

ANNUAL FINANCIAL STABILITY REPORT



National Bank of Serbia

2014

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NATIONAL BANK OF SERBIA

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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 management of risks.

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 and 14/2015) 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 the 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* will 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 the end of 2014.

The *Financial Stability Report* was adopted by the National Bank of Serbia's Executive Board in its meeting of 11 June 2015. Earlier issues of the *Report* are available on the National Bank of Serbia's website (<http://www.nbs.rs>).

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Veselin Pješčić, Vice Governor

Diana Dragutinović, Vice Governor

Đorđe Jevtić, Director of the Administration for Supervision of Financial Institutions

ABBREVIATIONS

ARIMA – Autoregressive Integrated Moving Average

BIS – Bank for International Settlements

bln – billion

bp – basis point

CAR – Capital Adequacy Ratio

CESEE – Central, Eastern and Southeastern Europe

DvP – Delivery vs. Payment

EBA – European Banking Agency

ECB – European Central Bank

EMBI – Emerging Markets Bond Index

FDI – foreign direct investment

Fed – Federal Reserves

LtD – Loan-to-Deposit ratio

LtV – Loan-to-Value ratio

GDP – gross domestic product

GSFR – Global Financial Stability Report

IFEM – Interbank Foreign Exchange Market

IFIs – international financial institutions

IMF – International Monetary Fund

lhs – left hand scale

mln – million

NPL – non-performing loan

pp – percentage point

Q – quarter

rhs – right hand scale

RTGS – Real Time Gross Settlement

VAT – Value Added Tax

VPFs – voluntary pension funds

y-0-y – year-on-year

Other generally accepted abbreviations are not cited.

Key risks	Mitigating measures
External risks:	
<ul style="list-style-type: none"> - reduced cross-border exposure of European banks may hinder domestic credit and economic growth in the medium run; - the spill-over from parent bank markets, notably Greece, may have negative consequences on the volume of activities of their subsidiaries; - the expected increase in the Fed's rate may heighten uncertainties in emerging markets; - rising rates on FX-indexed loans, following the period of exceptionally low rates of the leading central banks; - slower than expected recovery of the euro area and our other important foreign trade partners; - the implications of setting up a banking union may be ambiguous, particularly in regard to the framework for resolution of European bank subsidiaries in non-EU member states. 	<ul style="list-style-type: none"> - further expansion of the domestic deposit base; - organising meetings with subsidiaries' management to discuss bank liquidity and results of liquidity and solvency stress tests, in case of unfavourable tendencies; - cooperation with home supervisors in order to timely assess the effects of measures to be implemented; - cooperation with parent banking groups in order to assess their capacities and plans for further financial support to subsidiaries; - active participation in international forums, such as the Vienna Initiative and cooperation with working groups within the Vienna Initiative; - cooperation with European and international financial institutions to ensure adequate financial support to the domestic banking sector; - simulation of annuity plans for new loans at variable interest rates to the interest rate risk (rise), in order to alert clients of the interest rate risk; - developing recovery plans by banks; - developing resolution plans by the NBS.
Internal risks:	
<ul style="list-style-type: none"> - high degree of financial system euroisation increases exposure to FX-credit risk; 	<ul style="list-style-type: none"> - consistent implementation of the dinarisation strategy by all relevant stakeholders: the NBS, government and banks, with the support of IFIs; - simulation of annuity plans for new FX-indexed loans (euro loans for households) to the FX risk, in order to alert clients of the currency risk; - further promotion of dinar financial instruments – ranging from dinar savings to government securities in the local currency;

Key risks	Mitigating measures
Internal risks:	
<ul style="list-style-type: none"> - a high share of NPLs negatively affects bank risk aversion and credit growth, jeopardising banking sector profitability and posing a systemic risk; 	<ul style="list-style-type: none"> - development and consistent implementation of the national NPL resolution strategy; - setting up a working group consisting of representatives of the Ministry of Finance, NBS, Ministry of Justice, Ministry of Economy and Deposit Insurance Agency. The working group should coordinate the development of the strategy; - the strategy is aimed at preventing a further rise in NPLs and their subsequent reduction. The measures to be taken include, among others, changes to the regulatory framework conducive to faster resolution of NPLs (related to the profit tax, consensual financial restructuring, bankruptcy, etc.); - special diagnostic studies on asset quality review ensuring clear demarcation between good and bad assets;
<ul style="list-style-type: none"> - muted credit activity and sluggish economic recovery; 	<ul style="list-style-type: none"> - removing barriers slowing FDI's; - NPL reduction to boost supply; - further implementation of the subsidised lending programme to the extent allowed by fiscal room;
<ul style="list-style-type: none"> - negative effects of changes in business models of European banks on capital inflows into the banking sector, due to needs in the parents' home market, lower profitability in the Serbian market and adverse market conditions for the sale of government shares in good banks; 	<ul style="list-style-type: none"> - development of new financial instruments in order to bolster domestic sources of funding;
<ul style="list-style-type: none"> - inadequate valuation of collateral exposes banks to risks in case of collateral activation; 	<ul style="list-style-type: none"> - setting up a property valuation database and upgrading the appraisal profession;
<ul style="list-style-type: none"> - unfavourable maturity structure of domestic savings; 	<ul style="list-style-type: none"> - educational activities to encourage long-term saving; - consistent implementation of fiscal consolidation measures;

Key risks	Mitigating measures
Internal risks:	
<ul style="list-style-type: none"> - implications if positive effects of fiscal consolidation measures and structural reforms on growth in investments and net exports are lesser than expected; 	<ul style="list-style-type: none"> - consistent implementation of agreed structural reforms through robust measures;
<ul style="list-style-type: none"> - inadequate corporate governance in some financial institutions. 	<ul style="list-style-type: none"> - ownership consolidation and better corporate governance; - development of recovery plans by banks; - development of resolution plans by the NBS.

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Overview

Geopolitical tensions, a strong decline in oil prices, “normalisation” of the Fed’s monetary policy, very low euro area inflation throughout the year and deflation by year-end were the key movements in the international environment.

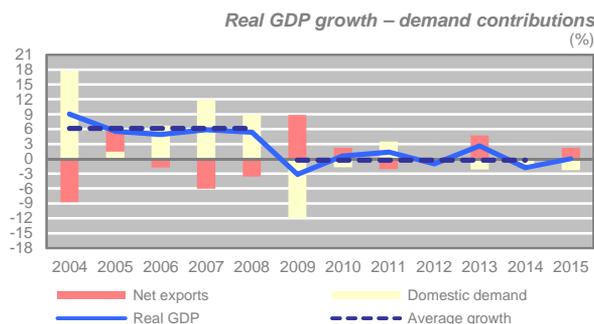
2014 was marked by further steps in the formation of a banking union, through centralisation of supervision under the ECB’s umbrella and setting up of a single resolution mechanism.

In 2014, GDP shrunk by 1.8%, reflecting mainly the effects of May floods that hit Serbia. Y-o-y inflation moved below the lower bound of the target tolerance band throughout the year, equalling 1.7% in December. In 2015, GDP is expected to stagnate and inflation to return within the target band.

Following a decline in the euro area’s economic activity in 2012 and 2013 (by 0.8% and 0.5%, respectively), 2014 saw a moderate growth (0.9%). The upward trend is expected to continue in the period ahead, on the back of growing domestic and external demand. The revival of the euro area’s domestic demand can be explained by: (a) the ECB’s accommodative monetary policy providing an impetus to credit activity and investments; (b) the effects of implemented fiscal consolidations and structural reforms; and (c) a significant drop in energy prices. At the same time, a rise in external demand is expected to stem from the anticipated revival of the global economy and the effects which the euro’s depreciation against other world currencies will have on net exports. Contrary to the ECB’s adherence to the accommodative monetary policy stance, the Fed rounded off its quantitative easing programme and announced gradual rising of the key rate in 2015.

As of November 2014, the ECB assumed the jurisdiction over euro area bank supervision via a single supervisory mechanism, placing some 120 banks under its direct supervision. In a bid to restore the credibility and rebuild the undermined trust in European banks, the centralisation of supervision was preceded by a detailed asset quality review and stress testing of European banks. One step further in the formation of a banking union was the setting up of a single resolution mechanism, operative as of 2016.

In 2014, inflationary pressures were rather subdued. Reflecting a protracted period of low and stable inflation, inflation expectations have been anchored and moved within the target tolerance band. Low domestic demand, depressed further by fiscal consolidation measures, will remain the key disinflationary factor in 2015 as well. Economic activity is expected to bounce back in 2016 as external demand gathers momentum as a consequence of



Creating adequate capital and liquidity buffers in the financial sector is not enough to maintain financial stability – sustainability of fiscal policy and public debt must be ensured as well.

Reserve adequacy indicators and different stress testing models showed that NBS FX reserves provided adequate protection of the domestic system from potential shocks in 2014.

Excluding the exchange rate effect, corporate loans recorded a y-o-y decline, though considerably milder compared to end-2013. While the share of dinar loans in total corporate lending of domestic banks increased, corporates retained a sizeable exposure to FX risk, particularly taking into account their external debt. The share of gross NPLs in total gross corporate loans remained unchanged. The number of businesses whose accounts were blocked through enforced collection has increased.

Household savings grew at a somewhat slower pace compared to 2013. As the upward trend of dinar savings continued, the share of long-term savings grew as well.

The fact that household savings continued to grow despite fiscal consolidation measures confirms citizens' trust in the banking sector and contributes to further strengthening of its deposit base. Household loans also

expected stronger euro area recovery. Consistent implementation of the adopted fiscal consolidation measures and structural reforms will be instrumental in reducing fiscal and external imbalances and spurring investments and net exports.

At end-2014, public debt came at 71.0% of GDP. If the non-state guaranteed debt of local governments is included, its share climbs to 72.3% of GDP. At year-end, 41.7% of public debt was denominated in euros and 31.5% in US dollars. As around one third of the debt was denominated in the US currency, its strengthening increased the costs of servicing dollar denominated loans and bonds. In late 2014, the government adopted fiscal consolidation measures including, among other: public sector wage cuts, rightsizing public sector employment, reducing pensions, decreasing state aid, and bankruptcy, privatisation and corporate and financial restructuring of public and state-owned enterprises. The significance and urgency of full implementation of fiscal consolidation measures were also confirmed by the signing of a three-year precautionary stand-by arrangement with the IMF in February 2015.

Equalling EUR 9.9 bln gross or EUR 7.7 bln net at end-2014, FX reserves are an important guarantee of the financial system's resilience to sudden shocks. Though the level of FX reserves was lower than in the prior year, their adequacy, measured by a composite indicator tailored as a "Right measure for Serbia", improved owing to the narrowing of the projected current account deficit and residual short-term debt.

Excluding the exchange rate effect, corporate loans fell by 1.4% y-o-y, much less than in 2013 (9.1%). Such trends were prompted primarily by the implementation of the government's subsidised dinar lending programme supporting corporate liquidity and financing of current assets. The programme boosted the dinar share in total corporate lending from 20% to 25.0% in 2014. Nevertheless, the share of gross NPLs in total gross corporate lending remained high (24.6% at end-2014). Additionally, increase in the number of businesses whose accounts were blocked (by 23.3%) pointed to liquidity difficulties in the economy.

Total household savings increased by RSD 68.8 bln, reaching RSD 1,036.3 bln at end-2014. Maturity structure also improved mildly. During 2014, dinar receivables gained further ground in total banks' receivables from households. Euro-indexed receivables made up 45.1% of total receivables from households, while those indexed to the Swiss franc contracted further to 13.9% (15.0% at

went up, especially dinar loans, which expanded their share in total household lending. 2014 saw an improvement in lending terms. However, the share of NPLs in total household lending increased, which calls for close monitoring.

The banking sector has been adequately capitalised and highly liquid, with banks increasingly reliant on domestic sources of funding. Credit growth entered positive territory in Q3 2014. While NPLs have a high share in total loans, having been fully covered by loan loss (accounting and regulatory) provisions, they pose no threat to the solvency of the financial system as a whole. Nevertheless, NPLs are a drag on profitability and new lending and therefore call for drafting and consistent implementation of a comprehensive strategy involving the government, NBS and international financial institutions.

end-2013). Observed by purpose, the greatest nominal growth in 2014 was recorded for cash loans (13.7%) and housing loans (6.6%). Interest rates on newly approved dinar loans dropped by 2.8 pp in 2014, though remaining high at 16.9%. Interest rates on newly approved euro and euro-indexed loans edged down by 1.0 pp to 6.9%.

Serbia has a bank-centric financial sector, with banks holding 92.0% of financial sector assets at end-2014. Therefore, adequate functioning of this sector is of utmost importance for the country's financial stability.

The banking sector is adequately capitalised – capital adequacy ratio at end-2014 stood at 20.0%, considerably above the domestic regulatory minimum of 12% and much above the Basel standards. In terms of capital adequacy, Serbia's banking sector is considerably above the regional average.

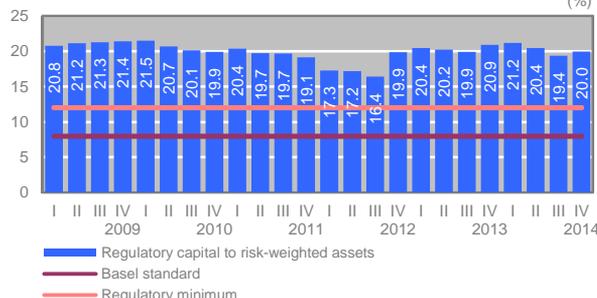
Reflecting the business models of banks which remain committed to traditional credit and deposit business, loans and other receivables held a dominant share in banks' assets (64.1%). As of October 2014, lending returned to positive territory, aided by the subsidised corporate lending programme implemented by the government. Other components of the assets were cash and cash equivalents with the central bank (16.4%) and financial assets (15.5%). Government securities made up the largest share of financial assets, due to banks' proneness to less risky investments.

The share of NPLs in total approved loans of the banking sector rose by 0.1 pp to 21.5% in 2014. Although it almost flatlined from the year before, the NPL share remained above the regional average. However, different NPL definitions limit data comparability. On the other hand, the level of total (accounting and regulatory) loan loss provisions is the highest in the region.

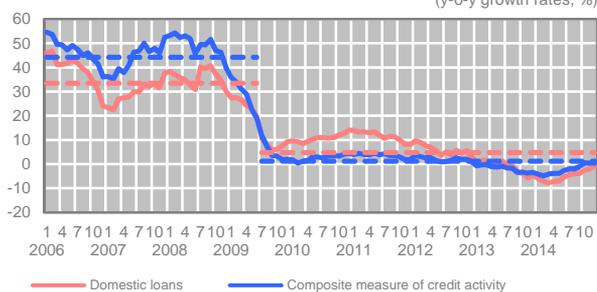
Banks operating in Serbia rely increasingly on domestic, stable sources of funding. Strengthening of the domestic deposit base helps to close the gap between local loans and deposits, thus reducing the sensitivity of the domestic financial system to external shocks. At end-2014, total deposits made up 63.7% of total liabilities of the banking sector, recording a 3 pp increase from the year before.

Unlike the previous year, the banking sector posted a positive financial result in 2014. Profitability was boosted mostly by interest, fees and commissions income, while expenses arising from indirect loan write-offs in the balance sheets and the restructuring of one bank in the last quarter of 2014 significantly dented the final result.

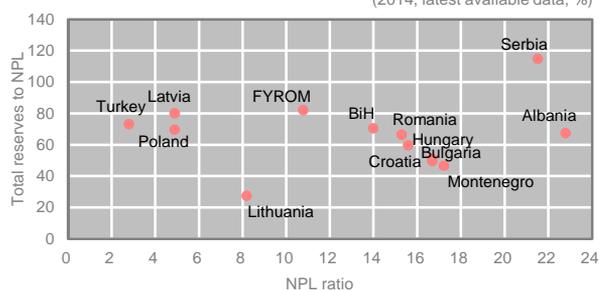
Banking sector capital adequacy (%)



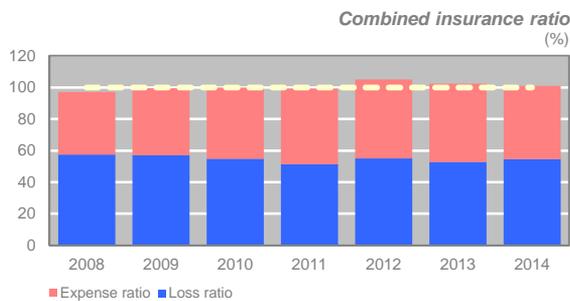
Real credit growth (y-o-y growth rates, %)



Coverage of gross NPLs by total reserves and NPL ratios, countries of the region (2014, latest available data, %)



The new Insurance Law, passed in late 2014 lays the groundwork for development and greater resilience of the Serbian insurance sector.



While voluntary pension fund assets continued to grow, their client base still made up a small portion of the total population.

Total balance sheet assets of all lessors continued to decline, as well as their share in the balance sheet of the benchmark banking sector.

Pursuing higher yields, foreign investors continued to invest in securities of emerging economies. The growth of the Fed's key rates announced for end-2015 could be a source of risk for Serbia's financial market, since foreign institutional investors are prominent buyers of dinar government bonds. This risk may be alleviated by the ECB's quantitative easing programme launched in March 2015 and the precautionary stand-by arrangement with the IMF.

Given that real estate remains the predominant form of loan collateral, change in its value has a bearing on a bank's loan portfolio quality and consequently on the price and accessibility of loans. It is therefore of utmost importance to monitor and analyse trends in this market, as well as launch actions for its improvement.

According to all criteria, liquidity of the Serbian banking sector is very high. Liquidity risk poses no threat to financial stability.

Mid-2014, the insurance sector faced the challenge of alleviating catastrophic damages in a flood-stricken country. Coping with this challenge and high insurance administration expenses, insurance undertakings recorded low profitability. As the insurance sector is still underdeveloped, it is expected that the new Insurance Law will provide an impetus to its growth.

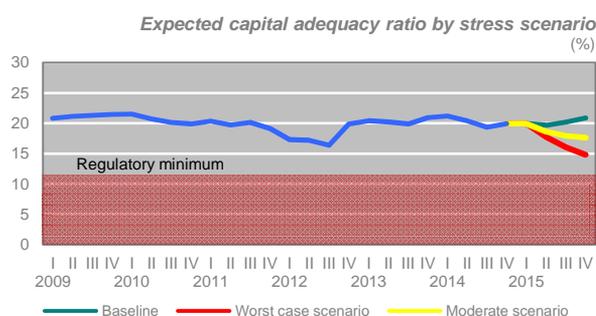
Net voluntary pension fund assets increased by 15% relative to 2013. The total number of clients in the accumulation phase at end-2014 equalled 186,578, while more than 250 thousand membership contracts were concluded. Users of voluntary pension fund services made up 2.5% of the total population, with only one in ten employees joining a pension fund.

Relative to end-2013, positive trends in financial leasing were reflected primarily in increased capital of leasing providers (17.5%) and lowered total operating expenses and losses (26.0%). However, 2014 saw further shrinking of total balance sheet assets (by 3%) of all lessors (16), coupled with a decline in total income and gains (by 11.6%).

Government bond segment of the Serbian financial market has gained much ground over the last five years and promises to grow further. As central banks of developed countries adhered to zero-bound interest rate policy and unconventional monetary policy measures in 2014, yields on government securities of developed countries remained low, despite the tapering of the Fed's quantitative easing programme. Motivated by conditions in both the international and domestic capital market, primarily relatively stable exchange rate and low inflation, domestic and foreign investors increased their exposure to Serbian government bonds in 2014.

In 2014, DOMex for Serbia lost 4.6% y-o-y. The drop in prices can be explained by persistently low demand, which led to a limited turnover. In 2014, 5,492 residential real estates were purchased by loans insured by the National Mortgage Insurance Corporation. The turnover in 2014 dropped by 13.9% compared to 2013 and as much as 2.8 times relative to 2008 when 15,650 residential real estates were sold. Almost half of all residential real estates purchased by NMIC-insured loans (46.5%) refer to transactions in Belgrade.

Financial stability assessment points to overall stability of Serbia's financial system. However, taking into account that the effects of fiscal consolidation measures could, in the short run, dent household debt servicing ability, NPLs may rise in this segment of lending activity.



Macroprudential solvency stress testing is used to assess the banking sector's resilience to credit risk growth. Capital adequacy ratio for the banking sector stays above the regulatory minimum even in the worst-case scenario. However, separately observed, CAR of few banks, which account for a smaller share of the total banking sector balance sheet assets, could fall below the regulatory minimum by end-2015.

In November 2014, the level of NPLs fell for the first time since the start of the year. If no further measures are taken, NPLs would probably rise in circumstances of slower than expected economic recovery, underperformance of credit activity and materialisation of the exchange rate depreciation risk if triggered by unfavourable developments in the international environment. In addition to corporate, household NPLs might rise as well, since the effects of fiscal consolidation measures may reduce citizens' debt servicing ability in the short run. Considering all of the above, the government, in cooperation with the NBS, will develop the national NPL Resolution Strategy. The Strategy will envisage the improvement of the regulatory framework for a market-based NPL resolution, which should serve as an incentive for banks and clients. In addition, having in mind the high level of euroisation of the domestic financial system, the NBS is intervening in the foreign exchange market taking into account the inflation target and financial sector stability, but without targeting a specific level for the exchange rate. Depending on the available fiscal space, the government could use measures to stimulate credit activity.

Liquidity stress tests used to measure liquidity risk under the assumed loss of depositors' confidence and/or unfavourable economic conditions indicate that the liquidity ratio for the system as a whole would remain much above the regulatory minimum. This applies even in case of the largest assumed deposit withdrawal, coupled with the effects of the spillover of the crisis from the international environment.

Based on the network modelling results, we can conclude that there is no significant systemic component of risk in the banking sector.

I. International and domestic environment

During 2014, further steps were taken towards forming a banking union. Euro area banking supervision was centralized under the auspices of the European Central Bank, and stress tests and asset quality review of banks were implemented. This should lead to enhanced safety and stability of the European banking system and improved financial integration in Europe. On the domestic front, GDP fell by 1.8% in 2014, partly on account of negative effects of the May flooding. Y-o-y inflation remained low throughout 2014, moving below the lower bound of the target tolerance band, and is expected to return within the band in H2 2015. Inflation expectations remained anchored in 2014. FX reserves, as a safety buffer, remained high at the end of 2014 as well. Risks from the international environment will subside on account of anticipated mild recovery in the euro area and faster US economic growth in 2015, coupled with the ECB's quantitative easing. The expected increase in the Fed's interest rates in H2 2015 will act in the opposite direction.

I.1. Risks from the international environment

The Fed's decision to wind down its QE programme, geopolitical tensions, tumbling oil prices, rising dollar, and extremely low euro area inflation during the year and deflation at year end, constituted key risks from the international environment in 2014. By contrast, the anticipated faster economic activity growth and labour market recovery in the US, coupled with the ECB's QE, are likely to foster increased lending and investment, and result in an improved outlook for the years ahead.

After contracting in 2012 and 2013 (0.8% and 0.5%, respectively), euro area economic activity picked up modestly in 2014 (0.9% growth), a trend expected to continue into 2015 as well. Based on the IMF's projections¹, euro area GDP growth in 2015 and 2016 is expected at 1.5% and 1.7%, respectively. In 2014, stagnant growth and recession in euro area countries were at their strongest in Cyprus (-2.3%), Italy (-0.4%) and Finland (-0.1%), while Greece posted a positive GDP growth rate (0.8%) for the first time since 2008. Central and Eastern Europe fared better compared to the euro

Chart I.1.1. GDP growth projections for 2015 - European countries (%)



Source: NBS, based on IMF data.

area, with an average growth rate of 2.8% in 2014. Looking at the Balkan region² alone, the strongest growth was registered in Macedonia (3.8%).

¹ World Economic Outlook, April 2015.

² Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Macedonia, Montenegro, and Republic of Serbia.

All European countries, except Ukraine (-5.5%), Russia (-3.8%), Belarus (-2.3%) and Moldova (-1.0%) are poised for recovery and positive growth rates in 2015. Forecasts differ for South and West European countries: higher growth rates are anticipated in Greece and Spain (over 2%), while Italy, France and Germany are expected to see a more modest growth (Chart I.1.1).

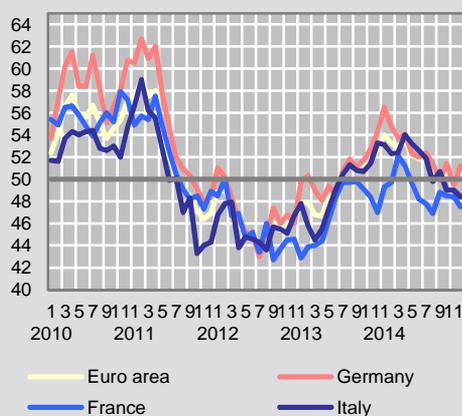
In the period ahead, economic activity of the euro area is anticipated to continue rising at a moderate pace. A rebound in euro area demand is likely, propped up by monetary policy measures aimed to increase lending and investment, better fiscal consolidation and structural reforms, as well as much lower energy prices. Another boost to economic activity could come from external demand, on the back of expected recovery of the global economy and euro's depreciation against the dollar in H2 2014. However, high unemployment continues to hinder economic recovery. In late December 2014, unemployment rate was 11.4%, while y-o-y inflation was -0.2%. This is the first time since 2009 that inflation entered negative territory. Although inflation was way below the close to, but below 2% target, it should be noted that the December fall in prices was largely due to tumbling global oil prices.

After standing at 52.9 points³ on average in the January-June 2014 period, with highest index value posted in January in Germany (56.5 points), PMI Composite for

euro area *manufacturing* declined in H2 2014, averaging at 50.7 points. In euro area *services*, the steady decline in economic activity present since January 2012 was halted in August 2013, with the index rising moderately to above 50 points thereafter. Charts I.1.2. and I.1.3. show that the lowest average index values in 2014 were recorded in France (below 50 points), while the highest values were recorded in Germany (over 52 points).

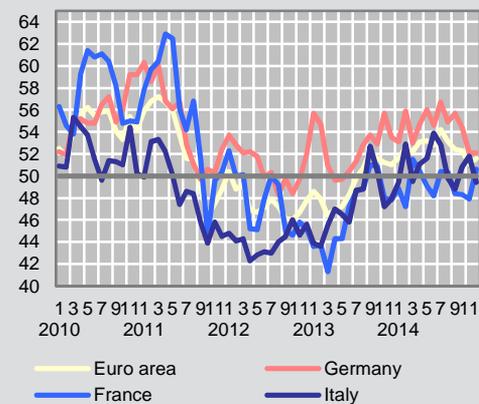
In the first half of 2014, the main source of volatility in the euro area was the political crisis in Ukraine, which escalated during the year, worsening geopolitical tensions between Western countries and Russia. A fresh wave of uncertainty in international markets and a negative shock to the Russian economy came around mid-2014, when global oil prices entered a sharp decline⁴. The Russian rouble weakened notably in late 2014 as sanctions blocked access to the international market for Russian companies and banks and as global oil prices dipped. The rouble's depreciation was further worsened by a downgrade of Russia's long-term foreign-currency credit rating by leading rating agencies. After repeated lowering of Russia's credit rating during H2 2014, in early 2015 *Standard & Poor's* and *Moody's Investor Service* downgraded it to speculative grade (BB+, Ba1, respectively). Capital outflows from Russia, sanctions, rating downgrades and a weaker rouble affected the profitability of Russia's banking system.

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.

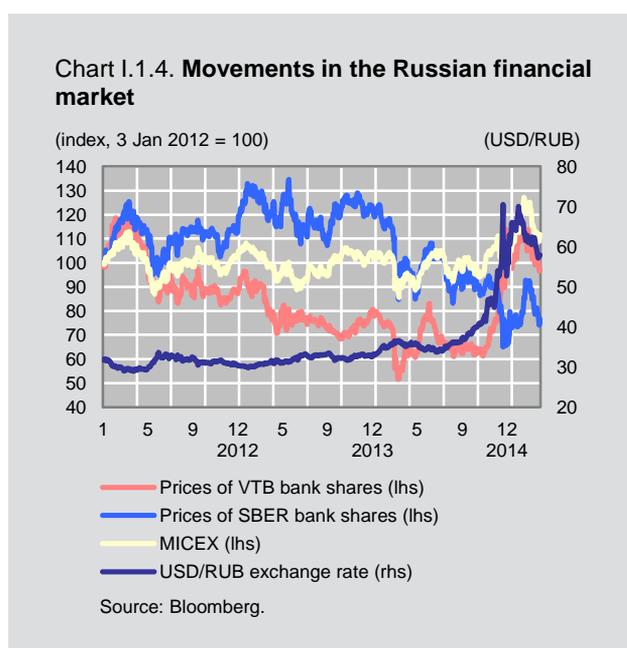
³ A reading of 50 or higher indicates economic expansion, whereas a reading of below 50 indicates economic contraction.

⁴ Oil prices dropped by around 55% from end-June 2014 until end-January 2015.

To head off the tumbling of the rouble, in December the Central Bank of Russia raised its key rate two times, from 9.5% to 10.5% and, later, to 17.0%. It also announced a set of measures to preserve financial stability and ensure necessary foreign exchange liquidity in the financial market. The announced measures include moderation of negative effects of foreign exchange changes at the time of calculating regulatory indicators, provision of necessary foreign exchange liquidity, support to a stable functioning of the Moscow Stock Exchange and enhanced credit risk management. Also, in order to preserve banking sector stability against a backdrop of higher interest rates and increased credit risk due to weak economic growth outlook for Russia, Russia's central bank and Government announced additional measures to recapitalise credit institutions in 2015.

Regarding the presence of Russian banks in Serbia, there were two banks with a combined market share of around 4%⁵ at end-2014.

In addition to geopolitical tensions, H2 2014 was marked by the Fed's QE wind-down, publishing of results of a comprehensive assessment of euro area banks, centralisation of supervision within the ECB's SSM,⁶ as well as uncertainties surrounding Greek parliamentary elections and the possibility of Greek exit from the euro area.



Greece entered capital markets in mid-2014 for the first time since 2010, when it had to seek financial assistance from foreign creditors due to a lack of investor confidence. In return, Greece was required to implement radical fiscal and economic reforms.

In late 2014 and early 2015, however, the yield on Greek bonds soared to worryingly high levels, while values of Greek bank shares slumped. This was due to political uncertainties and parliamentary elections, as well as the subsequent victory of Syriza, a leftist party opposed to further austerity measures, structural reforms and extension of the current assistance programme with the Troika⁷. The political crisis spilled over to the banking sector, causing deposit withdrawals, rapid liquidity tumble and problems in Greek banks' financing. As a result, Greek banks requested Emergency Liquidity Assistance (ELA) from the ECB, through the Central Bank of Greece. After long and exhausting negotiations, a deal on a bridge programme was sealed in mid-February 2015, which is in fact an extension of the assistance programme for Greece over the next four months. In return, the Greek government pledged to maintain a primary budget surplus and continue to implement previously agreed reforms. Despite the framework agreement between Greece and international creditors, it remains to be seen how situation in Greece will unfold after the bridge programme expires later in the year.

Regarding the presence of Greek banks operating in Serbia, there are four banks with a total market share of around 14%.

I.1.1. ECB's and Fed's monetary policy in 2014

Euro area lending to the real sector failed to recover in 2014 as well. This, together with inflation well below the target rate, prompted the ECB to maintain an accommodative monetary policy stance. By contrast, in light of US economic recovery, the Fed began a gradual monthly tapering of its QE programme, ending it in October 2014. The possibility of a gradual increase in interest rates in H2 2015 was announced.

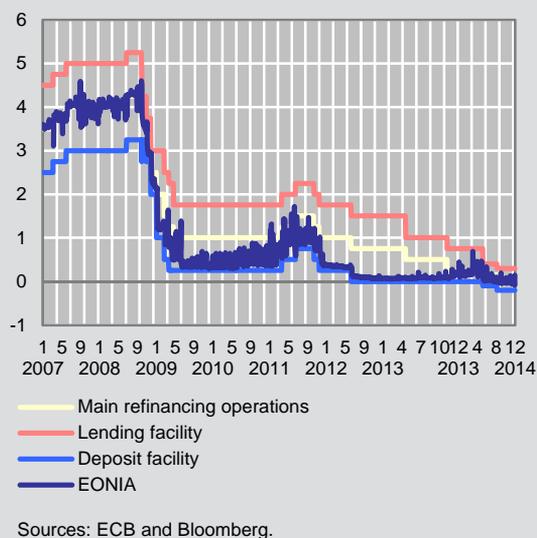
During 2014, the ECB lowered its main interest rate in June and September, by 10 bp each, to a historical low of

⁵ Measured by the share in net banking sector assets.

⁶ Single Supervisory Mechanism.

⁷ ECB, IMF and European Commission.

Chart I.1.5. ECB's interest rates and EONIA (%)



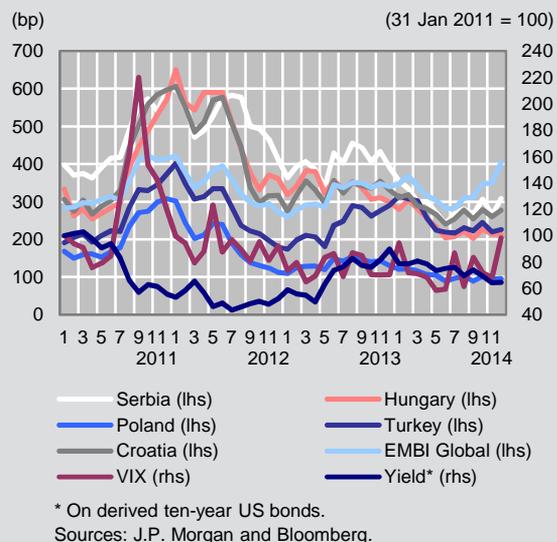
0.05%. The interest rate on deposit facilities was also slashed two times by 10 bp each, entering a negative zone and falling to -0.2% at end-2014. The rate on lending facilities was lowered from 0.75% to 0.4% in June, and 0.3% in September. Such decisions were motivated by deflationary pressures and record low inflation in 2014, which, at -0.2%, entered deflation territory in late December. According to the ECB's projections from March 2015, inflation is expected to gradually approach the target level in the years ahead (0.0% in 2015, 1.5% in 2016 and 1.8% in 2017).

As part of its monetary easing measures, in H2 2014 the ECB introduced four-year targeted longer-term refinancing operations (TLTROs). Two series of TLTROs (September and December) were conducted until end-2014, at a fixed interest rate of 0.15%. In the first TLTROs in September, banks took up EUR 82.6 billion, with demand rising to EUR 129.8 billion in December. The aim of these operations is to improve bank lending to the euro area private sector, including primarily SMEs, and further operations are planned in the period from March 2015 until June 2016.

According to the Euro Area Bank Lending Survey for Q4 2014⁸, which included 137 banks, bank participation in the first two TLTROs was mainly driven by profitability

⁸ Euro Area Bank Lending Survey for Q4 2014.

Chart I.1.6. EMBI for Serbia and other regional peers, VIX and yields on US bonds



(low cost of borrowing) and to a lesser extent by precautionary motives (reduction of current and/or prevention of future financing difficulties) and the objective of fulfilling regulatory requirements. Also, according to the Survey, banks will continue to be guided by the above motives in future TLTROs (with an even greater emphasis on profitability). Concerning the use of conducted (and future) TLTRO funds, banks participating in the survey specified that they will employ the funds for granting loans, and, to a lesser extent, for refinancing.

In June 2014, the ECB announced additional measures—asset-backed securities purchase programme (ABSPP) and covered bonds purchase programme (CBPP3). Both programmes were launched in Q4 2014 and are planned to be conducted over a window of at least two years. These securities purchases will help strengthen the ECB's monetary policy transmission mechanism as well as boost euro area lending and economic activity.

The most recent of the ECB's QE facilities, introduced in early 2015, is the expanded asset purchase programme which will include bonds issued by euro area central governments, agencies and European institutions. It will include purchases of sovereign and private sector securities. Combined monthly purchases will amount to

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

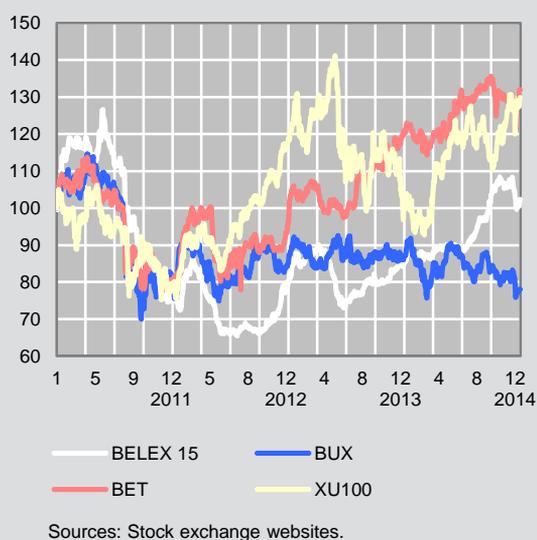
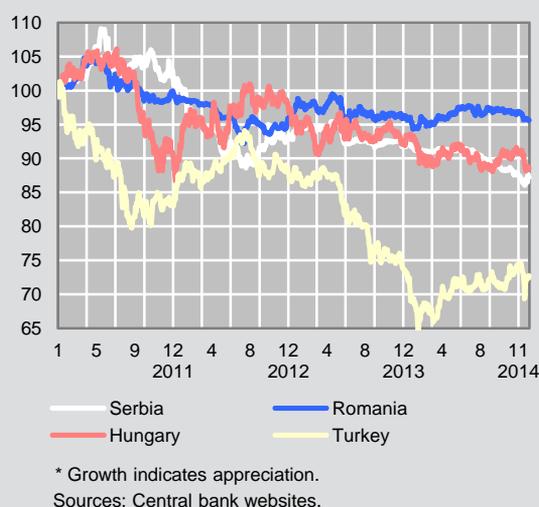


Chart I.1.8. **Exchange rates of selected national currencies against the euro***
(daily data, 31 Dec 2010 = 100)



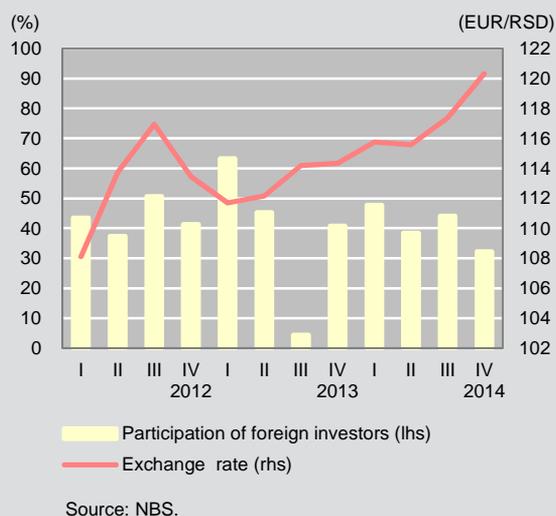
EUR 60 billion. The programme was launched in March 2015 and is expected to last until September 2016. Its aim is to inject over EUR 1,000 billion in the euro area economy. The programme might continue even after the above date, until y-o-y inflation in the euro area returns within the target of close to, but below 2% over the medium term.

Although most of the effects of the ECB's monetary policy measures will play out in the euro area, positive effects are likely to reverberate throughout the EU, and other European countries, including emerging economies, due to the size and interconnectedness of the market.

In the US, positive movements of key macroeconomic indicators point to an economic rebound. According to IMF data, GDP grew by 2.4% in 2014, and is expected to increase even more in 2015 — by 3.1%. The rate of unemployment continued its downward trend throughout 2014, dropping to 5.6% in December. Although y-o-y inflation moved below the long-term target in H2 2014, equalling 0.8% in December, its decline was mostly due to plummeting oil prices.

After gradually tapering its quantitative easing programme on a monthly basis since early 2014, the Fed decided to end the programme entirely because of

Chart I.1.9. **Exchange rate movements and participation of foreign investors in auctions of dinar government bonds**



achieved economic growth and significant improvement in the labour market⁹. Still, in order to support continued progress toward maximum employment and price stability, the Fed stated that its current low interest rate policy “remains appropriate”, and that the pace of interest

⁹ The Fed's decision from late December 2013 to start reducing its monthly securities purchases in January 2014 from USD 85 bln by USD 10 bln a month (cutting mortgage and government bond purchases by USD 5 bln each).

rate change will depend on both realised and expected progress toward its objectives. This assessment takes into account a wide range of information, including measures of labour market conditions, inflation expectations and financial developments. While there are differing opinions, it is believed that the policy rate will start increasing in the second half of 2015, but this could be postponed due to a continued uncertainty over the further movement of oil prices.

Emerging economies are likely to see increased risk aversion of foreign investors and depreciation pressures due to the Fed's announcement of an interest rate increase. This already happened once in May 2013, following the Fed's hints of cutting back on its bond purchases. Since global financial markets are interconnected and capital is highly mobile, in light of the expected end of the Fed's QE programme, it is up to emerging economies to try to reduce external and internal weaknesses by strengthening their macroeconomic fundamentals.

1.1.2. Centralisation of euro area bank supervision under the auspices of the ECB and further steps towards the establishment of a banking union

In November 2014, as part of the Single Supervisory Mechanism (SSM), the European Central Bank assumed the responsibility of supervision of all euro area banks, with around 120 banks (holding almost 82% of total banking sector assets) under its direct supervision. The centralisation of supervision was preceded by an asset quality review of European banks and stress tests with very conservative assumptions, aimed at strengthening the credibility and rebuilding trust in European banks. Another step towards a banking union is the establishment of a Single Resolution Mechanism, which should become operational in 2016.

After the European Parliament adopted a set of laws establishing a single supervisory mechanism in September 2013, the ECB, in collaboration with national supervisors, built the infrastructure needed for the exercise of single supervision over the course of 2014. The SSM officially became operational in November 2014. It functions as a network of national supervisors with the ECB at its centre, whereby the ECB directly oversees around 120 banking groups, but is also in charge of monitoring and supervision of all other banks in the euro area.

In addition to preparing the centralisation of supervision, a comprehensive assessment of euro area banks was conducted in 2014. It consisted of an asset quality review (AQR) and a stress test. The AQR was an assessment of the fair value of bank assets, while the stress testing provided a projection of the value of these assets under the impact of adverse events. The AQR was undertaken by the ECB for banks under its direct supervision; the banks were required to have a minimum capital adequacy ratio of 8%, while the analysis was based on a uniform methodology and harmonised definitions. Moreover, the European Banking Authority, in cooperation with the European Commission and the European Systemic Risk Board, conducted stress tests of euro area banks. Stress tests were conducted so as to examine the resilience of banks to various shocks and residual weaknesses of the banking sector, and to rebuild the trust in the euro area banking system.

Overall, the comprehensive assessment identified a capital shortfall of EUR 24.6 bln across 25 euro area banks. The implementation process and results are presented in detail in *Text box 1: ECB's comprehensive assessment of banks*.

Furthermore, in April 2014 the European Parliament adopted the decision on the establishment of a Single Resolution Mechanism (SRM), the aim of which is to ensure an orderly resolution of failing banks with minimal costs for taxpayers and to the real economy. The SRM is expected to become operational in early 2016. Like the SSM, the SRM is mandatory for all banks in euro area member states, whereas EU countries still using their national currencies may join the SRM on a voluntary basis.

The SRM complements the Single Supervisory Mechanism, covering the banks under its supervision. It comprises the Single Resolution Board and the Single Resolution Fund. If a bank gets into trouble, the Board is responsible for deciding on the resolution tool to be applied. From the beginning of 2015, the Board, in cooperation with national resolution bodies, began developing resolution plans for credit institutions, and will be fully operational from 2016.

The SRF will be financed by banks, gradually, during the transitional period (until 2024), so as to avoid short-term negative effects on bank operation and lending to the real economy. The specified contributions to the fund are 1% of the protected deposits of all banks in the banking union, meaning that the entire amount of funds available to the SRF after the transitional period should be around EUR 55 bln.

I.1.3. Credit activity, continued bank deleveraging in the CESEE countries and growing credit demand

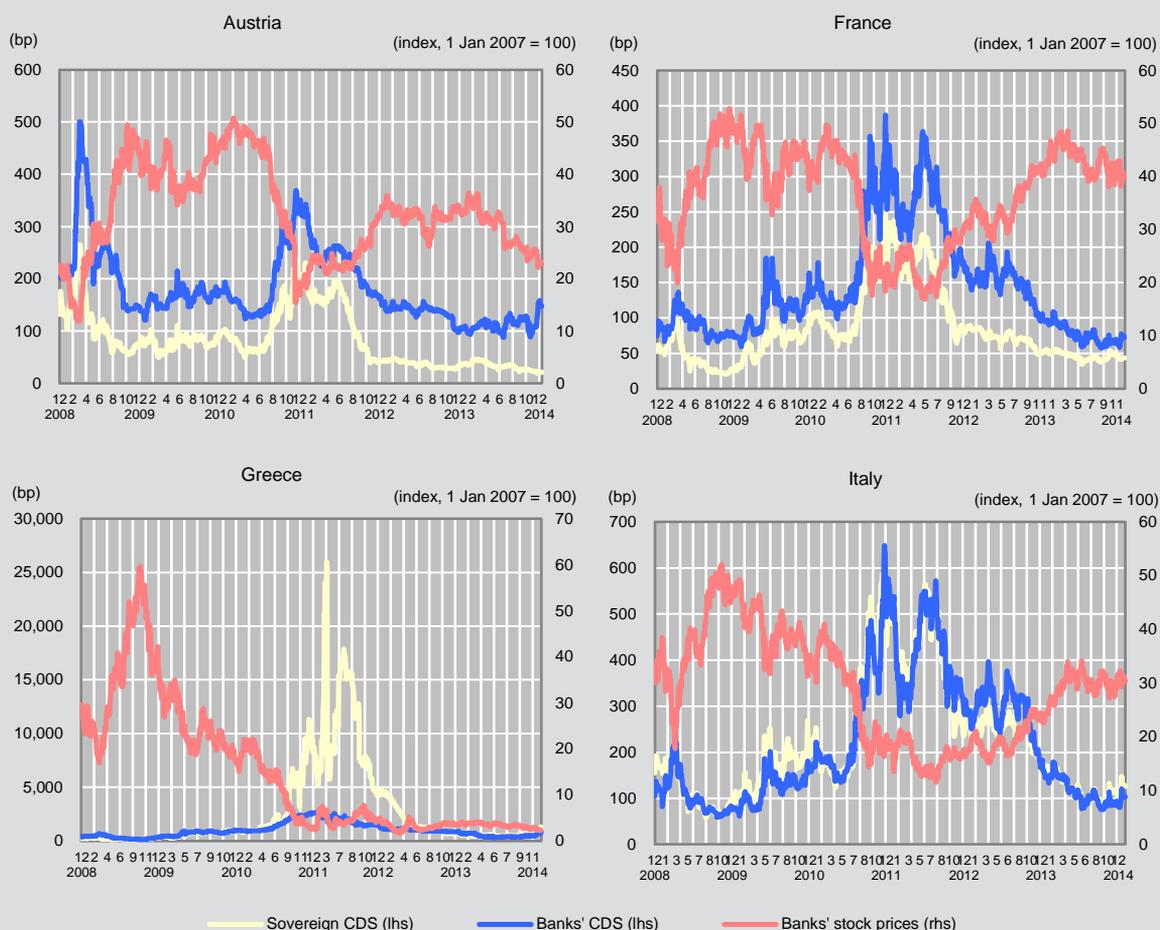
The recovery of credit activity in the CESEE countries is still a very topical issue, although credit demand is recovering. On the other hand, credit supply is still negatively affected by the “restraint” of banks. Moreover, as different market conditions drove European banks to change their business models after 2008, there is still reduction of cross-border exposure.

The crisis and post-crisis periods are characterised by parent banks prioritising home markets over cross-border

activity. For this reason, banks are increasingly reliant on growing local sources of funding (notably household deposits) in the countries where their subsidiaries operate.

Determinants of reduced credit activity in the CESEE countries can be predominantly found on the supply side. The conclusion is based on the results of the bank lending survey for the CESEE countries carried out by the European Investment Bank under the Vienna Initiative¹⁰. According to the survey, credit demand is on the rise and is expected to further improve on the back of growing consumer trust and increased consumer credit demand. On the other hand, dominant domestic constraining factors on the supply side are high NPLs

Chart I.1.10. Developments in the home markets of domestically present banks



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

¹⁰ CESEE Bank Lending Survey H2-2014; CESEE Deleveraging and credit monitor November 2014, Prepared by the staff of the IFIs participating in the Vienna Initiative's Steering Committee.

and the regulatory changes at local level (CESEE region), while international constraining factors on the supply side are regulatory changes at EU level, high NPLs at the level of banking group and capital restrictions. Growing credit demand and still “tight” credit standards are indicated by the results of the Emerging Markets Bank Lending Conditions Survey¹¹ of the Institute of International Finance.

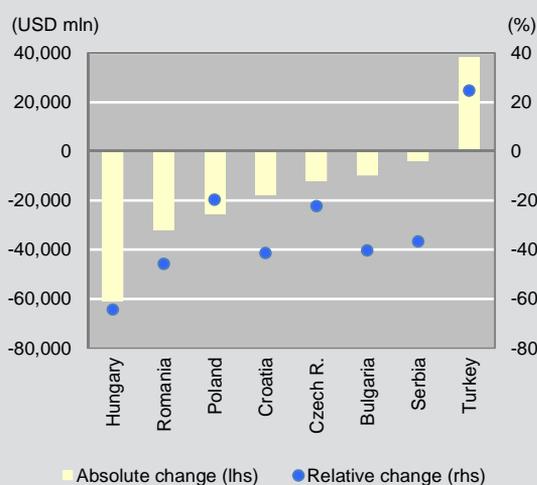
Similar conclusions have also been reached by the NBS, based on the survey it started implementing in early 2014. Namely, the October 2014 and January 2015 bank lending survey results indicate that in H2 2014, banks operating in Serbia tightened their bank credit standards to corporates (some banks did the same with household credits), while both corporate and household credit demand increased. The standards were tightened because of the perception of growing risk with regard to collectability of claims and collateral¹².

As subsidiaries of European banking groups account for around 75% of the domestic market, overall developments and credit activity in the euro area have a significant impact on the financing of subsidiaries in Serbia. Chart I.1.10. shows developments in the home markets of banking groups present in Serbia.

Considering a high share of foreign banks in the Serbian market, notably from the EU, deleveraging continued to be one of the risks in the Serbian banking system in 2014. However, deleveraging need not necessarily be negative. Serbian banks reacted to this particular challenge by adjusting their business models, or more specifically, by increasing domestic sources of funding. Owing, on the one hand, to a strong deposit base which recorded a growth in the post-crisis period and, on the other, to the

well-balanced measures of the NBS, the risk of external deleveraging, although present, is not alarming and is constantly monitored and analysed. Also, bearing in mind that all banks operating in Serbia are legal persons registered in accordance with the Serbian regulations which guarantee for their liabilities with their own capital, systemic withdrawal of cross-border sources of funding at the level of the entire sector is not likely and can only threaten financial stability if it is done hastily, without restraint and in great amounts, which is not the case in Serbia. A more detailed analysis of credit growth and an overview of the situation and developments in the banking sector can be found in chapter II.1.

Chart I.1.11. Change of cross-border exposure to selected countries, Q3 2008 – Q4 2014



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

¹¹ Emerging Markets Bank Lending Conditions Survey – Q4 2014.

¹² For more information on survey results, see the Report on the Results of the Bank Lending Survey – Fourth Quarter Report 2014 and First Quarter Report 2015.

Text box 1: ECB's comprehensive assessment of banks

In late October 2014, the ECB published the long-awaited results of the comprehensive assessment of 130 banks which, with assets worth EUR 22 trillion, accounted for 81.6% of total euro area banking assets. In November 2014, these banks were placed under the supervision of the Single Supervisory Mechanism (SSM). The comprehensive assessment consisted of the asset quality review (AQR) and the stress test. Within the AQR, relying on a uniform methodology, the ECB and national competent authorities (NCAs) assessed the accuracy of the carrying value of banks' assets as at 31 December 2013, whereas the stress test measured the impact of macroeconomic scenarios on banks' capital. The European Banking Authority (EBA) designed the stress test methodology, the European Commission set the baseline scenario, while the European System Risk Board (ESRB) developed the adverse scenario in cooperation with the NCAs, EBA and ECB. The stress test was undertaken by the participating banks (the bottom-up approach), while the ECB performed the stress test quality assurance in cooperation with the NCAs.

The comprehensive assessment identified a capital shortfall of EUR 24.6 bln across 25 participating banks. The amount of shortfall that initially arose from the bottom-up stress test was EUR 11.2 bln. The inclusion of AQR results increased the shortfall to EUR 21.9 bln, whereas the reflection of new information learned through the AQR resulted in the shortfall of EUR 24.6 bln. However, given bank recapitalisations after 31 December 2013, the "final" capital shortfall was estimated at EUR 9.5 bln and was distributed across 13 banks. The AQR also showed the need for additional provisions and value adjustments of bank assets in the amount of EUR 48 bln.

Furthermore, by its comprehensive assessment results, the ECB pointed to the significant issue of non-performing loans (NPLs). The AQR of European banks determined the NPL level at EUR 879 bln, of which 42% was secured by real estate. Such NPL level is significantly higher than EUR 743 bln which banks initially disclosed in their balance sheets – the EUR 136 bln difference is due to the interplay of two factors. The first factor concerns the application of a revised NPL definition. Namely, based on the ECB report, 28% of banks surveyed applied much more liberal NPL definitions compared to the new standards. The second factor relates to checking of the credit portfolio and a thorough analysis of loans in banks' balance sheets, which led to the reclassification of some loans into a lower asset category. Through transparent establishment of the real value of NPLs, European banks are encouraged to take measures to either sell these loans at market value or write them off in cases when rescheduling or resolution is not economically justified.

Judging by findings of the comprehensive assessment, the banks which showed unsatisfactory results and whose subsidiaries operate in Serbia include: Eurobank Ergasias, National Bank of Greece, Piraeus Bank, Nova Kreditna Banka Maribor and Nova Ljubljanska Banka. However, under the dynamic balance sheet assumption, Eurobank Ergasias and the National Bank of Greece did not show a capital shortfall as they were implementing restructuring plans adopted in 2014 and approved by the European Commission. As it raised capital in 2014, Piraeus Bank had no capital shortfalls under the dynamic assumption. In addition, the ECB's report states that the restructuring measures taken by Nova Kreditna Banka Maribor and Nova Ljubljanska Banka in 2014 had a positive effect on their profitability, which would help them cover the identified capital shortfalls.

In 2015, the NBS will implement special diagnostic studies of banks operating in the Republic of Serbia, following the methodology comparable with that of the ECB's AQR methodology. The methodological aspects and diagnostic coverage have been defined in cooperation with the IMF within the three-year stand-by arrangement. The quality of banks' claims will be checked in accordance with the IFRS and international valuation standards, and in compliance with domestic regulations and the specifics of the Serbian market. In addition to resolving the NPL issues, these activities will enhance the transparency of bank operations and enable early identification of bank recapitalisation and resolution needs, including further strengthening of supervision and regulations relating to banks.

I.2. Overview of domestic macroeconomic developments

In 2014, GDP contracted by 1.8%, partly as a consequence of the floods that hit Serbia in May. Y-o-y inflation moved below the lower bound of the target tolerance band throughout the year. It measured 1.7% in December and is expected to return within the target tolerance band in 2015. Economic activity is likely to recover in 2016, on the back of stronger external demand driven by the expected more robust rebound of the euro area. It is also expected that consistent implementation of fiscal consolidation measures and structural reforms will contribute to the reduction of fiscal and external imbalances and to the growth of investment and net exports.

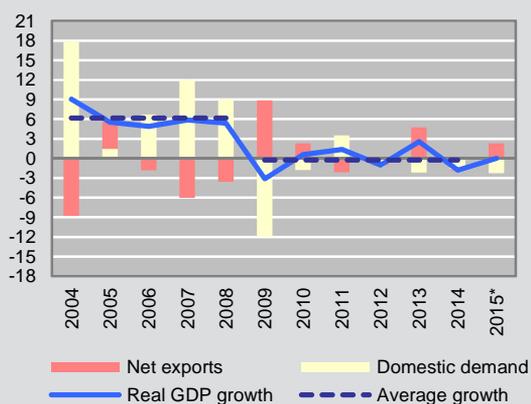
After positive growth rate in 2013 (2.6%), underpinned by the dominant contribution of export industries (automobile and oil industries), GDP contracted by 1.8% in 2014. Negative GDP growth rate is attributable to the effect of flooding which hit Serbia in May, but also to the sluggish recovery of the euro area – our key foreign trade partner. The May flooding inflicted the greatest damage on the sectors of energy and mining. Looking at the expenditure side of GDP, the largest negative contribution came from domestic demand, i.e. from household consumption and private investment, while net exports provided a neutral contribution due to weak external demand. On the other hand, government investment gave a positive contribution.

Charts I.2.1. and I.2.2. illustrate the change in the model of economic growth, which occurred after 2008. Namely, in the aftermath of the crisis, the key contributors to GDP (on the expenditure side) were exports and investments, while the production side rebalanced towards a greater share of tradables. Private investment is expected to rebound in 2015, and as the recovery of the euro area and external demand gather pace, net exports are also likely to provide a positive contribution to GDP growth. Also, progress in the EU accession process, consistent implementation of the adopted fiscal consolidation measures and structural reforms, supported by a three-year stand-by arrangement with the IMF (signed in February 2015), should help stabilise public finance, contribute to the investors' positive perception of Serbia and thus, serve as a fillip to investment in the coming period.

Y-o-y inflation has been moving below the lower bound of the target tolerance band since March 2014. It measured 1.7% in December. The inflation target undershooting can be put down to the factors with a temporary effect – weak growth in administered prices, the fall in prices of primary agricultural commodities and a sharp drop in international oil prices. Due to weak aggregate demand, inflationary pressures were rather subdued in 2014, while inflation expectations were anchored within the target tolerance band as a result of an extended period of low inflation.

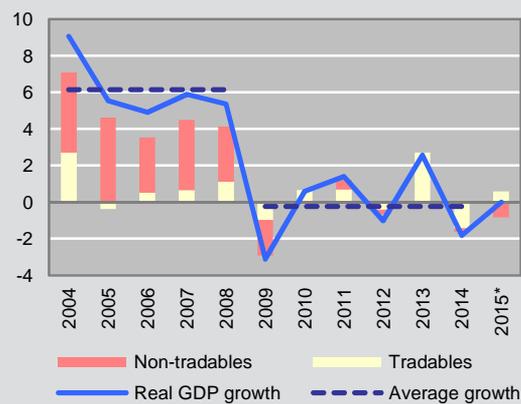
In response to the above inflation trends, but also being mindful of persistent uncertainties in the international environment and geopolitical tensions, the NBS took a cautious approach to easing its monetary policy stance. In

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



* NBS projection, May 2015.
Source: NBS.

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



* NBS projection, May 2015.
Source: NBS.

2014, the key policy rate was lowered in three 50 bp steps (in May, June and November) down to 8%.

Recording negative y-o-y growth rates since 2009, low domestic demand remains the strongest disinflationary factor. From mid-2014, however, its impact has been additionally fuelled by the adoption of fiscal consolidation measures which reflect negatively on public and household consumption. Negative trend of domestic demand is anticipated to prolong into the current year, whereas the recovery is predicted for 2016.

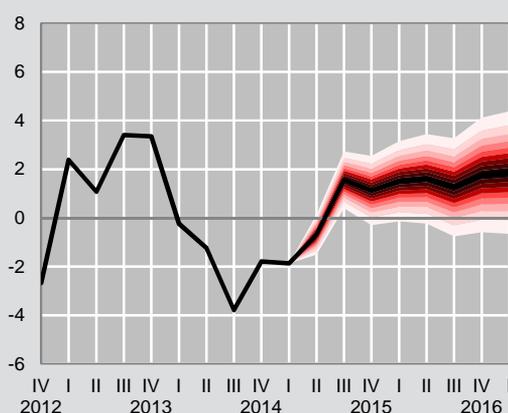
The exchange rate of the dinar vis-à-vis the euro was relatively stable during 2014. The first half of the year saw slight fluctuations and generally stable exchange rate, while depreciation pressures prevailed as of July 2014. Still, the weakening of the domestic currency in the above period was not felt in Serbia only, but in other emerging economies as well. In addition to global factors, such as increased uncertainty in the international environment, geopolitical tensions, less expansionary Fed monetary policy and the sluggish recovery of the euro area, the weakening of the domestic currency in the latter half of 2014 was driven by domestic factors as well – primarily by higher imports of energy products, weaker exports and the uncertainty surrounding the beginning of the implementation, pace and intensity of fiscal consolidation and structural reforms at home. Moreover, the reduction in FX-indexed loans prompted banks to step up their purchases of foreign exchange so as to balance their FX positions and decrease foreign currency risk exposure. At year level, the dinar lost 5.2% of its value against the euro in nominal terms.

In the course of 2014, the NBS intervened in the interbank foreign exchange market in both directions, by selling EUR 1,880 mln and buying EUR 260 mln, i.e. by selling a total of EUR 1,620 mln net. The NBS intervened in the foreign exchange market to ease excessive short-term volatility of the exchange rate, maintain price and financial stability and an adequate level of foreign exchange reserves, without any intentions to influence the foreign exchange rate trends. Pronounced fluctuations of the exchange rate, amid high financial euroisation specific to the Serbian economy, affect not only the rate of inflation, but also the balance sheets of the real and public sector, due to the currency mismatch of their assets and liabilities. In this sense, higher depreciation of the dinar acts as a catalyst of deterioration in banks' credit portfolios and the overall financial stability.

On the other hand, depreciation of the dinar has had a favourable sway on the current account deficit and improvement in the competitiveness of the domestic economy. It is essential that the toolkit and measures of monetary and macroprudential policy be well calibrated as depreciation has a diverging effect on the balance of payments on the one hand, and inflation, dinar equivalent value of the public debt expressed in a foreign currency and NPLs on the other. A prompt response of the central bank in such circumstances also entails that FX reserves are maintained at an adequate level, a task which the NBS manages to complete judged by its level of gross FX reserves, worth a total of EUR 9.9 bln at end-2014.

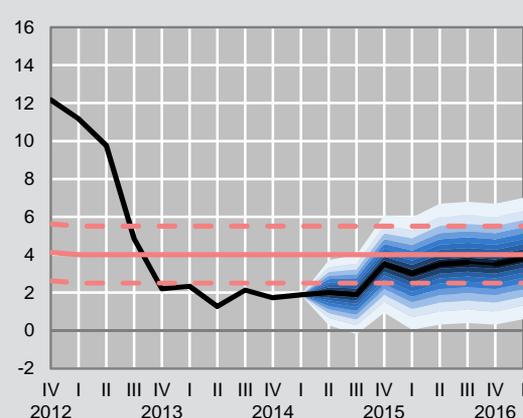
Considering a greater share of the public debt in the GDP on the one hand, and reduced current account deficit on

Chart I.2.3. Projection* of real GDP growth (%)



* May 2015.
Source: NBS.

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

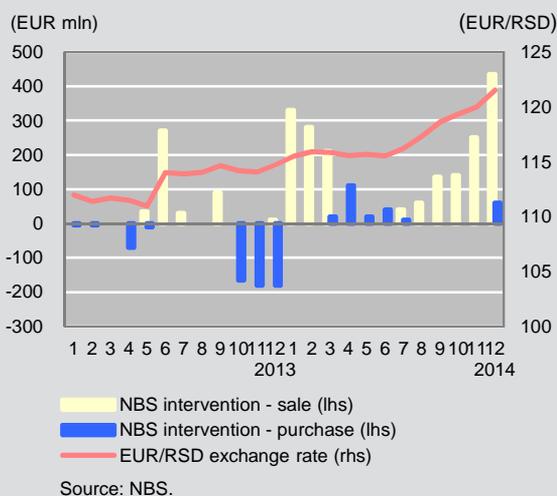


* May 2015.
Source: NBS.

the other, any definite conclusion regarding the reduction of macroeconomic imbalances in 2014 relative to 2008¹³ would be difficult to draw unambiguously. Nonetheless, reduction in the share of private external debt in GDP and lower euroisation of the banking system¹⁴, which is among the key risks threatening the financial stability, should be taken as positive results.

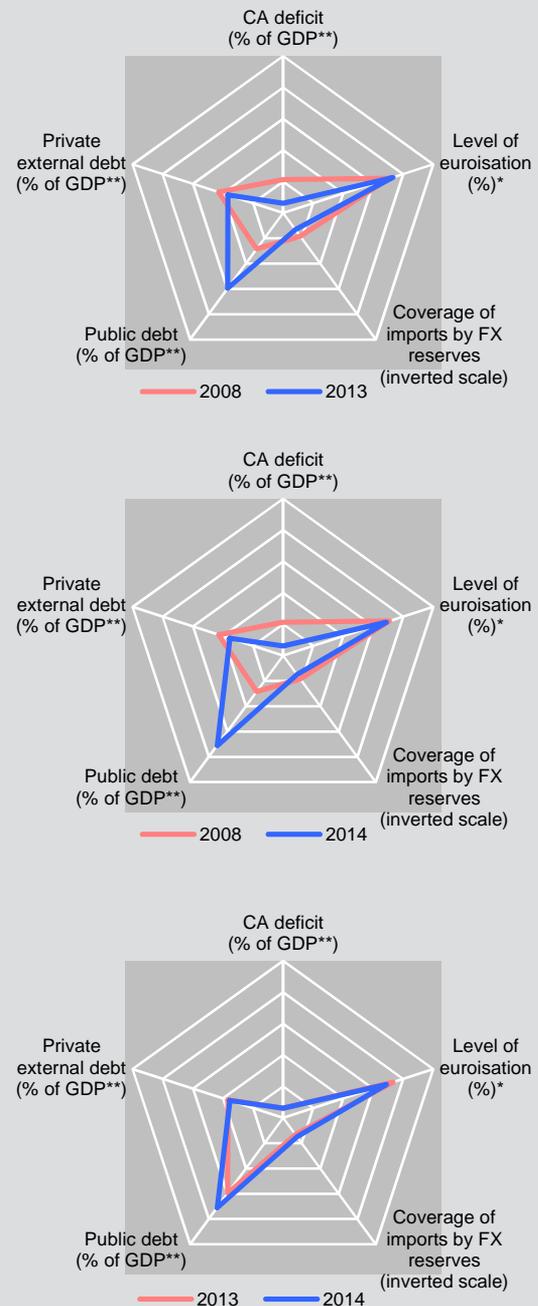
Compared with the trends witnessed in 2013, the vulnerability of the financial system remained at a rather similar level. Euroisation fell from 73.2% to 68.8%. The current account deficit of the balance of payments went down modestly from 6.1% to 6.0% of GDP, coupled with the lower share of the private external debt (from 36.7% of GDP to 35.5%). Still, public debt pursued its upward path further, amounting to 71.0% of GDP at the end of 2014. Such level of public debt is significantly above the level set forth by the Budget System Law (45% of GDP), but it is not only the level of debt that is unfavourable – observed by the currency structure, around 80.0% of debt is denominated in a foreign currency. However, refinancing risk is lower owing to a more favourable maturity structure of the public debt. Despite that, consistent implementation of the adopted fiscal consolidation measures is expected to reduce fiscal and external imbalances and facilitate sustainable economic growth in the medium term.

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



¹³ The key vulnerability indicators for the Republic of Serbia are shown in Chart I.2.6. The Chart shows changes in the balance of payments 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

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.

risk and a threat to stability. The further away from the centre an indicator is, the greater the vulnerability of the economy.

¹⁴ Measured as a share of FX and FX-indexed loans in total loans granted to household and corporate sectors.

I.3. Foreign exchange reserves as protection against shocks

Equalling EUR 9.9 bln in gross and EUR 7.7 bln in net terms at end-December 2014, foreign exchange reserves of the NBS were at an adequate level to ensure financial stability. Different stress scenarios show that in the event of extreme shocks the foreign exchange reserves are high enough to safeguard the domestic system from any such incidence.

As an institution mandated to safeguard the stability of the financial system, the National Bank of Serbia maintains an adequate level of foreign exchange reserves which are used rather cautiously and held for the purposes of financing balance of payments needs, preventing excessive volatility of the foreign exchange rate and dealing with contingencies such as natural disasters .

The adequacy of foreign exchange reserves is assessed through various indicators, primarily from the aspect of materialisation of individual risk or a combination of several risks. The most common risks, based on which relevant indicators are constructed, are the necessity to finance imports of goods and services over a certain

period of time against the backdrop of lower capital inflows from abroad, the necessity to service short-term external debt at remaining maturity in conditions of limited access to international capital markets, and the withdrawal of deposits.

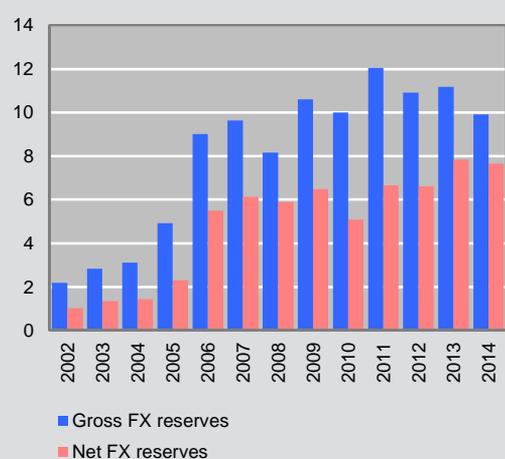
Traditional reserve adequacy indicators evaluate the degree of protection against individual risks. The coverage of imports by FX reserves indicator shows the link between foreign exchange reserves and the size and

Table I.3.1. Adequate level of FX reserves, end-2014

Adequacy indicator	Adequate level (EUR bln)
Coverage of three months of imports	4.5
Coverage of short-term external debt at remaining maturity	3.4
Coverage of 20% of money supply M3	3.1
"Right measure for Serbia"	4.3
Level of FX reserves	
Gross	9.9
Net	7.7

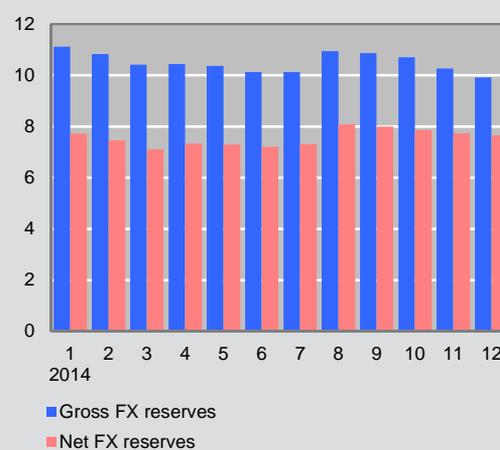
Source: NBS.

Chart I.3.1. FX reserves of the National Bank of Serbia (EUR bln)



Source: NBS.

Chart I.3.2. FX reserves of the National Bank of Serbia in 2014 (EUR bln)



Source: NBS.

openness of the economy. The FX level is considered adequate if it provides for the coverage of three months of imports.

In addition to the coverage of imports, protection against individual risks is also measured by an indicator known as Guidotti rule¹⁵, which shows the capacity of a country to service its external debt in the course of one year. The adequate level is achieved when a country can cover at least 100% of its short-term external debt in case it is cut off from the international capital market for the duration of one year.

To measure the degree of protection against the risk of withdrawal of domestic currency deposits, we use an indicator that shows the connection between foreign exchange reserves and monetary aggregates. The optimal level is achieved if foreign exchange reserves cover at least 20% of broad money (M3).

In order to make the best possible assessment of the adequacy of foreign exchange reserves, we developed an indicator that takes into account all the specificities of the Serbian economy. This indicator, known as “the right measures for Serbia”, gauges the coverage of the sum of

short-term debt at remaining maturity, the deficit of the balance of payments adjusted by FDI, 15% of FX deposits and 5% of dinar deposits.

Table I.3.2. shows stress scenarios for FX reserves run through the reserve adequacy model. The fifth scenario is the most extreme i.e. least likely to occur given the current economic developments.

To assess the adequacy of FX reserves, the dynamics of relations between the factors on which the adequate level of foreign exchange reserves actually depends are taken into consideration. The Jeanne–Ranciere model¹⁶ determines an optimal level of foreign exchange 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):

$$\rho = \left(1 - \frac{\delta}{(\pi + \delta)(1 - \pi)}\right)(1 + \Delta Q)$$

$$\rho = \frac{\lambda + \gamma - \left(1 - \frac{(r - g)}{(1 + g)}\right)\lambda(1 - p^{\frac{1}{\sigma}}) + \frac{1 + r}{1 + g}\lambda\Delta Q}{1 - \frac{\pi}{\pi + p(1 - \pi)}(1 - p^{\frac{1}{\sigma}}) + \left(1 - \frac{\pi}{\pi + p(1 - \pi)}\right)\Delta Q}$$

Table I.3.2. Stress-scenarios for FX reserves

Symbol	Parameter	Scenario				
		1	2	3	4	5
γ	Damage caused by sudden stop	7%	7%	7%	7%	7%
r	Yield on reserves	2%	2%	2%	15%	10%
g	Average GDP growth	0%	0%	0%	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%	10%	0%	10%	10%
	Optimal level of reserves (EUR bln)	7.3	8.7	7.3	8.7	8.7
Gross FX reserves of NBS (2014, EUR mln)		9,907				

Source: NBS.

Coverage of imports by FX reserves measured 6.6 (optimal level is 3.0 and above), coverage of short-term external debt at remaining maturity equalled 304.9 (optimal level is 100.0 and above), while the coverage of broad money (M3) stood at 64.2 (optimal level is 20.0 and above). Reserve adequacy indicators show that the NBS foreign exchange reserves were in an exceptionally safe zone at end-2014. This is further confirmed by the parameter sensitivity analysis and all of the five stress scenarios of the reserve adequacy model (Table I.3.2). Although foreign exchange reserves fell from EUR 11.2 bln to EUR 9.9 bln in 2014, the “right measure for Serbia” indicator rose from 147.1 to 161.5 relative to a year earlier. This rise was caused by the projected increase in FDI inflow and the projected narrowing of the current account deficit.

¹⁵ Guidotti, Pablo, Sturzenegger, Federico and Augustin Villar (2004), “On the Consequences of Sudden Stops”, *Economia* Vol. 4, No. 2, pp 171–203.

¹⁶ 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, as well as the 2011 Annual Financial Stability Report.

Chart I.3.3. Sensitivity analysis of the parameters of FX reserves adequacy model, based on the fifth scenario

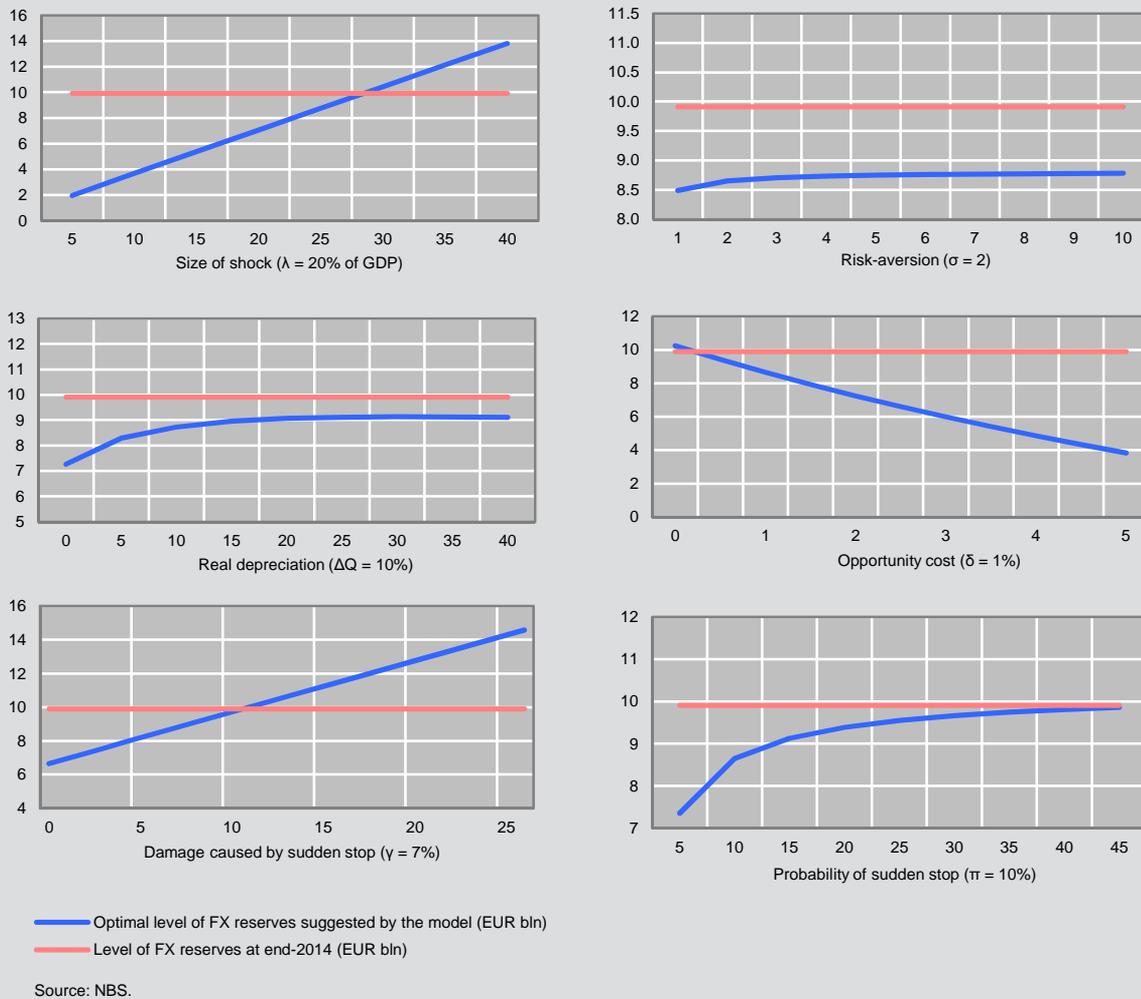
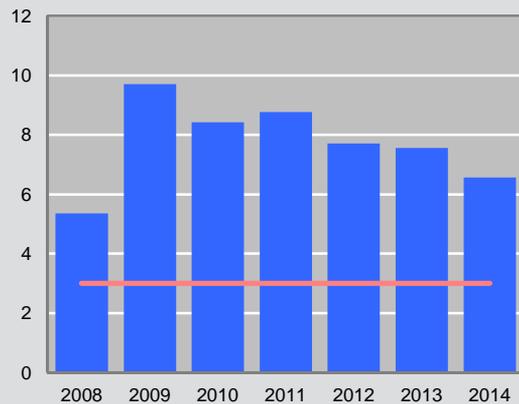
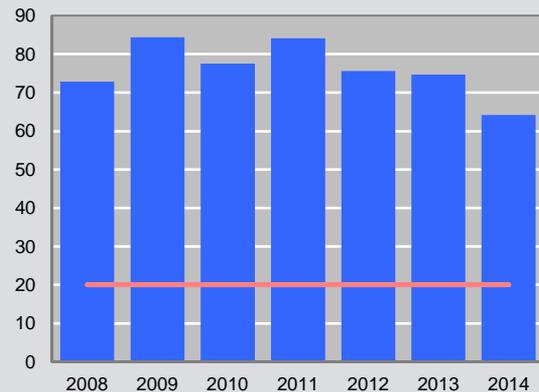


Chart I.3.4. Months of imports covered by gross FX reserves



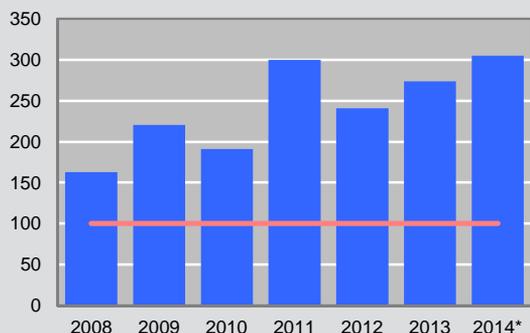
Source: NBS.

Chart I.3.5. Coverage of money supply M3 by gross FX reserves (%)



Source: NBS.

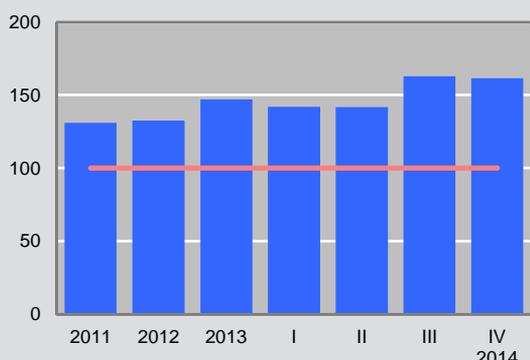
Chart I.3.6. Coverage of short-term external debt at remaining maturity by gross FX reserves*
(%)



* Short-term external debt at remaining maturity is projected by the NBS.

Source: NBS.

Chart I.3.7. "Right measure for Serbia" for gross FX reserves *
(%)



* Short-term external debt at remaining maturity, CA deficit and FDI are projected by the NBS.

Source: NBS.

I.4. Fiscal policy and sustainability of public and external debts

Public debt at end-2014 stood at 71.0% of GDP, up by 11.4 pp on end-2013. Including non-guaranteed debt of local governments, it amounted to 72.3% of GDP. Consolidated fiscal deficit¹⁷ in 2014 was 6.7%. In late 2014, fiscal consolidation measures were adopted,

including: wage bill reduction and public sector rightsizing, cut in pension outlays, decrease in subsidies and restructuring of public and state-owned enterprises. Salaries in the public sector and pensions were nominally reduced in November, while the public sector employment ban has been in force since early 2014. The signing of the three-year precautionary stand-by arrangement with the IMF in February 2015 attests to the importance and urgency of full implementation of fiscal consolidation measures.

Fiscal policy

In order to maintain financial stability, both public and financial sector must be stable. Building up sufficient capital and liquidity reserves in the financial sector is not enough. Fiscal policy and public debt must be sustainable as well. This is why the NBS monitors and assesses the risks that could arise from the close linkages between the financial and public sector in order to, if necessary, overcome them by an appropriate and timely prudential policy response.

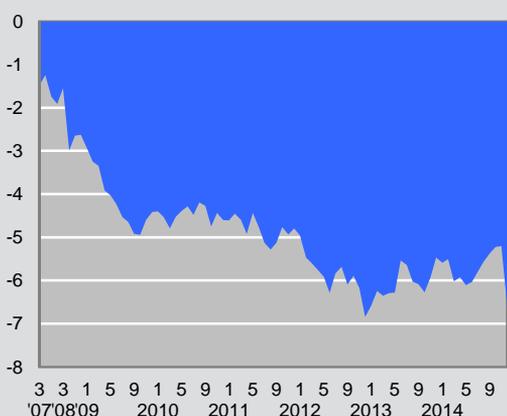
In 2014, consolidated fiscal deficit amounted to RSD 258.1 bln (6.7% of GDP), and was higher by around RSD 46 bln (19.2% in real terms) than in 2013. This includes called guarantees on loans to public and state-owned enterprises (RSD 29.6 bln) and interventions in the financial sector (around RSD 30 bln). Interventions in the financial sector were made for the purpose of maintaining financial stability.

Consolidated fiscal revenue rose by RSD 82.7 bln (3.2% in real terms) on 2013, which was largely due to higher revenue from VAT on imported goods (8.1% y-o-y). Profit tax revenue increased by 17.5% in real terms, owing to a tax rate increase from 10% to 15% in 2013, which also reflected on tax revenue in 2014. Amendments to tax legislation were adopted along with the budget of the Republic of Serbia for 2014. Thus, an upward revision was enacted to property tax, excise and the lower VAT rate. The range of products subject to the lower VAT rate was narrowed down.

Consolidated fiscal expenditure rose by RSD 128.7 bln (5.2% in real terms) from the previous year. In addition to the above mentioned called guarantees, the highest real increase was recorded for lending from the budget

¹⁷ Methodology of calculating consolidated fiscal deficit has been changed in the sense that it was extended to include expenses on account of payment of called guarantees, recapitalisation of banks and other financial institutions, assumed debt of public enterprises and other forms of financing below-the-line organisations from the budget.

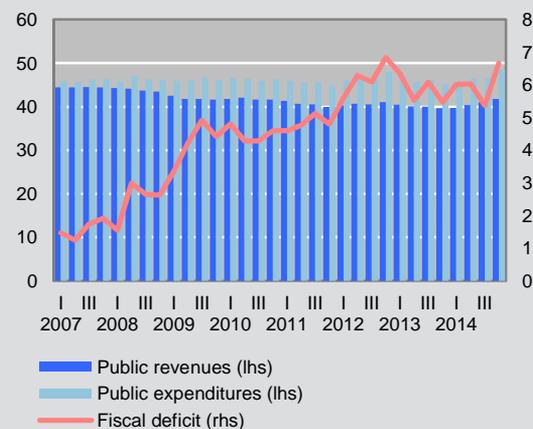
Chart I.4.1. Fiscal result*
(% of GDP)



* Ratio of 4Q moving sums.

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

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



* Ratio of 4Q moving sums.

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

(52.1%) followed by interest payment (by RSD 20.6 bln, i.e. 19.3%), subsidies (13.2%) and public procurements (5.0%). Only substantial savings were recorded for employee salaries (-3.2%), as a result of the government's austerity measures.

Capital expenditures rose by RSD 12.6 bln (12.6% in real terms). However, since there are few high-quality investment projects, the execution of capital expenditures is still low. It can be said that the execution of public investments is low, especially taking into account the heavy toll the catastrophic floods took on the Serbian infrastructure in May 2014. In late 2014, the Government of the Republic of Serbia adopted the Fiscal Strategy for 2015 with projections for 2016 and 2017 (Fiscal Strategy). The macroeconomic and fiscal frameworks presented in the Fiscal Strategy were in line with the views expressed by the IMF during their November mission.

A reporting and planning methodology which includes "below-the-line" expenditure in the calculation of fiscal result was used for the first time in the Law on the Budget for 2015 and Fiscal Strategy in order to ensure accurate and transparent monitoring of fiscal revenue, expenditure and results. These expenditures refer to financial transactions such as: payment of called guarantees, recapitalisation of banks and other financial institutions,

assuming debt of public enterprises and other forms of financing non-budgetary entities from the budget. The Fiscal Strategy contains a fiscal consolidation plan which would stabilise public debt at 79% of GDP in 2017, and gradually reduce it thereafter. The first pillar of fiscal consolidation is represented by savings from salaries in the public sector and pensions. The second pillar is the achievement of self-sustainable operation of public and state-owned enterprises.

The following savings from salaries are planned:

- Salaries of employees in the public sector over RSD 25,000 were nominally cut by 10% in November 2014.
- Salaries in the public sector will not be inflation-indexed until 2017 which, based on the current inflation projections, could lead to their further real decline by an additional 10%.
- The number of employees is planned to be reduced by 5% per year until 2017 (by a total of 15% in three years).

The restructuring and rightsizing of the public sector will require additional expenses in the form of severance payments and unemployment benefits, while the cuts in salaries and pensions will negatively impact aggregate demand and reduce VAT receipts, all of which was taken into account in the preparation of the Fiscal Strategy.

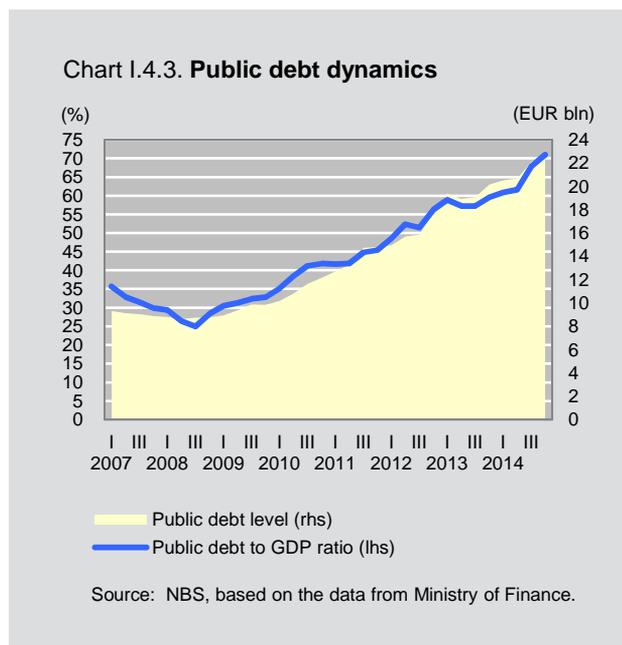
The second pillar of fiscal consolidation is the restructuring of public and state-owned enterprises with the aim of laying the foundation for their profitable operation. The Fiscal Strategy envisages that, starting from 2015, the government will no longer issue loan guarantees to these enterprises. Also, some enterprises will be privatised. Privatisation is expected to produce positive effects in the form of a public debt decrease and improvement of operations of privatised enterprises. These positive effects could greatly outweigh the drop in non-tax revenues from dividends collected by the state from enterprises in its ownership recording after-tax profit.

In early 2015, a three-year stand-by arrangement was signed between the Republic of Serbia and the IMF, providing investors and lenders with further guarantee that fiscal consolidation will be implemented. Serbia has pledged to take measures which will significantly drive down primary fiscal deficit during the life of the arrangement (2015-2017), with the aim of halting the growth in the share of public debt in GDP by 2017, after which it should start falling.

Fiscal consolidation measures stated in the Fiscal Strategy were reiterated in the arrangement's Memorandum: reduction in the cost of salaries and public sector rightsizing, decrease in pension allocations, lower subsidies and restructuring of public and state-owned enterprises. This further underscored the significance of their implementation. The IMF document differs from the Fiscal Strategy primarily in that it envisages contingency measures such as raising the VAT rate and gasoline excise if consolidated fiscal deficit exceeds the agreed RSD 232.1 bln in 2015.

Public debt sustainability

Public debt of the central government amounted to EUR 22.8 bln or 71.0% of GDP at end-2014. The increase in public debt by EUR 2.6 bln in 2014 was primarily driven by high consolidated fiscal deficit of around EUR 2 bln. Taking into account that the average annual growth in public debt in the period 2010-2013 was also around EUR 2.6 bln, its rate of growth is estimated to have been unfavourable for years. The strengthening of the US dollar against other currencies also pushed public debt up, since the share of dollar debt in Serbian public debt surpasses 30%. The drop in GDP in 2014 additionally



amplified the relative growth of public debt compared to the share of public debt in GDP in 2013, which consequently amounted to 11.4 pp. General government debt, including non-guaranteed debt of local governments at end-2014, was EUR 23.2 bln or 72.3% of GDP.

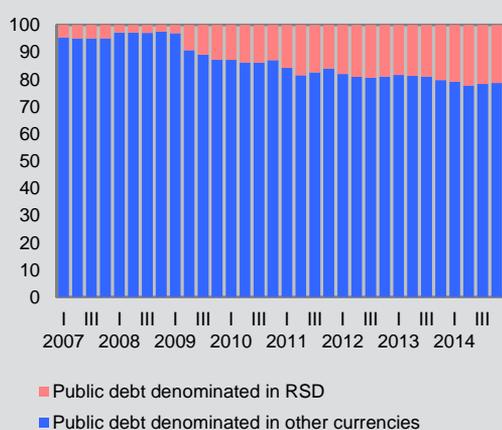
Primary fiscal deficit¹⁸ amounted to RSD 142.9 bln (3.7% of GDP) in 2014. This indicates a large imbalance between revenue and expenditure which does not stem from costs of public debt servicing. Unless the primary fiscal deficit is reduced, public debt could become self-generating debt.

On the other hand, interest expenses reached RSD 115.2 bln or 3.0% of GDP in 2014. Still, FX risk is more alarming than the interest rate risk. Around 76.3% of debt is contracted at a fixed interest rate, significantly reducing the interest rate risk. The maturity structure is also favourable as the share of debt with the remaining maturity of over one year is 87.0%.

The currency structure of public debt is unfavourable. Although the share of dinar public debt is growing, around 80% of Serbian public debt is denominated in foreign currency. At end-2014, 41.7% of public debt was denominated in euros and 31.5% in US dollars. In earlier years, the Republic of Serbia primarily borrowed in dollars in the international market because of the more favourable interest rates. Considering that close to a third

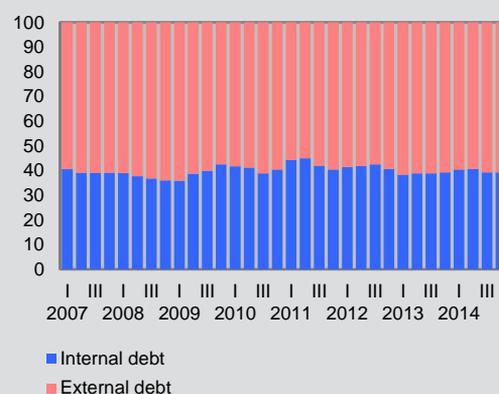
¹⁸ Fiscal result adjusted for the impact of paid and charged interest.

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



Source: Ministry of Finance.

Chart I.4.5. **Internal and external component of public debt**
(%)



Source: Ministry of Finance.

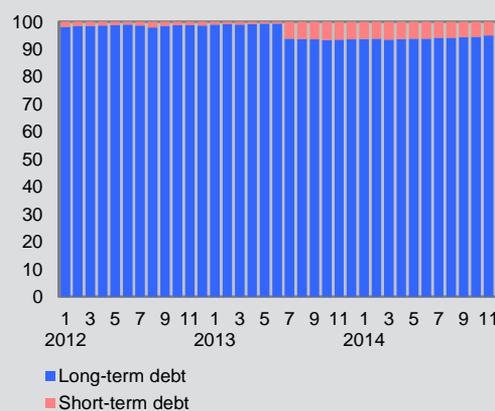
of the public debt is dollar-denominated, the strengthening of this currency considerably increased interest expenses on liabilities in respect of loans and bonds issued in this currency. Its strengthening reflected negatively not only on interest expenditure, but on the total Serbian public debt in dinars and euros. Since the majority of exports are made to the neighbouring countries or EU member states, the FX revenue is predominantly in euros. Therefore, there is a currency mismatch in assets and liabilities at the level of the state budget and hence a significant exposure to FX risk.

If the dollar's strengthening endures in the coming years, Serbian public debt and interest payments on this account will continue rising regardless of new borrowing. This would push public debt even further from the target level, which would require more severe fiscal consolidation. Regular assessments of FX risk and the use of hedging instruments are desirable to minimise FX risk exposure.

Though public debt sustainability is affected by high primary fiscal deficit and exchange rate depreciation risk, the risk of a widening gap between the average lending rate and the rate of economic growth should not be ignored either.

When making projections of new borrowing for the purposes of financing consolidated budget deficit, it should be taken into account that the level of interest rates at which Serbia borrows abroad is also affected by

Chart I.4.6. **Public debt by original maturity***
(%)

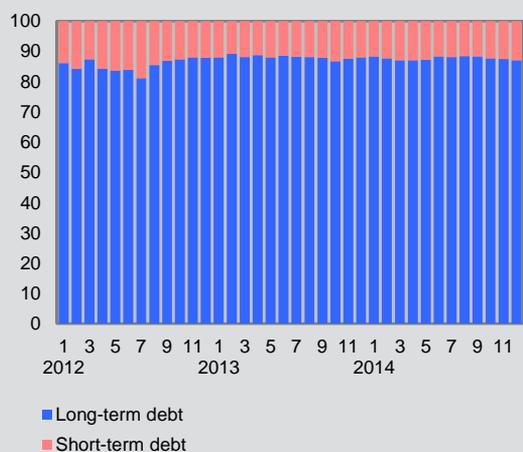


* 53w T-bills are included in short-term debt since July 2013.

Source: Ministry of Finance.

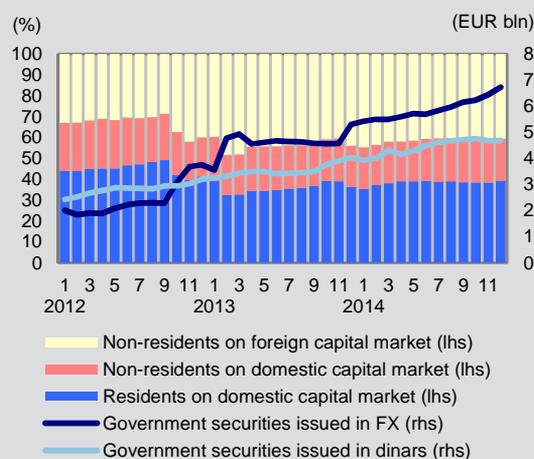
external factors, such as monetary policy decisions of the Fed and the ECB. Although the Fed started tapering its QE programme in January 2014, and finally ended it in October, policies of both the Fed and the ECB were characterised by low interest rates. Then, in 2015, the ECB expanded its QE programme by starting to purchase bonds issued by countries in the euro area. This programme is envisioned to last until end of September 2016. The accommodative monetary policy stance of developed economies encouraged foreign investors to

Chart I.4.7. Public debt by remaining maturity (%)



Source: Ministry of Finance.

Chart I.4.9. Primary market buyers of government securities

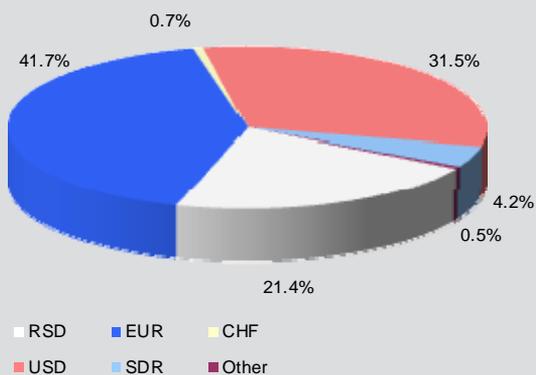


Source: NBS, based on the data from Ministry of Finance.

invest in emerging market bonds. For this reason, the so-called normalisation of monetary policy in advanced economies represents a challenge for the Republic of Serbia and other emerging markets in terms of external borrowing. As the economy recovers, investors will be turning away from government securities towards riskier investments. Building up fiscal buffers would lower the risk premium and cost of borrowing, making the emerging market economies more resilient to external shocks.

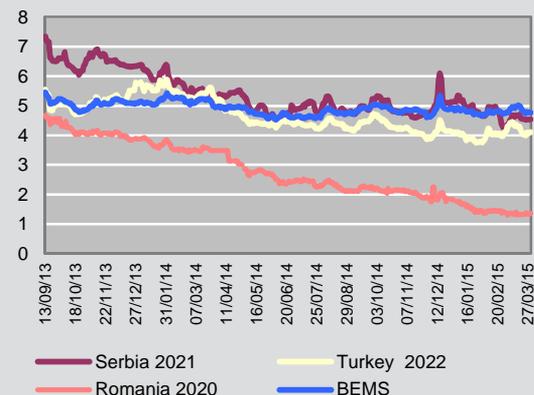
As in other emerging markets, the participation of foreign investors in government securities trading denominated in local currency became very significant from the aspect of the Serbian public debt management, as well as from the aspect of macroeconomic and financial stability. The external component accounts for around 60.8% of public debt. Data on primary market trading in government securities in 2014 show that foreign investors held 44.7% of the portfolio of dinar securities issued in the domestic market and 10.4% of the portfolio of euro-denominated securities. In the international primary market of Serbia's

Chart I.4.8. Public debt currency composition, 31 December 2014 (%)



Source: Ministry of Finance.

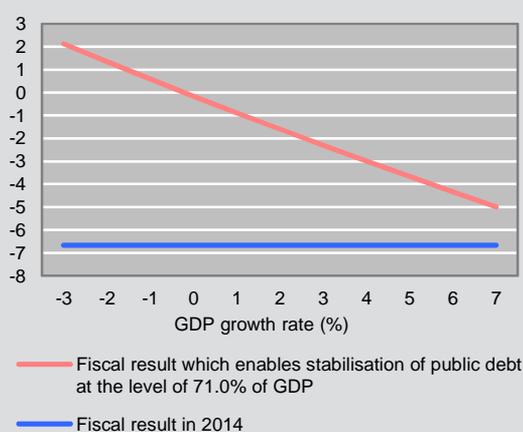
Chart I.4.10. Yields on government eurobonds and BEMS* (%)



*BEMS – Bloomberg Dollar Emerging Market Sovereign Bond Index.

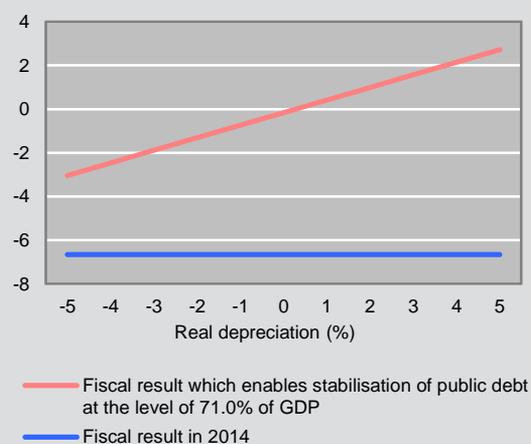
Source: Bloomberg.

Chart I.4.11. Public debt stabilisation based on different GDP scenarios
(% of GDP)



Source: NBS.

Chart I.4.12. Public debt stabilisation based on different exchange rate scenarios
(% of GDP)



Source: NBS.

eurobonds, the participation of foreign institutional investors was 100%. The sale of government eurobonds in the international capital market is also positive because it widens the investor base. The demand of foreign investors for government bonds drives their yields down, signalling confidence in the economic system. On the other hand, high participation of foreign investors in the portfolio of government securities, especially those denominated in local currency, heightens the sensitivity of public debt to investor sentiment, which often depends on movements in international markets which the issuing

country cannot affect, such as the normalisation of the Fed's monetary policy in the period ahead (the expected rise in the Fed's key policy rate). There are no significant domestic investors in government securities in Serbia other than domestic banks. The sensitivity of public debt securities to movements in the international environment, i.e. to investor sentiment, could be diminished by further development of local institutional investors and promotion of the dinar capital market. Also, it is important to maintain or improve the country's credit rating.

Table I.4.1. Basic scenario assumptions for the simulation of public debt dynamics

Real GDP growth rate (%)	Primary result (% of GDP)	Weighted average nominal interest rate (%)	Deflator (%)
0.0	-3.7	4.7	3.4

Source: NBS.

Table I.4.2. Primary fiscal result which enables stabilisation of public debt in 2015 at the level of 71% of GDP, depending on real depreciation and GDP growth
(% of GDP)

Real depreciation (%)	GDP growth rate (%)			
	-3	0	2	6
-3	14	-0.9	-2.3	-5.0
0	3.1	0.8	-0.6	-3.3
4	5.5	3.1	1.7	-1.2
10	9.1	6.6	5.0	2.1

Source: NBS.

Table I.4.3. Primary fiscal results which enable the reduction of public debt to the level of 45% of GDP and ensure the maintenance of that level, depending on real depreciation and GDP growth
(% of GDP)

Real depreciation (%)	GDP growth rate (%)	-3		0		2		6	
		71to 45	45 to 45						
-3		27.4	0.1	25.1	-13	23.7	-2.2	210	-3.9
0		29.1	13	26.8	-0.2	25.4	-1.1	22.7	-2.8
4		31.5	2.8	29.1	13	27.7	0.3	24.8	-15
10		35.1	5.0	32.6	3.5	310	2.5	28.1	0.6

Source: NBS.

The Republic of Serbia has established cooperation with the following rating agencies: Standard & Poor's, Fitch and Moody's, and they are the ones that issue its long and short-term foreign currency and local currency credit ratings. Serbia's long-term foreign currency rating by Standard & Poor's, Fitch and Moody's are: BB- with a negative outlook, B+ with a stable outlook and B1 with a stable outlook, respectively. Standard & Poor's and Moody's did not change Serbia's credit rating, while Fitch lowered it in January 2014 by one rank, from BB- to B+, but the outlook was improved from negative to stable. Still, this had no major effect on the yields on Serbian eurobonds which in 2014 followed in the footsteps of their counterparts issued by other emerging market economies.

Maintaining public debt (of the central government) at 71.0% of GDP under different assumptions of economic growth and exchange rate, indicates the necessity of strong fiscal adjustment (Charts I.4.11. and I.4.12, and Table I.4.2).

The results of stress-testing point to the sensitivity of public debt to shocks simulated through the variation of key model parameters – change in the real exchange rate, GDP growth rate, primary fiscal result and real interest rate.

To contain public debt at 71.0% of GDP assuming zero real depreciation, a primary surplus must be recorded at an economic growth rate of less than 2%. However, if the exchange rate of the dinar depreciates by 10% in real terms, a much larger adjustment, i.e. a surplus, would be needed even if economic growth measured 6%.

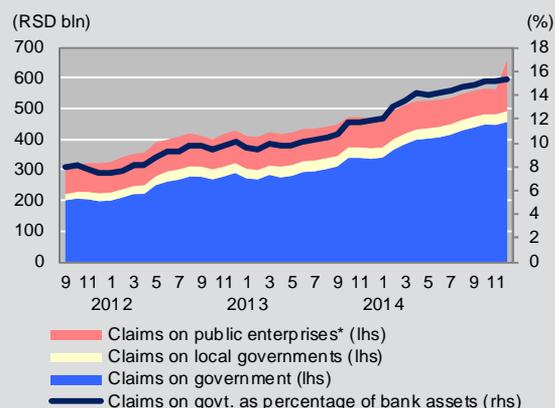
Curbing public debt to 45% of GDP requires strong fiscal adjustment over a longer time horizon. In Table I.4.3. we first simulated the size of fiscal adjustment which allows

for the reduction of public debt to 45% of GDP, and only then the size of fiscal adjustment required to keep it at that level. The size of the required adjustment leaves no room for doubt – it cannot be implemented over a short period of time.

Macprudential policy and sovereign risk

Government securities are considered to be risk-free, high-quality liquid assets because financial capacity of the government exceeds that of other issuers. A crisis of public debt would drive down the value of government securities and generate losses in banks' balance sheets. On the other hand, if banks were to sell a significant part of government securities or reduce their purchases in a short period of time, it would lead to a fall in the value of

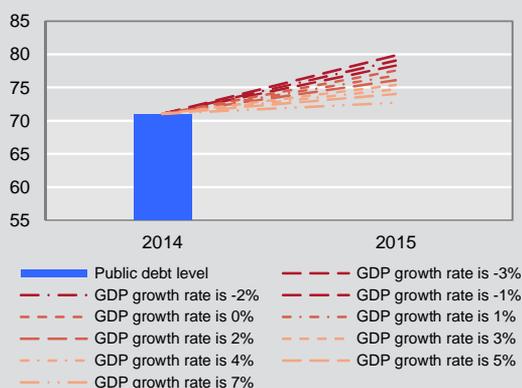
Chart I.4.13. Bank claims on government, local governments and public enterprises



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

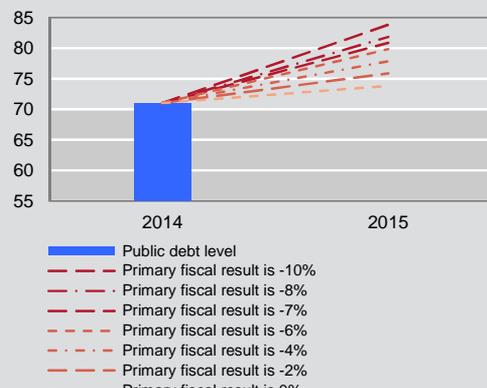
Source: NBS.

Chart I.4.14. Public debt projections based on different GDP growth rate scenarios
(% of GDP)



Source: NBS.

Chart I.4.16. Public debt projections based on different primary fiscal result scenarios
(% of GDP)



Source: NBS.

government securities, an increase in sovereign risk, and problems in public debt refinancing.

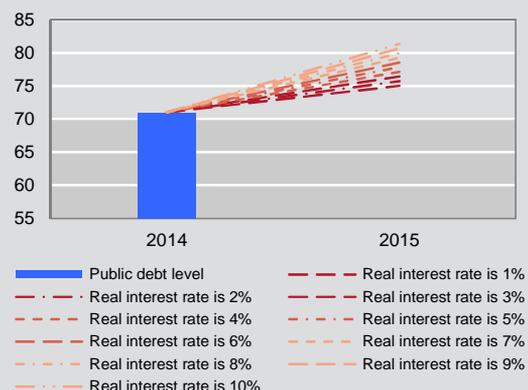
According to the relevant EU regulations (Basel II, Basel III and the Capital Requirements Directive), if denominated and funded in local currency, the bank's exposure to government bonds is considered to be risk-free, whereas if such bonds are denominated in foreign currency, they are assigned appropriate risk weights. Pursuant to the NBS Decision on Capital Adequacy for Banks, all bank exposures towards the Republic of Serbia, irrespective of currency denomination, are considered to be risk-free until 1 January 2018.

The share of claims on government against securities in banking sector net assets as at 31 December 2014 equalled 14.6%, making up 94.6% of total claims on the

government. The share of dinar securities in the structure of the above receivables was 62.0% at end-2014, while the share of securities issued in foreign currency was 38.0%.

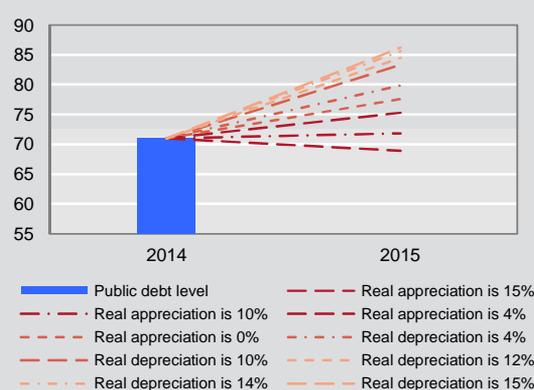
The European Systemic Risk Board (ESRB) published a document in March 2015 stating that European banks should not treat government debt as risk-free without conducting prior analyses and that it is necessary to consider engaging international regulators in amending the relevant regulation. "Given the consistency of approaches in supervision and prudential regulation aimed at risk management, it is necessary to take into account the risk of default by the government equivalent to the country's exposure to that risk", the ESRB report states. EU regulations allow European banks to use a standardised approach when assessing the risk of some

Chart I.4.15. Public debt projections based on different real interest rate scenarios
(% of GDP)



Source: NBS.

Chart I.4.17. Public debt projections based on different real exchange rate scenarios
(% of GDP)



Source: NBS.

investments. The standardised approach enables banks to apply a zero risk weight to a large part of government debt; the ESRB emphasises that this approach results in banks investing more in government debt, which suppresses lending to the real sector and jeopardises the functioning of the banking system as a whole. Still, after three years of work, the ESRB chose not to offer specific solutions, and decided that the published report should serve as a starting point for discussion between relevant legislative bodies, underlining that it expects changes in the legislation “only in the medium run, after the government debt crisis is resolved”. One of the possible solutions offered is a surcharge on the countercyclical capital buffer which could be used to mitigate risk if a bank is significantly exposed to risk of investing in government securities.

External debt sustainability in Serbia

Fiscal consolidation measures are expected to drive the current account deficit further down, while restructuring of public enterprises will have a favourable effect on FDI inflow. Also, lower fiscal deficit will decrease the need for additional borrowing. All this will give positive contribution to reduction in external imbalances and external debt sustainability.

At end-2014, external debt stood at EUR 25.8 bln or 78.1% of GDP. Compared to end-2013, its share in GDP increased by 3.0 pp. This was primarily the consequence of the fall in GDP. Since 2009, external debt has been growing more sluggishly, mainly due to the contraction of foreign debt of the private sector.

In 2014, external debt of the public sector increased by EUR 1.0 bln to EUR 14.2 bln. It should be taken into account that external debt of the public sector includes NBS liabilities towards the IMF, which were slashed down by EUR 545.3 mln in 2014. External debt of the public sector has been on the rise since 2008, but such trend is expected to halt in the next few years as a result of the effect of fiscal consolidation measures.

The pace of external debt growth was also slowed by the narrowing of the current account deficit which contracted significantly from 11.6% of GDP in 2012 to 6.1% of GDP in 2013, shrinking additionally to 6.0% in 2014. In the same year, current account deficit amounted to EUR 2.0 bln.

Exports increased in 2014, yet were lower than the year before due to effects of flooding and lowering in demand from the EU member states. Implementation of structural

reforms is expected to boost competitiveness of Serbian economy and encourage exports and economic growth. This would in turn lower the share of the current account deficit in GDP and contribute positively to external debt sustainability. In the short term, drop in imports of consumer goods could be the primary driver of further shrinking of the current account deficit.

The government is undertaking measures to enhance business environment and to make it more attractive to domestic and foreign investors. This will cushion the effects of the private sector deleveraging over the last couple of years. Measures for restructuring of public enterprises and privatisation of some large companies will attract higher FDIs in the following years. Regulatory environment favourable for higher FDIs was improved in 2014. The new Labour Law and Law on Planning and Construction were adopted inter alia and are expected to soon be followed by the new Bankruptcy Law and Mortgage Law.

As total foreign exchange reserves are high enough to absorb even quite larger shocks, FX reserves could be used to smoothly serve short term external liabilities in the event of a crisis. Still, foreign capital inflow is necessary to service external debt. Net FDIs in 2014 came at EUR 1.2 bln and covered over 60% of the current account deficit.

Keeping external debt at 78.1% of GDP requires a substantial balance of payments adjustment (Table I.4.5). For instance, keeping external debt at the said level in the face of stagnated economic activity (GDP growth rate of 0%) and zero real depreciation requires a surplus on the current account of the balance of payments. Maintaining the share of external debt, while current account records deficit, would require economic growth above 2%. On the other hand, if the dinar depreciated in real terms by, for example, 10%, a much larger adjustment, i.e. surplus, would be required even at the economic growth rate of as much as 6%.

Lowering external debt to 75.0% of GDP calls for an even stronger balance of payments adjustment. Hence the simulation in Table I.4.6. starts with the size of the balance of payments adjustment which enables the lowering of external debt to 75.0% of GDP and continues with the size of the adjustment needed to keep it at that level. The size of the adjustment points unequivocally to the importance of fiscal adjustment that will help ease external imbalances while simultaneously underlining the importance of capital inflows, primarily FDIs, and structural reforms which are expected to assure investor interest.

Chart I.4.25. shows current account levels which enable the stabilisation of external debt relative to the real growth rate of GDP and unchanged real exchange rate, while chart I.4.26. illustrates current account levels enabling stabilisation of external debt relative to real change in exchange rate amid stagnated economic activity. Keeping external debt at 78.1% requires a surplus on the current account amid stagnated economic activity and zero real depreciation of the exchange rate. Based on the results of stress tests, obtained by changing the values of key model parameters and keeping other conditions unchanged – GDP growth rate (Chart I.4.27), interest rate (Chart I.4.28), primary current account (Chart I.4.29) and change in the real exchange rate (Chart I.4.30), we may conclude that external debt is sensitive to shocks, i.e. to significant changes in the said parameters.

Chart I.4.20. Exports and imports* (% of GDP)

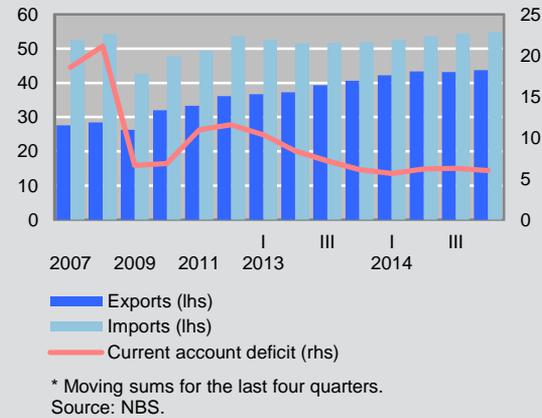


Chart I.4.18. External debt dynamics

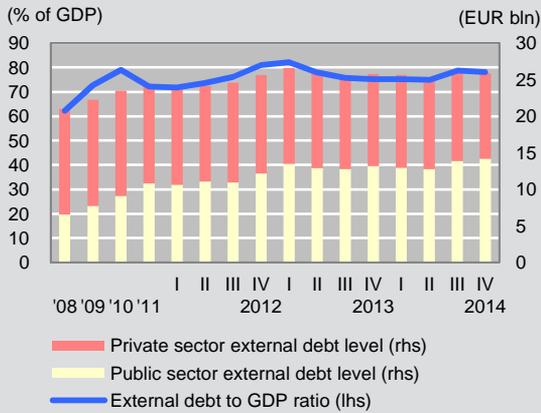


Chart I.4.21. External debt by borrower (%)

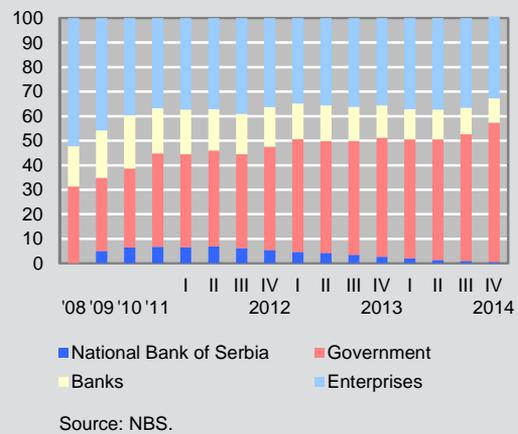


Chart I.4.19. Current account* (% of GDP)

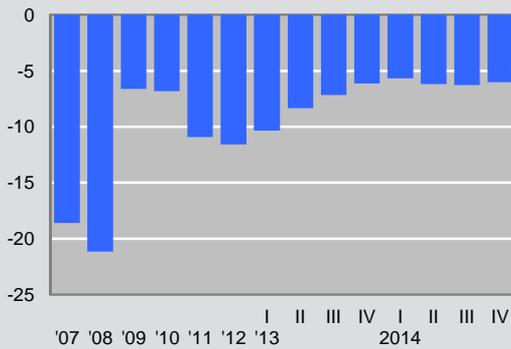


Chart I.4.22. External debt by original maturity (%)

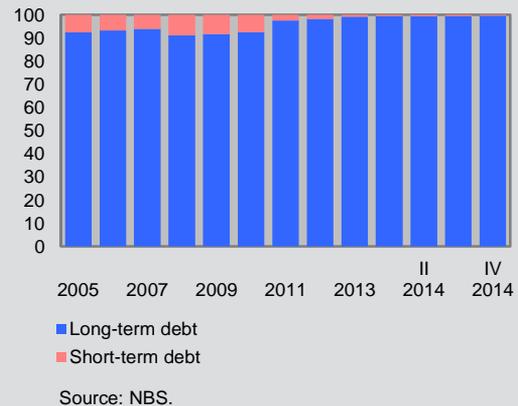
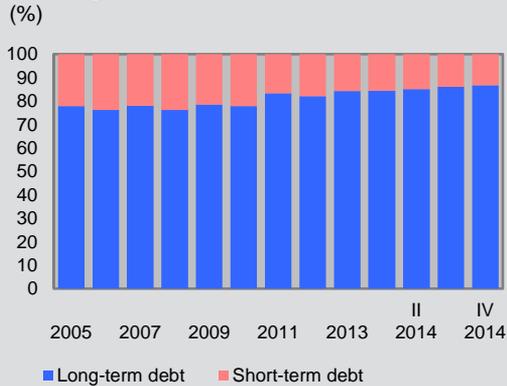
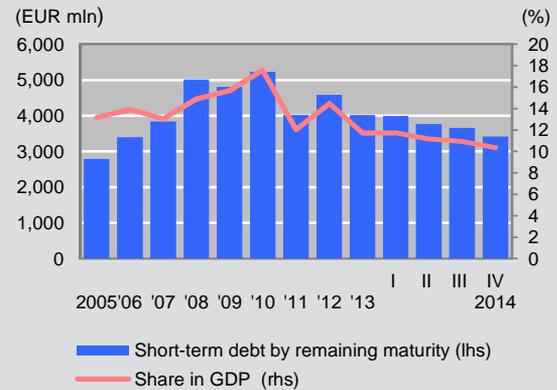


Chart I.4.23. External debt by remaining maturity (%)



Source: NBS.

Chart I.4.24. Short-term external debt by remaining maturity (EUR mln)



Source: NBS.

Table I.4.4. Baseline scenario assumptions for the simulation of external debt dynamics

Real GDP growth rate (%)	Current account (% of GDP)	Weighted average nominal interest rate (%)	Deflator (%)
0.0	-6.0	6.0	3.4

Source: NBS.

Table I.4.5. Current account which enables stabilisation of external debt in 2015 at the level of 78.1% of GDP, depending on real depreciation and GDP growth (% of GDP)

Real depreciation (%)	GDP growth rate (%)	GDP growth rate (%)			
		-3	0	3	6
-3		2.1	-0.4	-2.8	-5.0
0		4.5	2.0	-0.4	-2.7
4		7.8	5.2	2.7	0.3
10		12.8	10.0	7.3	4.9

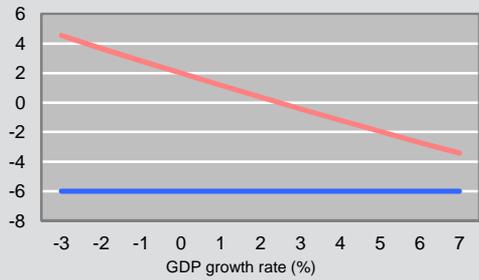
Source: NBS.

Table I.4.6. Current account which enables the reduction of external debt to the level of 75% of GDP and ensures the maintenance of that level, depending on real depreciation and GDP growth (% of GDP)

Real depreciation (%)	GDP growth rate (%)	GDP growth rate (%)							
		-3		0		3		6	
		78 to 75	75 to 75	78 to 75	75 to 75	78 to 75	75 to 75	78 to 75	75 to 75
-3		5.2	1.9	2.7	-0.5	0.3	-2.8	-1.9	-4.9
0		7.6	4.3	5.1	1.8	2.7	-0.5	0.4	-2.7
4		10.9	7.4	8.3	4.9	5.8	2.5	3.4	0.2
10		15.9	12.2	13.1	9.5	10.4	6.9	8.0	4.6

Source: NBS.

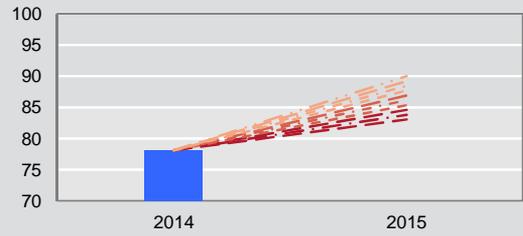
Chart I.4.25. External debt stabilisation based on GDP growth
(% of GDP)



— Current account which enables stabilisation of external debt at the level of 78.1% of GDP
— Current account in 2014

Source: NBS.

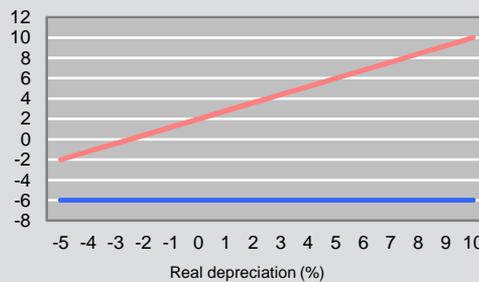
Chart I.4.28. Projections of external debt based on different real interest rate scenarios
(% of GDP)



— External debt level
— Real interest rate is 1%
— Real interest rate is 2%
— Real interest rate is 3%
— Real interest rate is 4%
— Real interest rate is 5%
— Real interest rate is 6%
— Real interest rate is 7%
— Real interest rate is 8%
— Real interest rate is 9%
— Real interest rate is 10%

Source: NBS.

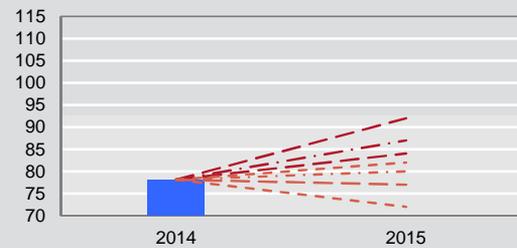
Chart I.4.26. External debt stabilisation based on movements of the dinar exchange rate
(% of GDP)



— Current account which enables stabilisation of external debt at the level of 78.1% of GDP
— Current account in 2014

Source: NBS.

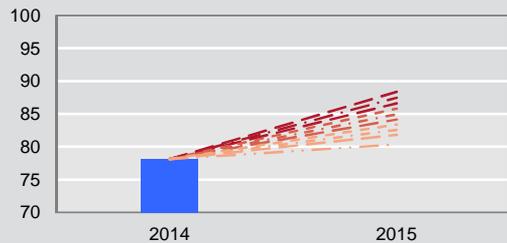
Chart I.4.29. External debt projections based on different primary current account scenarios
(% of GDP)



— External debt level
— Prim. current acc. is -10%
— Prim. current acc. is -5%
— Prim. current acc. is -2%
— Prim. current acc. is 0%
— Prim. current acc. is 2%
— Prim. current acc. is 5%
— Prim. current acc. is 10%

Source: NBS.

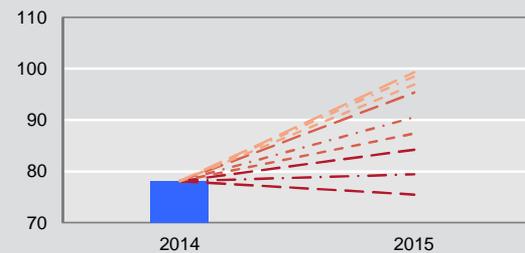
Chart I.4.27. Projections of external debt based on different GDP growth rate scenarios
(% of GDP)



— External debt level
— GDP growth rate is -3%
— GDP growth rate is -2%
— GDP growth rate is -1%
— GDP growth rate is 0%
— GDP growth rate is 1%
— GDP growth rate is 2%
— GDP growth rate is 3%
— GDP growth rate is 4%
— GDP growth rate is 5%
— GDP growth rate is 7%

Source: NBS.

Chart I.4.30. External debt projections based on different real exchange rate scenarios
(% of GDP)



— External debt level
— Real appreciation is 15%
— Real appreciation is 10%
— Real appreciation is 4%
— Real appreciation is 0%
— Real depreciation is 4%
— Real depreciation is 10%
— Real depreciation is 12%
— Real depreciation is 14%
— Real depreciation is 15%

Source: NBS.

I.5. Corporate sector

Excluding the exchange rate effect, the pace of the credit downturn in the corporate sector decelerated significantly, whereas the share of dinar lending went up. However, the share of corporate NPLs remained high, entailing the development of a comprehensive strategy for their resolution. The number of enterprises with accounts blocked in the enforced collection system went up.

Excluding the exchange rate effect, corporate lending declined by 1.4% in December 2014, which is much less compared to a 9.1% decline in the same period of 2013. In terms of structure, the strongest impact on such movements came from current assets loans, notably owing to the government's programme of subsidising dinar liquidity and current assets loans. The loans extended under this programme, which lasted from June to December 2014, were worth RSD 136.1 bln. At the same time, external corporate debt fell by EUR 108.8 mln to EUR 9,070.7 mln, while its share in total sources of funding went up marginally, to 49.1%. In contrast, the share of total corporate debt in GDP, including obligations to domestic and foreign banks, rose from 55.1% in 2013 to 55.9% in 2014, mainly reflecting the decline in GDP.

In terms of the currency structure of domestic bank receivables from the corporate sector, the share of dinar corporate lending went up. At end-2014, dinar receivables

made up 25.0% of total receivables, up by 5.0 pp relative to 2013. Such outcome was due primarily to the subsidised lending which was entirely dinar-denominated. Besides, an impetus was also provided by low inflation over an extended period and falling interest rates in the dinar market. Still, given the corporate sector external debt, which was entirely FX-denominated, the corporate exposure to the exchange rate risk remained high.

In terms of maturity, long-term obligations were dominant at 86.0% (up by 7.4 pp from 2013).

Chart I.5.2. Bank loans to the corporate sector by purpose

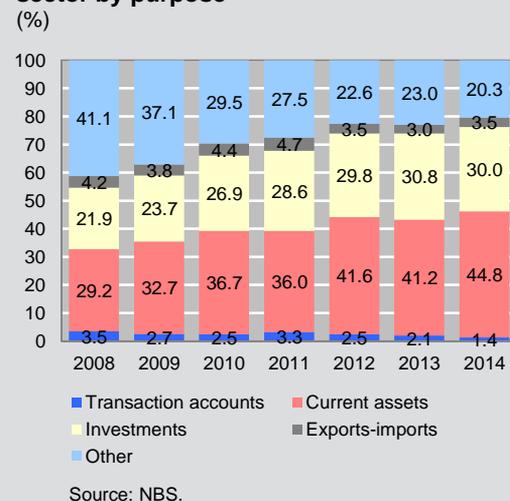


Chart I.5.1. Debt level of Serbian corporate sector

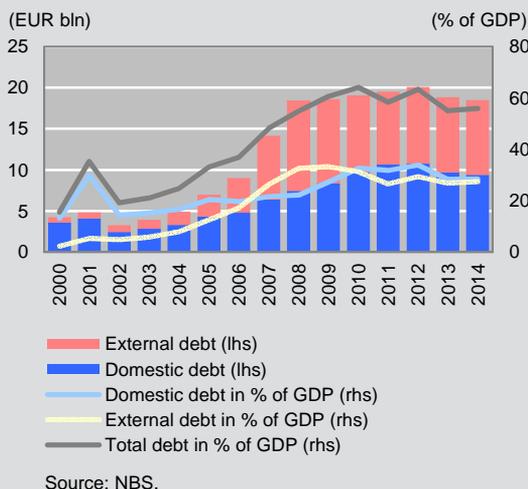
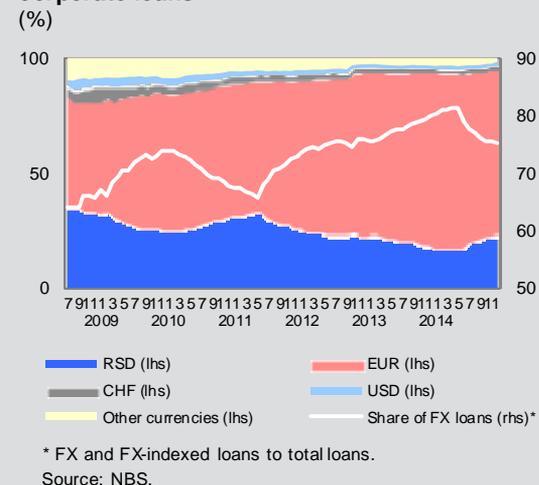


Chart I.5.3. Currency structure of domestic corporate loans



At end-2014, the share of gross corporate NPLs in gross corporate loans stood high at 24.6%. Though unchanged relative to end-2013, it reflects the difficulties facing the sector in the settlement of credit liabilities to banks. Broken down by quarter, the share of corporate NPLs declined considerably in Q4 2014, on account of the subsidised lending and the extension of FX and FX-indexed loans to some public enterprises. As it restrains lending activity and frustrates faster economic growth, the high share of NPLs must be urgently tackled. To this end, all relevant institutions

and stakeholders will be engaged in the development and implementation of a comprehensive NPL resolution strategy.

In 2014, corporate deposits rose by RSD 61.1 bln, making up 16.3% of total banking sector liabilities. As regards maturity, short-term deposits accounted for 95.2% of total corporate deposits.

The cost of corporate borrowing declined in 2014 as average rates on new dinar loans fell by 3.3 pp (to 10.9%), in response to the subsidised lending programme. In the same period, average rates on new euro and euro-indexed loans also decreased, by 1.4 pp (to 4.9%).

That the Serbian economy still faces liquidity and insolvency problems is also shown by the number of blocked accounts. Namely, the balances blocked in accounts of legal persons and enterprises increased in 2014. At year-end, total assets in blocked accounts were RSD 243.4 bln, up by 13.8% from 2013. In the same period, the number of blocked enterprises' accounts was on a sharp rise (10,213 or 23.3%).

In 2014, the NBS Enforced Collection unit received from commercial courts 213 decisions on opening bankruptcy proceedings against debtors (up by 26 from 2013) and 80 decisions on opening bankruptcy proceedings, confirming the adoption of pre-pack reorganisation plans and suspending bankruptcy proceedings (down by 19 from 2013). It also received seven decisions of the Privatisation Agency on initiating the restructuring of

Chart I.5.4. Share of gross corporate NPLs (%)

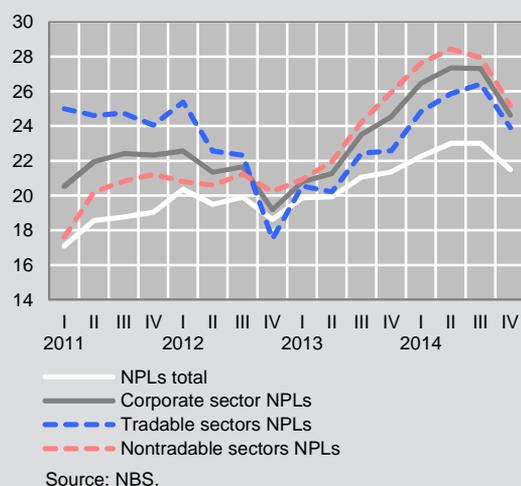


Chart I.5.5. Movements of corporate sector deposits



Chart I.5.6. Interest rates on corporate loans and deposits – new business (weighted average, %)

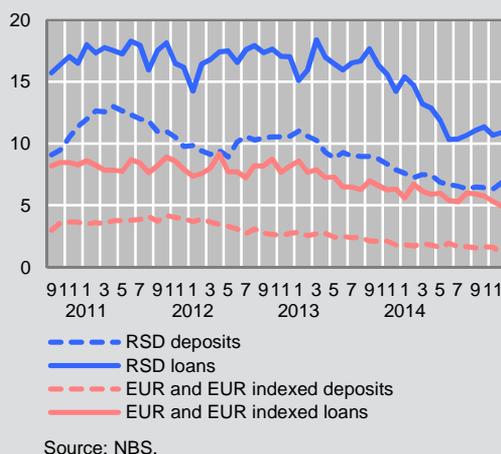
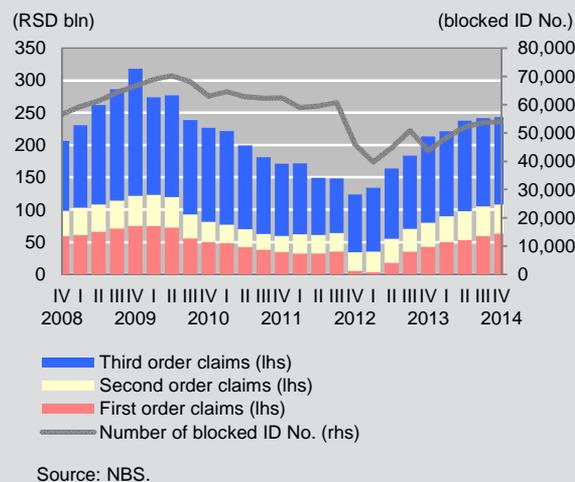


Chart I.5.7. Movements of claims through enforced collection by priorities



entities undergoing privatisation (one more than in 2013).

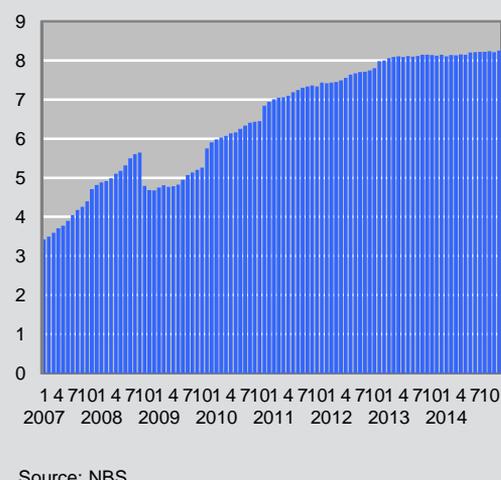
In the course of 2014, several systemic laws and amendments to systemic laws were adopted, with the aim to improve the business climate for investments and economic growth, strengthen the private sector, enhance competition and increase employment. These laws include the Labour Law, Law on Pension and Disability Insurance, Law on Planning and Construction, Law on Bankruptcy, Law on Investment Funds and the Law on Tax Procedure. Full effects of their implementation are expected in the years to come.

I.6. Household sector

Though household savings rose at a slower pace relative to 2013, both dinar savings and the share of long-term savings were on an upward path. Excluding the exchange rate effect, lending activity went up, as well as the share of dinar loans. However, the NPL share in total household loans also increased, which calls for careful scrutiny.

In 2014, total household savings rose by RSD 68.8 bln to RSD 1,036.3 bln, accounting for 34.9% of banking sector liabilities (up by 0.9 pp from 2013).

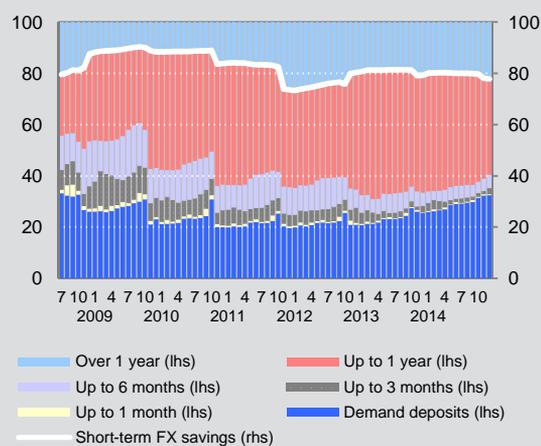
Chart I.6.1. Stock of household FX savings (EUR bln)



In terms of the currency structure, household (resident) FX savings increased less than last year (EUR 107.6 mln in 2014 vs. EUR 144.8 mln in 2013), significantly down on the 2012 figure. This is partly due to a drop in interest rates on saving deposits (which account for a part of the increase in savings).

Furthermore, the usual increase in FX savings during the November “Savings Week” did not take place for the second year in a row. Besides, the weighted rate on new FX-indexed and FX-denominated deposits continued down in 2014 (by 1.1 pp to 1.7%). Such movement in interest rates mirrored the general decline in international money market rates, but was also a result of the NBS’s recommendation that banks should align their efforts to attract savings with market developments and avoid the behaviour that may generate risks to liquidity and stability of the banking sector. Instead, banks should endeavour to attract clients and increase the savings base by improving the terms and conditions of their services and widening the range of their products. In 2014 again, the NBS issued the recommendation to banks to fix the rates on time deposits placed during the “Savings Week” at the levels not exceeding those customarily granted in the course of the year. A more responsible interest rate policy of banks doubtless has a positive impact both on theirs and on the overall financial stability. As the cost of funding sources affects the price of banking loans, preconditions have been created for a decline in lending rates.

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



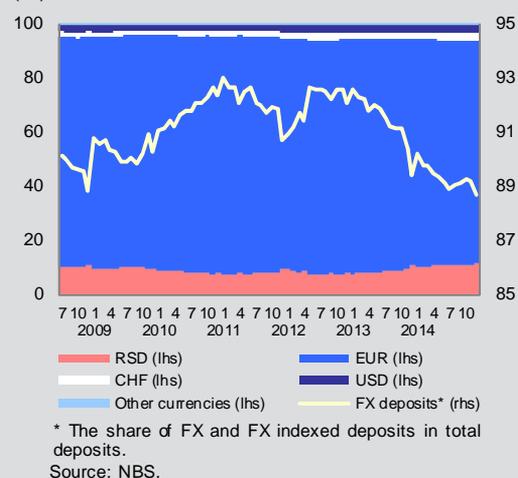
Though the growth in savings in 2014 did not go by the dynamics of the previous years, the maturity structure of FX savings improved further and the share of long-term in total FX savings rose to 22.1% (up by 1.4 pp from 2013).

Furthermore, in the course of 2014, the government paid out through banks EUR 301.5 mln¹⁹ to cover public debt arising from household FX savings. Since the start of redemption in 2002, total EUR 2,942.7 mln was paid out for that purpose.

What is encouraging from the aspect of financial stability is that the share of FX deposits in total household deposits declined by 0.7 pp to 88.7% by end-2014. Though euro deposits remained dominant within FX deposits, a moderate shift in favour of the US dollar and Swiss franc was recorded due to their appreciation against the euro. Still, by late 2014, the share of US and Swiss franc deposits remained low at 3.3% and 3.1% respectively.

Dinar household savings also continued up in 2014, albeit at a slower pace. At end-2014, y-o-y growth in dinar savings equalled RSD 4.4 bln or 13.0%. A steady rise in dinar savings testifies to gradual restoration of citizens' confidence in the domestic currency, notably owing to stable and low inflation, more favourable tax policy²⁰ and higher interest rates compared to FX savings. Therefore,

Chart I.6.3. Currency structure of household deposits (%)



though still low, the share of dinar in total savings went up by 0.2 pp to 3.7% in late 2014.

In its communication with the public, the NBS highlighted not only the importance of pursuing a responsible savings policy in terms of interest rate levels, but also aimed to underline greater profitability of dinar savings. The support for and promotion of saving in dinars is at the same time an element of the strategy to achieve and maintain financial stability as the increased use of the dinar in the financial system also means lower vulnerability of all sectors to exchange rate volatility.

In 2014, the maturity structure of dinar savings moderately improved, although the share of long-term in total dinar savings remained below 10%, i.e. it equalled 9.5%.

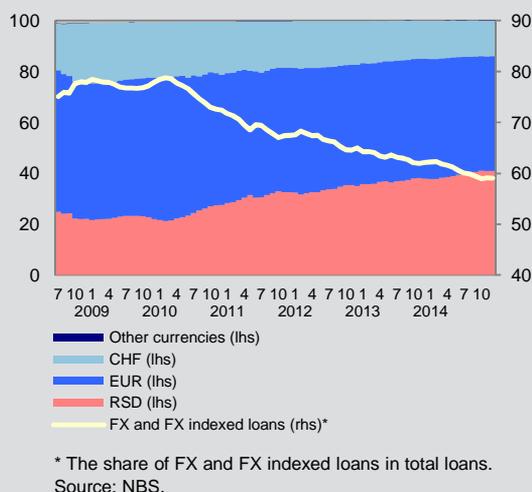
Despite sluggish growth, the movement in FX and dinar household savings confirms citizens' confidence in Serbia's banking sector and helps strengthen further its deposit base.

Excluding the exchange rate effect, household lending increased by 3.8% y-o-y by end-2014. Although subsidised household lending continued in 2014 – through the extension of housing loans worth RSD 1.6 bln and army loans worth RSD 2.0 bln, it was much smaller

¹⁹ FRY and RS bonds, issued to regulate public debt of the Federal Republic of Yugoslavia in respect of household FX savings and contracts on household FX deposits termed with Dafiment bank AD Beograd undergoing liquidation, and FX household balances deposited with Banka privatne privrede Montenegro DD Podgorica.

²⁰ Interest earnings are subject to a 15% tax rate for FX savings and are tax-exempt for dinar savings.

Chart I.6.4. Currency structure of bank claims on households (%)



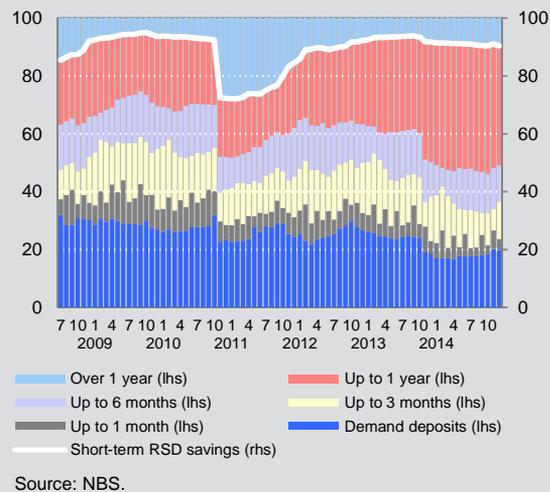
compared to 2013, mainly because housing loans were no longer subsidised after the funds envisaged by the 2013 budget were spent.

The upward trend in the share of bank dinar claims in total claims on the household sector, which began in mid-2011, continued into 2014 (up by 3.1 pp to 41.0% compared to end-2013). In 2014, around 71.7% of new household loans were dinar loans, much as a result of NBS regulations which favour borrowing in dinars. Euro-indexed claims accounted for 45.1%, while the share of Swiss franc claims declined further, to 13.9%.

Broken down by purpose, the highest nominal growth was recorded for cash (13.7%) and housing loans (6.6%), while loans for car purchases and consumer loans declined y-o-y. At end-2014, housing and cash loans remained dominant within the household loan category.

By late 2014, the total number of housing loans amounted to 107,162, worth RSD 337.2 bln gross. Of this, 21,702 loans, worth RSD 96.9 bln gross, were Swiss franc-indexed loans (28.7%). Of total housing loans, NPLs accounted for 6,557, worth RSD 27.6 bln or 8.2% (up by 1.3 pp relative to end-2013). In terms of the currency structure of housing loans, the NPL share increased

Chart I.6.5. RSD household savings by maturity (%)

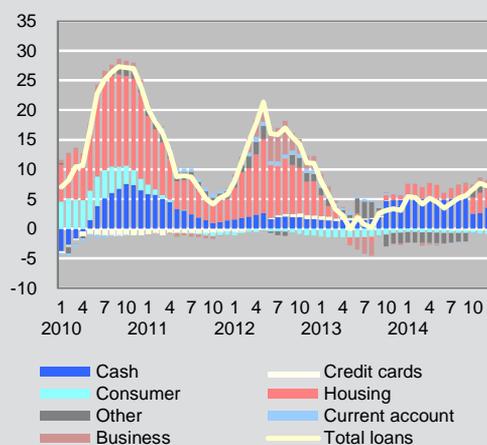


within Swiss franc-indexed loans (17.5%, up by 4.2 pp from 2013) relative to euro-indexed loans (4.3%). At end-2014, Swiss franc-indexed NPLs made up 61.4% of total housing NPLs.

Though it increased in 2014 (up by 1.3 pp to 8.2%) at the banking sector level, the share of housing NPLs remained lower compared to the share of total household NPLs (11.4%)²¹ and much lower relative to the share of total NPLs in total bank loans (21.5%). However, the fact that 17.5% of Swiss franc-indexed housing loans were in the NPL zone, and that Swiss franc-indexed housing loans made up 61.4% of total housing NPLs, means that beneficiaries of these loans face greater problems in their repayment. Their position was further aggravated following the decision of the Swiss central bank of 15 January 2015 on removing the cap of 1.20 francs per euro. After careful examination of the impact of this decision on financial stability and the position of beneficiaries of Swiss franc-indexed loans, on 24 February 2015, the NBS adopted the Decision on Measures for Preserving Stability of the Financial System in the Context of Foreign Currency-Indexed Loans. The Decision aims at preservation and strengthening of financial stability, more adequate risk management of banks, and better protection of financial services consumers who were the most severely hit by

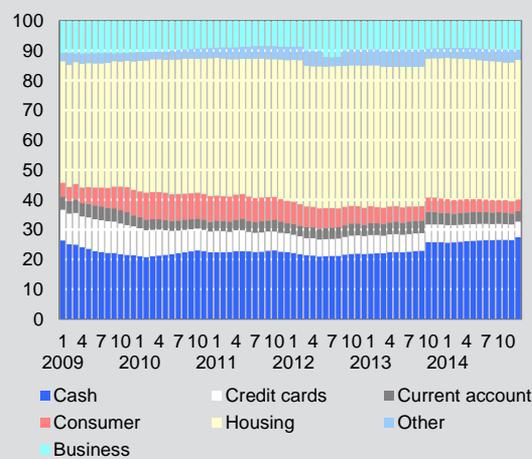
²¹ Household sector: domestic natural persons, foreign natural persons (residents), entrepreneurs, private households with employed persons and registered agricultural producers.

Chart I.6.6. Contributions to growth of bank loans to household by purpose
(y-o-y growth rate, pp)



Source: NBS.

Chart I.6.7. Bank loans to households by purpose
(%)



Source: NBS.

negative developments in international FX markets (see *Text box 8: Swiss National Bank's decision to lift the cap on the franc's value against the euro*).

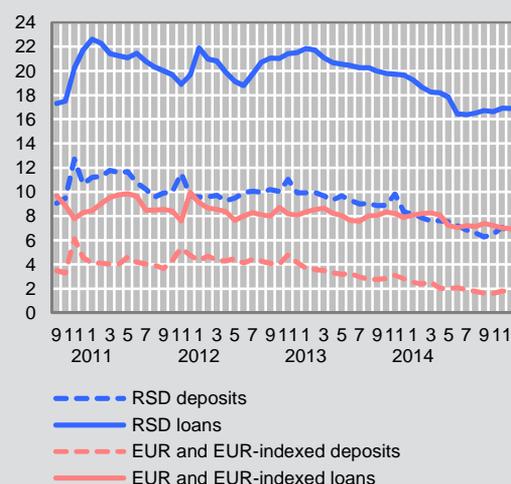
Despite the rising share of NPLs, what positively affects financial stability is that most housing loans (around 75%) were insured with the National Mortgage Insurance Corporation. At end-2014, the number of insured loans reached 79,992 (up by 4,258 relative to end-2013). The initially insured amount was EUR 2.9 bln, of which EUR 2.3 bln was outstanding.

In late 2014, the Corporation portfolio contained 821 past due loans worth EUR 37.9 mln. These loans were declared due because of events of default, whereas the Corporation will be paying annuities until the sale of mortgaged property. Relative to 2013, the number of these loans rose by 229 or EUR 9.9 mln.

Since the Corporation began to operate, 76 mortgages under insured housing loans were enforced, of which 56 under Swiss franc-indexed loans. In 2014 alone, 22 mortgages were enforced, of which 13 under Swiss franc-indexed loans.²²

Based on data of banks and the Corporation, insured housing loans declared due because of events of default

Chart I.6.8. Interest rates on household loans and deposits – new business
(weighted average, %)



Source: NBS.

and subject to the payment of annuities by the Corporation were still significantly below the share of housing NPLs. If the degree of collectability of bank housing loans decreases further, the Corporation may step up its engagement in respect of an insured event.

²²Data of the National Mortgage Insurance Corporation.

The costs of household borrowing declined in 2014 as the average rates on new dinar loans fell by 2.8 pp to 16.9%. The rates on new euro and euro-indexed loans also declined, by 1.0 pp to 6.9%. Though remaining high (10.0 pp), the spread between average rates on new dinar loans

and euro and euro-indexed loans narrowed by 1.9 pp by end-2014 due to a sharp drop in rates on dinar loans.

The table below contains the main indicators for the household sector for the 2008–2014 period.

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

	2008	2009	2010	2011	2012	Q1 2013	Q2 2013	Q3 2013	Q4 2013	Q1 2014	Q2 2014	Q3 2014	Q4 2014
Total indebtedness													
<i>RSD bln</i>	428.2	462.3	571.2	601.7	652.7	649.3	668.1	677.4	673.7	676.6	691.7	715.3	724.7
<i>EUR mln</i>	4,832.7	4,821.7	5,414.3	5,750.5	5,739.5	5,799.5	5,852.1	5,911.2	5,876.5	5,864.1	5,973.7	6,009.3	5,991.0
FX to total loans ¹	77.8	77.9	72.4	67.4	65.0	64.1	63.6	62.7	62.1	61.8	60.5	59.4	59.1
FX to total deposits ¹	88.8	90.2	92.4	90.7	92.1	92.2	91.8	91.1	89.4	89.7	89.1	89.1	88.5
FX deposits to FX loans ¹	124.5	157.2	177.2	191.2	214.7	218.1	217.7	219.9	223.3	224.3	226.8	230.0	233.3
Short-term loans to total loans	14.7	14.8	13.2	12.3	14.3	14.8	14.9	15.0	15.3	15.5	15.6	15.4	8.9
LTV ratio ²	63.6	66.1	65.4	65.6	65.7	65.7	65.8	65.8	65.9	66.8	66.9	67.2	65.8
Average loan per employee													
<i>RSD thousand</i>	166.0	193.1	256.8	281.0	302.9	301.3	315.5	321.8	312.7	320.1	321.1	331.3	336.2
<i>EUR</i>	1,873.4	2,013.6	2,434.5	2,685.8	2,663.8	2,690.8	2,763.0	2,807.8	2,728.0	2,774.1	2,773.1	2,783.2	2,779.4
Average loan per resident													
<i>RSD thousand</i>	58.3	63.2	78.5	82.7	90.1	90.4	93.0	94.3	93.8	94.7	96.8	100.1	101.4
<i>EUR</i>	657.9	659.5	744.1	790.3	792.6	807.6	814.9	823.1	818.3	820.5	835.9	840.8	838.3
Average loan amount													
<i>RSD thousand</i>	330.3	384.1	441.5	452.5	474.2	469.7	489.4	501.7	505.1	505.5	509.5	519.0	518.3
<i>EUR</i>	3,727.7	4,006.2	4,185.2	4,324.8	4,170.3	4,195.0	4,286.2	4,378.0	4,405.6	4,381.4	4,400.5	4,359.9	4,285.3
Average loan per user													
<i>RSD thousand</i>	401.1	461.7	525.6	546.5	587.1	582.0	609.1	628.2	631.0	632.1	639.1	652.9	653.8
<i>EUR</i>	4,526.6	4,815.1	4,982.5	5,222.8	5,163.1	5,198.7	5,335.0	5,481.8	5,504.4	5,478.6	5,519.4	5,485.1	5,405.6

¹ FX loans and deposits include FX-indexed loans and deposits.

² For loans insured with the National Mortgage Insurance Corporation.

Sources: NBS, Association of Serbian Banks, National Mortgage Insurance Corporation and Statistical Office of the Republic of Serbia.

II. Financial sector

Serbia's financial sector is predominantly bank-centric – the share of bank assets in total assets of the financial sector was 92.0% in late 2014. In the course of 2014, the banking sector remained highly capitalised and liquid. Lending activity started growing in October 2014, y-o-y. Despite having a high share in total loans, NPLs were fully covered by reserves for estimated losses, so financial stability was not at risk. Profitability indicators of the banking sector showed a trend of recovery. Still, long-term recovery of profitability can be expected only once lending activity starts growing on the basis of an adequate approach to risk management. The credit risk was the key risk facing the banking sector, while the liquidity risk was rather low.

II.1. Banking sector

Capital adequacy

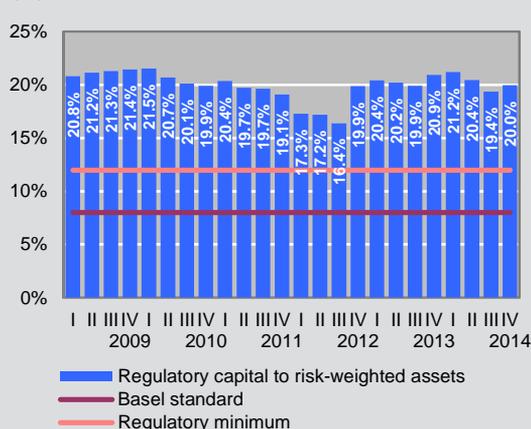
Serbia's banking sector was well-capitalised in 2014. The capital adequacy ratio (CAR) stood at 20.0% in late 2014, which is significantly above the country's regulatory minimum (12.0%) and 2.5 times above the EU threshold.

Recapitalisation (RSD 29.6 bln) and the inclusion of retained earnings from the previous period in capital contributed positively to the sector's total regulatory

capital. However, losses reported by some banks, an increase in required reserve for estimated losses and a decline in subordinated liabilities had the opposite effect, driving the value of total regulatory capital down relative to end-2013 (by RSD 7.8 bln to RSD 339.2 bln), while risk-weighted assets expanded y-o-y (by RSD 42.2 bln to RSD 1,700.0 bln). As a consequence, capital adequacy fell by 0.9 pp in 2014.

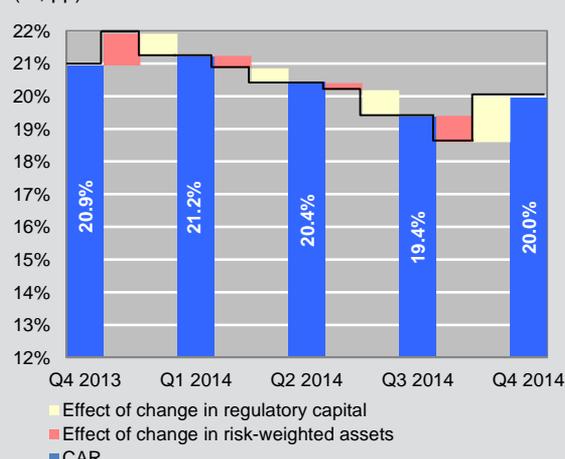
Observed by quarter, the mild increase in capital adequacy stemming from a reduction in risk-weighted assets in Q1 2014 was followed by its significant decrease

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



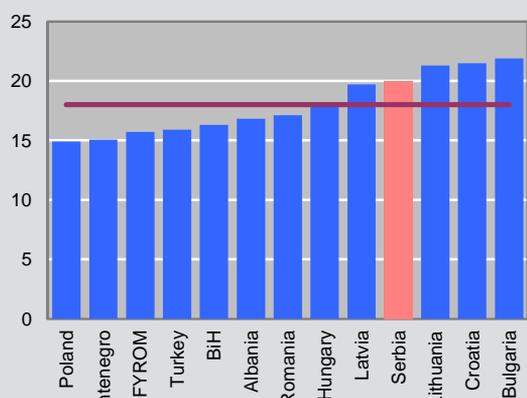
Source: NBS.

Chart II.1.2. Contribution to CAR change in 2014 (% pp)



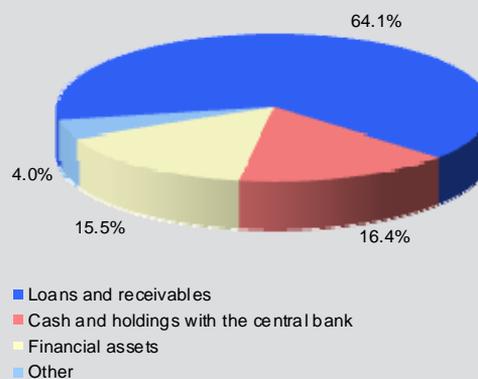
Source: NBS.

Chart II.1.3. Regulatory capital to risk-weighted assets, countries of the region
(2014, latest available data, %)



Sources: NBS and IMF: GFSR.

Chart II.1.4. Structure of assets of the Republic of Serbia's banking sector
(%)



Source: NBS.

over the next two quarters by a total of 1.8 pp. This was caused by a simultaneous rise in risk-weighted assets and the fall in regulatory capital due to an increase in required reserve for estimated losses. Growth in risk-weighted assets continued in Q4, but regulatory capital strengthened after a part of the required reserve was released and recapitalisations were made, sustaining CAR at a high 20.0%.

In terms of international comparison, despite a slight decrease in CAR in 2014, the capitalisation of Serbia's banking sector stayed above the average for the countries of Central and Eastern Europe.

Considering the high level of NPLs in total loans, particularly in the corporate sector, it is not surprising that credit risk was the most important risk in Serbia's banking sector. Hence 86% of capital requirements were credit risk-related, while 12% accounted for operational risk and 2% were market risk-related, indicating no change in the risk structure relative to 2013.

Level, structure and quality of assets

At end-2014, net assets of the Serbian banking sector amounted to RSD 2,969 bln or around 77% of GDP.

As banks in Serbia still engage in traditional credit-deposit activities, loans and receivables were the major

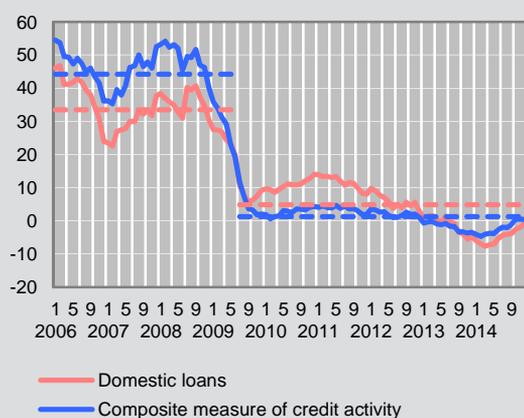
component of banking sector assets (64.1% in late 2014). Other components were currency and deposits with the central bank (16.4%) and financial assets (15.5%). The majority of financial assets were investments in securities of the Republic of Serbia, whose share in the sector's assets has been steadily growing since 2009, indicating that the banking sector is more oriented towards safer investments. Also, a mild decrease in lending activity in 2013 and H1 2014 is indicative of banks' risk aversion, which strengthens the sector's solvency and prevents accumulation of credit risk, but at the same time reduces profitability and certainly does not constitute a solid basis for economic growth. Aware of the consequences of weak lending activity, in 2014 the Serbian government implemented a subsidised programme of corporate loans that greatly spurred growth in lending activity in the second half of 2014.

Lending activity

Real lending activity was falling in y-o-y terms from early 2013 to October 2014, when it returned to the positive zone. In 2014 as a whole, real lending activity, which includes corporate cross-border loans in addition to domestic loans, gained 0.4%.

The recovery of the composite measure of lending activity was prompted by a higher level of household and corporate domestic and external borrowing.

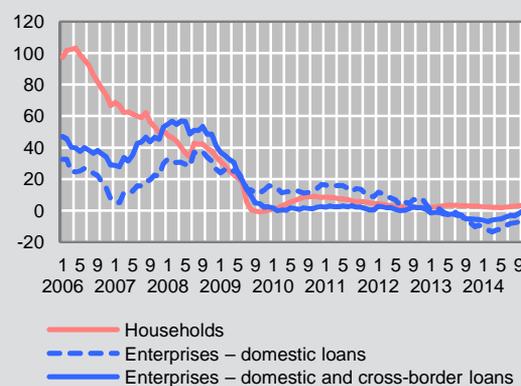
Chart II.1.5. Real credit growth*
(y-o-y growth rates, %)



* Excluding the exchange rate effect.

Source: NBS.

Chart II.1.6. Real growth of loans to households and enterprises*
(y-o-y growth rates, %)



* Excluding the exchange rate effect.

Source: NBS.

Corporate lending recorded positive real growth of 0.3% y-o-y at end-2014. A contribution to the growth in corporate lending in H2 2014 came from the government-subsidised programme of corporate loans for maintaining liquidity and financing long-term current assets. Loans worth RSD 136.1 bln were approved through this programme from June 2014 to the end of the year. Lending activity increased also on account of corporate cross-border borrowing, which recorded a real y-o-y growth of 2.2%.

Household lending also recorded real growth rates (3.8% y-o-y).

According to the Bank Lending Survey²³, credit standards were tightened in 2014, especially in the area of FX corporate loans. The most frequently cited reasons behind this are negative expectations regarding economic activity, as well as issues relating to uncollectible receivables. Tightening of credit standards is reflected in non-price conditions, such as maximum amount and maturity of loans, and requirements regarding collateral. On the other hand, interest margins and commissions continued down. Credit standards of household loans were tightened negligibly in the second half of the year.

The Serbian banking sector is characterised by high NPLs which constrain lending activity, as they increase banks' risk aversion, which manifests through tightening of

credit standards. In addition, the assignment of bank past due receivables to non-financial entities had a dampening effect on the credit portfolio. In the long run, however, this will prop up lending and enhance confidence in the banking sector, through a reduction in capital requirements for credit risk and the collection of a portion of assigned receivables.

Credit portfolio

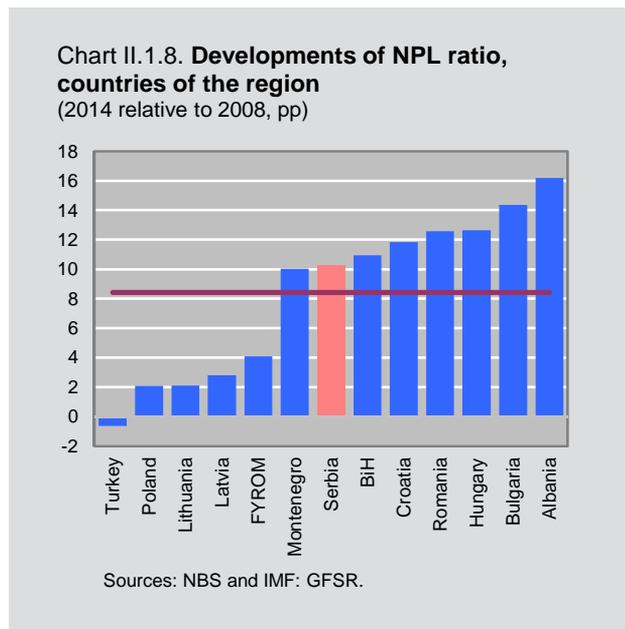
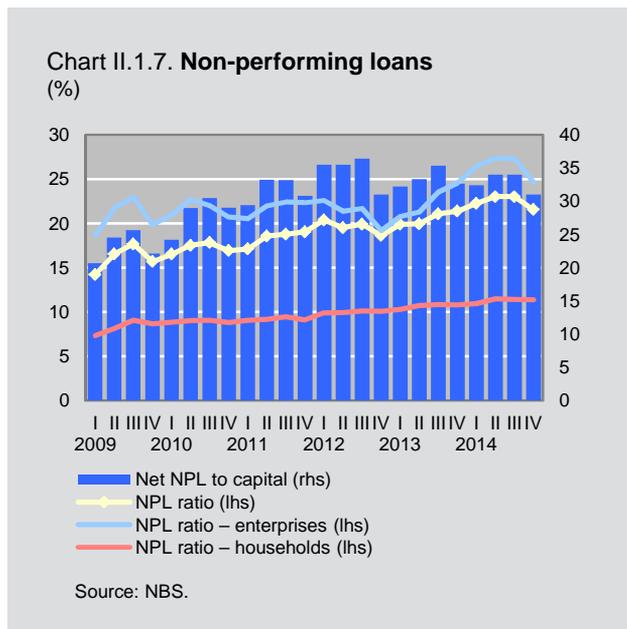
The credit portfolio was worth RSD 1,653 bln in late 2014. The major portion accounted for corporate²⁴ loans (around 52%) and loans to natural persons²⁵ (around 40%). Total corporate loans amounted to RSD 866 bln net, of which 78% were in foreign currencies (74% in euros). Loans to natural persons amounted to RSD 665 bln net in late 2014, with housing loans making up RSD 326 bln (49%). The FX portion of debt of natural persons equalled 60% (46% in euros).

As loans constitute the key component of total banking sector balance sheet assets, the quality of overall balance sheet assets is determined by the credit portfolio. Since 2008, the share of NPLs in total banking sector loans has been on the rise. However, it should not be overlooked that Serbia entered the crisis with a relatively high level of NPLs (11.3% at end-2008) and recorded y-o-y growth in NPLs during and after the crisis which does not significantly differ from the tendencies observed in most

²³ The NBS has been conducting the survey since early 2014.

²⁴ The corporate sector includes public enterprises and companies.

²⁵ Natural persons include entrepreneurs, households, private households with employed persons and registered farmers.

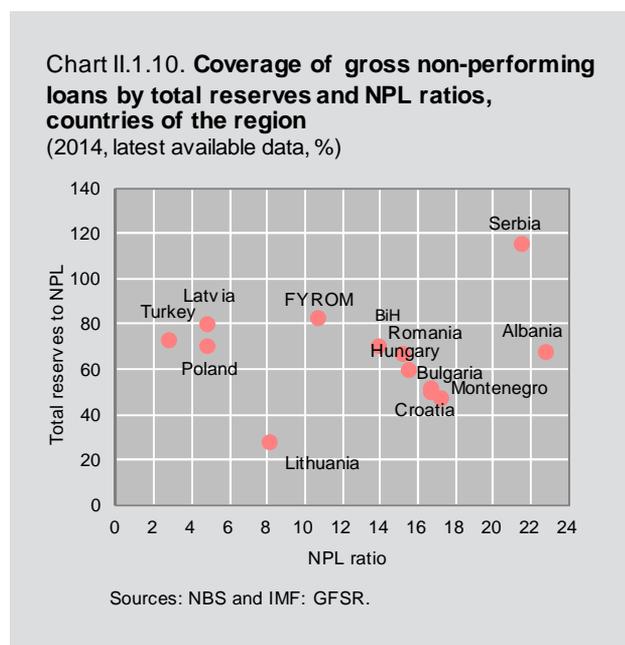
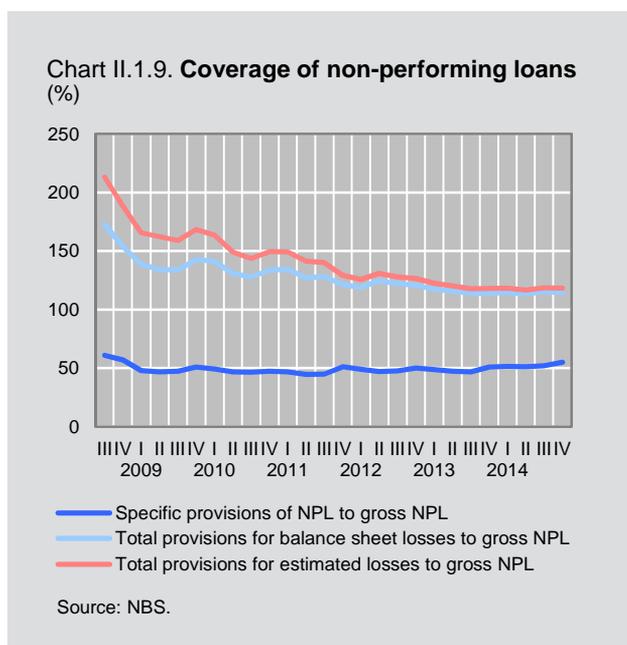


other countries in Central and Eastern Europe. Also, to provide a more adequate international comparison of the dynamics of growth in these loans, it should be noted that the NBS uses a rather rigorous definition of NPLs.

At end-2014, gross NPLs made up 21.5% of total gross loans, showing a rise of 0.1 pp relative to end-2013. This growth resulted from a higher percentage increase in total gross NPLs of the banking sector (by RSD 26 bln to RSD 421 bln, or by 6.6%) compared to the growth in total gross loans (which rose by 5.7%). The upward trend in the share of NPLs in total banking sector loans in the first half of the year was first halted in June, and then in the last quarter, mostly owing to the subsidised programme of corporate

loans. In addition, towards the end of the year, banks approved FX and FX-indexed loans to some public sector enterprises which collectively drove down the share of NPLs in total loans in Q4 2014. In this way, the growth in their share in the first half of the year was largely offset.

To protect the interests of depositors and other creditors, and to preserve financial stability, the NBS requires, in addition to reserves prescribed by the IFRS, the creation of regulatory reserves, i.e. reserves for estimated losses. By end-2014, the calculated reserve for the coverage of on- and off-balance sheet losses was sufficient to cover 118.4% of gross NPLs. The coverage by reserves for estimated losses has recorded a mild growth, indicating



that reserves for estimated losses are still sufficient to keep NPLs from jeopardising financial stability, even though their share in total loans is high. In this context, although the share of NPLs in total loans of the Serbian banking sector was above the regional average, it should be mentioned that their coverage by total reserves for estimated losses was the highest in the region.

In sectoral terms, the share of NPLs remained significantly higher in the corporate than in the household sector. In late 2014, the share of NPLs in total corporate loans was 24.6%, which is the same as in the previous year. In the corporate sector, the level of NPLs stayed the highest in the construction sector (48.3%). Although NPLs of this sector fell by 4.4 pp from 2013, the decrease mostly resulted from changes in sector classification. These changes, on the other hand, significantly altered the amount (growth) and sectoral structure of NPLs of public enterprises. The share of NPLs in the sector of public enterprises climbed considerably (by 12.5 pp to 13.3%), particularly within two branches of the sector – construction and manufacturing.

The share of NPLs in total loans to natural persons increased by 0.6 pp to 11.4% in 2014. This growth was almost entirely recorded in H2. Still, debt obligations were serviced most regularly in regard to housing loans, which represent the most significant segment of loans to natural persons.

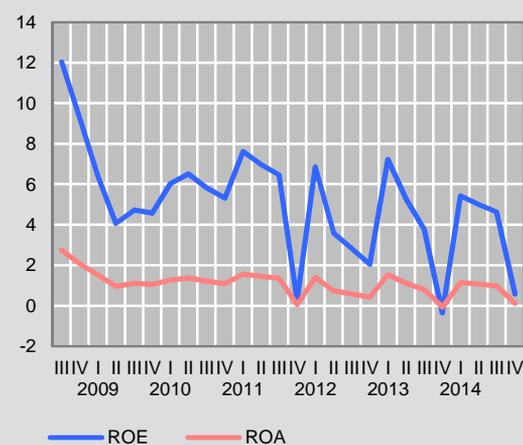
Profitability

At end-2014, there were 29 banks operating in the banking sector, down by one from end-2013. In 2014, the

banking sector recorded a positive financial result, in contrast to last year. With ROA of 0.1% and ROE of 0.6%, the banking sector is still below the regional average, while the structure of profit shows that domestic banks are still oriented towards traditional banking operations. Profitability of the banking sector rose primarily owing to income from interest, fees and commissions, whereas expenses on account of indirect write-offs of balance sheet items and the resolution of one bank in Q4 2014 significantly limited the final profit of the banking sector. Observed by quarter, profitability indicators recorded stronger recovery in the first three quarters, only to fall in Q4. The reason behind this was pre-tax loss of a bank which underwent business restructuring in Q4 2014.

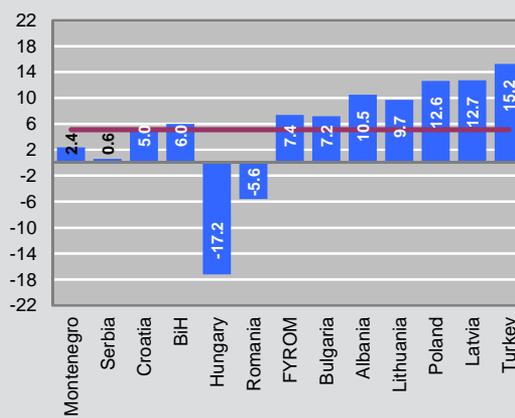
According to the banks' ownership structure, the profitability of the Serbian banking sector is not homogenous. According to the ownership structure, domestic state-owned and private banks accounted for 19.2% and 6.3% of net banking sector assets, respectively. The share of foreign-owned banks in net banking sector assets was 74.5%. In terms of average profitability by the country of origin, banks in majority state-ownership faced the greatest challenges in the domestic market, which was caused by the restructuring of one bank's operations. Excluding that bank, this group of banks had a positive result. Negative results were also recorded by banks in majority ownership of Greek, Slovenian, Cypriot and Norwegian shareholders. The results of French banks were weak, and even negative in some of the years between 2008 and 2014. By contrast, Italian and Austrian banks operated at a profit, on average, with quite high profitability indicators. In

Chart II.1.11. Profitability indicators (%)



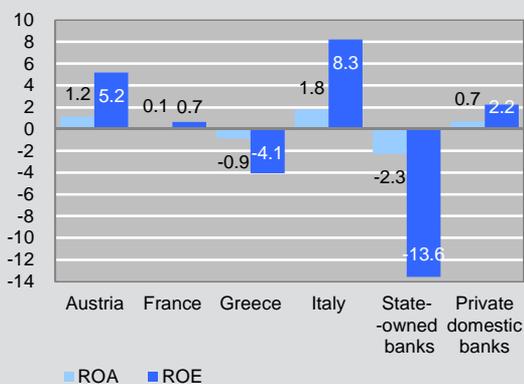
Source: NBS.

Chart II.1.12. Return on equity, countries of the region (2014, latest available data, %)



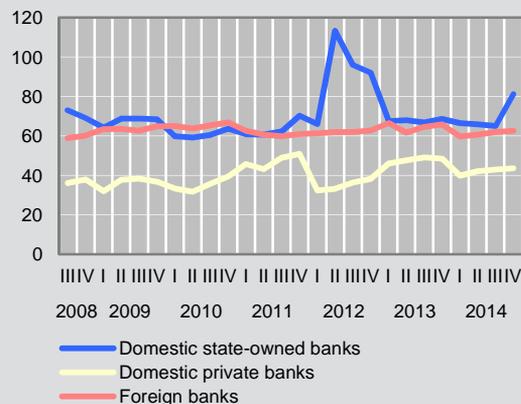
Sources: NBS and IMF: GFSR.

Chart II.1.13. Profitability indicators, by majority shareholder's country of origin and ownership structure in 2014 (%)



Source: NBS.

Chart II.1.14. Ratio of operating expenses to total operating income, by origin of ownership (%)



Source: NBS.

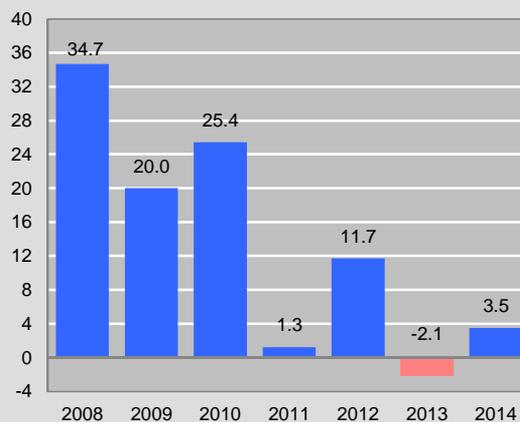
addition, American and Russian banks' profitability indicators were high, although their share in net banking sector assets is very small (4.3%).

Predominant among the top five profit-makers in terms of financial results were the largest banks in Serbia. Four out of those five banks belong to the peer group of banks holding over 5% of banking sector balance sheet assets.

Pre-tax profit of the banking sector in 2014 amounted to RSD 3.5 bln, up by RSD 5.6 bln from 2013. In total, 17 banks operated with a profit, in the total amount of RSD 30.6 bln, whereas 12 banks recorded a loss in the total amount of RSD 27.1 bln. As the achieved financial result includes pre-tax loss of the bank which underwent business restructuring in Q4 2014 (RSD 16 bln), pre-tax profit excluding the above loss came at RSD 19.5 bln. Income in 2013 and 2014 was similar both in terms of structure and amount. Net credit losses were the major drag on the profit of the Serbian banking sector in 2014.

Even though banking sector profitability indicators were positive, they were still lower than in other countries in the region. Banking sector profit increased after the closing of some banks. Regardless, NPLs pose a significant problem, as they greatly impact the end result of banking operations. Macroprudential stress tests²⁶ show that despite its low profitability, the banking sector as a whole remains solvent and resilient to potential shocks, *inter alia* due to the profits recorded by banks. Long-term recovery of profitability can be expected

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



Source: NBS.

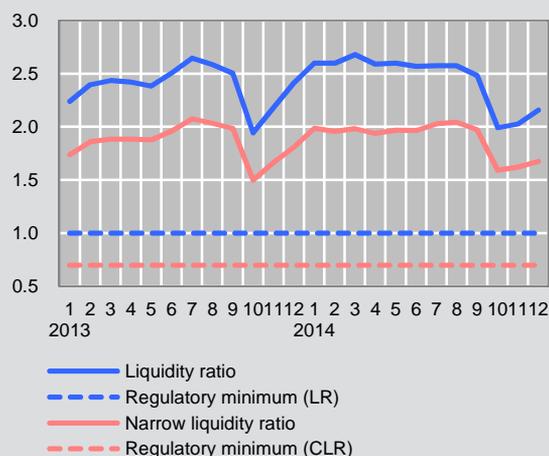
only once credit growth is based on a suitable approach to risk management.

Liquidity

As Serbia's banking sector is highly liquid according to all valid criteria, the liquidity risk poses no threat to financial stability. In December 2014, the average monthly liquidity ratio of 2.2 was much above the regulatory minimum (1.0). The average monthly narrow liquidity ratio of 1.7 was also significantly above the

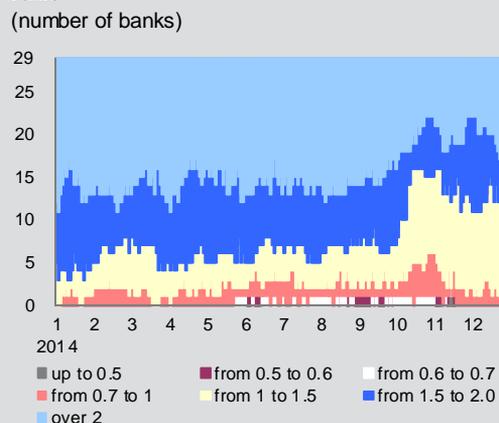
²⁶ Results of macroprudential stress tests are shown in part IV.2.

Chart II.1.16. Average monthly liquidity ratio



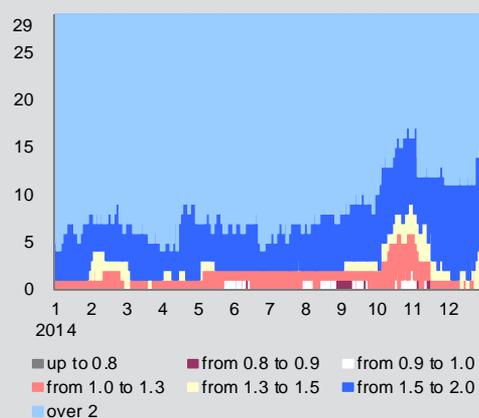
Source: NBS.

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



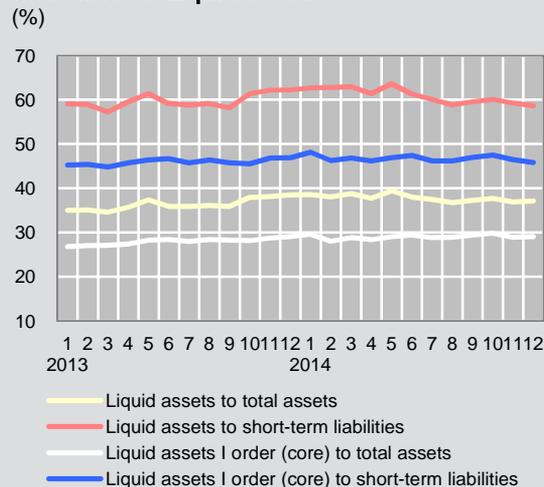
* Excluding Univerzal banka.
Source: NBS.

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



* Excluding Univerzal banka.
Source: NBS.

Chart II.1.19. Liquid assets (%)



Source: NBS.

regulatory minimum (0.7). According to the results of stress tests, Serbia’s banking sector remains highly liquid, even in conditions of extreme deposit withdrawal.

A decline in the liquidity ratio, observed in October each year, was due to maturing deposits termed during the “Savings Week”, as their maturity then dropped under a month. Charts II.1.17. and II.1.18. show the effects of the “Savings Week” and the distribution of liquidity ratios by banks.

High liquidity of the banking sector is confirmed by the fact that by end-2014, liquid assets covered 37.1% of total assets and 58.6% of short-term liabilities. In terms of first-degree liquid assets, their share in total assets and the coverage of short-term liabilities was 29.0% and 45.8% respectively.

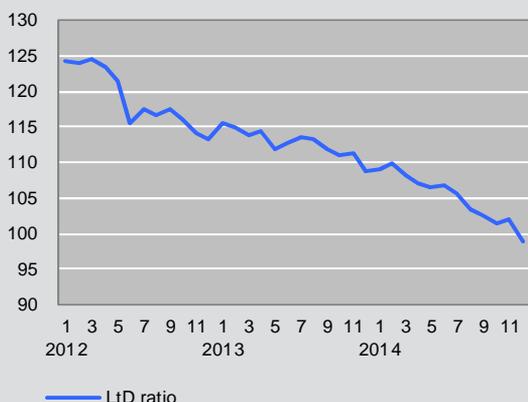
Substantial provisions of liquid assets doubtless contribute to the sector’s stability, but may also diminish profitability. The high share of liquid assets carries low risk, but also lower returns.

Sources of funding

Banks operating in the Republic of Serbia increasingly rely on domestic, stable sources of funding. Strengthening of the domestic deposit base closes the gap between local loans and deposits, which reduces the vulnerability of the domestic financial system to external shocks. The downward trend in the loan-to-deposit ratio in 2014 was prompted by deposits growing faster than loans.

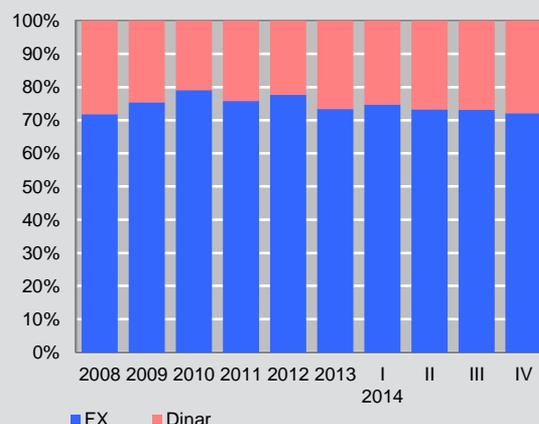
At end-2014, total deposits made up 63.7% of total banking sector liabilities (a 3 pp rise from 2013), while bank capital accounted for 20.7% (down by 0.2 pp). The currency structure of total deposits showed the continuing high presence of FX deposits, with a moderate downward tendency in 2014. Of total deposits, 72.1% were in foreign currencies, most notably in euros (66.0% of total deposits). Greater dinarisation of deposits is necessary to increase overall dinarisation of the system. Maturity structure of deposits remains extremely unfavourable, with short-term deposits²⁷ dominant at 90.9%.

Chart II.1.20. Developments in loan-to-deposit ratio (%)



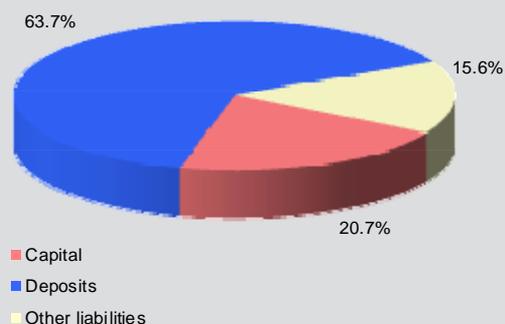
Source: NBS.

Chart II.1.22. Currency structure of deposits (%)



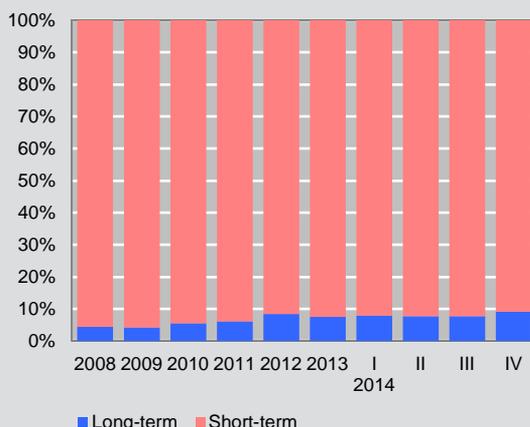
Source: NBS.

Chart II.1.21. Sources of banking sector funding (%)



Source: NBS.

Chart II.1.23. Maturity structure of deposits (%)



Source: NBS.

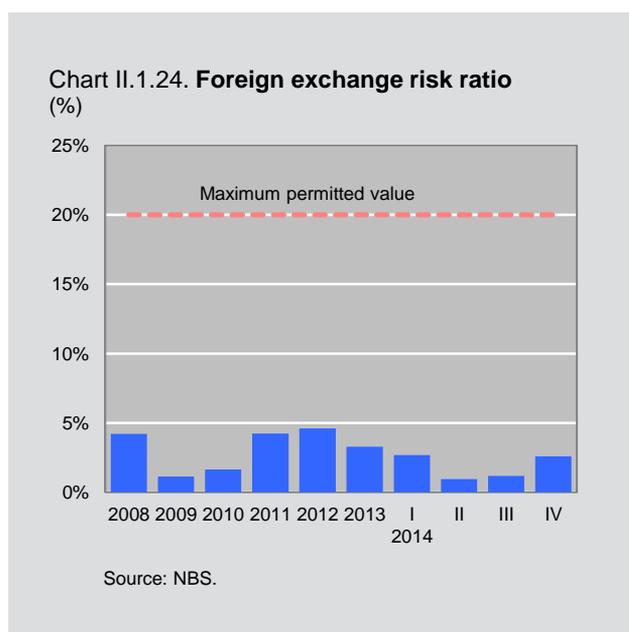
²⁷ Deposits with remaining maturity less than one year.

Sensitivity to market risks

Serbia's banking sector was exposed to market risks to a minimum extent. Only 1.6% of capital requirements were market risk-related.

The FX risk indicator was 2.6% in late 2014, far below the regulatory maximum of 20.0%.

The currency structure of bank assets and liabilities was matched. Tapping funds dominantly from FX sources, banks hedged against the FX risk by extending FX clause-



indexed loans. Despite the well-balanced FX position, which did not make them directly exposed to the FX risk, banks were exposed to the FX risk indirectly. Consequently, as FX clause-indexed loans were extended to unhedged clients, the FX risk fed back to banking sector balance sheets as an FX-induced credit risk.

Table II.1.1. Indicators of the Republic of Serbia's banking sector

(% , unless specified otherwise)

	2008	2009	2010	2011	2012	2013	2014
Capital adequacy							
Regulatory capital to risk-weighted assets	21.9	21.4	19.9	19.1	19.9	20.9	20.0
Tier I capital to risk-weighted assets ¹⁾	17.9	16.5	15.9	18.1	19.0	19.3	17.6
Balance sheet capital to balance sheet assets	23.6	20.7	19.7	20.2	20.5	20.9	20.7
Asset composition and quality							
Agricultural loans to total loans	3.3	3.1	3.0	2.8	3.0	2.7	3.5
Industry loans to total loans	18.4	17.9	19.3	17.2	17.9	18.4	19.2
Trade loans to total loans	16.9	17.3	16.6	14.7	15.0	13.5	13.9
Construction loans to total loans	5.8	5.3	6.9	6.2	5.8	4.6	4.2
Other loans to enterprises to total loans	8.1	9.8	9.7	10.9	12.8	11.4	11.5
Loans to natural persons to total loans	36.3	32.9	34.1	32.4	33.6	35.4	38.2
Of which: housing loans to total loans	13.9	13.8	15.4	15.0	16.1	16.8	18.0
Loans to other economic sectors to total loans	11.3	13.8	10.5	15.7	12.0	14.0	9.6
Gross NPLs to total gross loans	11.3	15.7	16.9	19.0	18.6	21.4	21.5
Net NPLs to total net loans	5.3	8.5	9.8	10.5	10.4	11.9	11.1
Value adjustment of total loans to total gross loans	8.3	9.6	9.1	10.9	10.2	11.9	12.7
Value adjustment of total loans to gross NPLs	73.2	61.4	53.9	57.0	54.9	55.8	59.0
Value adjustment of NPLs to gross NPLs	56.9	50.9	47.2	51.0	50.0	50.9	54.9
Regulatory provisions to gross NPLs	153.6	142.5	133.6	121.4	120.7	113.8	114.5
Large exposures to regulatory capital	36.6	37.4	43.3	110.1	104.5	90.4	130.5
Profitability							
ROA	2.1	1.0	1.1	0.1	0.4	-0.1	0.1
ROE	9.3	4.6	5.4	0.2	2.1	-0.4	0.6
Interest margin to average balance sheet assets	5.7	5.1	4.6	4.6	4.3	4.2	4.3
Interest margin to gross operating income	64.2	67.0	68.3	72.0	69.2	72.6	72.3
Operating expenses to gross operating income	59.0	62.6	63.5	61.8	66.1	65.3	64.7
Operating expenses to average balance sheet assets	-5.2	4.8	4.3	3.9	4.1	3.8	3.9
Wage expenses to operating expenses	41.2	41.9	41.1	41.9	38.3	39.4	37.0
Liquidity							
Liquid assets to total balance sheet assets	43.3	41.5	35.1	37.8	34.5	38.5	37.1
Liquid assets to short-term liabilities	68.6	63.6	56.4	62.8	57.5	62.2	58.6
Liquid assets (core) to total balance sheet assets	31.1	28.7	23.8	27.5	26.8	29.0	29.0
Liquid assets (core) to short-term liabilities	49.3	43.9	38.1	45.6	44.8	46.9	45.8
FX-denominated and FX-indexed loans to total loans	68.8	70.2	71.0	69.0	73.1	70.9	70.0
FX-denominated and FX-indexed deposits to total deposits	71.8	75.4	79.1	75.7	77.6	73.3	72.1
Loans to non-financial sector to deposits of non-financial sector	125.3	124.8	125.9	127.0	119.9	113.8	102.5
Loans to non-financial and non-public sector to deposits of non-financial and non-public sector	127.1	125.3	122.8	124.1	117.8	112.5	102.4
FX denominated and FX-indexed loans to FX denominated and FX-indexed deposits	109.8	99.8	99.1	109.7	106.7	105.3	95.9
Deposits to total balance sheet assets	57.7	60.2	59.4	57.9	59.0	60.7	63.7
FX denominated and FX-indexed liabilities to total liabilities	74.3	77.8	81.8	79.0	80.1	76.7	74.5
Sensitivity to market risk							
Total net open FX position to regulatory capital	7.4	3.6	3.9	6.2	5.5	4.4	3.9
Off-balance sheet items to total assets	121.4	106.7	97.7	111.0	103.5	111.0	207.1
Classified off-balance sheet items to total classified balance sheet assets	56.2	43.3	33.9	32.0	26.1	28.8	27.6

¹⁾ Adjusted Tier I capital is shown as at Q3 2011 (Tier I capital minus the reserve shortfall).

Source: NBS.

Table II.1.2. Serbia: Financial sector structure

	2010			2011			2012			2013			2014		
	No.	Assets		No.	Assets		No.	Assets		No.	Assets		No.	Assets	
		RSD billion	%												
Financial sector (% of GDP)	84	2,759	100.0	87	2,868	100.0	85	3,108	100.0	80	3,081	100.0	78	3,227	100.0
		95.7%		89.4%		92.8%		85.2%						83.2%	
Banking system	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
State-owned banks	8	454	16.4	8	472	16.5	8	522	16.8	6	534	17.3	6	571	17.7
Local private banks	4	217	7.9	4	213	7.4	3	194	6.3	3	196	6.4	2	187	5.8
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
<i>Greek</i>	4	427	15.5	4	393	13.7	4	426	13.7	4	409	13.3	4	418	12.9
<i>Italian</i>	2	526	19.1	2	591	20.6	2	657	21.1	2	679	22.0	2	738	22.9
<i>French</i>	3	202	7.3	3	263	9.2	3	287	9.2	3	299	9.7	3	304	9.4
<i>Austrian</i>	4	469	17.0	4	493	17.2	3	449	14.4	3	429	13.9	3	441	13.7
<i>Other</i>	8	238	8.6	8	225	7.8	9	345	11.1	9	301	9.8	9	310	9.6
Nonbank financial institutions	51	226	8.2	54	218	7.6	53	228	7.4	50	235	7.6	49	258	8.0
Insurance undertakings	26	117	4.2	28	126	4.4	28	140	4.5	28	148	4.8	27	169	5.2
Pension funds	8	10	0.4	9	12	0.4	9	16	0.5	6	20	0.6	6	24	0.7
Leasing companies	17	99	3.6	17	80	2.8	16	72	2.3	16	67	2.2	16	65	2.0

Source: NBS.

Text box 2: Banking sector stability index

Given that the Serbian financial system is bank-centric (92% of total financial sector assets is held by banks), the NBS uses a rich and diverse toolkit to measure the stability of the banking system and the risks to which it is exposed. In order to detect potential risks to financial stability, the banking system stability index was devised. Considering the characteristics of the domestic banking system, to calculate this index we use the indicators of:

1. solvency,
2. credit risk,
3. liquidity risk,
4. profitability, and
5. foreign exchange risk²⁸.

Solvency and **profitability** indicators represent the banking sector's ability to face the risks to which it is exposed. Capital adequacy, as an indicator of solvency, shows the ability of banks to cover losses. **Profitability** may adequately be monitored through the movement of return on equity and ratio of operating expenses to gross income. **Credit risk** is shown through the share of NPLs in total loans and indicates the banks' quality of lending. The rate of growth of NPLs is also used as a credit risk indicator, since it represents the dynamics of asset quality. The banks' ability to settle their liabilities on time is measured through **liquidity** indicators, or more precisely, through the share of liquid assets in total assets, and/or short-term liabilities. Direct exposure of banks to **foreign exchange risk** indicates a currency mismatch between FX assets and FX liabilities, and is expressed through the net open foreign exchange position to capital. Greater currency mismatch indicates greater exposure to foreign exchange risk, which increases the effect of the changes in the value of the domestic currency on the banking system.

Since the growth in NPLs, operating expenses to gross income and net open foreign exchange position to capital negatively affects the stability of the banking sector, reciprocal values of these indicators are used in the calculation of the index. In addition, due to the negative effect the growth in NPLs has on banking system stability, the rate of their growth was multiplied by -1. The data were normalised²⁹ and limited to values between 0 and 1. Each group of indicators (solvency, credit risk, profitability, liquidity risk, foreign exchange risk) was assigned the same weight (0.2) in the calculation of the index.

Table O.2.1. Construction of banking sector stability index

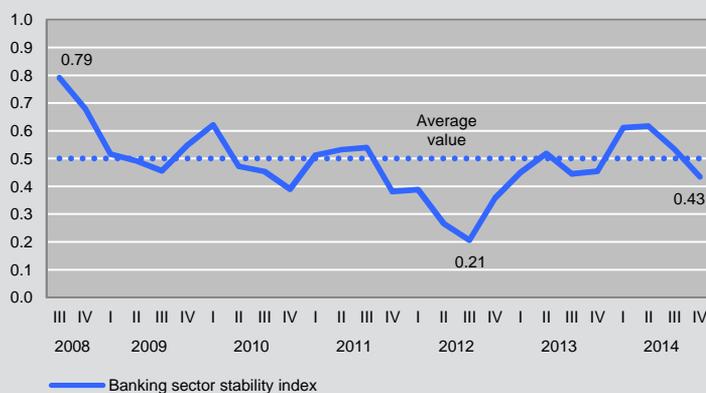
Banking sector segment	Indicator	Weights		Expected impact on banking sector stability	Transformation of indicators
Solvency	CAR	0.2	0.2	Positive	Without transformation
Credit risk	NPLs relative to total loans	0.1	0.2	Negative	1/X
	NPL growth rate	0.1		Negative	Change in sign
Profitability	ROE	0.1	0.2	Positive	Without transformation
	Noninterest expenses to gross income	0.1		Negative	1/X
Liquidity risk	Liquid assets to total assets	0.1	0.2	Positive	Without transformation
	Liquid assets to short-term liabilities	0.1		Positive	Without transformation
FX risk	Net open FX position to capital	0.2	0.2	Negative	1/X

Source: NBS.

²⁸ Other market risk elements, such as changes in prices of securities, were not taken into consideration, since 98% of capital requirements for market risk refer to foreign exchange risk.

²⁹ $X_{ij, \text{norm.}} = (X_{ij} - \min(X_i)) / (\max(X_i) - \min(X_i))$.

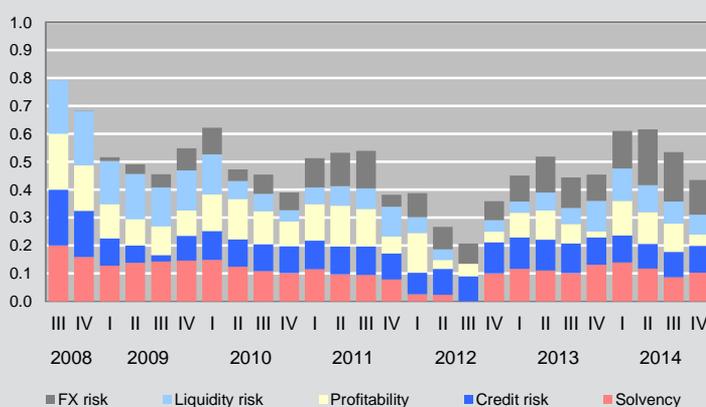
Chart O.2.1. Banking sector stability index
(composite measure)



Source: NBS.

The movement of the banking system stability index is shown in Chart O.1.1. The index was high in Q3 2008, which indicated low risk in the banking system, considering the sound capital adequacy ratio of 23.3%, high profitability (return on equity of 11.9%) and liquidity (44% of total assets were considered liquid), as well as the lowest level of NPLs in the observed period. However, the stability index saw a downward trend in the period that followed and reached its lowest value in Q3 2012. At that time, capital adequacy equalled 16.4%, which is still significantly above the regulatory level of 12%, but below average for the observed period. This resulted mostly from the introduction of Basel II regulatory standards, which involved the creation of regulatory reserves as a deduction from capital in order to cover unexpected risks. In the same period, liquid assets made up 32.4% of total assets, while the liquidity indicator was at 2.1, which is more than twice the regulatory minimum of 1, but still lower than the value in the period before. At end-2014, banking system stability index was at 0.43, twice that in Q3 2012. Observed by individual component (Chart O.1.2), CAR of 20.0% and net open foreign exchange position of 2.2% of capital indicate that solvency risk and direct foreign exchange risk of banks are low. On the other hand, the index dropped in late 2014 due to falling profitability (return on equity of 0.6%, which resulted from the effects of one bank's resolution in Q4 2014) and the falling liquidity indicator (although liquidity is still exceptionally high and significantly above the regulatory minimum). A high level of NPLs (21.5% of total loans) has had an almost unchanged effect on the stability index for a long period of time.

Chart O.2.2. Aggregate elements of banking sector stability index



Source: NBS.

Movement of the banking sector stability index shows that it will return to the pre-crisis level through gradual resolution of NPLs and the recovery of banking sector profitability indicators. Judging by its movement, the system is healthier than in Q3 2012, although the banking system was stable and resilient to shocks even then.

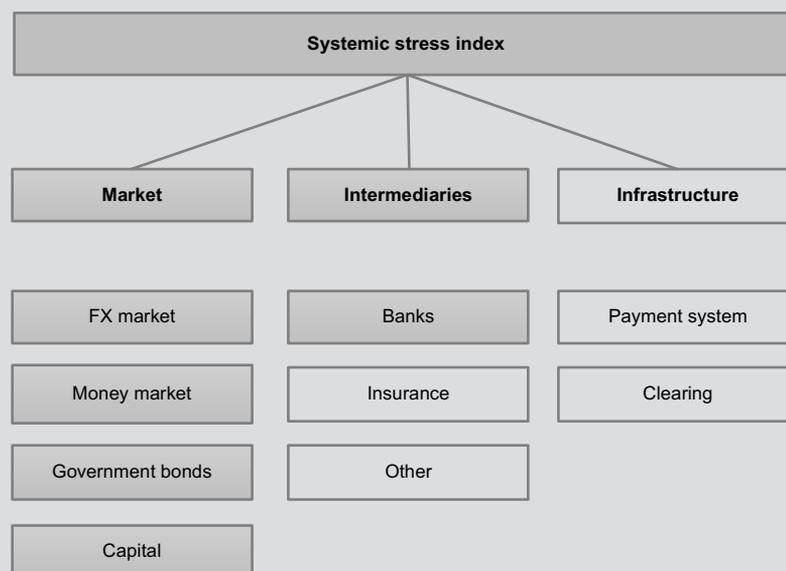
Text box 3: Systemic stress indicator

The global financial crisis exposed numerous weaknesses in financial systems, both in advanced and emerging economies. It became clear that microprudential supervision of financial systems must be supplemented by macroprudential regulation and supervision, whose role is to identify imbalances and vulnerabilities of the financial system. Another important lesson learnt at the time was that financial system regulators and supervisors were ill-equipped to assess the probability of risk in the system. However, there is still no uniform definition of systemic risk and financial stress, so there is no single way to measure them.

Generally speaking, systemic risk may be defined as the risk that financial instability becomes so widespread that it impairs the functioning of a financial system to the point where economic growth and welfare suffer materially³⁰. Financial stress manifests in numerous ways: growing uncertainty in certain market segments, expanding differences in investors' perception of the condition in certain markets, increasing asymmetry in information between debtors and creditors, higher aversion to risky assets, etc.³¹ A financial system may experience a large shock, as was the case during the last financial crisis. On the other hand, a system may be exposed to a large number of smaller shocks which, put together, may significantly impact the system. All situations between these two extremes represent various forms of crises.

Considering the effects of systemic risks on financial system stability, the identification, monitoring and analysis of those risks represent an important stage of the macroprudential policy cycle. The first step in the cycle is the development of a system of systemic stress indicators for certain segments of the financial system and their aggregation into a composite indicator of systemic stress. This indicator could help identify various stages of the crisis, analyse stress levels in pre-crisis periods and during a crisis. The indicator is formed in three steps. The first step is the selection of input variables, which will depend on the characteristics of the domestic economy and the availability of data. The second step is the transformation of those raw data to a single scale and the formation of sub-indices. The final step is the aggregation of sub-indices into a composite indicator of the overall system.

Diagram O.3.1. **Financial system segments and their compilation into composite systemic stress index**



Source: NBS.

³⁰ De Bandt O. and P. Hartmann (2000), "Systemic Risk: A Survey", ECB Working Paper Series, No. 35.

³¹ Hollo, Daniel, Manfred Kremer, and Marco Lo Duca. "CISS-a composite indicator of systemic stress in the financial system." (2012).

The first step is considered the most important one because the quality of the indicator itself depends on the selection of sound variables. In general, the financial system is made up of financial markets, financial intermediaries and financial infrastructure. In order to monitor systemic risks, we may divide **financial markets** into spot FX market, sovereign bond market, interbank market and capital market. Their development is contingent upon the development of the domestic economy. In highly euroised economies, such as the Serbian economy, one of the principal channels for the spillover of financial stress is the exchange rate channel. This is why systemic stress is gauged using variables which reflect FX market risks. These variables relate to the level, volatility and range between the bid and ask exchange rate of the dinar vis-à-vis the euro. Their growth points to a rising instability in the FX market, i.e. rising systemic stress.

Central bank interventions absorb shock in the FX market, so their absolute amount is used as another indicator of increased systemic stress. In accordance with the available data, capital market indicators are based on the volume and volatility of the stock exchange index BELEXline. When this index is high, capital market liquidity is on the rise, which reduces systemic stress, while high volatility indicates greater uncertainty, driving up systemic stress. The contribution of the sovereign bond market to the systemic stress level is reflected in the level and volatility of the price of those bonds, and in the movement of the emerging market bond index (EMBI) for Serbia. The increasing price of government bonds, i.e. declining yields, indicates a lower sovereign risk, which reduces systemic stress. On the other hand, rising volatility and range between the buying and selling price of government bonds and growing EMBI indicate an increase in sovereign risk and systemic stress. The interbank market is another important segment of the financial system which may point to the instability of financial markets. The dynamics of movements and interest rate volatility in the interbank market may also be useful in detecting periods of heightened stress. Indicators showing movements in the money market which are used in the formation of systemic stress indicators are based on BEONIA (average weighted rate) and on rates for individual overnight loans, their volatility and deviation from interest rates relevant to them.

By definition, **financial intermediaries** are banks, insurance undertakings and other financial intermediaries. Given that the Serbian financial sector is bank-centric, i.e. that the banking system dominates the Serbian financial system accounting for over 90% of total assets, banking sector activity indicators are used in the segment of financial intermediaries. The loan and deposit gaps indicate deviations of loans and deposits from their long-term trend, and in the case of negative deviations, contribute to the growth of systemic stress.

Financial infrastructure includes payment and clearing systems. Systemic stress indicators are calculated by measuring the availability of these systems and their resilience to shocks. Finally, these sub-indices of systemic stress are aggregated into a composite indicator which shows whether there are prominent risks to the financial system. The methodology of calculation of systemic stress indicators is subject to changes, i.e. improvements.

II.2. Non-bank financial sector

II.2.1. Insurance undertakings

In mid-2014, Serbia's insurance sector faced payout of claims arising from catastrophic flooding. This, together with high insurance administration expenses, resulted in low profitability of insurance undertakings. Generally speaking, the insurance sector is still underdeveloped, which is one of the reasons behind the adoption of a new Insurance Law in late 2014.

With a share of 5.2% in the balance sheet total of the financial sector supervised by the NBS, the insurance sector continues to hold the second position in our financial market, coming after banks. At end-2014, there were 25 insurance and reinsurance undertakings in Serbia, three less than in the corresponding period a year earlier. Of insurance undertakings, six were life insurers, 9 were non-life insurers, and six provided both life and non-life insurance services. There were also four reinsurance undertakings. Breakdown by ownership shows that 19 undertakings were in majority foreign and six in majority domestic ownership (Chart II.2.1).

Around 24% of total capital of all insurance undertakings was in the ownership of the Republic of Serbia and domestic legal persons. The Republic of Serbia is the majority owner of the largest insurance undertaking “Dunav osiguranje”, which made up 27.4% of total insurance sector premium. In terms of the share in total

premium, concentration in the insurance market, measured by the Herfindahl-Hirschman Index, was moderate in 2014 and equalled 1,124 (1,112 in 2013).

In addition to insurance undertakings, the insurance market also comprised: 19 banks holding approval to carry out insurance agency activities, 95 legal persons (undertakings for insurance brokerage, agency and the provision of other insurance services), 111 insurance agents (natural persons – entrepreneurs), while 15,287 natural persons obtained the authorisation for insurance agency and/or insurance brokerage.

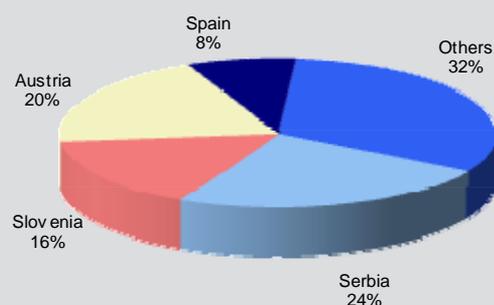
Compared with EU member states, Serbia's insurance sector remains undeveloped, as indicated by penetration and density ratios.

Namely, in 2013 the penetration ratio at EU level was 7.5%³² compared to 1.7% in Serbia. The density ratio in 2013 was EUR 1,883³³ compared to EUR 75 in Serbia. (Chart II.2.2).

Similarly, based on the absolute level of total premium (in 2013), Serbia ranked lowest among the observed countries (Chart II.2.3).

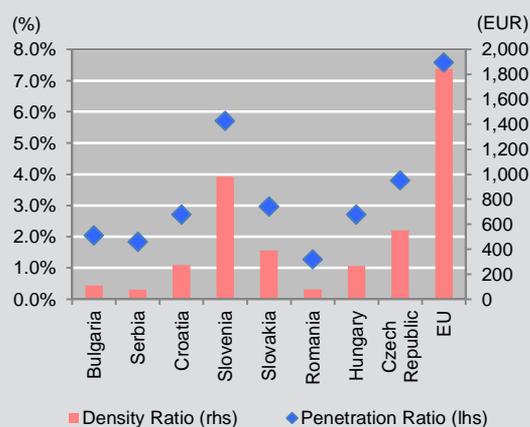
Still, there was a moderate positive trend in the insurance market, reflected in total premium growth (by RSD 69.4 bln – 8.4% in nominal and 6.6% in real terms) and improved composition of total premium, with the share of life insurance premium rising steadily (Chart II.2.4).

Chart II.2.1. Insurance undertakings ownership structure as at 31 December 2014 (%)



Source: NBS.

Chart II.2.2. Insurance sector development indicators as at 31 December 2013



Sources: CEA Statistics and NBS.

³² Source: CEA Statistics.

³³ Source: CEA Statistics.

Non-life insurances continued to account for the largest share of insurance premium, though their share declined from 78% in 2013 to 76.9% in 2014. Similarly to earlier years, within this segment of total premium, compulsory motor vehicle liability insurance was dominant, followed by premium from life insurance, property insurance and full-coverage insurance.

Given Serbia's high exposure to the risk of natural disasters which materialized in mid-2014 (after several days of catastrophic flooding) and substantial fiscal costs of addressing their consequences, further development of this segment of property insurance is of particular importance. Such insurance brings considerable advantages not only for individual households, agricultural estates and small entrepreneurs, but also for the state at large. Insurance undertakings responded adequately to completed damage compensation claims, with claim settlements amounting to around RSD 2 bln.

Serbia's insurance sector is well-capitalized relative to risks it is exposed to. As the guarantee reserve must be higher than the calculated solvency margin at all times, and given that the guarantee reserve to solvency margin ratio in 2014 was 179.8% for non-life and 206.0% for life insurance, the solvency of Serbia's insurance undertakings was satisfactory.

The adequate level of capital, measured by the capital to assets ratio, reflects the degree of an undertaking's exposure to risks typical for this activity. In aggregate

terms, the ratio of both non-life and life insurance undertakings has been on a decline for several years, but its value is still satisfactory. For an undertaking to be able to timely and fully meet its obligations, i.e. to settle claims, it must create an adequate amount of technical reserves on the one hand, and, on the other, invest such technical reserves, taking account of the maturity of obligations, profitability and dispersion of investment.

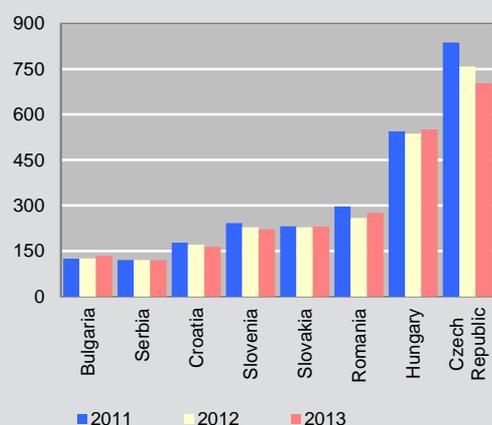
Coverage of technical reserves by prescribed forms of assets was 101.4% for non-life insurance undertakings and 100.3% for life insurance undertakings. A value of this indicator below 100% indicates that technical reserves are not covered by adequate forms of investment, which may cause problems in the settlement of obligations towards the insured.

Within coverage of technical life insurance reserves in 2014, low-risk investment accounted for around 98% (securities of the Republic of Serbia, bank deposits and cash) (Chart II.2.5).

With regard to non-life insurance, over 77% related to low-risk and liquid investments (securities of the Republic of Serbia – 48.2%, bank deposits and cash – 29.3%), and around 9% to investment property (Chart II.2.6).

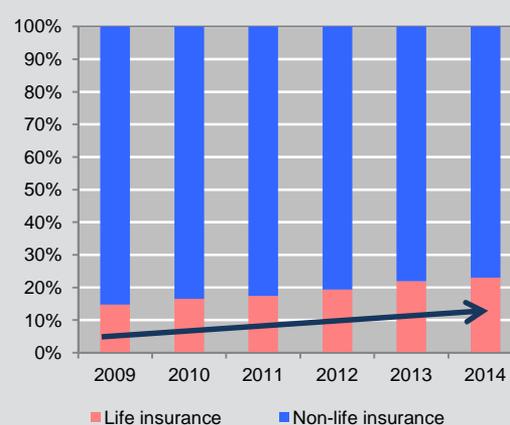
In assessing the quality of assets, particular attention is paid to the liquidity of individual forms of investment and the availability of adequate methodologies for assessing

Chart II.2.3. Total insurance premium (EUR mln)



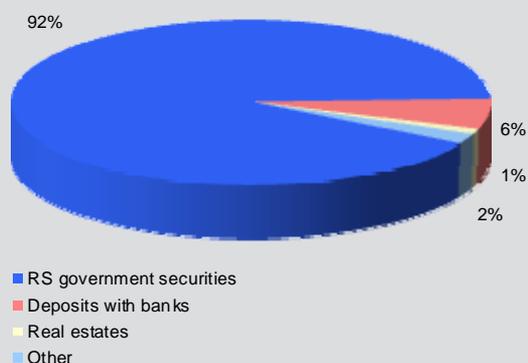
Sources: CEA Statistics and NBS.

Chart II.2.4. Insurance premium structure (%)



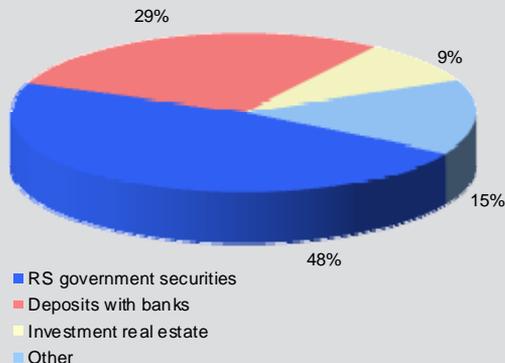
Source: NBS.

Chart II.2.5. Life insurance technical reserves coverage as at 31 December 2014 (%)



Source: NBS.

Chart II.2.6. Non-life insurance technical reserves coverage as at 31 December 2014 (%)



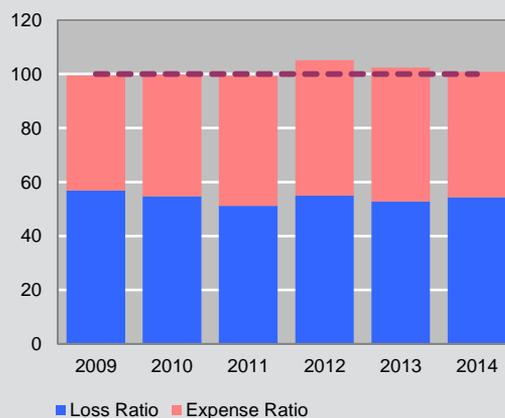
Source: NBS.

their value. Classes of investment assets, characterised by limited marketability and demanding valuation, include intangible investments, real estate, non-tradable securities and claims. Due to a downward trend recorded over the recent years, the share of less liquid investment was (for non-life insurance undertakings) satisfactory and came to 24% of assets at end-2014. For life insurance undertakings, the share of less liquid investment was 3.1%.

The efficiency of the insurance administration process, as measured by the expense ratio, remained inadequate despite a mild decline in the ratio. For companies dealing predominantly with non-life insurance, the combined ratio declined from 102.4% at end-2013 to 100.9% at end-2014. These movements may be considered favourable as the decrease in this ratio indicates insurers' lower exposure to market risks. Above 100% value of this ratio means that in setting the level of premium payments insurers count on potential income from investment in the financial and real estate market, which exposes them to additional market risks. The fall in combined ratio in 2014 is a result of improved efficiency of the insurance administration process, because the expense ratio went down from 49.6% at end-2013 to 46.5% at end-2014 (Chart II.2.7).

On the other hand, the loss ratio edged up from 52.8% to 54.4%. The loss ratio is an indicator of the adequacy of insurers' price policy and shows the extent to which an insurer is capable of settling damages from premium

Chart II.2.7. Combined insurance ratio (%)



Source: NBS.

income. High value of this ratio may indicate that the insurer is not capable of meeting its liabilities for damages claimed.

ROA and ROE of exclusive non-life insurers turned negative in 2013 for the first time after the crisis had spilled over to our country in 2008 (ROE was -0.21% and ROA was -0.05%). In 2014, they plunged further to -2.7% and -0.6% respectively (Chart II.2.8).

On the other hand, after negative values in 2011 and 2012,

Chart II.2.8. Profitability ratios of non-life insurance undertakings

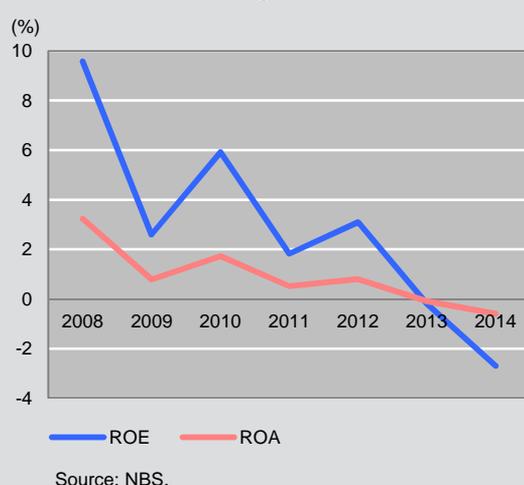
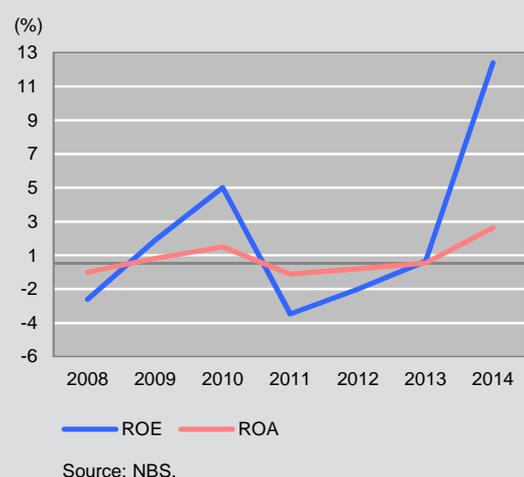


Chart II.2.9. Profitability ratios of insurance undertakings



exclusive life insurers recorded positive ROA and ROE in 2013 and 2014. Namely, ROE equalled 0.14% and 11.9%, and ROA 0.03% and 2.13%, respectively (Chart II.2.9).

It may be concluded based on the above that the profitability of the Serbian insurance sector (especially non-life insurance) is low. With non-life insurances, low profitability may indicate difficulties with solvency. However, the solvency of insurance undertakings depends primarily on the adequacy of the level of technical reserves for assumed obligations and the real

value of their coverage, as well as on the ratio of guarantee reserve to solvency margin as a buffer for unforeseen operating losses which cannot be covered from technical reserves. The solvency of Serbian insurance undertakings is satisfactory – technical reserves are adequately covered, and the ratio of guarantee reserve to solvency margin is significantly above the prescribed level.

New Insurance Law

The new Insurance Law was adopted on 18 December 2014 and will apply as of 27 June 2015. To a large degree, this Law could be regarded as a reform law. Although the insurance sector has undergone a transformation over the last decade, including strengthening of market discipline, introduction of new insurance services and improving the protection of the insured, the implementation of the previous Insurance Law pointed towards drawbacks of some of the solutions. This, together with the commitment to harmonise domestic regulations with the EU insurance acquis, showed the need to redefine and enhance the legal framework governing this area, which the recently adopted Insurance Law managed to attain.

The new Law regulates the insurance market of the Republic of Serbia in a broad and comprehensive manner, by transposing provisions of the EU Directives into the domestic legal system (to the extent possible), primarily taking into account the level of development of the domestic insurance market and the objective ability of domestic undertakings to carry on their activities amid these new conditions. For instance, this Law partially implements Council Directive 92/49/EEC of 18 June 1992 on the coordination of laws, regulations and administrative provisions relating to direct insurance other than life, Directive 2002/83/EC of the European Parliament and of the Council of 5 November 2002 concerning life assurance and Directive 2002/92/EC of the European Parliament and of the Council of 9 December 2002 on insurance mediation.

It is of particular significance that this Law lays down the principle of carrying on life insurance activities separately from non-life insurance activities. It means that an undertaking may not carry on life and non-life insurance activities simultaneously save in cases set forth by the Law as exceptions. This has allowed for full implementation of the provision of the EU acquis regarding the obligation to carry on these activities separately so that one type of insurance activities would

not take on obligations of the other, with a view to protecting policyholders and interests of the insured.

Entitled to an exception from this principle are insurance undertakings which as at the date of entry into force of the Law have the licence to carry on insurance activities from both groups, pursuant to Articles 18 and 19 of the Directive 2002/83/EC. To respect the principle of separate insurance activities, the Law envisages that undertakings which continue to carry on life and non-life insurance activities simultaneously have to keep separate assets, liabilities and capital according to the extent to which they belong to one of the two groups of insurance activities, and to manage them separately. Transfer of assets from one to the other group is allowed only in certain situations with prior consent of the competent authority. This provides for full abidance by the underlying principle of the said Directive which allows composite insurance undertakings to continue with their activities, provided that certain conditions have been met.

In addition to the implementation of the above mentioned principle, other numerous reasons prompted legislators to prepare the new Insurance Law.

Among such reasons, we may mention the following in particular:

- creating legal and other normative postulates for the development and improvement of insurance activities and protection of the insured and users of other insurance services;
- raising the quality of carrying on insurance activities in the Republic of Serbia, i.e. harmonising it with standards applicable in developed market economies;
- gradual liberalisation of the provision of insurance services in compliance with the obligations undertaken by the Republic of Serbia during negotiations with the World Trade Organisation in the field of financial services;
- necessity to ensure higher degree of financial stability and discipline of insurance undertakings in the course of their activities;
- maintaining long-term solvency of insurance undertakings, through permanent preservation of the core capital in the amount stipulated (census), i.e. ensuring continuous meeting of requirements pertaining to capital adequacy (measured by the level of risk actually undertaken), and the introduction of a modern management system within the undertaking;
- establishment of more efficient management and supervisory bodies in insurance undertakings, in accordance with the activities they pursue;

- ensuring that policyholders are better informed about the nature of the service they purchase, before entering into contract and during the term of validity of the contract;
- more precise regulation of insurance brokerage and agency activities;
- development of the financial system infrastructure;
- defining a more significant role for the supervisory body of the insurance/reinsurance undertaking, insurance broker and insurance agent – as a prerequisite for smooth functioning of the insurance market.

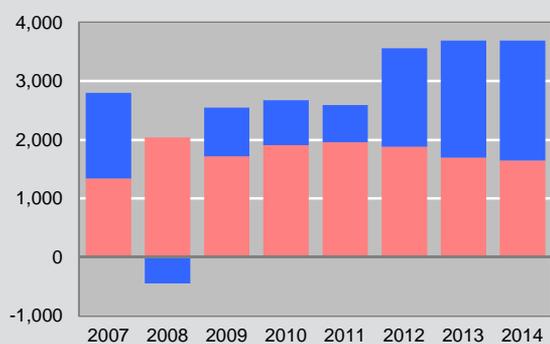
It follows from the above that the new regulatory framework (the Law and the supporting bylaws) provides for better and more efficient mechanisms for citizens' protection, i.e. insurance services beneficiaries. This primarily holds true now that the NBS has inserted provisions into the text of the Law that enable users to obtain adequate information prior to entering into an insurance contract about all the elements of the insurance service which are necessary for them to make an informed decision. Also, insurance undertakings and other subjects of supervision are obliged to protect the rights and interests of insurance beneficiaries in accordance with the regulations, code of conduct and good business practices. What is particularly important is that the NBS acts upon every complaint of the insurance service beneficiaries about the work of entities subject to its supervision and acts as a mediator in settling claims for damages in order to prevent insurance disputes.

II.2.2. Voluntary pension funds

Net assets of VPFs in Serbia stood at RSD 23.6 bln at end-2014, up by 19.6% from a year earlier. At the end of 2014, total number of users of voluntary pension funds was 187,997, holding a total of 252,072 pension plans. What is also representative of the VPF sector in Serbia is that users of voluntary pension funds account for 2.6% of the entire Serbian population and only one in ten employees is a member of any pension fund.

While the VPF sector in Serbia has in general been achieving positive results, one cannot overlook the fact that, due to a low standard of living and lack of awareness of the benefits it offers, this part of the pension system may be assessed as undeveloped. In this sense, competent authorities need to take action to inform and educate citizens of the benefits of this type of long-term saving.

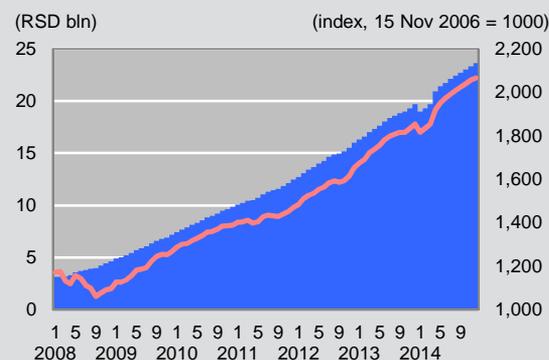
Chart II.2.10. Annual increase in VPF net assets and net contributions
(RSD mln)



■ Net contribution
■ Increase from investment

Source: NBS.

Chart II.2.11. Total VPF net assets and FONDex



■ Total net asset (lhs)
— FONDex (rhs)

Source: NBS.

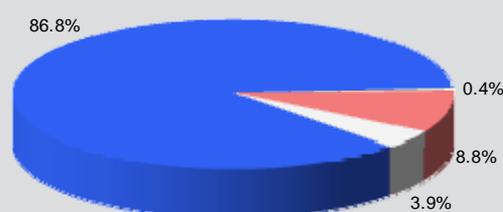
Although this segment of the financial system is insufficiently developed, total net assets of VPFs are constantly increasing. At end-2014, they equalled RSD 23.6 bln, rising by 19.6% from a year earlier. The change in the value of net assets depends on the net amount of contributions, withdrawals and positive return of VPF investment (Chart II.2.10)

At the end of 2014, FONDex³⁴ reached the value of 2,065.4 points, which is 212.0 points (11.5%) higher than a year earlier. Given that the increase in the value of FONDex represents the weighted average return of all funds, we can say that the value of VPFs assets was preserved when compared to both the last year's inflation rate and the change in the exchange rate. The initial FONDex value of 1,000 points was recorded on 15 November 2006 when the first VPF began to operate and, since the start of VPF operation, the return of FONDex equalled 9.4%. (Chart II.2.11)

At end-2014, the VPF sector in Serbia comprised four management companies in charge of managing assets of six voluntary pension funds.

Voluntary pension funds invest their assets in line with their investment policies, which means that they still apply an exceptionally conservative approach. At end-2014, almost 87% of their assets were invested in government securities. Term deposits with banks and balances in custody bank account make up 8.8%, while

Chart II.2.12. VPF investments as at 31 December 2014
(%)



■ Shares
■ Republic of Serbia government bonds
■ Real estate
■ Deposits

Source: NBS.

shares account for slightly less than 4% of the funds' assets. (Chart II.2.12)

At end-2014, 15.5% of total assets were in foreign currency (13.9% in euros and 1.6% in US dollars), whereas 84.5% of assets were denominated in dinars (RSD 19.9 bln).

As the high share of fund portfolios is made up of debt instruments and bank deposits, it may be said that the majority of VPF assets are exposed to interest rate risk.

³⁴ FONDex reflects movements in investment units of all VPFs in the market.

In terms of the systemic risks to which VPFs are exposed in Serbia, we may firstly pinpoint the investment concentration risk. Like in the preceding period, VPFs made no investments abroad in the course of 2014. To ensure appropriate dispersion of risks, it is necessary to undertake activities to develop the domestic capital market (particularly long-term financial instruments) as it is a key precondition for the diversification of VPF investments.

Investment tax incentives, which in Serbia are linked to consumer price growth, are also significant for further development of this sector. Following implementation of fiscal consolidation measures, economic recovery and improvement in the standard of living, we may also expect a rise in payment of contributions to VPFs. Sending a clear signal of the necessity of timely “saving for old age” to the citizens should, together with raising awareness and improving education, facilitate further development of VPFs in Serbia.

II.2.3. Financial leasing

When compared to end-2013, positive trends in the financial leasing sector are primarily mirrored in the rise in leasing providers' capital and reduction in their operating losses. Still, 2014 saw further contraction of balance sheet assets of all leasing providers.

The financial leasing sector stagnated throughout 2014, displaying only a few positive indicators. The increase in the capital of financial leasing providers and a reduction in their expenditures and losses point to the recovery of the sector. Also, the total number of employees in financial leasing stayed the same as in 2013 – 435, as did the number of financial leasing providers (16). On the other hand, total balance sheet assets of all leasing providers shrank (by 3%, coming down from RSD 67.5 bln at end-2013 to RSD 65.5 bln at end-2014), and so did the total revenues and profits (by 11.6%).

Total capital of all leasing providers at end-2014 stood at RSD 7 bln, up by 17.5% y-o-y. This increase was primarily driven by a reduction in losses and the rise in

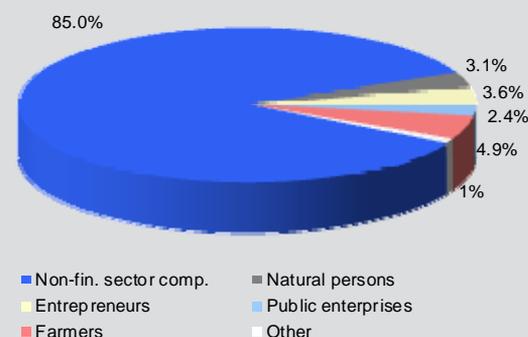
core capital. Compared with 2013, total expenditure and losses contracted by 26%.

Foreign legal persons accounted for the dominant share of the leasing providers' structure, given that nine leasing providers out of the total (16) were either in full or in majority foreign ownership.

Structure of lessees

The structure of lessees, like in the previous years, shows that companies outside the financial sector accounted for the major share (85%) of financial lease investment.

Chart II.2.13. Investment structure by lessee as at 31 December 2014 (%)



Source: NBS.

Farmers made 4.9% of total investment, entrepreneurs 3.6% and public enterprises 2.4% (Chart II.2.13).

Structure of investment by lease asset

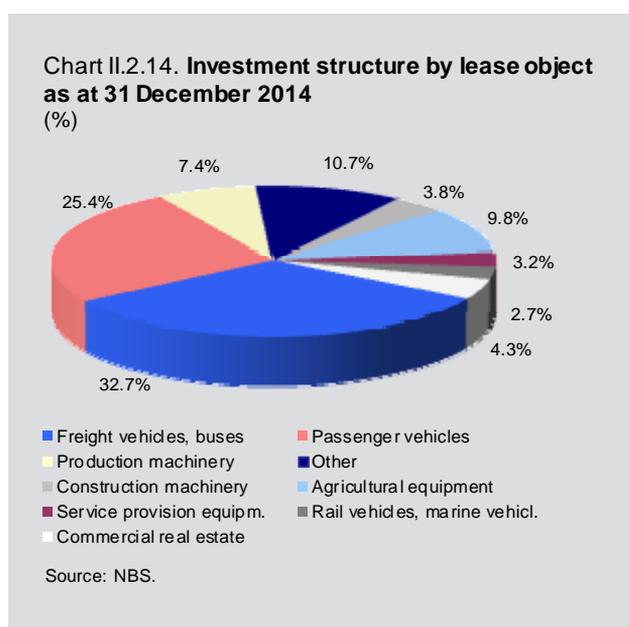
At end-2014, the structure of investment by lease asset changed slightly from a year earlier. These changes reflected to a certain extent the characteristics of the structure of lessees, primarily the increase in the share of farmers. Financing of freight vehicles, minibuses and buses and passenger vehicles accounted for the bulk of the entire structure – 32.7% and 25.4% respectively. On

the other hand, financing of agricultural machines and equipment rose from 8.7% to 9.8% (Chart II.2.14).

Despite the reduction in total expenditure and losses, the overall pre-tax result at the financial leasing market stood at RSD 987.4 mln and was negative (as was in 2013 when it amounted to RSD 2.3 bln). Because of the negative pre-tax result, profitability indicators of leasing providers were mostly negative at the end of 2014.

It follows from the above that the situation in the financial leasing sector cannot be assessed as satisfactory. Still, even despite the negative results

the country's financial system, as confirmed by the fact that the balance sheet total of financial leasing providers accounts for only around 2.2% of the banking sector balance sheet total.



posted by financial leasing providers, we may conclude that the risks prevailing in the sector do not pose a threat to the stability of the financial system as a whole. This conclusion is based on the sector's insignificant share in

III. Financial markets

In early 2014, financial markets were much under the sway of the Fed's decision to taper its quantitative easing programme. The effect extended through the remainder of the year, though to a somewhat lesser extent. Interest rates of central banks of advanced economies stayed low in 2014, which also affected financial markets worldwide. Nevertheless, the announced rise in the Fed's interest rates in 2015 may turn out to be a source of risk for the financial market of the Republic of Serbia, since dinar government bonds are extensively purchased by foreign institutional investors. On the other hand, the quantitative easing programme which the ECB started implementing in March and the precautionary stand-by arrangement approved by the IMF could act towards reducing that risk.

III.1. Money market

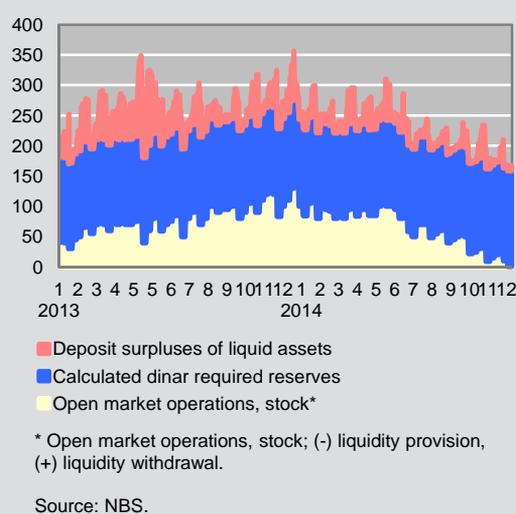
Early 2014 was marked by the Fed's decision to begin QE tapering and the announcement of an interest rate increase in 2015.

On the whole, the domestic market saw divergent movements in the first two quarters. In Q1, non-residents actively engaged in FX purchases, while resident demand for foreign currency increased as well, chiefly due to seasonal reasons (energy importers). Judging the pressures on the exchange rate to be short-term, the NBS intervened in the FX market by selling foreign currency until mid-March, which led to a reduction in dinar liquidity. In order to secure a portion of the required liquidity in dinars, banks reduced their investments in NBS securities and overnight deposits with the NBS. As the key policy rate stayed unchanged (9.5%), no major oscillations were recorded in terms of the average repo rate³⁵ (7.57% at end-March 2014, virtually unchanged relative to 7.55% at end-December 2013).

Contrary to Q1, Q2 saw increased foreign investment in government securities and moderate appreciation pressures. Aiming to smooth out excessive volatility of the exchange rate, during this quarter the NBS engaged only in buying foreign currency in the FX market. This boosted dinar liquidity of banks, which encouraged

investments in NBS securities and overnight deposits with the NBS. Still, the key policy rate was reduced with great caution, due to the risks emanating from the international environment, uncertainty over flood consequences and the necessity to implement additional fiscal consolidation measures. The key policy rate was revised down twice by a total of 100 bp to 8.5%.

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



³⁵ Repo rate weighted by the amount of sold securities.

The cut in the key policy rate fed into the decline in the average repo rate by 1.18 pp (from 7.57% to 6.39%).

The latter half of the year was also marked by the influence of global factors. These, on the one hand, were the expected “normalisation” of the Fed’s monetary policy (the end of the quantitative easing programme and the announced interest rate increase) and good news about the US macroeconomic indicators, and on the other, the unfavourable data regarding the euro area recovery and uncertainty over the effects of the ECB’s measures. Furthermore, heightened geopolitical tensions over the situation in Ukraine created additional uncertainty in the markets. The above risks in the international environment fuelled depreciation pressures both in the country and across the region. In addition to global factors, uncertainty over the pace and intensity of fiscal consolidation also affected the trends in the domestic financial market. In order to ease excessive short-term volatility of the exchange rate, without targeting a specific trend, the NBS intervened in the FX market as a net seller of foreign currency. Starting from November, the FX reserve requirement ratio was lowered on three occasions, releasing a part of FX liquidity and reducing pressures in the FX market. At the same time, a decision was taken to expand dinar allocations of required reserves on FX liabilities, which freed up additional FX liquidity and reduced dinar liquidity. To secure the required liquidity in dinars, in H2 2014 banks reduced investments in NBS securities (by RSD 87.5 bln to RSD 7.5 bln) and overnight deposits with the NBS (by RSD 7.4 bln to RSD 2.0 bln). In order to avert the above risks, the key policy rate was cautiously reduced by 50 bp to 8.0% in

November, where it stayed for the remainder of the year. However, owing to lower excess dinar liquidity at the level of the banking system, the key policy rate cut of 50 bp did not fully reflect on the average repo rate which fell by 19 bp in H2 (from 6.39% to 6.20%).

In the year 2014 as a whole, the key policy rate was cut by 150 bp (from 9.5% to 8.0%), and the average repo rate by 135 bp (from 7.55% to 6.20%). Due to dinar liquidity needs (for FX purchases, and increased dinar allocations of required reserves – from RSD 145.0 bln to RSD 158.1 bln), banks reduced investments in NBS securities from RSD 110.0 bln to RSD 7.5 bln, and the use of overnight deposit facility with the NBS from RSD 19.2 bln to RSD 2.0 bln.

The decrease in the banking sector liquidity reflected not only on bank operations with the central bank, but on the interbank money market as well. The average daily volume of trading in the interbank money market in 2014 more than doubled relative to 2013 (growing from RSD 1.1 bln to RSD 2.5 bln). As early as in Q1, the average volume rose from RSD 0.3 bln to RSD 1.6 bln, while reaching RSD 2.2 bln in Q2 and practically retaining the same level in Q3 (RSD 2.1 bln). However, NBS interventions in the FX market through FX sales and changes in reserve requirements induced a further decrease in excess dinar liquidity, driving up the average daily volume of trading in the interbank money market to RSD 4.0 bln in Q4. The highest average monthly trading volume was recorded in December (RSD 5.6 bln), with extremely high daily takings in the last week of December.

Chart III.1.2. Key policy rate, BEONIA, and interest rates on deposit and loan facilities

(daily turnover monthly averages)

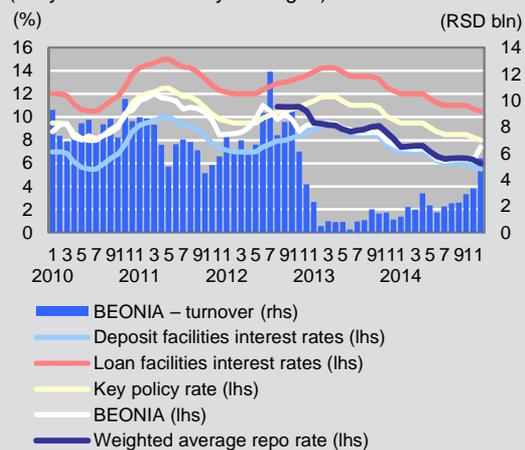
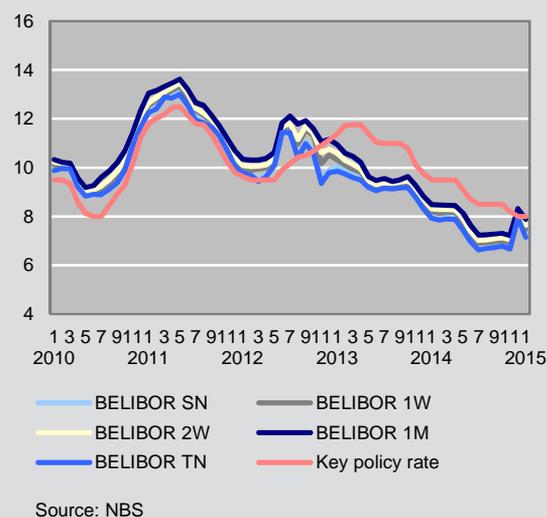


Chart III.1.3. BELIBOR interest rates
(monthly averages, %)



Despite diminished excess liquidity, for most of the year BEONIA continued fluctuating far below the key policy rate (at the level between 200 to 240 bp below the key policy rate), which drives us to conclude that the system is still operating in conditions of excess liquidity. BEONIA averaged 7.4% in December, while average BELIBOR rates ranged between 8.0% for the shortest and 8.8% for the longest maturity. Still, in the last ten days of December (from the start of the required reserve maintenance period), characterised by a further increase in dinar demand, some banks used credit facilities, while BEONIA moved in the upper half of the NBS interest rate corridor. Owing to these temporary movements, at end-2014 BEONIA came at 9.45%, 2.41 pp above a year earlier. Influenced by the same factors, BELIBOR rates of all maturities trended along a similar path. However, after temporary growth in late December, interbank money market rates returned in early 2015 below the key policy rate, i.e. to the lower half of the NBS interest rate corridor.

Both three- and six-month rates on T-bills declined in 2014, mostly on the back of NBS monetary policy easing in 2014. On the whole, rates on these securities moved above the average repo rate and below BELIBOR rates of the same maturity and, though mirroring its movement, far below the key policy rate.

The stock of sold T-bills at end-2014 totalled RSD 8.9 bln, down by RSD 6.2 bln relative to end-2013. In 2014, 15 auctions of T-bills were held – 9 auctions of three- and 6 auctions of six-month bills, March being the only month in which no auctions of shorter-maturity securities

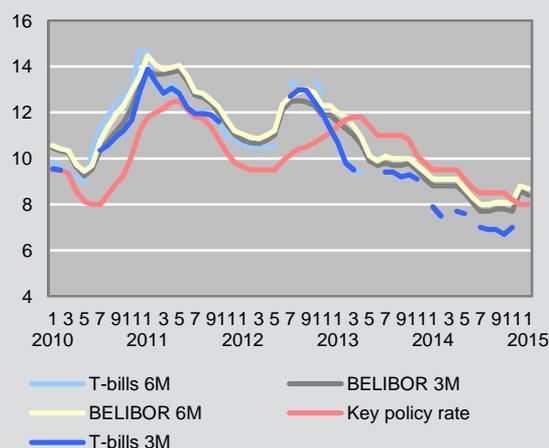
were held. The total value of T-bill issues in 2014 amounted to RSD 48 bln, of which RSD 29 bln was on account of three-month and RSD 19 bln of six-month bills. This indicates a decrease relative to 2013, when RSD 57 bln-worth of securities with maturity up to one year were offered up for sale. Demand for bills outstripped supply and equalled RSD 61.1 bln (127% of the issue), while the actual performance was lower (at RSD 38.2 bln, or 80% of the issue). Demand for three-month bills exceeded supply until September, which, along with the key policy rate cut, contributed to a fall in rates on these securities. The lowest demand for three-month bills was recorded in October and November. No three-month bill auctions were held in December, but judging from the performance at the six-month bill auction, demand for bills was renewed. For the year as a whole, the rate on three-month bills was cut by 209 bp to 7.0% and on six-month bills by 188 bp to 7.1%. The rates on bills of different maturities roughly levelled off because the last auction of three-month bills was held in November, before the key policy rate was cut by 50 bp, while the auction of six-month bills was organised in December when the key policy rate was already at 8%. Considering that in 2014 the fall in rates on bills was sharper than the key policy rate cut, we may conclude that, in addition to NBS monetary policy easing, the bill rates were also influenced by the demand for these securities.

III.2. Securities market

The Serbian market of corporate and municipal bonds is not sufficiently developed. The share market is also shallow, considering that shares of only few issuers are actively traded, and at rather low trading volumes. There have been no initial public offerings of company shares on the stock exchange as yet. Further development of the Serbian financial market would open up an alternative channel for financing of the economy, primarily through the issuance of debt securities, but also through initial public offerings of equity securities.

On the other hand, the market of government securities has developed significantly over the last five years and its development is continuing. Still, as in other emerging market economies, these markets are extremely sensitive to the decisions of central banks of advanced economies. With the low interest rate policy of central banks of advanced economies which marked 2014 and the use of unconventional monetary policy measures, despite the tapering of the Fed's QE programme, yields on government securities of advanced economies remained low throughout 2014. In pursuit of higher yields, foreign

Chart III.1.4. Money market interest rates and auctions of government bills
(monthly averages, %)



Source: Ministry of Finance and NBS.

Chart III.2.1. RSD government securities, outstanding stock
(nominal value in RSD bln)

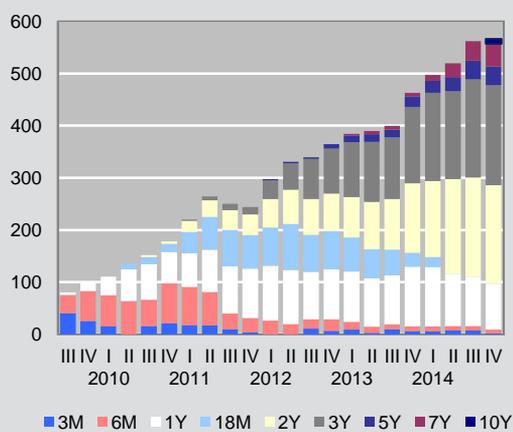
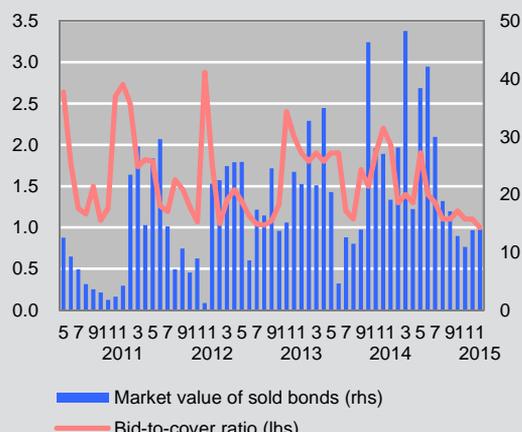


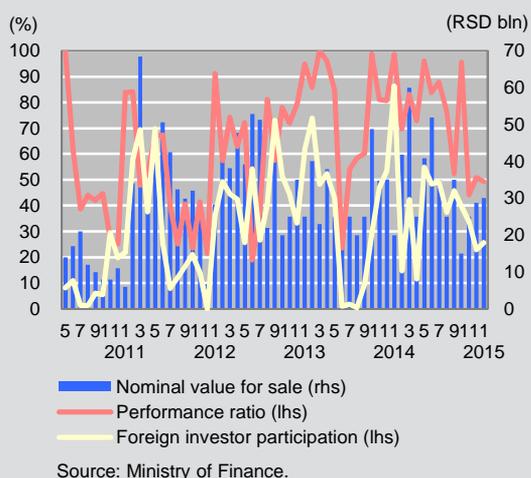
Chart III.2.2. Primary market demand for RSD government bonds
(auctions, in RSD bln)



investors continued investing in emerging market securities. Foreign investors increased investments in Serbian bonds, motivated by conditions in both the international capital market and those in the domestic market, notably the relatively stable exchange rate and low inflation. Thus, although 2014 saw tendencies in both directions – growing exposure to the Republic of Serbia, but also withdrawal from the domestic market, low interest rate policy of leading central banks which marked 2014, as well as the results achieved in respect of macroeconomic stability in Serbia, drove foreign investors to increase exposure to the Republic of Serbia. Nevertheless, the announced growth of the Fed's interest rates in H2 2015 may pose a major challenge to emerging markets in terms of access to external borrowing, Serbia included. On the other hand, that risk may be reduced by the quantitative easing programme which the ECB began implementing in March 2015. Stronger consolidation of domestic public finance would lower the risk premium and the cost of borrowing, making the economy more resilient to external shocks. Investors received a positive signal that public finance is moving in this direction when the IMF approved a three-year precautionary stand-by arrangement to Serbia in early 2015.

As a result of the above movements, the stock of dinar government bonds at end-2014 totalled RSD 557.5 bln, up by 24.5% on end-2013. Ten-year dinar securities were successfully issued in October, attracting high non-resident demand. This confirmed the confidence in the

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



domestic currency and additionally extended the dinar yield curve (from seven to ten years).

Conditions in the market of dinar government securities were shaped by both international and domestic factors. QE tapering and tensions in Ukraine dented foreign investors' interest at auctions of dinar government securities in February and April. A decline in the country risk premium and the ECB's decision to ease monetary

Chart III.2.4. **Structure of portfolio of dinar government bonds from primary auction**

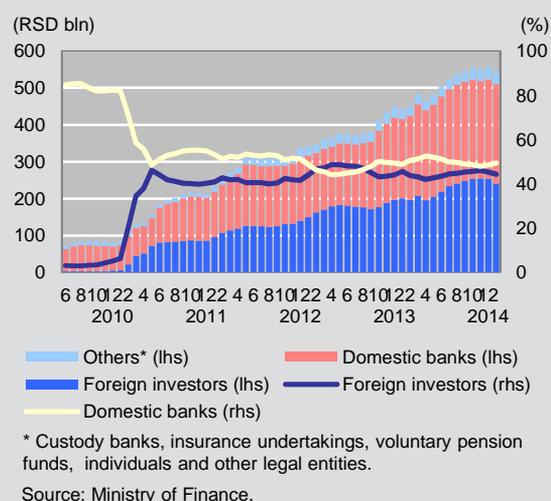
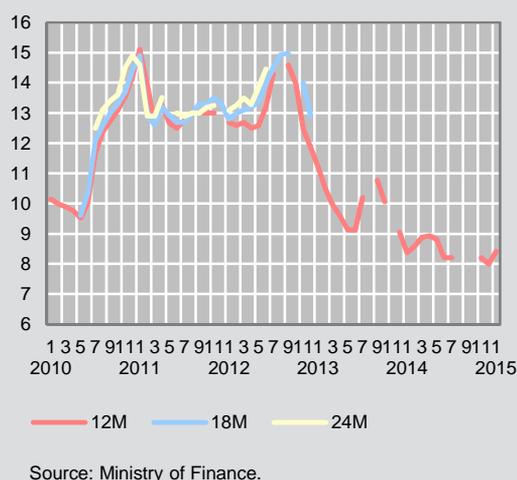


Chart III.2.6. **EUR government bonds, outstanding stock**
(nominal value, EUR mln)



Chart III.2.5. **Interest rates on zero coupon RSD government bonds**
(auctions, weighted monthly averages, %)



policy encouraged foreign investors to increase investments in government bonds in May, June and July. Therefore, the bid-to-cover ratio at primary auctions reached 1.9 in May.

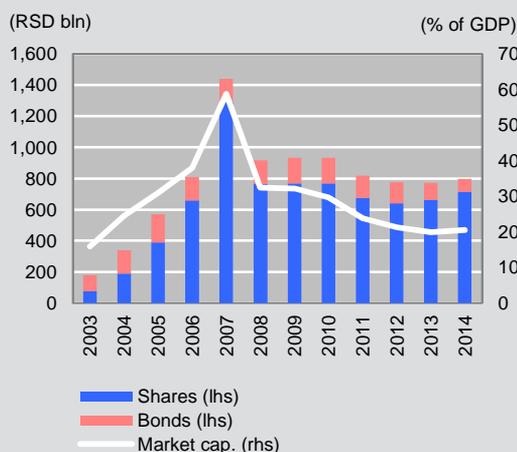
Towards the end of the year, in November and December, the average performance at auctions of dinar government bonds was slightly weaker – 44.1% and 50.9%, respectively. Due to the diminished need to borrow in

dinars in this period (external borrowing in Q3 improved budget liquidity), the government sold a lower amount of securities than initially offered, thus increasing competition among investors, which pushed interest rates down. Somewhat weaker performance was also caused by growing risk aversion of foreign investors due to geopolitical tensions and the conclusion of the Fed's QE programme in late October. Despite changing market conditions, banks and foreign investors remained the most significant buyers of government securities, with a 94% share in the portfolio of dinar securities at end-2014. Domestic institutional investors (insurance undertakings, pension and investment funds) and natural persons showed much less interest in dinar government bonds.

Market conditions, key policy rate cuts in 2014 by 150 bp and continued high demand for dinar government bonds were the key reasons behind the annual fall in interest rates at primary auctions of government bonds. The data from the last auctions of the year indicate that yields on one-year bonds (53-week) fell by 89 bp to 8.0% during 2014. Rates on two-year bonds fell slightly more, by 109 bp to 9.0%, while those on three-year securities (accounting for the largest share in the total portfolio of dinar bonds) went down by 48 bp to 9.7%.

The stock of government securities issued in euros in the domestic market rose by EUR 0.9 bln to EUR 2.1 bln in 2014. These securities are issued only with a maturity of over one year. Two-year securities made up the largest

Chart III.2.7. **Belgrade Stock Exchange market capitalisation**



Sources: Belgrade Stock Exchange and NBS.

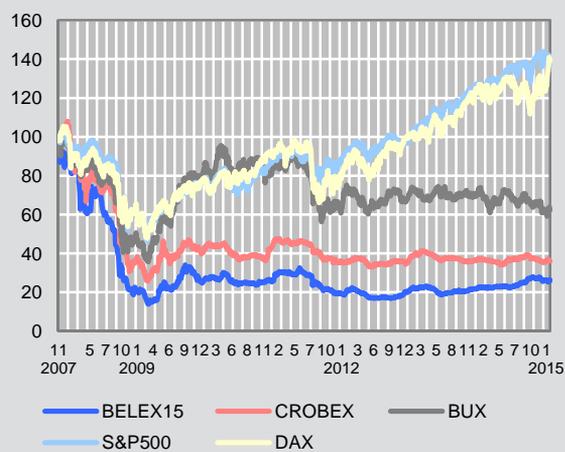
component of the total portfolio (40%), whereas ten-year euro-denominated securities were issued for the first time in April 2014. The largest component in the portfolio of these securities is held by banks and insurance undertakings.

An upturn was also recorded in the secondary market of government securities. At RSD 286.3 bln, secondary trading in government securities increased by 16.5% relative to 2013. Secondary trading in euro-denominated bonds reached EUR 511.9 mln, which is 4.2 times higher than in 2013. Such strong growth in secondary trading in euro-denominated securities in 2014 was also caused by the pronounced overall growth of their portfolio.

Though the secondary market of dinar government securities is gradually developing, it still cannot be considered liquid because of a small number of transactions and frequently low daily trading volumes. Much of the trading consists of transactions conducted after the primary settlement day. Of total secondary trading in dinar securities, trading in dinar government securities, taking place up to two business days from the primary settlement day, accounted for 35.8%. It can therefore be assumed that buyers were actually investors who had reached the upper limit to the size of competitive bids at primary auctions (50% of total issue).

Despite the progress achieved, the market of government bonds in Serbia remains highly vulnerable to risks from the international environment, chiefly due to high participation of foreign investors. Important for further

Chart III.2.8. **Stock market indices**
(15 Nov 2007 = 100)



Source: Bloomberg.

development of the domestic capital market is not only macroeconomic stability, reflected primarily in low and relatively stable inflation and comparatively stable exchange rate in 2014 (which were maintained despite numerous shocks), but also a stronger base of domestic institutional investors.

Market capitalisation of the Belgrade Stock Exchange (BSE) climbed 3.1% from end-2013 to RSD 796.6 bln in late 2014. In 2014, BELEX15 (the index of the most liquid shares) rose by 19.5% y-o-y, which made it one of the best performers in the region. Most of the growth was recorded in Q3, when the index skyrocketed by 16.1%.

Contrary to increased market capitalisation, the average monthly turnover ratio of 0.2% suggests low BSE liquidity. The ratio is lower than in 2013 (0.3%) and significantly below the pre-crisis level of 1.3% (2007). It is calculated as the ratio between total monthly trading returns and the average stock market capitalisation at the end of the month observed and the end of the previous month. However, it fails to adequately illustrate the degree of stock market liquidity as it also covers block trading which, being a one-off purchase of shares, is only registered on the BSE and is not an indication of its actual liquidity. Total trading in shares in 2014 amounted to RSD 15.6 bln, down by RSD 12.9 bln from 2013. Trading in the open market represented a large portion of trading in 2014 (RSD 9.0 bln), of which RSD 0.4 bln referred to a single transaction in December, when the majority owner of a company assumed the remaining shares.

Chart III.2.9. Belgrade Stock Exchange equity market turnover

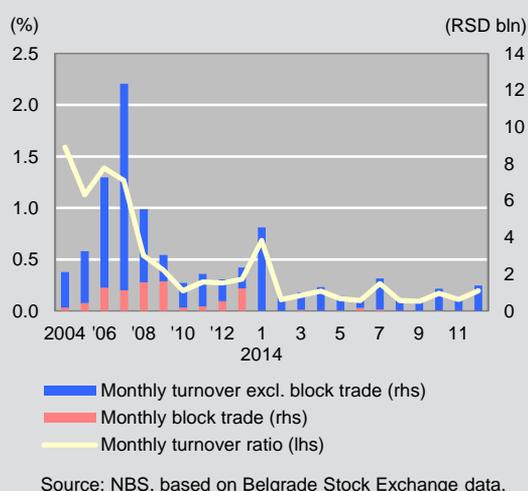
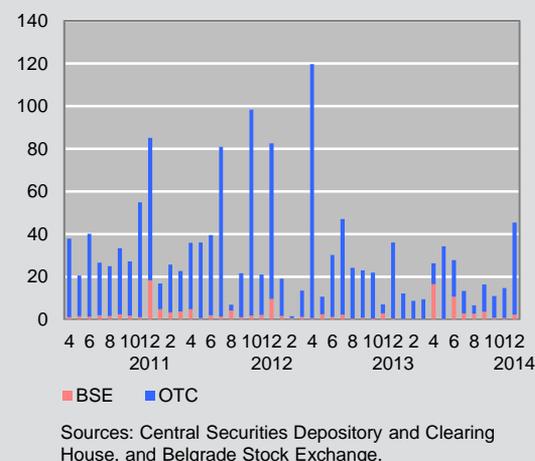


Chart III.2.10. Government frozen foreign currency savings bonds turnover (EUR mln)



Foreign investor participation in total trading in 2014 (48.15%) was significantly lower than in 2013 (72.3%). Foreign investors were more active on the sale (50.2%) than on the purchase side (45.8%).

In addition to shares, frozen FX savings bonds are also traded on the BSE (zero-coupon euro-denominated bonds issued to citizens to settle debt under FX savings). Although listed on the BSE Prime Listing, these bonds are generally traded on the OTC market. Frozen FX savings bonds mature on 31 May of each year through to 2016 (with only 2015 and 2016 remaining).

The market of municipal bonds is still undeveloped in the Republic of Serbia. In December 2014, the City of Šabac issued municipal bonds through a public offering, which marks a positive movement, this issue being the first of the kind (so far, only three local self-governments (Novi Sad, Pančevo and Stara Pazova) have issued bonds, but for pre-defined buyers). The issue worth RSD 400.0 mln was sold in entirety, at the fixed interest of 6.0%. These securities are euro-indexed, with a seven-year term. Interest will be paid annually – as of the first year, and the principal as of the third year. In early 2015 (5 January), the bonds were listed on the BSE open market, which may well represent an additional step forward in the development of the domestic capital market.

Given their insignificant supply, trading in corporate bonds is particularly undeveloped. No trading in these securities was recorded on the BSE in 2014.

III.3. Financial infrastructure

Financial infrastructure includes payment systems that facilitate the execution of payments and systems for settlement of financial instruments. A safe and efficient financial infrastructure is a prerequisite to the stability of the financial market and the financial system as a whole.

Payment systems provide for timely transfer of funds between or among participants in the system and enable processing, netting and/or settlement of payment transactions. Securities settlement systems enable clearing and settlement of transactions using different financial instruments.

Payment systems are designed and organised so as to minimise the risk exposure of payment system participants. Still, due to their strong interdependence, potential risk materialisation can cause systemic shocks and give rise to instability in the financial system at large. For this reason, the authorities need to provide for safe and sound functioning of all payment systems and for adequate management of risks, most notably credit, operational and liquidity risks.

Safe, sound and efficient functioning of the Real Time Gross Settlement System (RTGS) which is operated by the NBS and which facilitates the execution of payments between and among the participants in real time, is of special importance for preserving the stability of the financial system of the Republic of Serbia. Its systemic

importance lies in the fact that it provides for the execution of payment transactions with a view to implementing the monetary policy of the NBS, as well as for settlement of financial liabilities and claims originated in other payment systems and systems for settlement of financial instruments. Participants in the RTGS system are able to **manage credit risk** as the settlement of mutual transactions is carried out in central bank money, while participants in the clearing system are obliged to make available an appropriate amount of limit for calculated negative net position (debit caps).

Participants in the RTGS system are also able to **manage liquidity risk** as the system enables them to view all of their transactions, account balances and changes in the sequence of execution of payment orders. Besides, within its regular instrumentarium, the NBS enables commercial banks to use intra-day interest-free loans. These are collateralised 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 possibility for banks to obtain additional liquidity in this way is of vital importance for smooth operation of payment systems.

A total of 131.3 mln payments were carried out through the NBS RTGS system in 2014, with total turnover amounting to RSD 44,917.4 bln. The highest monthly turnover was recorded in January (RSD 4,641.5 bln). The value of turnover in 2014 surpassed the average turnover recorded in the 2010-2013 period by RSD 4,137.0 bln.

One of the indicators of the importance of this type of systems for the national economy is the value of payments executed in these systems (total value of turnover) relative to the GDP. The fact that RTGS

turnover in 2014 was around 12 times the value of Serbia's GDP, unambiguously confirms the importance of the RTGS system for our economy.

The NBS clearing system uses a liquidity-saving multilateral net settlement mechanism and is organised in three clearing cycles.

Given that in certain circumstances the financial infrastructure may not only augment, but also generate the systemic risk, central banks have begun to include financial infrastructure in their stress tests more frequently. Stress test is a tool which inter alia may be used to measure the resilience of financial infrastructure to extreme and potential shocks.

It is precisely because of the importance of financial infrastructure for the stability of the financial system as a whole that the IMF recommended, in its methodology for macroprudential stress testing, that regular exercises should include stress testing of financial infrastructure.³⁶

Unlike stress testing of the banking sector, stress testing of payment systems, central securities depository and securities settlement systems does not include quantitative analyses of their balance sheets, but rather of their safety, soundness and reliability in case of risk materialisation. The key risks analysed within stress testing are the operational, credit and liquidity risks. In fact, stress tests exercises focus on the immediate response of a financial infrastructure, i.e. on the infrastructure's capacity to end the business day and operate over the several business days after the occurrence of the shock.

The use of stress tests helps assess the short-term impact of events, such as a bank closure or disruptions in communications links which prevent participants from making a payment. The analysis captures the impact on a single payment system participant, but also the effect of systemic contagion. The degree of impact of an analysed scenario on the remaining participants will depend on their available collateral, initial liquidity and the potential to increase current liquidity.

Amendments to regulations governing payment systems

The NBS is making ongoing efforts to harmonise national regulations with EU regulations governing payment

Table III.3.1. Value and number of transactions in RTGS

	Period average 2010–2013	2014
NBS RTGS		
Value, RSD bln	40,780.40	44,917.39
Number of transactions, mln	134.64	131.34

Source: NBS.

³⁶ Macrofinancial Stress Testing – Principles and Practices, 2012, IMF.

systems.³⁷ Such efforts, among other things, resulted in the adoption of the Law on Payment Services which came into effect on 26 December 2014 and will be applied as of 1 October 2015.

In addition to establishing the legal framework for the provision of payment services and introduction of new payment services providers, namely payment institutions and electronic money institutions, this Law determines the rules for setting up and operating payment systems, as well as for their oversight. The Law also introduces the concept of an important payment system i.e. a payment system which is of importance for the stability of the financial system and which, in addition to the requirements prescribed for all payment systems, must also meet additional requirements set forth by the Law on Payment Services and regulations to be adopted pursuant to this Law. The NBS prescribes the criteria upon which it determines the importance of a given payment system for the stability of the financial system.

In regard to payment systems, the Law on Payment Services regulates the following:

1. General characteristics of a payment system – The Law regulates operations in the payment system, defines persons eligible to act as an operator and a participant in the payment system, introduces the concept of “connected payment systems” and “settlement agent”. Furthermore, the Law determines the content of operating rules of a payment system, as a document that closely regulates financial system operation. Conditions for participating in the payment system must be objective, non-discriminatory and proportionate, while participation in payment systems may only be restricted to the extent necessary for safeguarding against financial, operational, business and other risks, and preserving financial and operational stability of the system.

2. Operating licence of a payment system – The Law closely regulates the manner in which the application for payment system operating licence is submitted, licence granted, or application denied, the initial capital of the operator that may not be less than EUR 100,000 in the dinar equivalent value at the official middle exchange rate, change in circumstances after operating licence for a payment system is granted, expiry of the operating licence of a payment system etc. These decisions prescribe the rules for the establishment of payment systems.

3. Payment system operation – provisions of the Law task the operator with an obligation to continuously ensure and enhance safe and sound operation of the payment system and maintain the minimum amount of capital; to submit to the NBS the application for consent to amendments to operating rules of the payment system; to inform the NBS in case of entrusting operating activities of the operator to another person etc.

Risk management in the payment system includes managing risks in this system, particularly financial and operational risks.

Financial risk in the payment system is the risk of occurrence of adverse effects on payment system operation due to inability of a participant or another person to settle his due liabilities (liquidity risk), or to permanently settle all his liabilities (solvency risk).

Operational risk in the payment system is the risk of occurrence of adverse effects on payment system operation due to omissions on the part of employees, deficiencies in the operation of information and other systems, inadequate internal procedures and processes, and unforeseeable external events.

Provisions of the Law on Payment Services regulating payment systems operation and secondary legislation that will be adopted pursuant to the Law will enhance risk management in payment systems, which is one of the key segments of financial stability. Smooth execution of payment transactions is a prerequisite for smooth operation of payment institutions, and consequently for the stability of the financial system.

4. Settlement finality in an important payment system. Provisions of the Law regulate settlement finality in an important payment system while aiming to significantly reduce legal and systemic risks during the execution of transactions in these systems. These risks in the operation of important payment systems may result in diminished stability of financial market as a whole. Operating rules of an important payment system need to determine the moment of acceptance of a transfer order in an important payment system, and the moment after which the participant and a third person may not recall such order (irrevocability moment), which is of importance in case of participants' inability to settle their liabilities.

³⁷ Directive 2007/64/EC on payment services in the internal market, Directive 98/26/EC on settlement finality in payment and securities settlement systems and Directive 2009/110/EC on the taking up, pursuit and prudential supervision of the business of electronic money institutions.

Securities clearing system

As regards securities settlement systems, in the Republic of Serbia these activities are operated by the Central Securities Depository and Clearing House (Central Securities Depository). It performs clearing and settlement against transactions in financial instruments, and identifies liabilities and claims of its members and their clients after the settlement of mutual claims and liabilities. Central Securities Depository also operates accounts of its members, including the handling of payments and returns on financial instruments, and transfers financial instruments to accounts of its members and their clients. Transfers of financial instruments from one account to another are made simultaneously with payments according to the DvP principle (delivery vs. payment), i.e. the transfer of financial instruments from the seller to the buyer is effected simultaneously with the transfer from the buyer to the seller.

The Central Securities Depository is a joint-stock company. Its rights, obligations and responsibilities are defined by the Capital Market Law and Law on Companies. Under the Capital Market Law, the Securities Commission regulates and supervises the Central Securities Depository, while the NBS monitors the legality of payment operations and issues regulations governing the method of performing payment operations through money accounts with the Central Securities Depository.

III.4. Real estate market

Given that real estate is frequently used to secure bank loans, change in prices of mortgaged real estate significantly affects the quality of banks' credit portfolios. Hence, the failure to adequately value real estate is one of the risks to the financial system. For this reason, numerous relevant institutions are involved in the adoption of national real estate valuation standards and minimum criteria to regulate appraiser activity. Also, it is planned to establish a framework for licensing of appraisers in the near future in accordance with the best international practices.

Owing to its features, real estate is most frequently used to secure loans. Its price variations affect the price and availability of loans, as well as the quality of bank portfolios. Trends in the real estate market must therefore

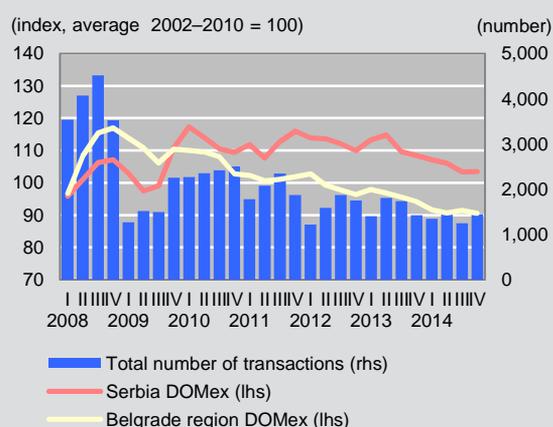
be monitored and analysed, and activities undertaken to improve its performance.

There is no comprehensive index in Serbia either for residential or commercial properties. The only real estate index is DOMex, compiled by the National Mortgage Insurance Corporation since 2012. DOMex reflects purchase/sale prices of real estate financed by loans insured by the Corporation.

DOMex is obtained by comparing the average value of all achieved prices per square metre in a specific territory over a particular period with the average value of all achieved prices per square metre in the base period. The sum of data used for DOMex calculation does not include all real estate purchased and sold in Serbia because data on achieved prices for real estate financed by cash or uninsured loans are not included. Besides, its calculation does not exclude the impact of change in the composition of the real estate index basket through observed periods (e.g. new construction developments) or changes in the quality of traded properties.

In 2014, DOMex for Serbia lost 4.6% y-o-y, while DOMex for Belgrade experienced a milder y-o-y drop of 3.8%. The decline in prices may be explained by the continued weak housing demand, which is confirmed by the results of the Bank Lending Survey. The surveyed banks believe that dented demand for housing loans in 2014 was due to low real wages and high unemployment.

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



Source: National Mortgage Insurance Corporation.

Limited housing demand resulted in reduced residential purchases. A total of 5,492 residential real estates financed with insured loans were sold in 2014, down by 13.9% from 2013 and 2.8 times less than in 2008 (15,650 residential real estates). Of all residential real estates financed with insured loans, nearly half (46.5%) were purchased in Belgrade.

Along with negative trends on the sale side, unfavourable movements were also registered in terms of the repayment of mortgage loans. The number of mortgage loans in default declared due for payment by the National Mortgage Insurance Corporation, where the Corporation, instead of clients, will pay annuities until the mortgaged property is sold, is still on the rise. An increase in the value of annuities paid in respect of insured loans, in the event of a larger number of loans falling due at the same time, represents a risk that needs to be taken into account. However, prices may continue to decline in the period ahead if a large number of properties come on the market following foreclosure of loans secured by mortgages and are sold by banks to settle their loan receivables. Also, prices may decline on the back of further weakening of demand, prompted by contraction in disposable income of Serbian households in the coming period.

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 a 60m² apartment to the average disposable income of an

average household in Serbia³⁸. 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-2014, this ratio was 9.2 years which, although below its multi-year average, still indicates that a household earning an average income cannot afford to buy an apartment. The slight drop in the ratio relative to end-2013 (9.3 years) resulted at the same time from an increase in disposable income of an average Serbian household by 1.0% (Q4 2014 relative to Q4 2013) and a fall in DOMex by 4.6% over the same period.

Since the beginning of the global economic crisis, the construction sector has contracted significantly. Credit debt of the construction sector was RSD 74.9 bln in late 2014, or 8.8% of total loans extended to companies, excluding the financial sector and public enterprises. NPLs in this sector are still high. Bank receivables from the construction sector in respect of NPLs were 48.3% of total loans extended to this sector at end-2014. Sizeable NPLs of the construction sector are one of the channels through which risks from the real estate market spill over to the financial system and adversely affect its stability.

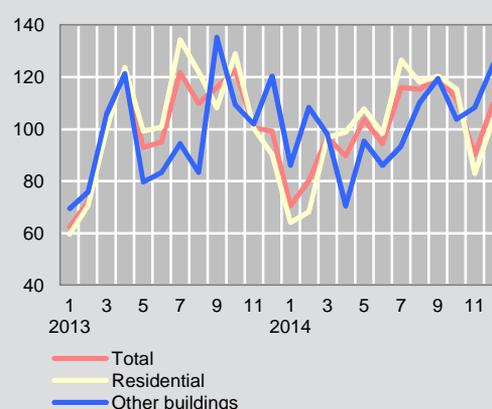
Based on data of the Statistical Office of the Republic of Serbia, the value of construction works at constant prices increased by 0.4% in 2014 from the year before. There were hints of recovery of the construction industry in Q4 2014 when the value of works rose by 39.6% relative to

Chart III.4.2. Housing availability indicator (Price-to-income) (in years)



Sources: NBS, based on data provided by the Statistical Office of the Republic of Serbia and the National Mortgage Insurance Corporation.

Chart III.4.3. Indices of the number of issued new construction building permits (index, 2014 = 100)



Source: Statistical Office of the Republic of Serbia.

³⁸ Source: Serbian Statistical Office – Household Consumption Survey.

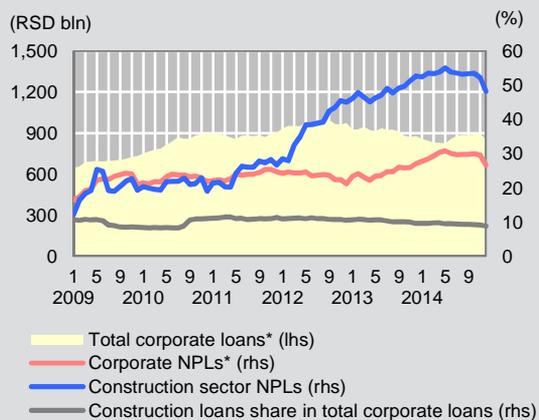
Q3, chiefly on account of the completion of the Mihajlo Pupin Bridge. The same quarter saw an increase in the value of construction works on residential buildings in the territory of the Republic of Serbia at constant prices by 12.0%. Furthermore, the total number of issued building permits for new construction climbed by 1.8% from 2013. The number of permits issued for the construction of residential buildings was up 1.1%, and 3.9% for other buildings. The issued building permits indicate that the number of apartments in 2014 inched down by 0.4% from 2013, while their surface area went up by 4.3%. The full implementation of the new Law on Planning and Construction, which envisages, inter alia, electronic issuance of construction permits in less than a month at a single counter, should push down construction costs and spur investments in the construction industry, which would speed up its recovery.

The new Law on Intermediation in Trade and Lease of Real Estate, which governs the sales procedure and requires that real estate brokers have the necessary expertise and a licence to perform these activities, is expected to enhance legal security in the real estate market.

Moreover, regulation of the profession of real estate appraisers and the application of internationally accepted real estate valuation standards have been recognised as requirements for improvement of the real estate market in Serbia. Real estate valuation in Serbia is currently performed by court experts. The Law on Court Experts regulates, to a certain extent, the terms for conducting expertise; however, given the absence of criteria for entry into/deletion from the register of court experts, as well as the lack of appraisal standards and the obligation of continuous education, the process calls for improvement. In recognition of the importance of regulation of the valuation profession, a legal framework establishing the profession of licensed real estate appraisers, which will also define the terms, criteria and manner of performing this activity, will be developed in the coming period.

Inadequate real estate valuation emerges as a significant risk because banks are directly exposed to the price risk of real estates through mortgage loans. Inadequately secured loans were among the triggers of the global economic crisis and provoked impairment of public trust in financial institutions. For this reason, the National Bank of Serbia plans to start collecting data on residential and commercial properties used to secure loans. This database will in the future be expanded to include data on land used to secure loans. In addition to ensuring more adequate valuation of mortgages, the aim is also to improve the analyses of the real estate market, whose functioning is of great importance to financial system stability.

Chart III.4.4. Construction sector's ratio of housing NPLs



* Excluding financial sector and public enterprises.
Source: NBS.

Text box 4: Setting up the database of collateralised property

By using property as a means of securing loans, banks are directly exposed to the price risk and the risk of bad initial property valuation, which may result in inadequate (insufficient or excessive) loan collateral coverage. For this reason, adequate property valuation is a necessary, though not a sufficient condition for proper assessment of credit risk in the banking sector. Aware of the need to improve collateral valuation, the NBS initiated the project of setting up the database of collateralised property in the Republic of Serbia. Within the project, to be implemented in the course of 2015, banks will have an obligation to submit monthly appraisal data of collateralised property. The project will enable adequate valuation of collateralised property, the analysis of property market risks and loan collateral coverage, and calculation of the nationwide property value index.

The collected data will be relevant not only for appraisers and banks, but also for the NBS in decision making on the introduction, change or abandonment of tools such as the loan-to-value (LTV) and debt-service-to-income (DSTI) ratios. Most often applied jointly, these macroprudential tools are used to regulate the property market, credit activity and client mortgage debt. They can be highly efficient if used counter-cyclically, assuming an adequate methodology of property valuation and swift revaluation in case of changed market conditions is applied. A reduction in the maximum LTV (DSTI) level directly reflects on dampened demand for loans as the number of potential loan beneficiaries declines, whereas its increase acts in the opposite direction. In 2011, the LTV was limited at 80% for FX and FX-indexed mortgage loans extended to natural persons in Serbia.

A thorough analysis was followed by establishment of the minimum set of data on collateralised property to be submitted by banks. These data include:

- real estate address, including the registration number of the cadastral municipality, numbers of the cadastral parcel and property folio etc;
- number of floors and surface area;
- property structure;
- technical features and description of property;
- appraised property value and data on the appraiser etc.

Having a single database will enable us to track changes in valuations through time and to monitor the deviation of individual valuations from market transaction values. The long-term objective of the project is to enhance collateral appraisal and reduce credit risk, which should, on the whole, contribute to further strengthening of financial stability.

IV. Financial stability

IV.1. Regulatory framework as support to financial stability

IV.1.1. Possible regulatory measures to contain systemic risks

Each year, in its Annual Financial Stability Report, the NBS sets out the measures that can be taken in order to contain the most important systemic risks identified in our financial system. The measures are listed in Table IV.1.1, and are explained in detail according to the areas where it is necessary to contain systemic risks.

Table IV.1.1. Recommendations

No	Brief description
1/2013/2014	<i>Draft plans to reduce the share of NPLs</i>
3/2013/2015	<i>Improve and promote the framework for consensual financial restructuring of companies</i>
4/2013	<i>Enhance the process of out-of-court mortgage enforcement</i>
6/2013	<i>Strengthen domestic dinar sources of financing</i>
8/2013	<i>Introduce different insured amounts and insurance premiums for foreign currency and dinar deposits</i>
1/2015	<i>Simulate annuity plans to interest and exchange rate risks</i>

Source: NBS.

Non-performing loans (NPLs)

The share of gross NPLs in total banking sector loans amounted to 21.5% at end-December 2014, up by 0.1 pp on the year before. The high rate of NPLs is both a systemic risk to the financial system (macroprudential aspect) and a risk to individual institutions (microprudential aspect).

NPLs pose a threat not only to the financial system, but also to the economy as a whole due to their potential to slow or delay economic growth by negatively impacting lending activity. As the Serbian banking system is well-capitalised and highly liquid, and NPLs are fully provisioned for, negative impact on lending is generated by banks' risk aversion, which is present even in the most advanced markets. Aversion manifests through the tightening of credit standards, such as setting a limit on the amount and maturity of loans, but also in more stringent requirements regarding collateral.

However, it should be noted that NPLs are sitting on bank balance sheets, though one of the main functions of the banking system is to manage the financial risks in the system. High NPLs in the pre-crisis period indicate that the banking system was not successful enough in performing this function. The financial crisis has only deepened the problem. Though a high share of NPLs is one of the most common consequences of a financial crisis, when lending, banks should take into account all the risks, including the systemic ones that materialise in times of crisis. The choice of the method and financing of NPL resolution is therefore primarily up to the banking sector to perform, while the regulatory authorities should only support the process through the relevant measures.

The significance of the issue of NPLs was also recognised in the Memorandum of Economic and Financial Policies concluded with the International Monetary Fund in February 2015. By signing this document, the Serbian government made a commitment to develop a comprehensive strategy for NPL resolution, in cooperation with the International Monetary Fund, the World Bank and the European Bank for Reconstruction and Development. The strategy will focus on the following areas:

- analysis of banks' capacity (based on a special diagnostic banking sector asset quality review and NPL Survey) to resolve NPLs and giving suggestions for better NPL management, while establishing specialised organisational units in banks to actively engage in resolving the issue of NPLs;
- analysis and suggestions for NPL market development (e.g. better regulation of appraisals and the profession of collateral valuation, primarily mortgaged properties, etc.);
- strengthening the legal framework governing insolvency, and
- promoting consensual out-of-court financial restructuring of companies and removing obstacles for out-of-court foreclosure of mortgaged property.

In order to create the above strategy, a working group was set up in May 2015, consisting of representatives of relevant institutions, with the task of defining activities, timeframe and responsibilities regarding the implementation of the Strategy.

The implementation of the Strategy will also be based on the results of a special diagnostic asset quality review of banks operating in the Republic of Serbia, which should be carried out until end-September 2015 in accordance with the Memorandum of Economic and Financial Policies. This diagnostic review will provide additional insight into banks' policies and processes for NPL resolution. Another objective of the review is to examine in more detail the quality of assets of domestic banks in conditions in which the share of bad assets is becoming a systemic problem in the banking system.

As in the past, the NBS supported the decision to proceed with the comprehensive resolution of the NPL issue. To address the issue of NPLs efficiently, in 2013, together with the IMF, the NBS organised the Belgrade Initiative meeting, where banks, IFIs and other participants had the opportunity to present their proposals for stepping up the process of NPL resolution. In cooperation with the Ministry of Finance and the World Bank, the second

Belgrade Initiative meeting was held in April 2015, focusing on sustainable resolution of the issue of NPLs.

Based on inputs from the first meeting, the NBS produced a Draft Belgrade Initiative Framework for NPL Resolution, based on a case-by-case approach to banks. In line with this framework, the NBS published recommendations in its 2013 and 2014 Annual Financial Stability Reports that advocate primarily the development of an individual approach to NPL resolution by banks themselves. Namely, banks know best the quality of their credit portfolio and their business strategy, and can hence assess what methods suit them best in reducing the share of these loans.

The concept of resolving the issue of high NPLs is explained in further detail. For each proposal/recommendation it was stated whether it is new or previously given.

1/2013/2014 Banks to draft plans to reduce the share of NPLs.

In addition to recommending that banks draft these plans, the NBS defined some of the elements that these plans must contain:

- the targeted share of NPLs in total loans of a certain bank to be achieved by implementing the said plan;
- the expected timeframe for the achievement of the targeted share of NPLs, which may be defined in stages (e.g. the NPL share will be reduced to 15% by a certain date, while full implementation of the plan will cut it down to 5%);
- method of decreasing the NPL share (sale, write-off, restructuring or enforced collection of receivables);
- sources for funding the process: recapitalisation by shareholders, or by a parent bank, in case of a foreign bank's subsidiary; debt or capital financing by IFIs; sale of NPLs to asset purchase and management companies, etc.

3/2013/2015 Improve and promote the framework for consensual financial restructuring of companies.

In order to improve the process of consensual financial restructuring of companies, a working group was set up in January 2015 to prepare the Draft Law Amending the Law on Consensual Financial Restructuring of Companies. The working group was created to improve legal norms in order for the Law to meet the real needs of participants in consensual financial restructuring, and to

enable an adequate resolution of the practical aspects of the process and of the detected problems in the application of the Law so far. It is also necessary to create a base on which processes before the Serbian Chamber of Commerce will be simplified and speeded up. In addition, awareness should be raised in the business community of the advantages of consensual financial restructuring, i.e. the process itself should be promoted. The NBS has always taken part in various projects aimed at promoting and developing the process of consensual financial restructuring.

4/2013 Enhance the process of out-of-court foreclosure of mortgaged property to improve the process of mortgage enforcement.

Amendments to Article 49, paragraph 2 of the Mortgage Law (RS Official Gazette, No 115/2005) would enable, in case of foreclosure, the striking off of the rights of subsequent mortgagees from the registry. In February 2015, the Republic of Serbia assumed the obligation of amending this Article with the signing of the Memorandum of Economic and Financial Policies.

1/2015 Simulate annuity plans for interest rate risk and FX risk.

When informing clients about loan conditions, banks should create two additional alternative plans of loan repayment in order to reduce new NPLs. One plan refers to loans with an agreed variable interest rate, in which case interest rate growth should be assumed after a certain period (depending on the loan maturity). Clients should then be informed clearly 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 refers to loans indexed to a foreign currency, in which case the dinar's depreciation should be assumed after a certain period (depending on the loan maturity). Clients should then be informed clearly by how much their monthly annuity and their total debt would increase in case of higher depreciation of the dinar.

Cross-border deleveraging

Around three quarters of the Serbian banking sector assets refers to foreign-owned banks. Most of them are members of cross-border banking groups. Until the outbreak of the global financial crisis in 2008 they provided the necessary funding primarily by borrowing from the parent banks. However, the crisis and the financial problems that parent banks were facing have ushered in the process of deleveraging. In order to prevent reverse capital flows

from causing financial instability in the countries where the subsidiaries of international banking groups operate, the so-called Vienna Initiative was launched in 2009. The Initiative sought to maintain the exposure of Western European banks towards the CESEE region at the agreed level. However, as the crisis continued, the relevant stakeholders realised that maintaining exposure levels is not a long-term solution, which led to the revamping of the Initiative into Vienna Initiative 2.0 in January 2010. The aim of Vienna Initiative 2.0 is not to maintain exposure levels, but to guard against disorderly deleveraging of international banking groups. It became apparent that the domestic financial system cannot rely on external sources of financing only and that the domestic sources of financing need to be strengthened. Serbia is also exposed to deleveraging risk due to the ownership structure of its banking sector. Because of that, this risk needs to be contained to the extent possible.

6/2013 Strengthen domestic dinar sources of financing.

Relying on domestic sources of finance, notably the dinar sources is of paramount importance in an environment of scarce external sources of funding. 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 financing, through tax and other incentives, seems reasonable. A possible example of these sources in the domestic market are VPFs, whose potential in Serbia is much less utilised than in some other countries.

Euroisation

In itself, a euroised financial system implies a systemic risk that can materialise in the event of a sudden depreciation of the domestic currency. Such a scenario would lead to a major increase in foreign currency liabilities, expressed in the local currency, and considering that most borrowers receive their income in the local currency, their indebtedness would go up suddenly. In this way, the FX systemic risk can give rise to system-wide solvency and liquidity problems both in the corporate and household sectors. Also, in an environment of high euroisation, change in the key policy rate cannot 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 systemic risk. This is why it is necessary to continue working towards greater dinarisation of the Serbian financial system. At end-2014, dinarisation, measured as the share of dinar loans in total corporate and household lending, equalled 31.2% (up by

4.4 pp from end-2013), whereas as the share of dinar deposits in total corporate and household deposits, it amounted to 24.5% (up by 1.4 pp from end-2013).

In March 2012, the Government of the Republic of Serbia and the NBS signed the Memorandum on the Strategy of Dinarisation of the Serbian Financial System which defines three inter-connected pillars for increasing share of the dinarisation:

- monetary and fiscal policy measures to strengthen the macroeconomic environment by securing low and stable inflation, coupled by managed floating exchange rate regime and sustainable economic growth;
- development of the market of dinar securities and the creation of conditions for the introduction of new dinar products;
- development of FX hedging instruments.

We recommend the following in support of the above activities:

8/2013 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 foreign currency and dinar deposits, as well as the same level of insurance deposit premium even though foreign currency deposits entail higher risk for the insurer. Namely, the risk of occurrence of the insured event is higher for foreign currency than for dinar deposits given that there is no FX risk associated with the investment of the dinar sources of

funding. It would be useful in this context to differentiate the insurance deposit premiums and amounts, in accordance with the risk profile of a bank, taking into account the currency of the deposit as one of the more important elements.

Crisis management framework

In its Annual Financial Stability Report the NBS published the recommendation *13/2013 Transpose into domestic regulations the EU directive regulating bank recovery and resolution*. On 15 April 2014, the European Parliament adopted the Bank Recovery and Resolution Directive, which lays down the crisis management framework. The Directive was published in the Official Journal of the EU on 12 June 2014. The NBS emphasised the importance of transposing this directive into national regulations relatively soon, so that we can harmonise the domestic crisis management framework with the *acquis communautaire*. This task is especially important due to the dominant share of subsidiaries of EU banks in the Serbian banking market. In February of this year (RS Official Gazette, No 14/2015), a set of regulations was adopted which included the amendments to the Law on the National Bank of Serbia and Law on Banks and the entirely new Law on Deposit Insurance, Law on Deposit Insurance Agency and Law on Bankruptcy and Liquidation of Banks and Insurance Companies. These regulations were adopted in order to transpose the above directive and became effective on 1 April 2015, thus fully implementing the NBS recommendation *13/2013* (see *Text box 7: Bank resolution – New statutory function of the NBS*).

Text box 5: Macroprudential framework

The global financial crisis has shifted the focus of market participants and the public to the significance of the stability of the financial system and possible costs that may arise if that stability is threatened. This has encouraged a more rapid development of macroprudential policy at both national and international level. Institutions and regulatory bodies with the mandate to strengthen the stability of the financial system have intensified the adoption and implementation of measures in order to reduce systemic risks and maintain and strengthen the stability of the system. Measures aimed at preventing and mitigating financial risks in the system are called macroprudential measures.

The establishment of macroprudential framework is only one of the solutions offered by macroprudential policy makers aiming to regulate this new area in greater detail and bring it closer to the general public. The NBS acted accordingly, and in March 2015 it published a consultation document “Macroprudential framework”³⁹. This document sets out the objectives, instruments and decision-making process of macroprudential policy, without prejudice to the achievement of the primary objective of the National Bank of Serbia.

Macroprudential objectives

Macroprudential objectives are divided into ultimate, primary and intermediate objectives.

The ultimate macroprudential objective is contributing to the safeguarding and strengthening of financial system stability by preventing new systemic risks and mitigating and eliminating the existing ones, while ensuring the contribution of the financial system to sustainable economic growth.

Primary macroprudential objectives include:

1. strengthening of the resilience of the financial system so that it may absorb financial and economic shocks more rapidly, without posing adverse consequences for the functions of the system (*structural dimension of systemic risk*);
2. mitigation of the financial system pro-cyclicality and its impact on the intensification of financial and business cycles (*time dimension of systemic risk*).

Primary macroprudential objectives are achieved through **intermediate macroprudential objectives**:

- 1) mitigating and preventing excessive credit growth and leverage;
- 2) mitigating and preventing excessive maturity mismatch between the funding sources and placements of financial institutions;
- 3) mitigating and preventing concentration of financial institution exposures to specific sectors or asset classes;
- 4) limiting the systemic impact of misaligned incentives in terms of favouring certain financial institutions, with a view to reducing moral hazard;
- 5) strengthening the resilience of financial infrastructure.

Macroprudential instruments

Macroprudential instruments are legally binding measures whose implementation leads to the achievement of intermediate macroprudential policy objectives. The selection of specific macroprudential instruments is a part of a broader process of identification and measurement of systemic risk, based on which appropriate instruments are determined.

Once the threat of systemic risk emerging or increasing has been identified, it is necessary to carefully decide on the point at which one or several macroprudential instruments will be introduced, eased or withdrawn. In selecting instruments, the first issue to be addressed is the source of systemic risk, followed by the selection of appropriate instruments targeting certain balance sheet categories or terms of lending.

³⁹ http://www.nbs.rs/internet/english/18/18_5/index.html.

Table O.5.1. Intermediate objectives and macroprudential instruments⁴⁰

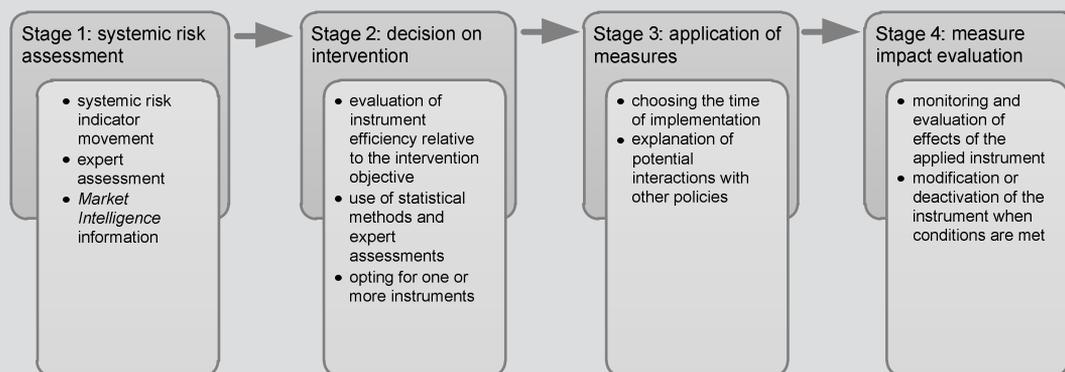
1. Mitigating and preventing excessive credit growth and leverage;
1.1. Countercyclical capital buffer
1.2. Sectoral capital buffer
1.3. Macroprudential restriction on the leverage ratio
1.4. LTV (loan-to-value) limit
1.5. LTI (loan-to-income) limit
2. Mitigating and preventing excessive maturity mismatch between the funding sources and loans and advances of financial institutions;
2.1. Liquidity coverage ratio – LCR
2.2. Net stable funding ratio – NSFR
2.3. Loan-to-deposit ratio – LTD
3. Mitigating and preventing concentration of financial institution exposures to specific sectors or asset classes;
3.1. Macroprudential restrictions on exposure to a particular sector or asset class
4. Limiting the systemic impact of misaligned incentives in terms of favouring certain financial institutions, with a view to reducing moral hazard;
4.1. Capital buffer for systemically important financial institutions
5. Strengthening the resilience of financial infrastructure;
5.1. Systemic risk buffer

Macroprudential policy decision-making

There are four main stages in the implementation of macroprudential policy:

1. Identification, assessment and monitoring of systemic risk;
2. Selection and calibration of macroprudential instruments;
3. Implementation of macroprudential instruments;
4. Evaluation of the impact of the applied instrument.

Diagram O.5.1. Macroprudential policy cycle (decision-making process)



⁴⁰ Given that instruments shown in the Table under Nos 1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 4.1. and 5.1. are governed by the EU regulations which implement the Basel III standard –their implementation will be aligned with the transposition of these regulations into the domestic legal system.

The first stage of the macroprudential policy cycle involves systemic risk identification and assessment. For these purposes, it is necessary to monitor and analyse movements in various indicators of the time and structural dimension of systemic risk. It is particularly important to assess whether indicators improve or deteriorate. Since, in most cases, movements in one indicator are not a sufficient basis for determining whether there is a need for macroprudential intervention, a broader set of indicators is usually monitored. This set of indicators can be supplemented and modified over time. Expert assessment and qualitative information obtained through Market Intelligence also play an important role at this stage. For that reason, the most appropriate way to reliably assess the threat of systemic risk emergence is to monitor a broader set of indicators, including data collected in bank examinations and the financial market, with the option to modify and supplement that set. It is also necessary to carry out stress tests at regular intervals to assess the resilience of the banking system and to improve such tests on an ongoing basis. A good assessment of systemic risks thus constitutes an important first step in the adoption of sound macroprudential decisions.

The second stage of the macroprudential policy cycle begins when the threat of systemic risk emergence or growth is identified. At that point it is very important to assess whether a macroprudential intervention is necessary or whether fiscal or monetary policy measures are more appropriate. It is also important to inform market participants about the existence of systemic risk in the early stages. In certain circumstances, the issuance of warnings or recommendations can be sufficient to cause a change in the behaviour of market participants without having to use macroprudential instruments. If the risk has been determined to be at a level that requires the implementation of these instruments, during selection, their efficiency needs to be assessed in relation to the specific objective of the intervention (e.g. prevention of excessive credit growth). An optimal reaction may often include the use of several instruments at the same time, which should also be taken into account in this stage of the macroprudential policy cycle. For example, in the boom phase of the credit cycle, in order to prevent excessive credit growth, in addition to introducing the countercyclical capital buffer, the institution in charge may also directly influence certain high-risk borrowing (e.g. by setting a cap on the loan-to-value ratio).

The third stage of the macroprudential policy cycle involves deciding on when to implement the instrument, which may be very important for the accomplishment of an objective. The timeliness of the intervention requires a good assessment, while the length of the preparatory period depends on the specific macroprudential instrument. Premature or late implementation of an instrument can create higher costs than a timely intervention. For instance, introducing an instrument too soon may give rise to various kinds of financial system disruptions, such as shifts in certain types of financial flows outside the banking sector. Introducing an instrument too late means that systemic risk has already built-up and its mitigation is going to be more expensive and with limited effects. In principle, macroprudential instruments should be applied according to a predefined formula (clear rules), proactively and in the manner which does not affect the already concluded loan agreements. However, the possibility of discretionary decision-making cannot be ruled out, particularly in situations of strong and sudden systemic risks. Communication and explanations of the reasons for the introduction of an instrument are also very important, as is the clarification of potential interactions between instruments being introduced and microprudential, monetary and fiscal policy measures.

The fourth stage of the macroprudential policy cycle involves evaluating instrument implementation, i.e. whether the set objective has been achieved. Whether the instrument has caused certain undesired effects is also assessed at this stage. If the conditions so require, the implemented macroprudential instrument may be modified or withdrawn.

Deciding when to introduce, ease or withdraw macroprudential instruments is not always simple, because their effects are asymmetric: they are easier to implement when they are intended to counteract the boom phase of the cycle, than in the bust phase of the cycle, when more active lending should be encouraged. Thus, during a financial crisis, when it is essential that banks are adequately capitalised and able to continue providing necessary credits, it is not easy to exert influence on financial institutions to maintain an adequate level of credit activity (due to the banks' risk aversion). For that reason, the effects of macroprudential instruments are weaker in the bust phase of the financial cycle, when financial institutions are trying to reduce their risk exposure, than in the boom phase of the cycle.

Text box 6: EBA Guidelines for Assessment of Other Systemically Important Institutions (O-SIIs)

The current financial crisis has revealed the magnitude of social costs of the insolvency of institutions which play an important role in different financial markets. Therefore, determining the systemic importance of institutions and defining special rules regulating their activity is exceptionally important both in global and national terms.

In November 2011, the Basel Committee on Banking Supervision issued the methodology for determining global systemically important banks (G-SIBs) and revised it in July 2013. In October 2012, the Basel Committee published *A framework for dealing with domestic systemically important banks* (D-SIBs) and special rules regulating their activity. In July 2014, the EBA issued the draft Guidelines on the criteria to determine the conditions of application of Article 131 (3) of the Directive 2013/36/EU (CRD) in relation to the assessment of other systemically important institutions (O-SIIs). Following consultations, which lasted until 18 October 2014, the EBA published the final text of the Guidelines on 16 December 2014.⁴¹ The Guidelines apply as of 1 January 2015. National regulators of member states should implement the Guidelines within six months by incorporating them in their supervisory procedures.

The Guidelines contain a set of mandatory indicators classified into four systemic risk criteria, as set out in the Table below. All criteria may be weighted equally (25%), but not necessarily. Also, all indicators within the same criterion may have the same weight, which depends on the number of indicators, but not necessarily. It is desirable that a national regulator should, in addition to mandatory, also include additional indicators.⁴² This means that a national regulator has far greater discretion in selecting systemic risk criteria, indicators and weights compared to the manner of determining systemically important institutions at the global level. This strikes a balance between convergence and comparability, on the one hand, and flexibility in adjusting the methodology to local specificities, on the other.

According to the Guidelines, the degree of systemic importance is expressed by a score. The score is calculated by (1) dividing the indicator value of each individual institution by the aggregate amount of the respective indicator value at the system-level; (2) multiplying the obtained share by the weight assigned to each indicator; (3) multiplying the weighted share by 10,000 to express the indicator score in basis points; (4) calculating the arithmetic mean of indicators within the same systemic risk criterion; (5) summing up scores of all systemic risk criteria. A bank is designated as systemically important if its score is higher than 350 bp. A national regulator may raise this threshold up to 425 bp as a maximum or decrease it to 275 bp as a minimum to take into account the specific circumstances of its banking sector.

In addition to mandatory and optional indicators, a national regulator may apply a qualitative supervisory assessment of systemic risk which depends on local specificities. Thus, institutions with a score below the cut-off value may also be included in the group of systemically important institutions.

In line with the CRD IV package and as prescribed by the Guidelines, the assessment of systemic importance should be performed once a year. The home authority should assess systemic importance on a consolidated basis, while the host authority should make the assessment at the individual (subsidiaries) level. Determining systemic importance has implications in terms of additional capital requirements, development of recovery and resolution plans and the frequency of supervision.

⁴¹ Guidelines on the criteria to determine the conditions of application of Article 131(3) of Directive 2013/36/EU (CRD) in relation to the assessment of other systemically important institutions (O-SIIs), European Banking Authority, 16 December 2014.

⁴² The list of optional indicators includes: risk-weighted assets, institution's position in the network, insured deposits, mortgage loans, retail loans, business loans, number of customers, number of transactions in domestic payment operations, number of organisational units, activity in the market of government securities, potential contagion through the relation parent bank–subsidiary, value of repo (reverse repo) transactions, share in issued bonds (shares), assets held for trading etc.

National regulators must publish the methodology for determining systemically important institutions, including supervisory criteria. The methodology should capture all the indicators used, classified into representative systemic risk criteria, the assigned weights and the cut-off score. Besides, regulators should publish the list of systemically important institutions and the methodology for determining additional capital requirements⁴³.

Table O.6.1. **Systemic risk criteria, mandatory indicators and weights for determining systemic importance of domestic financial institutions**

Systemic risk criteria	Indicator	Weight of indicator importance (example)
Size	Total assets	25.00%
Importance (including substitutability/financial system infrastructure)	Value of domestic payment transactions	8.33%
	Private sector deposits (residents and non-residents)	8.33%
	Private sector loans (residents and non-residents)	8.33%
Complexity/cross-border activity	Value of OTC derivatives	8.33%
	Cross-jurisdictional liabilities	8.33%
	Cross-jurisdictional claims	8.33%
Interconnectedness	Intra-system liabilities	8.33%
	Intra-system claims	8.33%
	Debt securities outstanding	8.33%

Source: NBS.

⁴³ The maximum capital buffer rate for domestic systemically important institutions equals 2% of the total risk exposure amount – Article 131(5) of Directive 2013/36/EU. If a regulator assesses that this rate is insufficient, the difference may be compensated for by capital buffer for the systemic structural risk and more flexible application of the second pillar.

Text box 7: Bank resolution – new statutory function of the NBS

Following bankruptcy of the investment bank Lehman Brothers in September 2008, significant amounts of financial aid were provided by home authorities to financial institutions in a number of countries to prevent their non-liquidity and insolvency. As a result, financial systems maintained their core functions. However, despite the importance of functions performed by financial institutions for the entire economy, it should not be forgotten that they are, as a rule, profit-oriented institutions in private ownership. This means they are exposed to market forces and, under normal circumstances, must undergo regular bankruptcy proceedings in case they become illiquid or insolvent. However, such practice was temporarily abandoned (with the exception of Lehman Brothers) during the financial crisis due to enormous negative consequences that the bankruptcy of large financial institutions could have on the performance of core functions of the financial system. In other words, the rationale behind providing state aid was the assessment that the cost of aid would still be smaller than the damage in case no aid was provided.

In such circumstances, regulators became aware of the need to establish an efficient, pre-defined plan of measures to be taken in the event of risk to the financial system. Therefore, relevant international authorities launched initiatives to develop standards for an efficient framework of resolution of financial institutions. The main feature of such initiatives is the protection of taxpayer money, i.e. use of budgetary funds exclusively as the last-instance option.

International standards for resolution

In the international context, the work of the Financial Stability Board (FSB) is relevant for uniform resolution of financial institutions. The most important document that the FSB has issued in this field is titled *Key Attributes of Effective Resolution Regimes for Financial Institutions*. Generally, all papers and initiatives in this area focus on the need to introduce a special procedure which differs from regular bankruptcy proceedings since bankruptcy proceedings are not aimed at preserving financial stability, but at implementing corporate bankruptcy and ensuring payments to creditors from the bankruptcy estate. According to the FSB, “the objective of an effective resolution regime is to make feasible the resolution of financial institutions without severe systemic disruption and without exposing taxpayers to loss, while protecting vital economic functions through mechanisms which make it possible for shareholders and unsecured and uninsured creditors to absorb losses in a manner that respects the hierarchy of claims in liquidation.”⁴⁴ One of the main principles is to avoid taxpayer cost and ensure that shareholders and creditors bear the losses of financial institutions. In addition, the hierarchy of claims in liquidation must be respected in order to preclude that the resolution of financial institutions results in consequences for shareholders and creditors that would be more severe than those that would have occurred had regular bankruptcy proceedings been instituted. The objective of the regulatory framework should not be to protect any person who, under the regular legal procedure, should bear losses, but to preserve financial stability which may be jeopardised in the event of bankruptcy of a particular financial institution.

At the EU level, intensive efforts were invested in developing the bank resolution framework whose implementation will enable an efficient response to problems in the performance of critical functions of the financial system. To this end, in spring 2014 the Bank Recovery and Resolution Directive (BRRD) 2014/59/EU⁴⁵ was adopted, introducing a comprehensive framework for bank resolution both at the national and cross-border level. The Directive is generally harmonised with the concept developed by the FSB.

In accordance with the Directive, each EU member state should designate the body competent for bank resolution. Banks should develop recovery plans and the national competent authority should design bank resolution plans. Besides, each member state should determine the financing arrangements for resolution (e.g. establishment of a resolution fund), based on contributions of market participants.

⁴⁴ FSB (2014), *Key Attributes of Effective Resolution Regimes for Financial Institutions*, October 2014, p. 3.

⁴⁵ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32014L0059>.

Domestic bank resolution framework

In its Financial Stability Report for 2013, the NBS emphasised the need for fast transposition of the Bank Recovery and Resolution Directive⁴⁶ into domestic legislation. Thus, within an exceptionally short deadline, the NBS prepared the Law Amending the Law on the National Bank of Serbia and the Law Amending the Law on Banks, which were adopted by the National Assembly in February 2015. At the same time, the Assembly adopted the Law on Deposit Insurance, Law on Deposit Insurance Agency and Law on Bankruptcy and Liquidation of Banks and Insurance Companies. The application of these laws began on 1 April 2015.

The main objectives of the domestic regulatory resolution framework are the following:

- ensuring continuity in the performance of critical functions of the bank;
- avoiding adverse effects on financial stability;
- protecting budgetary funds;
- protecting depositors and investors;
- protecting funds and other client assets.

Under the domestic regulatory framework, the NBS is the national authority competent for bank resolution.

Banks must develop and submit to the National Bank of Serbia **recovery plans** containing concrete measures to be taken by banks in the event of stress and ensuring fast restoration of regular operations. If the recovery plan is assessed as unsatisfactory, the NBS may order a bank to take adequate measures (adjust the risk profile, change the business policy and strategy, re-examine the organisational structure etc.).

The domestic regulatory framework also envisages **early intervention measures**, entitling the NBS to order banks to take particular measures or decisions (restructuring of debt to bank creditors, removal from office of members of managing or executive boards, appointment of a temporary administrator etc.) with the same objective – to enable a bank to continue with regular operation.

In addition, the NBS develops a **resolution plan** for each bank. The resolution plan envisages the application of appropriate resolution tools and measures and the exercise of NBS powers following the adoption of the resolution decision, provided conditions for bank resolution have been met.

Before taking the resolution decision, the NBS conducts the **least cost test**, which has to show the most appropriate solution for a bank, bearing in mind resolution objectives. The NBS initiates the resolution procedure once it has established that the following conditions are met: the bank is failing or likely to fail, there is no reasonable prospect that any other measure by the bank or a private sector entity could in a reasonable period remove impediments to the continuation of the bank's operation, and the bank's resolution is in the public interest.

Resolution is deemed to be in the **public interest** if the bank is systemically important, as well as if the resolution can achieve one or more resolution objectives which could not be achieved to the same extent by placing the bank under the bankruptcy or liquidation procedure.

The resolution tools available to the NBS have also been defined by the Bank Recovery and Resolution Directive as follows:

- 1) the sale of shares and/or all or any assets or liabilities of the bank under resolution to the acquirer other than a bridge bank (the sale of business tool),

⁴⁶ Recommendation 13/2013, NBS (2014), Annual Financial Stability Report for 2013, http://www.nbs.rs/export/sites/default/internet/english/90/90_2/fsr_2013.pdf, p. 96.

- 2) the transfer of shares and/or all or any assets or liabilities to a bridge bank (the bridge bank tool),
- 3) the asset separation tool,
- 4) the bail-in tool.

If the need arises, the NBS will apply the above instruments in accordance with best comparative practice, always bearing in mind the same objective – preservation of financial stability at the least possible cost.

Text box 8: Swiss National Bank's decision to lift the cap on the franc's value against the euro

In September 2011, the Swiss National Bank (SNB) capped the franc at 1.20 against the euro (as a temporary measure), in an attempt to halt a further rise in its currency – a traditional “safe haven” for investors – which occurred at the time of heightened instability in the global financial market. Limiting the franc's value against the euro precluded further tightening of monetary conditions, ensuring that the Swiss export-oriented market was shielded from negative effects of an overvalued currency. However, this provisional measure required the central bank to intervene in the FX market by selling francs, which led to an increase in FX reserves to around 80% of GDP.

The SNB's decision of mid-January 2015 to remove the cap sent FX and, consequently, credit markets around the world into turmoil. At the same time, the SNB made a decision to cut interest rates aiming to discourage conversion of other currencies into the franc, i.e. alleviate appreciation pressures on its currency.

Given the high share of the Swiss franc in credit portfolios of some central and eastern European countries, the abandonment of the cap severely hit the markets of this region. Households were particularly vulnerable as a number of housing loans were denominated in the Swiss franc. Namely, the sudden and sharp appreciation of the franc led to a rise in clients' credit liabilities.

In Serbia, household lending indexed to foreign currencies except for the euro was forbidden in June 2011 as some citizens continued to borrow in the Swiss franc despite warnings of the central bank. Aware of the situation facing around 22,000 citizens, in May 2013 the NBS issued recommendations to banks advising a reduction in annuities over the following three years for beneficiaries of Swiss franc-indexed loans. In light of the expected implementation of fiscal consolidation measures, which would also reflect on the standard of living, the NBS aimed to relieve the burden of debt repayment in this most difficult period. The difference between the real and reduced rate would not be paid over a three-year period, and no interest would be charged on such deferred receivables. Thus, until fiscal consolidation measures began to yield full effects on the standard of living, annuities could be lower between 12% and 20% (depending on the moment when a loan is granted). Loan beneficiaries who acted upon this recommendation are now less exposed to the franc's appreciation.

According to the latest data, Swiss franc-indexed loans – mostly housing, account for around 3% of GDP. Though these loans are not a source of systemic risk, following careful analysis the NBS adopted the Decision on Measures for Preserving Stability of the Financial System in the Context of Foreign Currency-Indexed Loans. Under this Decision, banks can offer their clients one of the following four models:

1) Conversion of a Swiss franc-indexed housing loan into a euro-indexed loan using a 5% more favourable exchange rate, interest rate equal to the rate applied to euro-indexed loans and a possibility to request extension of the loan repayment term by maximum five years;

2) Conversion of a Swiss franc-indexed housing loan into a euro-indexed loan, lowering the interest rate on a euro-indexed loan by one percentage point on an annual basis, but not necessarily below 3% and granting the possibility to request extension of the loan repayment term by maximum five years;

3) Keeping the housing loan indexed to the Swiss franc, lowering the interest rate by one percentage point on an annual basis, but not necessarily below 3% and granting the possibility to request extension of the loan repayment term by maximum five years;

4) Keeping the housing loan indexed to the Swiss franc, lowering the Swiss franc-indexed monthly instalments by 20% of the contracted amount for the period of 36 months from the date of conclusion of the annex to the loan agreement, and postponing the repayment of the total amount of the reduction until the expiry of the original maturity date when it will be divided into 12 equal monthly instalments. No interest shall be calculated or charged on the receivables whose collection is postponed under this model.

Banks must clearly explain to clients the financial effects of each of the four models – by preparing loan repayment schedules for each model. In addition, banks must also report to the NBS on offers given to each client. To present the effects of each model, the NBS designed and published on its website special calculators⁴⁷. However, in opting for a particular model, clients should be aware that the double FX risk that Swiss franc-indexed loan beneficiaries are exposed to can be avoided only through the conversion of Swiss franc-indexed into euro-indexed loans. Though not fully eliminating the FX risk, this diminishes the risk of a repeated “January” effect.

In addition to models for Swiss franc-indexed housing loans, the activities that the NBS stipulated as desirable in its recommendation of 2013, relating to refunds in respect of a unilateral increase in the interest rate, became mandatory for banks under the above Decision. The obligation applies to all loans, regardless of the currency of indexation. Namely, for each agreement on a loan under repayment, concluded prior to the start of application of the Law on the Protection of Financial Services Consumers (December 2011), banks must determine the total amount overcharged in respect of an increase in indefinable elements of the variable interest rate (e.g. changes in the interest rate in accordance with business policy acts, general terms of operation or changed market conditions). A bank must treat this amount as early loan repayment and submit to the client a notification thereon along with a modified loan repayment schedule. None of the above is subject to the client’s request for the refund of overcharged amount, to signing an annex to the loan agreement, submission of other supplementary documentation or other similar conditions.

The Decision represents a systemic approach to resolving the complex issue of FX-indexed housing loans, fully respecting the freedom of contract on the one, and generally binding rules on the other hand. As a regulator of the banking market, the NBS adopted a solution helping citizens overcome difficulties in the repayment of Swiss franc-indexed loans as well as in the event of a unilateral increase in interest margins by banks. At the same time, such a solution does not jeopardise the basic principles upheld by the NBS – legal certainty, market operation and accountability of all market participants for the obligations assumed. In other words, this solution has introduced specific assumptions and incentives such as mandatory action by banks, freedom of choice of loan beneficiaries and burden sharing between creditors and debtors.

⁴⁷ http://www.nbs.rs/internet/cirilica/55/odluka_20150224/index.html.

IV.2. Macroprudential stress testing

The global crisis heightened the importance of adding a macroprudential dimension to the microprudential approach in the regulation and supervision of financial institutions. The NBS's quarterly macroprudential stress tests using report data indicate that the domestic banking sector, as a whole, is resilient to extreme growth in credit and liquidity risks over a one-year horizon.

Introduction

The NBS conducts macroprudential stress tests to assess the resilience to potential risks and shocks at the level of the banking sector, individual banks and groups of banks.

Macroprudential stress tests are conducted on a quarterly basis and are continuously improved. Basel II standards⁴⁸ and NBS regulations require that banks also use stress tests to assess their internal capital. This additionally attests to the significance of stress tests as a tool for detecting problems that may occur as a result of a bank's behaviour model.

Stress tests are based on plausible but highly improbable assumptions and/or events that may produce negative effects to the financial system. Therefore, poor stress test results do not necessarily mean that a sector, an individual bank or a group of banks are experiencing difficulties. To avoid misinterpretation, results for individual banks are usually not published.

For the time being, macroprudential stress testing conducted by the NBS enables:

- measurement of banking sector resilience to an increase in capital requirements for the credit risk in case of adverse macroeconomic developments;
- measurement of the liquidity risk due to the loss of depositors' confidence and unfavourable macroeconomic conditions;
- network modelling in the estimate of banking sector systemic risk and systemic importance of individual financial institutions.

The present report sets out *three approaches* to analysing the impact of economic turbulences on banking sector stability. *The first* approach involves credit risk assessment in relation to the projected macroeconomic

developments, using the least probable assumptions. *The second* involves the assessment of whether, in case of large deposit withdrawals, the banking sector has sufficient liquidity to ensure its smooth operation. *The third* relates to the assessment of banking sector's systemic risk and whether the current structure of banks' interrelatedness is conducive to the propagation of shocks across the entire banking sector, i.e. how resilient the system is, as a whole, to potential shocks.

Solvency stress testing

Credit risk is the most significant risk in Serbia's banking sector. It is most often assessed as a rise of NPL share in total loans.

To assess banking sector resilience to credit risk growth, we projected a rise in NPLs over a one-year horizon.

NPL projection by the multi-dimensional analysis of time series

The multivariate analysis of time series was applied to modelling of NPLs, with changes in NPLs linked to changes in macroeconomic conditions.

Of a large set of variables eligible for an econometric analysis and with a potential to impact monthly dynamics of NPLs, three showed reliable and predictable strength: (1) the exchange rate, (2) seasonally-adjusted real net wages and (3) the key policy rate. Elasticity coefficients (indicating the impact of each variable on NPLs) and individual contributions of each variable to NPL growth,

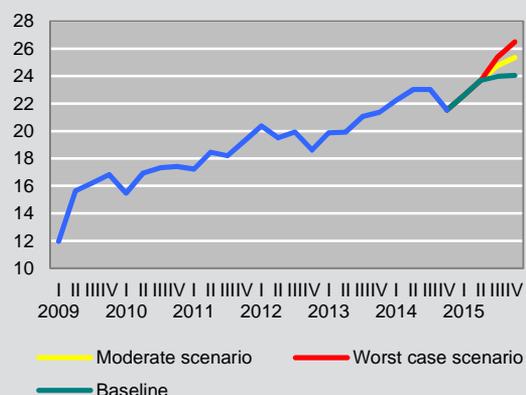
Table IV.2.1. Elasticity coefficients of NPLs and contributions of independent variables from Q4 2013 to Q4 2014
(%)

	Elasticity coefficients	Contributions of independent variables
Nominal exchange rate	0.45	22
Seasonally -adjusted real net wages	-0.25	50
Key policy rate	0.13	28

Source: NBS.

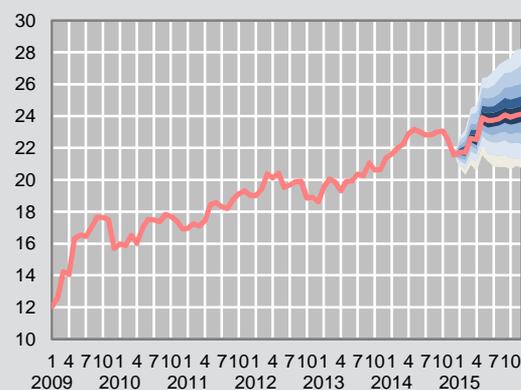
⁴⁸ Principles for sound stress testing practices and supervision, (2009), BCBS, <http://www.bis.org/publ/bcb155.pdf>.

Chart IV.2.1. The share of gross NPLs in baseline, moderate and worst case scenario* (%)



* NBS estimate.
Source: NBS.

Chart IV.2.2. The share of gross NPLs of the banking sector - confidence intervals* (%)



* NBS estimate.
Source: NBS.

Table IV.2.2. Overview of scenarios

	Baseline	Moderate	Worst case
Y-o-y growth in NPL ratios (pp)	2.50	3.81	4.95
Y-o-y depreciation of RSD against EUR (%)	/	17.72	35.92
Y-o-y change in key policy rate (pp)	/	12.50	29.00
Y-o-y growth in real net wages (%)	-5.32	-7.72	-9.32

Source: NBS.

are presented in Table IV.2.1. As indicated in the Table, one-percent depreciation of the dinar against the euro causes a 0.45% rise in the gross NPL share, a one-percent drop in seasonally-adjusted real net wages results in 0.25% growth of gross NPLs, and the key policy rate increase of 1% causes a 0.13% increase in gross NPLs.

For stress test purposes, three scenarios are assumed within a one-year period. Their overview for December 2014 is shown in Table IV.2.2. All three scenarios of movements in the key policy rate are conditional on the assumed movements in the exchange rate and its impact on inflation. The projection of net wages (in dinars) was made independently, i.e. based on the ARIMA model. Wages were then adjusted for projected inflation based on corresponding scenarios.

Chart IV.2.1. shows the projected increase in the NPL share in total loans for three assumed scenarios – 2.50 pp, 3.81 pp and 4.95 pp, respectively.

The projected movement with confidence intervals of 95% for the baseline projection (the most probable scenario) is presented in Chart IV.2.2.

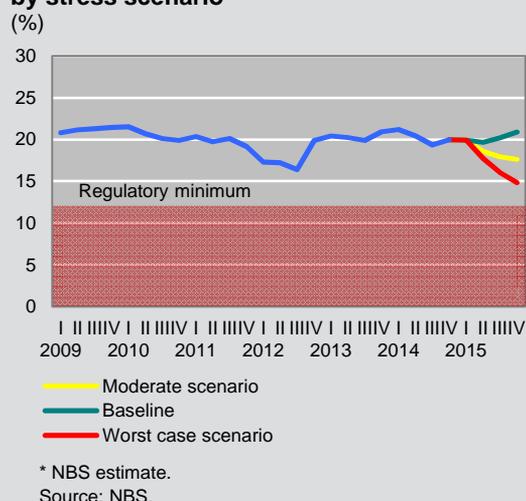
Estimate of resilience of the banking sector and individual banks in conditions of projected profit buffer

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

The level of CAR is directly affected by changes in risk-weighted assets, the amount of required reserve for estimated losses on balance sheet assets and off-balance sheet items by which regulatory 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 profit buffer, amendments to regulations (treatment of supplementary capital, changes in the calculation of required reserve for losses) etc.

The impact of the exchange rate (primarily dinar's depreciation) on NPL growth and thereby on a rise in loan

Chart IV.2.3. Expected capital adequacy ratio by stress scenario*



euroisation of assets, 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.

As at 31 December 2014, CAR for Serbia's banking sector stood at 19.96%.

Under the baseline projection, CAR reaches 20.9%, but falls to 17.6% under the moderate scenario.

According to the worst-case scenario, implying a vigorous but highly improbable shock, CAR equals 14.8%, i.e. stays above the regulatory minimum.

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

Based on data as at 31 December 2014, banks should obtain additional capital injections in the amount of RSD 0.3 bln or 0.1% of regulatory capital. Alternatively, the banking sector would have to reduce risk-weighted assets by RSD 2.6 bln or 0.2% in which case CAR of the Serbian banking sector would be 19.97%.

Chart IV.2.4. shows needed recapitalisation of the banking sector, assuming a profit buffer, in all three scenarios.

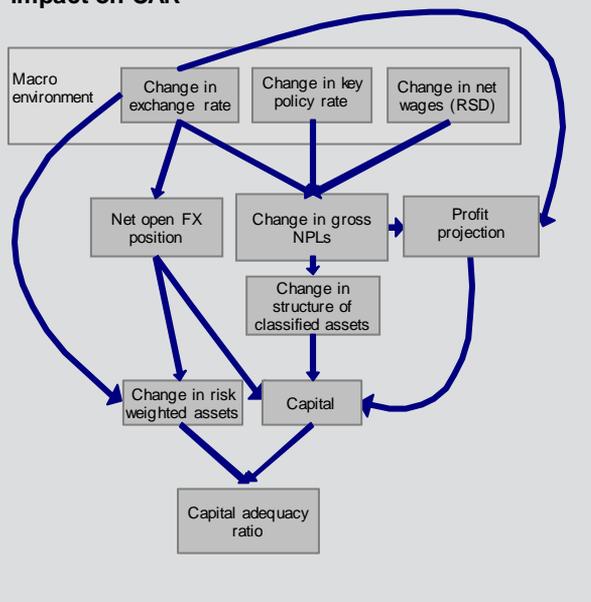
Alternatively, the necessary reduction in risk-weighted assets in all three scenarios is shown in Chart IV.2.5.

Under the baseline projection, banks should receive additional recapitalisation of RSD 0.9 bln or 0.3% of estimated regulatory capital. Alternatively, the banking sector would have to reduce risk-weighted assets by RSD 7.3 bln or 0.4%.

Under the moderate scenario, banks need additional recapitalisation in the amount of RSD 2.7 bln or 0.9% of estimated regulatory capital. Alternatively, the banking sector would have to reduce risk-weighted assets by RSD 22.6 bln or 1.3%.

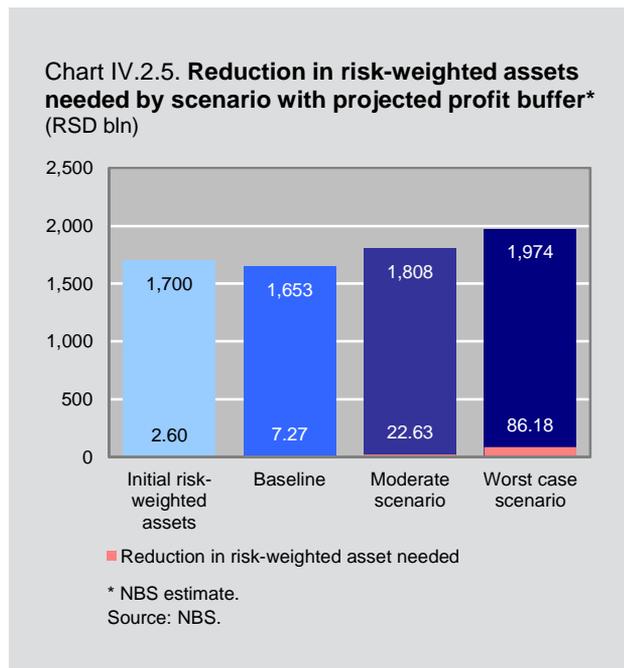
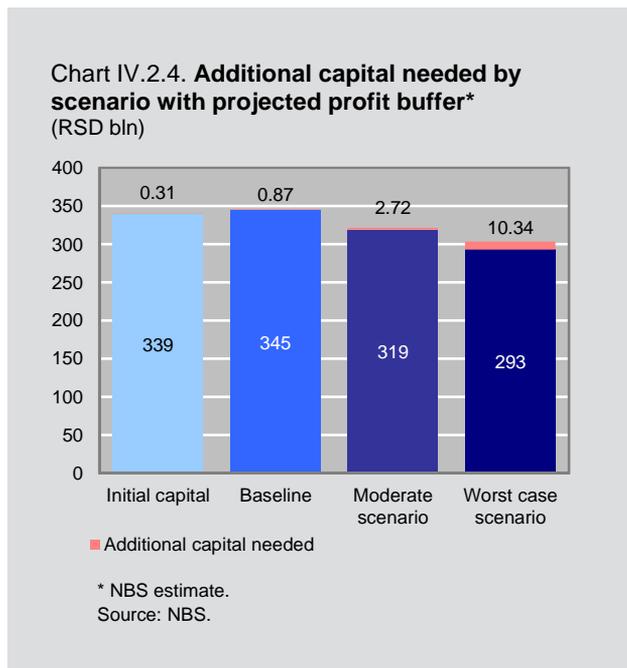
Under the worst-case scenario, the needed additional recapitalisation amounts to RSD 10.3 bln or 3.5% of estimated regulatory capital. Alternatively, the necessary reduction in risk-weighted assets would equal RSD 86.2 bln or 4.4%.

Diagram IV.2.1. Channels of macroeconomic impact on CAR



loss provisioning, is not the only channel through which the exchange rate affects capital adequacy (Diagram IV.2.1).

The exchange rate also influences a rise in capital requirements for FX risk coverage. Given a high level of



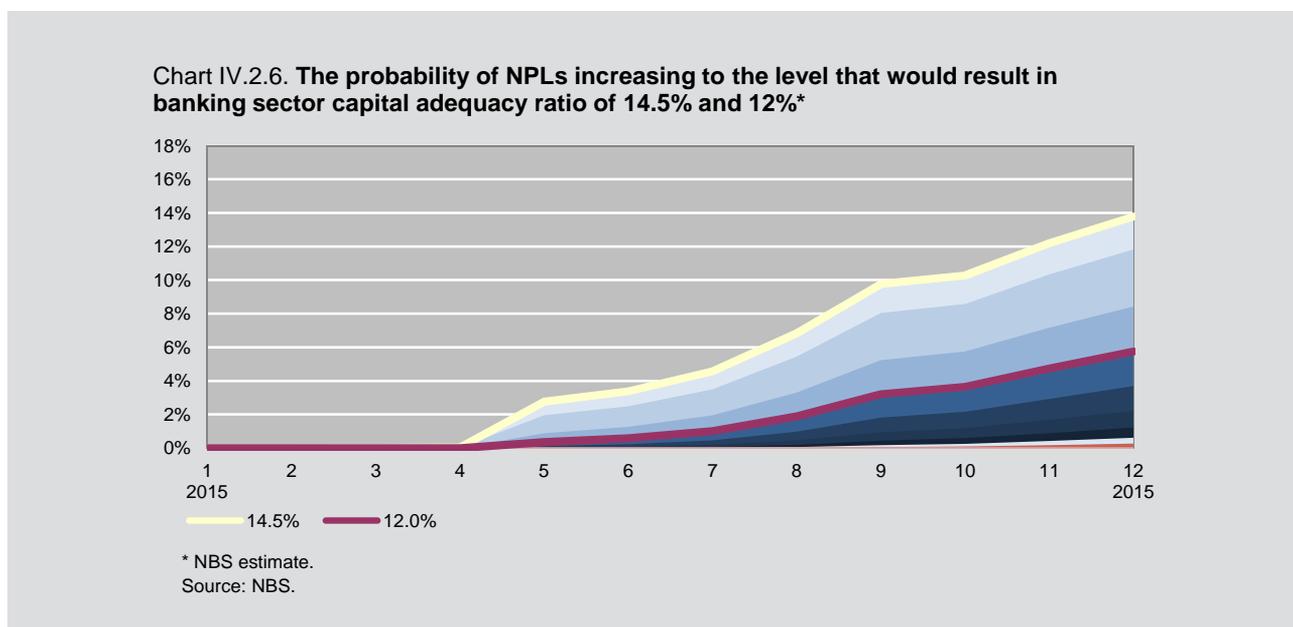
NPLs which bring CAR to critical levels

The final phase of credit risk analysis aims to determine the share of NPLs in total loans which would bring banking sector CAR from the current level down to 14.5% or 12%.

Assuming the projected profit buffer, with a 5.1 pp increase in the share of gross NPLs in total loans, the banking sector CAR would fall from current 19.96% to

14.5%. A 6.2 pp increase would bring CAR to the regulatory minimum of 12%.

Based on the values of critical NPL levels which bring CAR to 14.5% and 12%, and the confidence interval of the projection of gross NPLs in total loans based on the multivariate analysis of time series, we obtained probabilities of the increase in the share of gross NPLs in total loans in the period from Q4 2014 to Q4 2015 (Chart IV.2.6). It is obvious that the probability of CAR falling to



critical levels of 14.5% and 12% is small – equalling only around 13.8% and 5.7%, respectively.

It should be underlined that preventive recapitalisations are necessary at the above assumptions for individual banks. Also, one of the measures would imply improving the credit portfolio quality – the share of NPLs in total loans should decline so that CAR remains above the regulatory minimum.

Liquidity stress testing

Although less significant than the credit risk, liquidity risk in Serbia's banking sector could materialise under certain circumstances, as demonstrated by the events that unfolded in late 2008⁴⁹.

The deposit withdrawal structure was obtained based on the analysis of historical data from September 2008 to January 2009 – the period of the deposit withdrawal shock.

Based on results of liquidity stress testing, we aim to determine whether the banking sector would continue to operate smoothly in case of the same or similar shock. Factors that depress liquidity on the liabilities side include withdrawal of funds, tighter access to new sources of funding and no option to refinance debt. Events 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 liquidity structure.

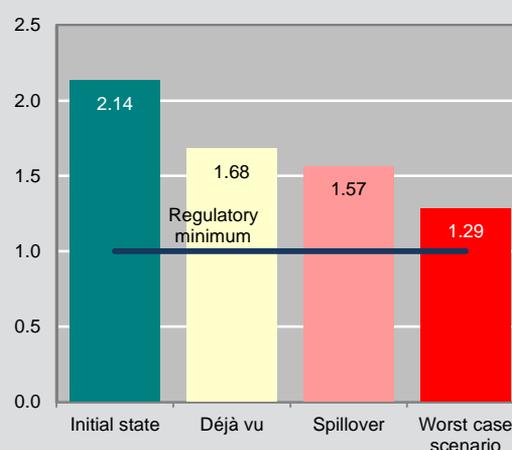
Estimate of liquidity ratio

The above analysis of deposit withdrawal in late 2008⁴⁹ served to create the following scenarios:

- Déjà vu scenario, envisaging deposit withdrawal worth RSD 197 bln (10% of total deposits). The scenario applies the deposit withdrawal structure from October 2008;

- Risk spillover scenario, implying the spillover of the euro area crisis to Serbia's financial sector. In addition to the deposit withdrawal of 2008, this scenario envisages deleveraging, prompted by the euro area crisis. In this scenario, deposit withdrawal increases to RSD 277 bln (15% of total deposits);

Chart IV.2.7. Expected liquidity ratio for the banking sector by stress scenario*



* NBS estimate.
Source: NBS.

- Worst-case scenario, envisaging a two times stronger shock than in October 2008, i.e. deposit withdrawal of RSD 392 bln (21% of total deposits).

Deposits are divided into two main groups – demand and term deposits. Deposit withdrawal assumptions for all three scenarios are presented in Table IV.2.3.

Table IV.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%
Households - 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 bln)	197	277	392
Share in total deposits (%)	10%	15%	21%

Source: NBS.

⁴⁹ For a more detailed description of deposit withdrawal in late 2008 see the Annual Financial Stability Report for 2012.

In the scenarios assumed, the banking sector liquidity ratio would range from 2.14 on 31 December 2014 to 1.29 in the worst-case scenario (Chart IV.2.7).

In the risk spillover scenario, banks accounting for 2.6% of the total banking sector balance sheet assets would be below the minimum. In case of the worst-case scenario, which implies a severe shock, banks accounting for 8.7% of total banking sector balance sheet assets would fall below the threshold. The largest percentage of banks would be in the safety zone – their liquidity ratios would be above one.

Liquidity needs

Based on data as at 31 December 2014, there is no need for first order liquidity.

Under the *déjà vu* scenario, commercial banks would have first-order liquidity needs amounting to RSD 0.52 bln or 0.06% of initial first order liquidity.

According to the risk spillover scenario, first-order liquidity needs would equal RSD 1.99 bln or 0.23% of the initial value.

In the worst-case scenario, first-order liquidity needs would be RSD 8.36 bln or 0.97% of the initial value.

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

Establishing deposit withdrawal values which bring the liquidity ratio to critical levels

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

Based on assumptions in Table IV.2.3, for the *déjà vu* scenario we obtained the structure of deposit withdrawal by deposit category in total withdrawn deposits (Table IV.2.4).

At the banking sector level, under the *déjà vu* scenario, the withdrawal of RSD 305.3 bln or 16.1% of total deposits (of which RSD 159.4 bln of demand and RSD 145.9 bln of

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

	Déjà vu
Withdrawal of demand deposits	52%
Withdrawal of time deposits	48%
Structure of total demand deposit withdrawal	
Banks	0%
Other depositors	66%
Savings	34%

Source: NBS.

term deposits) lowers the liquidity ratio to 1.5. The withdrawal of RSD 664.3 bln or 35.1% of total deposits (of which RSD 346.8 bln of demand and RSD 317.5 bln of term deposits) lowers the liquidity ratio to 1.0.

Banking sector survival period in case of sudden deposit withdrawal

The shock observation period is called the survival period. It may consist of two phases. The first is a short period of high-intensity stress, lasting for several days, during which evaluation is made of the bank's ability to cover liquidity outflows without the possibility of obtaining new liquid funds and without changing the business model. The second is a longer period, marked by weaker but more persistent shocks, lasting for over a month.

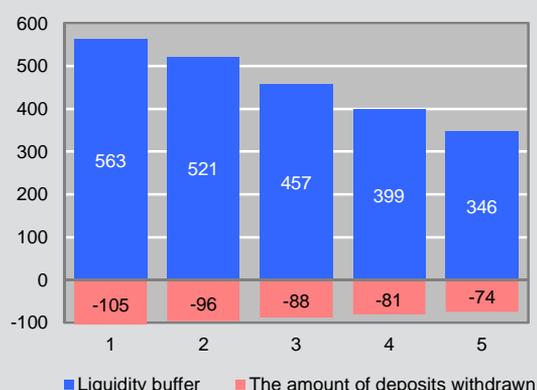
This group of liquidity tests aims to determine the longest period of banking sector survival in case of large daily deposit withdrawal. The main withdrawal assumptions for the moderate and worst-case scenarios are presented in Table IV.2.5.

Table IV.2.5. Assumed deposit withdrawal rate by sector

WITHDRAWAL OF DEPOSITS	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.

Chart IV.2.8. Liquidity buffer - daily for moderate scenario* (RSD bln)



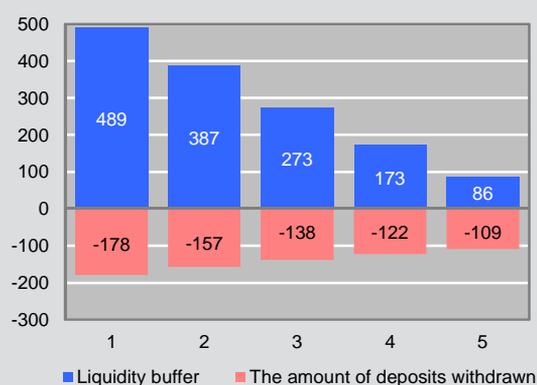
* NBS estimate.
Source: NBS.

Chart IV.2.10. The structure of demand and time deposits - daily for moderate scenario* (RSD bln)



* NBS estimate.
Source: NBS.

Chart IV.2.9. Liquidity buffer - daily for worst case scenario* (RSD bln)



* NBS estimate.
Source: NBS.

Chart IV.2.11. The structure of demand and time deposits - daily for worst case scenario* (RSD bln)



* NBS estimate.
Source: NBS.

Charts IV.2.8. and IV.2.9. show available liquid assets and the amount of withdrawn deposits in the first five days (the amount of liquid assets remaining after the coverage of liquidity needs) for both scenarios. Charts IV.2.10. and IV.2.11. give the deposit structure by day.

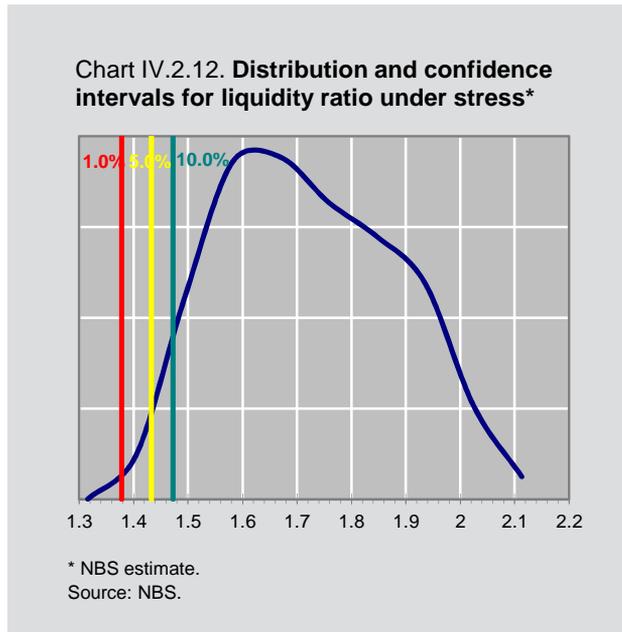
The entire banking sector can withstand 22 business days⁵⁰ in conditions of daily deposit withdrawal under the moderate scenario, or seven business days in the worst-case scenario.

The banking sector would remain liquid even in case of the largest assumed deposit withdrawal.

Simulations of liquidity shocks

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

⁵⁰ The IMF's recommendation about the bank survival period after deposit withdrawal covers the period of five business days. After this period, it is believed that a bank will have sufficient time to consolidate its operation.



We obtained liquidity ratios based on tens of thousands of different simulations, which imply random sampling of assumptions of deposit withdrawal by sector, from zero to the worst-case scenario value (described in Table IV.2.4).

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

With the given confidence interval of 10%, the liquidity ratio equals 1.47, while for confidence intervals of 5% and 1%, it equals 1.43 and 1.38, respectively.

In other words, we can claim with 90% certainty that the liquidity ratio in different combinations of deposit withdrawal assumptions will not fall below 1.47. Moreover, it is 99% certain that the ratio will not fall below 1.38.

As we are interested only in assumption values with a negative impact, we calculated tentative values of the variable under assumed negative effects. This produces a large number of changes in banking sector liquidity which may occur in future.

Network modelling in the estimate of banking sector systemic risk⁵¹

The 2008 financial crisis revealed the importance of observing the dynamics of interdependencies among

financial institutions for the purpose of describing the systemic risk. In terms of the systemic risk, it is important to determine which financial institutions are systemically important, whether the existing structure of mutual relations is conducive to fast transmission of the shock through the system, and notably to what extent the entire system is resilient to potential shocks. Therefore, the financial system should not be observed only as a set of institutions with particular characteristics, but it is necessary to include information on the dynamics of their interdependencies.

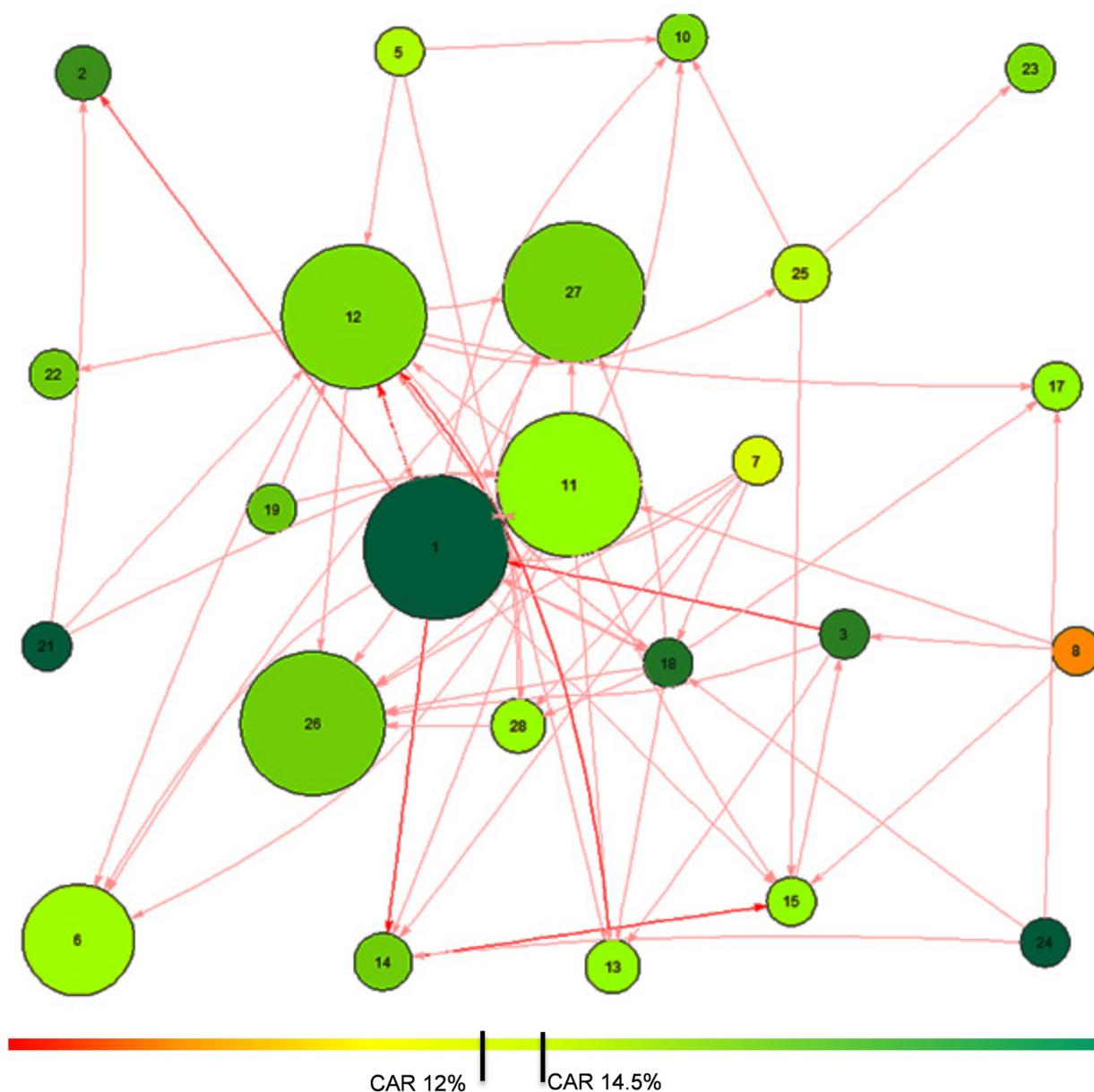
The structure describes Serbia's banking sector in the context of mutual on- and off-balance sheet exposure of banks. The edge weight from bank *i* to bank *j* represents the potential increase in required reserve, relative to the regulatory capital of bank *i*, in case of insolvency of bank *j*. The network of Serbia's banking sector, in accordance with the given definition, is presented in Chart IV.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 insolvency of bank *j*. The size of the circle which represents the bank shows the amount of its regulatory capital – the greater the circle, the larger 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 network capacity in terms of shock transmission and equals 0.18. As global efficiency ranges between 0 and 1, while values close to 1 indicate high conductivity of shocks through the network, we can assume that global efficiency of 0.18 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 we calculated the expected increase in required reserve for estimated losses. An increase in reserve for estimated losses results in lower risk-weighted assets and capital, including CAR, in the first

⁵¹ Network modelling uses the data as at 31 Dec 2014.

Chart IV.2.13. Banking network of the Republic of Serbia



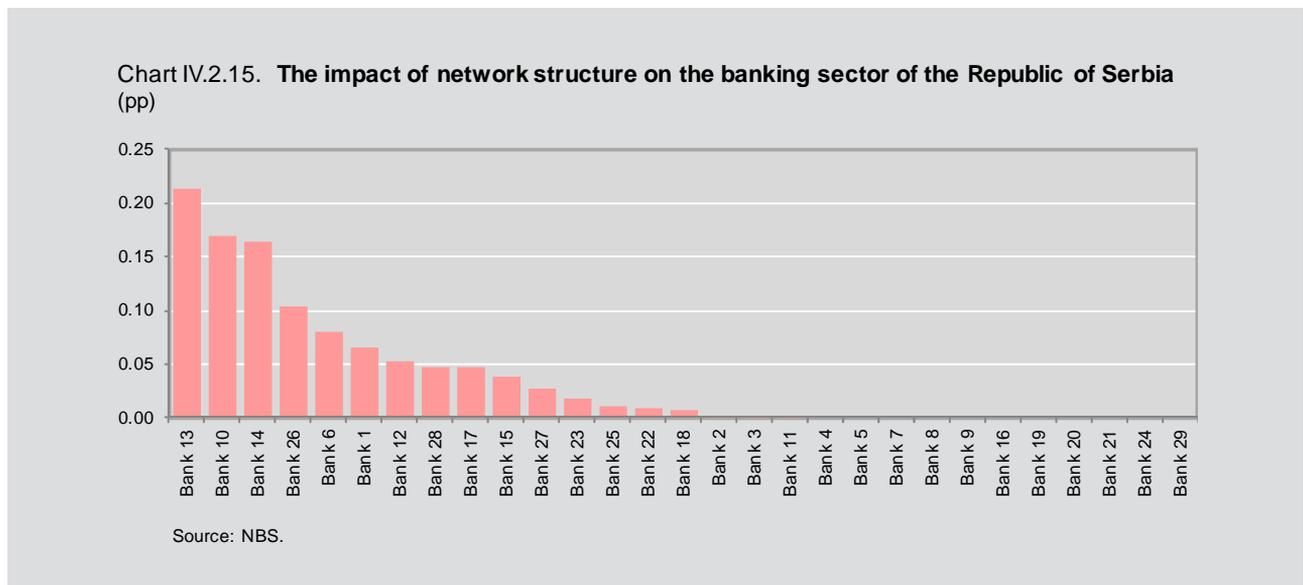
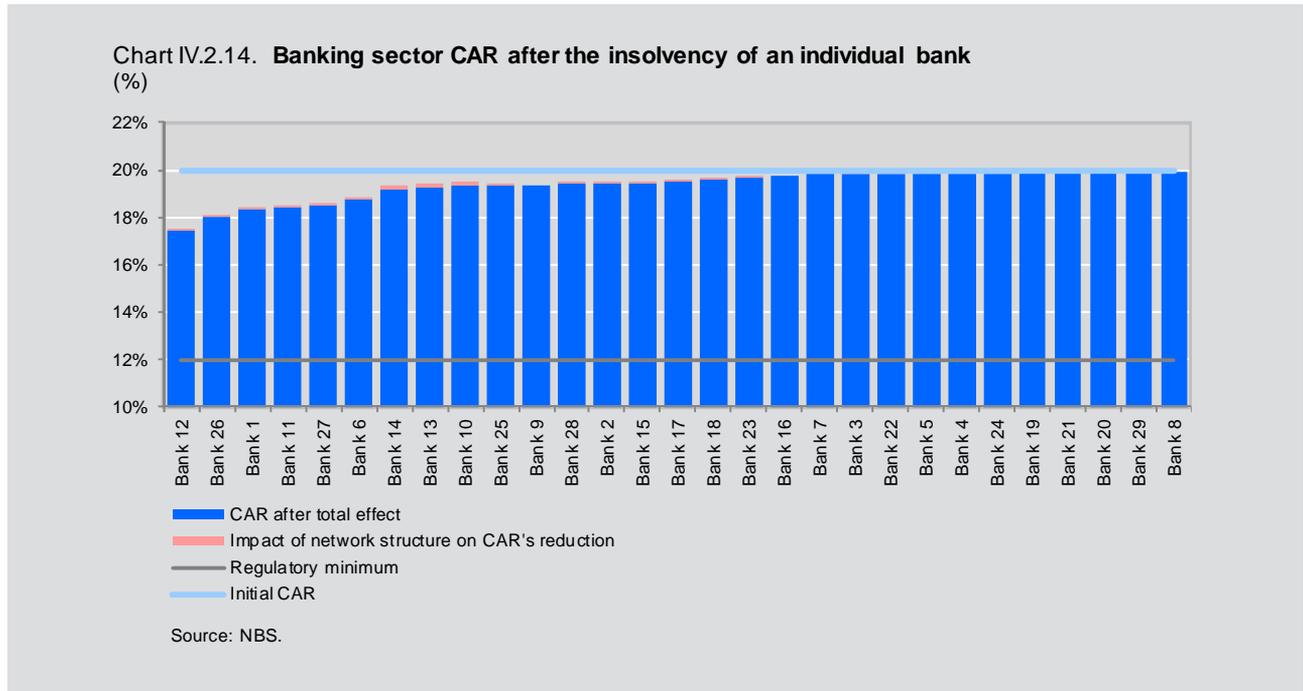
Source: NBS.

iteration of shock transmission. In each following iteration, based on CAR values obtained in the previous iteration, we obtained new probabilities of defaults for each bank (which did not become insolvent up to that point). Based on this, we calculated again the expected increase in reserves for estimated losses and a new reduction in risk-weighted assets, capital and CAR. A shock is considered neutralised when further iterations show no change in regulatory capital and risk-weighted assets of each bank. In each iteration, we can observe regulatory capital or risk-weighted assets, as well as CAR of the banking sector. Assuming the insolvency of

an individual bank and the transmission of a particular shock through the system, as we have explained, the effect on each individual bank, and therefore on the system, originates from two different sources. The first 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 IV.2.14, in case of insolvency of each individual bank in the sector, shows CAR of the banking sector immediately after the assumed insolvency and the total effect of the existence of the network structure. Chart IV.2.15. shows the impact of the network structure on shock transmission, reflected in a reduction in CAR of individual banks, and/or sector, in all iterations following the first one.

The results shown in Charts IV.2.14 and IV.2.15. indicate that, in case of insolvency of any bank, CAR of the sector would definitely stay in the safe zone, i.e. above the regulatory minimum. Also, the impact of the network structure on shock transmission is relatively small, which is a favourable result from the aspect of financial stability.



Conclusion

An average CAR of the banking sector would stay above the regulatory minimum even in the worst-case scenario, so the system's solvency would not be jeopardised⁵². However, looking at individual banks, by end-2015 CAR may fall below the regulatory minimum in a few banks which do not hold a significant share in total balance sheet assets of the banking sector, even under the baseline projection assumptions which can be characterised as the least unfavourable with a high degree of certainty. Nevertheless, the NBS has in store measures which will influence banks to either engage in preventative recapitalisations and/or decrease their risk-weighted assets.

A high share of NPLs negatively impacts bank profitability and thus the access to capital and other sources of funding. Consequently, growth in lending slows down, which impacts on the level of NPLs. Therefore, NPL resolution must be a joint priority of the Government and the NBS.

The banking sector will remain liquid even in conditions of the largest assumed deposit outflow. Under the worst-case scenario, very few banks could enter the zone of high liquidity risk. In case the assumed scenarios materialise, the NBS may react by extending liquidity loans, i.e. by performing its lender of last resort function.

Based on network modelling, we conclude that there is no significant systemic risk component in the banking sector.

Recommendations

In November 2014, the level of NPLs fell for the first time since the start of the year. Nevertheless, amid lower rates of corporate loan growth, further improvement of the NPL resolution framework remains imperative in the context of preserving financial stability. Serbia has a high

share of NPLs, particularly in the corporate sector, despite the delicensing of banks in the previous period and an upgrade of the NPL resolution regulatory framework. If no further measures are taken, corporate NPLs will probably continue to rise. Also, over the near term, household NPLs are also very likely to increase mildly. Strengthening of the Swiss franc additionally aggravated the ability of close to 22,000 citizens to service their debts.

There are three main sources of potential NPL growth:

First, corporate sector may recover slower than expected, in case that: (a) the euro area and our other important foreign trade partners experience a more sluggish recovery than initially anticipated (b) positive effects of fiscal consolidation measures and structural reforms on growth of investments and net exports turn out to be lower than expected;

Second, the government's subsidised corporate lending programme intended as a support to liquidity maintenance and current assets financing, boosted corporate credit activity in the second half of 2014. However, despite the programme, real corporate credit activity remains low, while budgetary sources are insufficient for any significant stimulus to lending;

Third, amid persistent risks from the international environment, depreciation of the dinar exchange rate may dent bank clients' debt servicing ability, due to the high degree of euroisation of the domestic financial system.

Considering all of the above, the Government and the NBS will prepare a national NPL resolution strategy. Also, special diagnostic asset quality review (AQR) to be conducted by end-September 2015 using the ECB's methodology will contribute to better understanding of asset quality of domestic banks in a situation where the share of bad assets has become a systemic problem in the banking system.

⁵² After special diagnostic asset quality review is conducted, the NBS will carry out macroprudential stress tests based on the banking sector data that are corrected in line with the findings of AQR.

Text box 9: NPL determinants

Empirical research and other analytical studies have shown that in most countries NPL movements are predominantly determined by macroeconomic conditions. For this reason, within the framework of macroprudential stress tests of the National Bank of Serbia, the changes in NPLs are linked with the impact of macroeconomic factors. Due to insufficient data to estimate Serbia-specific elasticities, in the first phase of stress-testing assumptions were made based on expert judgment and using the elasticities derived from 51 banking crises in 54 countries over ten years (1994–2004). The assumed elasticities linking key macroeconomic variables with credit risk in Serbia are -0.7, 0.3 and 0.4 for changes in output gap, exchange rate and interest rate, respectively. In the second phase, in order to empirically verify the impact of these factors on the share of NPLs, we assessed the regression model of the monthly growth rate of the share of loan debt in default in total outstanding debt, based on NBS data. The analysis uses the following variables which explain movements in the dependant NPL variable (LU): the nominal exchange rate of the dinar against the euro (LE), key policy rate (LR) and seasonally-adjusted real net wages (LWRS) according to the NBS and Statistical Office sources.

Since all time-series have exactly one unit root, they need to be reduced to stationary transformations – the first differences. Estimates of model parameters for the January 2009 – December 2014 period, based on data on first differences of logarithmic values of series (monthly growth rates of variables) are presented in Table O.9.1.

The estimated model shows that the variable which influences NPLs with the longest time lag (eleven months) is the key policy rate, while the lag of the exchange rate and net wages equals four months. The strongest contribution to the explanation of variability of the dependant variable is provided by the exchange rate and the smallest by the key policy rate. As estimated parameters in the model represent elasticity coefficients, we may conclude that the one-percent monthly depreciation of the dinar against the euro causes a 0.45% monthly rise in NPLs after four months. On the other hand, a one-percent monthly increase in the key policy rate and seasonally-adjusted net wages leads to a monthly rise in NPLs of 0.13% or a fall of 0.25%, respectively. We highlight that individual estimates of model parameters are interpreted under the assumption of constancy (unchanged level) of other model variables. In addition to the mentioned variables, the model contains two impulse dummy variables and seasonal dummy variables for May and March, marked VS5 and VS3, respectively. The results of statistical tests show that the importance level of all variables is 1%, with the exception of wages whose importance level is 5%. Econometric tests confirm the absence of autocorrelation and the fulfilment of the assumption of normality of distribution of the stochastic model member (Table O.9.1).

Chart O.9.1. presents the valuation of the model prediction strength done by a comparative analysis of actual and predicted movements. The estimated model included data as at 31 December 2014. The projected share of NPLs was 23.5% in December 2014. As the actual share measured 21.5%, the prediction error in real value for the time horizon

Table O.9.1. **Coefficient estimates***
(%)

Dependent variable	DLU	
Independent variables	Coefficient estimates	P-value
Constant	0.0024	0.3313
DLE(-4)	0.4488	0.0002
DLWRS(-4)	-0.2513	0.0188
DLR(-11)	0.1332	0.0022
V1 (Dec 2009)	-0.1051	0.0000
V2 (Jun 2012)	-0.0624	0.0067
VS5	0.0473	0.0000
VS3	0.0291	0.0336
Econometric tests		
R-squared		0.5074
Prob(F-statistic)		0.0000
Prob(BLJQ(1) statistic)		0.4927
Prob(BLJQ(2) statistic)		0.7816
Prob(JB statistic)		0.3832

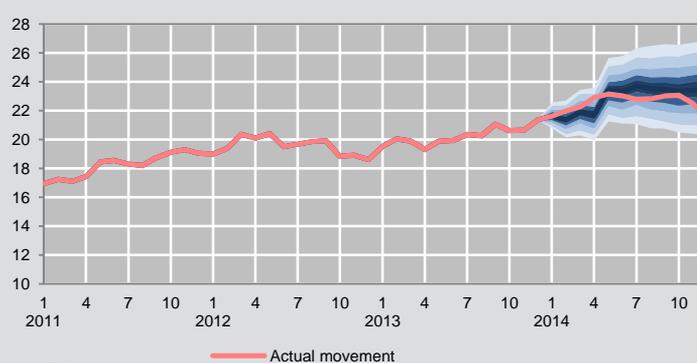
* NBS estimate.

Source: NBS.

stretching from Q4 2013 to Q4 2014 was 2 pp. The discrepancy between the projected and actual movement of NPLs was somewhat more pronounced in Q4 2014. This was due to the effect of subsidised loan programmes which were not anticipated in the framework of the measures of fiscal consolidation at the beginning of 2014, as well as write-offs of NPLs.

As the majority of empirical research explains NPLs by economic growth indicators, such as output gap or GDP growth, the quarterly econometric model was also assessed. In addition to the determinants used in the monthly model analysis, we included time series of seasonally-adjusted real GDP (LGDP) and the rate of unemployment (LUR). The unemployment rate was calculated based on unemployment data of the National Employment Service and data of the Statistical Office.

Chart O.9.1. Actual and projected share of gross NPLs in total loans* (%)



* NBS estimate.
Source: NBS.

Based on the method of gradual inclusion of the most significant explanatory variables, we estimated the econometric model presented in Table O.9.2. for the Q3 2008 – Q4 2014 period. The logarithmic values of all time series used in the model were first calculated and then transformed to the first differences, i.e. quarterly rates of growth. The most important contribution of this model is the significant current impact of the quarterly growth of the seasonally-adjusted real GDP. The GDP coefficient above one reflects a high degree of sensitivity of NPLs to economic growth, whereby this impact may be attributed to the NPLs of the corporate sector as they make up the bulk of NPLs of the banking sector. Similar to GDP, unemployment rate has a strong current effect with a positive sign indicating that an increase in unemployment induces a rise in NPLs. However, unemployment rate also has a three-quarter lagged effect with the opposite sign. This impact may be explained by the improvement of the financial position of an enterprise achieved by cutting employee expenses through layoffs. The exchange rate, similar to the model

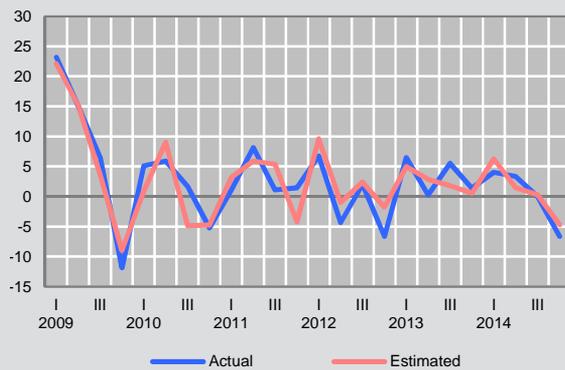
Table O.9.2. Coefficient estimates* (%)

Dependent variable	DLU	
Independent variables	Coefficient estimates	P-value
Constant	0.0265	0.0001
DLGDP	-1.6041	0.0141
DLE(-2)	0.3803	0.0274
DLUR	1.6453	0.0000
DLUR(-3)	-2.0138	0.0000
DLR(-3)	0.2072	0.0003
DLU(-1)	-0.5362	0.0370
Econometric tests		
R-squared		0.8643
Prob(F-statistic)		0.0000
Prob(BLJQ(2) statistic)		0.2994
Prob(JB statistic)		0.7267

* NBS estimate.
Source: NBS.

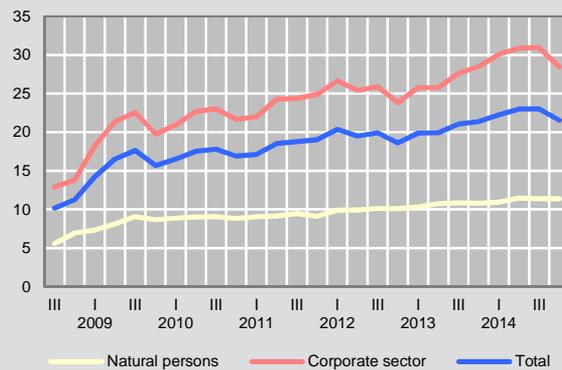
using monthly data, has a two-quarter lagged effect on NPLs. The lower value of the coefficient relative to the formerly used model is a consequence of the inclusion of new explanatory variables and use of data of different frequencies. The key policy rate has a three-quarter lagged effect. Comparing the coefficient for the exchange rate variable to the key policy rate coefficient, we may conclude that their relation reflects the degree of dinarisation of the newly granted loans which hovered around 46% at end-2014. The real net wages proved not to be significant in this model. Chart O.9.2. shows the actual and estimated quarterly change in the share of total gross NPLs.

Chart O.9.2. Actual and estimated movement in quarterly growth in the share of total gross NPLs*
(%)



* NBS estimate.
Source: NBS.

Chart O.9.3. Movement in the share of gross NPLs
(%)



Source: NBS.

To compare the effect of macroeconomic variables on different sectors, we assessed the household and corporate sectors (including public enterprises) separately. Table O.9.3. presents the assessment of model parameters. The specification of the model for corporate NPLs was the same as the specification of the model for total NPLs, but the assessment values were different. Although the direct effect of higher unemployment is most pronounced in the corporate sector, three quarters later, the feedback decrease in gross NPLs of the corporate sector was higher. GDP had

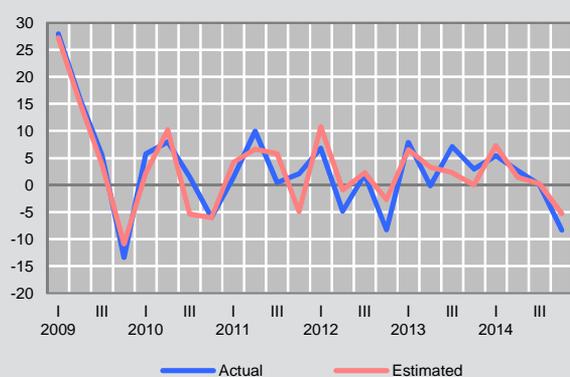
Table O.9.3. Coefficient estimates*
(%)

Corporate sector			Natural persons		
Dependent variable	DLU		Dependent variable	DLU	
Independent variables	Coefficient estimates	P-value	Independent variables	Coefficient estimates	P-value
Constant	0.0301	0.0004	Constant	0.0118	0.0001
DLGDP	-1.5829	0.0354	DLGDP(-2)	-1.1564	0.0141
DLE(-2)	0.3609	0.0806	DLWRS(-1)	-0.6319	0.0274
DLUR	1.8838	0.0000	DLE(-1)	0.6923	0.0000
DLUR(-3)	-2.3168	0.0000	DLR(-1)	-0.0996	0.0000
DLR(-3)	0.2179	0.0016	DLR(-3)	0.2409	0.0003
DLU(-1)	-0.4659	0.0707	DLU(-1)	-0.4893	0.0370
Econometric tests					
R-squared		0.8571	R-squared		0.6803
Prob (F-statistic)		0.0000	Prob (F-statistic)		0.0000
Prob (BLJQ(2) statistic)		0.3553	Prob (BLJQ(2) statistic)		0.1263
Prob (JB statistic)		0.7753	Prob (JB statistic)		0.6750

* NBS estimate.
Source: NBS.

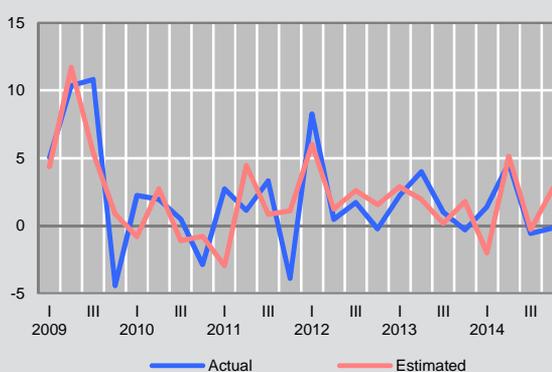
an almost identical effect on both sectors, whereas the effect of the exchange rate channel was slightly weaker in the corporate sector than the interest rate channel. On the other hand, specification of the model used for household NPLs differs from the previously estimated models as the unemployment rate is statistically insignificant. However, movements in seasonally adjusted real wages have a one-quarter lagged effect on the rate of increase in household NPLs. As expected, GDP does not produce immediate effect on household NPLs, but rather has a two-quarter lagged effect. Compared to its impact on the corporate sector, exchange rate has a more immediate, namely a one-quarter lagged effect on the household sector. Moreover, the effect of the exchange rate channel is contained in the coefficient of the key policy rate which also has a one-quarter lagged effect. Having in mind the estimated effects of the key policy rate and exchange rate, we can see that the effect of the exchange rate vis-à-vis key policy rate is more significant in the context of the household sector than in terms of the banking and/or corporate sector. This trend is the consequence of around 25% lower level of dinarisation of the newly granted household loans. Charts O.9.4. and O.9.5. show actual and estimated movements of the NPL level in the corporate and household sectors respectively.

Chart O.9.4. Actual and estimated movement in quarterly growth in the share of gross NPLs - corporate sector*
(%)



* NBS estimate.
Source: NBS.

Chart O.9.5. Actual and estimated movement in quarterly growth in the share of gross NPLs - natural persons*
(%)



* NBS estimate.
Source: NBS.

IV.3. Financial soundness indicators

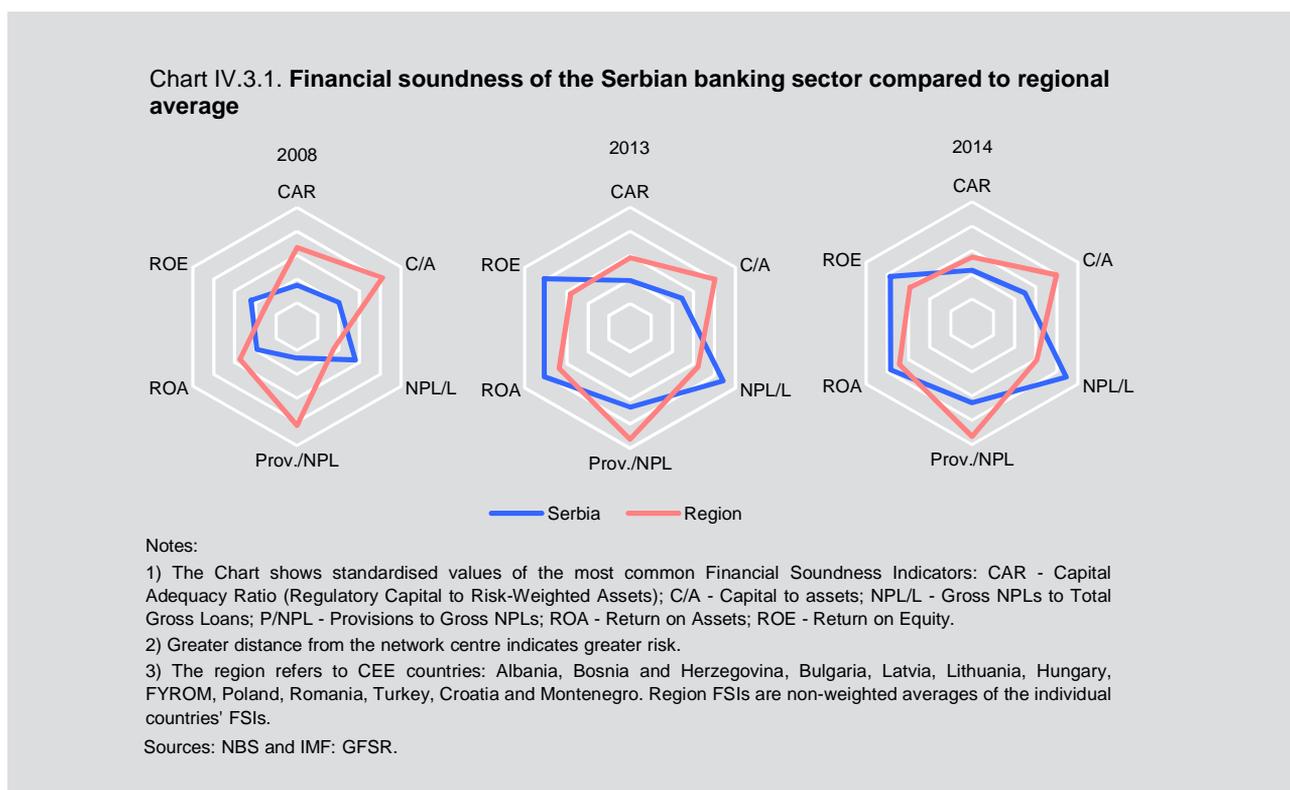
International comparisons of the financial system stability most often rely on the selected financial soundness indicators. Stability networks shown in Chart IV.3.1 display the value of six key indicators for Serbia and the region, at end-2008, 2013 and 2014: (a) capital adequacy, (b) balance sheet capital relative to balance sheet assets; (c) share of NPLs in total loans, (d) provisions for estimated losses relative to NPLs, (e) return on assets and (f) return on equity.

At end-2014, capitalisation of the domestic banking sector again exceeded the levels in the regional peers, which is a significant guarantee of stability for the entire financial system. The profitability of the Serbian banking sector however hovered below the regional average. The share of NPLs in total loans was higher than regional average, yet the level of total reserves for the coverage of potential losses against NPLs was far above the region's average.

In addition to the above indicators, the Financial Stress Index, a composite indicator based on the IMF methodology, is also applied to measure the financial

soundness.⁵³ This index was introduced to identify episodes of high financial stress, their culmination and duration; hence the FSIX 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. Negative values registered in the course of 2013 were detected in 2014 as well. Analysis of some of the indicators and their movements shows that a lower level of financial stress comes as a consequence of lower volatility of the exchange rate and stock exchange indicators, allowing for a positive assessment of financial soundness.

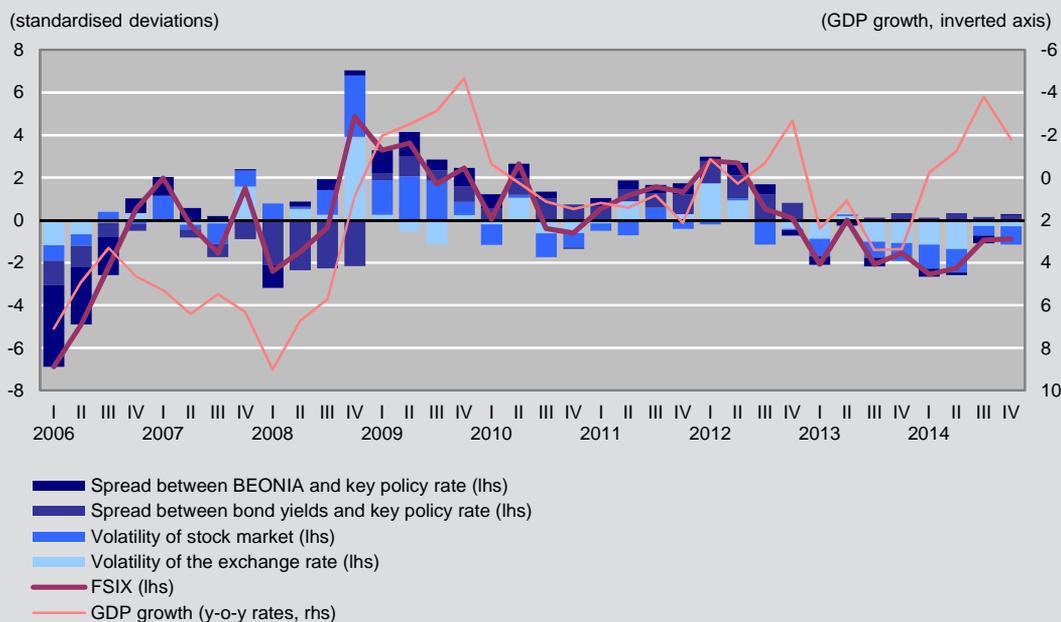
Given that the domestic economy is small and open and as such susceptible to influences from the international environment, an indicator of the impact of the common lender is applied in the analysis for measurement of the financial crisis spreading across countries which are reliant on the same source of funding. This indicator⁵⁴ 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 indicator arrived at is proportionate to the



⁵⁴ For more information on the methodology, see the Annual Financial Stability Report for 2012.

⁵⁵ For more information on the methodology, see the Annual Financial Stability Report for 2013.

Chart IV.3.2. **Financial Stress Index (FSIX) and GDP growth**



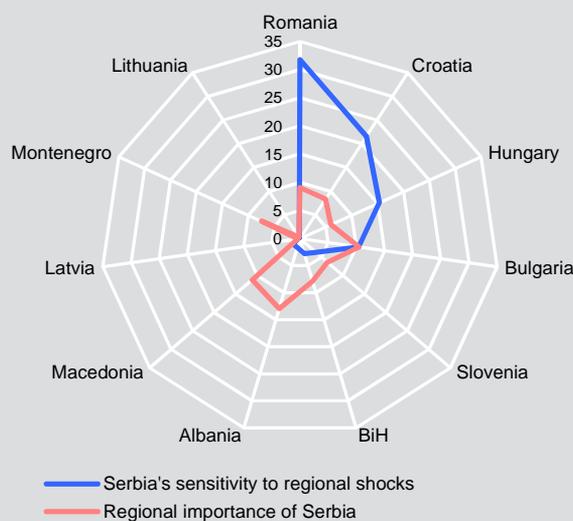
Sources: IMF and NBS.

probability of a financial crisis spilling from one country of the region over to the Republic of Serbia, i.e. to the probability of the crisis spilling over from the Republic of Serbia to other countries in the region.

The analysis was based on consolidated BIS reports on cross-border exposures of global banking groups that cover a large number of banks and countries, which makes them suitable for comparative analyses of cross-border exposures. Analysed were the exposures of banks from eleven countries to the Republic of Serbia and CESEE countries.

The results of the analysis are shown in the grid Chart IV.3.3. which indicates that in the event of a liquidity shock in any of the countries in the region, the greatest impact on the Republic of Serbia, through the common lender channel, would be exerted by Romania, Croatia and Hungary, while the Republic of Serbia would exert the greatest impact on Albania, Macedonia and Bulgaria.

Chart IV.3.3. **Shock transmission via common lender channel**



Sources: BIS and NBS.

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