

# ANNUAL FINANCIAL STABILITY REPORT



National Bank of Serbia

# 2012



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STABILITY REPORT

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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 hedging.

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

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

The *Financial Stability Report* aims to provide timely information about the current 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 and the Centre for Financial System Development. The *Report* uses data available as at the end of 2012.

The *Financial Stability Report* was adopted by the National Bank of Serbia’s Executive Board in its meeting of 26 June 2013. Earlier issues of the *Report* are available on the National Bank of Serbia’s website (<http://www.nbs.rs>).

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Diana Dragutinović, *Vice Governor*

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

## **ABBREVIATIONS**

**ARIMA** – Autoregressive Integrated Moving Average

**bln** – billion

**bp** – basis point

**CAR** – Capital Adequacy Ratio

**ECB** – European Central Bank

**EMBI** – Emerging Markets Bond Index

**FDI** – foreign direct investment

**LtD** – Loan-to-Deposit ratio

**GDP** – gross domestic product

**IFI** – international financial institution

**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

**y-o-y** – year-on-year

Other generally accepted abbreviations are not cited.

Key risks	Mitigating measures
<b>External risks:</b>	
<ul style="list-style-type: none"> <li>- change in the behavioural pattern of European banks towards reducing cross-border exposure, which could become an obstacle to domestic credit and economic growth in the medium term;</li> <li>- protracted crisis in the European Union (fragile recovery is not expected before 2014);</li> <li>- change in investor sentiment because of possible monetary policy tightening by the world's leading central banks and a consequent decrease in liquidity in the international financial markets;</li> <li>- insufficiently clear implications of the establishment of a Banking Union (single regulatory mechanism, supervision, resolution of troubled banks and deposit insurance) for countries outside the EU.</li> </ul>	<ul style="list-style-type: none"> <li>- active participation in international initiatives:               <ol style="list-style-type: none"> <li>1. <i>Vienna Initiative</i>:                   <ul style="list-style-type: none"> <li>- participation in the Full Forum;</li> <li>- cooperation with the Steering Committee for the purposes of enhancing home-host authority coordination;</li> </ul> </li> <li>2. <i>Belgrade Initiative – permanent channel of communication</i>:                   <ul style="list-style-type: none"> <li>- cooperation with banking groups, home supervisors, working groups within the Vienna Initiative, European and other international financial institutions for the purposes of:                       <ul style="list-style-type: none"> <li>- resolving the issue of NPLs and ensuring support of IFIs and parent banks;</li> <li>- development of the domestic capital market;</li> <li>- monitoring the effects of application of Basel III standards;</li> <li>- monitoring developments relating to the Banking Union;</li> <li>- better use of resources from special EU funds;</li> <li>- achieving agreement on approach to ECB swap arrangements;</li> <li>- <i>ex-ante</i> coordination of macroprudential measures;</li> <li>- publishing of stress-test results on a decentralised basis;</li> </ul> </li> </ul> </li> </ol> </li> </ul>
<b>Internal risks:</b>	
<ul style="list-style-type: none"> <li>- lack of a robust fiscal adjustment increases the likelihood of a public debt crisis;</li> </ul>	<ul style="list-style-type: none"> <li>- consolidation of public finance and implementation of structural reforms are needed; this calls for decisive action and may have a negative short-term impact on growth;</li> </ul>
<ul style="list-style-type: none"> <li>- exposure of the financial system to credit-foreign exchange risk;</li> </ul>	<ul style="list-style-type: none"> <li>- consistent implementation of the dinarisation strategy by all relevant stakeholders: the National Bank of Serbia, Government of the Republic of Serbia, banks and IFIs; the Government needs to support the use of the dinar at all levels, as well as to consider additional measures encouraging the use of the domestic currency;</li> </ul>

Key risks	Mitigating measures
<b>Internal risks:</b>	
<ul style="list-style-type: none"> <li>- increased pressures on the foreign exchange market;</li> </ul>	<ul style="list-style-type: none"> <li>- programme with the IMF:               <ul style="list-style-type: none"> <li>- to insure against external shocks;</li> <li>- to anchor fiscal responsibility;</li> <li>- to mitigate financial risks;</li> <li>- to catalyse structural changes;</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>- high share of NPLs increases banks' risk aversion, jeopardises the profitability of the banking sector and threatens to evolve into a systemic risk;</li> </ul>	<ul style="list-style-type: none"> <li>- banks should make plans for a reduction in the share of NPLs; mandatory direct write-off of NPLs; adopting regulatory framework for the bankruptcy of natural persons; stepping up activities relating to consensual financial restructuring; improving the process of out-of-court mortgage enforcement;</li> <li>- strengthening macroprudential supervision of the National Bank of Serbia and regulatory framework for resolution as the first line of defence against systemic risk;</li> </ul>
<ul style="list-style-type: none"> <li>- sluggish capital inflow caused by investor risk aversion due to the lack of fiscal adjustment;</li> </ul>	<ul style="list-style-type: none"> <li>- foreign sources of funding being scarce, domestic dinar sources should be developed by strengthening domestic institutional investors – insurance companies and voluntary pension funds;</li> </ul>
<ul style="list-style-type: none"> <li>- underdeveloped domestic capital market as an alternative source of funding;</li> </ul>	<ul style="list-style-type: none"> <li>- there is scope for further upgrading of the government securities market, which represents a basis for the development of other financial instruments;</li> </ul>
<ul style="list-style-type: none"> <li>- poor corporate governance in some financial institutions, with special emphasis on those in state-ownership;</li> </ul>	<ul style="list-style-type: none"> <li>- ownership consolidation, improving corporate governance and taking additional steps to boost capital adequacy of those institutions;</li> </ul>
<ul style="list-style-type: none"> <li>- sluggish capital inflow into the banking sector due to European banks' deleveraging, lower profitability of the domestic market and bad market conditions for the sale of government shares in good banks;</li> </ul>	<ul style="list-style-type: none"> <li>- providing incentives to banks to focus on the issue of long-term dinar debt with a view to broadening the sources of finance;</li> </ul>
<ul style="list-style-type: none"> <li>- inadequate real estate valuation which puts at risk banks that rely on real estate as collateral in case of a need to activate such collateral.</li> </ul>	<ul style="list-style-type: none"> <li>- introducing mandatory application of international standards in real estate valuation and valuer performance control mechanisms for the client, as well as compiling a more reliable and better quality index of change in real estate prices.</li> </ul>

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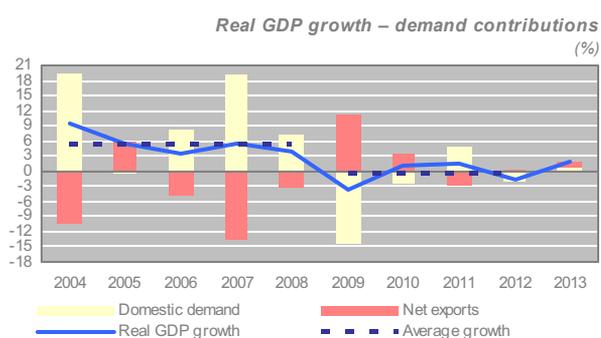


## Overview

*Sluggish economic recovery of the euro area and the deleveraging of European banks towards the Republic of Serbia represent the key risks emanating from the international environment.*

*The formation of a banking union is a likely development. Active participation in the Vienna Initiative should protect the interests of Serbia.*

*In 2012, Serbia saw economic downturn and an inflation rate above the target tolerance band. Better performance is expected in 2013: GDP growth led by investment and exports and inflation's return within the target tolerance band.*



*High fiscal and external imbalances represent the key challenges to economic policy makers. A strong fiscal adjustment is needed to ensure sustainability of public and external debt.*

The fall in economic activity of the euro area, measuring 0.6% in 2012, will continue into 2013, albeit at a slower pace (0.3%). Slow recovery of the euro area, which is not expected earlier than in 2014 despite accommodative monetary policy, and the deleveraging of European banks towards the Republic of Serbia represent the key risks emanating from the international environment. The shocks affecting the euro area spill over into Serbia through two channels – weaker foreign demand, which affects net exports, and strained access to sources of finance.

A change in the business model of euro area banks, which resulted in their diminished exposure, is based on three pillars: strengthening of the banks' capital base, strengthening of stable local sources of finance and preparing for potential crisis situations. To prevent fragmentation of the single currency market, the European Commission proposed a framework for the formation of a banking union, which is likely to be subject to further discussion and negotiation. Hence, any concluding assessments of this proposal from the aspect of interests of non-EU members are still premature. Nonetheless, all communication channels within the Vienna Initiative should be actively used with a view to protecting the interests of Serbia.

Unstable macroeconomic developments, which characterised the Serbian economy during the crisis, continued into 2012: negative economic growth, high and volatile inflation, as well as high fiscal and external imbalances. In 2013, GDP is expected to grow 2% and inflation to return within the target tolerance band, which could be regarded as a good performance in the changed post-crisis environment.

High fiscal and external imbalances may jeopardise the recovery of the Serbian economy. The sustainability of public debt and fiscal policy is now on the table, since public debt has not only exceeded the ceiling defined by the Law on the Budget System (45% of GDP), but also the limit above which a public debt crisis becomes possible (50% of GDP) and the Maastricht limit of 60% of GDP. A potential public debt crisis would also affect the stability of the financial system despite relatively low exposure to government securities.

*Foreign exchange reserves represent an adequate protection against extreme shocks, but cannot be a substitute for fiscal adjustment.*

*The environment in which our enterprises operated in 2012 was unfavourable. Debt of the corporate sector rose slightly. The upward trend in investment lending signals that the economy is capable of developing new production programmes. Overall performance of the corporate sector, however, gives a reason for concern.*

*Real wages are declining, and so is employment. Though real movements still sound a warning, household savings are growing at a somewhat faster pace. The maturity*

Fiscal and external imbalances may induce a change in foreign investor sentiment and hence represent the key challenges for economic policy makers in Serbia. A strong fiscal adjustment in 2013–2015 is a must, but this is not an easy task to achieve considering that higher public investments are also needed. Furthermore, fiscal adjustment affects the sustainability of the balance of payments deficit, which in its turn depends on the expected inflow of foreign capital, and FDIs in particular.

Foreign exchange reserves of EUR 10.9 bln (gross) or EUR 6.6 bln (net) at end-2012 stand an important safeguard of financial stability. They provide protection against extreme shocks such as a sudden stop to foreign capital inflow, deposit flight, loss of access to international capital markets, or natural disasters. All traditional and composite measures show that our foreign exchange reserves are at an adequate level.

In 2012 the corporate sector (non-financial corporations) faced persistent recessionary pressures, high inflation, significant depreciation of the dinar against the euro during the first eight months of the year, a decline in retail trade, extremely unfavourable weather conditions causing a sharp drop in agricultural output, as well as adverse trends in the euro area leading to a deterioration in export potential and deceleration of economic growth.

Debt of the corporate sector, measured as the share in GDP, edged up to 67.4%. It rose primarily on account of a fall in GDP that was recorded in 2012. The Serbian economy continues to have access to international capital markets for refinancing purposes. The trend of debt restructuring in favour of longer-term debt is sustained. The share of indexed bank loans rises, which together with external debt, amplifies the sector's exposure to the risk of volatility in the exchange rates of foreign currencies. Corporate deposits are down in real terms and the terms of financing are still unfavourable. Despite stagnation of total real lending growth, the upward trend in investment lending in place since 2011 continued. This is a positive sign indicating that the economy is capable of developing new production programmes and modernising existing capacities. On the other hand, the corporate sector remains strained by low liquidity and profitability, the lack of net current assets, financial expenditure, and a partial maturity mismatch between assets and liabilities.

As wages lagged behind the consumer price growth and employment plummeted in 2012, the standard of living gradually declined. Continuation of such a trend would have a negative impact on disposable household income,

*structure of savings is changing towards a greater share of short-term deposits. Lending activity is slowing down. Its debt being low, the household sector remains net creditor of the financial system.*

which could strain households' debt servicing capacity and push up the level of NPLs.

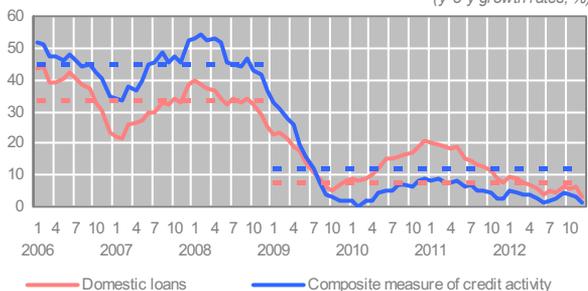
Total household savings gained RSD 132 bln in 2012, reaching 29.4% of banking sector liabilities. FX savings recorded a substantial increase, while dinar savings registered a real fall. The growth in household lending slowed down, but remained positive in real terms. The share of dinar loans in total lending continued up. On balance, interest rates on loans and deposits (dinar and FX) flatlined or recorded a mild increase. Its debt still low (19.3% of GDP), the household sector remains net creditor to the financial system as it uses, through loan and leasing agreements, 63.2% of its total financial assets.

*The banking sector is well-capitalised and highly liquid. Credit growth is softening. The share of NPLs in total loans is high, but fully provisioned for. Still, NPLs dampen profitability. Banks are relying increasingly on the domestic sources of funding.*

**Banking sector capital adequacy (%)**



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

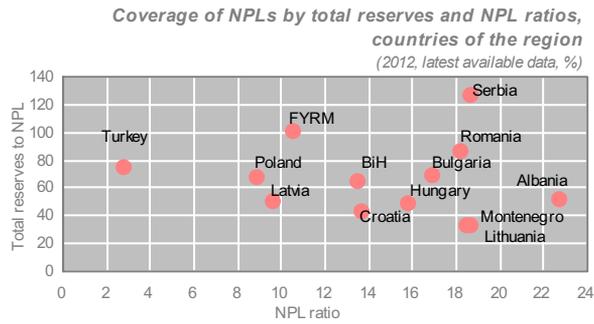


The Serbian financial sector is bank-centric. The share of the banking sector in total financial sector assets equals 92.6%. Key to preserving financial stability is the capacity of banks to perform financial intermediation effectively. The banking sector is well-capitalised – at end-2012 CAR equalled 19.9%, as a result of recapitalisation, changes in regulations and delicensing of one bank. International comparison of capital adequacy levels shows that the Serbian banking sector is the second among Central and East European countries thanks to conservative regulations.

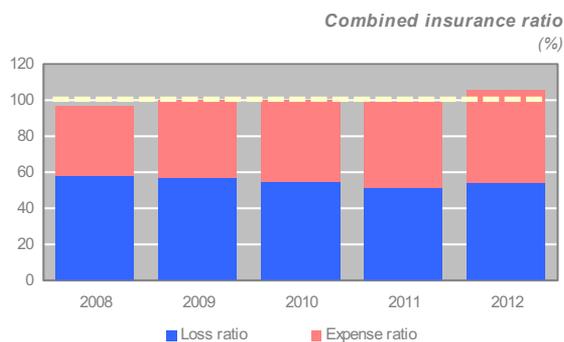
The business models of domestic banks are still quite traditional, oriented towards lending and deposit operations.

The pace of real lending growth slowed down, the negative contribution to composite growth coming from net repayment of cross-border loans by the corporate sector. Terms of borrowing in the domestic and foreign currency tightened. Slackened lending activity is attributable primarily to weak loan demand against the backdrop of low and negative economic growth and falling real wages. Though faced with limited availability of foreign sources of finance, banks are liquid and well-capitalised, which means that their ability to finance credit growth is not at play in this respect. Risk aversion, however, is and it works on the loan supply side. As the economy rebounds, sparking the demand for loans, a reduced loan supply may become an effective constraint on credit growth. Economic policy makers must be proactive and develop measures to respond to such a turn of events.

While the share of NPLs in total loans decreased by the end of 2012 to 18.6%, it remained relatively high and above the regional average (though it should be taken into account that data comparability is limited due to varying



**Insurance companies and voluntary pension funds are still not giving their full contribution to building a more diverse and resilient financial system.**



**The development of the government securities market is a prerequisite for the development of other segments of the financial market.**

**Risks from the real estate market spill over to the banking sector through several channels.**

definitions of NPLs). On the other hand, the level of total (accounting and regulatory) reserves for covering potential losses on these loans is the highest in the region.

Banking sector profitability declined from the previous year, reflecting elevated NPLs, high write-off of uncollectible claims and weak credit growth. With a 4.7% ROE, profitability of the domestic banking sector is somewhat below the regional average. Visible is a change in the behavioural pattern of banks and their increasing reliance on stable sources of finance – domestic deposits.

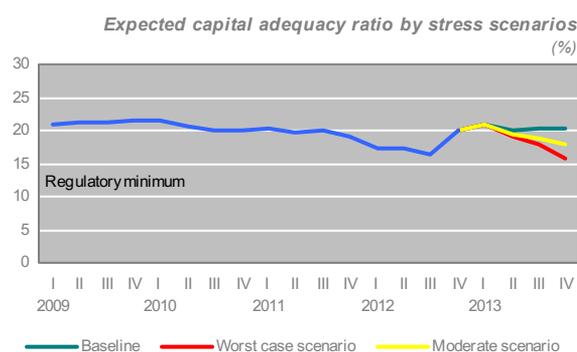
The insurance sector was well-capitalised in 2012. Still, its low profitability, attributable above all to high insurance administration expenses, could be a foretaste of solvency problems. While there are some positive, albeit slow, trends in terms of the rising share of life in total insurance premium and a constant increase in technical reserves, the Serbian insurance sector, as the most significant domestic institutional investor, remains underdeveloped.

The same applies to voluntary pension funds. With net assets of RSD 16 bln and around 180,000 beneficiaries at end-2012, this potentially important segment is still not giving its full contribution to the building of a more diverse and resilient financial system. For the VPF market to grow, we need a higher standard of living, a stable macroeconomic environment, primarily low inflation, and a developed domestic capital market.

Positive steps forward were made in 2012 in terms of the functioning of the government securities market, notably the primary market. Long-term macroeconomic stability is critical for the development of the dinar capital market. In the initial stage of development, it is important to establish efficient primary and secondary markets of government securities, which represent a basis for the development of other segments, such as corporate bonds and financial derivatives. The factors that could contribute to further development of the market of government securities include harmonisation of the clearing and securities settlement processes in Serbia with internationally accepted principles, ensuring international clearing and settlement of dinar government bonds, listing on the Belgrade Stock Exchange and development of FX hedging instruments.

Risks from the real estate market spill over to the banking sector primarily through the high level of NPLs incurred by corporates operating in the construction industry. Another important channel through which shocks in the real estate market work their way into the financial system are changes in the value of mortgaged real estate.

*The results of financial stability assessment show that the Serbian financial system is stable, though less so than in the pre-crisis period. As the amount of budget and deposit insurance funds available for bank resolution and recovery is limited, steps should be taken to boost capital adequacy in banks exposed to the risk of undercapitalisation.*



Inadequate real estate valuation falls in the category of major risks to the financial system since banks, which rely on real estate as loan collateral, are directly exposed to the risk of changes in real estate prices.

Solvency and liquidity stress-tests conducted by the National Bank of Serbia are tailored to accommodate the specificities of the Serbian banking sector. Solvency stress-tests aim to assess banking sector's resilience to a rise in credit risk, depending on movements in macroeconomic variables over a one-year horizon. Their results indicate that CAR of the Serbian banking sector would stay above the regulatory minimum even in a worst-case scenario. However, looking at banks individually, by the end of 2013 CAR could slip below the regulatory minimum in some instances. Given the budget constraints, and the limited amounts in the deposit insurance fund, it would be desirable if appropriate measures were taken to maintain or return above the regulatory minimum the CARs of banks which are likely to become undercapitalised in 2013. Liquidity stress-tests aim to gauge liquidity risk on account of a loss of confidence and unfavourable economic developments. Their results show that the liquidity ratio of the Serbian banking sector would stay far above the regulatory minimum even in case of the largest deposit outflow assumed.

Based on the results of network modelling, it can be concluded that there is no major systemic risk component in the banking sector.

The financial stress index is a composite indicator of financial soundness. It aims to identify episodes of elevated financial stress, their culmination and duration. Positive values of the financial stress index point to above average and negative to below average financial stress in the market. As the financial stress indicator moved below average in the second half of 2012, we can conclude that the stability of the domestic financial system is not under threat by this indicator either.



## I. Real sector

*Despite accommodative fiscal and monetary policies, the recovery of the euro area economy is not expected earlier than in 2014. A change in the business model of European banks and the likely formation of a banking union will undoubtedly make an impact on the financial and real sectors of the Republic of Serbia. By contrast to the euro area, the Serbian economy will start its recovery in 2013 – led by investment and exports, it is expected to grow around 2%. Furthermore, inflation will return within the target tolerance band. This could be regarded as a good performance in the changed post-crisis environment. However, tying credit growth to the growth in local sources of finance could become an obstacle to the achievement of potential economic growth. Household debt remains low, while the corporate sector is net repaying its debt. High fiscal and external imbalances may affect investor sentiment and, as such, represent the key risks faced by the Serbian economic policy makers. An adequate level of foreign exchange reserves guarantees protection against extreme shocks.*

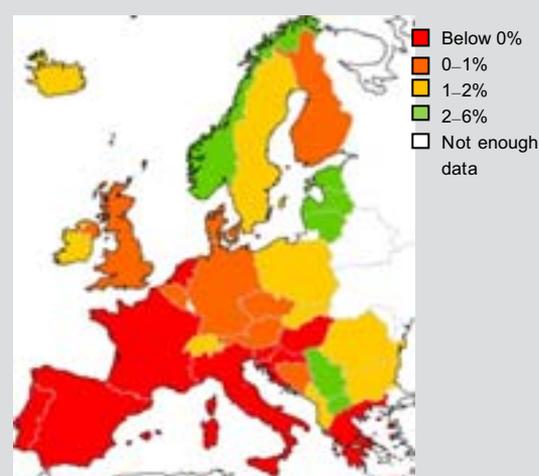
### I.1. International environment

*Sluggish economic recovery of the euro area and the deleveraging of European banks towards the Republic of Serbia represent the key risks emanating from the international environment. A change in the banks' business model, which resulted in their diminished exposure, is based on three pillars: strengthening of the capital base, strengthening of stable local sources of funding and preparing for potential crisis situations. To prevent fragmentation of the single market, the European Commission proposed a framework for the formation of a banking union, which is likely to be subject to further discussion and negotiation. Hence, any concluding assessments of this proposal from the aspect of interests of non-EU members are still premature.*

Since the last Financial Stability Report, the world has faced two key risks – a possible collapse of the euro area, amid the debt crisis in Greece and political instability in Italy, and a possible fall of the US economy over a fiscal cliff. Materialisation of any of the two risks would have led to a significant reduction in global growth and would have probably plunged the world economy into a new recession. Through joint efforts of economic policy makers, risks in the euro area have been put under control. Still, a lot needs to be done yet in order to reduce the vulnerability of European banks' balance sheets and to ease the terms of borrowing so that the availability of

sources of funding would not become a brake to economic growth. On the other hand, a partly solved “fiscal cliff” problem and the fact that the US macroeconomic policy is stimulating growth through rising external demand will have a positive effect on the euro area economy.

Chart I.1.1. GDP growth projections for 2013 - European countries (%)



Source: NBS, based on IMF data.

The economic contraction of the euro area in 2012 (0.6%) will continue in 2013, albeit at a slower pace (0.3%). A recovery is expected only in 2014 – 1.1% according to the IMF. New shocks in the euro area, however, remain a possibility, and so does a rise in interest rates in the United States and Japan if the markets assess their fiscal positions as unsustainable. A rise in interest rates would have a negative effect not only on the growth prospects of these countries, but on the global growth prospects as well.

Being a small and a rather open economy, Serbia is quite sensitive to developments in the euro area. The first reason for this is that the euro area is Serbia's main foreign trade partner, and the second, that the subsidiaries of European bank groups participate with around 75% in the domestic market. The shocks affecting the euro area spill over to Serbia through two channels – lower external demand, which directly feeds through into lower net exports, and lesser readiness or capacity of European banks to finance subsidiaries' lending activity and thus support domestic economic growth.

The rest of this chapter explains the role of the European Stability Mechanism as a firewall and safeguard of Europe's financial stability, sets out the measures taken by the ECB in order to ease stress in the financial markets, and outlines the remaining risks and planned reforms, as well as their potential implications for Serbia.

### **1.1.1. European Stability Mechanism – a safeguard of the euro area financial stability**

*The European Stability Mechanism is a permanent firewall for the euro area to safeguard against the crisis and provide instant access to financial assistance programmes for member states in financial difficulty. Its establishment has helped restore confidence in the financial stability of the euro area.*

The European Stability Mechanism (ESM) was established as an intergovernmental institution on 8 October 2012 following ratification of the ESM Treaty by 17 signatories.<sup>1</sup> The institution is managed by the Board of Governors, made up of the finance ministers of the euro area member states.

The ESM can use different instruments to support euro area stability – it can extend loans to countries in financial distress, purchase their debt in the primary and secondary markets and approve credit lines. The ESM can also finance indirectly the recapitalisation of troubled financial institutions by lending to the governments of states whose financial systems are under threat.

The adoption of the European Commission's proposal to entrust bank supervision to the ECB will also enable direct recapitalisation of banks in financial woes. This is very important as it eliminates the negative feedback loop between public debt growth in some member states and further financial deterioration of ailing banks.

The ESM financial assistance is conditional on the fulfilment of obligations defined by the Memorandum of Understanding (MoU) signed by a beneficiary state with the European Commission, the ECB, and, if applicable, the IMF. The ESM lending capacity is EUR 500 bln.

The ESM Treaty foresees financing from own capital and issue of debt securities. The ESM's paid-in capital of EUR 80 bln should be paid in tranches of EUR 16 bln. All member states paid in the first two tranches (EUR 32 bln) and the full amount is to trickle in by 2014. Member states also committed to provide up to EUR 620 bln in callable capital if paid-in capital is reduced through the absorption of losses. The ESM can issue bills and bonds with one month to 30-year maturity, the issuer of debt being itself and not its members.

The ESM has replaced the European Financial Stability Facility (EFSF) in its role of a safeguard to the euro area financial stability. The main differences between the two institutions are as follows: the ESM is an intergovernmental institution, whereas the EFSF was set up as a private company; the ESM was founded as a permanent and the EFSF as a temporary body; and finally, the ESM has own paid-in capital, while the EFSF raises capital based on member states' guarantees. The EFSF will continue to exist. However, it will approve no support programmes as of July 2013, but will only administer the programmes approved before the establishment of the ESM (EFSF aid to Ireland, Portugal and Greece) until all loans are repaid in full. The funds earmarked for the recapitalisation of Spanish banks will be transferred to the ESM.

<sup>1</sup> The Treaty establishing the European Stability Mechanism was signed by Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia and Spain.

## I.1.2. Unconventional monetary policy measures – helped lower the risk premium

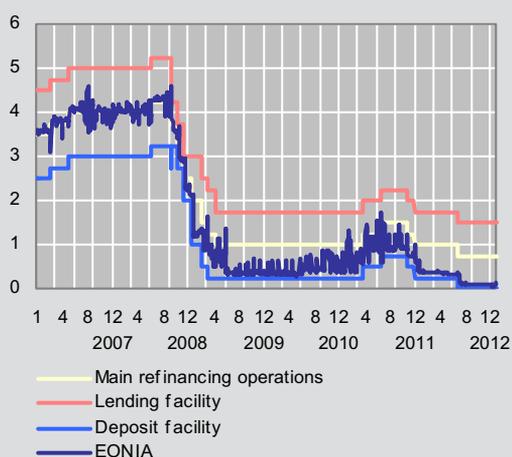
*To foster economic recovery and ease stress in the financial markets, the ECB implemented not only traditional, but also less conventional measures of monetary policy, which helped lower the risk premium and the cost of financing of public and private debt.*

1. Low reference rates – at the start of 2012, the ECB's main refinancing rate stood at 1%. It was cut further to 0.75% around mid-year.
2. Longer-term refinancing operations (LTROs) – on 20 December 2011 the ECB offered to euro area banks for the first time three-year low interest rate funding against the collateral of sovereign debt. The positive effects of LTROs were twofold – banks were given an injection of cheap liquidity and the yields on sovereign bonds accepted as collateral decreased. The second three-year auction, known as LTRO2, was held on 28 February 2012. While the auction held in December 2011 gathered 523 banks, the number of banks participating in the February auction climbed to 800. The loans granted under LTRO and LTRO2 fall due in late 2014 and early 2015, respectively, and it is essential that banks have access to capital markets when that time comes.
3. Outright monetary transactions (OMT) – the aim of ECB's purchase of sovereign bonds in the secondary market is to lower the cost of financing the public debt of

countries under an ESM or EFSF programme. The ECB announced OMT on 2 August 2012 and published the criteria member states must fulfil in order to qualify for debt purchase. It is necessary that a country has requested assistance, is participating in an ESM programme and has committed under MoU to implementing structural reforms so as to ensure long-term macroeconomic stability. The key difference between OMT and quantitative easing, which also represents the purchase of sovereign bonds in the secondary market, is that the former implies full sterilisation. The aim of these two types of operations is also different. Quantitative easing injects liquidity into the banking system in order to stimulate economic activity, while outright purchase is aimed exclusively at bringing interest rates down and all the liquidity created through OMT is fully sterilised. Not a single OMT was performed until the publication date of this *Report*, but the announcement of the programme itself was effective as it alleviated the pressure on borrowing costs.

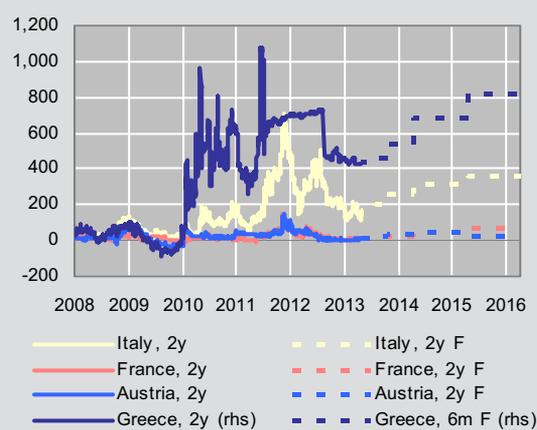
The ECB's readiness to make use of all monetary policy instruments available has managed to calm the jittery markets. ECB President Mario Draghi pledged to do whatever it takes, within his mandate, to preserve the euro, including efforts to reduce the high risk premiums on the sovereign debt of euro area members whose fiscal sustainability has been brought into question. In addition to Draghi's statement, the agreement on Greek bailout, securing funds for the recapitalisation of Spanish banks and establishment of the ESM also played a role in boosting confidence and appeasing the markets. As a

Chart I.1.2. ECB's interest rates and EONIA (%)



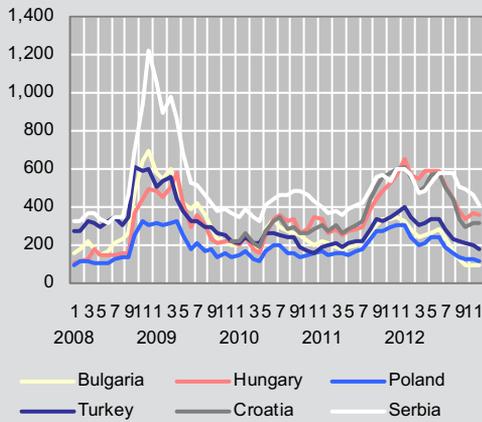
Source: ECB and Bloomberg.

Chart I.1.3. 2-year sovereign spreads relative to German bonds (bp)



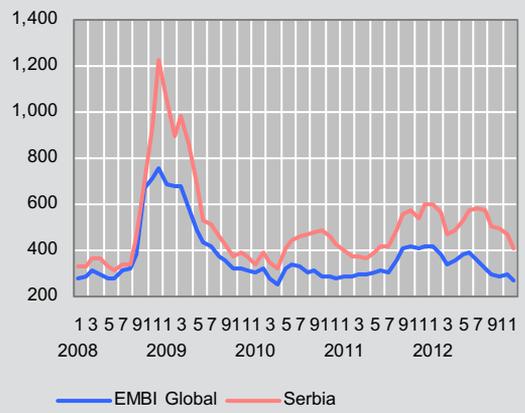
Source: Bloomberg.

**Chart I.1.4. Emerging Market Bond Index: Republic of Serbia and countries of the region (bp)**



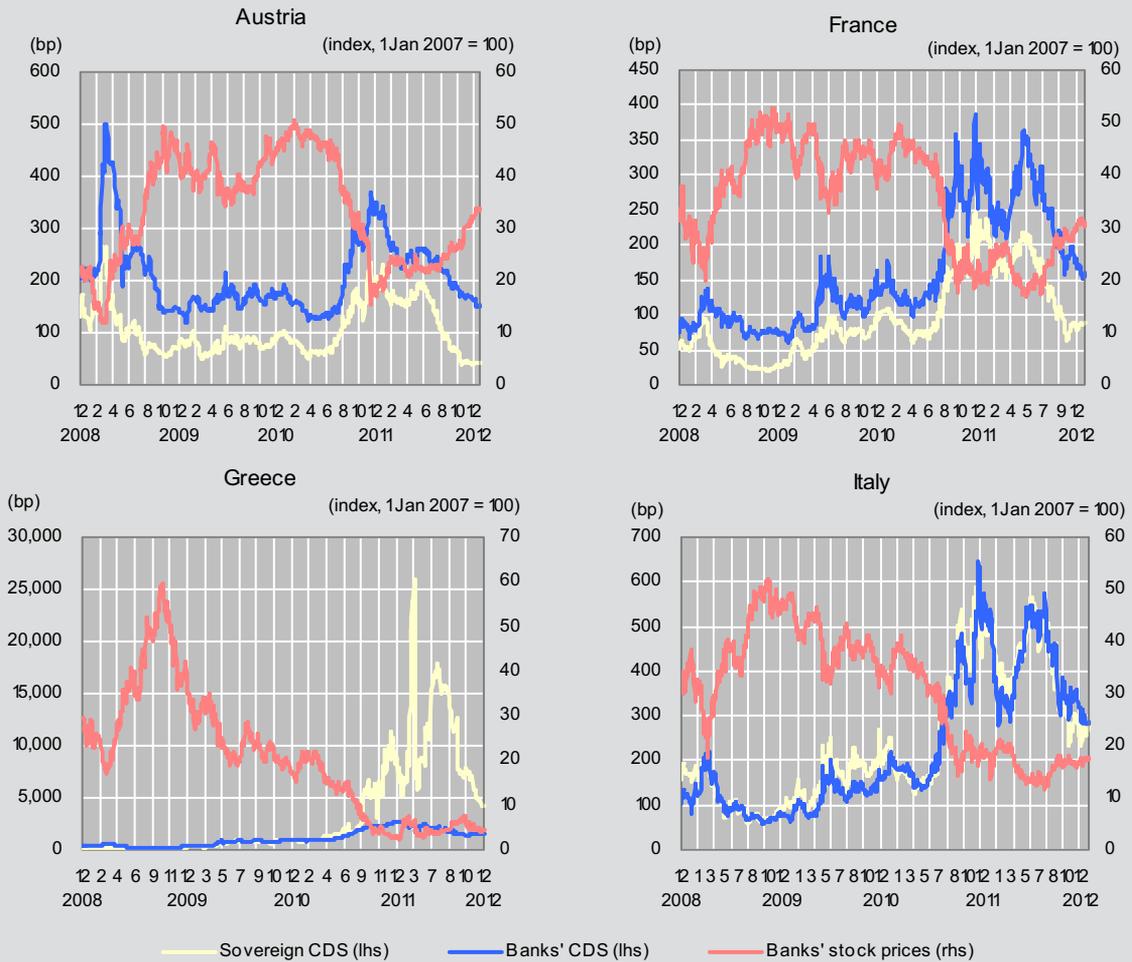
Source: J.P. Morgan.

**Chart I.1.5. Emerging Market Bond Index: Republic of Serbia and EMBI Global (bp)**



Source: J.P. Morgan.

**Chart I.1.6. Developments at home markets of domestically present banks**



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

result, the risk premiums of European countries and banks decreased, the yields on public and private debt went down, and the prices of European bank shares rebounded.

Still, the turbulent market reaction to political uncertainties in Italy and recent developments in Cyprus shows that the confidence remains fragile. Although the risk premiums are down for the time being, implicit yields on two-year bonds, derived from forwards, suggest that the markets expect further widening of the yield spreads between Greek and Italian relative to German sovereign bonds.

The key medium-term risks identified by the IMF include protracted stagnation in the euro area, structural reform fatigue and threat of new turmoil which could dent the only recently restored market confidence.

### I.1.3. From the risk of deleveraging to the risk of fragmentation of the single market

*Fragmentation of the single banking market and its impact on the deleveraging of European banks towards the Republic of Serbia represents the key risk to the country's financial stability. Though it is difficult to pinpoint the drivers of deleveraging, lack of good-quality domestic demand seems to have played the key role so far. As the economy recovers and domestic loan demand follows suit, loan supply and its main determinants will become an effective constraint. The main determinants of loan supply are the country's macroeconomic stability and relative profitability of the market, but also conditions in the home markets of European banks, their capital adequacy, access to sources of funding, etc.*

Accumulated vulnerabilities in the balance sheets of European banks are putting pressure on their profitability and capital adequacy. The stress tests conducted by the European Banking Authority (EBA) in 2011 revealed shortfall capital in 27 banks in the total amount of EUR 76 bln. At the EBA recommendation, these banks raised EUR 116 bln. Still, as the cost of capital is relatively high compared to current returns, most banks tend to respond by reducing their risk-weighted assets rather than by raising additional capital. Changes in the credit ratings of banks which participated in stress testing indicate an increase in the vulnerability of their balance sheets during the crisis (Chart I.1.7).

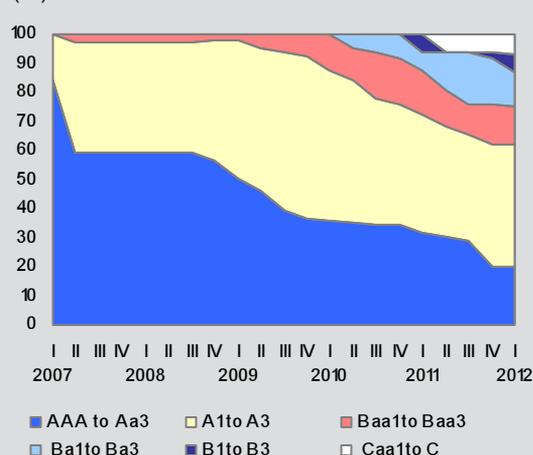
The business models of European banks are changing towards a smaller share of cross-border exposure. There is

evidence of increased home bias and reduced cross-border banking activity. Linking credit growth in host countries to the growth in local sources of financing is *de facto* fragmentation of the single market. In some instances, national regulators advised banks to withdraw from other markets in order to protect their taxpayers from potential losses.

The risk of deleveraging of European banking groups towards the Serbian financial and real sector was discussed in the previous Report. This risk persists and has intensified to the extent banking groups retrench to their home markets. As set out in the previous Report, deleveraging can be a healthy process. If accompanied with the strengthening of the domestic deposit base, it helps close the gap between local loans and deposits, which reduces the vulnerability of the domestic financial system to external shocks. Deleveraging could jeopardise financial stability only if it were sudden, disorderly and large in scope. There is no doubt, however, that this trend leads to fragmentation of the single market, as well as that it could strain the growth potential of Serbia and other emerging markets as the prospects of securing funding in underdeveloped local capital markets are limited. Serbia is very vulnerable to potential shocks on account of European banks' deleveraging, given that 75% of the Serbian banking sector assets are in foreign ownership. Chart I.1.8 shows the ratings of parent banks.

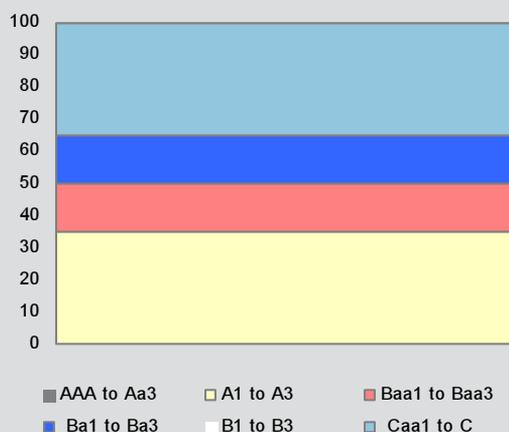
Establishing the significance of individual factors of deleveraging towards peripheral markets is far from easy. Two groups of factors can be identified: home and host country factors. The first group of factors includes bank

Chart I.1.7. Credit ratings of banks that participated in EBA's stress-tests (%)



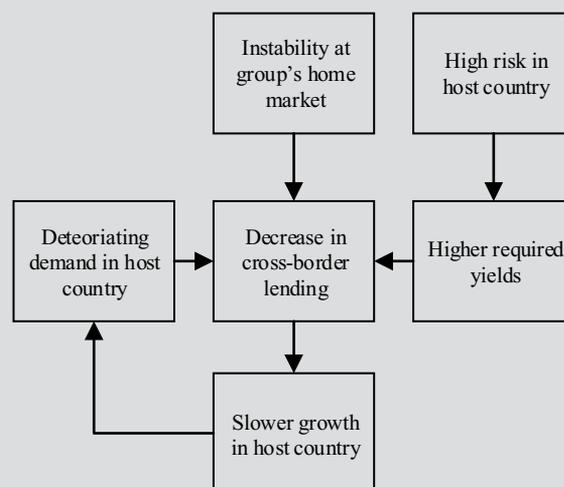
Source: Central Bank of Chile, based on data from Moody's.

**Chart I.1.8. Credit ratings of foreign banks with ownership stakes in Serbian banks**  
(April 2013, %)



Source: NBS, based on data from Moody's.

**Chart I.1.9. Interaction of demand and supply side determinants of cross-border lending**



Source: NBS.

financing costs conditioned by the government borrowing costs, domestic regulatory framework, investment alternatives in the home market, etc. The second group forks into factors working on the supply and demand side. The impact of factors working on the supply side is quite clear – high risk premiums, macroeconomic instability and low potential for profit-making dampen the supply of loans. The impact of factors working on the demand side is much more complex. Loan demand in a host country will depend on the country's economic performance, but this link can work the other way round too, so that limited loan supply is slowing the country's economic growth.

### Consequences of the changing business model of banks – reduced exposure towards Serbia

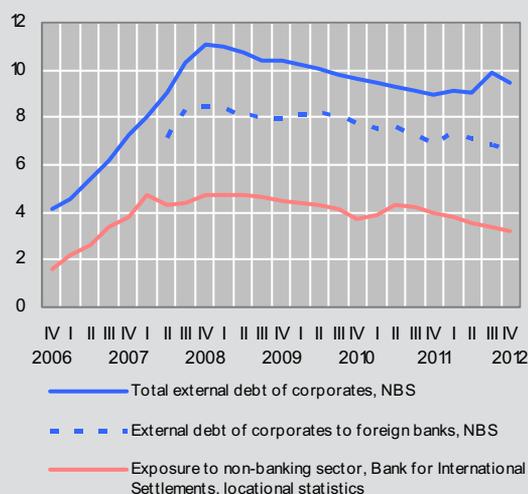
*Change in the business model of parent banks manifested through reduced exposure towards Serbia. Before the onset of the global financial crisis, local subsidiaries and the real sector relied considerably on external sources of financing. As of 2008, the exposure of European banks towards Serbia is on the decline. The reduction of exposure to the corporate sector is particularly pronounced, while exposure to the financial sector is relatively stable. Exposure to the corporate sector was cut primarily amid a lack of good-quality domestic demand, even though the role of bank risk aversion cannot be disregarded in this respect either. As the economy grows and domestic demand recovers, reduced loan supply could become an effective constraint on further growth.*

To get a thorough understanding of the dynamics and structure of deleveraging towards Serbia, all relevant and available data were used – NBS data on corporate external debt, data on external liabilities of domestic banks from the NBS Monetary Survey, data on exposure (defined under the Vienna Initiative as the sum of total loans and deposits of parent banks less the funds of local subsidiaries deposited with parents) and finally, locational statistics of the Bank for International Settlements. As, in addition to funding from foreign commercial banks, funding from IFIs also plays a significant role in financing domestic growth, external liabilities were divided into liabilities to commercial banks and other creditors wherever possible. Furthermore, in order to get a better insight, external positions of domestic banks were observed in gross, but also in net amounts.

Looking at exposure to the corporate sector, all data available indicate unambiguously that the exposure of foreign banks to domestic companies has decreased since the beginning of the crisis. According to NBS data, total external debt of the corporate sector declined by EUR 1.6 bln from end-2008. BIS data indicate the same trend – a decline in exposure by EUR 1.5 bln.

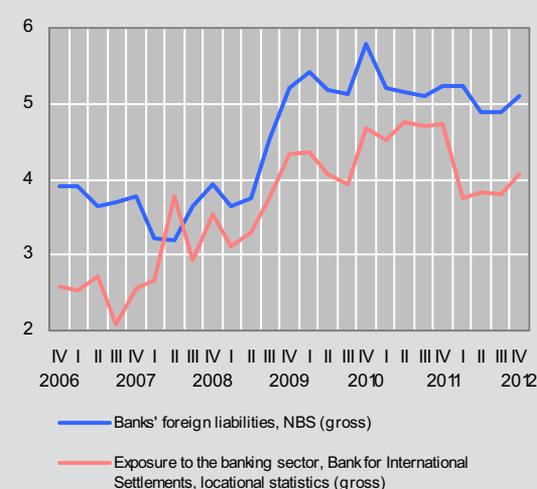
As regards exposure to domestic banks, different data paint a different picture of the situation. Based on NBS data, not only had gross external liabilities of domestic banks not fallen relative to the pre-crisis period, but were on a constant rise until end-2009 and have been relatively stable ever since. BIS data indicate a similar trend until end-2011. However, since the start of 2012 there has been

Chart I.1.10. **Gross exposure to the non-banking sector**  
(EUR bln)



Source: NBS and Bank for International Settlements.

Chart I.1.11. **Gross exposure to the banking sector**  
(EUR bln)



Source: NBS and Bank for International Settlements.

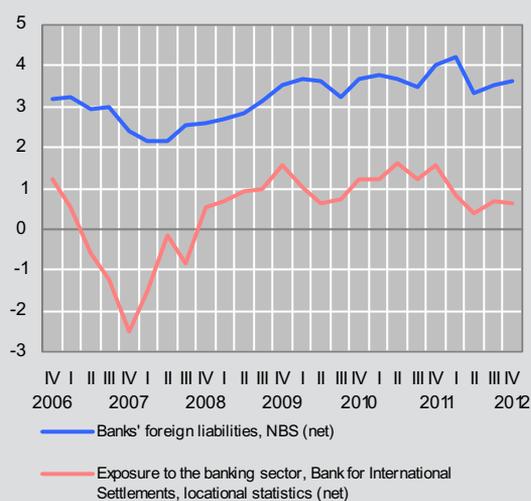
a significant difference in NBS and BIS data, the latter signalling a sharp fall in exposure throughout the year. The movements in net exposure to the domestic banking sector are in line with the trends suggested by the dynamics of gross exposure. The discrepancy between NBS and BIS data is visible also with net exposure.

In this context, several potential limitations of BIS data on the exposure of its members to Serbia should be taken into account. Two key limitations are: noise caused by the movements in the exchange rate of the dollar against the euro and incomplete data coverage (e.g. banks resident in Russia are not included in the sample). More information on the interpretation of BIS data is available in Text box 1.

The most commonly used measure of exposure has been defined under the Vienna Initiative as the sum of loans and deposits of parent banks placed with the domestic banking and real sectors less domestic bank funds deposited with parent banking groups.<sup>2</sup> Relative to end-2008, this type of exposure decreased by EUR 1.4 bln. The decrease in total exposure was led by the corporate sector's net repayment of cross-border loans, while exposure of parent banks to local subsidiaries has been broadly stable.

The main reason behind a reduction of European banks' exposure to the Serbian real sector is the lack of good-quality domestic demand. As the causality in opposite

Chart I.1.12. **Net exposure to the banking sector**  
(EUR bln)

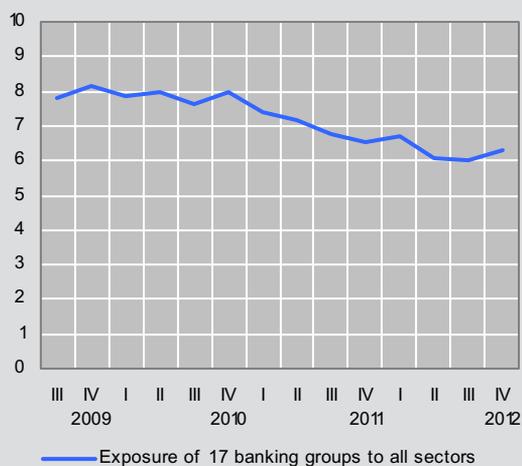


Source: NBS and Bank for International Settlements.

direction is also possible, in which case slow and negative credit growth affects economic growth, the direction of the causality was the subject of an econometric analysis. It has been established that economic growth has the greater power to affect credit growth than vice versa.

<sup>2</sup> Seventeen banking groups participating in the Vienna Initiative are included in the calculation of exposure.

Chart I.1.13. Vienna Initiative, banks' exposure to the Republic of Serbia, net (EUR bln)



Source: NBS.

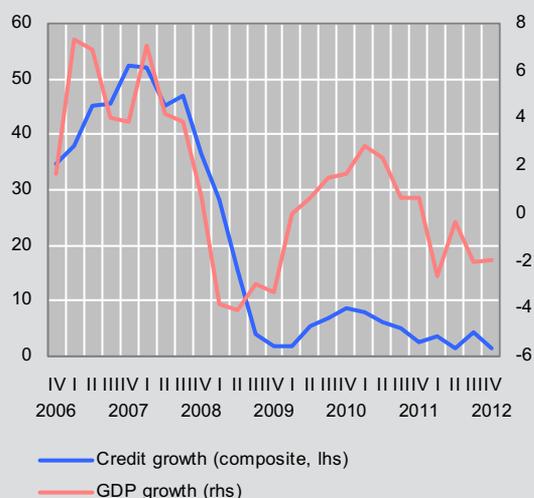
Still, in order to avoid a one-sided view of the problem, we also need to consider potential constraints on the loan supply of European banks, regardless of the type of lending – direct cross-border or indirect, through local subsidiaries. A certain tightening of lending terms has been identified. This tightening manifested in the rise in interest rates on newly-extended euro loans above the three-month EURIBOR. Detailed analysis of credit growth and lending terms is presented in chapter II.1, which gives an overview of the situation and movements in the banking sector. The identified constraint on the loan supply side is not effective at this point, i.e. it is not a brake to domestic growth, due to the low level of good-quality demand. Still, it is necessary to prepare on time and develop adequate measures if loan supply should become a limiting factor for economic growth.

It is estimated that the tightening of lending terms thus far is attributable to smaller availability and higher cost of bank funding on the one hand, and declining profitability and growing risk perception of the domestic market, on the other. The factors affecting loan supply in Serbia were discussed at the Belgrade Initiative forum.<sup>3</sup> On that

<sup>3</sup> Belgrade Initiative is the first host country cross-border banking forum, held at the NBS on 8 March 2013. It was jointly organised by the NBS and the IMF.

<sup>4</sup> The results of the Risk Assessment Questionnaire are published in the Risk Assessment of the European Banking System report on the EBA website. Out of the 35 banking groups which participated in the survey, 13 are present in the Serbian market (Erste Group Bank AG, Raiffeisen Zentralbank, KBC Group, Marfin Popular Bank PCL, National Bank of Greece, Alpha Bank AE, Piraeus Bank, Euroban Ergasias, BNP Paribas, Credit Agricole Group, Societe Generale, Gruppo UniCredit and Gruppo Bancario Intesa Sanpaolo).

Chart I.1.14. Real credit and economic growth (y-o-y rates, %)



Source: NBS.

occasion, representatives of European banking groups affirmed their commitment to the Serbian market, but said their decision-making on exposure levels will be increasingly guided by the relative market profitability.

The profitability of banks is what ensures the sustainability of their business. The EBA published the results of a questionnaire covering 35 banking groups, 13 of which are present in Serbia.<sup>4</sup> Most banks assessed that funding costs range from 10 to 12% and that the ROE needed for long-term business viability is between 10 and 15%. ROE in countries of the region, with several exceptions, is significantly lower than the estimated funding cost and is ranging from -5.4% to 22.2%. At 4.7% in 2012, ROE of the Serbian banking sector was below the regional average (6.4%)<sup>5, 7</sup>

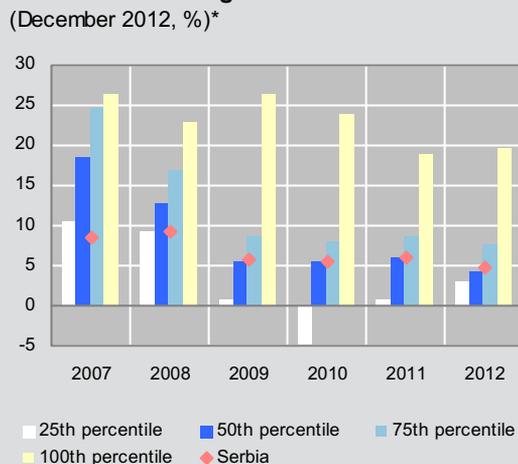
The profitability of banks operating in Serbia is encumbered by the high level of NPLs and the consequent provisioning against potential losses. A step in the right direction in this context is the set of recently adopted regulatory amendments, which removed legal obstacles to effective resolving of the problem of NPLs.

<sup>5</sup> The region means Central and East European countries: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Hungary, Latvia, Lithuania, Macedonia, Montenegro, Poland, Romania, Serbia and Turkey.

<sup>6</sup> Data for Serbia do not include Agrobanka, Nova Agrobanka and Razvojna banka Vojvodine.

<sup>7</sup> ROE of -5.4% and 22.2% relate to Romania and Latvia, respectively.

**Chart I.1.15. Return on equity in Serbia and countries of the region**  
(December 2012, %)\*



\* Latest available data. Data for Serbia exclude Agrobanka, Nova Agrobanka and Razvojna banka Vojvodine.  
Source: NBS and IMF: GFSR.

Further strengthening of macroeconomic stability will by all means have a positive effect on the country risk premium, whose lowering will make the Serbian market more attractive to foreign investors. However, what Serbia needs most in order to make long-term commitment to macroeconomic stability and sustainable growth credible are a strong fiscal adjustment and tighter fiscal discipline.

#### I.1.4. Banking union – response to the risk of fragmentation of the single market

*At the summit held on 28–29 June 2012, EU leaders concurred that the economic and monetary union must be reinforced in order to avert any future crisis. One of the key elements of further integration of the euro area is the formation of a banking union which rests on four equally important pillars: Single Rulebook, Single Supervisory Mechanism, Single Resolution Mechanism and Single Deposit Guarantee Scheme. The Single Rulebook means that banks in different countries would have to comply with the same set of rules (level playing field for all banks). The Single Supervisory Mechanism means that the monitoring of compliance with the said rules would be assigned to a single regulatory body. This would enable timely detection of risks in the operation of international banking groups, but also direct recapitalisation of banks by the ESM. The Single Resolution Mechanism involves different options: from liquidity and capital injections, bank splitting into a “good” and “bad” bank, to bankruptcy and liquidation,*

*the losses being shouldered by shareholders and creditors and not by taxpayers. This process would be managed by a single resolution body. Finally, the banking union would not be complete without a common deposit guarantee fund or, alternatively, without a fund that would insure insurers, so that depositors would not have to worry whether their national insurance systems will remain solvent.*

#### Single Rulebook

On 16 April 2013, the European Parliament adopted the Single Rulebook that will be applied in the 27 member states. This regulatory framework is *de facto* implementation of the Basel III standards which were discussed in the previous *Report*. The Single Rulebook consists of two legal instruments – a regulation to be applied in all member states and a directive to be applied by national regulators with a certain degree of flexibility i.e. allowing for the specific circumstances in their respective countries. The new rules will apply from 1 January 2014 if published in the Official Journal by 30 June 2013, or from 1 July 2014 if published between 1 July and 31 December 2013. The application of a Single Rulebook aims to create a level playing field for all participants and thus prevent regulatory arbitrage stemming from disruptions in the single market.

#### Single Supervisory Mechanism

On 12 September 2012, the European Commission proposed that the responsibility for banking supervision in the euro area should be assigned to the ECB. National regulators would retain their role in day-to-day supervision of bank operations and would participate in the development and implementation of the ECB's decisions. Single supervision under the auspices of the ECB is a prerequisite for direct recapitalisation of banks by the ESM.

#### Single Resolution Mechanism

From October 2008 to October 2011, EUR 4.5 trillion (37% of the EU GDP) was spent on government assistance to ailing banks. Though this helped avert the collapse of systemically important banks and the spill-over of negative effects on the real sector, taxpayers' money was spent and public finances sustained a severe blow.

On 6 June 2012, the European Commission unveiled a proposal for the Single Resolution Mechanism for ailing banks. The mechanism aims to ensure timely reaction at the first sign of a problem, and if banks do fail, the

shouldering of losses by shareholders and creditors, rather than by taxpayers. The proposed tools are divided into powers of prevention, early intervention and resolution.

Prevention includes obligation on the part of banks to prepare recovery plans, obligation on the part of authorities responsible for resolution to prepare resolution plans, and obligation on the part of banks to remove any obstacles to resolvability identified by the relevant authorities. Banks are also given the option to enter into intra-group support agreements to provide financial support to other entities within the group that are experiencing financial difficulties.

Early intervention powers are triggered when a bank does not meet or is likely to be in breach of regulatory capital requirements. In those circumstances, the authorities could require the bank to implement any measures set out in the recovery plan, to convene a meeting of shareholders so as to adopt urgent decisions, and to draw up a plan for the restructuring of debt with its creditors. In addition, supervisors will have the power to appoint a special manager at a bank for a limited period. The primary duty of a special manager is to restore the financial situation of the bank and the sound and prudent management of its business.

Resolution takes place if preventive and early intervention measures fail to redress the situation. The main resolution tool is the sale of business whereby the authorities would sell all or part of the failing bank to another bank. The second is the bridge institution tool which consists of identifying the good assets or essential functions of the bank and separating them into a new bank (bridge bank) which would be sold to another entity. The old bank with the bad or non-essential functions would then be liquidated under normal bankruptcy proceedings. There is also the asset separation tool whereby the bad assets of the bank are put into an asset management vehicle. This tool cleans the balance sheet of a bank and may be used only in conjunction with another tool (bridge bank, sale of business). The most significant resolution tool for failing banks is the so-called bail-in which implies recapitalisation through debt conversion into equity and dilution of shareholders. The costs of resolution would be borne by shareholders and creditors of the failed bank and not by taxpayers.

The proposed framework envisages cross-border coordination of national resolution authorities through resolution colleges. If market funding is not available, resolution actions would be financed from resolution funds which will raise contributions from banks proportionate to their liabilities and risk profiles. These

funds will be used exclusively for supporting orderly reorganisation and resolution, and never to bail out a bank.

### **Single Deposit Guarantee Scheme**

Under current regulations, deposits invested in the banking systems of EU member states are guaranteed up to the amount of EUR 100,000 per depositor. A credible deposit guarantee scheme plays an important role in maintaining financial stability because it averts panic that could lead to a sudden and massive run on banks.

On 12 July 2010 the European Commission proposed the introduction of compulsory mutual lending between national deposit guarantee agencies. If need be, the proposed solution would enable national deposit guarantee agencies to borrow the necessary funds from other agencies, which would mark the first step towards a Single European Deposit Guarantee Scheme.

### **Implications for the Republic of Serbia**

Though aimed at finding a solution to the current euro area crisis, the banking union will have an effect on the Serbian banking system too. As a country outside the EU, Serbia cannot be a part of the single supervisory mechanism, at least not in the beginning. However, it is necessary to establish cooperation with the ECB not only in relation to microprudential regulations, but also in relation to certain aspects of macroprudential regulations such as the introduction of the countercyclical capital buffer. Permanent mechanism of cooperation with the ECB does not exclude the need for bilateral agreements with participants in the Single Supervisory Mechanism.

It is expected that the mechanism will be open under certain conditions also to non-EU members such as Serbia, which would be a positive evolution. The main challenge, however, is the manner of integration. In order to encourage third countries to join in, rules must be developed to govern their participation in decision-making, as well as rules that will regulate access to liquidity and fiscal safety nets. A positive development is the appointment of the governor of the Bank of Albania to the Vienna Initiative 2.0 Steering Committee, as the only member outside the EU who will advocate the interests of non-EU member states.

The Single Supervisory Mechanism is just a first step towards a banking union, which is likely to be subject to further discussion and negotiation. Hence, any concluding assessments of this proposal from the aspect of interests of non-EU members, such as Serbia, are still premature.

### Text box 1: Interpretation of BIS data

BIS statistics on cross-border exposure of global banking groups comprises two data sets:

1. locational, and
2. consolidated statistics.

Both cover a large number of banks and countries, which makes them quite suited for comparative analysis of cross-border exposure. Still, in order to interpret data correctly, the main features of locational and consolidated statistics need to be taken into account.

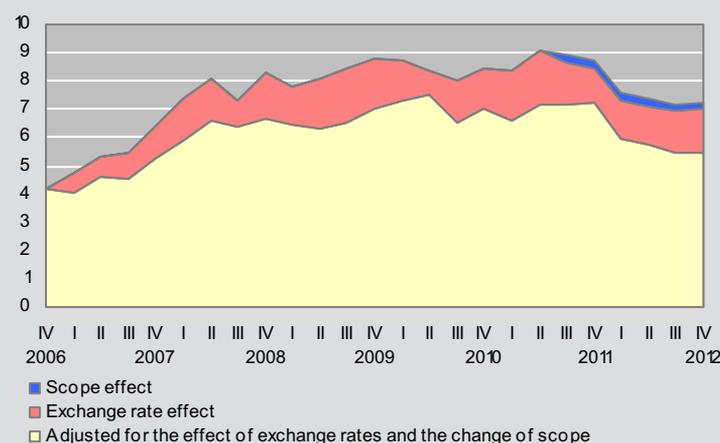
Locational statistics is structured according to the residence of reporting banks, which is consistent with the methodology of national accounts, balance of payments and external debt. In accordance with the residence principle, the exposure of all banks resident in a country is treated as the exposure of the country concerned (though often other than a home country). Hence the main analytical weakness of locational statistics is the inability to break down data on exposure by a country of a foreign bank's residence, home country and host country.

In consolidated statistics, data on cross-border exposure are not reported by all banks resident in individual countries, but only those being the ultimate parent companies in their groups. Consolidated exposure includes subsidiaries' claims on the countries of their residence and excludes inter-office positions within the group. Hence, consolidated statistics is conducive to breaking data down by the home country of the ultimate parent company of a foreign bank and by the host country, which is definitely an asset in comparative analysis.

In analysing BIS data, we must not forget that the currency BIS uses in its calculations is the US dollar. When a large part of a country's external debt is denominated in the euro or in some other currency, such as the external debt of Serbia, changes in the exchange rate of the euro against the dollar will seemingly show a change in exposure of banking groups to that country, even when the change did not take place at all. Locational statistics provides data on exposure in dollar terms, without any adjustment for the exchange rate, and data on change in exposure adjusted for the exchange rate. By combining these data sets, we can obtain exposure without the exchange rate effect. Consolidated statistics offers no possibility of adjustment for the exchange rate, which significantly lessens its suitability for analysing exposure to markets such as Serbia.

Finally, when interpreting statistics it is very important to take into account changes in the coverage scope of reporting banks. While Austrian banks, for instance, are included in the BIS reporting system, this is not the case with Russian banks. When the Russian Sberbank bought Austrian Volksbank, total exposure of BIS members decreased by the amount of Volksbank exposure, even though there was practically no deleveraging.

**Chart O.1.1. Banking groups' exposure to Serbia, locational statistics**  
(EUR bln)



Source: NBS, based on data from the Bank for International Settlements.

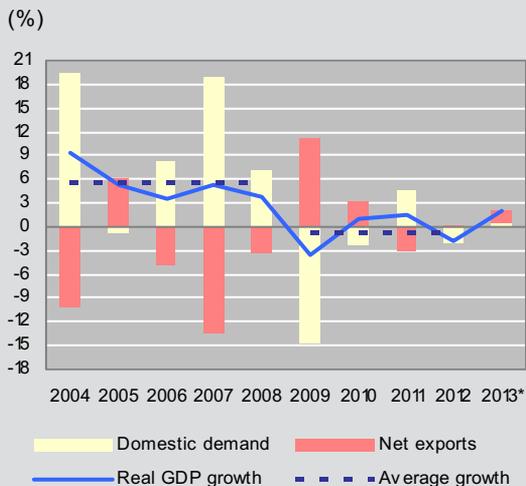
## I.2. Domestic macroeconomic environment

*Serbia experienced unstable macroeconomic developments during the crisis: low and negative economic growth, high and volatile inflation, and high fiscal and external imbalances. In 2013, GDP is expected to grow 2% and inflation to return within the target tolerance band, which could be regarded as a good performance in the changed post-crisis environment. On the other hand, high fiscal and external imbalances could affect investor sentiment and hence represent the key challenges for domestic economic policy makers.*

In the pre-crisis period, from 2002 to 2008, the Serbian economy grew at the average rate of 5%. This growth was consumption-driven. During the crisis, from 2009 to 2012, the Serbian economy contracted by 3% in total, which means that our GDP has still not returned to its pre-crisis level.

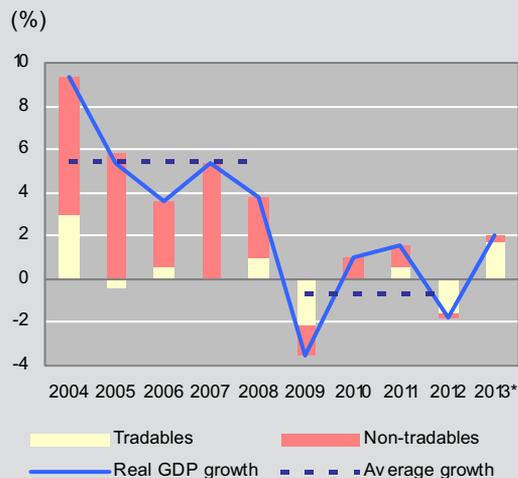
In 2012 alone GDP fell by 1.7%, as a consequence of poor agricultural season caused by extremely bad weather which dampened product supply, as well as of low

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



\* NBS projection.  
Source: NBS.

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



\* NBS projection.

Source: NBS.

investments and recession in the euro area which weighed down the demand for Serbian exports.

Low and negative economic growth during the crisis was accompanied by the rebalancing of the growth model. The key element of this rebalancing are exports whose share in GDP in the Republic of Serbia is indeed low in comparison to other countries in the region. Charts I.2.1. and I.2.2. clearly show that the contribution of net exports to growth is increasing.

Investments represent another important element of switching to the new model of growth. Domestic investments are desirable, but Serbia also needs those from abroad, and FDI in particular. In the last eight years, most foreign investments were channelled into non-tradables, while FDIs in production activities were modest (Chart I.2.3).

Led by net exports, GDP is expected to grow 2% in 2013. The main contributions to exports will be coming from two companies (Fiat and Serbian Oil Industry) and from agricultural products.

In July 2012 inflation overshoot the upper bound of the target tolerance band, settling at the end of the year at

\* According to World Bank data, in the period 2004–2011 the Serbian exports-to-GDP ratio averaged 30.2% and was almost twice lower than the regional average (50.9%). The region includes Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Hungary, Macedonia, Montenegro, Poland, Serbia, Slovakia and Slovenia. The average is unweighted.

Chart I.2.3. **Gross FDI, by industry sector**  
(EUR bln)

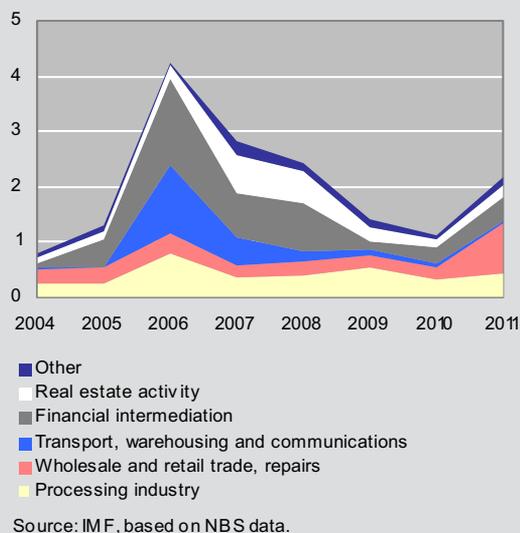
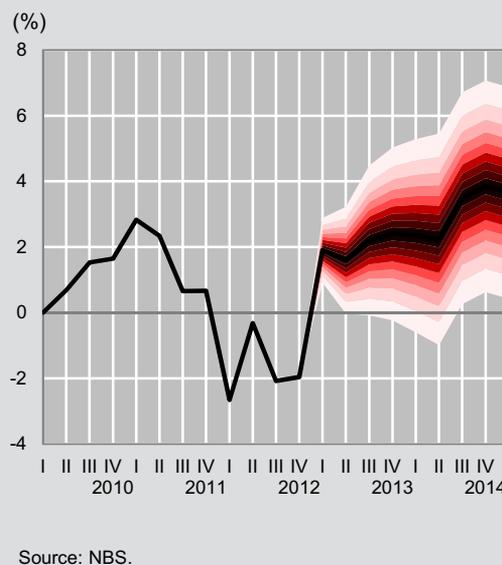


Chart I.2.4. **Projection of real GDP growth**



12.2%. Inflation growth was driven not only by supply-side shocks (food price, administered price and consumption tax hikes), but also by those on the side of demand (fiscal expansion and strong depreciation). Still, what exerted the greatest impact on inflation were the prices of food and the exchange rate.

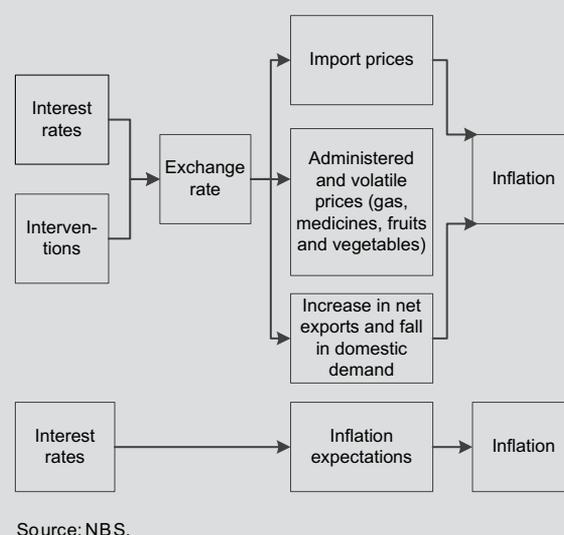
To stem inflation growth, the NBS tightened its monetary policy stance by raising the key policy rate and by intervening in the foreign exchange market. The NBS relied on the exchange rate and inflation expectations as the strongest channels of monetary transmission. Following a 25 bp cut in January, the key policy rate was raised in six steps during the year by a total of 175 bp. Overall in 2012, the NBS spent EUR 1.3 bln from net foreign exchange reserves on its interventions in the IFEM. By changing the structure and ratio of FX reserve requirements, the NBS released additional EUR 650 mln, which is an intervention as well – from gross foreign exchange reserves though.

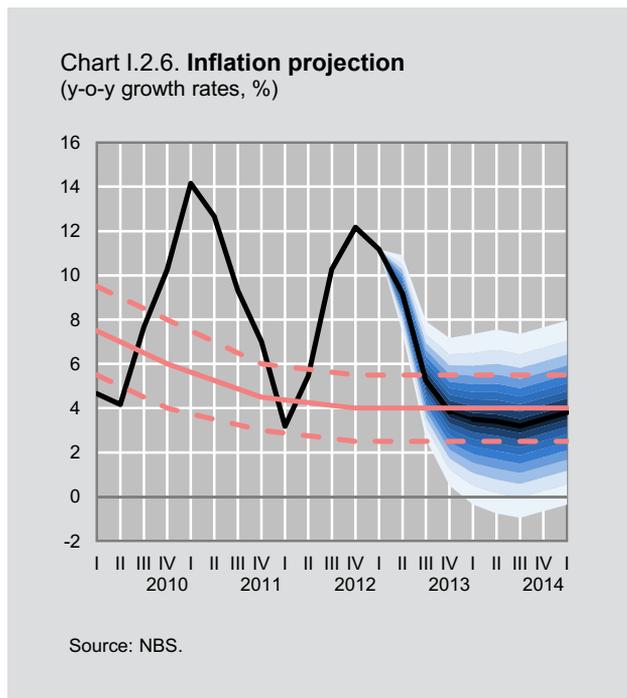
As a result of tightened monetary policy stance, inflation started falling and is expected to return within the target tolerance band in 2013.

Interventions in the foreign exchange market were not inconsistent with the inflation targeting framework. They

are justified to the extent they aim to ease excessive daily volatility of the exchange rate, to ensure smooth operation of the foreign exchange market and to maintain an adequate level of foreign exchange reserves. However, in

Chart I.2.5. **Strongest transmission mechanisms of monetary policy**





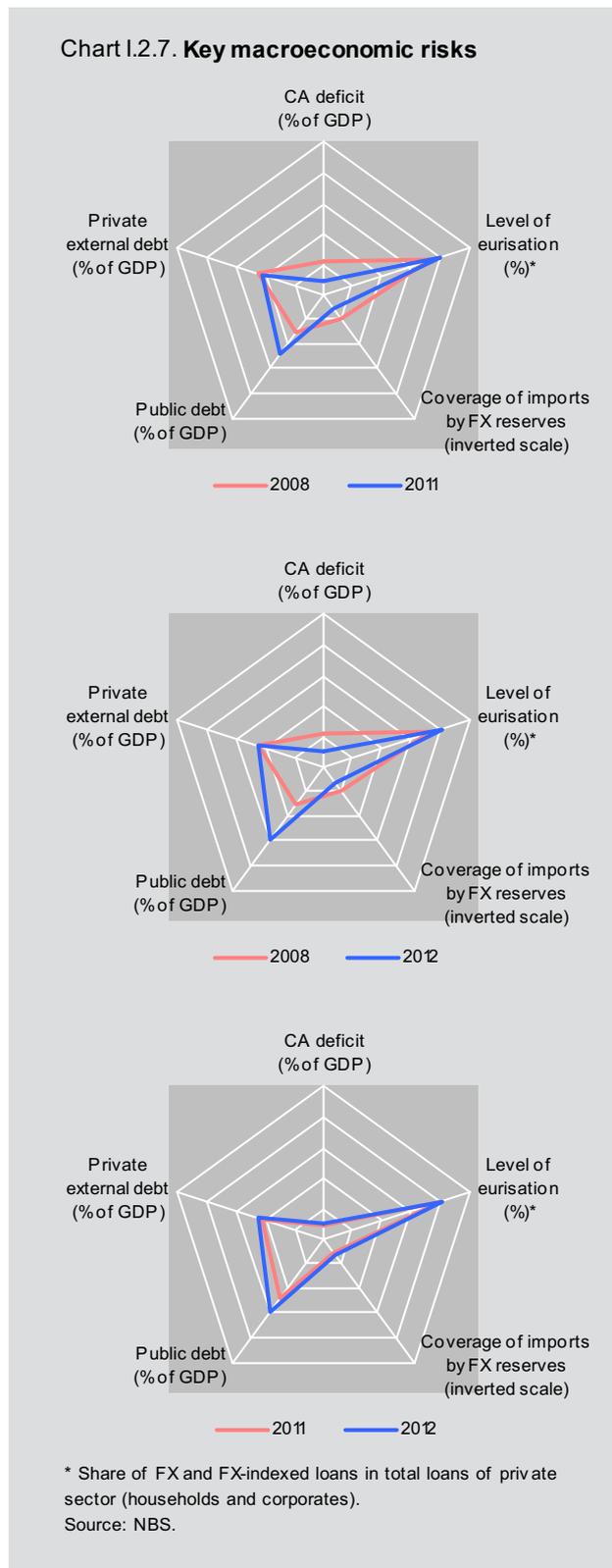
a highly euroised economy, such as that of Serbia, there are additional reasons for interventions in the foreign exchange market. High volatility of the exchange rate affects not only inflation, but also the balance sheets of the real sector due to the asset-liability currency mismatch, and through these balance sheets it affects the quality of banks' credit portfolio and thus, financial stability at large.

What must be taken into account when deciding on an intervention is the deviation of the market from the equilibrium exchange rate, the pass-through of depreciation to inflation (in order not to jeopardise the inflation target) and the pass-through effect on NPLs (in order not to jeopardise financial stability).

Depreciation is an important inflation determinant in Serbia as one percent depreciation of the dinar against the euro pushes inflation up by 0.34% in the short term and by as much as 0.75% in the long term.

Depreciation is also the main determinant of NPL growth in the domestic banking sector. One percent depreciation of the dinar against the euro leads to a 0.74% growth in NPLs.<sup>9</sup>

<sup>9</sup> For more information see "NPL determinants" in chapter IV.



Finally, depreciation of the dinar improves the country's balance of payments position. Thus, real one percent depreciation of the domestic currency causes in the short run a 0.45% fall in real imports and a 0.74% rise in real exports. Elasticity is even higher in the long run – one percent depreciation leads to a 0.60% drop in real imports and a 0.90% growth in real exports. The weakening of the dinar has a beneficial impact on the current account deficit in both short and long run – by increasing the competitiveness of the domestic economy it serves as a fillip to export-based GDP growth.

Due to the simultaneous impact of depreciation on the balance of payments, inflation and NPLs, monetary and macroprudential policy instruments need to be carefully fine-tuned. To make this fine-tuning, and especially reliance on interventions in the foreign exchange market, possible, it is necessary to maintain an adequate level of foreign exchange reserves.

Despite switching to the new model of growth, vulnerability indicators<sup>10</sup> suggest that macroeconomic imbalance in 2012 remained practically unchanged from 2008. The sources of vulnerability, on the other hand, did change. The current account deficit was halved and the coverage of imports by foreign exchange reserves expanded. The degree of euroisation, measured by the share of FX-denominated and –indexed loans, increased. The share of public debt in GDP doubled, while the share of private sector external debt remained unchanged.

Relative to 2011, the general macroeconomic imbalance widened because of the yawning fiscal deficit and public debt that overshot the level above which a public debt crisis becomes a possibility. A robust fiscal adjustment is needed to reduce fiscal and external imbalances, to preserve financial stability and to foster sustainable economic growth.

### I.3. Foreign exchange reserves as insurance against shocks

*Foreign exchange reserves are an important safeguard of financial stability as they represent insurance against extreme shocks. At end-2012, gross foreign exchange reserves equalled EUR 10.9 bln and net EUR 6.6 bln. Indicators and different scenarios*

<sup>10</sup> Key vulnerability indicators for the Republic of Serbia are shown in Chart I.2.7. 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

**Table I.3.1. Adequate level of FX reserves, end-2012**

Adequacy indicator	Adequate level (EUR bln)
Coverage of three months of imports	4.6
Coverage of three months of current payments	5.1
Coverage of short-term external debt at remaining maturity	4.9
Coverage of 20% of broad money (M3)	2.9
Coverage of foreign exchange deposits	10.1
Coverage of short-term external debt at remaining maturity and current account deficit	6.8
<i>Wijnholds – Kapteyn</i> indicator	6.4
<i>Roaf – Norris</i> indicator (stress-scenario)	6.8
"Right measure for Serbia"	7.2
<b>Level of FX reserves</b>	
Gross	10.9
Net	6.6

Source: NBS.

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

Symbol	Parameter	Scenario			
		1	2	3	4
Y	Damage caused by sudden stop	7%	7%	7%	7%
r	Yield on reserves	2%	2%	2%	2%
g	Average GDP growth	3%	3%	3%	3%
$\sigma$	Risk-aversion	2	2	2	2
$\delta$	Opportunity cost	1%	1%	1%	1%
$\pi$	Probability of sudden stop	10%	10%	10%	10%
$\lambda$	Size of shock (% of GDP)	20%	20%	25%	25%
$\Delta Q$	Real depreciation	0%	10%	0%	10%
$\rho$	Optimal level of reserves (EUR mln)	7,072	8,305	8,577	9,359
Gross FX reserves of NBS (2012, EUR mln)		10,914			

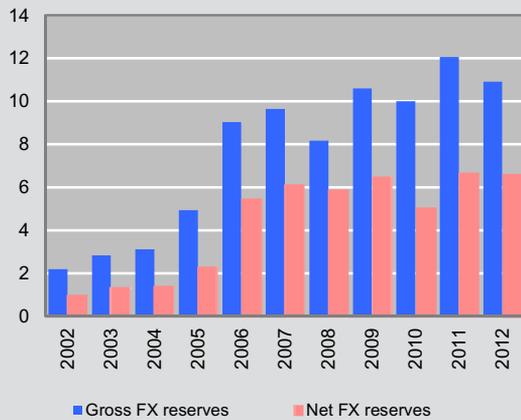
Source: NBS.

*run through the foreign exchange reserves adequacy model show that the foreign exchange reserves of the Republic of Serbia are at an adequate level.*

The National Bank of Serbia holds foreign exchange reserves for the purposes of financing balance of payments needs, intervening in the foreign exchange market and dealing with contingencies such as natural disasters.

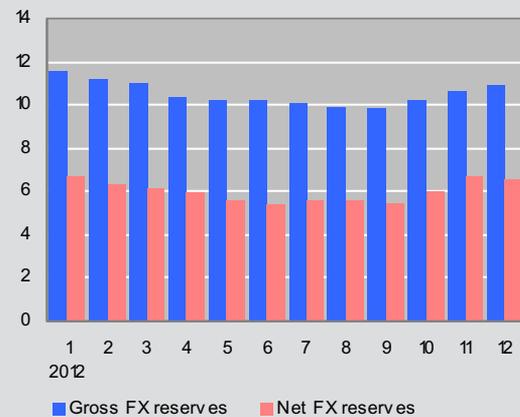
in the indicator's distance from the centre of the chart signals elevated risk and a threat to stability. The farther away from the centre an indicator is, the greater the vulnerability of the economy.

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



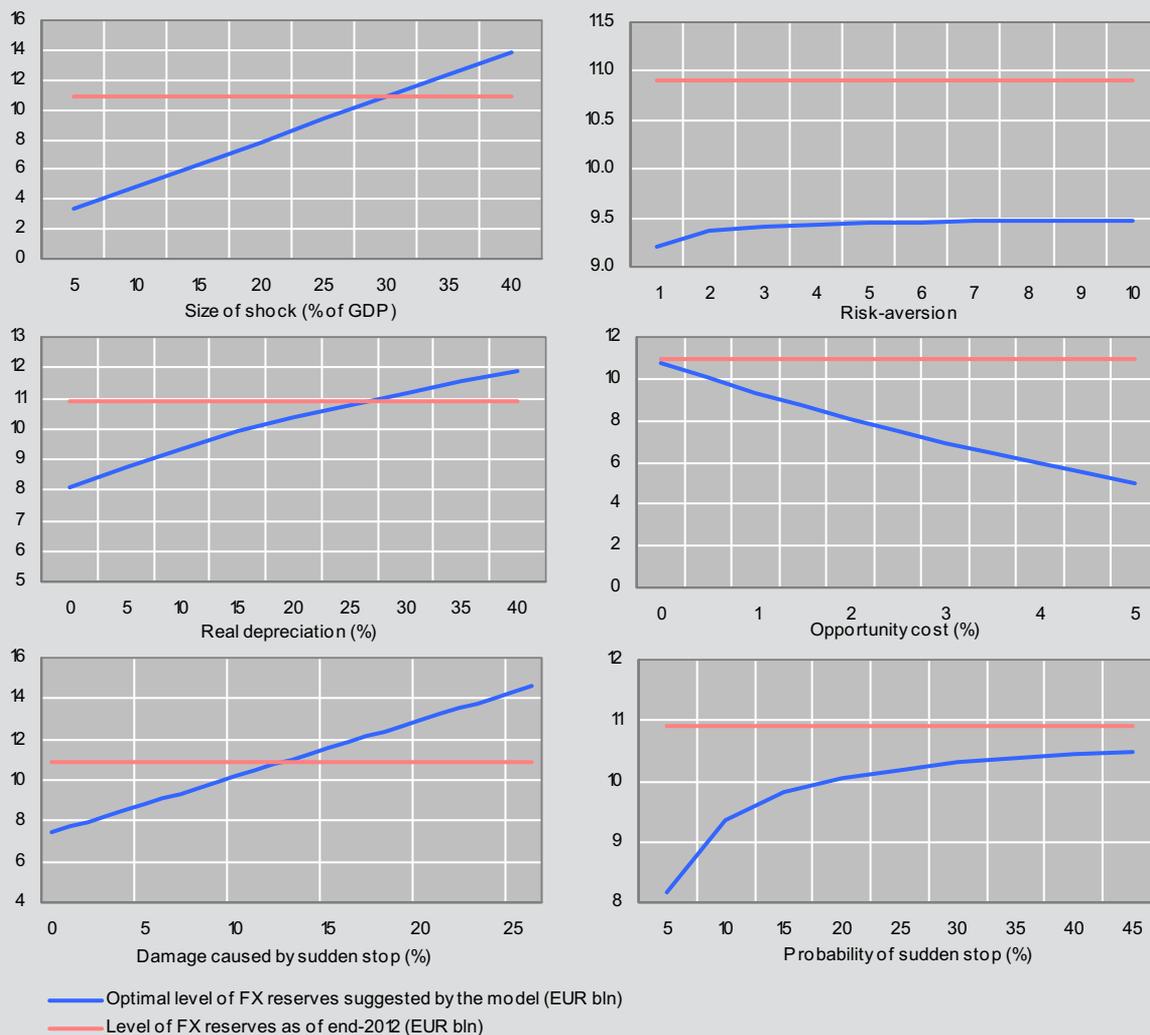
Source: NBS.

**Chart I.3.2. FX reserves of the National Bank of Serbia over 2012 (EUR bln)**



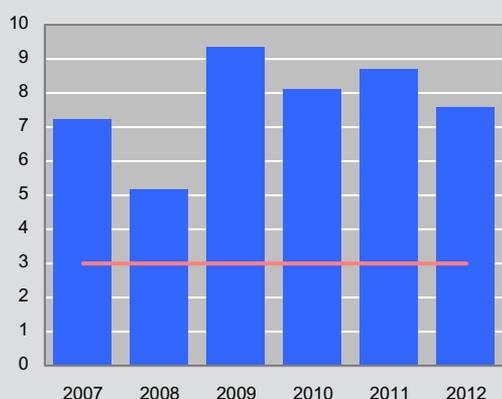
Source: NBS.

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



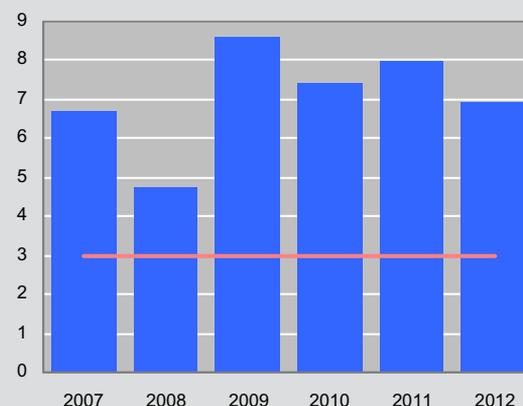
Source: NBS.

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



Source: NBS.

Chart I.3.5. Months of current payments covered by gross FX reserves



Source: NBS.

The adequacy of foreign exchange reserves is assessed from the aspect of materialisation of individual risk or a combination of several risks. The most common risks, based on which relevant indicators are construed, are the necessity to finance imports of goods and services for some time against the backdrop of no capital inflows from abroad, the necessity to service short-term external debt at remaining maturity in conditions of no access to international capital markets, and the withdrawal of deposits. Here we will explain in short the Wijnholds–Kapteyn, Roaf–Norris and “right measure for Serbia” indicators which imply simultaneous occurrence of several different shocks.<sup>11</sup>

According to the Wijnholds–Kapteyn indicator, foreign exchange reserves should cover the sum of short-term external debt at remaining maturity and 5–10% of broad money. For the purposes of this analysis, we used a conservative scenario, which implies 10% of M3.

The Roaf–Norris indicator measures the coverage of the sum of 50% of short-term external debt at remaining maturity, 50% of portfolio investments, 5% of broad money (M3) and 15% of exports.

In our efforts 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.

In making these assessments, it is useful to take into account the dynamics of mutual relations between the factors on which the adequate level of foreign exchange reserves actually depends. The Jeanne–Ranciere model<sup>12</sup> determines an optimal level of foreign exchange reserves as a share in GDP ( $\rho$ ), depending on the size of the shock ( $\lambda$ ), probability of a sudden stop ( $\pi$ ), damage caused by the sudden stop ( $\gamma$ ), real depreciation ( $\Delta Q$ ), risk aversion ( $\sigma$ ), return on reserves ( $r$ ), opportunity cost of holding reserves ( $\delta$ ) and real GDP growth ( $g$ ):

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

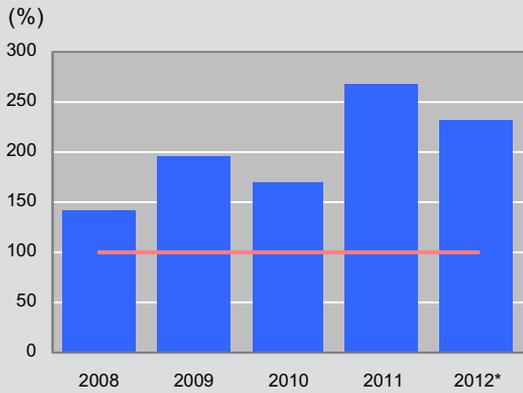
$$p = \left(1 - \frac{\delta}{(\pi + \delta)(1 - \pi)}\right) (1 + \Delta)$$

Based on the reserve adequacy indicators, parameter sensitivity analysis and the four stress scenarios run through the reserve adequacy model, it can be concluded that the level of Serbia’s foreign exchange reserves at end-2012 was quite comfortable. The same applies to 2013.

<sup>11</sup> For detailed explanation of the indicators see the *Annual Financial Stability Report 2011*.

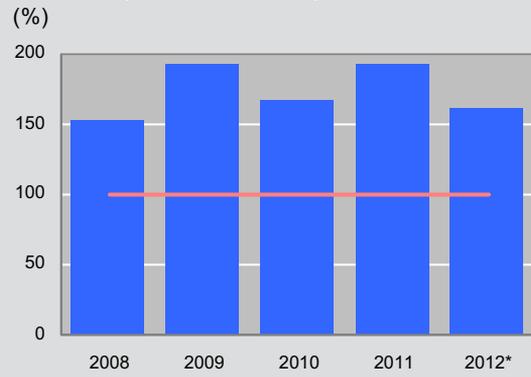
<sup>12</sup> See O. Jeanne, R. Ranciere (2008): *The Optimal Level of International Reserves for Emerging Market Countries: A New Formula and Some Applications*, CEPR Discussion Papers 7623, as well as the *Annual Financial Stability Report 2011*.

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



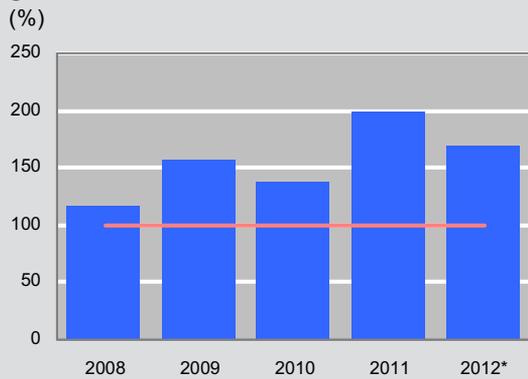
\* Short-term external debt at remaining maturity is projected by the NBS.  
Source: NBS.

**Chart I.3.8. Roof – Norris indicator for gross FX reserves (stress-scenario)**



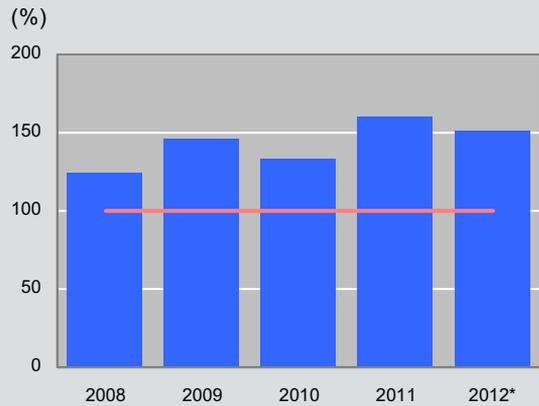
\* Short-term external debt at remaining maturity is projected by the NBS.  
Source: NBS.

**Chart I.3.7. Wijnholds –Kapteyn indicator for gross FX reserves**



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

**Chart I.3.9. "Right measure for Serbia" for gross FX reserves**



\* Short-term external debt, CA deficit and FDI are projected by the NBS.  
Source: NBS.

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

*The sustainability of public debt and fiscal policy is more than topical since public debt exceeded not only the ceiling defined by the Law on the Budget System (45% of GDP), but also the threshold above which a public debt crisis becomes possible (50% of GDP). It also approached the Maastricht limit of 60% of GDP. A potential public debt crisis could affect the stability of the financial system despite relatively low exposure to government securities. A fiscal adjustment equivalent to 5–6% of GDP is necessary over 2013–2015, but this is not an easy task to achieve in a situation where higher public investments are also needed. Fiscal adjustment inevitably affects the sustainability of external debt, which in its turn depends on the expected capital inflow, notably FDI. Hence, creating an environment conducive to higher FDI inflows, especially into the sector of tradables, must be a priority on the economic policy agenda.*

### Fiscal policy

Fiscal policy was extremely accommodative in 2012. The accommodation, which resulted from traditionally high expenditure in the election year, is evidenced by the level of fiscal deficit and by the level and growth of public debt.

An exceptionally high deficit of RSD 217 bln (6.4% of GDP) was anticipated even though both public revenue and expenditure were lower than planned. Revenue underperformed by around RSD 25 bln, the strongest deviations from the plan being recorded for excise duties on tobacco, non-tax revenue and VAT. Expenditure fell short of the plan by around RSD 30 bln, chiefly as a result of smaller spending on the purchase of goods and services.

Though exceptionally high, the fiscal deficit is underestimated by around 1.5% of GDP. Namely, the fiscal deficit is underestimated at least by the amount of expenditure on account of repayment of the principal of guaranteed loans (PE Srbijagas, PE Serbian Railways, etc.) and budget support to failing banks (Agrobanka, Razvojna banka Vojvodine and Privredna banka Beograd). These items are registered as expenditure for loan repayment and repayment of the principal under issued securities, and not as expenditure included in the calculation of the fiscal result. Subsidies and subsidised government loans are also underestimated to a degree

since they are registered as the purchase of financial assets and not as expenditure included in the calculation of the fiscal result.

The government is turning increasingly towards the foreign market for deficit financing purposes. Foreign borrowing proves to be a necessity against the background of sluggish capital inflow on other grounds, such as FDI and private sector borrowing. Still, though the government's borrowing abroad leaves greater scope for the private sector to borrow in the domestic financial market, it also increases public debt exposure to the risk of exchange rate volatility.

At end-2012, public debt amounted to EUR 17.7 bln, or 59.3% of GDP. Within the span of one year only, public debt swelled by around EUR 3 bln and its share in GDP expanded by more than 11 pp. Public debt growth is driven by the need to finance the current account deficit and the future fiscal deficit, as well as by the repayment of principals that will fall due in the coming period and by the guarantees granted by the government to public enterprises. The upward trend of public debt is unsustainable and could trigger a crisis. In order to halt and reverse such trend, a robust fiscal adjustment is needed.

Though exceptionally high, public debt is underestimated by around 2.5% of GDP. According to the IMF, the share of public debt in GDP is around 62%. This difference in figures is due to the inclusion of non-guaranteed debt of local governments in the public debt even though, pursuant to our Law on Public Debt, this is not a part of public debt. As local governments are a part of the consolidated general government sector, their borrowing is *de facto* debt. Also, public debt includes accumulated arrears at all government levels which are not public debt *de iure*, but are debt *de facto*.

The programme of fiscal consolidation has put off the eruption of a public debt crisis. Namely, the fiscal consolidation programme adopted in October 2012 and the budget for 2013 have temporarily removed the threat of a public debt crisis. The programme envisages a reduction in fiscal deficit from the official 6.4% of GDP in 2012 to 3.6% in 2013, 50% of the fiscal adjustment coming from a rise in revenue and the other 50% from a cut in expenditure, notably from a real cut in pensions and public sector wages.

For a permanent removal of this threat, a sharp deficit reduction is needed in 2014–2015. Based on the Fiscal Strategy, the share of public expenditure in GDP should

be slashed by around 3 pp. Particularly important is 2014, when the fiscal deficit should be lowered by 1.5–2 pp relative to the deficit level in 2013.

Though far from easy, a large fiscal adjustment is possible. Consistent implementation of the rules on indexation of pensions and public sector wages could reduce the share of deficit in GDP by around 0.5 pp. According to the recommendations of the Fiscal Council, a large potential for deficit reduction in 2014 lies in the establishment of a sustainable system of fiscal decentralisation. Savings should be made also as a result of implementation of structural reforms. Thus, for instance, the key component of pension reform should be the introduction of actuarial fairness in retirement before and after the retirement age. This would ensure that people who retire at a younger age receive a proportionately smaller pension amount and those who retire later a proportionately higher amount, depending on their life expectancy. However, this measure will yield its full effect only after a longer period of years. As regards public sector wages and employment, the Government pledged to implement the Programme of Downsizing State Administration, including local government and the introduction of a uniform pay grade system. The current wage-setting system is extremely unfair. Across the state administration, employees with the same qualifications and job descriptions earn in some cases significantly different amounts. The Fiscal Strategy foresees in 2013 adoption of the action plan for the completion of restructuring process by mid-2014. There is a large scope for improvement of public finance when it comes to subsidies. The analysis of budget execution in 2012 showed that the allocations for subsidies have already exceeded allocations for capital investments and that this trend must be reversed. Finally, on the front of social protection, the Government committed to social mapping in 2013 that will ensure a targeted social policy at central and local levels.

The fiscal consolidation programme from October 2012 will not produce the expected results. The trends prevailing in 2012 and the alarming pace of deficit growth in early 2013 seem to suggest that the 2013

deficit will be higher than the planned 3.6% of GDP. It is difficult to give any reliable estimates as to the size of the overshooting. Fiscal consolidation measures on the revenue side entered into force in October 2012. They brought significant changes in excise policy and the system of VAT collection (VAT payment upon received customer payment, higher limit for three-month settlement of liabilities, switching from monthly to three-monthly VAT payment, higher limit for entering the VAT system, etc.). And yet, it appears that the revenue will be lower than planned. Fiscal consolidation on the expenditure side began in 2013, wherefore no reasonable estimates of its effects can be made. The possibility that the deficit will reach 5% of GDP during the year is not excluded.

Public debt will continue to rise in 2013. According to estimates, it could reach around 62–63% of GDP at the end of the year (or as much as 65% of GDP according to the IMF). In the event of a lower-than-planned GDP growth rate and/or depreciation of the dinar against the euro, the share of public debt in GDP would be higher than specified above, whereas in the event of faster GDP growth and appreciation of the dinar, it would be somewhat lower. A real reduction of public debt can be based exclusively on a lower fiscal deficit and public sector reform.

### Public debt sustainability

Fiscal policy has departed from the rules defined by the Law. The Law on the Budget System comprises provisions on fiscal responsibility. Pursuant to these provisions, the fiscal deficit is determined according to the numeric rule, which implies that the size of fiscal adjustment depends on the economic growth rate and deviation of actual from the targeted deficit. The Law also introduced a debt ceiling of 45% of GDP (including issued guarantees) and established the Fiscal Council as a body in charge of monitoring the implementation of the Law, i.e. whether fiscal policy is conducted in accordance with the rules. Strict observance of the fiscal responsibility rules ensures sustainability of fiscal policy and public debt. However, from mid-2011 through 2012

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

Real GDP growth rate (%)	Fiscal result (% of GDP)	Real depreciation (%)
2.0	-4.7	0.0

Source: NBS.

**Table I.4.2. Fiscal result which enables stabilisation of public debt at the level of 59.3% of GDP, depending on real depreciation and GDP growth**  
(% of GDP)

Real depreciation (%)	GDP growth rate (%)			
	-3	0	2	6
0	2.9	0.9	-0.3	-2.6
4	4.9	2.9	1.6	-0.8
10	7.8	5.8	4.5	2.0
15	10.3	8.2	6.8	4.2

Source: NBS.

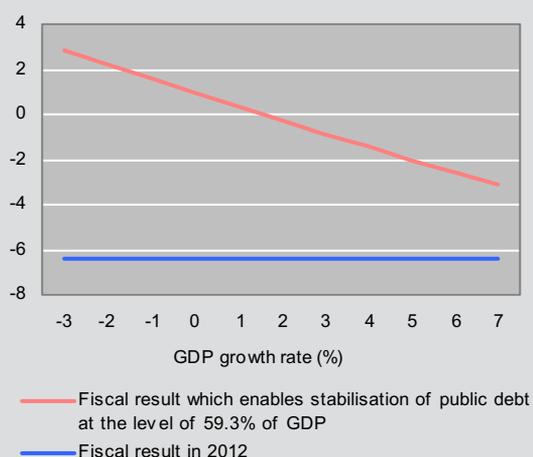
fiscal policy deviated significantly from these rules: the actual deficit was not in line with the numeric rule and public debt exceeded the ceiling envisaged by the Law on the Budget System.

The sustainability of fiscal policy and public debt are two interconnected concepts. Fiscal policy is unsustainable if in the absence of adjustment, the government sooner or later finds itself in a situation of not being able to service its debt. If the fiscal adjustment is realistic (economically and politically), it will bring the primary fiscal result to a level that guarantees regular debt servicing. In this context, the current fiscal policy is unsustainable and public debt is considered to be sustainable. If the fiscal adjustment is economically and politically unfeasible, then both fiscal policy and public debt are unsustainable and the problem of insolvency can be resolved only by public debt restructuring.

The level of public debt sounds a warning. It exceeded not only the ceiling defined by the Law on the Budget System, but also the threshold above which a public debt crisis becomes possible (50% of GDP). It also approached the Maastricht limit of 60% of GDP. The higher the level of public debt, the greater the probability of unsustainable fiscal policy and public debt. The stabilisation of a higher public debt calls for a higher primary fiscal surplus. Higher debt goes hand in hand with a higher interest rate and a lower economic growth rate. The stabilisation of public debt at a higher interest rate (as a result of changed market mood) and a lower economic growth rate also call for a higher primary fiscal surplus.

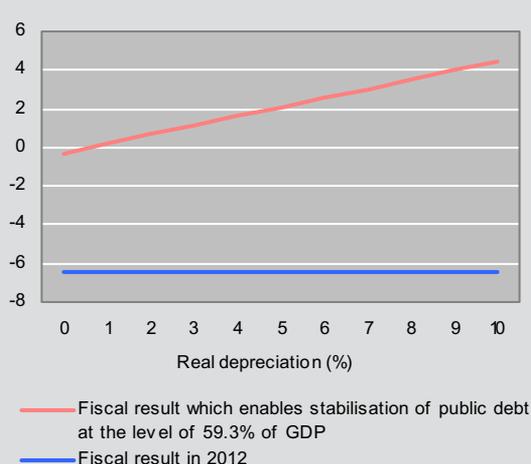
Refinancing risk depends on the size of the necessary borrowing and the fiscal deficit (which again depends on the size of debt through interest expenses), the structure of debt (e.g. a greater share of shorter maturity is riskier) and the investment base (e.g. a greater share of non-residents

**Chart I.4.1. Public debt stabilisation**  
(% of GDP)



Source: NBS.

**Chart I.4.2. Public debt stabilisation**  
(% of GDP)



Source: NBS.

**Table I.4.3. 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	
		59 to 45	45 to 45						
0		17.2	1.7	15.2	0.2	14.0	-0.7	11.7	-2.4
4		19.2	3.2	17.2	1.7	15.9	0.7	13.5	-1.1
10		22.1	5.5	20.1	3.9	18.8	2.9	16.3	1.0
15		24.6	7.4	22.5	5.7	21.1	4.7	18.5	2.7

Source: NBS.

is riskier). The currency structure of public debt and the share of external public debt show that the public debt is extremely sensitive to changes in the exchange rate. Public debt is also sensitive to investor mood since a significant portion of debt is in the hands of non-residents. The maturity structure of public debt, on the other hand, is favourable, which makes the refinancing risk low.

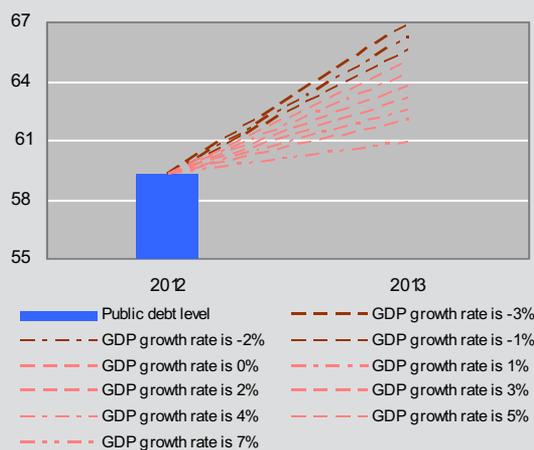
The stabilisation of public debt at current level requires a strong fiscal adjustment. Even though the Law defines public debt ceiling at 45% of GDP, in further text we will focus on maintaining public debt at 59.3% of GDP over a one-year period. A strong fiscal adjustment is needed in order to keep public debt at 59.3% of GDP in scenarios which assume different economic growth rates and depreciation of the dinar. This is clearly shown by Charts I.4.1. and I.4.2, and still more so by Table I.4.2. Keeping public debt at 59.3% of GDP against the

background of zero economic growth rate and zero depreciation requires a fiscal surplus. Economic growth over 2% would allow a fiscal deficit. However, if the dinar depreciates in real terms by, let's say, 10%, a much larger adjustment, i.e. surplus, would be needed even at the economic growth rate of 6%.

Lowering the level of public debt to 45% of GDP calls for a strong fiscal adjustment over a longer time horizon. This is why in Table I.4.3. we first simulated the size of fiscal adjustment which enables the lowering of public debt to 45% of GDP and then keeping it at that level. The size of the adjustment shows unequivocally that it cannot happen over a shorter period of time. An adjustment plan must be clearly defined, announced and implemented as envisaged.

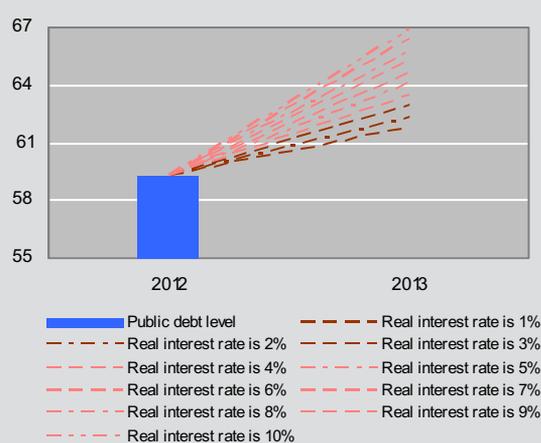
Based on the results of stress tests, simulated by varying the values of key model parameters – real depreciation,

**Chart I.4.3. Public debt projections based on different GDP growth rate scenarios**  
(% of GDP)



Source: NBS.

**Chart I.4.4. Public debt projections based on different real interest rate scenarios**  
(% of GDP)



Source: NBS.

GDP growth, primary fiscal result and interest rate, it can be concluded that public debt is sensitive to shocks.

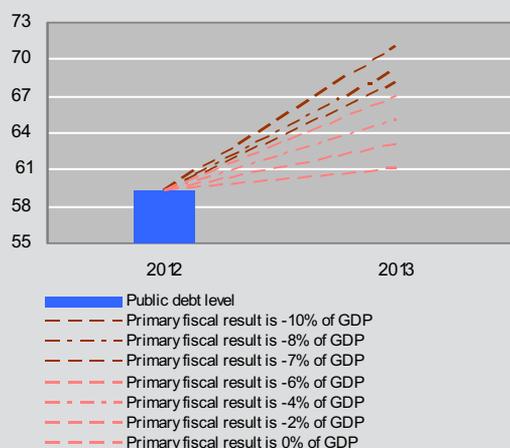
The crisis-induced rebalancing of the economy towards greater investments and a focus on exports and production of tradables will also lead to a divergence in tax revenue and GDP trends in the sense that tax revenue will grow significantly slower even when the recovery of GDP gains ground. Capital-intensive export-oriented projects generate relatively modest tax revenue for the government. As the majority of these projects is heavily reliant on subsidies, their net contribution to fiscal result could easily be negative in the short term. However, as the network of local suppliers develops and the value

added created in Serbia increases, tax revenue might gather pace.

A rise in public debt on other grounds cannot be excluded either. The key upside risks to public debt include:

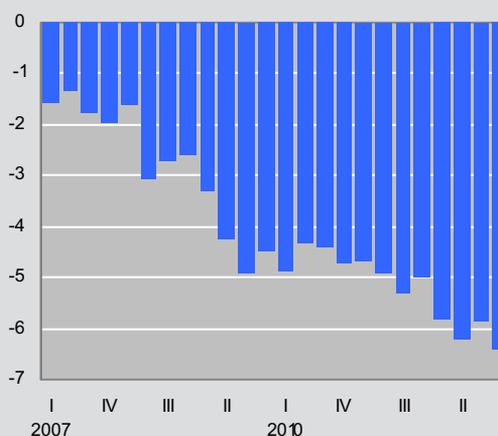
- Government guarantees on commercial loans extended to public enterprises for the purposes of financing their current operations. These guarantees could be called in the absence of systemic measures that should eliminate the causes of insolvency of these enterprises. At the same time, terms of borrowing (despite government guarantees) remain unfavourable. Basically, government support is justified only on a temporary basis – when intended for public enterprise restructuring;

**Chart I.4.5. Public debt projections based on different primary fiscal result scenarios**  
(% of GDP)



Source: NBS.

**Chart I.4.7. Fiscal result**  
(% of GDP)



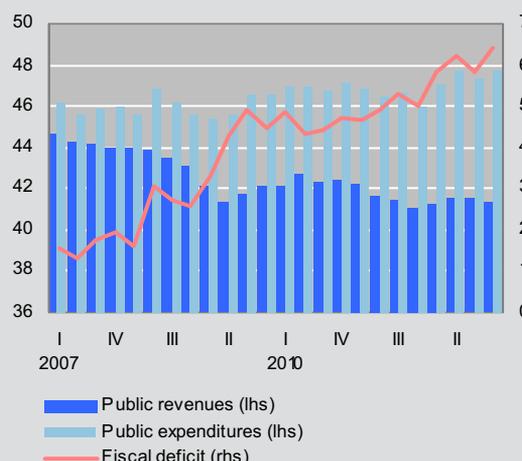
Source: NBS, based on the data from Ministry of Finance and Economy.

**Chart I.4.6. Public debt projections based on different real depreciation scenarios**  
(% of GDP)



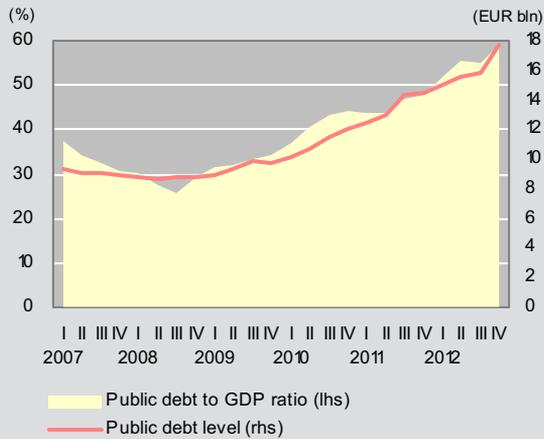
Source: NBS.

**Chart I.4.8. Public revenues and expenditures**  
(% of GDP)



Source: Ministry of Finance and Economy.

Chart I.4.9. Public debt dynamics



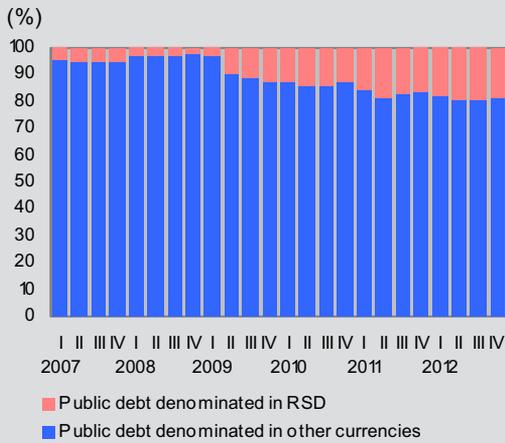
Source: NBS.

Chart I.4.12. Public debt by remaining maturity (%)



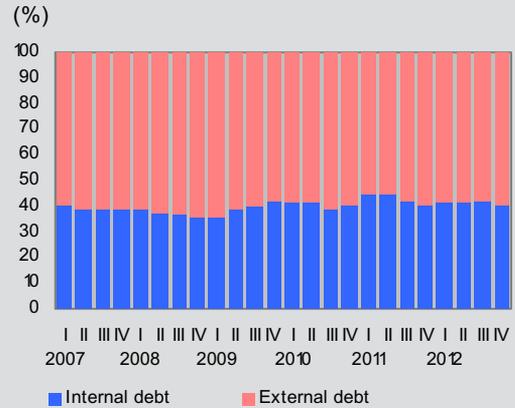
Source: Ministry of Finance and Economy.

Chart I.4.10. Public debt by currency (%)



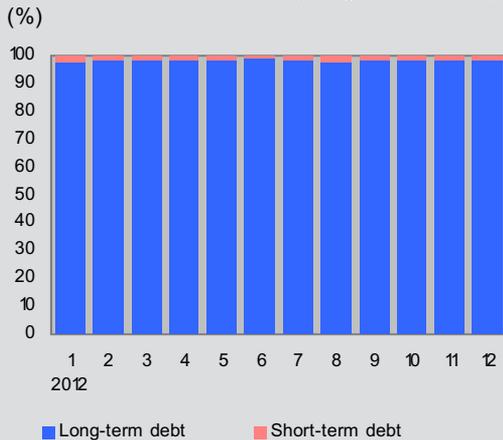
Source: Ministry of Finance and Economy.

Chart I.4.13. Internal and external component of public debt (%)



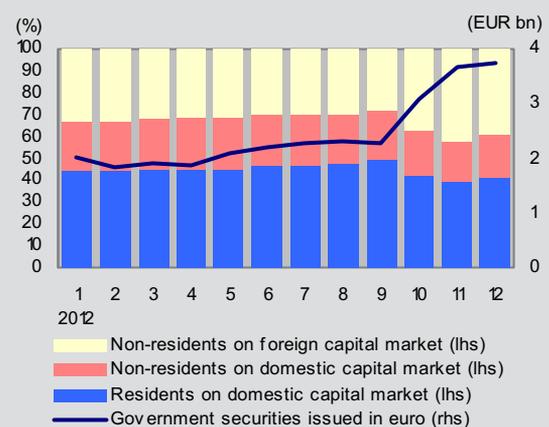
Source: Ministry of Finance and Economy.

Chart I.4.11. Public debt by original maturity (%)



Source: Ministry of Finance and Economy.

Chart I.4.14. Primary market buyers of government securities



Source: Ministry of Finance and Economy.

- New, unplanned expenditure (e.g. for restarting production in the Smederevo steel plant);

- Debt on account of restitution (compensation for property confiscated in the aftermath of World War II). This debt will amount to 5–6% of the 2012 GDP. It should be borne in mind that this portion of public debt will be exchange rate-sensitive, because bonds issued against it will be denominated in foreign currency. However, the repayment period will be up to 20 years, with annual costs equivalent to around 0.5% of GDP. In 2015–2016, the government will be servicing liabilities on account of both restitution and old foreign exchange savings;

- Shocks in the financial system, which could also create the need for government intervention (though it is possible that the government behaviour itself could jeopardise financial stability).

The government can influence shocks in the financial system. Exposure to government securities in a public debt crisis could create huge losses in bank balance sheets. Insufficient diversification of banking sector risks during the crisis could increase the risk of illiquidity and insolvency and thus create a vicious circle between the financial and public sector. The financial sector is the main creditor of the government. However, in times of crisis banks also need government assistance in the form of guarantees and recapitalisation. The government's ability to help the banking sector during the crisis depends on the size of budget revenue relative to the size of the banking sector and on the sustainability of public debt. The larger the banking sector relative to the budget and the larger banks' exposure to the government, the lesser the government's

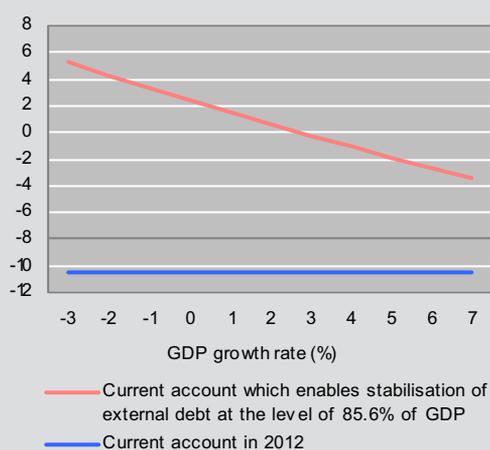
ability to help. In other words, support to the banking sector involves high debt servicing costs. The government which cannot issue new debt and which faces a drop in the market value of its previous bond issues could become insolvent. The local banking sector could find itself in difficulty due to the government's inability to service its debt. Comparative analysis shows that the share of government securities in the assets of Serbian banks is not that big (6% on average). However, with some banks, this type of exposure ranges from 10 to 15%, wherefore the negative impact of a public debt crisis on the stability of the financial sector cannot be excluded nor underestimated.

### External debt sustainability

The level of external debt sounds a warning. At end-2012, external debt of the Republic of Serbia came at EUR 25.7 bln, or 85.6% of GDP. If internal public debt in the hands of non-residents were included, the share of external debt in GDP would climb close to 90%. The 80% limit was overshoot as a result of public sector borrowing. Within the span of one year only total external debt increased by EUR 1.6 bln and its share in GDP by 12 pp. As the inflow of foreign capital in the form of FDIs or private sector borrowing is small and rather volatile, the costs of financing in the coming period will be quite high.

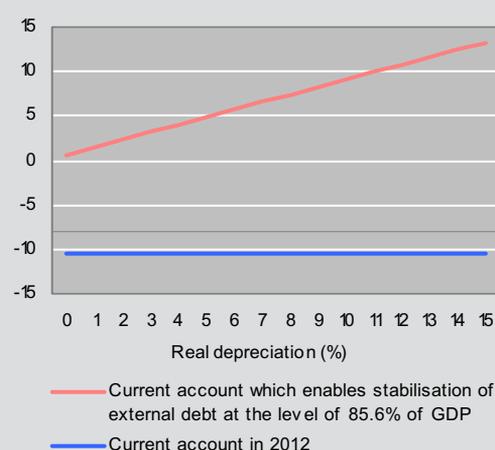
External debt growth is potentially risky for Serbia. The risk could manifest in the event of a sudden slowdown in foreign capital inflow due to a change in investor mood. The level of foreign exchange reserves is sufficient to moderate a large, but not a permanent shock and it would

Chart I.4.15. **External debt stabilisation**  
(% of GDP)



Source: NBS.

Chart I.4.16. **External debt stabilisation**  
(% of GDP)



Source: NBS.

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

Real GDP growth rate (%)	Current account (% of GDP)	Real depreciation (%)
2.0	-8.1	0.0

Source: NBS.

**Table I.4.5. Current account which enables stabilisation of external debt at the level of 85.6% of GDP, depending on real depreciation and GDP growth (% of GDP)**

GDP growth rate (%)		-3	0	3	6
Real depreciation (%)	0	5.2	2.4	-0.2	-2.7
	4	8.8	5.9	3.1	0.5
	10	14.1	11.0	8.1	5.4
	15	18.5	15.3	12.3	9.5

Source: NBS.

be rather difficult to service external debt from foreign exchange reserves over a longer period of time.

Public debt growth is the main driver of the increase in external debt. As the share of public debt in total external debt is expanding, the risks of external and public debt crises are becoming strongly and increasingly interrelated. However, as the Serbian economy has twin deficits – private and public sector, fiscal adjustment stabilises not only public, but also external debt.

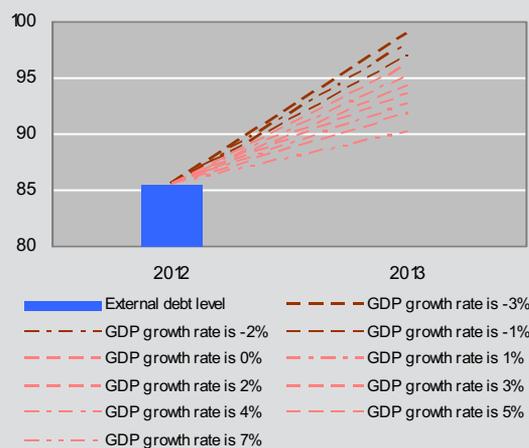
Keeping external debt at 85.6% of GDP over a one-year horizon requires a substantial balance of payments adjustment. This is clearly indicated by Charts I.4.15. and I.4.16, and especially by Table I.4.5. Keeping external debt at 85.6% of GDP against the background of zero economic growth and zero depreciation requires a surplus on the current account of the balance of payments. Economic growth of 3% would allow a current account deficit. However, if the dinar depreciates in real terms by, let's say, 10%, a much larger adjustment, i.e. surplus, is needed even at the economic growth rate of 6%.

Lowering external debt to below 80% of GDP (for instance, to 75%) calls for a strong balance of payments adjustment. This is why in Table I.4.6. we first simulated the size of the balance of payments adjustment which enables the lowering of external debt to 75% of GDP and then keeping it at that level.

The size of the adjustment points unequivocally to: (a) the importance of fiscal adjustment that will help ease external

imbalance; (b) the importance of capital inflows, notably FDI – since privatisation gained momentum, structural reforms are the ones to assure investor interest; (c) the possibility of using the exchange rate in lowering external imbalance, while taking care not to jeopardise the inflation target and overall price and financial stability.

Based on the results of stress tests, simulated by varying the values of key model parameters – primary current account, real depreciation, GDP growth and interest rate, it can be concluded that external debt is sensitive to shocks.

**Chart I.4.17. Projections of external debt based on different GDP growth rate scenarios (% of GDP)**

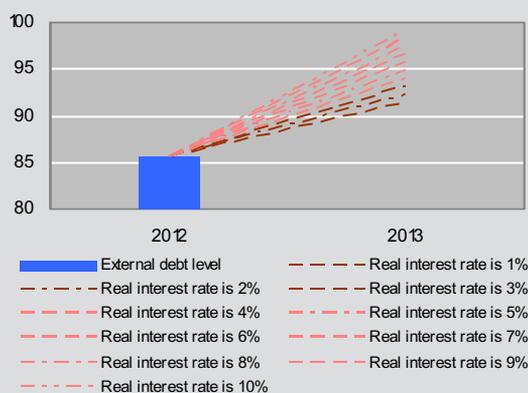
Source: NBS.

**Table I.4.6. Current account which enables the reduction of external debt to the level of 75% 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		3		6	
			86 to 75	75 to 75						
	0		15.8	4.3	13.0	1.8	10.4	-0.5	7.9	-2.7
4		19.4	7.4	16.5	4.8	13.7	2.4	11.1	0.1	
10		24.7	12.0	21.6	9.3	18.7	6.8	16.0	4.4	
15		29.1	15.9	25.9	13.1	22.9	10.5	20.1	8.0	

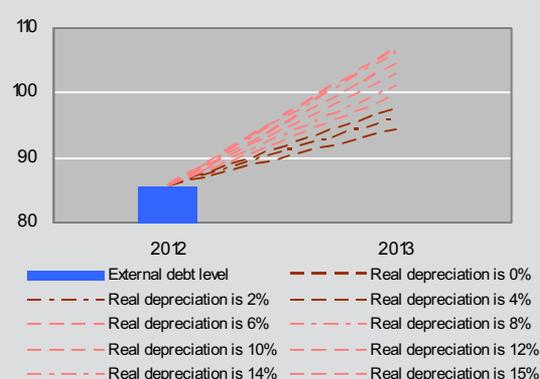
Source: NBS.

**Chart I.4.18. Projections of external debt based on different real interest rate scenarios**  
(% of GDP)



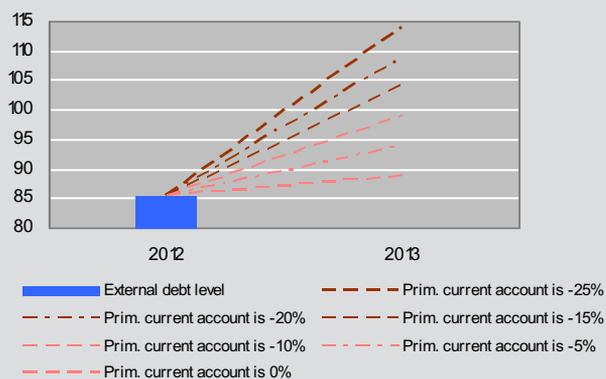
Source: NBS.

**Chart I.4.20. External debt projections based on different real depreciation scenarios**  
(% of GDP)



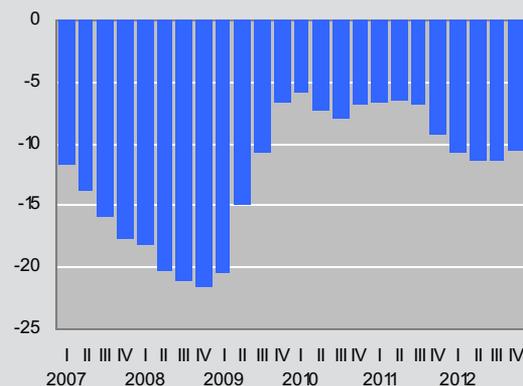
Source: NBS.

**Chart I.4.19. External debt projections based on different primary current account scenarios**  
(% of GDP)



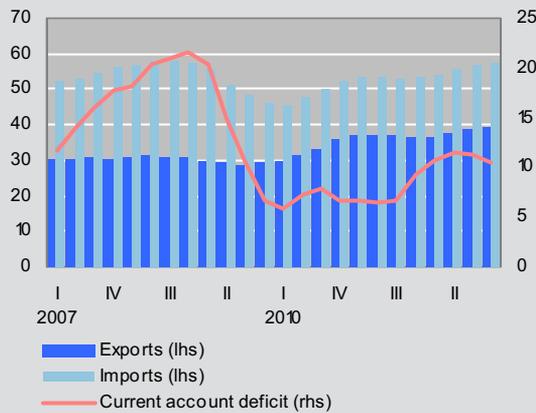
Source: NBS.

**Chart I.4.21. Current account**  
(% of GDP)



Source: NBS.

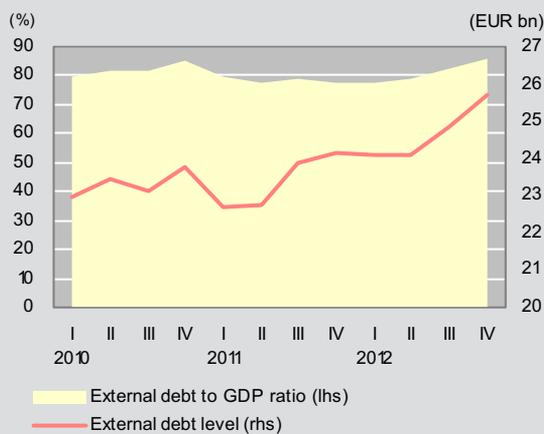
**Chart I.4.22. Exports and imports**  
(% of GDP)



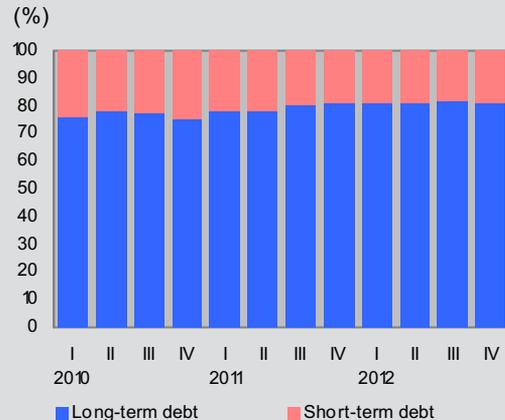
**Chart I.4.25. External debt by original maturity**  
(%)



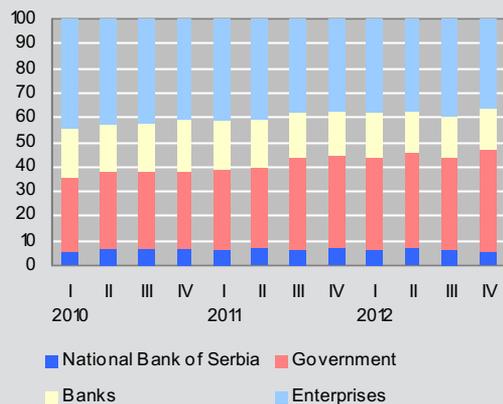
**Chart I.4.23. External debt dynamics**



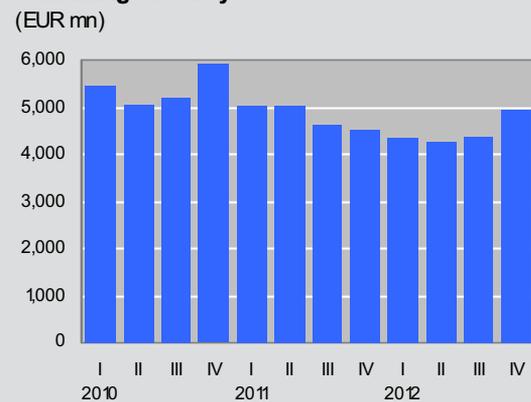
**Chart I.4.26. External debt by remaining maturity**  
(%)



**Chart I.4.24. External debt by borrower**  
(%)



**Chart I.4.27. Short-term external debt by remaining maturity\***  
(EUR mn)



## I.5. Sector of non-financial enterprises

*The sector of non-financial enterprises operated in adverse conditions in 2012. Real GDP fell 1.7%. The sector debt rose slightly, while deposits declined in real terms. The share of long-term debt in total sector debt continued up. The upward trend of investment loans is a positive signal of the corporate ability to develop new production programmes.*

In the course of 2012, the sector of non-financial enterprises operated in adverse conditions, facing mounting recessionary pressures, high inflation, strong depreciation of the dinar against the euro in the first eight months, plummeting retail trade volumes, exceptionally unfavourable climate conditions which triggered a hefty fall in agricultural production, and negative trends in the euro area which reflected on deterioration in export capacities and a slowdown in economic growth. Following growth in 2011, real GDP contracted 1.7% in 2012. Industrial production fell 3.4% below the 2011 levels.

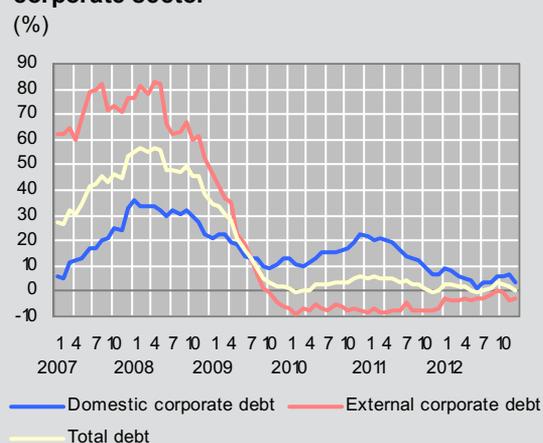
Total loans extended to the sector of non-financial enterprises rose slightly (0.6%) in 2012<sup>13</sup>, while domestic bank loans recorded a y-o-y growth rate of 3.1%. External debt fell 2.5% in real terms.

Total sector debt (domestic loans and external debt) rose EUR 564.6 mln. Measured by the share of total

debt in GDP, sector debt rose from 62.3% in 2011 to 67.4% in 2012, chiefly owing to a decline in GDP. The sector still taps mainly domestic bank loans, though the share of external debt in the structure of total sector debt increased somewhat (by 0.9 pp to 46.7% at end-2012). The upward trend in bank lending to non-tradeable sectors continued – the share rose by 0.7 pp, from 63.8% in 2011 to 64.5% in 2012.

In 2012, the corporate sector repaid EUR 1.8 bln in foreign loans, notably long-term. As the Serbian economy

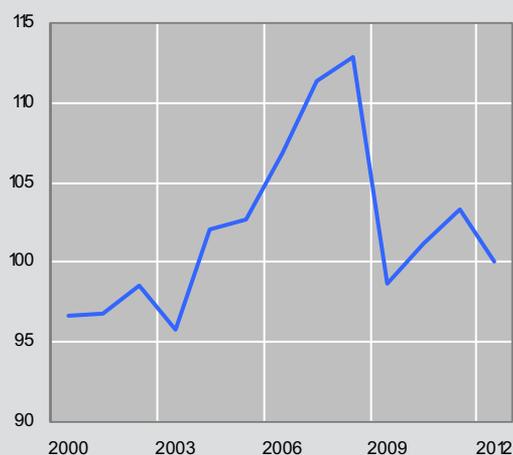
**Chart I.5.2. Real growth rate of loans to corporate sector\***



\* At the RSD/EUR exchange rate of 31 August 2008, assuming that all FX and FX-indexed loans are granted in EUR.

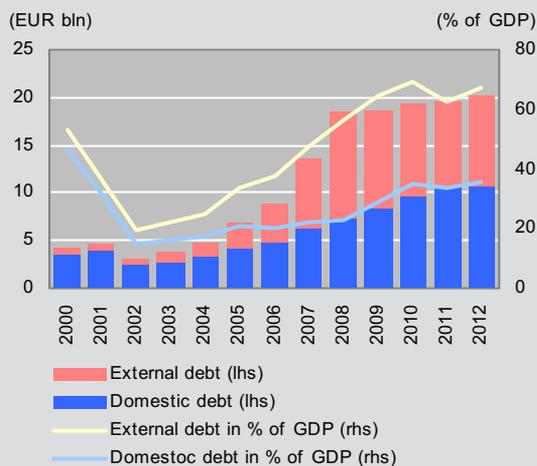
Source: NBS.

**Chart I.5.1. Industrial production index**  
(index, 2012 = 100)



Source: NBS.

**Chart I.5.3. Debt level of Serbian corporate sector**



Source: NBS.

<sup>13</sup> Excluding the exchange rate effect for FX loans; the exchange rate of the euro is applied as at 31 August 2008.

borrowed additional foreign loans worth EUR 1.9 bln, we can conclude that it still has access to the international market for refinancing purposes, even though the risk of availability of funding sources is underscored as the greatest risk in emerging markets.

Because of insufficient liquidity of the sector of non-financial enterprises, current assets loans are dominant in new bank loans, accounting for 41.6% of all approved loans. Also, the upward trend of investment loans, which began in 2011, continued (present share of 29.8%), which is a positive signal of the corporate sector ability to

develop new production programmes and modernise the existing capacities.

The 2012 year saw further extension of subsidised corporate loans, most notably liquidity and current assets loans which made up 69.7% of total approved loans in Q4. Refinancing and export loans accounted for 22.8% and 7.5% respectively.

Furthermore, the share of indexed loans continued up – these loans made up 75.8% of internal debt of the sector of non-financial enterprises, with euro loans making up 91.9%. Taking into account also external debt, this sector becomes even more exposed to the risk of volatility of exchange rates of foreign currencies.

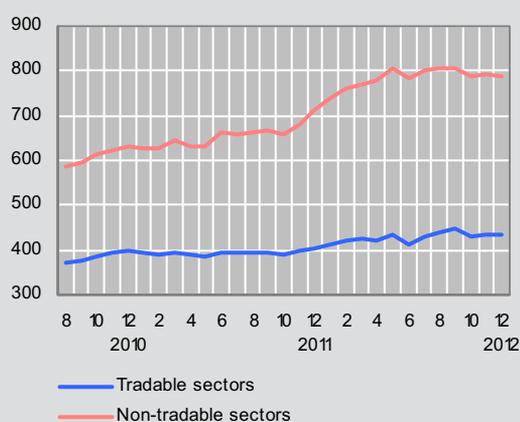
Though deposits of the sector of non-financial enterprises rose 1.8% nominally, they are lower in real terms given the inflation rate – their share in GDP fell from 12.9% in 2011 to 12.4% in 2012. In the structure of sector deposits, short-term deposits accounted for 95%.

Relative to 2011, the share of deposits of non-tradeable sectors in total corporate deposits rose 3.2 pp, from 62.0% to 65.2%.

Interest rates on dinar and euro and euro-indexed loans rose 0.25 pp and 0.15 pp in 2012 respectively.

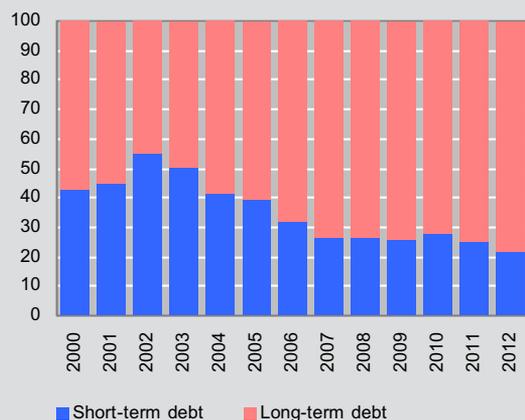
Amounts in blocked accounts of legal persons and entrepreneurs undergoing enforced collection declined significantly by end-2012. The decline was due mainly to the application of the Law on Conditional Interest Write-Off and Tax Debt Standstill, adopted in late 2012.

**Chart I.5.4. Domestic debt of Serbian economy by sector**  
(RSD bln)



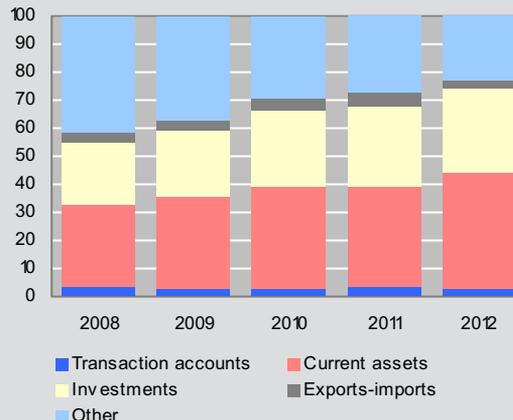
Source: NBS.

**Chart I.5.5. Maturity structure of corporate sector debt**  
(%)



Source: NBS.

**Chart I.5.6. Bank loans to corporate sector by purpose**  
(%)



Source: NBS.

The Law regulates the conditional write-off of default interest and the standstill of the main tax debt, including its postponed payment in the 2014–2015 period in 24 monthly instalments without collateral. In this way, first-rank receivables in enforced collection fell by around RSD 30 bln. Bank receivables declined also because of the write-off, restructuring, collection of receivables, and bankruptcy proceedings, in accordance with the Bankruptcy Law. The Constitutional Court decision of 25 July 2012 determined that provisions of the Bankruptcy Law on automatic bankruptcy proceedings for enterprises with accounts blocked in continuity for more than one year are contrary to the Constitution.

In the course of 2012, the NBS Enforced Collection received from commercial courts 1,005 decisions on opening of bankruptcy proceedings and 47 decisions confirming the adoption of the reorganisation plan, based on which the blockade of legal persons concerned was repealed. Also, until the adoption of the Constitutional Court decision, 5,496 decisions were received on opening and conclusion of automatic bankruptcy proceedings, adopted pursuant to Articles 150–154 of the Law, based on which enforced collection against the debtors concerned was repealed.

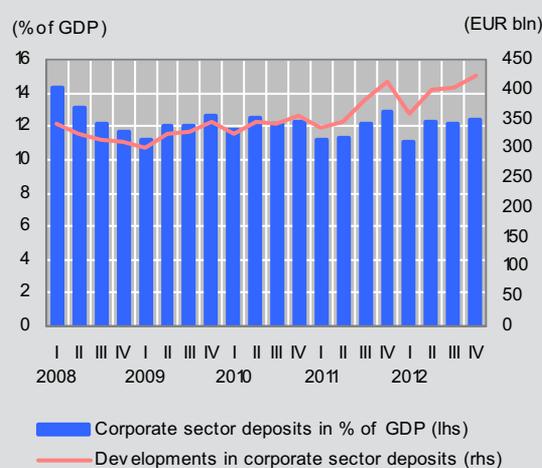
Data on operation of the sector of non-financial enterprises in 2012 were not available at the time of preparation of this *Report* as the deadline for preliminary processing of financial statements of legal persons, performed by the Business Registers Agency, was 30 June 2012. This is why the indicators of operation of the sector of non-financial enterprises are given for the 2009–2011 period.

**Table I.5.1. Overview of claims through enforced collection**  
(RSD mln)

	2009	2010	2011	2012
First order claims	73,124	50,741	35,298	5,368
Second order claims	47,042	31,052	24,577	29,141
Third order claims				
Banks	90,101	100,440	72,811	55,502
Mutual claims	51,838	44,765	38,820	33,499
Number of blocked ID No.	66,570	63,002	62,339	45,903

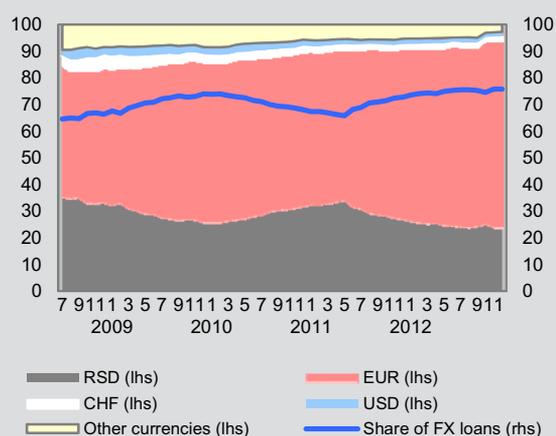
Source: NBS.

**Chart I.5.8. Level of corporate sector deposits**



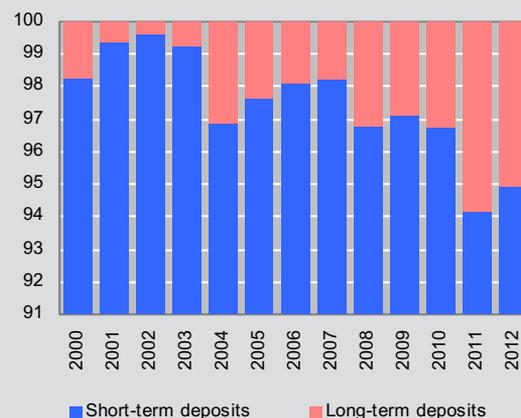
Source: NBS.

**Chart I.5.7. Currency structure of domestic corporate loans**  
(%)



Source: NBS.

**Chart I.5.9. Maturity structure of corporate sector deposits**  
(%)



Source: NBS.

In 2011, the corporate sector featured net profit after three successive years of negative financial results, a rise in fixed assets as a result of greater investment, low profitability, insufficient liquidity, lack of net turnover capital, financial expenditure arising from liabilities under taken loans, financing a part of long-term assets from short-term sources, and a high cumulated loss from earlier years.

Non-tradeable sectors still remain a dominant part of the corporate sector, with the share in total revenue and expenditure of 58.9% and 58.5% respectively.

Fixed assets and capital are largely concentrated in public enterprises, which is why the performances of these enterprises impact on business results of the corporate sector as a whole. Only four public enterprises (JP Elektroprivreda Srbije – consolidated, JP Železnice Srbije – consolidated, JP Putevi Srbije and JP Telekom Srbija – consolidated) hold 30.1% of fixed assets and 32.1% of capital of the Serbian corporate sector.

According to preliminary data of the Statistical Office on quarterly dynamics of corporate sector operations in 2012, H1 saw higher growth in business expenditure than in revenue compared to the same period of 2011. In contrast, H2 witnessed a positive change – higher growth in revenue compared to expenditure, which indicates better corporate performance in that period.

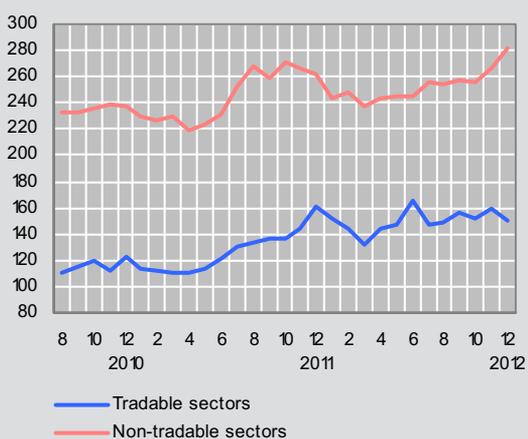
**Table I.5.2. Quarterly dynamics of economy in 2012**

(Index: the same quarter of the previous year = 100)

	Operating income	Operating expenses
I	106.4	109.2
II	105.3	105.7
III	106.9	104.6
IV	103.4	102.2

Source: Statistical Office of the Republic of Serbia.

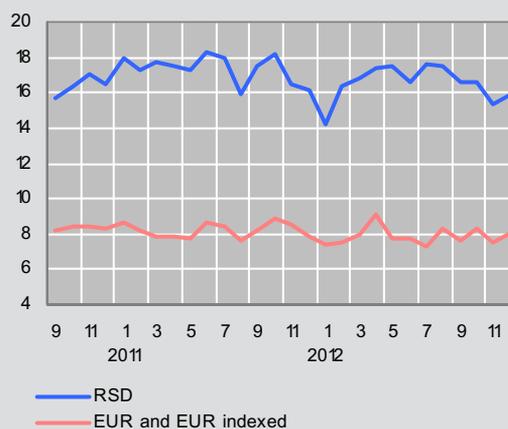
**Chart I.5.10. Corporate deposits by sectors (RSD bln)**



Source: NBS.

**Chart I.5.11. Interest rates on corporate loans - new business (w eighted average, %)**

(w eighted average, %)



Source: NBS.

Table I.5.3. Overview of key corporate sector performance indicators

(in %, unless indicated otherwise)

	2009	2010	2011
<b>Accrued income, business result and assets</b>			
<b>Total income (RSD bln)</b>	<b>6,328.0</b>	<b>7,260.1</b>	<b>8,108.9</b>
Total income (EUR bln)	66.0	68.8	77.5
Total income (in % of GDP)	227.9	246.2	246.1
<b>Total expenses (RSD bln)</b>	<b>6,409.3</b>	<b>7,339.3</b>	<b>8,009.9</b>
Total expenses (EUR bln)	66.8	69.6	76.5
Total expenses (in % of GDP)	230.9	248.9	243.1
<b>Net profit - loss (RSD bln)</b>	<b>-102.2</b>	<b>-101.5</b>	<b>64.1</b>
Net profit - loss (EUR bln)	-1.1	-1.0	0.6
Net profit - loss (in % of GDP)	3.7	3.4	1.9
<b>Operating income (RSD bln)</b>	<b>5,888.9</b>	<b>6,773.6</b>	<b>7,483.3</b>
Operating income (EUR bln)	61.4	64.2	71.5
Operating income (in % of GDP)	212.1	229.7	227.2
<b>Operating expenses (RSD bln)</b>	<b>5,701.2</b>	<b>6,491.5</b>	<b>7,191.1</b>
Operating expenses (EUR bln)	59.5	61.5	68.7
Operating expenses (in % of GDP)	205.3	220.1	218.3
<b>Operating profit (RSD bln)</b>	<b>187.7</b>	<b>282.2</b>	<b>292.2</b>
Operating profit (EUR bln)	2.0	2.7	2.8
Operating profit (in % of GDP)	6.8	9.6	8.9
<b>Financial income (RSD bln)</b>	<b>198.8</b>	<b>241.7</b>	<b>279.9</b>
Financial income (EUR bln)	2.1	2.3	2.7
Financial income (in % of GDP)	7.2	8.2	8.5
<b>Financial expenses (RSD bln)</b>	<b>419.2</b>	<b>533.3</b>	<b>422.6</b>
Financial expenses (EUR bln)	4.4	5.1	4.0
Financial expenses (in % of GDP)	15.1	18.1	12.8
<b>Profit - loss from financial activities (RSD bln)</b>	<b>-220.4</b>	<b>-291.7</b>	<b>-142.7</b>
Profit - loss from financial activities (EUR bln)	-2.3	-2.8	-1.4
Profit - loss from financial activities (in % of GDP)	7.9	9.9	4.3
<b>Cumulative loss (RSD bln)</b>	<b>1,649.9</b>	<b>2,008.4</b>	<b>2,274.2</b>
Cumulative loss (EUR bln)	17.2	19.0	21.7
Cumulative loss (in % of GDP)	59.4	68.1	69.0
<b>Fixed assets (RSD bln)</b>	<b>5,482.0</b>	<b>5,672.1</b>	<b>6,875.7</b>
Fixed assets (EUR bln)	57.2	53.8	65.7
Fixed assets (in % of GDP)	197.5	192.4	208.7
<b>Inventories (RSD bln)</b>	<b>1,081.8</b>	<b>1,188.1</b>	<b>1,255.1</b>
Inventories (EUR bln)	11.3	11.3	12.0
Inventories (in % of GDP)	39.0	40.3	38.1
<b>Net working capital (RSD bln)</b>	<b>-143.6</b>	<b>-187.0</b>	<b>-337.3</b>
Net working capital (EUR bln)	-1.5	-1.8	-3.2
Net working capital (in % of GDP)	5.2	6.3	10.2
<b>Lack of long-term capital (RSD bln)</b>	<b>1,208.2</b>	<b>1,352.6</b>	<b>1,593.2</b>
Lack of long-term capital (EUR bln)	12.6	12.8	15.2
Lack of long-term capital (in % of GDP)	43.5	45.9	48.4
<b>Equity (RSD bln)<sup>1)</sup></b>	<b>3,563.0</b>	<b>3,495.0</b>	<b>4,503.9</b>
Equity (EUR bln)	37.2	33.1	43.0
Equity (in % of GDP)	128.3	118.5	136.7
<b>Growth of income, expenses, results, assets, equity and liabilities</b>			
Total income growth		14.7	11.7
Total expenses growth		14.5	9.1
The growth in net profit - loss		-0.7	163.2
Operating income growth		15.0	10.5
Operating expenses growth		13.9	10.8
Operating profit growth		50.3	3.5
Financial income growth		21.6	15.8
Financial expenses growth		27.2	-20.8
The growth of profit - loss from financial activities		32.4	-51.1
Accumulated losses growth		21.7	13.2
Fixed assets growth		3.5	21.2
Inventories growth		9.8	5.6
The growth in net working capital		-30.2	-80.4
Equity growth		-1.9	28.9
<b>Performance indicators</b>			
Return on assets after taxes	-1.3	-1.1	1.9
Return on equity after taxes	-2.9	-2.9	1.6
Own capital ratio	38.7	35.1	39.7
Current ratio (times)	1.0	1.0	0.9
Interest coverage ratio (times)	0.3	0.3	1.8
<b>GDP (EUR bln)</b>	<b>29.0</b>	<b>28.0</b>	<b>31.5</b>

<sup>1)</sup> Equity adjusted for losses over equity level.

Source: NBS, according to Serbian Business Registrs Agency's data.

## I.6. Household sector

*Real wages were falling, while the decline in employment numbers slowed down. Despite real movements which called for caution, household savings rose at a somewhat faster pace than in 2011. The share of short-term deposits increased. Real lending activity grew slowly. Indebtedness of the household sector remained low – this sector became an even more important net creditor of the financial system in 2012.*

In 2012, as nominal and real wages lagged behind consumer price growth, while employment numbers plummeted, the standard of living gradually deteriorated. Such trends were caused by the inflation shock triggered primarily by food and administered price growth, to a lesser extent by higher VAT and excise rates, as well as by unfavourable developments in the euro area, which brought about the deterioration in export capacities and the slowdown in economic growth. The year 2012 also saw a decline in the coverage of the average consumer basket by the average net wage. Namely, the average nominal net wage rose by around 6.9% and the average consumer basket by around 14.0%. The coverage thus declined from 78.4% at end-2011 to 73.6% at end-2012. The continuation of such trend would negatively impact on the available income of the household sector, which would exacerbate the servicing of household obligations towards the banking sector and raise the level of NPLs.

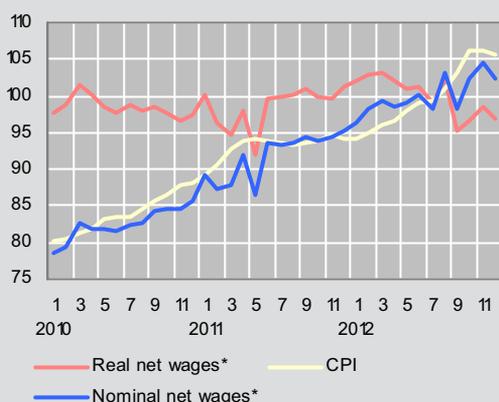
Under the Labour Force Survey of October 2012, the unemployment rate declined as some unemployed persons entered informal employment, or were engaged on temporary and seasonal contracts.<sup>14</sup>

It should be emphasised that household sector debt remains low at 19.3% of GDP, with one debtor accounting for 1.5 employees, which indicates a fall compared to 2011 (1.6). The average amount of loan per citizen rose 0.4% in 2012, from EUR 790.3 to EUR 793.5. The average amount of loan per debtor equalled 12.5 of average net wages, implying no changes from the previous year.

Total household saving rose in 2012 from RSD 795 bln to RSD 927 bln, accounting for 29.4% of total banking sector liabilities (27.4% in 2011). With rising domestic sources of funding, such as household saving, credit potential became stronger and banks' exposure to unfavourable external market developments declined. In consequence, financial stability of the domestic banking sector strengthened.

The year 2012 saw further growth in FX savings, at a faster pace than the year before. Real growth in FX household savings (excluding the exchange rate effect) was 7.9% (EUR 588.5 mln), up from 6.8% in 2011. Applying the weighted average rate to FX and FX-indexed deposits for 2012 (4.2%) to the average amount of FX savings in that year (EUR 7.7 bln), it is estimated that around EUR 320 mln were calculated in respect of

**Chart I.6.1. Consumer prices and net household earnings**  
(index, 2012 = 100)



\* Seasonally adjusted data.  
Source: NBS.

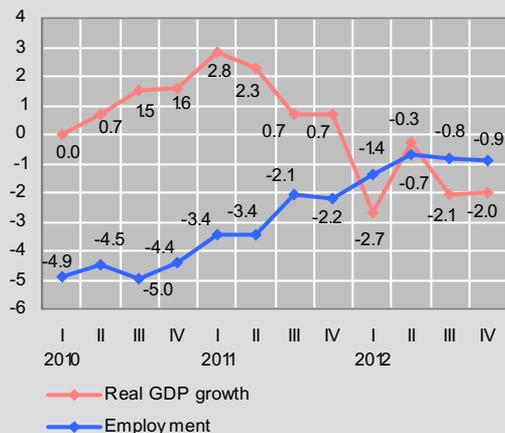
**Chart I.6.2. Labour market trends**



Source: Statistical Office of the Republic of Serbia.

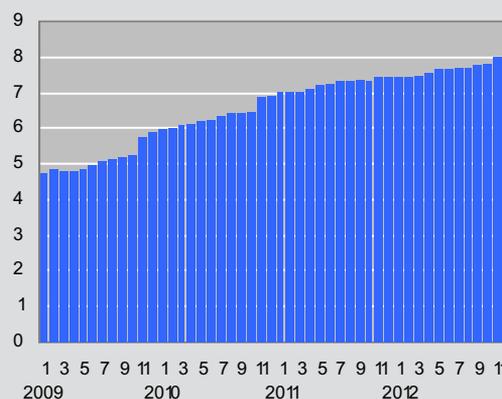
<sup>14</sup> Source: Public Finance Bulletin, January 2013, Ministry of Finance and Economy.

**Chart I.6.3. Real GDP growth and employment**  
(y-o-y growth rate, pp)



Source: NBS and Statistical Office of the Republic of Serbia.

**Chart I.6.5. Stock of household FX savings**  
(EUR bln)



Source: NBS.

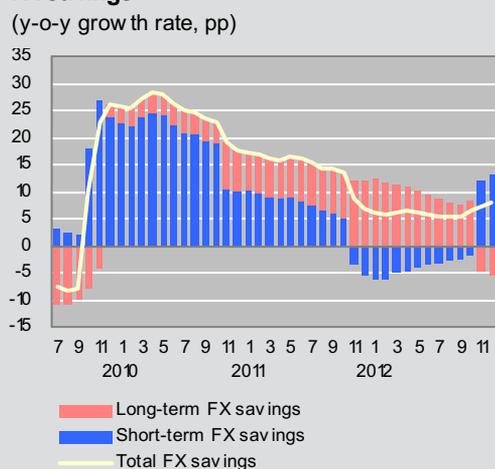
interest on FX savings. Also, the share of FX savings in GDP rose from 23.5% in 2011 to 26.7% in 2012.

As in the previous years, the strongest growth was recorded in the November “Savings Week”, despite moderate competition of banks and lower interest rates compared to November 2011 (by 0.52 pp). A reduction in interest rates provides banks with cheaper sources of funding, which may push down lending interest rates.

A real, 2.3% rise in FX savings in November (excluding the exchange rate effect) was higher than in November

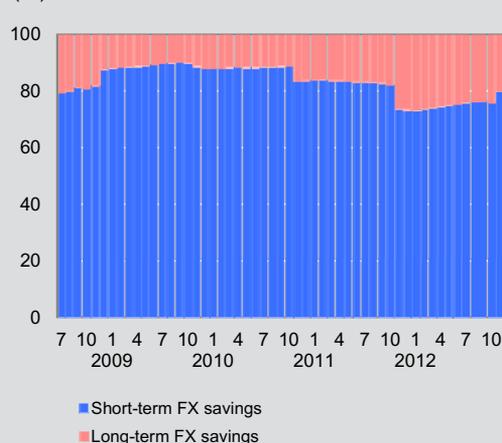
2011 (1.4%), which confirms that citizen trust in the Serbian banking sector was not impaired. Bank reliance on higher growth in FX savings in the “Savings Week” did not jeopardise liquidity of the banking sector, despite the concentration of maturity deadlines of a considerable part of sources of bank funding and the disloyalty of depositors who did not assess the riskiness of banks with which they entrusted their savings. They instead relied on the fact that deposits up to EUR 50,000 per depositor are insured in accordance with law, and the fact that in bank resolutions so far, the uninsured part of deposits was taken care of and transferred to other banks.

**Chart I.6.4. Contributions to real growth of FX savings**  
(y-o-y growth rate, pp)

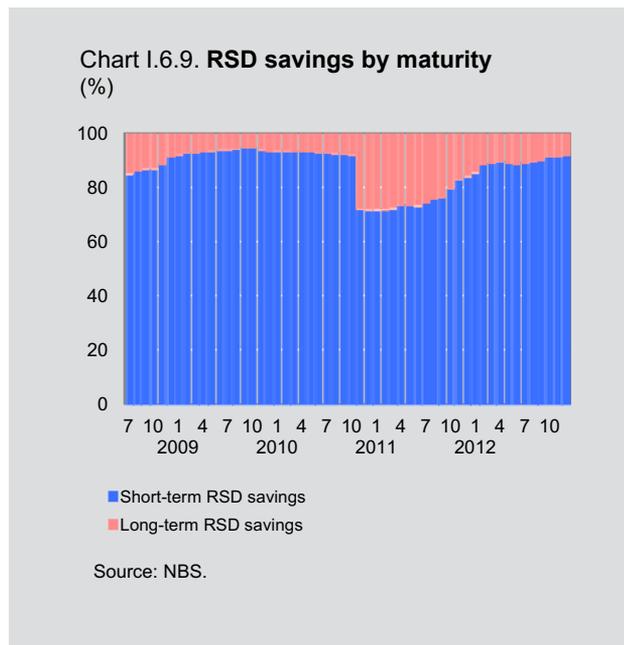
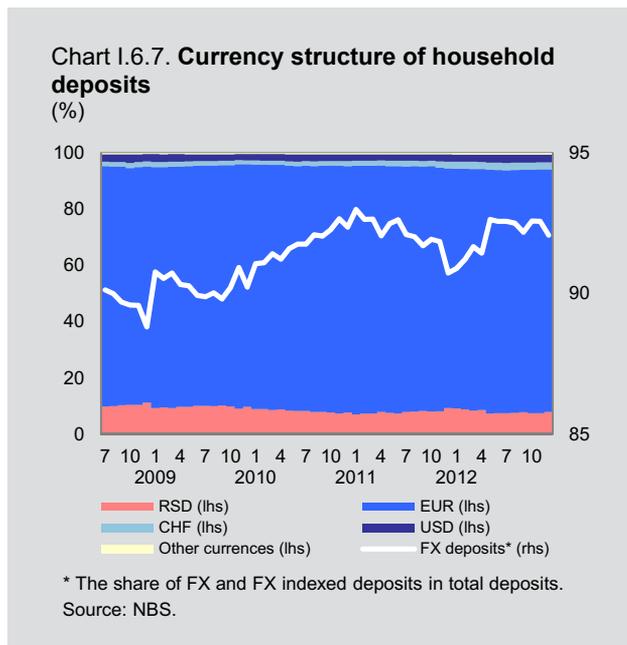


Source: NBS.

**Chart I.6.6. FX savings by maturity**  
(%)



Source: NBS.

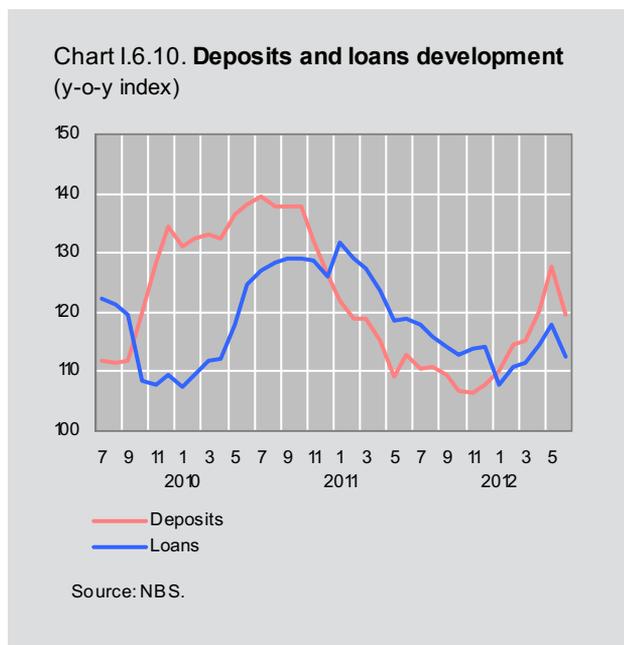
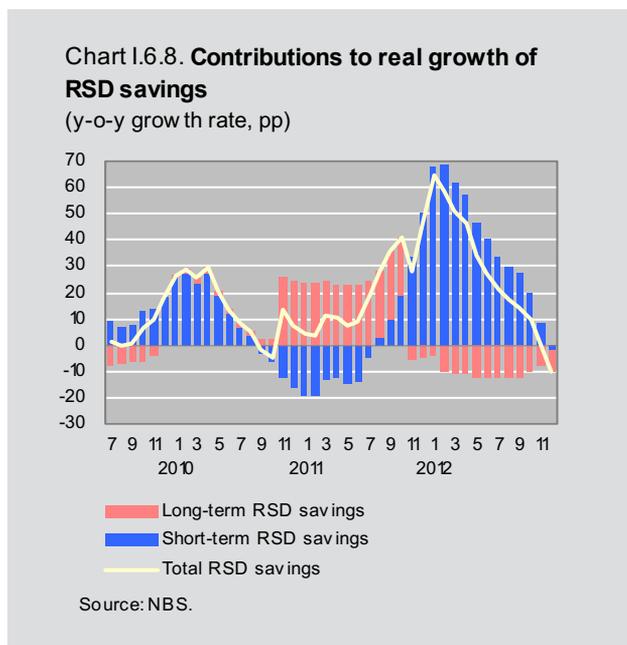


Except in 2007, the NBS did not stimulate the collection of FX savings by prescribing exemptions from required reserve allocations for FX savings collected in the “Savings Week”. By issuing recommendations to banks, for the second year in a row, to set interest rates on deposits termed in the “Savings Week” which do not significantly deviate from their average levels in the banking sector during the remainder of the year, the NBS gave a strong contribution to the prevention of excessive volatility of interest rates.

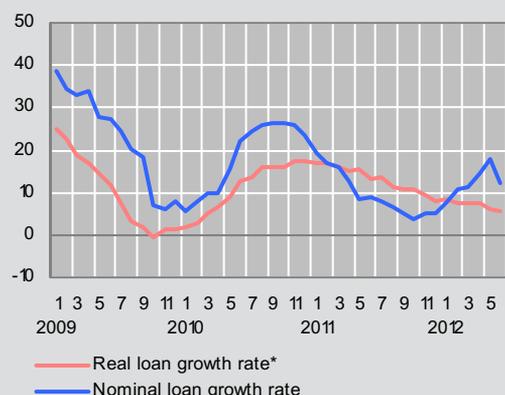
Following a drop in the share of short-term in total FX savings, recorded in late 2011, this share gradually increased in 2012, to reach 80.1% in November and

December (a 6.5 pp change). Such trends can be explained by citizen caution in uncertain economic circumstances.

Because of the prolonged euro area crisis, the trend of changing currency structure of deposits of the household sector in favour of the Swiss franc and the American dollar, recorded in late 2011, continued into 2012, though at a slower pace. Euro deposits rose by 7.7%, Swiss franc deposits 11.4%, and deposits in the American dollar by 12.9%. At end-2012, FX-currency denominated household deposits accounted for 92.1% of total deposits (90.7% at end-2011). The impact of the euro area crisis on the deposit currency structure shows market sensitivity to news from the environment.



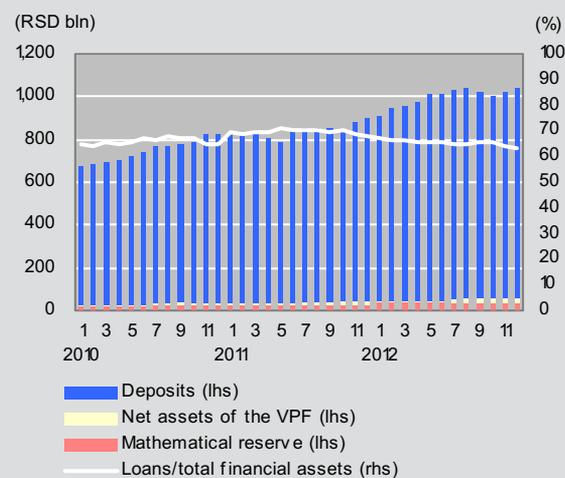
**Chart I.6.11. Household lending growth rate**  
(y-o-y growth rate, %)



\* At the RSD/EUR exchange rate of 31 August 2008, assuming that all FX and FX-indexed loans are granted in EUR.

Source: NBS.

**Chart I.6.13. Net households position to the financial sector**



Source: NBS.

In 2012, dinar savings dropped by real 10.0% (deflated) because of interest rates which were lower than the inflation rate and strong depreciation of the dinar against the euro in the first eight months. Also, the share of dinar in total savings declined by 0.5 pp, from 2.4% at end-2011 to 1.9% at end-2012.

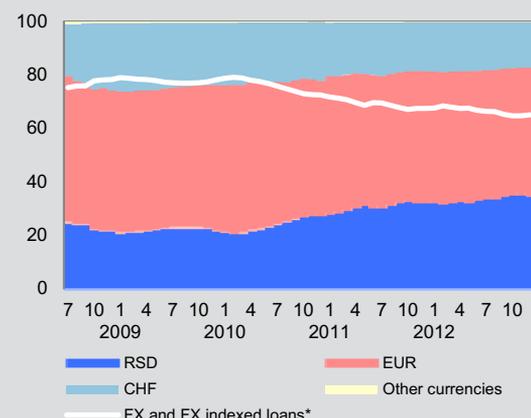
The upward trend of the share of short-term dinar savings in total savings continued – from 84.5% in 2011 to 92.2% in 2012.

A rise in household lending slowed, but remained positive in real terms. Real growth in household loans (excluding the exchange rate effect for FX loans and applying the

exchange rate as at 31 August 2008) equalled 4.2% (7.7% in 2011). Sluggish growth may be partly explained by a smaller volume of subsidised loans, citizen caution against the background of a decline in the standard of living, and the prolonged effects of the 2011 Decision on Measures for Safeguarding and Strengthening Stability of the Financial System. To reduce FX and credit risk, the Decision allows for indexing of loans only in euros, while the downpayment for euro loans was raised to 30%. Also, the value of financing under a housing loan is limited to at most 80% of the estimated value of real estate which serves as collateral.

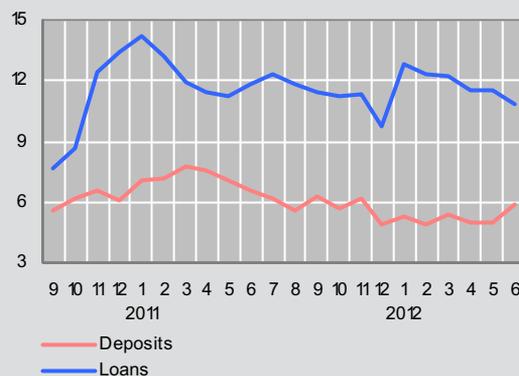
These measures drove up the share of dinar loans in total loans by 2.4 pp, from 32.6% at end-2011 to 35.0% at end-

**Chart I.6.12. Currency structure of household loans**  
(%)



\* The share of FX and FX indexed loans in total loans.  
Source: NBS.

**Chart I.6.14. The difference of interest rates on loans and deposits in RSD against the interest rates on EUR and EUR indexed loans and deposits**  
(weighted average, %)



Source: NBS.

2012. Euro-indexed loans accounted for 47.6% of total loans, while the share of Swiss franc-indexed loans fell by 1.3 pp, from 18.4% at end-2011 to 17.1% at end-2012.

The household sector remained a significant net creditor of the financial system – at end-2012, through loans and leasing contracts it used 63.2% of total financial assets which it holds in banks, insurance companies and voluntary pension funds (67.6% in late 2011).

Interest rates on loans and deposits (dinars and FX) generally stagnated or recorded moderate growth. The large difference between rates on dinar and FX deposits remained (5.8 pp), including the difference between dinar and FX-indexed loans (13.4 pp – a 3.7 pp rise in 2012). There was also a large spread between rates on dinar deposits and loans (11.6 pp) and between rates on euro and euro-indexed deposits and loans (3.9 pp).

**Table I.6.1. Household sector performance indicators**

(in %, unless indicated otherwise)

	2008	2009	2010	Q1 2011	Q2 2011	Q3 2011	Q4 2011	Q1 2012	Q2 2012	Q3 2012	Q4 2012
<b>Total indebtedness</b>											
<i>RSD bln</i>	381.9	418.3	527.5	564.5	583.3	587.1	601.7	628.5	655.6	660.0	652.8
<i>EUR mln</i>	4,310.5	4,362.3	4,999.7	5,449.0	5,692.5	5,802.5	5,750.6	5,644.0	5,660.3	5,737.4	5,746.1
<i>% of GDP<sup>1)</sup></i>	14.4	14.5	18.3	19.0	19.0	18.7	18.8	19.5	20.1	19.8	19.3
FX to total loans <sup>2)</sup>	78.2	78.1	72.4	70.6	69.5	67.8	67.4	67.8	66.6	65.2	65.0
FX to total deposits <sup>2)</sup>	88.8	90.2	92.4	92.6	92.6	91.7	90.7	91.7	92.6	92.2	92.1
FX deposits to FX loans <sup>2)</sup>	138.9	173.3	191.6	183.4	183.2	187.0	191.2	195.8	203.5	207.1	214.7
Short-term loans to total loans	16.9	17.1	14.3	13.8	13.2	12.8	12.3	12.6	13.5	14.2	14.3
<i>LTV ratio<sup>3)</sup></i>	63.6	66.1	65.4	66.9	67.7	64.7	64.3	62.8	65.5	64.8	65.5
<b>Average loan per employee</b>											
<i>RSD thousand</i>	148.1	174.7	237.2	256.2	268.9	272.0	281.4	294.2	310.2	313.0	303.2
<i>EUR</i>	1,671.0	1,821.8	2,248.1	2,472.7	2,623.9	2,688.7	2,689.1	2,642.0	2,678.3	2,721.2	2,668.8
<b>Average loan per resident</b>											
<i>RSD thousand</i>	52.0	57.2	72.5	77.6	80.2	80.7	82.7	86.8	90.5	91.1	90.1
<i>EUR</i>	586.8	596.7	687.1	748.9	782.3	797.5	790.3	779.4	781.7	792.3	793.5
<b>Average loan amount</b>											
<i>RSD thousand</i>	294.6	347.6	407.7	439.2	444.8	444.3	452.5	470.3	483.0	481.9	474.3
<i>EUR</i>	3,325.0	3,624.5	3,864.7	4,239.5	4,341.1	4,391.7	4,324.8	4,223.5	4,170.3	4,189.2	4,175.1
<b>Average loan per user</b>											
<i>RSD thousand</i>	357.7	417.7	485.4	523.4	532.2	532.9	546.5	570.4	591.0	593.0	587.2
<i>EUR</i>	4,037.6	4,356.4	4,601.0	5,052.8	5,194.5	5,267.0	5,222.8	5,122.3	5,102.5	5,154.9	5,169.1
Indebtedness to financial assets	83.9	67.4	64.6	69.2	70.2	69.7	67.6	66.2	65.5	65.4	63.2

<sup>1)</sup> GDP rates for 2011 and 2012 are projected by the NBS.

<sup>2)</sup> FX loans and deposits include FX-indexed loans and deposits.

<sup>3)</sup> For loans insured with the National Mortgage Insurance Corporation.

Source: 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 bancocentric – the share of banks in its total assets is 92.6%. Therefore, the focal point of financial stability is the soundness of banks and their capacity to perform their core, financial intermediation function, thus underpinning domestic economic growth. The banking sector is adequately capitalised, on account of recapitalisations and regulatory changes. Real growth in lending is sluggish and lending conditions are tighter. Though the share of NPLs in total loans declined, banking sector profitability remains low. Despite this, it does not deviate significantly from the region average – the crisis swept across almost all countries of Central and Eastern Europe. Credit risk is the most important risk facing the banking sector, while the liquidity risk is weak. The model of bank behaviour has changed recently in terms of greater reliance on domestic, stable sources of funding.

### II.1. Banking sector

#### Capital adequacy

The banking sector has been continuously well-capitalised. At end-2012, CAR equalled 19.9%, which implies a small increase relative to 19.1% at end-2011. However, CAR varied throughout 2012, though it stayed significantly above the regulatory minimum.

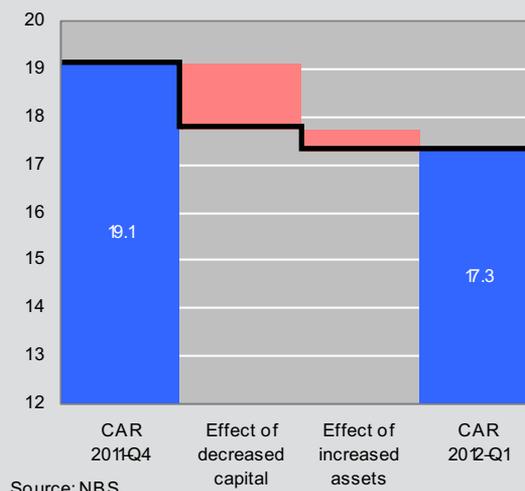
In Q1, CAR declined significantly from the previous quarter (by 1.8 pp), chiefly on account of contracted regulatory capital. A RSD 23 bln reduction in regulatory capital, which accounts for almost three quarters of the CAR reduction, is due mainly to banking sector

harmonisation with Basel II standards, i.e. inclusion of a part of regulatory reserves into core capital deductibles. In accordance with transitional provisions of the Decision on Capital Adequacy, banks were obliged to include, until end-2012, at least 25% of required reserves for estimated losses into core capital deductibles, instead of treating them as deductibles from total regulatory capital, as it was the case before the application of Basel II. As the amount of supplementary capital cannot exceed 50% of core capital, by reducing core capital, reserves bring down the level of subordinated debt and other elements of supplementary capital which can be included into regulatory capital. A rise in risk-weighted assets also contributed to the CAR reduction, but this contribution was less important.

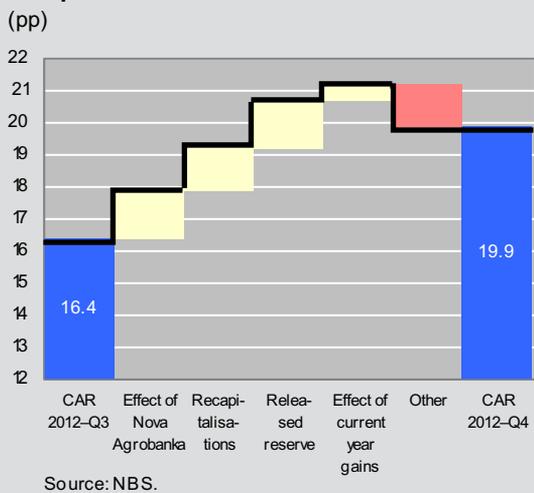
Chart II.1.1. Banking sector capital adequacy (%)



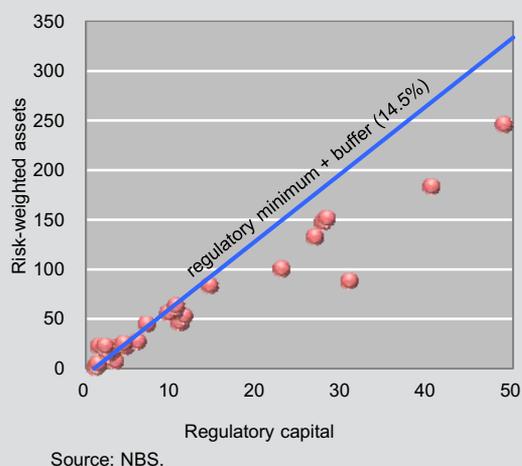
Chart II.1.2. Decrease in CAR over Q1, as a consequence of regulatory adjustments (pp)



**Chart II.1.3. Increase in CAR driven by the resolution of a distressed bank and recapitalisations**



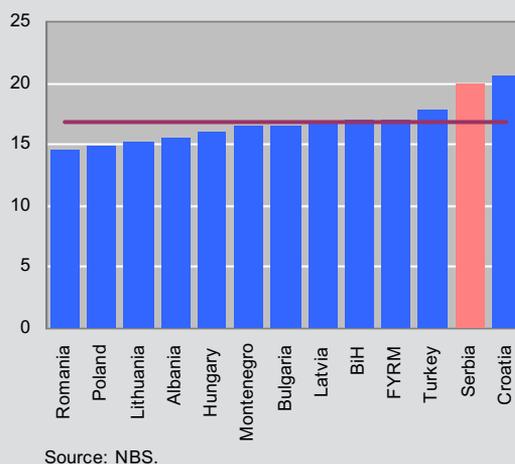
**Chart II.1.4. Distribution of risk-weighted assets and regulatory capital, by bank (RSD bln)**



Q4 saw a significant increase in CAR. Though it reached and then exceeded the 2011 levels, it is important to note that the improvement in capital adequacy is due not only to recapitalisations worth RSD 23.6 bln (with the government participating as a shareholder with RSD 12 bln), but also the delicensing of Nova Agrobanka. In addition, growth in regulatory capital was prompted by a rise in core capital of one bank after the inclusion of profit worth RSD 9.5 bln from the current period (making up the major part of contributions from the ‘Other’ category in Chart II.1.3). The same effect was produced by regulatory easing in respect to the recognition of mortgage as adequate collateral in case a debtor settles its mortgaged receivables in arrears not longer than 720 days (instead of previous 360 days), which enabled a shift of one part of receivables from E to D category. More favourable classification of a part of credit portfolio released a significant portion of required reserves (as provisioning rates for D and E categories equalled 30% and 100% respectively, while these categories together made up around 23% of classified balance sheet assets). These and other positive contributions to the growth in CAR surpassed negative effects of losses of some banks on core capital.

Aggregate CAR for the banking sector was more than adequate – over 65% above the regulatory minimum. As CAR of one or more individual institutions can be different than the aggregate level and even stay below the regulatory minimum, Chart II.1.4. shows the distribution of CAR by banks. Such distribution is also favourable and shows that CAR of as many as 29 banks (out of 32) was not only above the regulatory minimum, but also above the regulatory minimum increased by the

**Chart II.1.5. Regulatory capital to risk-weighted assets, countries of the region (2012, latest available data, %)**



capital reserve for limitation of profit distribution (14.5%). CAR of all banks below the dark blue line is above 14.5%.

In terms of CAR internationally, owing to conservative prudential regulations, Serbia’s CAR ranks second among countries of Central and Eastern Europe.

The most important risk in Serbia’s banking sector was credit risk, followed by operational risk, while market risks (FX and particularly price risk) were almost insignificant. Hence, the dominant share in capital requirements was recorded for credit risk, counterparty risk, settlement/delivery risk (88%), and capital

requirement for operational risk (11%), while the capital requirement for market risks was the least significant (1%, of which most related to the capital requirement for FX risk).

### Level, structure and quality of assets

At end-2012, net assets of the Serbian banking sector amounted to RSD 2,880 bln or 85% of GDP. Business models of banks present in the domestic market are still highly traditional, oriented to credit-deposit activities as the major portion of assets – as much as 60.7%, consists of banks' credit portfolio.<sup>15</sup> A significant part of total assets is placed in liquid assets (22.3% of total assets, of which 16.1 pp related to bank required reserves with the NBS).<sup>16</sup> At end-2012, the share of risk-weighted assets in total net assets of the banking sector equalled 61.2%. By switching to new regulations (in late 2011), a decline was observed for risk-weighted assets and its share in total assets. No greater volatility of risk-weighted assets was observed since then.

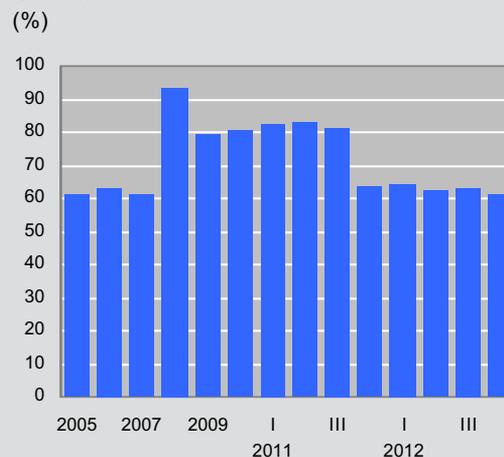
### Lending activity

Lending activity stagnates. The composite measure of lending activity which, in addition to domestic loans, includes corporate cross-border loans, rose in real terms in the 2006–2008 period at the average y-o-y rate of 45.1%.<sup>17</sup> From 2009 to 2012, the average y-o-y rate of composite lending growth equalled 7.3%, only to fall to 1.5% in late 2012.

Real y-o-y growth in total (domestic and cross-border) corporate loans was mere 0.6%. Growth in domestic corporate loans was somewhat higher (3.1% at end-2012). However, corporate external debt repayment slowed down (-2.5%) relative to 2011 (-6.5%). Corporate lending contracted significantly in Q4 after the delicensing of Nova Agrobanka, i.e. the write-off of a significant portion of its loans and the transfer of one part of loans to the Deposit Insurance Agency and thus the exclusion of these loans from banking sector balance sheets. Real y-o-y growth in household lending was on a moderate downward path, totalling 4.2% by end-2012.

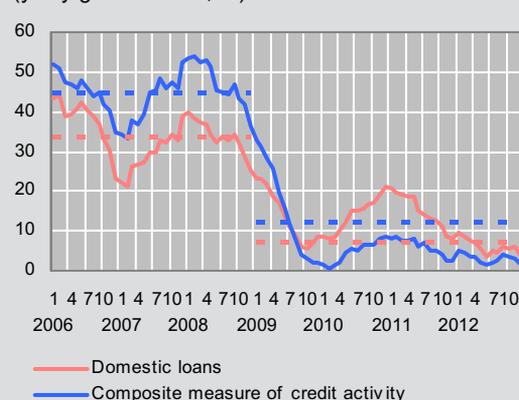
A slowdown in lending activity was conditioned by both demand- and supply-side factors. A reduction in quality domestic demand for loans was due to the deceleration in

Chart II.1.6. Risk-weighted assets to total assets (%)



Source: NBS.

Chart II.1.7. Real credit growth\* (y-o-y growth rates, %)



\* Calculated using the exchange rate of dinar to euro as of August 31, 2008 and assuming that all FX and FX-linked loans have the euro as the currency of indexation.

Source: NBS.

economic growth. The average GDP growth rate fell from 5.5% in the 2002–2008 period to -0.7% in the crisis period, from 2009 to 2012. This discouraged demand for loans and had a negative impact on the quality of remaining demand. However, there are signs that loan supply is becoming limited, as manifested in tighter lending conditions – e.g. a rise in the loan margin above the 3-month EURIBOR.<sup>18</sup> On the other hand, this is due to

<sup>15</sup> Credit portfolio includes granted loans and deposits of the banking sector excluding securities and other loans in the net amount.

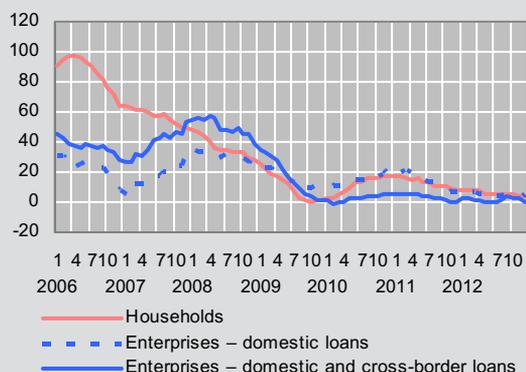
<sup>16</sup> Liquid assets include cash and cash equivalents and callable loans and deposits.

<sup>17</sup> Real growth implies growth excluding the exchange rate effect (fixed exchange rate from August 2008), assuming a fixed currency structure prior to July 2008.

<sup>18</sup> The interest margin is calculated as a difference between lending rates on new euro loans and 3-month EURIBOR.

**Chart II.1.8. Real growth of loans to households and enterprises\***

(y-o-y growth rates, %)

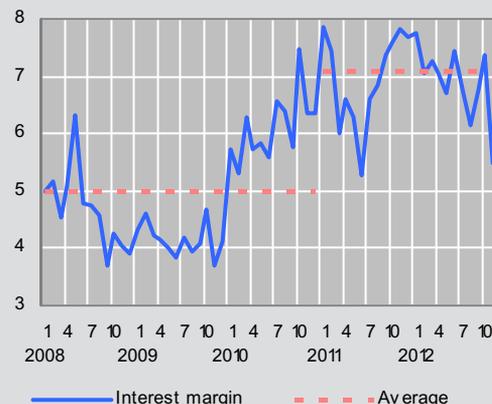


\* Calculated using the exchange rate of dinar to euro as of August 31, 2008 and assuming that all FX and FX-linked loans have the euro as the currency of indexation.

Source: NBS.

**Chart II.1.9. Interest margin\***

(pp)



\* Spread between weighted lending interest rate on new loans and 3M EURIBOR.

Source: NBS.

the prevailing risk aversion, but also to the change in business models of parent banks in terms of subsidiaries' greater reliance on local sources of funding, which becomes a precondition for local credit growth. Furthermore, Serbia's macroeconomic stability and market perspective in terms of profitability are important in decision-making by parent banks in terms of lending to the domestic economy, either indirectly (through subsidiaries) or through cross-border lending.

Chapter I.1. on the international environment describes circumstances in the EU banking market. First, European banks still face market pressures and are constantly struggling to preserve and strengthen the fragile investor trust. Second, they suffer further regulatory pressures because of the introduction of the single regulatory framework (Basel III standards), which implies strengthening of bank capital and the introduction of minimum liquidity standards. Third, banks were obliged to harmonise their operation, by end-June 2012, with requirements of the European Banking Agency in regard to the provision of the minimum adequacy ratio of core Tier 1 capital of 9%. Parent banks aim to timely prepare themselves for the fulfilment of market requirements and future regulations. A possible way for the fulfilment of new requirements in terms of capital adequacy is not only recapitalisation, but also a reduction in risk-weighted assets. As a result, quite expectedly, parent banks' exposure to countries such as Serbia declines somewhat.

In addition to factors affecting supply from parent markets of banking groups, several factors from the domestic environment negatively impact these groups' exposure to Serbia. Some of the factors present in the host country are a high risk premium and the lack of above-average profitability of the domestic market compared to the region.

Contracted supply will become an effective limitation once economic recovery takes hold and stimulates domestic demand for loans. However, further economic growth should not be limited by the supply of loans, particularly corporate ones.<sup>19</sup>

## Credit portfolio

The credit portfolio worth RSD 1,747 bln made up around 60% of total assets. The strongest portion of the portfolio related to corporate (55%), followed by household (34%) loans. Total net corporate loans were RSD 961 bln, of which 84% in a foreign currency. At end-2012, total household loans amounted to RSD 597 bln, of which RSD 304 bln related to housing loans. Of total household loans, 70% were in a foreign currency.

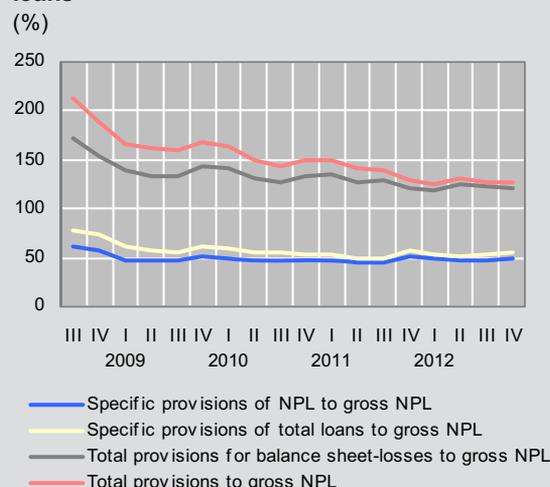
Given that loans are the most important part of domestic banking sector assets, the credit portfolio quality is the key determinant of the quality of total assets. Starting from 2008, the share of NPLs in total banking sector loans

<sup>19</sup> The chapter on the international environment elaborates on the change in European banks' business models and consequences on domestic economic growth.

Chart II.1.10. Non-performing loans



Chart II.1.11. Coverage of non-performing loans



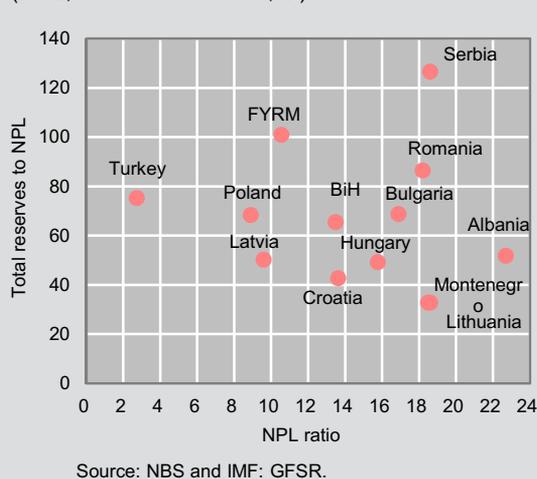
has been rising. By end-2012, gross NPLs made up 18.6% of total gross loans. However, it should not be disregarded that Serbia entered the crisis with a relatively high share of NPLs (11.3% at end-2008). In international terms, it recorded a smaller increase in NPLs during the crisis than most other countries. Also, the NBS applies a rather rigorous definition of NPLs.

The delicensing of Nova Agrobanka gave the strongest contribution to the fall in this indicator during 2012, which was the most pronounced in Q4. A part of the portfolio of the delicensed bank was assumed by the Deposit Insurance Agency and a part was written-off, which largely accounts for the reduction in corporate NPLs.

To protect the interests of depositors and other creditors, and preserve financial stability, the NBS requires, in addition to the reserves prescribed by the IFSR, the creation of regulatory reserves, i.e. reserves for potential losses. By end-2012, calculated reserve for the coverage of on- and off-balance sheet losses was sufficient to cover 126.5% of gross NPLs. Owing to the high coverage by reserves for estimated losses, NPLs, though high, do not jeopardise financial stability.

In the international context, the share of NPLs in total loans of Serbia's banking sector was above the region average. Their coverage by total reserves for potential losses is the highest in the region.

Chart II.1.12. Coverage of NPLs by total reserves and NPL ratios, countries of the region

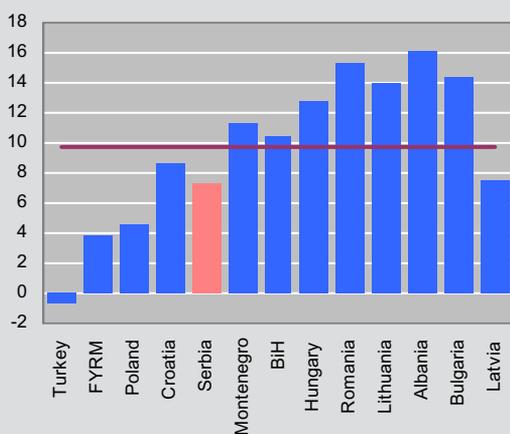


At end-2012, the share of NPLs in total corporate loans was 19.2%, down by 3.1 pp on end-2011. The sharpest drop in this indicator was recorded in Q4 because of the delicensing of Nova Agrobanka.

The NPL share in total loans differs across sectors. Generally, tradeable sectors<sup>20</sup> recorded for a long time

<sup>20</sup> Agriculture, forestry, fishing, mining, manufacturing, electricity, gas, steam and air conditioning supply.

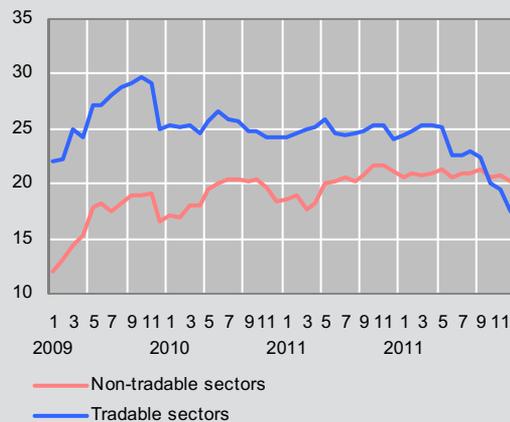
Chart II.1.13. **Developments of NPL ratio, countries of the region**  
(2012 relative to 2008, pp)



Source: NBS and IMF: GFSR.

higher NPL rates than non-tradeable ones. The gap was progressively narrowing, only to close in late 2012. The share of NPLs in tradeable sectors declined significantly from the beginning of the year, which can be an early signal of the recovery of the export-oriented industry. The largest NPL share was observed in the construction sector which also witnessed the strongest growth in 2012.

Chart II.1.14. **NPL ratio in tradable and non-tradable sectors**  
(%)



Source: NBS.

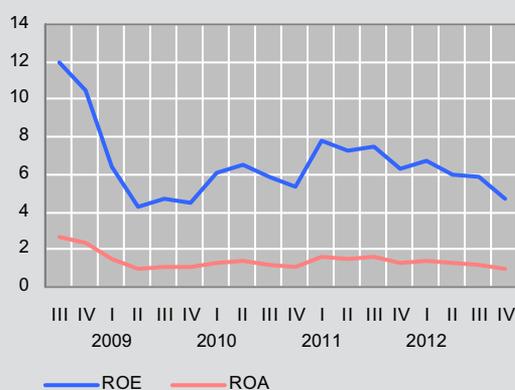
NPLs of the household sector increased in 2012. Debtor obligations were serviced most regularly in regard to housing loans where the percentage of arrears is traditionally the smallest. In contrast, the share of NPLs in total consumer loans rose considerably.

## Profitability

Despite numerous, both internally and externally generated challenges, the banking sector is profitable though its profitability declined in late 2012 relative to the previous year.<sup>21</sup> With RoA of 1.0% and RoE of 4.7%, banking sector profitability does not deviate much from the region average. A reduction in profitability is due to a high level of NPLs, i.e. considerable write-offs of NPLs at the expense of results, and sluggish lending growth. Therefore, a reduction in profitability in Serbia is not higher than in the rest of the region, as such reduction was recorded in most countries during the crisis.

Broken down by the banks' ownership structure, profitability of Serbia's banking sector is not homogenous. Foreign-owned banks were on average more profitable than domestic banks in majority state ownership, but less profitable than privately-owned domestic banks. However, excluding from calculation banks delicensed in 2012 and early 2013, profitability of state-owned banks was somewhat above the sector level,

Chart II.1.15. **Profitability indicators\***  
(%)



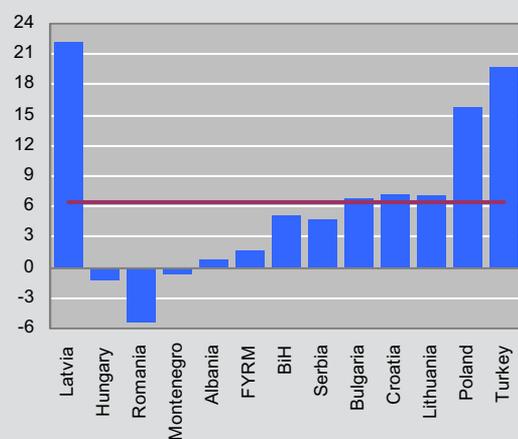
\* Excluding Agrobanka, Nova Agrobanka and Razvojna banka Vojvodine.

Source: NBS.

<sup>21</sup> Profitability indicators exclude Agrobanka, Nova Agrobanka and Razvojna banka Vojvodine.

Chart II.1.16. Return on equity, countries of the region

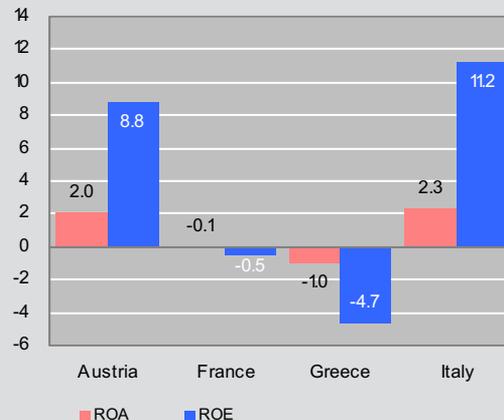
(2012, latest available data, %)



Source: NBS and IMF: GFSR.

Chart II.1.18. Profitability indicators, by majority shareholder's country of origin in 2012

(%)



Source: NBS.

with RoA of 1.1% and RoE of 6.3%. RoA and RoE of banks in majority foreign ownership equalled 0.8% and 3.9% respectively.

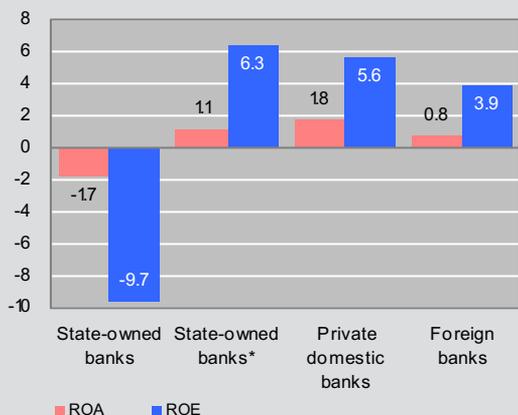
In terms of average profitability, banks in the majority ownership of French and Greek shareholders faced the greatest challenges. These banks posted weak results, and in some years of the 2008–2012 period even negative

results. By contrast, banks in majority Austrian and Italian ownership operated on average with profit, and their profitability indicators remained high at end-2012. Italian banks constantly operated with a two-digit RoE in the period observed.

Pre-tax profit of the banking sector equalled RSD 11.7 bln in 2012. As the financial result achieved includes a

Chart II.1.17. Profitability of the banking sector, by ownership structure

(%)

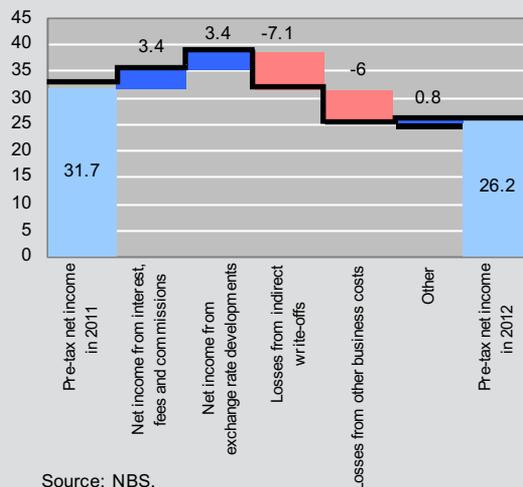


\* Excluding Razvojna banka Vojvodine.

Source: NBS.

Chart II.1.19. Contributions to change in pre-tax net income over 2012

(RSD bln)



Source: NBS.

RSD 14.5 bln loss of one bank, already liquidated at the moment of publication of this Report, pre-tax profit amounted to RSD 26.2 bln, excluding the above loss. Pre-tax profit recorded a RSD 5.4 bln decline y-o-y, with the greatest positive effect exerted by a rise in profit on account of the exchange rate effect (RSD 3.4 bln), interest earnings (RSD 2.0 bln), fees and commissions (RSD 1.4 bln), while the strongest negative contribution came from a rise in losses under indirect write-offs of loans and provisions (RSD 7.0 bln) and other operating expenditure (RSD 6.0 bln). Taking into account the relatively low average profitability, it is possible to expect further banking sector consolidation even excluding high write-off costs.

### Liquidity

Serbia’s banking sector is highly liquid and the liquidity risk poses no threat to financial stability. In late 2012, the average monthly liquidity ratio of 2.08 was almost twice higher than the prescribed minimum (1.0). The average monthly narrow liquidity ratio of 1.58 was also above the regulatory minimum (0.7). According to 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 November each year, is due to maturing deposits termed in the

Chart II.1.20. Average monthly liquidity ratio

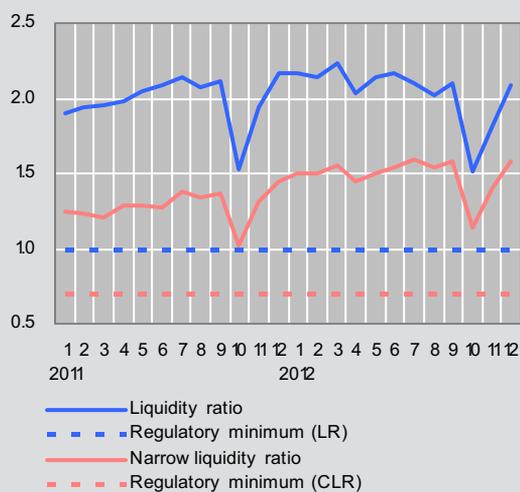
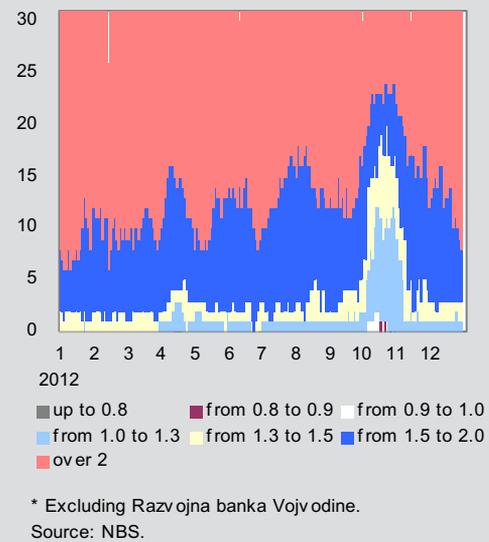


Chart II.1.21. Distribution of liquidity ratio\* (number of banks)



“Savings Week”. Charts II.1.21. and II.1.22. show the effects of the “Savings Week” and the distribution of liquidity ratios by banks. By end-2012, liquid assets covered 34.5% of total assets and 57.5% of short-term liabilities. In terms of first-degree liquid assets, their share in total assets and the coverage of short-term liabilities equalled 26.8% and 44.8% respectively.

Chart II.1.22 Distribution of narrow liquidity ratio\* (number of banks)

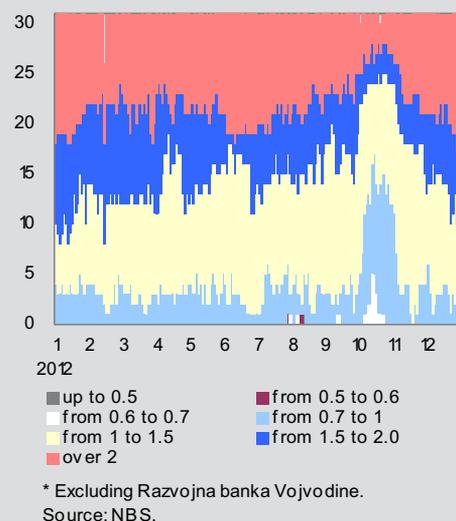
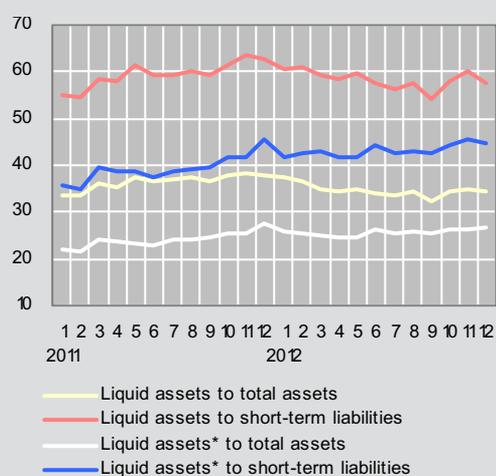


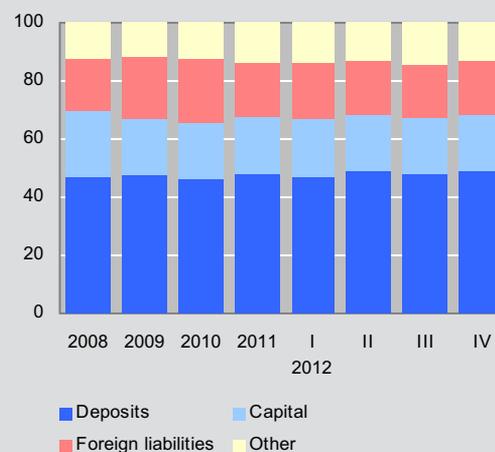
Chart II.1.23. **Liquid assets**  
(%)



\* I order (narrowly defined).

Source: NBS.

Chart II.1.25. **Structure of funding sources of the banking sector**  
(%)



Source: NBS.

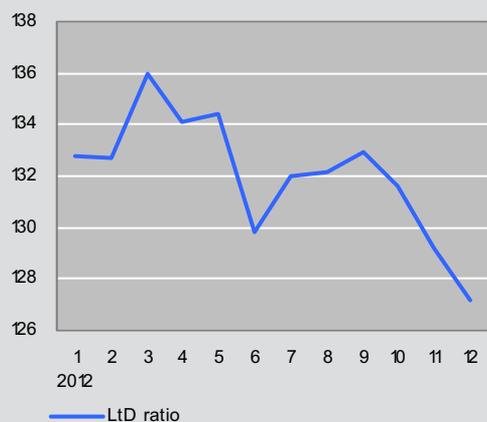
## Sources of funding

In accordance with a change in business models of European banks, models of financing their subsidiaries were changed. Recently, banks have increasingly relied on domestic, stable sources of funding, as confirmed by the downward trend in the loan-to-deposit ratio in 2012.

The currency structure of funding sources did not change significantly, with FX deposits remaining dominant.

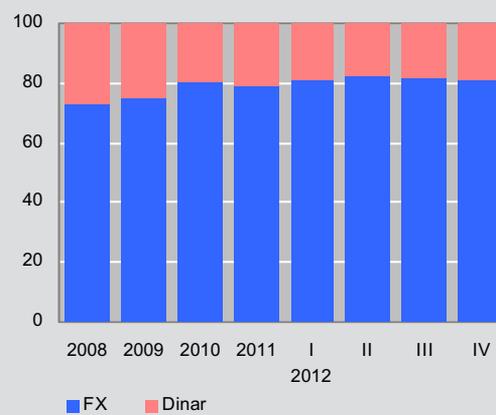
The maturity structure of deposits shows a lesser percentage of long-term deposits, with a moderate tendency of a further decline. On the other hand, bank external liabilities are generally long-term.

Chart II.1.24. **Developments in loan-to-deposits ratio**  
(%)



Source: NBS.

Chart II.1.26. **FX structure of deposits of households and enterprises**  
(%)



Source: NBS.

At end-2012, total deposits made up 49% of total banking sector liabilities, bank capital accounted for 19.4% and external liabilities for 18.4%.

Given a change in business models of European banks, the potential of Serbia's banking sector to ensure lending growth will be largely determined by a rise in domestic sources of funding.

Chart II.1.27. **Maturity structure of deposits of non-monetary sectors**

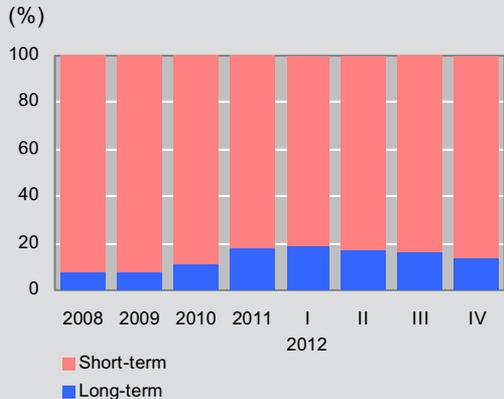


Chart II.1.29. **Net open FX position to regulatory capital**

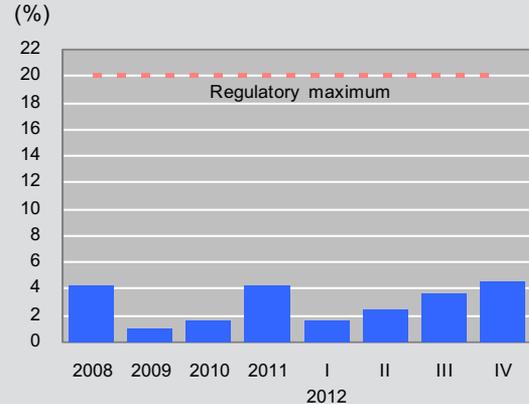


Chart II.1.28. **Maturity structure of banks' foreign liabilities**



market risks. The majority of securities held by banks in their portfolios are NBS and government securities. Given the prevalent share of short-term securities, the price risk is negligible. The FX risk indicator (net open FX position relative to regulatory capital) of 4.6% is still far below the regulatory maximum (20%).

Banks are dominantly financed from FX sources, but they also hedge against FX risk by extending loans with an FX clause. However, it is harder for their debtors to hedge, particularly for households. Depreciation of the domestic currency may exacerbate loan repayment by debtors whose liabilities are linked to a foreign currency and income to the domestic currency. The exchange rate is considered the most important determinant of NPLs. As a consequence, though FX risk in its basic form does not pose threat to the banking sector, it feeds back to the banking sector as credit-FX risk because of generally unhedged debtors.

## Sensitivity to market risks

Serbia's banking sector is almost unexposed to market risks. Only 1% of capital requirements relates to

This risk is recognised as one of the key risks to financial stability, not only in Serbia, but also the region.

Table II.1.1. Serbia: Key Macroprudential Indicators, 2008-12

(in %, unless otherwise indicated)

	Q4 2008	Q4 2009	Q4 2010	Q4 2011	Q1 2012	Q2 2012	Q3 2012	Q4 2012	yoy Δ
<b>Capital Adequacy</b>									
Regulatory capital to risk-weighted assets	21.9	21.4	19.9	19.1	17.3	17.2	16.4	19.9	🟡
Regulatory Tier I capital to risk-weighted assets <sup>1)</sup>	17.9	16.5	15.9	18.1	16.3	16.3	15.6	19.0	🟡
Regulatory capital to total assets	20.5	17.1	16.1	12.2	11.1	10.8	10.4	12.2	🟡
Capital to assets	23.6	20.7	19.7	20.6	20.6	20.2	20.2	20.5	🟡
<b>Asset Composition and Quality</b>									
<i>Sectoral distribution of bank claims on corporate sector</i>									
Agriculture, forestry, fishing	-	-	5.3	5.2	4.9	4.9	5.2	4.9	🟡
Mining, processing industry, water supply, waste water management, waste disposal control and similar activities	-	-	31.8	29.6	28.9	28.3	29.3	29.3	🟡
Distribution of electricity, gas, steam and air conditioning	-	-	1.5	1.5	1.7	1.3	1.3	1.3	🟢
Construction	-	-	11.7	11.1	10.6	10.6	10.2	9.9	🟢
Wholesale and retail trade, repair of motor vehicles and motorcycles	-	-	29.3	26.9	25.2	24.7	25.0	25.4	🟢
Transport and warehousing, food and lodging services, information and communications	-	-	10.6	12.5	14.3	15.1	14.4	14.8	🔴
Real estate activity, professional, scientific, innovation and technical activities, administrative and supporting service activities, arts, entertainment and recreational activities	-	-	6.1	6.9	6.5	6.9	6.6	6.3	🟢
Education, health and social care	-	-	0.6	0.6	0.6	0.6	0.5	0.5	🟢
Other claims	-	-	3.0	5.7	7.3	7.7	7.6	7.6	🔴
<i>Non-performing loans and NPL coverage</i>									
Gross non-performing loans to total gross loans	11.3	15.7	16.9	19.0	20.4	19.5	19.9	18.6	🟡
Non-performing loans net of provisions to Tier I capital <sup>1)</sup>	18.9	34.9	44.5	55.1	70.2	70.4	74.7	54.7	🟡
Non-performing loans net of provisions to total gross loans	4.9	7.7	8.9	9.3	10.4	10.3	10.4	9.3	🟡
Specific provisions of total loans to total gross loans	8.2	9.6	9.1	10.8	10.9	10.2	10.4	10.2	🔴
Specific provisions of total loans to gross NPL	73.2	61.4	53.9	57.0	53.8	52.2	52.3	54.9	🟡
Specific provisions of NPL to gross NPL	56.9	50.9	47.2	51.0	49.0	47.1	47.6	50.0	🟡
Total provisions to total gross loans	21.2	26.4	25.3	24.6	25.6	25.5	25.5	23.6	🟡
Total provisions to gross NPL	187.8	168.1	149.4	129.2	125.7	130.7	127.9	126.5	🟡
Loan loss reserve to gross NPL	153.6	142.5	133.6	121.4	118.7	124.4	122.1	120.7	🟡
<b>Profitability</b>									
Return on Assets - ROA <sup>2)</sup>	2.4	1.0	1.1	1.3	1.4	1.2	1.2	1.0	🔴
Return on Equity - ROE <sup>2)</sup>	10.5	4.5	5.3	6.3	6.7	6.0	5.9	4.7	🔴
Net interest margin to average assets	5.7	5.3	4.6	4.7	4.4	4.2	4.2	4.2	🔴
Net interest margin to net operating income <sup>3)</sup>	74.5	75.9	76.2	76.9	76.7	76.4	76.1	76.4	🟡
Net fees and commissions margin to net operating income	24.0	23.9	23.2	22.9	22.5	23.1	23.5	23.2	🟡
Net fees and commissions margin to average assets	1.8	1.7	1.4	1.4	1.3	1.3	1.3	1.3	🔴
Staff costs to total operating expenses	41.2	41.9	41.1	41.9	42.4	37.0	38.3	38.3	🟢
Cost to income ratio	68.5	70.9	70.9	66.0	66.1	76.1	73.2	73.0	🔴
<b>Liquidity</b>									
Liquid assets to total assets	43.3	41.5	35.1	37.7	34.6	34.0	32.4	34.5	🔴
Liquid assets to short term liabilities	68.6	63.6	56.3	62.8	59.3	57.5	54.1	57.5	🔴
Core Liquid assets to total assets	31.1	28.7	23.8	27.4	25.1	26.2	25.4	26.8	🟡
Core Liquid assets to short-term liabilities	49.3	43.9	38.1	45.6	42.9	44.3	42.4	44.8	🟡
FX-loans to total loans to households and enterprises	70.5	75.3	69.5	70.8	72.1	72.2	71.8	72.0	🟡
FX-deposits to total deposits of households and enterprises	73.0	75.0	80.7	78.9	81.3	82.7	81.7	81.1	🟡
Loans to deposits	1.24	1.17	1.30	1.28	1.36	1.30	1.33	1.27	🟡
Loans (net) to core deposits	1.25	1.25	1.26	1.27	1.34	1.21	1.23	1.20	🟢
FX-loans to FX-deposits of households and enterprises	134.4	130.3	119.3	120.4	126.1	118.1	121.9	117.2	🟡
Net FX-loans to core FX-deposits	109.8	99.8	99.1	109.7	112.8	109.4	113.0	106.7	🟡
Deposits of households and enterprises to total assets	40.9	41.8	42.1	43.9	42.9	44.4	44.1	45.0	🟡
Average monthly liquidity ratio	1.81	1.86	1.96	2.17	2.23	2.17	2.10	2.08	🟡
Average monthly narrow liquidity ratio	1.23	1.23	1.27	1.45	1.55	1.54	1.58	1.58	🟢
<b>Sensitivity to Market Risk</b>									
Net open FX position (overall) to Tier I capital	5.1	1.4	2.0	4.5	1.8	2.6	3.8	4.8	🔴

<sup>1)</sup> Up to Q3 2011, an adjustment is made in the deductibles of Tier 1 capital.

<sup>2)</sup> Profitability indicators exclude Agrobanka, Nova Agrobanka and Razvojna banka Vojvodine.

<sup>3)</sup> Net operating income is the sum of net interest, fees and commissions income and other net income (on dividends and equity investments and net gains/losses on securities).

Source: NBS.

Table II. 1.2. Serbia: Financial Sector Structure, 2008-12

	2008			2009			2010			2011			Q1 2012			Q2 2012			Q3 2012			Q4 2012		
	Assets			Assets			Assets			Assets			Assets			Assets			Assets			Assets		
	No.	RSD billion	%																					
<b>Financial sector</b>	<b>85</b>	<b>1,989</b>	<b>100.0</b>	<b>88</b>	<b>2,378</b>	<b>100.0</b>	<b>84</b>	<b>2,759</b>	<b>100.0</b>	<b>87</b>	<b>2,868</b>	<b>100.0</b>	<b>86</b>	<b>3,048</b>	<b>100.0</b>	<b>86</b>	<b>3,075</b>	<b>100.0</b>	<b>85</b>	<b>3,108</b>	<b>100.0</b>	<b>85</b>	<b>3,108</b>	<b>100.0</b>
<i>(in % of GDP)</i>		74.7			87.4			95.7			89.4			93.4			92.3			91.8			91.8	
<b>Banking system</b>	<b>34</b>	<b>1,777</b>	<b>89.3</b>	<b>34</b>	<b>2,160</b>	<b>90.8</b>	<b>33</b>	<b>2,534</b>	<b>91.8</b>	<b>33</b>	<b>2,650</b>	<b>92.4</b>	<b>33</b>	<b>2,810</b>	<b>92.2</b>	<b>33</b>	<b>2,844</b>	<b>92.5</b>	<b>32</b>	<b>2,880</b>	<b>92.6</b>	<b>32</b>	<b>2,880</b>	<b>92.6</b>
State-owned banks	8	284	14.3	9	378	15.9	8	454	16.4	8	472	16.5	9	533	17.5	9	530	17.2	8	522	16.8	8	522	16.8
Local private banks	6	154	7.7	5	178	7.5	4	217	7.9	4	213	7.4	3	198	6.5	3	195	6.4	3	194	6.3	3	194	6.3
Foreign-owned banks	20	1,339	67.3	20	1,605	67.5	21	1,863	67.5	21	1,965	68.5	21	2,079	68.2	21	2,118	68.9	21	2,163	69.6	21	2,163	69.6
Greek	4	301	15.1	4	353	14.8	4	427	15.5	4	393	13.7	4	417	13.7	4	419	13.6	4	426	13.7	4	426	13.7
Italian	3	352	17.7	3	457	19.2	2	526	19.1	2	591	20.6	2	600	20.5	2	645	21.0	2	657	21.1	2	657	21.1
French	2	107	5.4	2	140	5.9	3	202	7.3	3	263	9.2	3	262	8.9	3	268	8.7	3	287	9.2	3	287	9.2
Austrian	4	387	19.4	4	454	19.1	4	469	17.0	4	493	17.2	3	417	14.2	3	437	14.4	3	449	14.4	3	449	14.4
Other	7	193	9.7	7	202	8.5	8	238	8.6	8	225	7.8	9	309	10.5	9	328	10.8	9	345	11.1	9	345	11.1
<b>Nonbank financial institutions</b>	<b>51</b>	<b>212</b>	<b>10.7</b>	<b>54</b>	<b>218</b>	<b>9.2</b>	<b>51</b>	<b>226</b>	<b>8.2</b>	<b>54</b>	<b>218</b>	<b>7.6</b>	<b>53</b>	<b>238</b>	<b>7.8</b>	<b>53</b>	<b>231</b>	<b>7.5</b>	<b>53</b>	<b>228</b>	<b>7.4</b>	<b>53</b>	<b>228</b>	<b>7.4</b>
Insurance companies	24	85	4.3	26	99	4.2	26	117	4.2	28	126	4.4	28	133	4.5	28	141	4.6	28	140	4.5	28	140	4.5
Pension funds	10	5	0.2	11	7	0.3	8	10	0.4	9	12	0.4	9	13	0.4	9	15	0.5	9	16	0.5	9	16	0.5
Leasing companies	17	123	6.2	17	111	4.7	17	99	3.6	17	80	2.8	16	83	2.7	16	76	2.5	16	72	2.3	16	72	2.3

Source: NBS.

## II.2. Non-bank financial sector

### II.2.1. Insurance companies

*Serbia's insurance sector was well-capitalised in 2012. However, low profitability of insurance companies, notably because of high insurance administration costs, could be interpreted as a signal of solvency problems. Though there have been slow but positive steps forward in terms of a rising share in life insurance premia in total insurance premia and a constant rise in technical reserves, Serbia's insurance sector, as the most important domestic institutional investor, remained undeveloped.*

The share of balance sheet total of the insurance sector in balance sheet total of the financial sector supervised by the NBS (banks, leasing and insurance companies and voluntary pension funds) stood at 4.5% at end-2012. Compared to insurance sectors of EU member states, Serbia's insurance sector is small and undeveloped. By end-2012, Serbia had 24 insurance and 4 reinsurance companies. Total premium collected in 2012 equalled RSD 61.5 bln, up by 7.2% nominally relative to 2011 (total premium was RSD 57.3 bln). The ratio of total collected premia to GDP was 1.8% (1.8% in 2011) and the average premium per citizen RSD 8,489 (RSD 7,896 in 2011).

According to statistical data, life insurance premia accounted for 19.3% and non-life insurance premia for 80.7% of total premia in 2012. This ratio changed slightly compared to 2011 when the share of life insurance equalled 17.4%. The highest share in non-life insurance

premia was held by motor third-party liability insurance with 39% (RSD 19.3 bln).

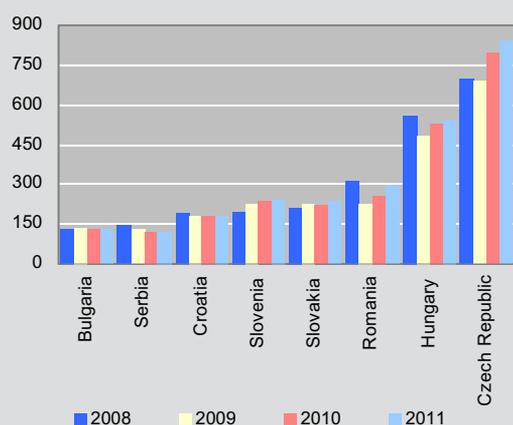
The share of property insurance premia in total non-life insurance premia equalled 27.5% (RSD 13.6 bln), up from 26.7% (RSD 12.6 bln) in 2011. Because of the economic crisis and low available household income, this type of non-life insurance in Serbia remains stagnant at a low level. Property insurance against natural disasters should be developed in the Serbian market since this type of insurance has significant advantages:

- it would lower fiscal expenditure for liabilities resulting from exposure to natural hazards and would enable fast access to liquid funds needed to eliminate the consequences of natural disasters;
- if offered to households, it would serve as important financial support, helping property owners to protect their investment into property;
- it would mitigate the adverse impact of natural disasters on operating results of enterprises and borrowing costs.

Within the project of strengthening the catastrophe risk insurance market, underway is the implementation of the Catastrophe Risk Insurance Facility, which also includes Serbia. It can be thus expected that this type of insurance will be present to a higher extent in the Serbian market.

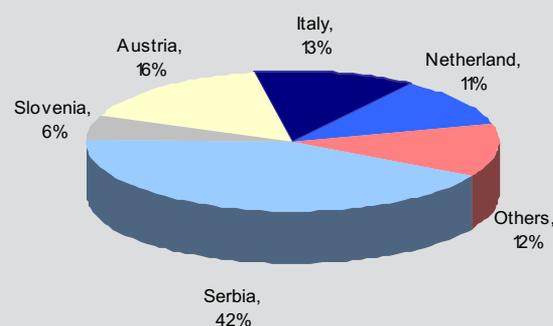
Around 40% of total capital of all insurance companies is owned by the Republic of Serbia and domestic legal persons. The Republic of Serbia owns around 95% of capital of the largest insurance company “Dunav osiguranje” which made up 29.1% of total insurance sector premium. The two largest insurance companies

Chart II.2.1. Total property insurance premium (EUR mln)



Source: CEA Statistics and NBS.

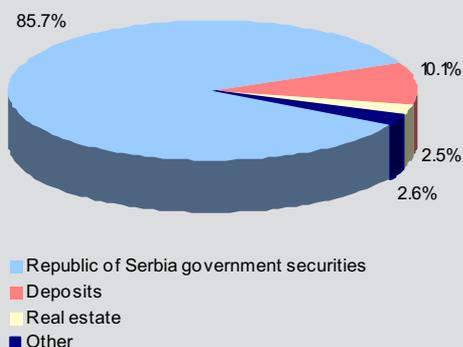
Chart II.2.2. Insurance companies ownership composition end of 2012\* (%)



\* Does not include reinsurance companies.

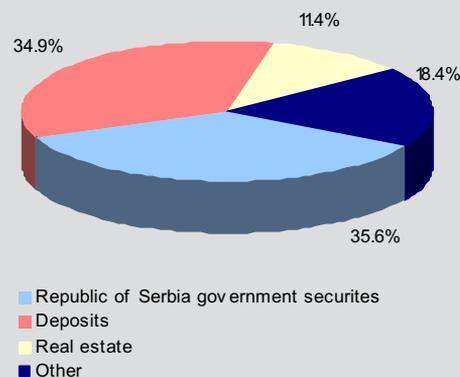
Source: NBS.

**Chart II.2.3. Life insurance technical reserves structure end of 2012 (%)**



Source: NBS.

**Chart II.2.4. Non-life insurance technical reserves structure end of 2012 (%)**



Source: NBS.

“Dunav osiguranje” and “Delta generali” accounted for 49.1% of total insurance premium in 2012. In terms of share in total premium, concentration in the insurance market, measured by Herfindahl–Hirschman Index<sup>22</sup>, was moderate and equalled 1,132 in 2012 (1,117 in 2011 and 1,123 in 2010).

Serbia’s insurance sector is well-capitalised considering the risks it is exposed to. Under the Insurance Law, guarantee reserve must always be higher than the solvency margin. As the minimum prescribed ratio is 100%, the percentage of 186.7% for companies predominantly engaged in non-life insurance and 189.1% for companies predominantly dealing with life insurance, implies that Serbian insurance companies were on average well-capitalised at end-2012.

The capital-to-assets ratio reflects the degree of company’s exposure to credit and market risks. The adequate level of capital enables an insurance company to cover losses in case these risks materialise. In aggregate terms, the ratio was falling for several years in non-life insurance companies, though its value remained at a desirable level (above 20%). At end-2012, the capital-to-assets ratio equalled 24.8% for non-life insurance companies (27.6% in 2011). Though capital was by 14% higher at end-2012 than in 2011, the ratio declined as assets rose faster than capital (by 27% from end-2011). Life insurance companies saw a rise in the ratio, which is considered a positive development (23.7% in 2012 and 19.65% in 2011).

It is exceptionally important for operation of insurance companies that technical reserves be covered by the prescribed forms of assets, taking into account the prescribed investment limitations as technical reserves are used to cover companies’ obligations from concluded insurance contracts. The ratio equalled 100.2% for non-life and 100.95% for life insurance companies respectively. The value below 100% would show the non-coverage of technical reserves by adequate forms of investment, which can cause problems in the settlement of obligations towards the insured.

In the structure of coverage of technical insurance reserves, the greatest share was recorded for low-risk investment (RS securities and bank deposits including cash) with around 70.5% for non-life and 95.8% for life insurance respectively. Special focus should be placed on the monitoring of investment concentration risk in only one, domestic market.

When assessing the quality of assets, particular attention is paid to the liquidity of individual forms of investment and the existence of adequate methodologies for assessing their value. Forms of assets where insurance companies invest, which are characterised by limited marketability and demanding valuation, include intangible investments, real estate, non-tradeable securities and claims. Though a downward trend has been observed over the recent years, the share of less liquid investment in total assets in non-life insurance companies stood at the upper boundary of

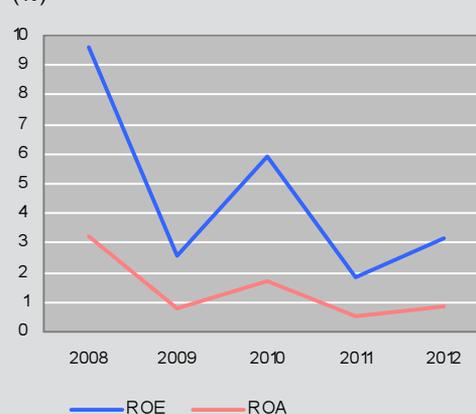
<sup>22</sup> The Herfindahl–Hirschman Index below 1,000 indicates the absence of concentration.

Chart II.2.5. **Combined insurance ratio** (%)



Source: NBS.

Chart II.2.6. **Profitability ratios of non-life insurance companies** (%)



Source: NBS.

the desirable level, equalling 35% of assets at end-2012. In life insurance companies, the share of less liquid investment was 4.3%.

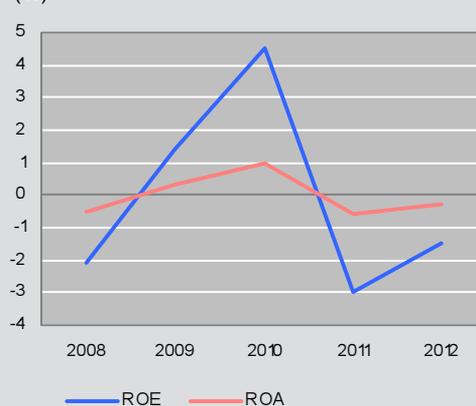
The loss ratio shows the extent to which an insurance company is capable of settling damages in self-retention by retained premium revenue, and indicates the adequacy of price policy of non-life insurance companies. The ratio equalled 55% for non-life insurance companies in 2012, which halted the downward trend initiated in 2008.

The expense ratio measures the efficiency of the insurance administration process. It shows insurance administration expenses (acquiring and management expenses) by the unit of contracted premium. In non-life insurance companies, this ratio was rising from 2005 to 50.1% in 2012.

The combined ratio, as the sum of the previous two ratios, equalled 105.1% in non-life insurance companies, which is above the threshold value of 100%. When the ratio exceeds 100% (from 2004, this happened only in 2012), it is assumed that in defining the premium level companies count on potential revenue from investment in financial markets and the real estate market. The ratio over 100% is considered unsustainable in the long run as potential revenue from investment belongs to shareholders, which increases the risk that an insurance company considers investment activities a priority compared to insurance service activities.

RoE for non-life insurance companies equalled 3.1% in 2012, with five companies operating with a net loss. Though higher than in 2011 (1.8%), RoE was lower than in 2008 when it equalled 9.6%. In regard to life insurance

Chart II.2.7. **Profitability ratios of life insurance companies** (%)



Source: NBS.

companies, RoE was -1.5%, with five companies operating with a net loss. RoA equalled 0.8% and -0.3% for non-life and life insurance companies respectively. Given all the above, Serbia's insurance sector features low profitability, which is in case of non-life insurance companies due mainly to high insurance administration expenses relative to retained premium.

Successful operation of an insurance company affects the level of insureds' confidence. Low profitability is a signal that the company has problems, and can be considered the key indicator of a solvency problem.

However, the solvency of insurance companies depends primarily on the adequacy of the level of technical

reserves for assumed obligations and the real value of their coverage, and the level of guarantee reserve as a buffer for losses in case of unforeseen operating losses which could not have been covered by technical reserves. Serbia’s insurance sector is well-capitalised – the guarantee reserve suffices to cover unforeseen gains, and technical reserves are adequately covered and are constantly rising.

The development of the insurance sector would contribute to financial stability as it would increase the importance of insurance companies operating in Serbia as investors in the domestic capital market.

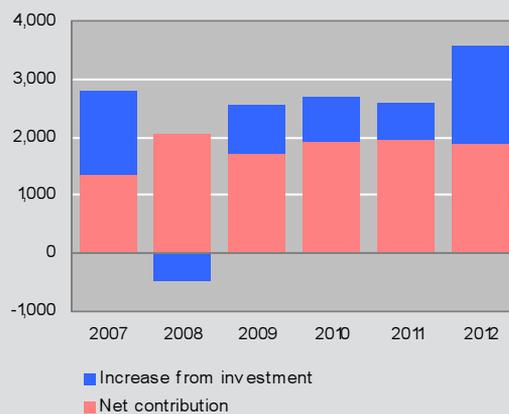
### II.2.2. Voluntary pension funds

*Net assets of voluntary pension funds amounted to RSD 16.0 bln at end-2012 and the number of beneficiaries was around 180,000. A rise in the living standard of households, a stable macroeconomic environment, notably low inflation, and the development of the domestic capital market are the precondition for the successful development of voluntary pension funds as a form of saving for old age.*

Pension system reform is one of the most topical issues both in developing and developed countries. Reform was launched in order to prevent poverty among the elderly

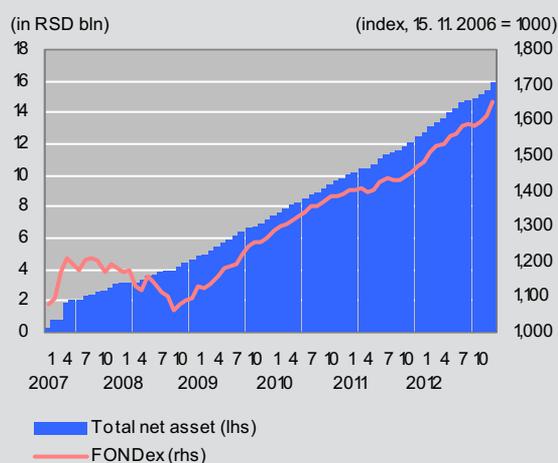
and to reduce fiscal pressures. Mandatory pension-disability insurance in Serbia (“first pillar”) is based on pay-as-you-go financing – pensions are financed from contributions paid by current generations of employees and represent only a type of a transitory account replenished by the collection of contributions and emptied by paying out pension benefits. There are also fully-funded systems where collected contributions are

**Chart II.2.9. Annual increase in VPF net assets and net contributions**  
(in RSD mln)



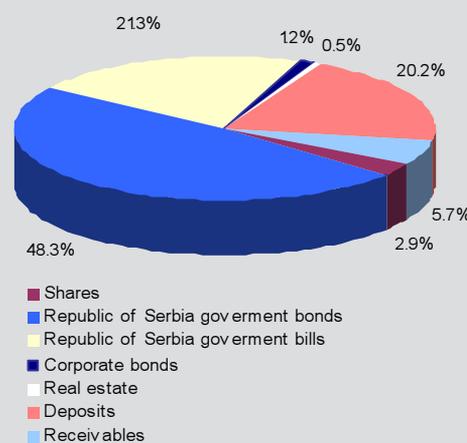
Source: NBS.

**Chart II.2.8. Total VPF net assets and FONDex**



Source: NBS.

**Chart II.2.10. VPF investments, end of 2012 (%)**



Source: NBS.

invested in the capital market. Contribution payments may be mandatory (“second pillar”) and voluntary (“third pillar”). In the 2001–2003 period, the introduction of the “second pillar” was considered in Serbia. The idea was, however, rejected because of the high deficit in the “first pillar” and high transition costs. In late 2006 and early 2007, Serbia introduced the first voluntary pension funds (VPFs) (“third pillar”). Though the VPF sector in Serbia posts positive results, due to the low living standard and the economic crisis, this part of the pension system remains undeveloped.

VPF net assets totalled RSD 16.0 bln at end-2012, making up 0.5% of balance sheet total of the financial sector supervised by the NBS, or only 0.5% of GDP in 2012. Net assets rose 28.6% from end-2011 on account of net contributions of members and positive results of VPF assets investment. At end-2012, FONDex<sup>23</sup> reached 1,654.4 points, up by 12.5% on end-2011. The initial index value of 1,000 points was recorded on 15 November 2006, on the day when the first VPF began to operate.

At end-2012, five companies managed nine VPFS.

VPFs invest in accordance with their currently conservative investment policies. At end-2012, 89.8% of their assets were invested in RS securities and bank deposits, including transaction accounts. Total 22.7% of VPF assets were exposed to the FX risk at end-2012, down from 24% at end-2011. Owing to the high share of debt instruments in fund portfolios and bank deposits, most assets were exposed to the interest rate risk. Systemic risks that VPFS are exposed to include the risk of investment concentration and liquidity of domestic financial instruments. VPFS did not invest abroad in 2012. The development of the domestic capital market is a necessary prerequisite for the diversification of VPF investment, which would enable risk dispersion.

### II.2.3. Financial leasing

*Signs of recovery of the financial leasing sector, recorded in 2011, did not take root in 2012. This is evident particularly in the reduction in balance sheets of leasing providers and notably in the reduction in their current assets and capital.*

Though the first signs of recovery of the financial leasing sector emerged in 2011 (particularly in regard to the

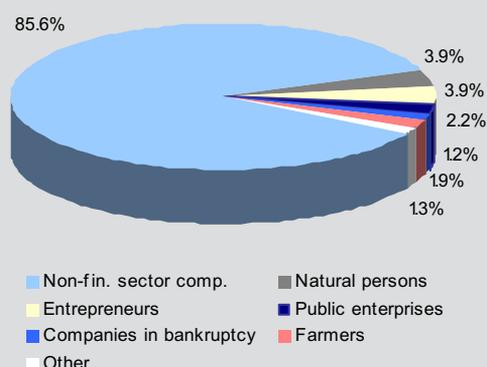
reduction in losses relative to the previous year), this trend did not persist in 2012, even though the obligation of leasing providers to keep reserve balances was abolished, which created the scope for reducing the price of financial leasing financing and for making leasing an attractive financial product. The adverse situation in the sector is confirmed by a reduction in balance sheet assets of financial leasing providers and a reduction in their current assets and capital. As a consequence, following several years when no changes were recorded, the sector experienced for the first time a reduction in the number of financial leasing providers (from 17 to 16<sup>24</sup>) and the downward trend of the number of employees continued.

The financial leasing market saw a reduction in total balance sheet assets. At end-2012, balance sheet assets of all financial leasing providers equalled RSD 71.9 bln, down by 10.3% on end-2011. Capital of financial leasing providers followed the same trend. As at 31 December 2012, capital of all financial leasing providers totalled RSD 7.7 bln down by 3.8% from RSD 8.0 bln at end-2011.

### Structure of lessees

Companies continued to account for the largest share in the structure of lessees in 2012. Most funds were granted to non-financial companies (85.6%), which implies the

Chart II.2.11. Investment structure by lessee on 31 December 2012 (%)



Source: NBS.

<sup>23</sup> FONDex reflects movements in investment units of all VPFS in the market.

<sup>24</sup> One leasing provider implemented voluntary liquidation and ceased to operate.

same share as at end-2011. In contrast, the share of natural persons in total investment declined and equalised with the share of entrepreneurs (3.9%). The share of public enterprises also declined (2.2%), while the share of farmers rose to 1.9% relative to end-2011.

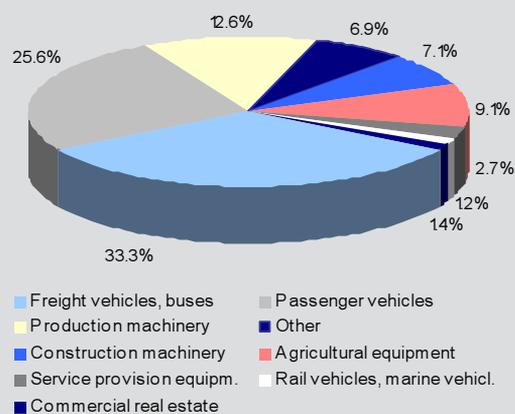
### Structure of investment by lease asset

In 2012, the financing of freight vehicles, minibuses and buses (33.3%) accounted for the largest share in the structure of investment by the lease asset, followed by passenger vehicles (25.6%). This trend was maintained from previous years. The share of production machines and equipment was also significant (12.6%). However, what is particularly important for sector development were the first contracts on real estate leasing, worth RSD 830 mln (FX currency clause indexed) and accounting for 1.4% of total investment.

Real estate leasing was introduced in 2011, but was not successful for several reasons:

- acquisition of real estate through financial leasing is less favourable than real estate purchased on loans as it includes, in addition to loan expenses, the lease fee, determined based on the amount that the financial leasing provider pays to gain ownership over the lease asset increased by interest and other costs;
- until 2013, the leasing provider was not entitled to the withholding of VAT, calculated by the supplier of the lease asset on the first transfer of the right of disposal of the lease asset (newly constructed facility), as the input tax. Instead, the leasing provider transferred VAT, through the lease price, to the lessee. To develop the real estate market, amendments to the VAT Law of 1 January 2013 allow for withholding of the input tax to the VAT payer that procured the asset for further trading, based on a financial lease contract;

Chart II.2.12. Investment structure by lease object on December 31, 2012 (%)



Source: NBS.

- to perform financial leasing of real estate, the capital census of the financial leasing provider equals EUR 5.0 mln.

Though the situation in the financial leasing sector is not satisfactory, notably owing to the structure of sources of funding (where the greatest portion is financed via external borrowing – most often by founders or legal persons operating within the same banking group), the general conclusion is that risks prevailing in the sector do not pose a serious threat to financial stability. The conclusion is based on the sector's small share in the country's financial system, as also confirmed by the fact that balance sheet total of financial leasing providers accounts for around only 2.5% of banking sector balance sheet total.

## III. Financial markets

The scale of the financial crisis has revealed the interdependence between financial stability and financial market development. Positive steps were made in 2012 on the domestic, government securities market, primarily in terms of better organisation of primary auctions compared to previous years. The most important precondition for the development of the dinar capital market, and thus the market of dinar government bonds, are stable macroeconomic conditions in the long run, notably low and stable inflation and a stable exchange rate of the dinar. The government securities market can be upgraded by: harmonising clearing and settlement operations with international standards, enabling international clearing and settlement of dinar government bonds, listing of long-term dinar government securities on the Belgrade Stock Exchange, and developing hedging instruments.

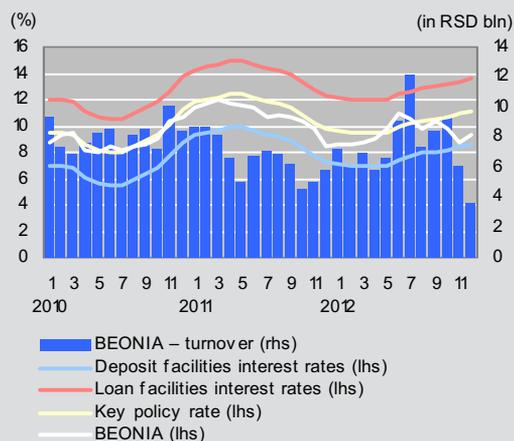
### III.1. Money market

In July 2012, the NBS reversed the direction of main open market operations by providing the banking sector with liquidity through repo purchase of dinar government securities. Dinar liquidity of the banking sector contracted as in the April–September period the NBS increased on several occasions the percentage of allocation of the dinar portion of FX required reserves, with the aim to stabilise the FX market. Moreover, dinar liquidity contracted also via NBS interventions through the sale of FX. By switching from repo sale to repo purchase operations, the

type of auctions changed: fixed-rate auctions were replaced by variable, multiple-rate auctions. In accordance with the decision on auction organisation, each member may submit to the NBS one or more individual bids, specifying the quantity of securities to be sold and the appertaining interest rate. Also, the maturity of auctions was reduced from 14 to 7 days.

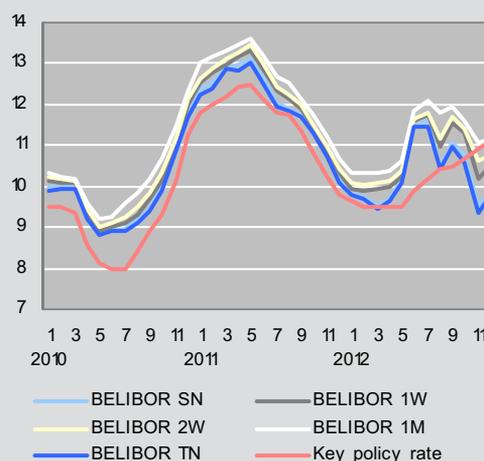
In H1 2012, BEONIA moved below the key policy rate until May and exceeded the rate from May to July. After the government monetised a considerable amount from September 2012 to January 2013, excess liquidity

Chart III.1.1. Key policy rate, BEONIA, and interest rates on deposit and loan facilities (monthly averages)



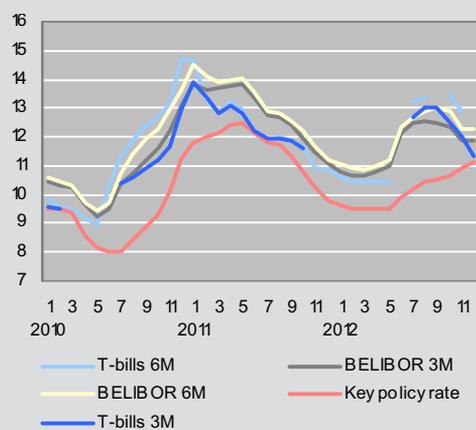
Source: NBS.

Chart III.1.2. BELIBOR interest rates (monthly averages, %)



Source: NBS

**Chart III.1.3. Money market interest rates and auctions of government bills**  
(monthly averages, %)



Source: Ministry of Finance and Economy and NBS.

appeared in the market, which is why BEONIA declined, getting closer to the deposit facilities rate by the year-end.

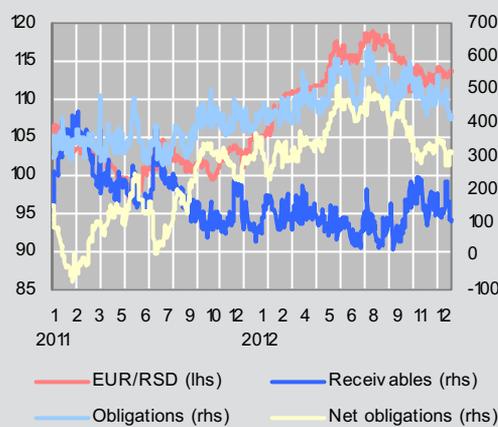
Facing excess liquidity, the NBS switched back in December to reverse repo transactions (repo sale of securities), aimed at the withdrawal of excess liquidity of the banking sector. The auction method and 7-day transaction maturity remained unchanged, i.e. auctions were organised at the variable, multiple interest rate. The highest rate that banks can offer equals the key policy rate. The subject of these transactions can be dinar securities issued by the NBS, Republic of Serbia and international financial institutions with the highest credit rating.

Though the money market still faces excess liquidity, trading volumes in the interbank market are low, though slightly above the 2011 levels (in Q1 and Q4 2012, average daily trading volumes equalled RSD 9.3 bln and RSD 6.5 bln respectively vs. RSD 6.7 bln and RSD 5.1 bln in the same period of 2011 respectively).

Three- and six-month BELIBOR rates mirrored the rates on T-bills of the same maturities. Rates on T-bills were rising until early Q4, and declined thereafter. In H2, three- and six-month BELIBOR rates were generally lower than rates on the same maturity T-bills. This difference reflects excess liquidity in the interbank money market.

Bank FX liabilities under swaps with non-residents stem mainly from trading in FX swaps in respect of bank cross-border borrowing from parent banks, and to a lesser extent from the purchase of dinar government bonds by non-residents. In case of expected depreciation, some

**Chart III.1.4. Net FX swap obligations to non-residents from 1/1/2011 to 31/12/2012**  
(in EUR mln)



Source: NBS.

non-residents enter into dinar liabilities in order to hedge against the FX risk of investment into dinar bonds. On the other hand, through swaps in which they generate dinar claims, foreign investors tend to make profit from the spread between interest rates in the country and abroad against the background of a stable exchange rate. The movement in these claims indicates the behaviour of foreign investors in case of changes in the dinar exchange rate.

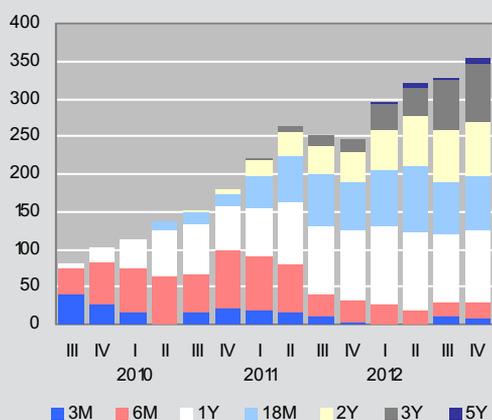
## III.2. Bond and stock market

When there is financial stability, the financial system, which includes financial intermediaries, financial markets and financial infrastructure, supports the efficient distribution of financial resources. Developed financial markets are an alternative source of corporate funding, primarily via the issue of debt securities, but also through initial public offerings of equities. Trade in securities in the Republic of Serbia is regulated primarily by the Law on the Capital Market and accompanying by-laws. In addition, trade in government securities is governed by the Law on Public Debt and decrees of the Ministry of Finance and the Economy. Also, the issue of and trade in dinar securities are an important incentive to the dinarisation of the financial system.

The primary sale of government securities in the domestic market is organised by the Public Debt Administration of the Ministry of Finance and Economy. The sale is conducted through auctions at a single interest rate. The maturity of government securities issued in the domestic currency is gradually extended. The longest

Chart III.2.1. **RSD government securities, outstanding stock**

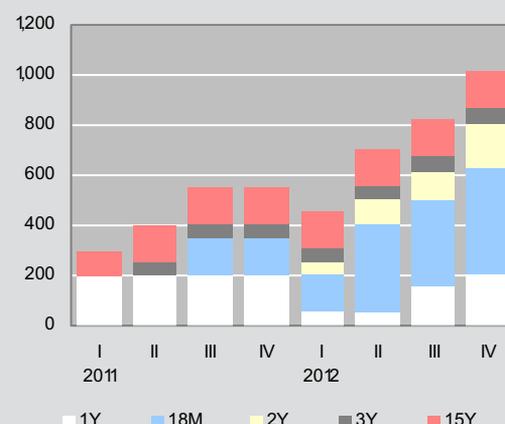
(nominal value in RSD bln)



Source: Ministry of Finance and Economy.

Chart III.2.2. **EUR government bonds, outstanding stock**

(nominal value, EUR mln)



Source: Ministry of Finance and Economy.

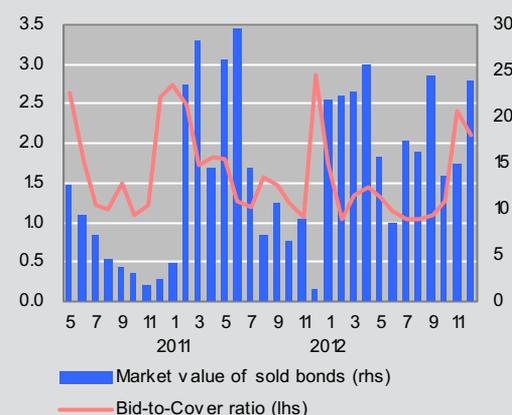
maturity of dinar bonds at the end of 2012 was five years, while in March 2013 the Ministry of Finance and Economy issued its first seven-year dinar bond. The two-year bond with a variable interest rate, which is linked to the changes in the NBS key policy rate, with the addition of a fixed margin, was issued in August 2012 for the first time. Three- and five-year dinar bonds have periodic coupon payments and a 10% annual coupon rate. As of 2013, coupon payments for coupon government bonds issued in the domestic market were shifted from semi-annual to annual.

At end-2012, the overall stock of undue government bonds, whose primary sale is organised by the Public Debt Administration, stood at RSD 469.9 bln<sup>25</sup>, calculated at nominal value, of which RSD 354.5 bln are in dinars and RSD 115.4 bln in euros (EUR 1.01 bln). Foreign investors showed the greatest interest, with the average annual participation in primary auctions of 61.1%, in three-year dinar bonds, which at the end of 2012 held a 21.6% share in the overall stock of dinar government bonds.

Euro-denominated government securities are issued only with the maturity exceeding one year. The major buyers at these auctions were domestic banks with the average share of 75.8% in 2012. The average performance ratio at auctions of euro-denominated government bonds in 2012 stood at 78.3%. The stock of these bonds rose from EUR 0.55 bln at end-2011 to EUR 1.01 bln at the end of 2012.

Chart III.2.3. **Primary market demand for RSD government bonds**

(auctions, in RSD bln)



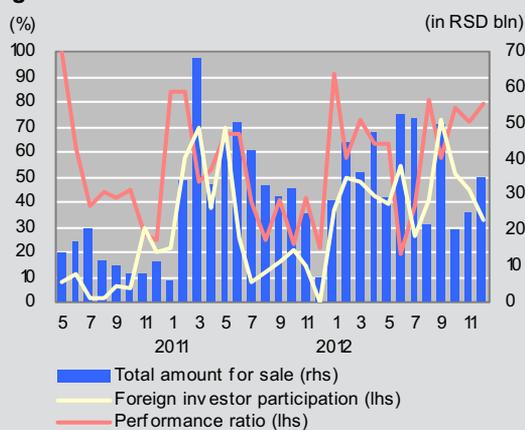
Source: Ministry of Finance and Economy.

The bid-to-cover ratio for dinar government securities in primary auctions indicates a relatively more favourable situation at the end of 2012 compared to the previous period. In November and December, the ratio was 2.4 and 2.1 respectively. The ratio over 2.0 is one of the indicators of a successful auction.

The major buyers of dinar government bonds were domestic banks and foreign investors, while the participation of domestic institutional investors

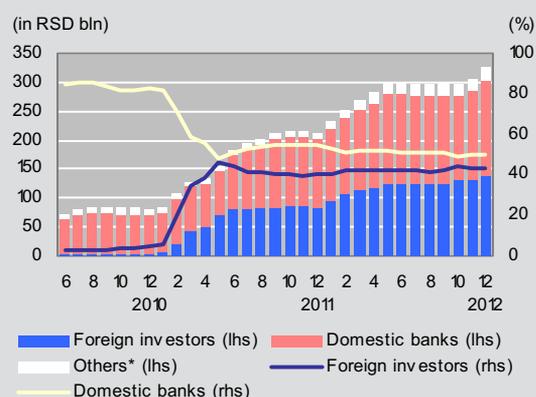
<sup>25</sup> Excluding RSD 16.8 bln worth of bonds issued in accordance with the Programme of Measures to Preserve Financial Stability of Banks.

Chart III.2.4. Performance ratio and foreign investor participation in auctions of RSD government bonds



Source: Ministry of Finance and Economy.

Chart III.2.5. Primary market of RSD government bonds investors structure



\* Custody banks, insurance companies, vol. pension funds, individuals and other legal entities.

Source: Ministry of Finance and Economy.

(insurance companies, pension and investment funds) and natural persons considerably subsided. Foreign investors may invest in long-term government securities issued by the Ministry of Finance and Economy. The share of foreign investors and domestic banks in the overall stock of dinar government bonds at the end of 2012 was 42.8% and 49.8% respectively. Higher participation of domestic institutional investors in the primary market of government securities would help reduce the sensitivity of the portion of public debt in government securities to investments by foreign investors, who often react more quickly to any negative news from the domestic or international environment than domestic investors.

Due to large foreign investor participation in primary auctions, as well as the structure of funding sources of banks that are dominant domestic participants, the performance ratios in primary auctions were strongly influenced by movements in the exchange rate. During periods of stronger domestic currency, the demand for dinar government bonds was heightened, whereas it receded in periods of weaker local currency, hence the bid-to-cover ratio in the period June–August 2012 averaged 1.0. Further development of FX hedging instruments would enable investors to manage this risk better.

The rising investor interest, which led to a decline in accepted interest rates on dinar government securities in the second half of 2012 and to more favourable government borrowing, was primarily triggered by global developments in terms of policy relaxation implemented by a number of central banks in developed countries and by the ECB, a rise in investments in government

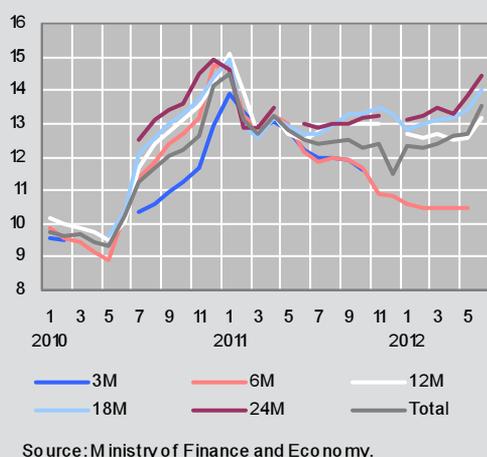
securities in emerging markets, as well as domestic efforts aimed at macroeconomic stability.

Despite the continuity of new issues of dinar government securities since 2009, the secondary market, where the dinar yield curve could be formed, is still illiquid and in its initial phase of development. Trading volume remains low, a small number of transactions are executed on a daily basis and a significant portion of the turnover pertains to transactions realised within seven days from the primary settlement date.

A continuous dinar yield curve for the secondary market of government securities is a precondition for the development of the dinar bond market of other issuers. In early 2011, the Ministry of Finance and Economy, Public Debt Administration, Securities Commission, Central Securities Depository and Clearing House, ACI Serbia and the NBS set up a task force to enhance the secondary trade in government securities. Their cooperation continued on in 2012.

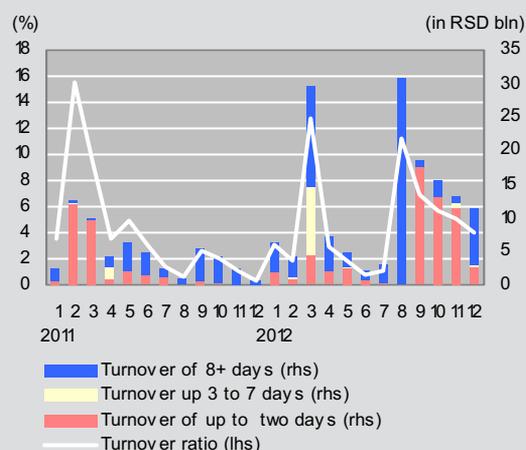
Secondary trading in government securities issued by the Ministry of Finance and Economy totalled RSD 154.9 bln in 2012, of which RSD 147.3 bln pertains to dinar securities and EUR 68 bln to euro-denominated bonds. Of the total trading volume in dinar securities, secondary trade in dinar government securities accounted for 47.2% and was realised within seven days from the primary settlement date. We can therefore assume that the buyers were investors who reached the 30% participation limit in the total volume of the issue. The annual trading volume of dinar government securities of the Ministry of Finance and Economy in the secondary market in 2012 came at

**Chart III.2.6. Interest rates on zero coupon RSD government bonds**  
(auctions, weighted monthly averages, %)



Source: Ministry of Finance and Economy.

**Chart III.2.7. RSD government bonds monthly turnover and turnover ratio**



Source: Ministry of Finance and Economy.

49.2%. Excluding secondary trading realised within seven days from the primary settlement date, the trading ratio was 26%.

In 2012, first steps were made towards increasing transparency in the secondary market of dinar government securities. An electronic platform for secondary trading was introduced in one of the world's leading information systems for financial markets, the E-Bond Bloomberg platform.

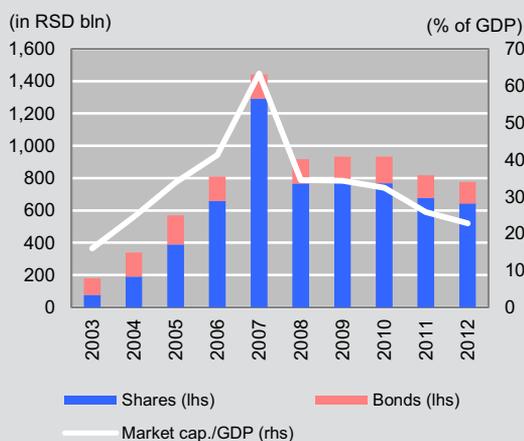
In order to bolster demand for domestic securities, the clearing and settlement processes at the Central Depository must be synchronised with internationally recognised recommendations to the greatest possible extent. Enabling international clearing and settlement (e.g. Euroclear and Clearstream) of government securities issued by the Republic of Serbia in the domestic market would most likely help reduce borrowing costs, as indicated by experiences of other countries, and would improve secondary trading, leading to higher liquidity of this market and the formation of the dinar yield curve. In 2012, talks were launched with the Belgrade Stock Exchange (BSE) to discuss the possibility of listing long-term government securities. Greater transparency on account of listed bonds could also help boost the liquidity of the secondary market of dinar government securities and reduce the costs of government borrowing. In addition, by introducing master repo agreements for financial transactions between banks, a basis is created

for the development of a whole range of different FX hedging instruments.<sup>26</sup> International practice has shown that primary dealers in government securities improve the liquidity of the primary and secondary markets of government securities.

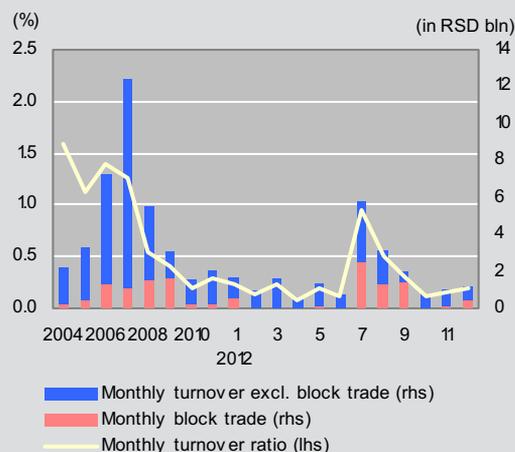
Market capitalisation of shares in the BSE at end-2012 was RSD 642.1 bln, down by around 5% from end-2011 (RSD 676 bln). Total market capitalisation ratio of the BSE (which includes all shares and bonds traded in this stock market) to GDP also shows a downward tendency relative to 2011. This indicator, however, though relevant for developed markets, does not bear the same significance under local conditions and should be taken with reservations, with the assumption that it may be overestimated. This is primarily due to the fact that market capitalisation also comprises companies whose shares are very rarely traded on the stock exchange, i.e. that there is a small number of issuers with actively traded shares and satisfactory trading volumes.

The average monthly trading ratio of 0.27% in 2012 indicates low liquidity of the BSE. This ratio is calculated as the quotient of total stock trading within a month and the average market capitalisation of shares at the end of the observed and previous months. Still, it does not sufficiently illustrate the level of stock market liquidity because the overall trading volume includes block trading which is, as one-off stock purchases, only formally recorded on the stock market and does not reflect actual

<sup>26</sup> For more information see Text box 2.

**Chart III.2.8. Belgrade Stock Exchange market capitalisation**

Sources: Belgrade Stock Exchange and NBS.

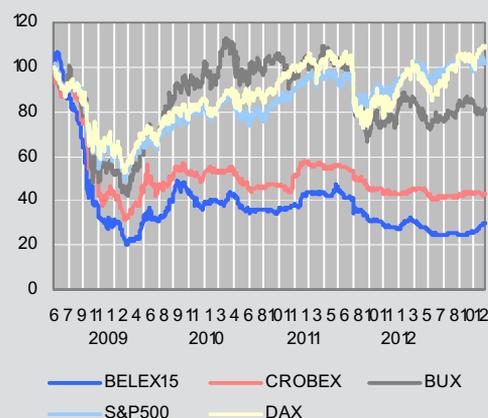
**Chart III.2.9. Belgrade Stock Exchange equity market turnover**

Sources: NBS based on Belgrade Stock Exchange data.

liquidity. Moreover, some shares of issuers primarily in the banking sector, which had a satisfactory trading volume, recorded a considerable fall in value. A positive example was trade in the shares of the Oil Industry of Serbia (NIS), which constantly recorded high daily trading volumes throughout 2012, primarily owing to good relations with investors and anticipated dividend payments. In the first half of 2013, the company decided to pay out dividends (at a significant percentage of company profits), which led to a further rise in the prices of its shares and sparked more interest of domestic and local investors. Foreign investor participation in total turnover in 2012 was quite high, as in previous years, and stood at 55.8%. Foreign investors took part in trading in shares more on the sale (58.47%) than on the purchase side (53.16%).

On the other hand, despite reduced market capitalisation, BELEX15, which comprises the most liquid BSE shares, recorded a mild 5% growth from end-2011. From the start of the reporting year, BELEX15 registered a decline, with occasional oscillations, until August, when it embarked on a growth pattern which continued into Q1 2013. As in the previous period, 2012 saw similar trends with indices of some Central and East European stock markets. Bonds are also traded in the BSE, primarily frozen FX savings bonds and, to a lesser extent, corporate dinar bonds of banks.

As for frozen FX savings bonds (euro-denominated zero-coupon bonds issued to Serbian citizens to settle debt under FX savings), although they are listed at BSE Prime listing, the majority of the trade in these bonds takes place on the OTC market. The remaining value of these bonds,

**Chart III.2.10. Stock market indices (1 June 2008 = 100)**

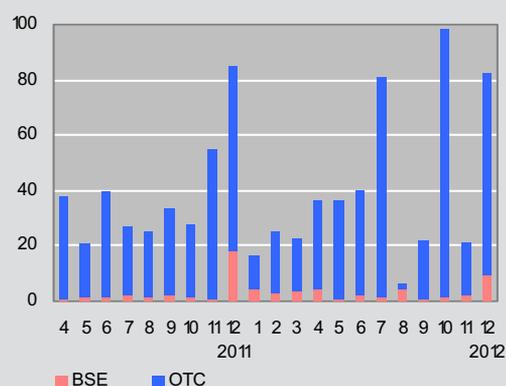
Source: Bloomberg.

which mature on 31 May each year until 2016, stood at EUR 1.27 bln at end-2012.

The markets of municipal and corporate bonds are underdeveloped and illiquid. Only two local governments issued municipal bonds to pre-selected investors, without a public offering and denominated in euros.

Some positive developments have been observed in the corporate bonds market. In 2012, two commercial banks, Société Générale and Erste Banka a.d. Novi Sad, decided to issue dinar bonds in order to expand and additionally diversify the sources of financing used in their regular

Chart III.2.11. **Government frozen foreign currency savings bonds turnover**  
(EUR mln)



Sources: Central Securities Depository and Clearing House, and Belgrade Stock Exchange.

operations. Dinar bonds issued by commercial banks, without any currency clause, contribute to the process of dinarisation of the financial system.

In May, Serbia-based Société Générale sold its first issue of dinar bonds worth 1.7 bln, with demand equalling around RSD 2.8 bln. The dinar bonds are issued for a three-year period with a put option. Interest is paid on a quarterly basis. The interest rate is variable and consists of a variable part based on the key policy rate and a 5.25% fixed margin.

The bank chose the key policy rate as a variable component in an effort to protect bond owners from inflationary pressures. In September 2012, the bonds were admitted to the BSE Open Market, only to be excluded from it in March 2013 because of a lack of trading for 180 days, after which they were transferred to the BSE multilateral trading platform.

In November, Erste Banka a.d. Novi Sad issued a two-year dinar bond in a public offering through the BSE, thus enabling all interested domestic and foreign investors to participate in primary purchase. The bonds sold were worth RSD 1.5 bln, which equals 69.76% of the total offered amount. The interest rate is fixed – 15% annually. Interest is paid on a quarterly basis. The bond was admitted to the BSE Open Market and has been traded since late November.

Dinar bond issuance increases the share of long-term dinar sources of funding of issuing commercial banks, i.e. the capacity of banks to extend dinar loans for a longer period, which leads to a reduction of the FX risk. In addition, international financial institutions (the European Bank for Reconstruction and Development, International Financial Corporation and the World Bank) also expressed their interest in issuing dinar bonds. Dinar bonds with high credit rating issued by international financial institutions would contribute to the dinarisation of the financial system and help attract new investors.

## ***Text box 2: Standard agreements for interbank financial transactions***

### **Reasons for standardisation of interbank financial transactions**

The need to introduce standards in interbank financial transactions (trade in financial derivatives) surfaced for a number of reasons. The previous bilateral (case-by-case) approach showed significant shortcomings on the sides of both expenditures and legal security. Because of the pronounced legal risk, in cases when a non-standardised transaction is performed by systemically relevant participants, the negative effects of such transactions can spill over onto the entire financial system. The rich comparative practice of developed financial systems showed that standardisation of these transactions is a path towards greater legal security, increased frequency and considerable improvement of business relations between market participants.

### **Interbank repo operations and their significance**

Interbank repo operations enable banks to borrow dinar funds from each other, mostly on the basis of government bonds (as well as other financial instruments), given that they are top-class collateral. The development of this banking segment could improve the current situation in the money market, characterised by a low volume of interbank trade, primarily on account of high liquidity of the banking system, but also because of heightened uncertainty triggered by the financial crisis. Repo transactions based on government securities could help overcome this problem since banks could extend loans to each other without any major credit risk. The Serbian financial market would thus make headway, as the large volume of interbank money transactions with different maturities would help establish the right price of dinar loans and enable the formation of a short-term section of the dinar yield curve – an indispensable precondition for smooth functioning and development of other financial instruments.

### **Composing standard interbank repurchase agreements**

The composition of standard agreements for interbank repo operations began in the second half of 2012, conducted by the task force comprising representatives of ACI Serbia, the Ministry of Finance and Economy, commercial banks and the NBS. By standardising repo transactions, through future implementation of this agreement based on the European Framework Agreement model, we can expect lower operating, credit and legal risks which these transactions can entail if conducted in a non-standardised manner. We expect that the standard repurchase agreement will be presented to the banking sector in the second half of 2013, after which the work on composing standard agreements for other financial transactions (futures and swaps) will continue.

### III.3. Financial infrastructure

One of the key assumptions for a developed financial market is financial infrastructure which is both adequate and developed, and exposed to operational risks as little as possible. Payment systems and securities settlement systems are crucial components of financial infrastructure in the Republic of Serbia.

Payment systems were designed and organised so as to minimise the risks that payment system participants are exposed to. Furthermore, they enable timely transfer of money funds between participants in the system, and processing, netting and/or settlement of payment transactions.

Because of the strong cross-dependence of payment systems participants, materialisation of risks can cause systemic disruptions and instability of the country's entire financial system. For this reason, it is necessary to ensure safe and sound functioning of all payment systems and management of all risks, most notably credit, operating and liquidity risks.

The NBS is the operator of the RTGS system which, being a systemically important payment system, represents a key component in the Serbian financial infrastructure.

As the settlement of mutual transactions is conducted at the central bank level, participants are not exposed to credit risk, while the possibility of securing additional liquid funds is extremely important for all participants in the system and for the smooth functioning of payment systems.

Participants in the RTGS system are able to manage liquidity risk because the system provides them the possibility to view all of their transactions, account balances and changes in the sequence in which payment orders are executed.

Within its regular instrumentarium, the NBS enables commercial banks to use interest-free loans for the duration of one day in order to maintain daily liquidity. This is a collateralised facility 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 ratings. This facility is usually resorted to on days when banks make larger payments (VAT or excise tax).

The NBS clearing system is organised on a multilateral net settlement basis, and as such it saves the liquid assets of participants. It is organised in three clearing cycles, and a participant is obliged to provide appropriate debit cap for calculated negative net position, which ensures credit risk management.

The system of international and interbank clearing of foreign exchange payments is another payment system operated by the NBS. It processes euro payments between banks in the Republic of Serbia, as well as banks from Bosnia and Herzegovina.

The management of operational risks in all financial institutions, including payment systems, depends on responsible corporate governance, internal controls, internal procedures and adequate business continuity plans in case of unforeseen external events. One of the measures implemented by the NBS against this risk is a back-up location ensuring the work of the RTGS and clearing systems. The back-up location is fully functional and has the capacity needed to ensure full capacity production work of the payment systems operated by the NBS.

In 2012, BIS published the document "Principles for Financial Market Infrastructures", which contains new and more demanding international standards for systemically important payment systems, clearing and securities settlement systems, central market participants and trade repositories. The new standards were introduced to ensure that the infrastructure behind global financial markets becomes stronger and more resilient to financial shocks.

This document clearly indicated the need to oversee payment and settlement systems according to the same standards and best practices. Given the scope of interconnectedness between these systems, the materialisation of certain risks in one of them can have dramatic consequences on efficient and unhindered operation of the other system, and consequently on financial stability.

The Central Securities Depository and Clearing House performs clearing, settlement and registration of transactions with financial instruments in Serbia. It is a joint-stock company with a minimum 51% of state-owned capital. Pursuant to the Law on the Capital Market, the Securities Commission regulates and supervises the Central Depository, while the NBS issues regulations that

govern the manner of performing payment operations through money accounts with the Central Depository and supervises legal compliance of its business operations.

Securities settlement is performed through money accounts with the Central Depository, using the funds kept by the Central Depository on behalf of its members in a money account with the NBS.

BIS recommends that one of the central bank functions should be oversight of the safety and efficiency of the securities settlement system, which is also a systemically important component of financial infrastructure. Risks in the securities settlement system can be a source of systemic risks in the securities market, as well as in the entire financial system due to their strong interconnection with payment systems.

In addition to its importance from the financial stability point of view, safe and efficient settlement is also needed to implement monetary policy through open market operations, credit facilities and short-term liquidity loans against a collateral of securities. Many central banks oversee their settlement systems according to standards and best practices, and in doing so they often cooperate with institutions tasked with the oversight of these systems. The oversight function, in addition to the oversight of the securities settlement system, most often includes the monitoring of their synchronisation with the goals of the central bank and international principles of financial infrastructure.

The NBS composed the Draft Law on Payment Services and the Draft Law on Settlement Finality in Payment Systems and Securities Settlement Systems to implement the EU Directive on Payment Services<sup>27</sup> and the Directive on Settlement Finality<sup>28</sup>. The Draft Law on Payment Services includes provisions that regulate electronic money issuance and electronic money institutions.<sup>29</sup>

### III.4. Real estate market

*Risks from the real estate market are transferred to the banking sector primarily through the high level of NPLs of construction sector companies. In addition to this, certain banks also have a high level of non-performing housing loans. An important channel through which*

*shocks in the real estate market are transferred onto the financial system is the change in the value of real estate used as loan collateral. The failure to adequately value real estate poses one of the most significant risks to the financial system – with real estate serving as loan collateral, banks are directly exposed to the risk of changes in real estate prices.*

Because of its permanent nature, real estate is the most important form of loan collateral. Variations in the value of real estate serving as loan collateral affect the price and availability of the loan, as well as the quality of the bank's loan portfolio, a large portion of which consists of mortgage-backed loans. Therefore, it is particularly important to monitor and analyse developments in this market and initiate activities aiming at its improvement.

From a legal standpoint, the real estate market in Serbia is inadequately regulated and there is no comprehensive, multi-institutional real estate database. To a certain extent, the Law on Court Experts regulates the terms of conducting expertise; however, there are no regulations governing the issue of authorised valuers which would define the terms, criteria and the manner of performing this activity.

The main characteristics of the domestic real estate market are non-transparency and inefficiency, given that data on transactions are most often known only to the seller and the buyer.

There is no comprehensive index of either residential or commercial facilities in Serbia. The only real estate index that has been applied in Serbia since 2012 is DOMex, composed by the National Mortgage Insurance Corporation. DOMex reflects purchase/sale prices of real estate financed with loans insured by the Corporation.

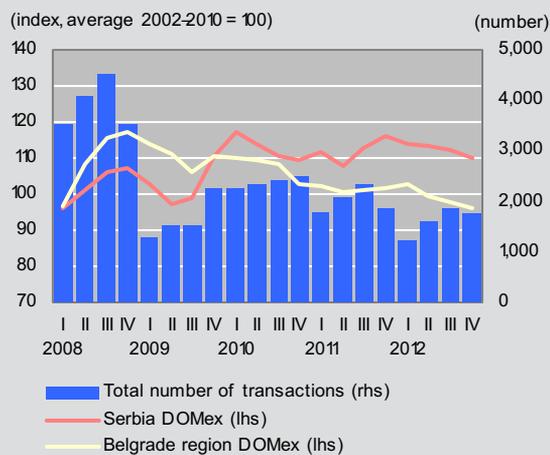
DOMex is obtained by comparing the average value of all achieved prices per square metre in a particular period in a specific territory with the average value of all achieved prices per square metre in the base period. The sum of data used for DOMex calculation is narrower than the sum of all purchases and sales in Serbia as it does not include data on achieved prices for real estate financed by cash or uninsured loans. In addition, its calculation does not exclude the impact of change in the composition of the real estate index basket through

<sup>27</sup> Directive 2007/64/EC on payment services in the internal market.

<sup>28</sup> Directive 98/26/EC on Settlement Finality in payment and securities settlement systems.

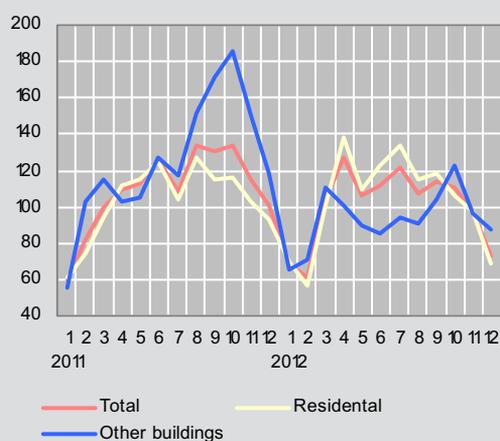
<sup>29</sup> Directive 2009/110/EC on the taking up, pursuit and prudential supervision of the business of electronic money institutions.

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



Source: National Mortgage Insurance Corporation.

Chart III.4.2. Indices of the number of issued new construction building permits (index, 2010 = 100)



Source: Statistical Office of the Republic of Serbia.

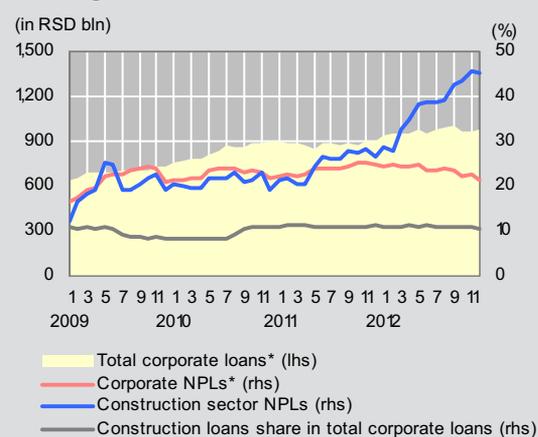
observed periods (e.g. new construction), or qualitative changes in traded property.

The analysis of DOMex trends in Serbia shows a rise in real estate prices until early 2010 when they recorded a mild drop followed by stagnation, declining again in 2012. During 2012, DOMex lost 5.2% of its value. Additionally, relative to previous years, most notably 2008, there was a significant drop in the volume of traded property whose purchase was financed by insured loans. Further decline in the prices of real estate in Serbia can be expected if the amount of real estate available in the market increases significantly on account of banks' settling overdue loans by selling real estate used as loan collateral, and if available income of households in Serbia continues to subside.

According to the Statistical Office, the value of new construction contracts in Serbia in 2012 fell by 11.4% relative to 2011, when the Construction Directorate of Serbia launched a project to build a residential and business complex in the former Stepa Stepanović military barracks in Belgrade. The complex comprises 44 buildings with a total of 4,616 flats available to citizens through subsidised and commercial housing loans granted by banks. In 2012, the total number of issued permits for new construction rose by 0.7% from 2011. By type of facility, the number of permits issued for residential buildings was up by 1.5%, while those for other types of buildings declined by 1.8%.

In response to adverse conditions in the field of construction, there was an increase in banks' claims from this sector on account of NPLs – at end-2012, they stood

Chart III.4.3. Construction sector's ratio of housing NPLs



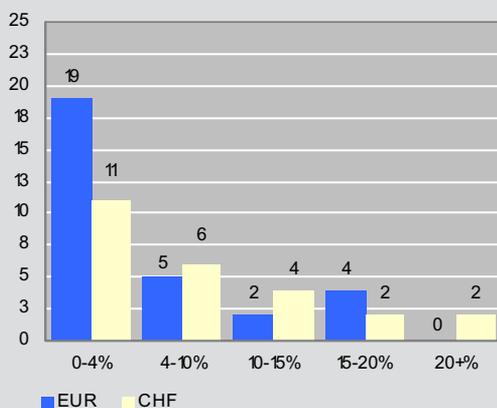
\* Excluding financial sector.

Source: NBS.

at 45.1% of total loans approved to the construction sector. At end-2012, construction sector loans amounted to RSD 102.1 bln, making up 10.5% of total loans granted by foreign commercial banks to companies, excluding the financial sector and public enterprises. As of December 2012, when the Decision on Risk Management by Banks was amended, a bank may assign/sell NPLs approved to legal entities in the construction sector to another resident or non-resident legal entity. Further, with the amendments to the Law on Corporate Profit Tax, which also came into force in December 2012, a bank may write-off its receivables on account of NPLs extended to the construction sector at the expense of tax expenditures,

**Chart III.4.4. Non-performing housing loans by bank**

(31 December 2012\*, number of banks)

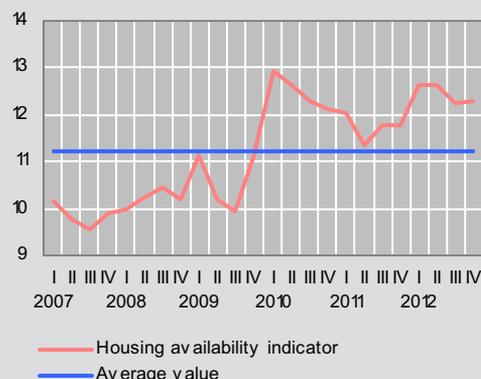


\* Excluding Razvojna banka Vojvodine.

Source: NBS.

**Chart III.4.5. Housing availability indicator (Price-to-Income)**

(in years)



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

provided that it files charges against the debtor or reports the receivable in a liquidation or bankruptcy procedure.

At end-2012, housing loans in Serbia amounted to RSD 309.7 bln, making up 18% of banks' total loan portfolio. Of the total amount of housing loans, 64.7% are euro-indexed, 34.8% Swiss franc-indexed, while the share of housing loans in dinars stands at a mere 0.8%. Chart III.4.4. shows that the considerably high level of non-performing housing loans in total extended housing loans prevails with several banks doing business in Serbia. A bank may not assign non-performing housing loans of individuals to a legal entity, except to another bank. The sale of real estate serving as housing loan collateral is difficult for the bank, among others because the Law on Mortgage, in the section governing out-of-court foreclosure, stipulates that the rights of subsequent mortgagees remain reserved, therefore the bank either cannot sell such mortgaged residential property, or it can do so at a very low price.

The availability of an average housing unit to an average household in Serbia can be measured by the price-to-income ratio, a housing indicator calculated as the ratio of the price of a 68.9 square metre flat<sup>30</sup> and funds available in money to an average household in Serbia. The price-to-

income ratio shows the average number of years needed for an average household to buy a flat if it were to spend all its available income on this purchase. At the end of 2012, the value of the ratio was as high as 12.3 years, indicating that flats in Serbia are not available to citizens with average income. The value of the ratio higher than its average value for several years can be an indicator of the formation of a bubble in the real estate market and of the future fall in prices of flats.

The key problems with housing loans in Serbia are the long period of high housing prices, availability of housing loans to wealthier families only, housing loan instalments that often exceed one-third of a household's monthly income and inadequate assessment of the value of real estate by authorised valuers.

Having recognised the need to improve this market, the NBS, together with the United States Agency for International Development, organised a roundtable discussion on 21 February 2013, themed "Improving Property Valuation in Serbia". The roundtable discussion gathered representatives from commercial banks, the Serbian Association of Banks, the National Mortgage Insurance Corporation, property valuation companies, associations of valuers and the NBS, as well as professors from the Belgrade Faculty of Economics.

<sup>30</sup> Average size of flats in Serbia, according to data from the 2011 national population and housing census.

The goal of the discussion was to identify possible ways of introducing international real estate valuation standards into domestic practice. It emphasised that good collateral management is important for the stability of the financial system, which can be further underpinned by adequate real estate valuation.

Although there is no valuation methodology in Serbia or regulations defining valuation procedures, the roundtable discussion noted that valuers should implement internationally accepted methods and standards and apply the knowledge gained through years of work and experience. The most widely accepted international real estate valuation standards are the International Valuation Standards – IVS, the European Valuation Standards – EVS and the Appraisal and Valuation Manual of the Royal Institution of Chartered Surveyors – RICS Red Book.

In addition, another issue that was raised is that of collecting, combining, classifying and processing data on the value of real estate, which requires expertise. Without a comprehensive and systematic database that would provide detailed information on real estate, adequate real estate valuation is not possible, nor is the formation of a real estate price index.

The valuation of real estate in Serbia could be enhanced by introducing mandatory implementation of international standards for real estate valuation for the purpose of securing extended loans, putting in place mechanisms for the ordering party to control the work of valuers and creating a database that could be used for contemporary valuation methods, composing analyses and calculating the index of real estate.



## IV. Financial stability

### IV.1. Regulatory framework as support to financial stability

#### IV.1.1. Introduction

Regulatory framework is of immense importance for maintaining financial stability. That is to say, proper financial system regulation has both a preventive and a reactive role. The preventive role is exercised through restrictions on the accumulation of systemic risks, reflected primarily as indirect (implementation of market mechanisms) or direct limitations of financial institutions' risky behaviour. On the other hand, the reactive role gains relevance when preventive measures fail to yield adequate results and when there is a risk of a financial crisis, i.e. when the crisis has already occurred. Under such circumstances, efficient legal procedure is required to provide a competent crisis-management authority with an opportunity to properly and quickly solve the issue of problematic financial institutions in order to limit the transfer of the risk onto other parts of the financial system. The probability of the outbreak of a financial crisis, which can cause huge costs for the country's economy and affect the level of social wealth, depends to a great extent on the efficiency of the response of such authority. In fact, this is the theoretical and practical reason why huge amounts of taxpayer money were used to financially support systemically relevant financial institutions during the last crisis. The goal was to prevent them from going bankrupt and thus preserve the main functions of the financial system which these institutions performed. On the other hand, this proves that preventive regulations implemented on time have considerable social and economic importance.

The NBS insists on preventive measures whose goal is to prevent the development of systemic risks. It therefore continuously enhances the regulatory framework and indicates possible lines of action for mitigating systemic risks.

#### IV.1.2. Possible regulatory measures for reducing systemic risks

##### NPLs

The share of NPLs in total loans in the Serbian banking system was 18.6% (end-2012). Such high share is a typical consequence of a financial crisis. The economic slowdown (worsening of loan users' financial situation) and depreciation of the domestic currency (rise in obligations of loan users who are not hedged against FX risk) are the elements accompanying a financial crisis and they have an adverse effect on the capacity of loan users to settle their obligations on a regular basis.

If the issue of NPLs is not resolved on time, it can exacerbate the gravity of the crisis and prolong it further. This is reflected in resources being tied down (all the way to NPL liquidation), in which case their efficient allocation is restricted, and in prolonged economic stagnation that accompanies a financial crisis.<sup>31</sup>

To resolve this issue efficiently, the NBS published its regulatory recommendations in last year's Annual Financial Stability Report.<sup>32</sup> Some of these recommendations were implemented in the period prior to the publication of this text.

<sup>31</sup> David Woo (2000), *Two Approaches to Resolving Nonperforming Assets during Financial Crises*, p. 3.

<sup>32</sup> National Bank of Serbia (2012), *Annual Financial Stability Report for 2011*, pp. 91 and 92.

One of the most relevant adopted recommendations is the creation of regulatory assumptions for the assignment of bank receivables from legal entities. The Decision on Risk Management by Banks (RS Official Gazette, No 45/2011) set forth a number of conditions which, to a great extent, limited the assignment of bank receivables from legal entities. It stipulated that a bank may assign receivables from a legal entity only if such receivables are mature and if they are assigned to a legal entity in the Republic of Serbia primarily engaged in financial activity, provided the bank had previously made an effort to collect such receivables from the borrower. Also, the legal entity to which the receivables are assigned cannot be related to the bank, and the bank may not assign such receivables to several legal entities at one time. The assignment of bank receivables from legal entities was restricted to such a degree that this practice was almost non-existent. However, the Decision was amended last December reducing all of the above conditions to a single one – that the receivables are mature, while the bank is obligated to notify the NBS about the assignment within five days from the day the contract on the assignment is signed. Thus, regulatory assumptions were created for the resolution of the issue of NPLs approved to legal entities through their assignment to other legal entities. At the same time, the Decision on the Classification of Bank Balance Sheet Assets and Off-Balance Sheet Items was also amended (RS Official Gazette, Nos 94/2011, 57/2012, 123/2012 and 43/2013). Considering the liberalisation in the assignment of bank receivables from legal entities, the Decision included new provisions stipulating that receivables from borrowers to whom the bank assigned these receivables, as well as receivables from borrowers which the bank had assigned to another entity over the previous three years, are classified in the lowest classification category E (for which reserve for estimated losses of 100% is envisaged). The goal of these changes is to limit the possibility of regulatory arbitrage.

As for last year's regulatory recommendation relating to the full implementation of the Law on Consensual Financial Restructuring of Companies (RS Official Gazette, No 36/2011), amendments to the Decision on the Classification of Bank Balance Sheet Assets and Off-Balance Sheet Items from December 2011 endorsed the process of consensual financial restructuring. Namely, it was established that when classifying receivables, the delay in collection should be calculated as of the subsequently agreed maturity date even if the restructuring of receivables was conducted for the second time in line with this law.

Additionally, as regards last year's recommendation to banks to take a serious approach to the resolution of NPLs and form groups that would deal with this issue, we must underline that most banks are aware of the gravity of the problem which bad investments pose in their portfolios, as confirmed in direct contacts between the NBS and individual banks. On these occasions, banks proposed various methods for reducing the share of NPLs at the individual level. They also endorsed the process of NPL resolution by taking part in the Belgrade Initiative, held on 8 March 2013 in Belgrade, where they had an opportunity to put forward their proposals for the improvement of the entire process.

Following the meeting, the NBS composed a Belgrade Initiative draft framework for resolving the issue of NPLs based on the case by case approach. The framework offers measures that may help resolve NPLs, some of which are as follows.

1. *Draft plans to reduce the share of NPLs.* NPLs do not pose the same problem in portfolios of each bank. Some banks have a high NPL share, whereas with others they make up a much smaller portion. Therefore, banks with a high NPL share should draft these plans given that such large percentage of NPLs poses a risk to their future operations, as well as to the smooth functioning of the financial system (systemic risk). Among others, the plans could include the following:

- a precisely defined goal expressed as a percentage share of NPLs in total loans of a particular bank, to be achieved by implementing the said plan;
- expected time frame for the achievement of this goal, 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%);
- ways of decreasing the NPL share to be applied (sale, write-off or restructuring of receivables, or enforced collection);
- sources for financing the implementation of the plan to reduce the share of NPLs – such as: recapitalisation by shareholders, or by a parent bank, in case of a foreign bank's subsidiary; debt financing or financing by capital of IFIs; sale of NPLs to asset purchase and management companies, etc.

2. *Regulate the mandatory write-off of NPLs.* Direct write-off of NPLs is one way of solving this issue. However, whether a receivable will be directly written-off depends on the accounting assessment of its collectability. Hence, it is important to consider the possibility of introducing mandatory NPL write-off that has to be

implemented if all of the previously established conditions are met. For instance, with the Slovenian model of mandatory NPL write-off, a bank is obligated to write the receivable off if it is:

- unsecured receivable and the debtor's delay in payment exceeds three years;
- receivable secured by a mortgage and the debtor's delay in payment exceeds five years;
- unsecured receivable from a debtor who has been in bankruptcy for more than a year;
- receivable for which a write-off has been agreed in a compulsory settlement procedure.

If in these situations court proceedings are not yet legally concluded, the written-off receivables are disclosed in off-balance sheet records until the proceedings are terminated.

The introduction of the mandatory NPL write-off could also help banks to disclose their financial situation more objectively.

3. *Continue implementing the Law on Consensual Financial Restructuring of Companies.* As financial restructuring is one way to resolve the issue of NPLs, investing further efforts in this procedure is justifiable. The Law allows for consensual financial restructuring of companies before launching a bankruptcy procedure, in accordance with the principle of sustainability of the debtor's business operations. Despite all positive effects which financial restructuring may produce, the process did not take hold because:

- companies and their legal representatives were insufficiently acquainted with the possibilities and advantages of the procedure, hence their lack of interest and trust in it;
- the procedure was not launched on time – companies apply too late, when they are already in the pre-bankruptcy procedure;
- decision-making process in banks takes too long.

Evidently, the reasons for modest results achieved so far can be attributed to participants in the procedure. With this in mind, it would be helpful to conduct a project aimed at informing and educating participants in financial mediation about the possibilities of financial restructuring

and its advantages, thus helping to increase the percentage of participants in the procedure.

It would be desirable to consider if there could be any tax incentives for debtors who, pursuant to effective laws, are obligated to pay taxes in case of a debt write-off, given that this is treated as extraordinary income.

4. *Enhance the process of out-of-court foreclosure of mortgaged property to improve the process of mortgage enforcement.* Pursuant to the Law on Mortgage (RS Official Gazette, No 115/2005), mortgage is terminated when it is struck off the real estate register. It can also be struck off based on an out-of-court sale of real estate. An obstacle for mortgage to be stricken off based on an out-of-court sale is the fact that in this case, the claims of subsequent mortgagees remain reserved (Article 49, paragraph 2, item 2 of the Law on Mortgage). This means that a bank – the mortgagee cannot actually receive settlement in an out-of-court foreclosure procedure because lower-order mortgages continue to encumber the mortgaged real estate, wherefore the interest of potential buyers in such property is much lower. On these grounds, the Serbian Geodesic Office, which keeps the Central Mortgage Register as stipulated by law, denies as unfounded the requests for striking off lower-order mortgages, which are submitted by buyers of mortgaged real estate. As the collection through court procedure is executed according to a defined collection schedule, and mortgage is afterwards struck off the real estate register, banks as mortgagees have no interest in initiating an out-of-court procedure, and instead opt for a court procedure. This rendered the out-of-court collection procedure pointless. Therefore it would be helpful if amendments to the Law on Mortgage would stipulate that in the case of out-of-court collection procedure, all subsequent mortgages are also stricken off the register.

5. *The resolution of NPLs extended to natural persons could be improved by establishing a regulatory framework for personal bankruptcy.* Though the share of NPLs in total loans extended to natural persons<sup>33</sup> is not that high (10.1%) compared to the corporate sector (19.2%), the adoption of a regulatory framework for personal bankruptcy would be highly beneficial. Personal bankruptcy is a legal procedure enabling the achievement of several goals. The debtor gets a fresh financial start, while unsecured creditors benefit from collective, even, fair and forced debt settlement.<sup>34</sup> The main advantage of

<sup>33</sup> Natural persons include both entrepreneurs and farmers.

<sup>34</sup> Vuk Radović (2006) Personal Bankruptcy, Personal Property under Bankruptcy, Belgrade.

personal bankruptcy is the possibility for a new financial beginning of a natural person after a certain relatively short period, which encourages that person not to avoid paying debts. At the same time, this implies considerable debt relief and major debt restructuring. On the other hand, the collection procedure is accelerated, hence creditors can collect at least a portion of their receivables (it is highly questionable which portion of receivables and after how long they would be able to collect through a regular procedure) within a relatively short period, which is of critical importance for many of them. The introduction of such procedure into our legal system would speed up the resolution of NPLs approved to natural persons. Finally, this procedure is of immense importance for restructuring debts of entrepreneurs and individuals who perform their business activities independently, given that the existing legal mechanisms are intended for the resolution of debts of legal entities.

### **The risk of cross-border deleveraging**

Around 75% of our banking sector's assets are made up of foreign-owned banks as a result of the opening of the banking market at the beginning of the last decade when foreign bank groups arrived in Serbia together with foreign capital. Their arrival can be perceived as positive, as it influenced credit growth financed from foreign funds (without going into a more detailed analysis as to where this credit growth was directed and whether it would have been better if it had been steered towards the production sector). However, in the crisis period, such growth model of the banking sector (based on foreign sources) showed its weak sides. In the downward stage of the financial cycle, the Western European banking groups that prevail in our market launched the process of cross-border deleveraging because of their need to increase capital in parent countries. This means that cheap foreign sources are no longer available to our banking sector. Moreover, the rollover rate of current mature loans also dropped. All of this poses a systemic risk of cross-border deleveraging, which affects the entire economy through its negative impact on the tendency of financial institutions to assume risk.

*6. With a view to limiting this risk, it would be beneficial to develop domestic dinar sources of financing.* When the banking sector, being a dominant part of our financial system, lacks foreign sources of funding, domestic dinar sources must be established in their stead. It is a fact that without credit growth there will be no economic growth either. Given that domestic sources of financing (capital and savings) are insufficient to finance the current loan volume, development of alternative sources of funding is

justifiable. A good example of these sources in the domestic market are voluntary pension funds.

As institutional investors with long-term funds at their disposal, it is only natural that these funds should invest in long-term economic projects by purchasing corporate bonds and participating in initial offers. Further, it is also very important that they represent long-term dinar sources and that their investments do not produce any FX risk to beneficiaries of their funds. This way, FX risk at the financial system level is reduced and a direct contribution is made to the dinarisation of financial transactions and the preservation of financial stability.

Hence, it follows that dinar sources of financing can be developed through various types of incentives. With pension funds, there is a possibility of prescribing that each new employee has to enrol in a private pension fund immediately upon employment, with the option of opting out at any point and without any fee. Such ways of automatic enrolment have been quite successful elsewhere and turned out to be a very efficient way of increasing the number of pension funds' members and assets without any additional fiscal expenses. The incentive scheme with pension funds (for employees in the public sector) could resemble the following: if an employee decides to pay a percentage of each salary raise into the pension fund, he will receive a full salary with the increase. On the other hand, if he decides to collect the entire amount of the increase, he will be entitled to a raise, but to a lower percentage. In addition, in case of a reduced rate of contributions for compulsory pension insurance, it is possible to prescribe that all employees should pay a portion of the reduction into the private pension fund.

This and similar incentive schemes for investment by citizens can greatly contribute to the development of domestic dinar sources of financing. Given that pension and similar funds invest in long-term government securities, the Government would have an opportunity to borrow in dinars for a long-term at reasonable interest rates.

### **The risk of euroisation**

As for euroisation, we must reiterate all of its adverse consequences reflected in reduced efficiency of monetary policy instruments, the risk of exhausting foreign exchange reserve, considerable growth of systemic risk of changes in foreign exchange rate, etc. Therefore, in order to rein in the risk of euroisation, it is possible to do the following:

7. *Consider measures and incentives to increase the share of dinar loans.* The free use of the currency clause was stipulated in Article 34 of the Law on Foreign Exchange Operations. This legalised the use of foreign currencies as a measure of value on the local territory. Given the lack of dinar sources of financing, a dominant portion of bank lending was carried out with the currency clause, which led to a high degree of euroisation. It would therefore be beneficial to consider measures and incentives that would gradually lead to a higher share of dinar loans without the currency clause. It goes without saying that the main goal is to achieve sustainable macroeconomic stability that will lead to a considerable increase in dinar sources of financing, which will eventually help create conditions for borrowing in dinars. Nevertheless, it must be underlined that this objective can be attained only in the long run. In the meantime, we should implement measures that are a step in the right direction and that mitigate the problem of euroisation to a certain extent. These are:

- monetary and fiscal policy measures aimed at strengthening the macroeconomic environment by securing low and stable inflation, with the managed floating exchange rate and sustainable economic growth,
- activities aimed at developing the market of dinar securities and creating conditions for the introduction of new dinar products, and
- activities aimed at developing FX hedging instruments.

The said measures were defined by the Memorandum on the Strategy of Dinarisation of the Serbian Financial System<sup>35</sup>. This is why the Memorandum should be fully implemented and further measures to strengthen the dinarisation process developed.

8. *Take into consideration the introduction of different insured amounts and insurance premiums for FX and dinar deposits.* The Law on Deposit Insurance stipulates the same amounts of insured deposits for both FX and dinar deposits. When defining the amount of premium for deposit insurance, the Law did not envisage that FX deposits have a higher premium because they entail more risk to the insurer. In case of FX deposits, there is a higher risk of the occurrence of an insured event than with dinar deposits due to the lack of FX risk when investing dinar sources of financing. In regard to this, it would be convenient to differentiate between premiums and the amounts of insured deposits

in accordance with the bank's risk profile, taking into account the currency of the deposit as one of the more important elements.

9. *The Republic of Serbia should subsidise mostly non-FX-linked dinar loans.* If any local currency is to achieve all of the functions of money on the country's territory, the Government must use the local currency in all transactions to the greatest possible degree. It would therefore be helpful if the Government began to approve new subsidy schemes for loans in dinars and without a currency clause and, by way of exception, when it is justifiable to do so, for FX-indexed loans.

### Public finances

Public debt stood at 59.3% of GDP at end-2012. In accordance with the Law on the Budget System, if the general government debt exceeds 45% of GDP, the Government is obligated to submit to the National Assembly, along with the budget for the following year, a programme for the reduction of the debt relative to GDP. This is why we listed the adoption of a debt reduction programme as one of our recommendations last year. The Government met its obligation, in line with the law, and adopted the Programme for the Reduction of Debt, which stipulated that the public debt rate of 45% of GDP will be attained by 2020. However, despite the adoption of the Programme, the risk of a public debt crisis was not eliminated. The current fiscal deficit rate does not provide firm grounds to expect that the goals of the Programme can be achieved even within such long period. It is certain that the level of public debt cannot be reduced without essential fiscal consolidation. It would therefore be useful to do the following.

10. *Adopt a sustainable programme of fiscal consolidation and public debt reduction.* As already stated, public debt cannot be reduced without sustainable fiscal consolidation, therefore strong fiscal adjustment measures must be implemented to help reduce the risk of a public debt crisis. Such decisive measures would also serve as a positive signal to foreign investors.

11. *Dinarise public debt by issuing long-term dinar securities.* Dinarisation of the public debt affects the reduction of the debt's systemic currency risk. Namely, the dinar portion makes up only 18.9% of the public debt

<sup>35</sup> See: National Bank of Serbia and the Government of the Republic of Serbia, Memorandum on the Strategy of Dinarisation of the Serbian Financial System, March 2012.

(end-2012). Hence, strong dinarisation of the debt, implying intensive activity of the Government on issuing longer-term dinar government securities, would be very useful. This would help stimulate the development of domestic institutional investors who invest in dinar assets because the offer of dinar financial instruments would grow.

12. *Setting a rule for the Government and local government bodies to borrow only by issuing dinar securities without a currency clause, allowing FX borrowing only in exceptional cases.* This would help reduce the FX risk rate of budgets of the government and local government bodies, which can easily turn into credit risk.

### **Crisis management framework**

13. As regards the crisis management framework, the adoption of a directive that will regulate this issue is expected at the EU level any time soon. After the adoption, it will be of immense importance to implement the directive in our regulations relatively quickly as this would synchronise the domestic regulatory framework for crisis management with the *acquis communautaire*. Given the dominant share of EU banks' subsidiaries in the

domestic market, the harmonisation with the directive is of considerable relevance.

### **Macroprudential policy**

The NBS's macroprudential mandate is founded on Articles 4 and 14 of the Law on the National Bank of Serbia, based on which the NBS has the right to define activities and measures aimed at maintaining and strengthening the stability of the financial system. The NBS is thereby authorised to conduct macroprudential policy, i.e. policy aimed at limiting systemic risk and maintaining financial stability. Bearing in mind the efficiency of the procedure for the adoption of macroprudential policy measures, it would be important to define mechanisms for coordination between the NBS and other authorities, such as the Ministry of Finance and Economy and the Deposit Insurance Agency. Hence, it would be useful to:

14. *Adopt the manner of coordination between various authorities tasked with maintaining financial stability.* In this sense, we should also take into account the Recommendation of the European Systemic Risk Board on the macroprudential mandate of national authorities (ESRB/2011/3) from December 2011.

### Text box 3: Estimate of the credit-to-GDP gap

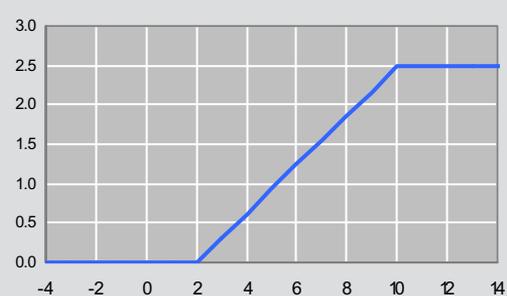
Excessive credit expansion relative to growth in economic activity often goes hand in hand with a misallocation of financial resources and is therefore assumed to represent a good indicator of potential risks to the stability of a financial system. Transition countries recording the highest pre-crisis credit growth, as a share of GDP, have also recorded the highest increase in NPLs. Some central banks and the relevant supervisory authorities have identified the risk of unsustainable credit growth and introduced a number of curtailment measures. Still, these measures failed to produce a positive impact as most of them were applied on the eve of the financial crisis.<sup>1</sup>

The regulatory framework of Basel III standards was adopted with the aim of advancing bank supervision towards strengthening banks' resilience to shocks and improving their risk management and operational transparency. Besides, Basel III also aims to prevent procyclic reaction of the banking sector in times of crisis. Hence, within the framework of new capital requirements, the Basel Committee envisages, among others, introduction of a new countercyclical capital reserve, i.e. countercyclical capital buffer. Its allocation should take place during the expansionary phase of the financial cycle and the buffer itself should be used as an instrument of protection against systemic risk in periods of crisis.

The countercyclical capital buffer was created primarily as a macroprudential instrument for the protection of the banking sector in periods of accelerated credit growth which is potentially unsustainable in the future. When credit activity subsides, the countercyclical capital buffer should compensate for the decline in sources for financing new lending. It is expressed as a percentage of risk-weighted assets (RWA) and covered from the share capital in a 0–2.5% interval.

Instructions for the calculation of the countercyclical capital buffer are set out in the Basel Committee document.<sup>2</sup> The basis for the calculation is the difference between the share of credits in GDP and their trend, i.e. the credit-to-GDP gap estimated using the Hodrick–Prescott (HP) filter. The countercyclical capital buffer would reach its maximum level of 2.5% of risk-weighted assets if the credit-to-GDP gap were higher than 10 pp. If the credit-to-GDP gap were between 2 pp and 10 pp, this buffer would vary linearly between 0 and 2.5% of the risk-weighted assets (Chart O.3.1).

Chart O.3.1. Countercyclical capital buffer (function of credit-to-GDP gap) (% of RWA)



Source: NBS.

Chart O.3.2. Credit-to-GDP gap (Hodrick–Prescott filter estimate) (%)



Source: NBS.

We will estimate the credit-to-GDP gap by using HP filter based on available time series of the share of composite measure of credit activity in GDP from Q1 2005 until end-2012. The parameter  $\lambda$  will be defined at the level of 400,000 in line with the Basel Committee guidance. To account for the bias in trend estimation at the lower end of the sample, the share of credits in GDP is projected for one year in advance based on the specification of an error correction model. Estimation of the credit-to-GDP gap in the pre-crisis period, taking into account the projected values of the share of credits in GDP, is presented in Chart 0.3.2.

<sup>1</sup> See: Gersl, A., & Seidler, J. (2010), *Excessive credit growth as an indicator of financial (in)stability and its use in macroprudential policy*. *Financial Stability Report*, 2011, pp. 112–122.

<sup>2</sup> Basel Committee on Banking Supervision (2010b), *Guidance for National Authorities Operating the Countercyclical Capital Buffer*, December 2010, Bank for International Settlements, Basel.

Since trend estimation is strongly influenced by depreciation, the credit and GDP series are expressed in euros. We may conclude that during the first two years of the period observed, the strongest need for the creation of capital buffer, 2% of RWA, was recorded in Q3 2006 (Chart O.3.3). From that point onwards, capital requirements declined to less than 1% by mid-next year when, after attaining the highest y-o-y growth in credit activity during the period analysed, the capital requirement also approached its maximum level. The highest level of capital buffer of 2.5% was required in Q3 2007, one year before the financial crisis reached its climax. It is particularly important to underline that the requirement for holding maximum capital reserve continued not only until end-2008, but all through the first two years of the crisis period, i.e. throughout 2009 and 2010.

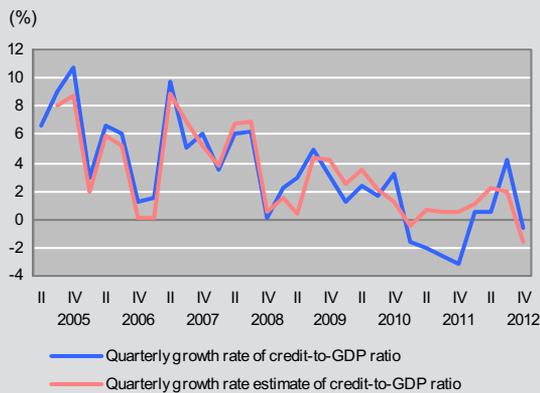
The econometric approach to estimation of the credit-to-GDP gap assumes assessment of a long-term equilibrium share of credits in GDP based on the cointegration analysis of time series. In addition to the credit-to-GDP gap, the following time series (after being logarithmed) were also used in the analysis: real GDP per capita, share of household consumption in GDP and inflation. Cointegration rank test has identified one cointegrated vector composed of the following time series: credit-to-GDP, real GDP per capita and household consumption-to-GDP. It was established that real GDP per capita and the share of household consumption in GDP are weakly exogenous variables of the cointegrated vector and represent a source of non-stationarity of the share of credits in GDP. Table O.3.1. shows assessment of the parameters of the cointegration relation and the error correction model, while the actual and estimated growth in the share of credits in GDP is shown in Chart O.3.4.

**Chart O.3.3. Countercyclical capital buffer (Hodrick-Prescott filter estimate)**



Source: NBS.

**Chart O.3.4. Quarterly growth rate of credit-to-GDP ratio and its estimate**



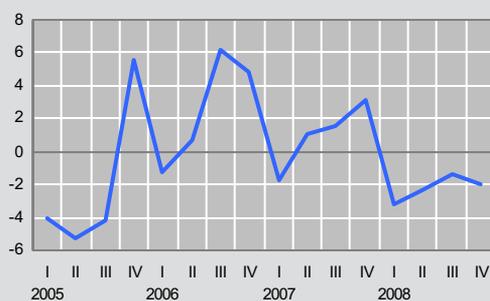
Source: NBS.

Validity of the assessment of long-term equilibrium level of the share of credits in GDP based on the cointegrated vector confirms the fulfilment of econometric tests of the estimated model (Table O.3.1). The designations of logarithmed values of variables in the model are as follows: the share of credits in GDP – LKB, real GDP per capita – LBP, the share of household consumption in GDP – LCB and equilibrium error (the difference between actual and potential share of credits in GDP – RESK). The model also involves dummy variables: V1 – takes the value of 1 from Q2 2009, V2 – takes the value of 1 from Q2 2007 and V3 – takes the value of 1 from Q4 2008. Charts O.3.5. and O.3.6 show estimates of the credit-to-GDP gap and the countercyclical capital buffer.

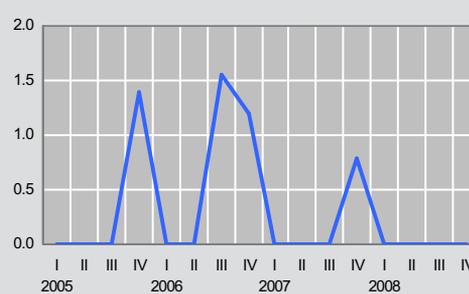
Table O.3.1. Coefficient estimates

Dependent variable	DLKB	
<b>Cointegration relation estimates</b>		
LKB	1	
Constant	29.48395	
LBP	-4.58042	
LCB	-1.912552	
V1	-0.153797	
Independent variables	Coefficient estimates	P-value
Constant	0.0059	0.1878
RESK(-1)	-0.3163	0.0016
DLKB(-1)	0.5841	0.0000
DLCB(-1)	1.6110	0.0008
DLBP(-1)	1.1863	0.0111
V2	0.0616	0.0020
V3	-0.0624	0.0011
<b>Econometric tests</b>		
R-squared	0.8369	
Prob(F-statistic)	0.0000	
Prob(BLJQ(2)-statistic)	0.8160	
Prob(BLJQ(3)-statistic)	0.6970	
Prob(BLJQ(4)-statistic)	0.5480	
Prob(JB-statistic)	0.6996	

Source: NBS.

Chart O.3.5. Credit-to-GDP gap (econometric approach estimate)  
(%)

Source: NBS.

Chart O.3.6. Contercyclical capital buffer (econometric approach estimate)  
(%)

Source: NBS.

During the first two years of the period analysed, estimate of the credit-to-GDP gap using econometric approach shows conformity with the estimate made using HP filter. During that period, according to both methods, the highest capital buffer is needed in Q3 2006 in the amount of 1.6% RWA. Still, similar conclusions cannot be drawn for estimates of the required capital reserve in the next two years of the period observed. According to econometric approach, capital buffer needed in Q4 2007 would be 0.8% of the risk-weighted assets and the need would completely disappear in the quarter that follows, while HP filter indicates a need for a maximum allocation into capital reserve in that period.

The Serbian banking sector regulations applied since 31 December 2011 are consistent with the regulatory requirements of Basel II. Capital requirement which implies limits on profit distribution into elements of core capital of banks whose capital adequacy ratio is higher or would be higher due to profit distribution than 12% by less than 2.5 pp represents capital conservation buffer under Basel III rather than the countercyclical capital buffer. The countercyclical capital buffer will be gradually introduced from 2016 until 2018 and will be fully applied as of 2019. Introduction of the countercyclical capital buffer must be announced at least one year before its full application date.

Though quality of the estimation of the credit-to-GDP gap, i.e. of the countercyclical capital buffer, is affected by the shortness of the period analysed, the implications of the results obtained are significant and should not be ignored. They warned of the future risks to the quality of credit portfolio and the need for additional capital in the early years of the crisis when NPLs soared by 50%. When interpreting the expansionary credit growth and the consequent need for capital reserve, it is important to take into account the contribution of credit growth from the aspect of credit purpose. High share of investment credits in the contribution to credit expansion is not necessarily an indicator of excessive credit growth and its unsustainability in future years. Positive effects of investment lending on economic growth may become manifest over a period longer than the critical period of introduction of a capital buffer. On the other hand, a much more cautious approach must be adopted when analysing excessive credit growth driven by consumer and housing loans. Following escalation of the financial crisis, a significant contribution to credit growth in Serbia comes from subsidised loans, the majority of which are loans granted for liquidity purposes. Hence the significance of analysing the sustainability of credit growth depending on the type of loans driving it.

### Text box 4: What do stress tests evaluate?

A banking sector stress-test is an analysis designed to determine the effects of an unexpected adverse shock on banks' balance sheets. A shock is defined as an event which is unlikely, but plausible. Stress tests usually combine adverse shocks that rarely occur simultaneously.

Two important dimensions must be considered in the stress testing process:

- balance sheet items which the stress test targets;
- the degree of transmission of the initial shock through the financial system and real economy.

The shock may affect balance sheet items on the assets side (cash and cash equivalents, loans granted and securities purchased) and the liabilities side (client deposits, credit lines received and securities issued).

Capital is the difference between total assets and total liabilities of a bank. Capital adequacy of a bank, as an important measure of its financial strength, is the ratio of regulatory capital to risk-weighted assets, within which higher weights are assigned to riskier elements. In part, stress tests enable an assessment of the impact of adverse shocks on capital adequacy. Different types of shock affect different balance sheet items. To illustrate:

- in October 2008, at the start of the banking sector crisis in the Republic of Serbia, withdrawals of household deposits over a two-month horizon led to a notable downsizing of liquidity, causing problems on the liabilities side;
- a similar effect would be produced by a sudden stop of foreign capital inflows, again creating problems on the liabilities side;
- with public debt write-offs already unfolding in advanced European economies, stress tests target securities as a class of assets;
- rise in NPLs (part of balance sheet assets) could also be a source of banking sector vulnerability.

There are two possible approaches to stress testing:

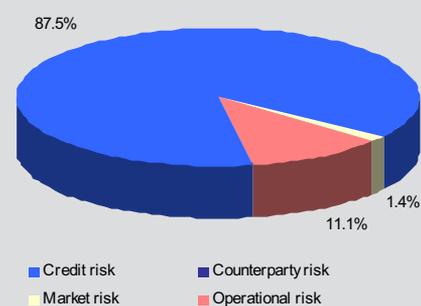
- sensitivity analysis which aims to evaluate the effects of a given shock, and

- macrostress test, evaluating the effects of change in several risk factors or of simultaneous occurrence of several specific events represented by the macro-scenario. As macroeconomic variables are interdependent, some negative effects amplify one another, but it is also possible for one effect to neutralise the other. Macrostress test is an attempt to analyse the risks of the system as a whole, taking into account the spillover effects – transmission of risks within a country's financial system, but also cross-border transmission, as well as transmission of risks between the financial sector and the real economy.

In view of the structure of the risk which banks are either already exposed to or may be so in the future because of the change in their business models, special attention is paid to the credit risk (because of the high degree of euroisation), liquidity risk (because of the considerable share of foreign ownership) and systemic risk assessment.

It must be underscored that a stress test does not provide an answer to the question of how the banking sector will function in a time of crisis, but merely sheds light on key risks and their impact on capital and liquidity.

Chart O.4.1. Capital requirements  
(December 2012, %)



Source: NBS.

## IV.2. Stress tests

*The global crisis heightened the importance of upgrading the microprudential approach to regulation and supervision of financial institutions with a macroprudential point of view. Hence, macrostress tests are conducted in addition to microstress tests. Macroeconomic stress tests have shown the resilience of the banking sector to excessive growth of credit and liquidity risks.*

### Introduction

The NBS uses stress tests to assess banks' individual resilience to potential risks. It also conducts macroeconomic stress tests of groups of banks and the banking sector at large. Stress tests are conducted once every three months and are subject to ongoing improvement. Basel II<sup>36</sup> standards and NBS regulations require that banks also use stress tests to evaluate their internal capital. This points to the significance of stress tests as tools for evaluating the problems that may occur in the bank behaviour model.

Stress tests are based on extreme, but plausible assumptions and/or events that have extremely adverse effects on the financial system. Nevertheless, poor results of a stress test do not mean that a sector, an individual bank or a bank group are experiencing difficulties. Results for individual banks are usually not published in order to avoid misinterpretation of the results and the spread of unwarranted panic among the public.

For the time being, stress tests used in the NBS enable the measurement of:

- credit risk depending on macroeconomic variables, and of the impact of NPLs on banks' capital, risky assets and profits, and, consequently, on CAR;
- liquidity risk due to the loss of depositors' confidence and adverse economic circumstances;
- effects of shock transmission in case an individual bank faces problems and no longer meets its obligations to other banks, transmitting the effects of the shock to the rest of the system.

This report sets out two approaches to analysing the impact of economic turbulences on banking sector stability. The first approach involves an assessment of

credit risk depending on macroeconomic development. The second involves an assessment of whether, in case of large deposit withdrawals, the banking sector has sufficient liquidity to ensure smooth operation. The third approach relates to the assessment of banking sector's risk and whether the current structure of relations among banks is suitable for the transmission of shocks across the entire banking system, i.e. how resilient the system is, as a whole, to potential shocks.

### Credit risk

Credit risk is the crucial risk in the Republic of Serbia's banking sector. It is most often quantified as a share of NPLs in total loans.

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

The projections were conducted in two ways – based on one-dimensional and multi-dimensional analyses of time series. It was assumed that the model is a data generating process. A time series analysis relies on the assumption that a time series shows a regularity in behaviour which needs to be discovered. While the one-dimensional analysis utilises only one variable, multi-dimensional analysis of time series explains these regularities based on the movement of a larger number of other variables.

### NPL projection obtained using the ARIMA model

Taking into account the above-said, we first applied the Box–Jenkins approach to ARIMA modelling of NPLs (one-dimensional time series analysis). Past behaviour of NPLs was explained by the inertia and dependence between observations, which enabled us to make a forecast. This way, the impact of current or past shocks is transmitted to the future, similar to a pendulum which, pushed out of balance by an impetus, keeps swinging back and forth until it regains balance.

Chart IV.2.1. illustrates NPL projections based on the Box–Jenkins approach, as well as the corresponding confidence intervals.

According to the central tendency, the projected NPL growth stands at 1.61 pp, or 3.82 pp (worst-case scenario – ceiling at 95% of the confidence interval).

<sup>36</sup> Principles for sound stress testing practices and supervision.

Chart IV.2.1. **Projection of NPL share in total loans obtained by ARIMA model with confidence intervals**  
(%)



\* NBS estimate.  
Source: NBS.

### NPL projection by the multidimensional analysis of time series

The multi-dimensional 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 which could impact the NPL dynamics, three have demonstrated reliable and predictable strength: the exchange rate, seasonally-adjusted real net wages and the key policy rate. Elasticity coefficients (indicating the impact of each variable on NPLs), and the individual contribution of each variable to NPL growth, are presented in Table IV.2.2. Based on this Table, we can conclude that the one-percent depreciation of the dinar against the euro causes a 0.7% rise in the NPL share.

Three scenarios are assumed within a one-year period. Their overview for end-2013 is presented in Table IV.2.1. 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 inflation in accordance with appropriate scenarios.

The difference in the projection based on the ARIMA model and the multi-dimensional analysis of time

Table IV.2.1. **Overview of scenarios**

	Baseline	Moderate	Worst case
Y-o-y change of NPLs (pp)	2.50	3.70	4.50
Y-o-y depreciation of RSD against EUR (%)	-0.32	12.00	23.00
Y-o-y change of key policy rate (pp)	-1.25	4.00	21.25
Y-o-y change of seasonally-adjusted gross real wages (pp)	0.60	-4.30	-5.20

Source: NBS.

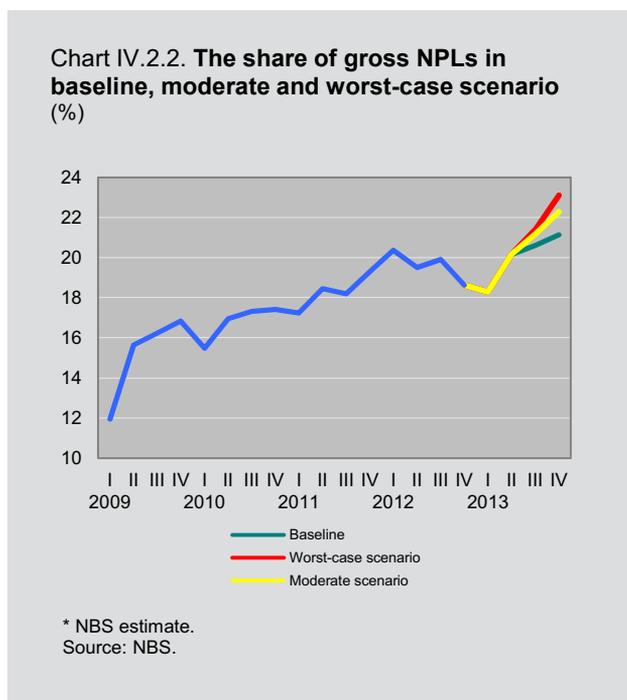
Table IV.2.2. **Elasticity coefficients of NPLs and contributions of independent variables in 2012**  
(%)

	Elasticity coefficients	Contributions of independent variables
Exchange rate	0.74	52.13
Seasonally-adjusted gross real wages	-0.39	24.18
Key policy rate	0.20	23.69

Source: NBS.

series equals 0.9 pp. The upper bound of the ARIMA model envisages NPL growth close to the worst-case scenario of the multi-dimensional analysis (Chart IV.2.3).

Chart IV.2.2. shows the projected increase in the NPL share in total loans for three assumed scenarios – 2.5 pp, 3.7 pp and 4.5 pp, respectively.



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

For the purposes of this analysis, we define banking sector resilience as a change in CAR at assumed changes in variables which directly and indirectly impact on the level of CAR. If CAR remains above the regulatory minimum over the entire period of projections, the banking sector as a whole, i.e. individual banks, is considered resilient.

The level of CAR is directly affected by changes in the level of risk-weighted assets (the most important being credit growth), the amount of required reserve for estimated losses under balance sheet assets and off-balance sheet items by which regulatory capital is reduced, and changes in capital positions (the most important being recapitalisation). 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 calculation of required reserve for losses) etc.

The impact of the exchange rate (primarily the depreciation of the dinar) on NPL growth, and thus on a rise in loan-loss provisions, is not the only channel through which the exchange rate impacts capital adequacy (Figure IV.2.1).

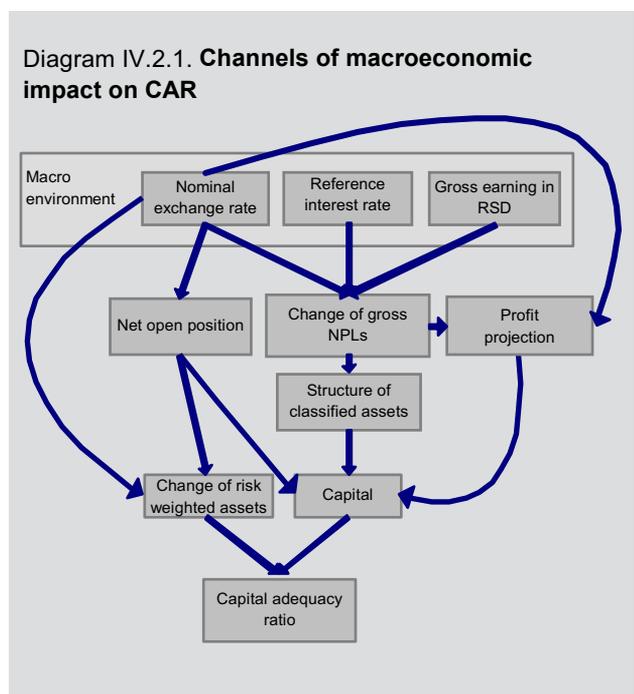
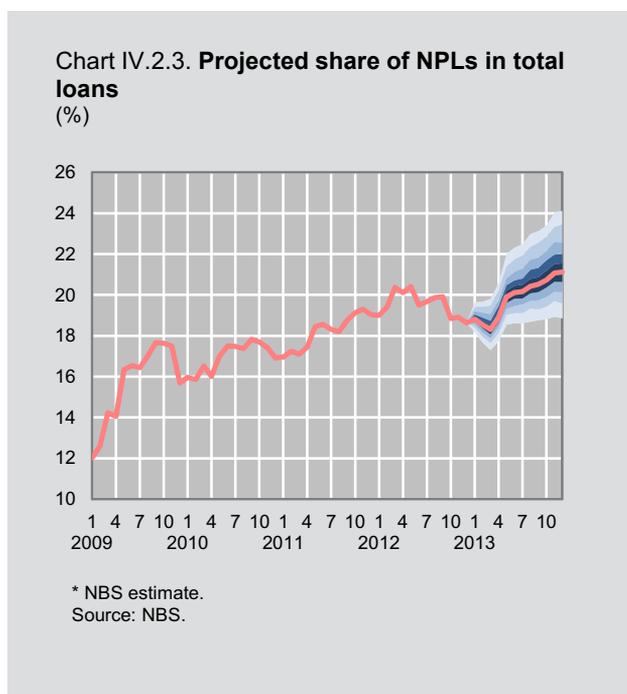


Table IV.2.3. Distribution of CAR by banks in different scenarios with projected profit buffer as of December 31st, 2012

CAR	< 0%	< 2%	< 4%	< 6%	< 8%	< 10%	< 12%	< 14.5%	>14.5%
Baseline	1	1	0	0	1	1	0	5	23
Moderate scenario	2	0	0	1	1	0	4	1	23
Worst-case scenario	2	0	1	1	0	4	1	4	19

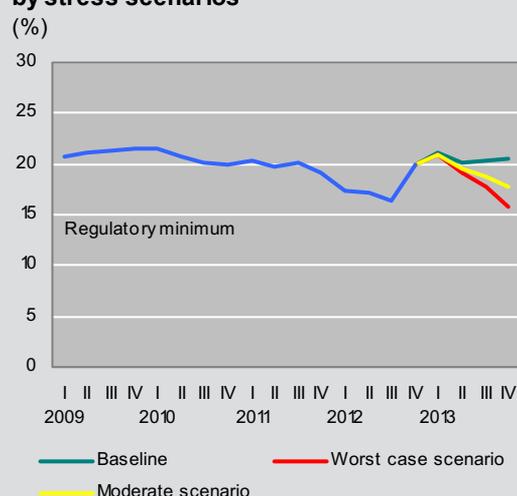
Source: NBS.

The exchange rate also influences a rise in capital requirements for FX risk coverage. Given a high level of euroisation of assets, the exchange rate impacts the revaluation of risk-weighted assets. Finally, the exchange rate influences the banking sector profit which serves as a buffer for the coverage of losses.

As at 31 December 2012, CAR of the banking sector equalled 19.87%.

Through the said channels, appreciation of the dinar against the euro for the baseline projection (0.32%), with a change in the repo rate and y-o-y growth in real net wages of 0.6%, pushes up CAR to 20.43%, while for the moderate and worst-case scenarios CAR is lowered to 17.77% and 15.87% respectively (Chart IV.2.4).

Chart V.2.4. Expected capital adequacy ratio by stress scenarios



NBS estimate.  
Source: NBS.

Table IV.2.3. shows the distribution of CAR for the baseline projection and both scenarios.

Under the baseline projection, CAR of the banking sector reaches 20.43%. In this case, CAR of four banks is below the statutory minimum, which makes up 4.72% of total balance sheet assets of the banking sector.

Under the moderate scenario, CAR would fall to 17.77%. CAR of eight banks is below the statutory minimum, which makes up 12.47% of total balance sheet assets of the banking sector.

Under the worst-case scenario, CAR would equal 15.87%. CAR of nine banks is below the statutory minimum, which makes up 16.02% of total balance sheet assets of the banking sector.

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

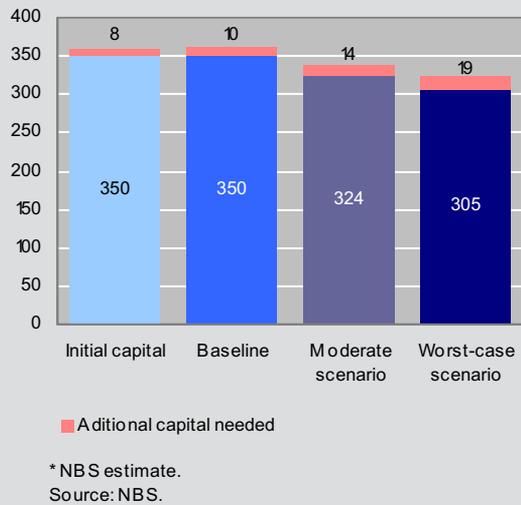
Based on data as at 31 December 2012, banks should make additional recapitalisation of RSD 7.7 bln, or 2.19% of regulatory capital. Alternatively, the banking sector would have to reduce risk-weighted assets by RSD 64 bln or 3.63%. In this case, CAR of the Serbian banking sector would be 20.31%.

Chart IV.2.5 shows the necessary recapitalisation of the banking sector, assuming a profit buffer, for all three scenarios.

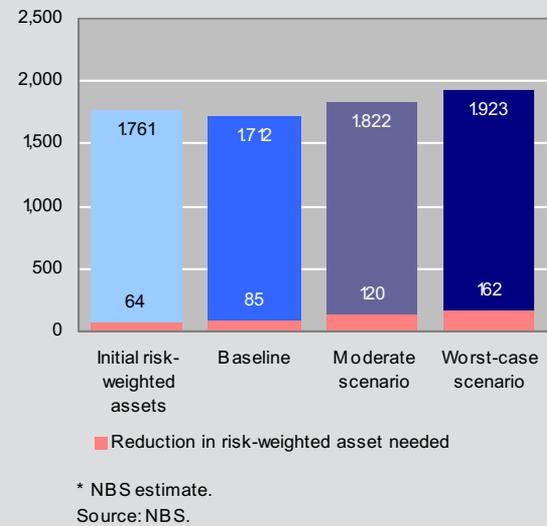
Alternatively, the necessary reduction in risk-weighted assets for all three scenarios is shown in Chart IV.2.6.

Under the baseline projection, banks should make additional recapitalisation of RSD 10 bln, or 2.90% of estimated regulatory capital. Alternatively, the banking

**Chart IV.2.5. Additional capital needed by scenarios with projected profit buffer\* (RSD bln)**



**Chart IV.2.6. Reduction in risk-weighted asset needed by scenarios with projected profit buffer\* (RSD bln)**



sector would have to reduce risk-weighted assets by RSD 85 bln or 4.94%. In this case, CAR would equal 21.01%.

According to the moderate scenario, banks should make additional recapitalisation of RSD 14 bln or 3.71% of estimated regulatory capital. Alternatively, the banking sector would have to reduce risk-weighted assets by RSD 120 bln or 6.60%. CAR would equal 18.56%.

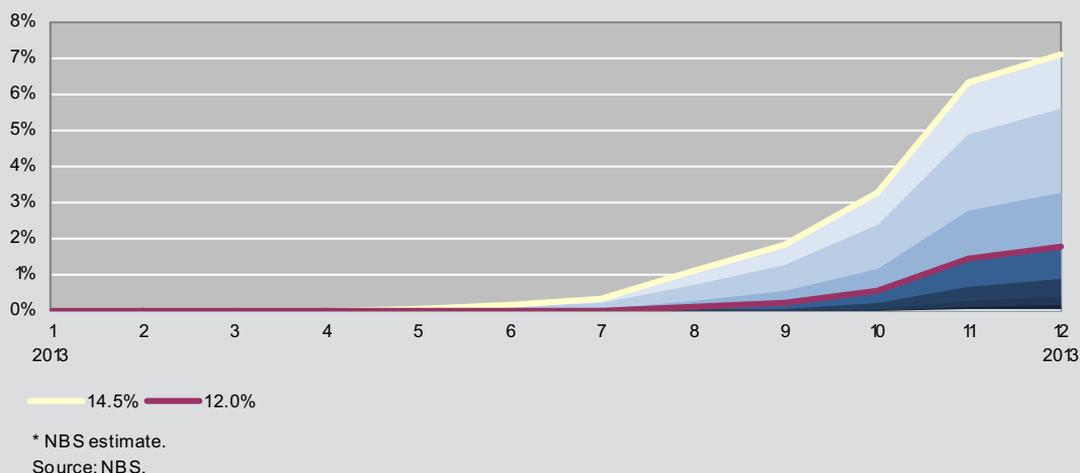
Under the worst-case scenario, banks should make additional recapitalisation of RSD 19 bln or 6.36% of

estimated regulatory capital. The necessary reduction in risk-weighted assets would equal RSD 162 bln or 8.41%. In this case, Serbia’s banking sector would be adequately capitalised at 16.87%.

### NPLs which bring CAR to critical levels

The final phase of credit risk analysis relates to determining the share of NPLs in total loans, which would bring CAR from the current level down to 14.5% or 12%.

**Chart IV.2.7. The probability of NPLs increasing to the level that would result in banking sector capital adequacy ratio of 14.5% and 12.0%**



Assuming a projected profit buffer, with the increase in the share of gross NPLs in total loans of 5.05 pp and depreciation of 31.71%, CAR would fall from current 19.87% to 14.5%. The increase of 6.17 pp with depreciation of 51.52% would bring CAR to the regulatory minimum of 12%.

Based on obtained values of critical NPL levels which bring CAR to 14.5% and 12%, and the confidence interval of the projection of gross NPL share in total loans based on the multi-dimensional analysis of time series presented in the introductory part, we have obtained the probabilities of the increase in the share of gross NPLs in total loans in 2013. They would bring CAR to 14.5% and 12% over the next year (Chart IV.2.7). The probability that CAR would fall to 14.5% and 12% is small – it equals only around 7% and 2% respectively.

We should emphasise that preventive recapitalisations are necessary at the above assumptions for individual banks – those likely to post further losses (based on their performance so far) and those whose CAR is already close to or below the regulatory minimum. Also, one of the measures would imply the improvement of credit portfolio quality – a decline in the share of NPLs relative to total loans, so that their CAR remains above or returns to the regulatory minimum.

## Liquidity risk

Escalation of the crisis in 2008 showed that in conditions of tempered confidence in financial markets, the linkage of the domestic banking sector with bigger European groups opens additional channels for the spill-over of crisis effects.

Reputational risks of headquarters of some banks which operated in Serbia served as a trigger for the (psychologically-induced) withdrawal of considerable FX household deposits, which had a negative impact on FX liquidity. Though the sudden withdrawal of deposits was stopped in late 2008, the new net inflow did not suffice to fully restore the deposit base of the banking sector.

In October 2008, despite the net deposit outflow of EUR 796 mln (or 6.2% of total deposits), the banking sector remained stable. Deposit withdrawals, excluding deposit placements, totalled EUR 1.3 bln or 10.4%.

Based on the analysis of historical data from September 2008 to January 2009, the period in which the deposit withdrawal shock lasted, the deposit withdrawal structure was obtained.

Using the results of liquidity stress tests, we aim to determine whether in case of the same or similar shock the banking sector can continue to function normally. Factors which depress liquidity on the liabilities side include tighter access to new sources of funding, impossibility to refinance debt and the withdrawal of funds. Events on the assets side may include the unexpected use of credit lines, contraction in market liquidity, lower value of assets etc, which further weakens the liquidity structure.

## Estimate of liquidity ratio

The above analysis of deposit withdrawal in late 2008 served to create the following scenarios:

- “Déjà vu” scenario, envisaging deposit withdrawal worth RSD 156 bln (9.3% of total deposits). This 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 October 2008, this scenario envisages deleveraging, prompted by the euro area crisis. In this scenario, deposit withdrawal increases to RSD 208 bln or 12.4%.
- Worst-case scenario, envisaging a two times stronger shock than in October 2008, i.e. deposit withdrawal of RSD 305 bln or 18.1%.

Deposits are divided into two main groups – demand and term deposits. Deposit withdrawal assumptions for all three scenarios are presented in Table IV.2.4.

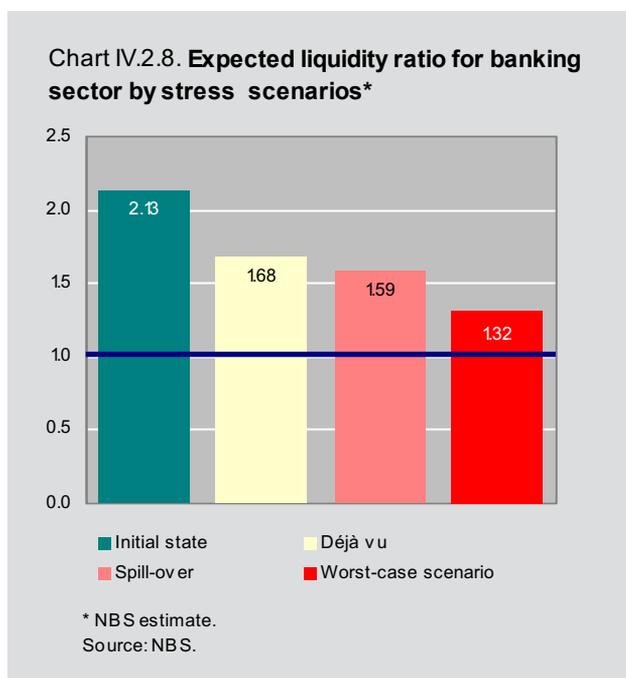
**Table IV.2.4. Assumptions of deposit withdrawals by sector**

DEPOSIT WITHDRAWAL	Déjà vu 2008	Spill-over	Worst-case
Banks - demand	0%	60%	60%
Corporate - demand	10%	10%	20%
Households - demand	12%	20%	24%
Government - demand	23%	23%	35%
Other deposits - demand	11%	15%	22%
Time deposits	11%	13%	20%
Marketability of 2nd class liquid asset	100%	100%	80%
Stocks and bonds listed on the stock exchange	100%	100%	40%
Total of deposits withdrawn (RSD bln)	156	208	305
Share in total deposits (%)	9%	12%	18%

Source: NBS.

In the scenarios assumed, the banking liquidity ratio would range from current 2.13 to 1.32 in the worst-case scenario (Chart IV.2.8).

Table IV.2.5. shows the distribution of liquidity ratios in different scenarios.



According to the “déjà vu” and risk spillover scenarios, two banks would fall below the regulatory minimum. In the worst-case scenario, three banks would be below this minimum. A high percentage of banks are in the safety zone – their liquidity ratios are above one.

## Liquidity needs

Based on data as at 31 December 2012, first-order liquidity needs are worth RSD 2.26 bln or 0.30% of the initial value.

Under the “déjà vu” scenario, first-degree liquidity needs would equal RSD 3.97 bln or 0.53% of the initial value.

According to the risk spillover scenario, first-degree liquidity needs would equal RSD 5.35 bln or 0.71% of the initial value.

In the worst-case scenario, first-degree liquidity needs would be RSD 12.2 bln or 1.61% of the initial value.

In case the assumed scenarios materialised, the NBS may react by extending liquidity loans, i.e. by exercising its lender of last resort function. As these operations are performed in dinars, while most deposits

**Table IV.2.5. Distribution of liquidity ratios by banks in different scenarios**

LIQ	<0.6	<0.8	<1	<1.2	<1.5	>1.5
Déjà vu 2008	1	0	1	1	5	24
Spill-over	1	0	1	2	10	18
Worst-case scenario	1	1	1	8	11	10

Source: NBS.

**Table IV.2.6. Derived structure for share of deposit withdrawals by depositor categories in total deposits withdrawn**

	Déjà vu 2008
The withdrawal of demand deposits	38%
The withdrawal of time deposits	62%
The structure of total deposit withdrawal	
Banks	0%
Other depositors	74%
Savings	26%

Source: NBS.

**Table IV.2.7. Assumed withdrawal rate of deposits 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.

are euro-denominated, this may generate pressures in the FX market.

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

This analysis aims to determine the values of deposit withdrawals of the banking sector and individual banks which would lower the liquidity ratio to 1.5 and 1.0 respectively.

Based on assumptions in Table IV.2.4, we obtained for the “déjà vu” scenario the structure of the share of deposit withdrawals by depositor categories in total withdrawn deposits. This structure is presented in Table IV.2.6.

At the banking sector level, under the “déjà vu” scenario, the withdrawal of RSD 238 bln or 14.2% of total deposits (of which RSD 91 bln demand and RSD 147 bln term deposits), brings the liquidity ratio to 1.5. The withdrawal of RSD 552 bln or 32.9% (of which RSD 210 bln demand and RSD 342 bln term deposits), lowers the liquidity ratio to 1.0.

### Period of banking sector survival in case of deposit withdrawal

The period over which the effect of the shock is observed is called the survival period. It can be divided into two stages. 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 changing the business model. The second refers to a longer time period marked by weaker but more persistent shocks, in the duration of over one 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 assumptions of deposit withdrawal for the moderate and worst-case scenarios are presented in Table IV.2.7.

Charts IV.2.9. and IV.2.10. 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.2.11. and IV.2.12. give the deposit structure by days.

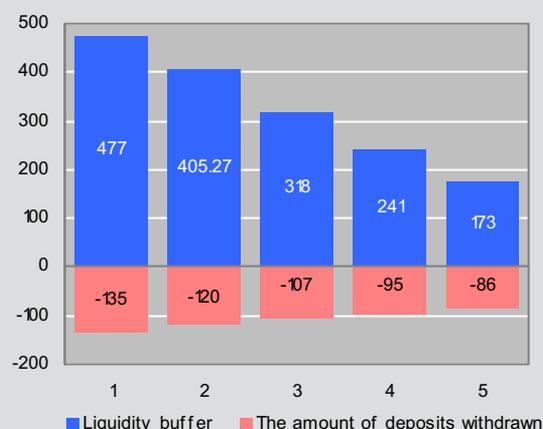
The entire banking sector can withhold more than 30 business days<sup>37</sup> in conditions of daily deposit withdrawal under the moderate scenario, or nine business days in the worst-case scenario.

Chart IV.2.9. Liquidity buffer - daily for moderate scenario\*  
(RSD bln)



\* NBS estimate.  
Source: NBS.

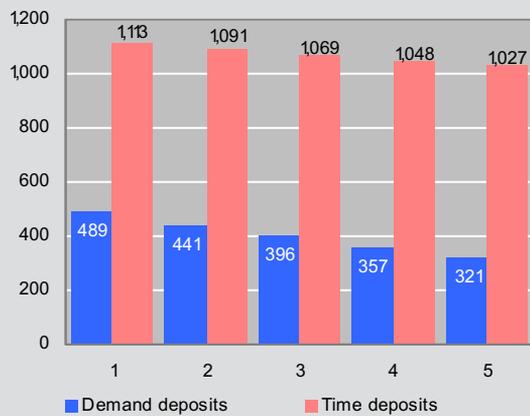
Chart IV.2.10. Liquidity buffer - daily for worst-case scenario\*  
(RSD bln)



\* NBS estimate.  
Source: NBS.

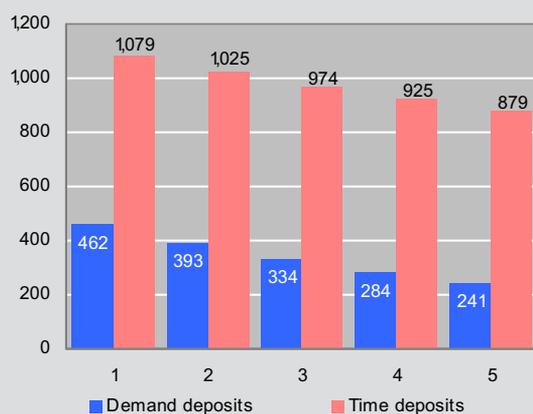
<sup>37</sup> The IMF’s recommendation about the bank survival period after deposit withdrawal covers the period of five business days. After this period, it is believed that a bank will have sufficient time to consolidate its operation.

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



\* NBS estimate.  
Source: NBS.

**Chart IV.2.12. The structure of demand and time deposits - daily for worst-case scenario\***  
(RSD bln)



\* NBS estimate.  
Source: NBS.

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

### 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.

We obtained liquidity ratio values 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).

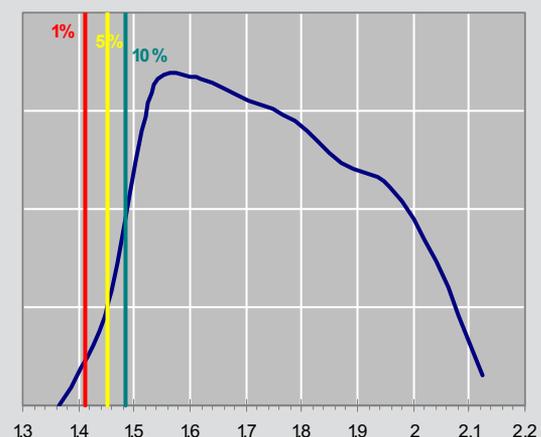
These simulations produced the distribution of liquidity ratios of the banking sector at different combinations of assumptions (Chart IV.2.13).

With the given confidence interval of 10%, the liquidity ratio equals 1.48, while for confidence intervals of 5% and 1% the liquidity ratio equals 1.45 and 1.41 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 1.48. Moreover, it is 99% certain that the ratio will not fall below 1.41.

As we are interested only in assumption values with a negative impact, we calculated the tentative value of the

**Chart IV.2.13. Distribution and confidence intervals for liquidity ratio under stress\***



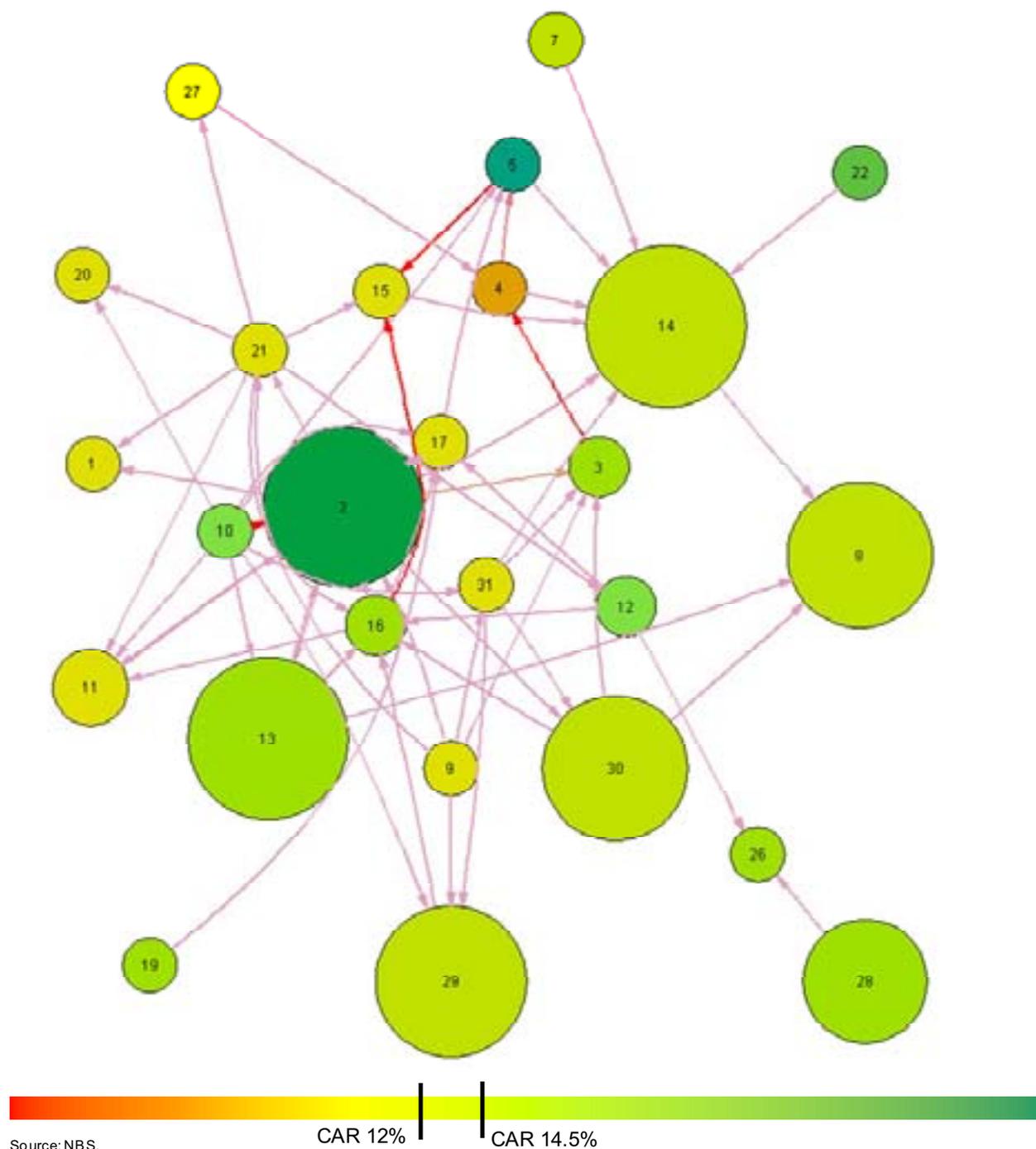
\* NBS estimate.  
Source: NBS.

variable under assumed negative effects. This produces a large number of changes in banking sector liquidity which may happen in future.

### Network modelling in the estimate of banking sector systemic risk

The 2008 financial crisis revealed the importance of observing the dynamics of mutual relations among financial institutions for the purpose of describing systemic risk. In terms of systemic risk, we should

Chart IV.2.14. Banking network of the Republic of Serbia



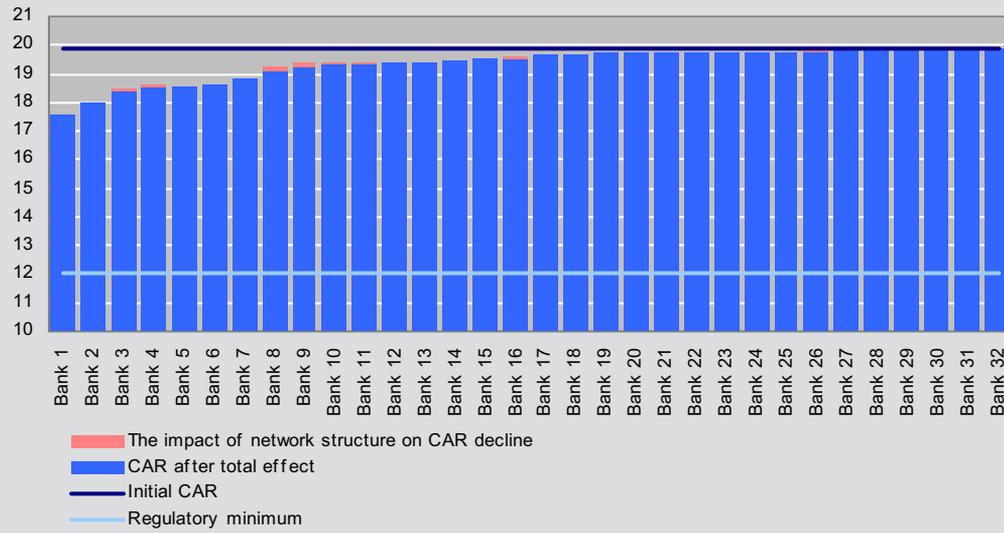
determine what financial institutions are systemically important, whether the existing structure of mutual relations is conducive to a fast spillover of shock through the system, and primarily the extent to which the entire system is resilient to potential shocks. Therefore, the financial system should not be observed only as a set of institutions with particular characteristics, but we need to include information on the dynamics of their mutual relations.

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.2.14. The intensity of the edge colour indicates its weight – the greater the weight, the more intensive 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

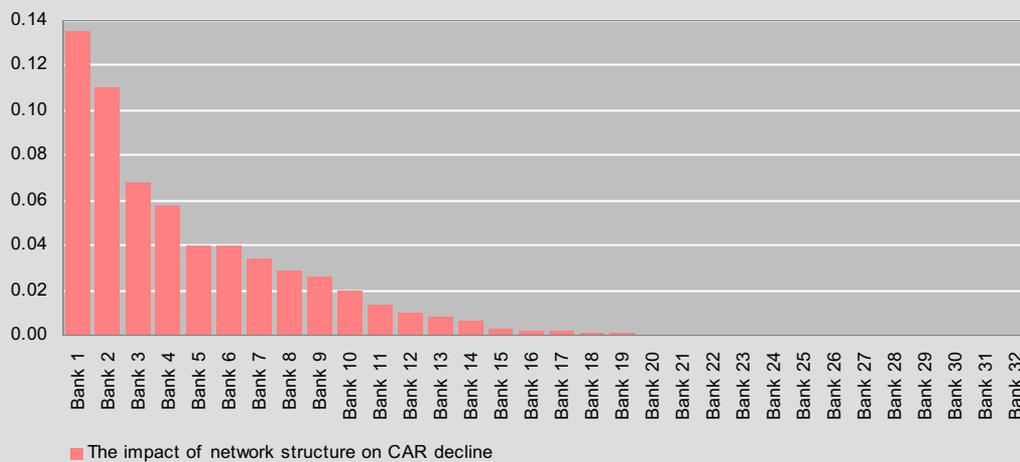
capital – the greater the circle, the bigger the amount of regulatory capital. The circle colour indicates the level of CAR. In the spectre from red to green, red colour corresponds to the minimum observed CAR of 0%, while green corresponds to the maximum observed CAR of

**Chart IV.2.15. Banking sector CAR after the insolvency of an individual bank (%)**



Source: NBS.

**Chart IV.2.16. The impact of network structure on the banking sector of the Republic of Serbia CAR decline (pp)**



Source: NBS.

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 the spillover of shocks and equals 0.14. As global efficiency ranges between 0 and 1, while values close to 1 indicate high conductivity of shocks through the network, we can consider that global efficiency of 0.14 does not indicate a high network potential in the spillover of shocks.

The impact of the network structure on the transmission of shock is simulated as follows: assuming the insolvency of a pre-determined bank, we calculated for each bank in the system the expected increase in loan loss provisions. An increase in loan loss provisions results in lower risk-weighted assets and capital, including CAR, in the first iteration of shock transmission. In each following iteration, based on CAR values obtained in the previous iteration, we obtained a new probability of defaults for each bank (which did not become insolvent up to then). Based on this, we calculated again the expected increase in loan loss provisions and a new reduction in risk-weighted assets, capital and CAR. A shock is considered neutralised when further iterations show no changes 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. 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.2.15, 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.2.16 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.2.15 and IV.2.16. show 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

Average CAR of the banking sector would remain above the regulatory minimum even in the worst-case scenario. The conclusion was adopted based on NPL projections performed through the one-dimensional and multi-dimensional analysis of time series, their impact on the level of additional required reserves, projected changes in risk-weighted assets and off-balance sheet assets, and the projected profit buffer.

However, broken down by individual banks, CAR may fall below the regulatory minimum in some banks by end-2013, even under the baseline projection assumptions which can be characterised as exceptionally moderate. These are banks with CAR close to the regulatory minimum in late 2012, or banks which are undercapitalised and likely to operate with loss or insignificant profit in the coming period.

As the estimate of average CAR does not indicate a decline below the regulatory minimum even in the worst-case scenario, we conclude there is no need for urgent systemic measures to prevent financial instability. However, CAR of some banks is relatively close to the regulatory minimum. It should also be borne in mind that CAR will decline further in Q1 2014 when, in accordance with transitional provisions of the Decision on Capital Adequacy, banks will have to include, instead of 25% (obligation in place until 2012), the total amount of loan loss provisions in deductibles from core capital, instead of treating them as deductibles from total regulatory capital. As the amount of supplementary capital may not exceed 50% of core capital, by reducing core capital, reserves lower the level of subordinated debt and other elements of supplementary capital which can be included in regulatory capital. It is therefore desirable to consider and take further steps aimed at reducing the level of NPLs. A high share of NPLs negatively impacts on bank profitability and thus on the access to capital and other

sources of funding, which becomes increasingly tight amid unabating euro area crisis. In consequence, lending growth slows down, which impacts on the level of NPLs.

As the absence of a significant decline in the share of NPLs shows that the banking sector does not manage to independently find a solution, steps should be taken to make the existing methods more efficient. These methods include the assignment of receivables, consensual financial restructuring, write-off and court and out-of-court collection of receivables.

Banking sector consolidation, which is underway, and the resulting increase in concentration, call for the redefinition of the concept of a systemically important institution and its careful supervision.

Furthermore, given budgetary restrictions and the limited availability of funds in the Deposit Insurance Agency, it would be desirable, in case of banks which are likely to become undercapitalised in 2013, to consider or take measures to maintain their CAR, i.e. to bring it back above the regulatory minimum. Available measures which could be agreed with vulnerable banks or are required by the NBS, should relate to the following:

- reduction in operating costs in order to increase profitability;
- limitation of growth in credit exposure or, if needed, its reduction;
- sale of uneconomical assets regardless of the current market price, including ownership stakes and shares, in order to reduce risk-weighted balance sheet assets and off-balance sheet items;
- recapitalisation by shares or subordinated loans;
- conversion of retained earnings, if any.

Moreover, given the tightening of monetary policy in the past period, stability of the exchange rate has a positive impact on financial stability.

The banking sector would remain liquid even in case of the largest assumed outflow of deposits. In the worst-case scenario, some banks may enter the zone of high liquidity risk. In case the assumed scenarios materialised, the NBS may react by granting liquidity loans, i.e. performing its lender of last resort function.

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

### Text box 5: Determinants of NPLs

In implementing stress tests, the NBS links changes in NPLs to changes in macroeconomic conditions. Of a large set of variables which can potentially affect the dynamics of NPLs, only three have demonstrated a reliable and predictable strength in the largest number of countries: changes in the output gap, exchange rate and key policy rate. In the first phase of stress tests, because of the lack of data for assessing specific elasticities for Serbia, we combined the elasticities obtained based on 51 banking crises in 54 countries in a ten-year period (1994–2004) with expert assessments. The assumed elasticities which link the key macroeconomic variables with credit risk in Serbia equal -0.7, 0.3 and 0.4 for changes in the output gap, exchange rate and key policy rate, respectively. In the second phase, in order to empirically verify the impact of factors on the share of NPLs, we assessed the regression model of the monthly growth rate of the share of remaining debt under loans in arrears in the total remaining amount of debt, in accordance with NBS data. The analysis uses the following variables which explain movements in the dependent 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.

Logarithms were first applied to variables, whereafter their stationarity test was implemented. The Dickey–Fuller unit root test (with the appropriate correction because of structural breaks) determined that each variable has exactly one unit root, which limits their use in a classic econometric model without the previous reduction to stationary transformations – the first differences. Estimates of model parameters for the January 2009–December 2012 period, based on data on first differences of logarithmic variables (monthly growth rates of variables) are presented in Table O.5.1.

The estimated model shows that the variable which influences NPLs with the longest time lag (ten 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 dependent 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 0.74% 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 affects a monthly rise/fall in NPLs by 0.2% and 0.4% respectively. We highlight that individual estimates of model parameters are interpreted under the constancy assumption (unchanged level) of other model variables. In addition to the mentioned variables, the model contains two impulse dummy variables and VS5 – the seasonal dummy variable for May.

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.5.1). Chart O.5.1. reflects a high level of correlation (0.82) of the dependent variable, assessed based on the model.

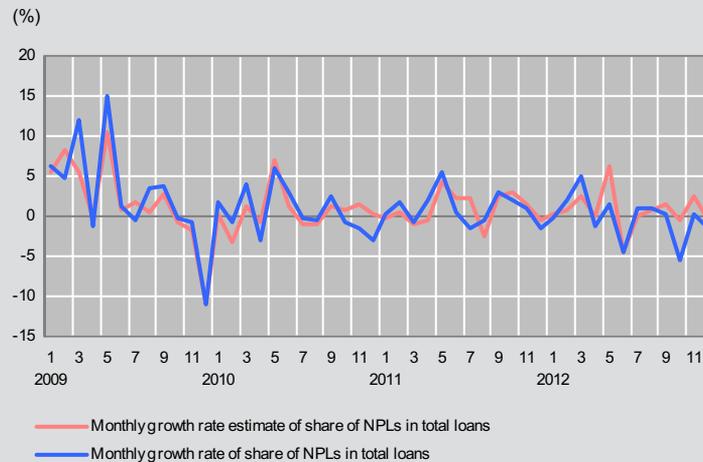
Table O.5.1. **Coefficient estimates\***  
(%)

Dependent variable		DLU	
Independent variables	Coefficient estimates	P-value	
Constant	0.0036	0.3683	
<i>DLE</i> (-4)	0.7410	0.0000	
<i>DLWRS</i> (-4)	-0.3948	0.0264	
<i>DLR</i> (-10)	0.1993	0.0011	
V1 (dec. 2009)	-0.1166	0.0000	
V2 (june 2012)	-0.0738	0.0054	
VS5	0.0594	0.0000	
Econometric tests			
<i>R-squared</i>		0.6839	
<i>Prob(F-statistic)</i>		0.0000	
<i>Prob(BLJQ(1) statistic)</i>		0.8251	
<i>Prob(BLJQ(2) statistic)</i>		0.9402	
<i>Prob(BLJQ(6) statistic)</i>		0.6635	
<i>Prob(JB statistic)</i>		0.7145	

\* NBS estimate.

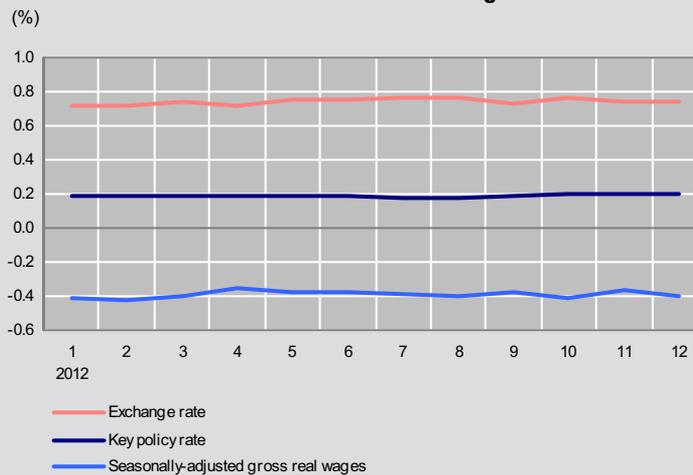
Source: NBS.

**Chart O.5.1. Monthly growth rate of share of NPLs in total loans and its estimate**



Source: NBS.

**Chart O.5.2. Recursive coefficients of the regression\***

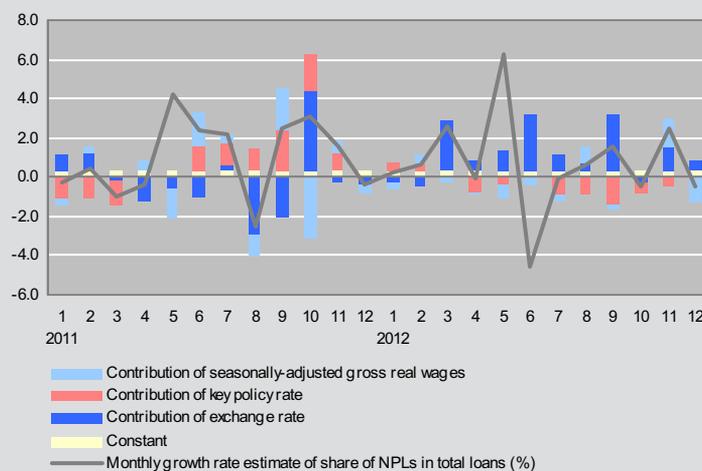


\* NBS estimate.

Source: NBS.

To verify the stability of model parameters, we calculated recursive coefficients (Chart O.5.2) which point to a high degree of stability of estimated model parameters. The valuation of the model prediction strength, in addition to the analysis of stability of parameters, is possible by calculating the share of the prediction error in the real value of the dependent variable. Estimating the model as at December 2011, we predicted the share of NPLs of 20.5% for April 2012. The prediction was made for a four-month period, which is the shortest time lag of the impact of explanatory variables in the model, while the quality of model prediction over a longer period depends on the predicted movement in determinants of NPLs. As the share of gross NPLs equalled 20.11% in April 2012, the share of the prediction error in real value is low and equals 1.4%. Based on the estimated model for June 2012, the share of the prediction error in real value of NPLs equals 6% in October 2012, while the higher error value is due to the delicensing of Nova Agrobanka (the prediction error of the model equals -0.9% for September).

**Chart O.5.3. Contributions of independent variables to the estimated monthly growth rate of share of NPLs in total loans (pp)**



Source: NBS.

Contributions to the monthly growth rate of the share of NPLs are presented in Chart O.5.3.<sup>1</sup> The exchange rate is the main determinant of growth in NPLs, as was also evident in 2012. In monthly terms, the exchange rate gave the strongest contribution to growth in NPLs in June and September 2012 with the contribution of 2.8 pp in each month. Such contribution was due to instances of the highest monthly depreciation of the dinar against the euro, of 4%, in February and May. One month after the occurrence of depreciation pressures, NPLs reached their historical high of 20.4%.

<sup>1</sup> Excluding dummy variables.

### IV.3. Financial soundness indicators

Though we must be cautious in international comparisons, we may say that Serbia's banking sector better weathered the global financial crisis compared to the region. Stability "networks" (Chart IV.3.1) show the six key indicators for Serbia and the region in late 2008, 2011 and 2012: (a) capital adequacy, (b) balance sheet capital relative to balance sheet assets, (c) share of NPLs in total loans, (d) reserves for estimated losses relative to NPLs, (e) return on assets and (f) return on equity.<sup>38</sup> By end-2012, profitability of Serbia's banking sector did not deviate significantly from the region average, while its capitalisation was higher than in the rest of the region. The share of NPLs in total loans was above the region average, while the level of total reserves for the coverage of potential losses against NPLs was far above the region average. In terms of changes relative to 2008, capital adequacy of the domestic banking sector declined, while it went up in the region. CAR remained significantly above the region average. Profitability contracted both at home and in the region during the crisis. Measured by the

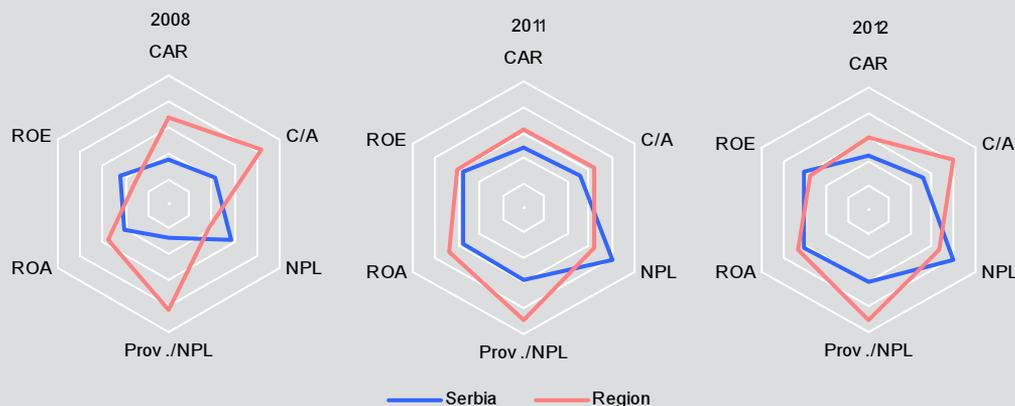
return on equity, profitability declined more in the region than in our country, while the return on assets fell 0.5 pp more than in the region.

As regards changes in profitability relative to 2011, the return on assets and return on equity declined in Serbia, while they went up in the region. The share of NPLs in total loans in 2012 relative to 2008 recorded a higher increase in the region than in Serbia.

### IV.4. Composite financial soundness indicator

The financial stress index is a composite indicator of financial soundness, based on the IMF's methodology. Such indicator was introduced with the aim of identifying episodes of high financial stress, their culmination and length. The financial sector and real economy are closely linked. Efficient distribution of capital considerably improves economic activity. Because of the complexity of the financial system, its functioning cannot be easily

Chart IV.3.1. Financial soundness of Serbian banking sector compared to regional average



Notes:

1) Chart shows standardised values of the most common Financial Soundness Indicators: CAR - Capital Adequacy Ratio (Regulatory Capital to Risk-Weighted Assets); C/A - Capital to assets; NPL/L - Gross NPLs to Total Gross Loans; P/NPL - Provisions to Gross NPLs; ROA - Return on Assets; ROE - Return on Equity.

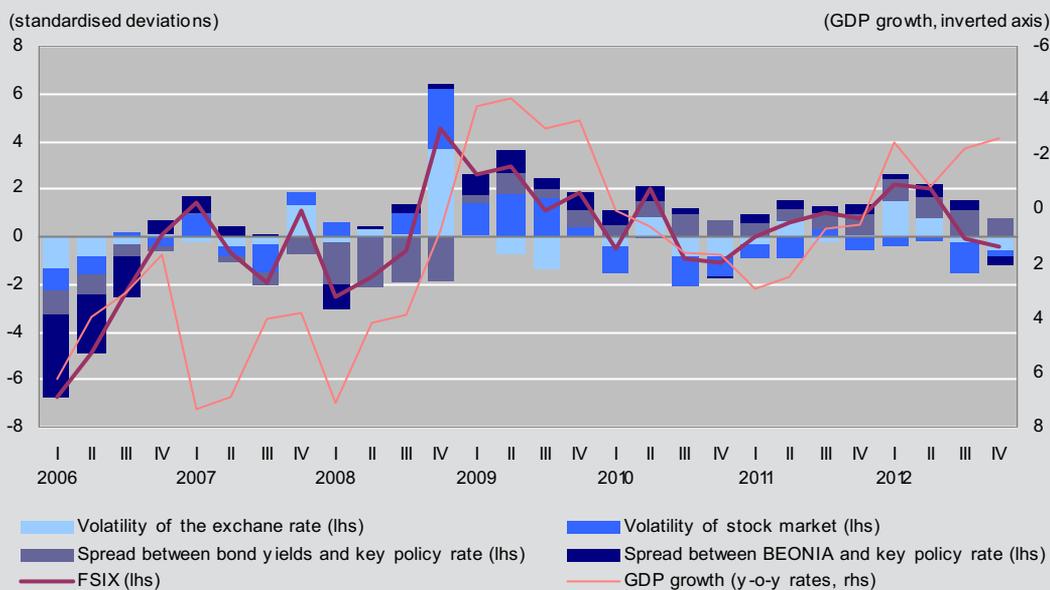
2) Greater distance from the network center indicates greater risk.

3) Region refers to the CEE countries: Albania, Bosnia and Herzegovina, Bulgaria, Latvia, Lithuania, Hungary, FYRM, Poland, Romania, Turkey, Croatia and Montenegro. Region FSIs are non-weighted averages of the individual countries' FSIs.

Source: NBS and IMF: GFSR.

<sup>38</sup> RoA and RoE exclude Agrobanka, Nova Agrobanka and Razvojna banka Vojvodine.

Chart IV.4.1. Financial Stress Index (FSIX) and GDP growth



Source: IMF.

presented using only one indicator. The financial stress index is composed of key financial sector variables that are relevant to real economic activity. These variables are as follows: spread between the BEONIA interest rate and the NBS key policy rate, stock market volatility, volatility of the foreign exchange rate and the spread between the yield on government bonds and the NBS key policy rate. The financial stress index is the sum of standardised deviations of the said variables<sup>39</sup>. In the case of stock market volatility, we used standardised deviations in the value of the variation coefficient of BELEX15 stock exchange index, and in the case of foreign exchange rate

volatility, standardised deviations in the value of the coefficient of variation of the daily exchange rate. Positive values of indicators suggest an above-average financial stress level in the market, while negative values point to a below-average level. As expected, GDP growth was inversely proportional to the financial stress index. This indicator has been rising since mid-2011, while in the same period, GDP growth recorded negative values with a downward trend. Due to reduced volatility of the stock market and the exchange rate, the financial stress index was below average in the second half of 2012, although GDP growth was still negative (Chart IV.4.1).

<sup>39</sup> Standardised deviation is defined as the quotient of the difference in the value of observation and mathematical expectancy, and standard deviation.



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