settlement). The NBS IPS went live on 22 October 2018. Its method of operation, functionalities and technical-technological solutions are on a par with the latest trends in the payment systems area. The system relies on the most advanced IT solutions – the MX/ISO 20022 message standard, and offers a high performance level, very short processing time and high availability.

The NBS IPS was set up in the integrated and upgraded model of the NBS RTGS payment system software platform. This enables the execution of instant payments 24/7/365[116] and settlement on accounts with the NBS, with balances in central bank accounts being the safest means of settlement. The IPS system enables the execution of instant payment orders in individual amounts of up to RSD 300,000.

In addition to standard payments (e.g. e- or m-banking or at tellers of payment service providers), the IPS system offers additional services for payment service providers and users. For instance, the Central Addressing Scheme (CAS) links the user's mobile telephone to his account number, enabling the user to transfer money to another user's account by providing his/her mobile phone number alone. The Bill Presentment (BP) service enables payers to obtain electronically from registered large bill issuers (mobile and cable operators, utility service providers, etc.) the data based on which they can swiftly and easily pay their bills for services provided, from any place and at any time.

The NBS IPS introduced another cashless payment method at merchants' points-of-sale, which enables payment service users to present or scan the standardised two-dimensional bar code – IPS Quick Response Code and initiate instant payments at a point-of-sale.

4.2 Advantages of IPS

The cutting-edge IPS payment system offers numerous advantages to citizens and corporates alike, and society at large:

– It enables cashless transfers 24/7/365;

– Transactions are executed within a few seconds only;

– As the system is standardised, payment instruments can be used for instant payments at a POS regardless of the issuer;

– The costs and method of transactions in the NBS IPS system enable payment service providers to offer to merchants to accept these payments under more favourable terms and at costs lower than those for the processing of card transactions;

– Instant payments can be initiated at any time, from any place and via all types of communications devices – e- or m-banking, tellers in banks and other payment service providers, thanks to which payees have access to money within a few seconds only;

[115] https://www.ecb.europa.eu/press/pr/date/2018/html/ecb.pr181130.en.html.

[116] 24 hours per day, 7 days a week, 365 days a year.

– The system broadens the offer of payment methods for all market entities (cooperation with large payment service providers, such as utility service providers, mobile operators, etc., ensuring access to bill/invoice data to users of their services directly through the IPS – this will, in turn, lower the costs of the issuance and collection of bills with these providers, while payers will have at their disposal new avenues for the transfer of funds).

Moreover, the NBS IPS is important for government digital services as it enables and supports not only the digitisation of the public administration, but also simple and fast provision of services to citizens. Owing to the IPS, within a few seconds only government authorities can obtain information on whether a citizen or an economic entity has settled its obligations towards the government and whether the funds are actually in the government authority's account at the moment of obtaining the information. All of this is available 24/7/365.

4.3 The impact of IPS on the financial system

Owing to the 24/7/365 regime, the faster flow of money within the economic system will no doubt reflect positively on the financial system as a whole.

This will, in turn, ensure the stable and safe operation of payment systems, in order to pre-empt systemic shocks and ensure the stability of financial infrastructure. By increasing the share of cashless payments with cost-efficient, fast, safe and universally available payment instruments, the NBS contributes not only to efforts to curb the grey economy, but also generates other positive macroeconomic effects, reflected in business innovations, lower costs of operation, improved financial education of citizens and corporates, and a higher degree of financial inclusion.

With the IPS, the NBS opened a new chapter of its activities aimed at increasing the options for cashless payments, aware of the importance of instant payments in the contemporary world both for individuals and society at large.

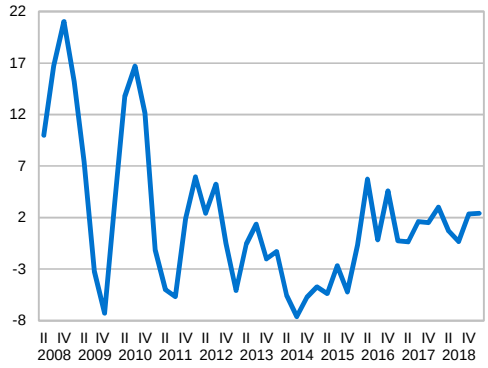
III.4 Real estate market

Serbia's average real estate price, measured by DOMex increased by 2.3% y-o-y at end-Q4 2018, indicating a further recovery in the real estate market. Elevated housing loan demand is expected to continue in the coming period, as confirmed by the 2018 Bank Lending Survey, along with the anticipated rise in private sector employment and wages. On the supply side, the recovery in the construction sector is indicated by the value of construction works executed in the territory of Serbia which went up by 13.9% at constant prices in 2018, compared to 2017.

The DOMex is a real estate index, published by the National Mortgage Insurance Corporation since 2012. It is calculated based on the purchase/sale prices of real estate financed by loans insured by the Corporation.[117] The index does not cover data on the prices of real estates financed by the loans not insured by the Corporation or otherwise.

Since early 2016, the real estate prices, measured by the DOMex, have shown signs of the real estate market recovery. In Q4 2018, Serbia's DOMex rose by 2.3% in y-o-y terms, with Vojvodina recording the sharpest growth (11.3%) and Šumadija and Western Serbia the slightest (0.07%) (Chart III.4.1). The average LTV for total initially insured loans at end-2018 measured 67.8, considerably below the prescribed level of 80%.

Chart III.4.2 **Real estate prices**

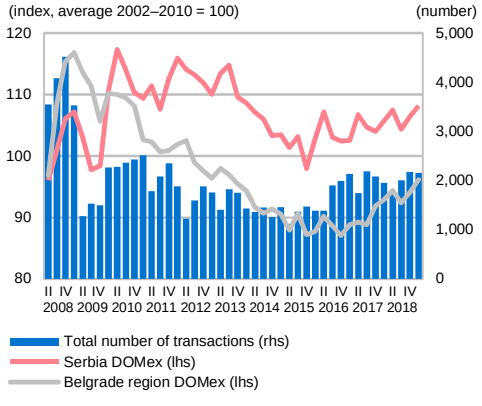


Source: National Mortgage Insurance Corporation.

According to the Corporation, the average real estate price in Serbia equalled EUR 910.2 per square metre in Q4. Real estates were the most expensive in the Belgrade region, averaging EUR 1,219.4 in Q4, which is the highest value in the last five years.

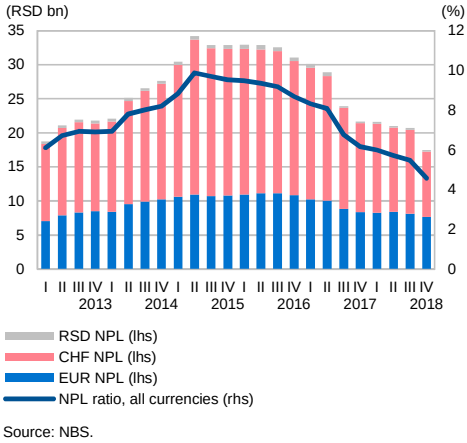
The year 2018 saw the sale of 8,089 apartments financed by insured loans, by 1.9% more than in 2017, but almost twice less than in 2008 (15,650 apartments) which recorded the largest turnover since DOMex is monitored. Of the total number of apartments financed by insured loans, almost one half (3,648 apartments, or 45.1%) are in the Belgrade region.

Chart III.4.1 **Real estate index DOMex and total number of transactions**



Source: National Mortgage Insurance Corporation.

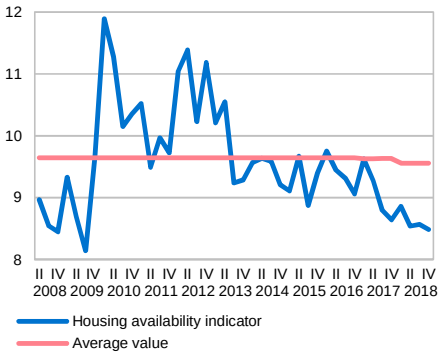
Chart III.4.3 **Housing NPLs**



Source: NBS.

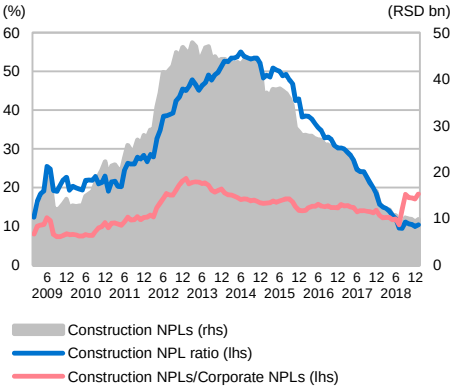
[117] DOMex for a particular period is obtained by comparing the average value of all prices per square metre in a specific territory over a particular period of time with the average of all prices per square metre in the same territory in the base period.

Chart III.4.4 **Housing availability indicator (price-to-income)**
(in years)



Source: NBS, based on data from SORS and the National Mortgage Insurance Corporation.

Chart III.4.5 **NPLs of the construction sector within corporate sector NPLs**



Source: NBS.

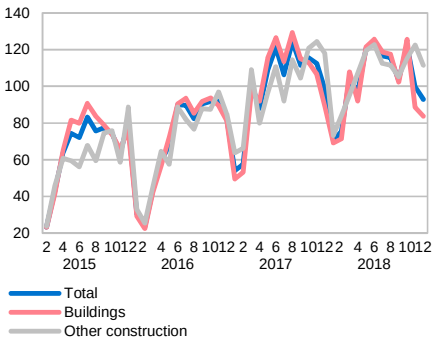
The number of real estate transactions increased as a result of both demand and supply factors.

The Bank Lending Survey[118] indicates that housing loan demand expanded in 2018 and that banks expect this trend to continue in the period ahead. Banks estimate that the demand was boosted by an improvement in the overall economic situation, reflected in wage and employment growth. On the supply side, increased interbank competition, lower costs of funding and greater risk propensity resulted in the easing of housing loan standards.

The Bank Lending Survey indicates a rising demand for housing loans in the period ahead, on account of higher wages and employment in the private sector.

The recovery of the construction sector, as a supply side factor, contributed to a rise in real estate transactions. The economic crisis brought the construction activity down, but as of 2015 this sector embarked on a recovery path, with acceleration in 2018. According to the Serbian Statistical Office data for 2018, the value of the construction works performed in Serbia, at constant prices, rose by 13.9% relative to 2017, and the value of works performed on buildings by 18.1%. The total number of issued construction permits and the number of issued permits related to buildings rose by 5.5% and by 8.2%, respectively, but the number of issued permits for other types of constructions slightly decreased (3.1%).

Chart III.4.6 **Indices of the number of issued new construction building permits**
(index, 2017 = 100)



Source: SORS.

The number of issued construction permits for dwellings went up by 9.8% and their total square surface, according to issued permits, by 13.6%.

One of the indicators of the recovery in construction in 2018 is the expansion of lending to this sector, as well as growth in registered employment, which reached its peak since 2012. In addition, NPLs also continued down, reducing the NPL ratio of the construction sector by around 5.2 pp y-o-y. (Chart III.4.3). The NPLs touched their new historical lows in 2018 in almost every branch and this decline was the most prominent in construction since the implementation of the NPL Resolution Strategy.[119]

[118] https://www.nbs.rs/internet/english/90/anketa_kab/index.html.

[119] Activities envisaged in the NBS's Action Plan (http://www.nbs.rs/internet/english/55/npl/action_plan.pdf), aimed at boosting banks' capacity for NPL resolution and providing a contribution to the development of the NPL market were implemented in full, some of them even before the deadline. Their implementation was one of the important factors that led to the sharp fall in NPLs in 2016, 2017 and 2018.

The year 2018 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). Liabilities arising from housing loans are regularly settled and the rate of defaults on insured loans and the pertinent risk are relatively low. However, should there be an increase in defaults, a larger number of real estate properties offered at the market could trigger an excessive decline in real estate prices below their long-term equilibrium value.

The availability of an average housing unit to an average household in Serbia is measured by the price-to-income ratio, calculated as the ratio of the price of an average 60m2 apartment to the disposable income (in dinars) of an average household in Serbia. The price-to-income ratio shows the average number of years required for a household to buy an apartment if all its disposable income is spent on this purchase alone. At end-2018, the price-to-income ratio equalled 8.5 years and was below its multi-year average (9.6) owing to positive labour market trends. The decrease in this ratio (from 8.6 at end-2017 to 8.5 at end-2018) was brought about by the rise in the average net wage, particularly in the private sector and a further drop in the unemployment rate. The price-to-income ratio recorded downward trend since 2012, with slight volatility, which is a positive signal of the future trends (Chart III.4.4).

Text box 5: Real estate valuations in 2018

Developments in the real estate market may significantly impact the financial and real sectors, as confirmed by the fact that one of the causes of the global economic crisis in 2007–2008 and the undermined trust in financial institutions were actually inadequately secured mortgage loans. For this reason, adequate real estate valuation is an extremely important element in monitoring credit risk in the banking sector, because by accepting real estate as loan collateral, banks are directly exposed to real estate price risk. Aware of the importance of proper valuation, in January 2014, the NBS launched the project of creating a database on valuations of mortgaged real estate (real estate database). The main idea of this project was to use commercial banks' data to set up a real estate database, in order to support adequate real estate valuation and ensure additional mechanisms for monitoring credit risk in the financial system.

For the purpose of project implementation, the NBS adopted the Decision on Submission of Data on Valuation of Mortgaged Real Estate and Loans Secured by Mortgage, which came into force on 21 November 2015. Based on monthly data submissions by banks, the real estate database was set up at end-2015. At end-December 2016, the Law on Real Estate Valuers was adopted, defining the NBS's legal mandate to keep the database on real estate valuations, and allowing access to the database also to certified valuers (apart from banks), subject to submission of the application and fulfilment of conditions prescribed in detail by the NBS. Based on this law, the NBS passed the new Decision on the Content, Deadlines and Manner of Submission of Data on the Valuation of Mortgaged Real Estate and Loans Secured by Mortgage and the General Terms for Accessing Real Estate Valuation Data in the Database on Real Estate Valuations by Certified Valuers.

Since the beginning of bank reporting (November 2015) until end-2018, data on 89,510 properties of total estimated value of RSD 3,019,813 bn were entered into the database. The bulk of these data concern residential property (73% of the total number), while according to the appraised value, commercial properties hold the dominant share in collateral (84% of total appraised value of all properties entered into the database).

Based on the initial data fed into the database – valuations of residential real estate used as collateral for housing loans, the average appraised value per square metre in the Republic of Serbia in 2018 was EUR 862.

Table O.5.1 shows the average appraised value per square metre and the maximum and minimum appraised value per square metre in the Republic of Serbia, by statistical region, in selected cities and the municipalities of the Belgrade region, for valuations carried out in 2018.

Table O.5.1 **Real estate valuations in 2018**

	Average appraised value per m2 in 2018 (EUR)*	Average appraised value per m2 in 2017 (EUR)	Change compared to the previous year (%)	Minimum appraised value per m2 in 2018 (EUR)	Maximum appraised value per m2 in 2018 (EUR)	Number of appraised real estates in 2018
Republic of Serbia	**862**	**849**	**1.5**	**80**	**3,722**	**10,828**
Belgrade region	**1,248**	**1,204**	**3.6**	**149**	**3,722**	**4,874**
Belgrade – Savski venac	1,889	1,658	13.9	592	3,722	146
Belgrade – Stari grad	1,867	1,766	5.7	541	3,228	161
Belgrade – Vračar	1,796	1,808	-0.6	486	3,231	241
Belgrade – Novi Beograd	1,372	1,324	3.6	452	3,063	908
Belgrade – Voždovac	1,274	1,171	8.8	405	2,576	631
Belgrade – Zvezdara	1,249	1,206	3.6	260	2,357	820
Belgrade – Zemun	1,143	1,095	4.4	250	2,048	425
Belgrade – Čukarica	1,103	1,105	-0.2	292	1,958	446
Belgrade – Palilula	1,086	1,096	-0.9	342	2,660	470
Belgrade – Rakovica	960	942	1.9	462	1,838	312
Belgrade – Surčin	738	659	12.0	292	1,135	39
Belgrade – Obrenovac	645	550	17.2	161	949	70
Belgrade – Lazarevac	613	606	1.1	149	1,450	69
Belgrade – Grocka	597	578	3.2	230	957	65
Belgrade – Mladenovac	516	524	-1.6	290	1,100	44
Belgrade – Sopot	419	394	6.3	200	783	11
Belgrade – Barajevo	315	304	3.3	200	715	16
Vojvodina	**616**	**585**	**5.3**	**81**	**1,905**	**3,195**
Novi Sad	974	914	6.6	81	1,801	1,459
Šumadija and Western Serbia	**585**	**583**	**0.3**	**80**	**2,005**	**1,678**
Kragujevac	755	763	-1.1	175	1,253	254
Southern and Eastern Serbia	**570**	**573**	**-0.5**	**117**	**1,350**	**1,081**
Niš	728	729	-0.2	250	1,350	453

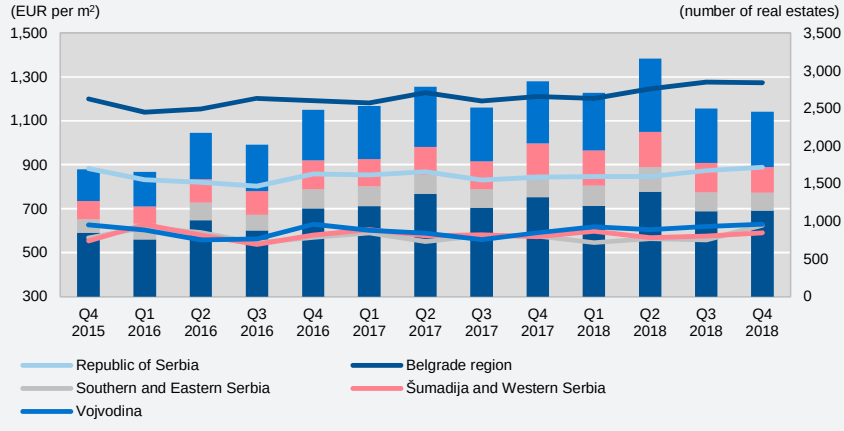
* A preliminary estimate as banks are expected to continue, in the course of Q2 2019, to submit estimates from 2018.

Source: NBS.

Significant value dispersion may be observed across the regions. Namely, at EUR 1,248, the average appraised real estate value in the Belgrade region is almost twice higher than in other regions (Vojvodina – EUR 616, Šumadija and Western Serbia – EUR 585 and Southern and Eastern Serbia – EUR 570). Given that the largest number of valuations pertains to the Belgrade region, it can be concluded that the average real estate value in the Republic of Serbia is largely determined by price movements in the Belgrade region. The average appraised real estate value is also heterogeneous across the Belgrade region, with suburban and outskirt municipalities recording relatively low average values (the lowest in Barajevo – EUR 315), and central municipalities – above EUR 1,500 (Savski venac – EUR 1,889, Stari grad – EUR 1,867 and Vračar – EUR 1,796). The maximum individual value of an appraised real estate was recorded in Savski venac municipality and the lowest in the region of Šumadija and Western Serbia.

Relative to the year before, in 2018 the appraised real estate values increased 1.5% in the Republic of Serbia, 3.6% in the Belgrade region, 5.3% in Vojvodina and 0.3% in the region of Šumadija and Western Serbia, while a drop of 0.5% was recorded in the region of Southern and Eastern Serbia.

Chart O.5.1 **Real estate valuations and number of real estates per region**



Source: NBS.

Looking at housing loans secured by mortgage over the last three years, by quarter, and the first valuations for those loans, a seasonal variation in the number of valuations is observed, with Q2 and Q4 recording a higher number of valuations than Q3 and Q1. A discrepancy is detected in Q4 2018 due to the fact that a real estate valuation is prepared minimum one month before the mortgage entry (and hence, before the bank's obligation to submit the valuation data to the NBS). Accordingly, it is expected that the number of valuations will add up in 2019. Also, the overview of changes in real estate valuations shows that a mild price rise is evident since Q3 2017.

Data from the real estate database enable determination of the average appraised value not only by region and municipality, but also based on the year of construction, type of real estate (house/apartment), apartment structure etc. The results are shown in Table O.5.2.

The average price of newly constructed real estate (built in 2017, 2018 or 2019) is around EUR 1,157 in the Republic of Serbia (EUR 1,413 in the Belgrade region) and is much higher than the average price of older real estate, of around EUR 811 (EUR 1,215 in the Belgrade region).

It can also be observed that average prices of apartments (EUR 1,029 in Serbia and EUR 1,284 in the Belgrade region) are much higher than average prices of houses (EUR 346 in Serbia and EUR 631 in the Belgrade region). This can be explained by the fact that the average surface area is generally larger for houses than for apartments, due to which the average price per square metre is significantly lower for houses. However, there are exceptions – in the territory of Stari grad municipality in 2018 the average value of houses reached as much as EUR 2,593 per square meter, exceeding the average value of apartments.

Table O.5.2 **Average real estate valuations in 2018 (year of construction, type, structure)**

	Average appraised value per m2 (EUR)*	Year of construction		Type of real estate		Apartment structure				
		New buildings	Old buildings	Apartment	House	0,5	1–1,5	2–2,5	3–3,5	4+
Republic of Serbia	**862**	**1,157**	**811**	**1,029**	**346**	**1,186**	**1,059**	**948**	**1,009**	**1,193**
Belgrade region	**1,248**	**1,413**	**1,215**	**1,284**	**631**	**1,394**	**1,248**	**1,213**	**1,262**	**1,454**
Belgrade – Savski venac	1,889	2,637	1,650	1,891	1,852	1,941	1,635	1,596	1,464	2,173
Belgrade – Stari grad	1,867	2,125	1,858	1,856	2,593	2,149	1,995	1,755	1,770	1,903
Belgrade – Vračar	1,796	2,200	1,736	1,805	486	1,958	1,758	1,693	1,737	1,941
Belgrade – Novi Beograd	1,372	1,679	1,356	1,375	948	1,687	1,455	1,387	1,329	1,393
Belgrade – Voždovac	1,274	1,525	1,209	1,280	1,132	1,352	1,336	1,272	1,223	1,334
Belgrade – Zvezdara	1,249	1,317	1,203	1,264	650	1,336	1,228	1,222	1,337	1,351
Belgrade – Zemun	1,143	1,370	1,091	1,168	704	1,258	1,257	1,113	1,239	1,032
Belgrade – Čukarica	1,103	1,140	1,097	1,126	596	1,416	1,105	1,111	1,123	1,165
Belgrade – Palilula	1,086	991	1,100	1,099	697	1,108	1,032	1,070	1,237	1,061
Belgrade – Rakovica	960	1,014	954	958	993	928	977	975	932	946
Belgrade – Surčin	738	966	578	947	462	983	993	945	913	735
Belgrade – Obrenovac	645	779	640	740	360	785	798	754	727	678
Belgrade – Lazarevac	613	714	601	679	447	802	779	693	730	486
Belgrade – Grocka	597	823	515	696	373	813	790	788	629	515
Belgrade – Mladenovac	516	752	476	604	371	583	618	605	600	596
Belgrade – Sopot	419	475	412	619	372	0	0	517	783	0
Belgrade – Barajevo	315	0	315	499	285	0	0	493	500	0
Vojvodina	**616**	**985**	**554**	**843**	**310**	**1,039**	**935**	**794**	**810**	**905**
Novi Sad	974	1,074	933	1,025	497	1,147	1,087	1,013	979	1,039
Šumadija and Western Serbia	**585**	**869**	**540**	**698**	**340**	**895**	**802**	**676**	**658**	**640**
Kragujevac	755	957	709	834	409	885	856	806	861	856
Southern and Eastern Serbia	**570**	**822**	**543**	**669**	**313**	**824**	**746**	**651**	**660**	**620**
Niš	728	915	700	760	436	853	796	749	744	782

* A preliminary estimate as banks are expected to continue, in the course of Q2 2019, to submit estimates from 2018.
Source: NBS.

In terms of apartment structure, the highest average value is recorded for apartments with four and more rooms (EUR 1,193 in Serbia and EUR 1,454 in the Belgrade region) and one-room apartments (EUR 1,186 in Serbia and EUR 1,394 in the Belgrade region). The appraised real estate value declines as the number of rooms increases, up to two-room apartments which have the lowest average appraised value (EUR 948 in Serbia and EUR 1,213 in the Belgrade region). However, with the further increase in the number of rooms, the appraised value goes up as well.

Given the importance of systemic monitoring of developments in the real estate market, both from the standpoint of a thorough analysis of macroeconomic conditions and a timely introduction of macroprudential measures aimed at preventing and mitigating systemic risks which may be generated by movements in this market and jeopardise financial stability, the real estate database is being constantly improved in order to enable a comprehensive collection, storage and distribution of data on the market of mortgaged real estates, for the needs of the NBS and market participants.

IV Financial stability

IV.1 Regulatory framework as support to financial stability

IV.1.1 Macroprudential policy

The global financial crisis (2007–2008) changed the scientific paradigm underlying the concept of financial system stability. Prior to the crisis, it was deemed that stability of individual financial institutions was sufficient to ensure financial stability. However, the crisis clearly showed that the financial system as a whole is a separate entity differing from its constituent parts and subject to its own laws. The new view on financial stability called for urgent development of a new area of public policy whose measures would have effect on the financial system and be tailored to its nature. This new policy, named macroprudential, was aimed at curbing the risks threatening the financial system as a whole – the so-called systemic risks.

Serbia timely took the necessary steps to lay down the legal basis for the conduct of macroprudential policy. Since the international practice identified central banks as the most adequate institutions to pursue the macroprudential policy, given the role they have played in containing the consequences of the latest crisis and the functions they perform (the conduct of monetary policy, lender of last resort for banks and often the supervision of individual banks), in 2010 the Republic of Serbia entrusted the legal mandate for the conduct of macroprudential policy to the National Bank of Serbia. Article 4, item 3 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) lays down the NBS's legal mandate to determine and implement, within its scope of authority, the activities and measures aimed at maintaining and strengthening the stability of the financial system. This legal mandate enables the NBS 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).

Given that the legal mandate for the conduct of macroprudential policy is defined in general terms, the NBS, following the best European practices, elaborated detailed elements of this policy in the Macroprudential Framework published in 2015.[120] This document sets out detailed objectives, instruments and the decision-making process of macroprudential policy.

After the publication of the Macroprudential Framework, the NBS adopted the regulations transposing into the domestic legal framework the regulatory standard Basel III,[121] one of the most important regulatory responses to the global financial crisis. On 15 December 2016, the NBS Executive Board adopted a set of secondary legislation applicable as of 30 June 2017,[122] introducing

[120] https://www.nbs.rs/internet/english/18/macroprudential_framework_201503.pdf

[121] For more information about Basel III, see the Annual Financial Stability Report for 2011, National Bank of Serbia, 2012, p. 75-77 (https://www.nbs.rs/internet/english/90/90_2/fsr_2011.pdf)

[122] This regulatory package includes NBS decisions published in the RS Official Gazette No 103/16 of 22 December 2016, namely: the Decision on Capital Adequacy of Banks, Decision on Disclosure of Data and Information by Banks, Decision on Reporting on Capital Adequacy of Banks, Decision Amending the Decision on Reporting Requirements for Banks, Decision on Liquidity Risk Management by Banks and Decision Amending the Decision on Risk Management by Banks. These decisions transpose into the domestic legislation 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 (CRDIV)).

Basel III into the domestic banking legal framework. An integral part of this regulatory package was the Decision on Capital Adequacy of Banks (RS Official Gazette, Nos 103/2016 and 103/2018). This Decision regulates capital buffers, which represent additional CET 1 capital that banks are required to maintain above the regulatory minimum in order to limit systemic risks in the financial system. Capital buffers are, beyond any doubt, the most important macroprudential policy instruments introduced by Basel III.

The same Decision lowers the requirement on minimum capital adequacy ratio from 12% to 8% of the risk-weighted assets of a bank. Also, the Decision on Liquidity Risk Management by Banks (RS Official Gazette, No 103/2016) introduces a new liquidity requirement – the Liquidity Coverage Ratio. Thus, new capital and liquidity requirements prescribed under Basel III are introduced in the domestic regulations.

The Decision on Capital Adequacy of Banks regulates the implementation of the following capital buffers:

– capital conservation buffer,

– countercyclical buffer,

– capital buffer for a global systemically important bank (as of the day of Serbia's accession to the EU),

– capital buffer for a systemically important bank, and

– systemic risk buffer.

These capital buffers are aimed at limiting two dimensions of systemic risk: cyclical (depending on the financial cycle phase) and structural (relating to direct and indirect interdependence of financial institutions). The cyclical dimension of systemic risk can be impacted by the countercyclical buffer, and structural dimension by capital buffers for systemically important banks and globally systemically important banks, as well as the systemic risk buffer. As for capital conservation buffer, given that its rate is always the same, it may be said that this buffer serves as a capital reserve aimed at mitigating cyclical and structural systemic risks.

By the introduction of capital buffers into banking legislation, systemic risks are recognised as a special type of risks which may have significant consequences on the country's economy, thus calling for special, tailored measures. This recognition lies at the core of macroprudential policy which, in order to be efficient, must be clearly defined as a separate policy, while taking into account interaction with other policies in its implementation, such as microprudential, monetary and fiscal policies, financial consumer protection policy, competition protection policy etc.

IV.1.2 Regulatory measures to contain systemic risks

In addition to the analysis and assessment of systemic risks in the financial system, the Annual Financial Stability Report each year lists measures that can be undertaken to contain the most pertinent systemic risks recognised in the analysis. These measures are shown aggregately in Table IV.1.1 and elaborated in detail in the text that follows, by area in which systemic risks need to be contained.

Table IV.1.1 **Recommendations**

Year	Brief description
2013/2014	Draft plans to reduce the share of NPLs
2013/2015/2016	Promote the framework for consensual financial restructuring
2013	Strengthen domestic dinar sources of funding
2013	Determine different insured sums and insurance premiums for FX and dinar deposits
2017	Consider measures to address uneven recovery of lending activity

Source: NBS.

Non-performing loans

The rising share of non-performing in total loans is one of the typical manifestations of the financial crisis. Non-performing loans (NPLs) are not a problem of the financial system alone, but of the economy as a whole, since their high share negatively affects credit activity, which may slow down or postpone economic growth. A high share of NPLs may also deepen the severity and duration of a financial crisis by tying down financial resources (until the NPL is liquidated), which impedes the efficiency of resource allocation and may prolong economic stagnation that goes hand in hand with the financial crisis.[123]

The gross share of NPLs in total loans of our banking system is 5.7% (December 2018). This is a decline by 16.7 pp from August 2015 when the NPL Resolution

[123] David Woo (2000), *Two Approaches to Resolving Nonperforming Assets during Financial Crises*, p 3.

Strategy (hereinafter: the Strategy) was adopted[124] and by 4.15 pp from end-2017. A significant reduction in the NPL level is a result of the successful implementation of the Strategy and action plans of the Serbian Government and the NBS, adopted to implement the Strategy. Since our banking system is adequately capitalised and highly liquid, and allowances for impairment account for 60.2% of gross NPLs (December 2018), the direct negative effect of NPLs on credit activity is considerably limited, so we can primarily talk about the indirect effect. This effect may materialise through banks' risk aversion, which exists even in the most developed markets. Risk aversion is manifested as the tightening of credit standards, such as limitation of loan amount and maturity, and also stricter collateral requirements.

Implementation of measures laid out in the Strategy yielded excellent results in terms of reducing the level of NPLs. NPLs are significantly below their pre-crisis level from end-2008 (11.3%). The Strategy measures were elaborated in two action plans – one prepared by the Government and the other by the NBS. The action plans set out a broad range of activities that the relevant authorities needed to carry out to accomplish the objectives of the Strategy. The NBS's Action Plan was implemented in full and a great number of activities from the Government's Action Plan were implemented within the foreseen deadline, with several activities still underway.

Given that the Strategy implementation was a three-year continuous process which ended in 2018, it was necessary to prevent the emergence of new NPLs and enable the sustainability of the achieved results. With this in mind, in December 2018 the Serbian Government adopted the NPL Resolution Programme for the Period 2018–2020[125] (hereinafter: the Programme), and the Action Plan for its implementation. The objective of this Programme and the implementing Action Plan is to remove the identified obstacles in the system which prevent timely NPL resolution and to establish a system that will prevent the accumulation of NPLs and negative effects on lending and, by extension, on potential economic growth. In order 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 prevention of new NPLs.

Regarding the resolution of NPLs of state-owned financial creditors, the Programme envisages a pilot project of the sale of receivables – a smaller part of the NPL portfolio managed by the Deposit Insurance Agency (DIA), after which the rest of the portfolios of the DIA and some state-owned financial creditors (Development Fund of the Republic of Serbia, Serbian Export Credit and Insurance Agency, Banka Poštanska štedionica a. d.) will be offered for sale.

When it comes to improvement of the bankruptcy framework, the key action in the following period should be the creation of an internet portal for online auctions of bankruptcy estate. Online auctions should maximise the value of the property by encouraging bidders to offer their own minimum value and enabling the highest bids to win the auction. In this field, the plan is also to improve the profession of bankruptcy administrators. This particularly concerns the training on implementation of national standards for the management of bankruptcy estate and amendments to the existing bankruptcy legislation, and after setting up the portal for the sale of property, also the training about the use of the portal and the obligations arising from that use. The Programme envisages further strengthening of the capacities of bankruptcy courts and improvement of implementation of bankruptcy regulations through continuous trainings, in order to ensure consistent application of the National Standards for Administering the Bankruptcy Estate and after that also the training on the use of portal for the sale of bankruptcy estate. The Programme also envisages regulating the bankruptcy of entrepreneurs.

Within the third area, including activities on NPL prevention, the Programme envisages the development of a study on corporate indebtedness and prevention of new NPLs in Serbia's real sector. The study should contribute to improvement of a good practice of timely and efficient resolution, as well as to the implementation of other activities with a view to preventing the emergence of NPLs in the real sector. The second activity in this area is the development of the information portal and the launch of an information campaign on timely detection of financial difficulties, which would primarily be intended for small and medium-sized enterprises and entrepreneurs. The third activity includes the ex post analysis of implementation of the Law on Deadlines for Settlement of Financial Liabilities in Commercial Transactions (RS Official Gazette, Nos 119/2012, 68/2015 and 113/2017), considering the need for

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

[125] http://www.mfin.gov.rs/UserFiles/File/strategije/2019/Program%20za%20resavanje%20problematicnih%20kredita%202018-2020.pdf.

amendments and carrying out promotional activities in order to improve law implementation. The final activity in this field is the improvement of the regulatory framework for real estate valuation, i.e. the proposal that future amendments to the Law on Court Experts (RS Official Gazette, No 44/2010), or a new law regulating court expertise should envisage that persons valuing real estate in court proceedings should hold the real estate valuer's license issued by the Ministry of Finance, in accordance with the Law on Real Estate Valuers.

Programme implementation is envisaged as a two-year continuous process led by the inter-institutional working group. It was also agreed that the group would maintain close cooperation and exchange information with the NBS and that NBS representatives would participate in the working group.

Presented below are recommendations whose implementation could additionally help in decreasing the share of NPLs.

2013/2014 Banks to draft plans to reduce the share of NPLs Amendments to the Decision on Risk Management by Banks (RS Official Gazette, No 61/2016) improved the process of managing bad assets in banks. The process can be further improved by preparing specific plans to reduce the share of NPLs. Below are some elements those plans may contain:

– a quantifiable target share of NPLs in total loans of a given bank;

– the expected timeframe for the achievement of the targeted share of NPLs, which may be defined in stages;

– method of decreasing the NPL share (sale, write-off, forbearance or enforced collection of receivables);

– sources for financing implementation of the plan: – recapitalisation by shareholders, or in case of a foreign bank's subsidiary, by the parent bank; debt or capital financing by IFIs; sale of NPLs to private asset management companies, etc.

2013/2015/2016 Promote the framework for consensual financial restructuring of companies. In order to improve the procedure of consensual financial restructuring of companies, the Law on Consensual Financial Restructuring was adopted in 2015 (RS Official Gazette, No 89/2015). The Law created the preconditions for speeding up and simplifying the current procedure and entrepreneurs were allowed to apply for the procedure.

However, apart from regulatory improvements, efforts need to be invested in promotion of the procedure and education of entrepreneurs and other stakeholders. The NBS has always taken an active part in various initiatives aimed at promoting and developing the consensual financial restructuring procedure.

The Recommendation 2015 Simulate annuity plans for interest rate risk and FX risk, published in the Annual Financial Stability Report for 2015, was fully implemented in 2018 by the adoption of the Decision Amending the Decision on Terms and Method of Calculating the Effective Interest Rate and on the Layout and Content of Forms Handed out to Consumers (RS Official Gazette, No 62/2018). This recommendation concerned the reduction of new NPLs. When informing clients about the terms of the loan, banks should also create two alternative plans for loan repayment. One plan applies to loans with a variable interest rate, in which case an increase in the interest rate should be assumed after a certain period (depending on the loan maturity). It should be made clear to clients by how much their monthly annuity and their total debt would rise in case of a sudden increase in the interest rate. The other plan applies to loans indexed to a foreign currency, in which case the depreciation of the dinar should be assumed after a certain period (depending on the loan maturity). It should be made clear to clients by how much their monthly annuity and their total debt would increase in case of a sudden strong depreciation of the dinar. According to Decision amendments, banks and/or lessors are obligated, as of 1 January 2019 – in case of offering a loan/lease contract at a variable nominal interest rate and/or in a foreign currency or by contracting a currency clause – to inform the consumer, using the prescribed form, about the risks of borrowing at a variable nominal interest rate and the risks of borrowing in a foreign currency or of contracting a currency clause. This information should contain different repayment schedule scenarios, including the highest historical values of the variable element in the nominal interest rate and the middle exchange rate of the dinar in the time interval equal to the loan repayment term preceding the day of handing out the offer. In this way, the NBS ensured that financial service consumers are informed, in a simple and understandable manner, about the risks they undertake when concluding the contract. This should contribute to the efficiency of the credit market and, most importantly, to prudent decisions of each consumer about the risks associated with credit borrowing.

Unsecured non-purpose household lending

The NBS took a proactive approach to the increasingly recurrent approval of unsecured non-purpose loans to households at unreasonably long maturities, also warning

in its 2017 Annual Financial Stability Report about the risk of unbalanced recovery of credit activity. Accordingly, at the meeting of 24 December 2018 the NBS Executive Board adopted the regulations expanding the available toolkit by adjusting the prudential requirements for banks so as to bring such credit practices within acceptable boundaries. Though it was assessed that credit-to-GDP gap was recovering, while still remaining below its long-term trend, the closing of the gap in some segments of household lending signalled that there are risks in this lending segment and called for the application of targeted measures that could contain this risk without undesirable consequences on the overall credit activity. These measures were defined in the following regulations published in the RS Official Gazette No 103/18 of 26 December 2018:

1. Decision on Managing Concentration Risk Arising from Bank Exposure to Specific Products,

2. Decision Amending the Decision on Capital Adequacy of Banks and

3. Decision Amending the Decision on the Classification of Bank Balance Sheet Assets and Off-Balance Sheet Items.

These decisions, applied as of 1 January 2019, introduce a new indicator of concentration risk, which at the level of each bank covers primarily the existing portfolio of cash, consumer and other loans (other than housing loans or current account overdrafts) with the agreed maturity of eight or more years that were approved or would be approved before the application of the new set of regulations. In addition, the NBS prescribed a 60% debt-to-income ratio – if this ratio is exceeded due to the approval of any loan to a natural person after the entry into force of the new provisions, the bank would be required to separately disclose the receivables from that borrower when reporting to the NBS on the quality of its assets. Also, it was established that if a bank, starting from 1 January 2019 approves a consumer, cash or other loan (other than a housing loan or a current account overdraft) due to which the level of credit debt (debt-to-income ratio) exceeds 60%, or the level of credit debt of the borrower in question exceeded 60% prior to loan approval, the bank would be required to reduce its capital by the total outstanding principal amount of exposure to that borrower until the loan is fully repaid. It was prescribed that if a bank, in the course of 2019, approves a consumer loan (except for consumer loans for the purchase of motor vehicles), cash or other loan (other than a housing loan or a current account overdraft), with the repayment term of eight or more years, it will be required to reduce its capital by the total outstanding principal amount of exposure to that borrower until the loan is fully repaid. In 2020, banks will be required to reduce their capital in the same manner when approving the above types of loans with the repayment term of seven years or longer, while starting from 1 January 2021 the same solution shall apply when approving those types of loans with the agreed maturity (repayment term) of six years or longer. It was established that if a bank, as of 1 January 2019, approves a consumer loan for the purchase of a motor vehicle with the agreed repayment term of eight years or longer, it would be required to reduce its capital by the total outstanding principal amount of exposure to that borrower until the loan is fully repaid.

On this occasion, the NBS did not opt for solutions which would prescriptively prohibit certain activities, taking particularly into account circumstances relating to the financial position and creditworthiness of citizens borrowing from banks, riskiness of the loans taken in terms of purpose, existence of collateral, repayment ability from the standpoint of the total credit debt of the borrower in question and justifiability of the repayment term depending on the loan purpose or the lack of a specific purpose.

The adopted set of regulations reflects the NBS's objectives – to encourage cautious risk-taking by banks, without hindering the approval of particular types of loans. Rather, banks are oriented toward sustainable lending and avoiding excessive exposure to particular types of credit products, without undermining the trend of lending growth and taking care of the rights and interests of consumers of bank services, all with a view to preserving and strengthening financial stability in the Republic of Serbia.

Cross-border deleveraging of banks

Around three quarters of the Serbian banking sector assets are held by foreign-owned banks (75%). Most of those banks are members of cross-border banking groups and prior to the global financial crisis in 2008 they were financed mainly by borrowing from their parent banks. When the crisis broke out, the majority of emerging markets were exposed to deleveraging by financially strained parent banks. In order to avoid financial instability caused by deleveraging in host countries of international banking groups' subsidiaries, the year 2009 saw the launching of the so-called Vienna Initiative 1.0. The initiative was aimed at maintaining 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 the Vienna Initiative 2.0 of 2012, the goal of which was no longer to maintain exposure, but to coordinate deleveraging of foreign banking groups. It became obvious by then 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, i.e. with the outbreak of the global financial crisis, cross-border liabilities of the banking sector accounted for 19.7% of total sector's liabilities, while in December 2018 they dropped to 13.1%. A relative decrease in cross-border liabilities was compensated for by the rise in the deposit base. Loan-to-deposit ratio dropped from 1.14 at end-2008 to 0.84 at end-2018, suggesting that loans of the banking sector were fully financed from deposits. In the period ahead, cross-border borrowing should be further monitored in order to assess whether it would go up or continue down, as was the general trend after the global financial crisis.

2013 Strengthening domestic dinar sources of funding. Reliance on domestic, primarily dinar sources of funding, limits the exposure to external risks. Also, developed domestic sources of funding enable adequate risk diversification. It is well known that without credit growth there can be no economic growth either. Given that our financial system is bank-centric, the development of alternative, long-term sources of funding seems reasonable. An example of these sources in the domestic market are VPFs, whose potential in Serbia is insufficiently used.

Degree of dinarisation

A euroised financial system is exposed to FX risk which may materialise in case of a sudden drop in the value of domestic currency relative to major world currencies. Such a scenario would lead to a major increase in FX liabilities, expressed in the local currency, and considering that most borrowers receive their income in the local currency, their debt would suddenly go up. In this way, the FX risk can give rise to system-wide solvency and liquidity problems both in the corporate and household sectors. Also, in a highly euroised economy, changes in the key policy rate cannot significantly 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 of the Republic of Serbia and the NBS signed the Memorandum on the Strategy of Dinarisation of the Serbian Financial System in 2012. Bearing in mind that in the period after the conclusion of the Memorandum in 2012, the macroeconomic stability was ensured and the financial stability strengthened, the Serbian Government and the NBS agreed that preconditions were put in place for updating the Strategy. Having that goal in mind and aware of the gradual and long-term nature of the dinarisation process, in December 2018 the Government and the NBS signed a new Memorandum on the Strategy of Dinarisation.[126] The new Memorandum on the Strategy of Dinarisation takes stock of the past measures and activities and, starting from them, defines additional measures and activities that would boost dinarisation further and mitigate the FX risk in the system. The Strategy of Dinarisation rests on three interconnected 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-2018, the degree of dinarisation of the domestic financial system, measured by the share of dinar in total loans approved to corporates and households, amounted to 33.0%, the same as at end-2017, and measured by the share of dinar in total corporate and household deposits – to 32.2%, which is an increase of 1.4 pp relative to end-2017.

The NBS took various monetary, microprudential and macroprudential policy measures in order to strengthen the dinarisation process. In terms of macroprudential measures, in 2011 the NBS adopted the Decision on Measures for Safeguarding and Strengthening Stability of the Financial System (RS Official Gazette, Nos 34/2011 and 114/2017). 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:

[126] https://www.nbs.rs/internet/english/30/Memorandum_Dinarisation_Strategy_2018.pdf.

– 80% LTV (Loan-to-Value) limit for FX or FX-indexed housing loans;

– banks are allowed to approve FX-indexed loans to natural persons, provided that the currency of indexation is the euro;

– banks are allowed to approve FX or FX-indexed loans to natural persons subject to a downpayment or placement of deposit of no less than 30% of the loan amount, provided that such liability does not relate to a credit card.

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 relaxes the LTV limit to 90% in case the loan is approved as a government-support measure for certain groups of natural persons. Systemic risk buffer was also introduced to curb the systemic euroisation risk. All banks headquartered in Serbia whose euroisation exceeds 10% are obliged to maintain systemic risk buffer at the rate of 3% of FX and FX-indexed loans to corporates and households in Serbia.

We recommend the following in support of the above activities:

2013 Consider introducing different insured amounts and insurance premiums for foreign currency and dinar deposits. The Law on Deposit Insurance envisages the same insured amount for both FX and dinar deposits. Since requests for the payment of deposits based on insurance 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 deposits in the local currency. Also, in determining the deposit insurance premium, the Law does not stipulate a higher premium for FX deposits, even though they entail higher risk for the insurer. Namely, in case of FX deposits there is a higher risk of the occurrence of the insured event than with dinar deposits, due to the absence of FX risk in investment of dinar funds. Accordingly, it would be useful to distinguish between premia and sums of insured deposits, depending on the currency of deposit. In this context, it is also possible to increase the insured amount in case of dinar deposits, while keeping the same insured amount for FX deposits, in order to encourage dinar savings.

Text box 6: Financial innovations and cyber security

Cyber security and digital innovations are two sides of the same coin and should, therefore, not be considered separately. Security in cyber space is not only the precondition of reliable financial services but also one of the main elements of financial stability.[127]

Cyber threats evolve and develop continuously and an adequate response of regulators is required. The main task of regulators is to improve the traditional supervision by using efficient mechanisms that require adjustment to cyber risks. In the financial sector, cyber threats may cause shocks that tend to spread fast across the globe, often with hardly predictable consequences.

Financial innovations may have a huge impact on the society. Fintech start-ups are growing through new business models. Regulators, supervisors and central banks are facing the challenge of providing reliability and trust in the new financial systems. This is not an easy task as it requires a compromise between innovations, complexity and security of the financial system. Cyber risk is a threat to the most important financial system functions, affecting commercial banks, payment systems as well as systems for the settlement of securities. In view of omnipresent cyber risks and the necessary constant improvement of cyber security in the financial sector, in October 2016, G7 published Fundamental Elements of Cybersecurity for the Financial Sector[128], which is a collection of fundamental elements for efficient assessment of cyber security. In view of these principles and from the central bank perspective, the following should be the main pillars of an efficient strategy: regulations, cooperation with other institutions and raising awareness of the cyber risk.

Legal framework

Regulations are an important component of efficient strategy for securing sustainability of innovations and preservation of cyber security. EU regulations recently introduced conditions and obligations for both private companies and public institutions aimed at improving cyber security in the most important economic sectors.

The EU Directive on Security of Network and Information System makes the general framework,[129] establishing security obligations for key financial service providers, including payment institutions, stock exchanges and financial market infrastructure.

The Payment Services Directive 2 (PSD 2)[130] introduced security requirements in the payment chain – from customer authentication to service provider communication, security risk management by financial companies and reporting to the relevant authorities on major incidents.

In June 2016, BIS published Guidance on Cyber Resilience for Financial Market Infrastructures which governs systemically important payment systems, securities settlement systems, central securities depositories and trade repositories. The purpose of the document is to raise awareness about the need to enhance resilience to the growing cyber risk in systemic operators of financial market infrastructure and stimulate institutions to constantly carry our internal risk assessments and improve them. The focus is on the active role of participants in providing adequate support to the development of security systems and their use. Secure and efficient operation of financial market infrastructure is critical for maintaining and promoting financial stability and economic growth.

In April 2018 the National Institute of Standards and Technology (NIST) published the Framework for Improving Critical Infrastructure Cybersecurity, Version 1.1,[131] as a starting point for cyber risk management for financial and non-

[127] *Digital transformation of the retail payments ecosystem in light of cyber security – the balance between cooperation and regulation*, conference, Rome, December 2017.

[128] https://www.ecb.europa.eu/paym/pol/shared/pdf/G7_Fundamental_Elements_Oct_2016.pdf.

[129] EU Directive on Security of Network and Information System, Directive (EU) 2016/1148 of the European Parliament and of the Council, of 6 July 2016.

[130] Payment Services Directive 2, Directive (EU) 2015/2366 of the European Parliament and of the Council, of 25 November 2015.

[131] Framework for Improving Critical Infrastructure Cybersecurity, Version 1.1, National Institute of Standards and Technology, USA.

financial participants. This document is focusing on the activities which would lead to adequate recognition and addressing of cyber risks as a part of the risk management process and governance, with a view to improving the business functions.

However, regulations alone do not provide sufficient protection from cyber risks to the financial system. Excessive reliance on regulations may have side effects due to complex interactions between different regulatory levels. In March 2018, the European Commission, the Directorate-General for Financial Stability, Financial Services and Capital Markets Union[132], in charge of EU policy on banking, published the FinTech action plan: For a more competitive and innovative European financial sector[133]. The document aims to help the financial industry make use of the rapid advances of the new technologies such as blockchain and other IT applications and strengthen cyber resilience, as this would benefit consumers, investors, commercial banks, but also new market players.

In May 2018, the ECB published TIBER-EU Framework-Implementation. The document is the basis for a closer cooperation between the European and national competent institutions and financial market infrastructure operators and sets out a framework for testing and improving the resilience to sophisticated cyber attacks.

Cooperation

Some participants are not highly motivated to invest in the development of cyber security even though such a development would be in the general interest of all. They may therefore be tempted to rely on other companies, without investing sufficiently in security improvement projects. In such a situation, central banks, as the institutions responsible for preserving financial stability, may act as a catalyst to cooperation and centralisation of defence from cyber threats and platforms for information exchange.[134]

In the EU framework, the ECB established the Euro Cyber Resilience Board for pan-European Financial Infrastructures in March 2018 and initiated a public debate on cyber resilience oversight expectations for financial market infrastructures. This is a precious example of cooperation between public institutions, operators of financial market infrastructures, and relevant service providers aimed at improving cyber resilience of the European financial system.

Also, competent financial institutions may cooperate on promoting efficient practices and tools for the assessment of cyber risks including simulations and tests which the companies could hardly do on their own. This is a new paradigm where regulators and institutions closely cooperate, amending regulations with a joint approach to the problem. This form of cooperation enables regulators to understand the level of cyber resilience.

Raising awareness about the risks

The spreading of cyber-attacks, which are becoming one of the greatest threats to digital business, can be ascribed to several factors. The most important being connected with the human factor (e.g. increasingly popular remote work from personal mobile devices combined with the users' lack of attention can easily open the door to cyber-attacks on critical corporate information). Employees, consumers and representatives of responsible institutions should build their knowledge about the risks arising from new technologies and develop and promote the risk management policy. Employees in financial institutions usually have well-regulated risk management procedures and policies. Representatives of regulatory authorities are in the best position to promote long-term educational initiatives and campaigns aimed at raising awareness about cyber risks.

[132] Directorate General for Financial Stability, Financial Services and Capital Markets Union, European Commission.

[133] FinTech Action plan: For a more competitive and innovative European financial sector, European Commission, March 2018.

[134] The department in charge of threats may support financial institutions in making the right decisions in order to prevent cyber-attacks, efficiently protect property and adequately respond to successful cyber attacks. Exchange of information on cyber events via reliable channels facilitates the joint response to major cyber incidents (CPMI-IOSCO, Cyber guidance, 2016).

In September 2017, the Institute of International Finance released the publication Cyber Security & Financial Stability: How Cyber-Attacks Could Materially Impact the Global Financial System,[135] emphasizing that since cyber-attacks will not stop and neither should, the efforts aimed at responding to them.

Four scenarios of transmission of cyber risks through the global financial system give an overview of an approach to cyber protection honouring the concept of objective reality concerning changes (holistic approach).

This approach takes into consideration all stakeholders and uses all available tools, but also develops new ones if necessary, alongside promoting and adjusting regulations.

The proposed cyber scenarios with a possible impact on financial stability are as follows:

– A major wholesale payment system and a large retail payment system attacked at the same time, so that neither can provide their services, for example, over a 24-hour period;

– Major data corruption at a custodian bank and one of the large Central Securities Depositories;

– Direct attacks on parts of the wider infrastructure that the financial system relies upon, such as the electrical grid;

– Retail consumers and broader society distrust the safety and soundness of parts of the financial system (either) because of a few very significant cyber-attacks or many very frequent successful smaller attacks on financial institutions or on financial markets infrastructures.

The conclusion is that it is of paramount importance to recognise financial system weaknesses and vulnerabilities to be able to mitigate the cyber risk threats to financial stability.

Despite its complex structure, financial system will continue to develop particularly in line with financial technologies development. Some of the new technologies may come with systemic impact, some will exacerbate cyber risk threats, while others might mitigate them. The publication provides an example illustrating that cloud computing reduces cyber risk, but increases dependency on several key providers. Finally, the focus is additionally placed on the possible difficulties with the development of control of this risk amid increased financial and technological complexity.

Cyber security in the Republic of Serbia

Some institutions in the Republic of Serbia already have a long tradition of cyber security protection. The Ministry of Defence, Ministry of Foreign Affairs, Ministry of Interior and Security Information Agency have been applying numerous crypto protective measures in the area of telecommunication systems for decades. Earlier these measures were sufficient, but today they are only one, though extremely significant segment in a wider range of measures aimed at protection of information systems and information in general.

In 2010, the Government of the Republic of Serbia adopted the Strategy for Information Society Development until 2020[136]. The Strategy defines information security as one of the top priorities and improves the legal and institutional framework for information security in the Republic of Serbia. In March 2013, the NBS Executive Board adopted the Decision on Minimum Information System Management Standards for Financial Institutions[137], setting the minimum standards and conditions for safe and sound business concerning information system management in banks and other financial institutions. Cyber security was not directly addressed by the Decision, but the obligation of constant information system security management was introduced as the key segment.

For the purposes of harmonisation with the Law on Payment Services[138], the Decision was amended in February 2017. It considerably raised awareness about the significance of information system security, particularly in smaller financial

[135] *How Cyber-Attacks Could Materially Impact the Global Financial System*, Boer, Martin, and Jaime Vazquez, Institute of International Finance, Cyber Security & Financial Stability, September 2017.
[136] Strategy for Information Society Development until 2020, RS Official Gazette, No 51/2010.
[137] Decision on Minimum Information System Management Standards for Financial Institutions, RS Official Gazette, Nos 23/2013, 113/2013 and 2/2017.
[138] Law on Payment Services (RS Official Gazette, Nos 139/2014 and 44/2018.

organisations. Among other things, the Decision expanded the supervisory role of the NBS Centre for Information System Supervision to information system management in payment institutions, electronic money institutions and the public postal operator that is, their operations linked with the provision of payment services and/or issuance of electronic money.

In June 2016, the Law on Information Security entered into force[139]. This Law defines the basic principles for planning and applying measures for the protection of information-communication systems. In May 2017, the Government of the Republic of Serbia adopted the Strategy for the Development of Information Security in the Republic of Serbia for the period 2017–2020[140]. The competence for information security in the Republic of Serbia has been assigned to the Ministry of Trade, Tourism and Telecommunications. The overall objective of the Strategy is to develop and improve information security in the Republic of Serbia and maintain it at an adequate level. The cooperation between the public sector, private sector, NGOs, academic community and other stakeholders was identified as the key element for the achievement of these objectives. The Strategy is an umbrella document which confirms the readiness of our country to regulate the area of cyber security.

The adopted regulations are the foundation and a starting point for a higher degree of system security which, when adequately implemented, will enable the improvement of the overall cyber security in the region. The trend of alignment of domestic regulations with the European *acquis* is evident, while the measures listed in the documents are harmonised with international practice in the area of information system security.

The answer to the question whether financial organisations are sufficiently secure and what is the degree of their cyber resilience does not lie in the adopted regulations alone, but in their implementation and the commitment demonstrated by the stakeholders when addressing this area. As cyber security is not a point that can be reached and considered a finished project. Constant monitoring is indispensable, as well as adjustment to the new types of risks arising in the cyber environment on a daily basis.

[139] Law on Information Security, RS Official Gazette, Nos 6/2016 and 94/2017.

[140] Strategy for the Development of Information Security in the Republic of Serbia for the Period 2017–2020, RS Official Gazette, No 53/2017.

IV.2 Financial soundness indicators

Several methodological approaches have been used to assess various aspects of stability of the financial system in Serbia, in the international context and over time.

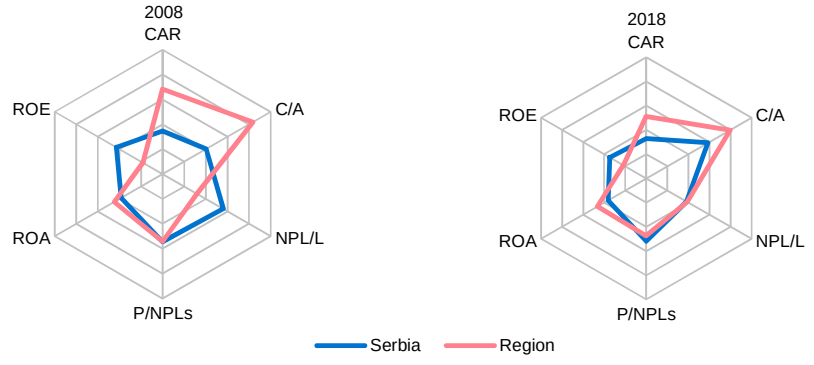
The comparison of stability of financial systems in the international context is based on selected financial soundness indicators. The stability network (Chart IV.2.1) shows six representative indicators for Serbia and the region at end-2008 and 2018: a) capital adequacy, b) balance sheet capital relative to balance sheet assets, c) share of NPLs in total loans, d) loan loss provisions relative to NPLs, e) return on assets, and f) return on equity.

The capitalisation of the banking sector in Serbia, in terms of the capital adequacy ratio, but also in terms of the balance sheet capital to balance sheet assets ratio, was higher than in the region, which is a significant guarantee of the stability of the entire domestic financial system. The share of NPLs in total loans was lower than the regional average, given that it fell considerably in the last couple of years. In 2018, the share of NPLs in total loans dropped by 4.2 pp to 5.7% at year-end, its historical low.[141] The level of NPL coverage with loan loss provisions was also close to the regional average. Profitability of the banking sector has been recovering in the past couple of years – ROA was above the region's average, while ROE remained below the regional average due to the strong capital base of the banking sector in Serbia.[142]

In addition to the above indicators, the Financial Stress Index (FSIX) is also used to measure financial soundness. FSIX is a composite index[143], introduced to identify episodes of high financial stress, their culmination and duration, which is why it covers the key financial sector variables relevant for real economic activity. Positive values suggest an above-average financial stress level, while negative values point to a below-average level.

Lower levels of financial stress recorded over the past several years continued into 2018, supported by the movements of all the indicators observed. The analysis of some variables indicates that the low level of financial stress reflects relatively low volatility of the exchange rate and stock exchange indicators, as well as the low level of Emerging Market Bond Index (EMBI) for Serbia.

Chart IV.2.1 **Financial soundness of the Serbian banking sector compared to regional average**



Notes:

* The Chart shows standardised values of the most common financial soundness lidicators: CAR – Capital Adequacy Ratio (regulatory capital to risk-weighted assets); C/A – Capital to Assets; NPL/L – gross NPLs to total gross loans; P/NPLs – provisions to gross NPLs; 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, Romania, Turkey and Croatia. Region FSIs are non-weighted averages of the individual countries' FSIs. Due to a different calculation mathod, North Macedonia was not included in the average for the indicator P/NPLs – provisions to gross NPLs.

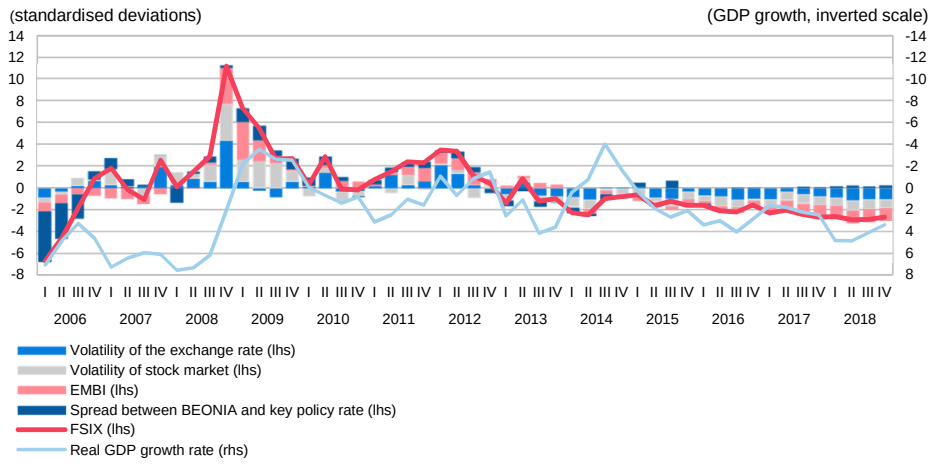
Sources: NBS and IMF – GFSR.

[141] NPL indicator has been monitored since Q3 2008, when it was introduced as an integral part of the regulatory reporting of banks.

[142] For more information on the characteristics and trends in the Serbian banking sector, see Chapter II.1 Banking sector.

[143] For more information on indicator methodology, see the Annual Financial Stability Report for 2012.

Chart IV.2.2 **Financial Stress Index (FSIX) and GDP growth**



Source: NBS.

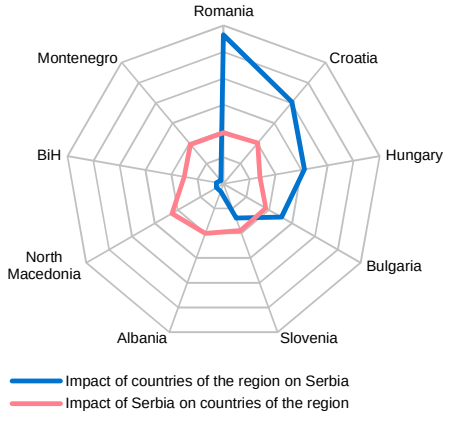
Given that the domestic economy is small and open and, as such, susceptible to influences from the international environment, and that the bulk of the financial sector is foreign-owned, the common lender effect is applied to measure financial crisis contagion across countries reliant on the same source of funding. This indicator 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[144] is proportionate to the probability of financial crisis contagion from one country of the region to Serbia, or probability of the crisis spilling over from Serbia to other countries in the region.

The analysis is based on consolidated BIS reports on cross-border exposures of global banking groups. These reports cover a large number of banks and countries and are therefore highly suitable for comparative analyses of cross-border exposures. Analysed were 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, Croatia and Hungary, while Serbia would exert the greatest impact on North Macedonia, Croatia and Albania. In order to capture potential risks to financial stability arising from the banking system, the banking sector stability index was created.[145] It is calculated based on indicators of solvency, credit risk, liquidity risk, profitability and FX risk.

At end-2018, the banking sector stability index measured 0.65, which indicates a slight improvement compared to the previous year. In terms of individual components, high capital adequacy, a significantly lower level of NPLs

Chart IV.2.3 **Shock transmission via common lender channel**

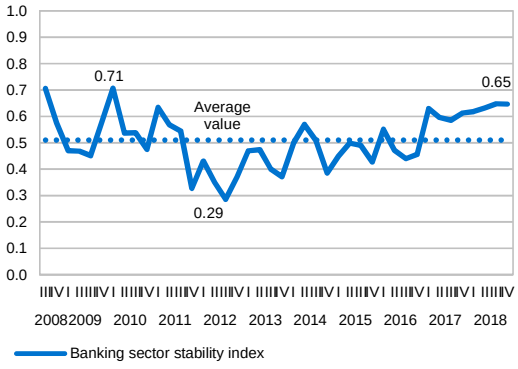


Sources: BIS and NBS.

[144] For more information on indicator methodology, see the Annual Financial Stability Report for 2013.

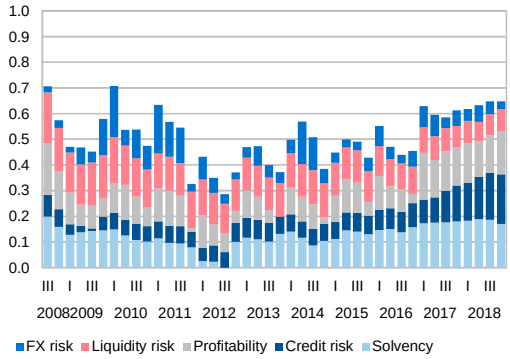
[145] For more information on indicator methodology, see the Annual Financial Stability Report for 2014.

Chart IV.2.4 **Banking sector stability index**
(composite measure)



Source: NBS.

Chart IV.2.5 **Aggregate elements of banking sector stability index**



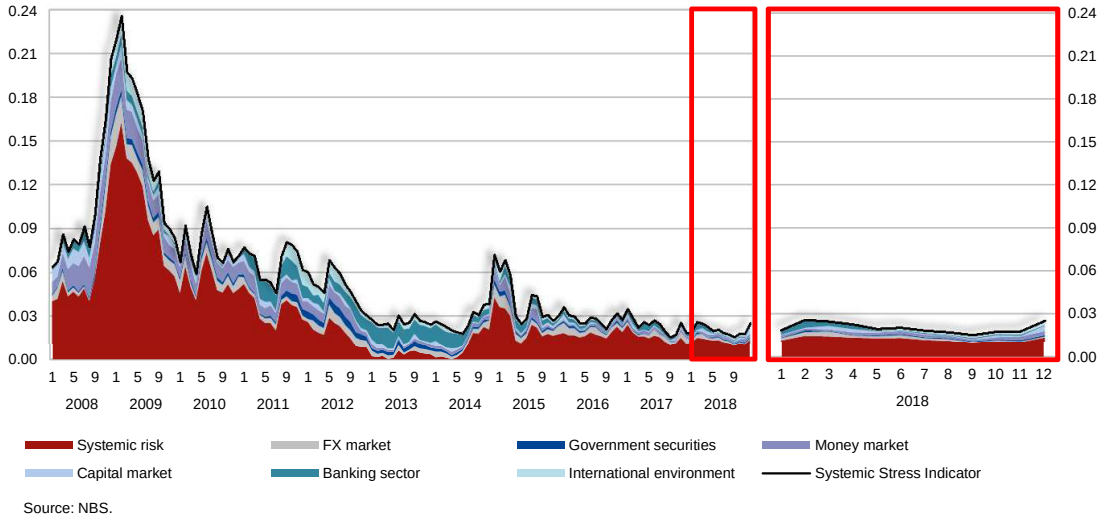
Source: NBS.

and high profitability indicate low risk level. Indicators of liquidity and FX risk also contributed to the high level of this indicator in 2018.

To identify crisis periods and assess the level of systemic stress in the Serbian financial system, a methodology was developed, serving to construct a composite indicator of systemic stress. This indicator is used by the European Systemic Risk Board and the ECB to analyse the build-up of risk in various segments of the financial system and to assess the level of overall systemic stress. The indicator of systemic stress covers 25 indicators which reflect the magnitude of financial stress in six major segments of the Serbian financial system: the FX market, government securities market, money market, capital market, banking sector and the international environment.

The analysis of the indicator of systemic stress in 2018 suggests favourable movements in all segments of the financial system. Low inflationary pressures, favourable fiscal developments, capital inflows to Serbia, monetary policy caution, coupled with stable banking system, continuously contribute to the maintenance and strengthening of resilience of the domestic financial system and macroeconomic stability of the country. Systemic stress indicator for 2018 reveals a period of low risk, with a low and stable systemic component.

Chart IV.2.6 **Systemic Stress Indicator dynamics**



Source: NBS.

Text box 7: Impact assessment of capital-based macroprudential measures on credit and economic growth

Drawing lessons from the negative experiences of the global financial crisis, many countries defined financial stability as one of the main statutory objectives of their central banks. A new policy area, called macroprudential policy, was developed in order to achieve this objective. By implementing appropriate regulatory measures (macroprudential tools), this policy contributes to safeguarding and strengthening the stability of the financial system as a whole. However, the evaluation of policy success requires the development of analytical impact assessment tools for these macroprudential measures. Capital buffers (capital conservation buffer, countercyclical capital buffer, capital buffer for systemically important banks and systemic risk buffer) are macroprudential measures impacting the amount of banks' capital. The Bayesian VAR model is used to assess how capital buffers affect macroeconomic variables, which are typical for monetary policy. Responding to a challenging task of determining and measuring the impact of banks' capital changes on macroeconomic environment, the ECB developed the BEAR toolbox (Bayesian Estimation, Analysis and Regression) within the Matlab programme package and made these complex tools available for macroeconomic analyses which improve the decision-making processes in central banks.

The Bayesian VAR model is applied to macroeconomic and banking indicators and is based on the works published by the ECB.[146] The analysis is carried out in order to determine how changes in capital, e.g. those resulting from introduction of capital buffers, impact economic growth, interest rates, inflation, as well as corporate and household lending. The analysis also observes the impact of capital buffer introduction on pre-crisis credit expansion and evaluates their effects on the moderation of economic and financial cycles. The impact of capital levels on credit and economic activity is not a one-way phenomenon, given that macroeconomic conditions also have a feedback effect on banks' capital. Changes in macroeconomic environment impact banks' operations, valuation of assets and receivables, movement of non-performing loans, etc. As documented in the relevant literature, banks respond to higher capital requirements, i.e. higher price of sources of funding, by constraining their lending, increasing interest margins and investing into lower-risk assets.

The Bayesian VAR model is estimated based on quarterly data, in the period from Q4 2008 until Q4 2018. A third-order model is used, i.e. a model with three lagged periods, meaning that each variable in the model is explained by an autoregressive member and values of other variables in the model up to three lagged periods. The following variables were used in model estimation: real GDP growth rate (gdp), y-o-y inflation rate (infl), overnight interest rate in the interbank money market – BEONIA (beonia), and the variables relating to the banking sector: y-o-y corporate credit growth rate (nfc), y-o-y household credit growth rate (hh) and the amount of regulatory capital above the regulatory minimum expressed as a percentage of risk-weighted assets (capital). The analysis also includes sign restrictions for the estimated parameters (Table O.7.1), based on the assumptions on movement and mutual impact of variables.

Table O.7.1 **Sign restrictions on bank capital shock effects**

	gdp	*infl*	*beonia*	*nfc*	*hh*	*capital*
Bank capital shock	-	-		-	-	+

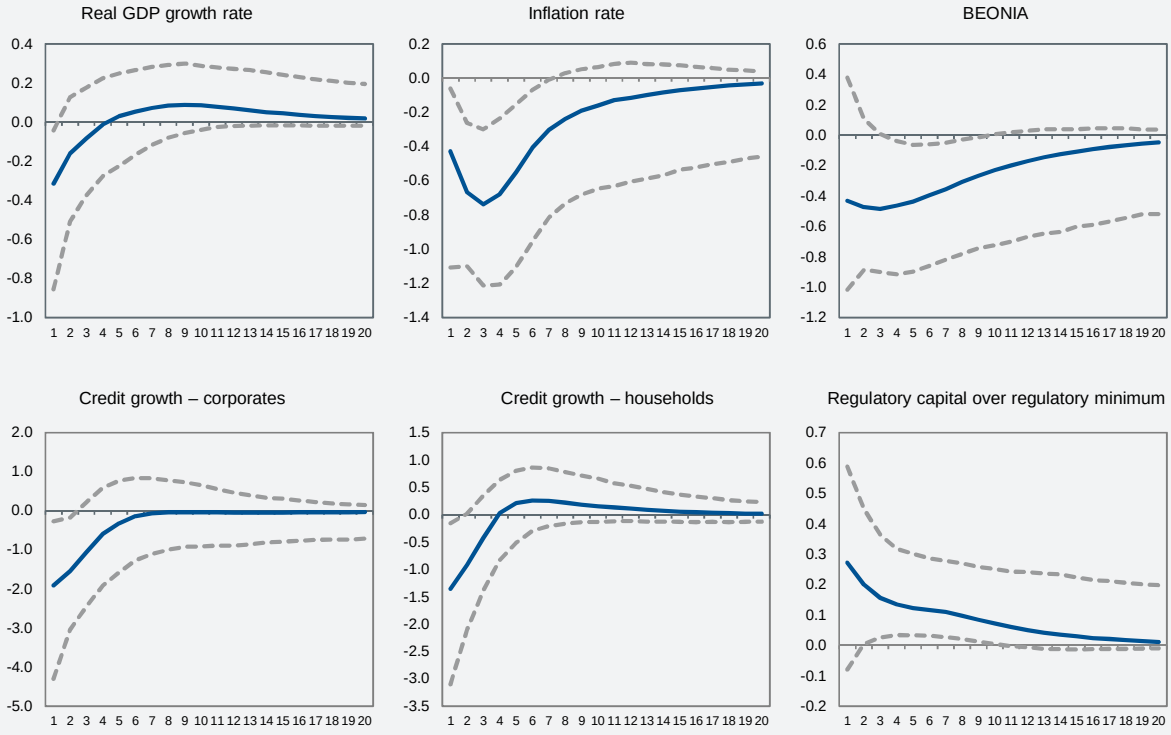
The impulse response function shows how endogenous variables in the model respond to one standard deviation shock in some of the variables. By applying the shock on banks' capital in the presented model (Chart O.7.1), the impulse response function (capital increase above the minimum regulatory level) results in a negative GDP response of -0.31 pp after one quarter. Excess capital may indicate insufficient utilisation of corporate and household borrowing potential, which has negative effects on credit activity and economic growth. This shock also adversely impacts inflation and BEONIA. In case of the inflation rate, the effect bottoms out at a minimum of -0.74 pp in three quarters, while BEONIA loses -0.49 pp in the same period, after which the impact on both variables weakens. Although there is no restriction as to the direction of BEONIA's movement, a decrease is expected due to monetary policy easing in response to the

[146] Estimating the impact of shocks to bank capital in the euro area, ECB WP No 2077, June 2017.

economic slowdown and a drop in inflation. The effect on corporate and household lending is negative, being more pronounced in the corporate segment, at -1.92 pp after one quarter, while in the household segment it equals -1.36 pp for the same period, which is expected given the structure of bank lending.

The second part of the analysis are conditional forecasts of endogenous variables. Namely, the analysis introduces assumptions on variable movements over a certain period (conditions) and observes the effects on other variables. This part is a sort of a scenario analysis and may be used to examine the effects of certain measures (e.g. introduction or relaxation of macroprudential tools). In the next part of the analysis we examine the effect of introduction of the countercyclical capital buffer[147] in the period of strong credit expansion, from Q4 2008 until Q4 2009 and the subsequent relaxation of this instrument in the period of subdued credit activity. Accordingly, as of Q3 2010, the calculated countercyclical capital buffer rate has been 0%. The assumptions on the countercyclical capital buffer are based on the standardised approach proposed by the European Systemic Risk Board[148] and the Basel Committee on Banking Supervision,[149] which uses the deviation of the credit-to-GDP ratio from its long-term trend as a reference indicator informing the decision on the countercyclical capital buffer rate. The analysis observes the impact of changes in the capital level on other endogenous variables, except inflation and BEONIA.

Chart O.7.1 **Impulse response function – capital shock**
(pp)



Source: NBS.

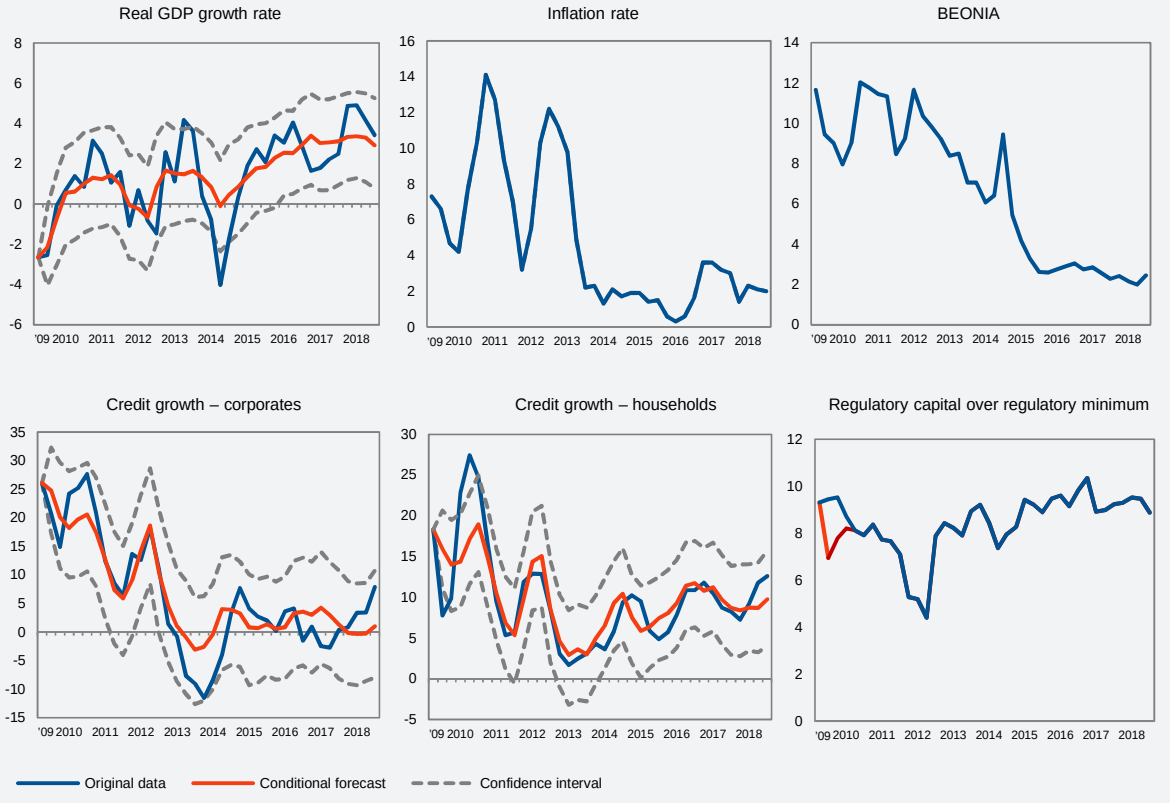
Relative to actual GDP movements, conditional forecasts indicate that the introduction of the countercyclical capital buffer would reduce the volatility of GDP movements. Conditional forecasts of real GDP growth rate indicate that in the first few periods after the introduction of the countercyclical capital buffer, growth rates would be lower than the actual

[147] The values of the capital buffer in the period observed are assessed by the model for the assessment of the countercyclical capital buffer rate which is based on the deviation of corporate and household credit-to-GDP ratio from its long-term trend.

[148] Recommendation of the European Systemic Risk Board of 18 June 2014 on guidance for setting countercyclical buffer rates, ESRB/2014/1, ESRB, June 2014.

[149] Guidance for national authorities operating the countercyclical capital buffer, Basel Committee on Banking Supervision, December 2010.

Chart O.7.2 **Conditional forecast of endogenous variables**
(pp)



Source: NBS.

ones and that in the period after buffer relaxation, negative growth rates would be significantly moderated. Under conditional forecasts, corporate and household credit growth rates also exhibit lower cyclicality. Corporate credit growth path under the conditional forecasts shows that high credit growth rates in the period Q2 2010 – Q1 2011 would have been lower. On the other hand, negative growth rates recorded in the period Q2 2013 – Q3 2014 are significantly softened, evidencing that capital buffer also has a countercyclical effect on corporate lending. The effects on household lending are milder, showing reduced countercyclicality. Such results are also supported by literature, which suggests the use of the countercyclical capital buffer exactly for these purposes. The disadvantage of this analysis are short time series, because longer time series covering also the period before 2008, would enable a more adequate view of the movement of conditional variables in the period before the outbreak of the crisis.

The latest global financial crisis highlighted the importance of stability of the financial sector as a whole and the tools by which this stability can be achieved. Given the relatively short period of application of macroprudential policy tools, the assessment of policy effectiveness is a challenging task. The empirical analysis, conducted based on the Bayesian VAR model, enables us to assess how changes in banks' capital impact corporate and household lending and certain macroeconomic movements. The impulse response function indicates that capital shocks negatively affect corporate and household lending, as well as economic activity and inflation in the medium term. Also, the analysis of conditional forecasts shows that the introduction of the countercyclical capital buffer would have a countercyclical effect on both corporate and household lending, on the one hand, and on economic growth, on the other. Conditional forecasts of GDP and corporate and household credit growth rates indicate that in periods of economic downturn and subdued lending these rates would be moderated relative to those materialising in the long term. These findings confirm the importance of macroprudential policy and its tools in overcoming some regulatory weaknesses that were brought to light by the global financial crisis.

List of charts, tables and diagrams

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ANNUAL Financial Stability Report /
National Bank of Serbia. - 2010- . -
Belgrade (Kralja Petra 12) : National Bank of
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