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FINANCIAL SYSTEM STABILITY ASSESSMENT

June 2015

This paper on Bosnia and Herzegovina was prepared by a staff team of the International Monetary Fund. It is based on the information available at the time it was completed on May 20, 2015.

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FINANCIAL SYSTEM STABILITY ASSESSMENT

May 20, 2015

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This report is based on the work of the Financial Sector Assessment Program (FSAP) mission that visited Bosnia and Herzegovina during October 29–November 18, 2014. The report will be discussed at the Board as a stand-alone Financial System Stability Assessment (FSSA).

- The FSAP mission team comprised: Sònia Muñoz (IMF mission chief) and Michael Edwards (WB mission chief); Peter Lõhmus (IMF deputy mission chief), Carlos Caceres, Fei Han, and Tanai Khiaonarong (MCM), Ricardo Llaudes (EUR), José Tuya, Geof Mortlock, José Rutman, and Rodolfo Wehrhahn (IMF consultants); Johanna Jaeger (WB deputy mission chief), Yen Mooi, Cevdet Unal, Marc Schrijver, Irit Mevorach, Jan Nolte, Pascal Frerejacque, Laura Ard, Jean Michel Lobet, Ruvejda Aliefendic (all WB) and Adolfo Rouillon and Tim Brennan (WB consultants).

- The mission met Governor Kemal Kozarić, Minister of Finance and Treasury Nikola Špirić, Minister of Finance of the FBiH Ante Krajina, Minister of Finance of the RS Zoran Tegeltja, Director of the Banking Agency of the RS Slavica Injac, Director of the Banking Agency of the FBiH Zlatko Barš, Director of the Deposit Insurance Agency Josip Nevjestić, Director of the Insurance Agency of BiH Samir Omerhodzic, Director of the Insurance Supervisory Agency of the FBiH Ivan Brkić, Director of the Insurance Supervisory Agency of the RS Božana Šljivar, President of the Securities Commission of RS Mira Potkonjak, President of the Securities Commission of FBiH Hasan Ćelam, Directors of the development banks, ministries of justice, stock exchanges, and representatives from banks, insurance companies, microfinance organizations, leasing companies, and accounting and auditing firms.

- FSAPs assess the stability of the financial system as a whole and not that of individual institutions. They are intended to help countries identify key sources of systemic risk in the financial sector and implement policies to enhance its resilience to shocks and contagion. Certain categories of risk affecting financial institutions, such as operational or legal risk, or risk related to fraud, are not covered in FSAPs.

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Glossary

AMC	Asset Management Company
AML/CFT	Anti-Money Laundering/Combating Terrorism Financing
BARS	Banking Agency of the Republika Srpska
BCBS	Basel Committee for Banking Supervision
BCP	Basel Core Principles for Effective Banking Supervision
BiH	Bosnia and Herzegovina
BLSE	Banja Luka Stock Exchange
BU	Bottom-Up
CAR	Capital Adequacy Ratio
CBA	Currency Board Arrangement
CPMI	Committee on Payments and Market Infrastructures
CBBH	Central Bank of Bosnia Herzegovina
DBFBiH	Development Bank of FBiH
DIA	Deposit Insurance Agency
DIF	Deposit Insurance Fund
DTI	Debt-to-Income
ELA	Emergency Liquidity Assistance
FBA	Banking Agency of the Federation of BiH
FBiH	Federation of Bosnia and Herzegovina
FedSC	Securities Commission of Federation BiH
FMI	Financial Market Infrastructure
FSAP	Financial Sector Assessment Program
FSF	Financial Stability Fund
FSA	Financial Sector Assessment
FSSA	Financial System Stability Assessment
GDP	Gross Domestic Product
GFAP	General Framework Agreement for Peace
HQLA	High Quality Liquid Assets
IADI	International Association of Deposit Insurers
IAIS	International Association of Insurance supervisors
IFI	International Financial Institution
IFRS	International Financial Reporting Standards
IOSCO	International Organization of Securities Commissions
IRBRS	Investment Development Bank of RS
ISA	Insurance Supervision Agency
LCR	Liquidity Coverage Ratio
LOLR	Lender of Last Resort
LTV	Loan-to-Value
MCO	Microcredit Organizations
ML/TF	Money Laundering and Terrorist Financing

MoF	Ministry of Finance
MoJ	Ministry of Justice
MoU	Memorandum of Understanding
MTPL	Motor Third Party Liability
NPL	Nonperforming Loan
NSFR	Net Stable Funding Ratio
P&A	Purchase and Assumption
P&L	Profit and Loss Statement
PIFs	Private Investment Funds
ROE	Return on Equity
ROSC	Report on the Observance of Standards and Codes
RR	Required Reserves
RS	Republika Srpska
RSSC	Securities Commission of Republika Srpska
RTGS	Real-Time Gross Settlement System
SBA	Stand-By Arrangement
SCFS	Standing Committee on Financial Stability
SME	Small- and Medium-sized Enterprise
TD	Top-Down
VI	Vienna Initiative
WEO	World Economic Outlook

EXECUTIVE SUMMARY

Economic and financial activity in Bosnia and Herzegovina (BiH) remains stuck in a low gear since the global financial crisis, reflecting weak external demand, tighter funding conditions, and deep seated structural issues. A high system-wide NPL ratio—14 percent at end-2014, about two thirds of which are provisioned—reflects the impact of the crisis, low growth since then, and a history of lax lending policies. Bank governance problems, related-party loans and inadequate corporate resolution and insolvency frameworks are obstacles to addressing asset quality problems and re-establishing bank profitability. Institutional fragmentation is delaying much-needed financial sector reforms.

Aggregate solvency and liquidity indicators appear broadly sound, but significant pockets of vulnerability exist. The banking system is more than 80 percent foreign-owned banks. The average regulatory capital adequacy ratio exceeded 16 percent as of end 2014. However, the dispersion among banks is wide, ranging from about 7 percent to 48 percent. Vulnerabilities are concentrated within domestically-owned banks, some of which are struggling to meet capital requirements, while some others are relying on public support. Stress tests indicate that these banks have large concentration risks and low liquidity ratios. While the insurance sector is small, a number of companies have thin solvency margins. FSAP team access to supervisory data—at the individual bank level, aggregated along group of banks, and system wide level—was exceptionally good.

Decisive and timely actions to deal with weak banks are critical for preserving financial stability. A comprehensive strategy—backed by a credible diagnostic assessment—is needed soon to either facilitate the recovery of these banks (if practicable) or to resolve them in a cost-effective manner that is also consistent with maintaining the stability of the financial system and protecting insured depositors. The timetable for these steps should be spelled out clearly and effectively communicated, and consideration should also be given to a credible and transparent public backstop to deal with potentially systemic cases.

Banking and insurance oversight improved since the 2006 FSAP, but a number of important shortcomings remain that have contributed to the vulnerabilities of the financial sector. Cooperation among the various oversight institutions is complex, having potential repercussions in times of stress. Lack of adequate governance and risk management has contributed to the current number of problem banks. The administrative powers of the agencies to sanction and fine supervisory board members and significant owners are inadequate. Moreover, the identification of ultimate beneficial owners of banks is problematic and related-party lending and group exposures are obscure. There is a need to further strengthen the supervisory board selection process and internal audit functions of state banks. The prudential framework for the insurance sector should be updated to improve its risk sensitivity. Consumer protection and financial literacy in the insurance industry are weak and should be improved.

The legal framework governing creditor/debtor relationships is comprehensive; however, neither debt resolution nor bankruptcy liquidation work effectively, impeding NPL resolution.

There is a need to streamline execution procedures, introduce incentives to facilitate corporate debt restructurings and resolution, and adopt out-of-court restructuring guidelines. The institutional framework could be further improved through hiring more commercial court judges with appropriate experience and improving the regulation of the insolvency profession.

Going forward, the financial safety net also needs to be strengthened. The creation of resolution authorities with comprehensive powers, appropriate resolution tools, and temporary and limited emergency liquidity—within the currency board arrangement—will be the key pillars to support the resolution of troubled banks and provide liquidity to solvent but illiquid banks. And while the deposit insurance system is largely compliant with international standards, shortening the payout period in line with the EU relevant directive would be appropriate. Well-coordinated contingency planning—both domestic and cross-border—is also essential to building an effective financial safety net. A macroprudential framework should be established, underpinned by broader and more focused cooperation among the relevant agencies.

The payment system meets much of the international standard, but liquidity and legal risks exist. Liquidity risks arise from the high concentration of transaction values in the payment systems across a few banks. The legal basis is relatively sound, but finality and netting arrangements require greater legal certainty at statutory level. The assessment suggests lack of oversight powers, limited resources and supervisory capacity. Progress has been made in enhancing the anti-money laundering and combating the financing of terrorism (AML/CFT) framework, but further efforts are necessary to address remaining deficiencies and implement the AML/CFT law in an effective way.

Capital markets are small and financial sector development in microfinance and leasing is constrained. The securities market legal and regulatory framework is sound and the infrastructure well developed. The markets would benefit from introducing a 'passporting' framework, and from increased transparency and information disclosures. To enhance leasing operations as an alternative financing option for firms with limited collateral or credit history, collateral requirements should be revisited and repossession of assets made more effective.

Table 1. Key FSAP Recommendations

Recommendations and Authority Responsible for Implementation	¶	Time[1]
Banking Oversight		
Develop a remedial action program focusing on new tools, earlier step-up enforcement and heavier fines to expedite corrective action (FBA, BARS, relevant Ministries of Finance and Justice).	40	NT
Strengthen provisioning under IAS by issuing standards to encourage conservative assumptions on impairment by banks (FBA, BARS).	42	MT
Enact new Laws on Banks and amend relevant legislation addressing deficiencies in supervisory powers, consolidated supervision, and identification of ultimate beneficiary owners (FBA, BARS, CBBH, Ministries).	36	I
Conduct additional AQRs in banks with weak solvency and liquidity indicators (FBA, BARS).	16	I
Assure that banks continue implementing IFRS and external auditor implement IAS (FBA, BARS).	41	MT
Insurance Oversight		
The appointment of the FBiH-ISA director should be based on the relevant law (Government).	45	MT
The new insurance law in the FBiH should be approved if it shows improved convergence towards the EU insurance directives (FBiH-ISA).	44	I
Introduce a formal channel of information sharing with banking agencies (FBiH-ISA).	46	I
Update solvency regime by a gradual incorporation of risk elements, develop an early warning system, including prompt corrective actions. Capacity building is required (ISAs).	44	I
Financial Safety Net, Resolution of NPLs, and Systemic Liquidity Management		
Revise the reserve requirements, maturity mismatch, and the liquidity ratio (CBBH, FBA, BARS).	55	NT
Design and implement the LCR, adapted to BiH (FBA, BARS).	55	MT
Revise the consequences to banks for not complying with reserve requirement (CBBH).	54	MT
Enable prompt depositor pay-out (DIA).	60	I
Provide resolution powers to the FBA and BARS for banks in their respective jurisdictions on the new Laws on Banks, following the FSB Key Attributes and EU BRRD (FBA, BARS, DIA, relevant Ministries)	65	I
Broaden the scope to draw on the existing DIF for funding bank resolution using least-cost solution (DIA)	66	I
Establish a Financial Stability Fund (FSF)—under the DIA—to provide for open bank resolution and limited and temporary liquidity support in systemic crisis (DIA, CBBH, FBA, BARS, Governments).	67	MT
Strengthen, regularly review, and test bank contingency plans of SCFS members (SCFS).	62	I
Strengthen the cooperation between DIA and financial safety net players (DIA, CBBH, FBA, BARS).	60	I
Add macroprudential analysis and policy to the coordination MoU. Define and collect additional information for the assessment of vulnerabilities and macroprudential tools (CBBH, FBA and BARS).	52	NT
Streamline collateral execution procedures by allowing a final auction at no reserve price if previous rounds of auctions failed and specify realistic criteria for asset market values (RS/FBiH Ministry of Justice).	34	I
Consider tools and incentives to facilitate restructurings and debt resolution as well as adoption of out-of-court restructuring guidelines. (RS/FBiH/BiH MoF, FBA, BARS).	31	I
Revise the insolvency framework by introducing incentives to initiate proceedings early and expand the insolvency framework to cover businesses run by individuals. (RS/FBiH MoJ).	35	NT
Financial Market Infrastructure		
Strengthen the legal framework to designate payment systems, and to protect settlement finality and netting in line with international standards (CBBH).	48	NT
Develop a comprehensive risk management framework for the RTGS system (CBBH).	47	I
Stress test the RTGS system, including the default of the largest participant and affiliates (CBBH).	47	NT
Establish a recovery time objective for the RTGS system following disruptive events (CBBH).	47	I
Establish a new oversight unit in Payment Systems Department, which is staffed with sufficient resources to carry out oversight responsibilities (CBBH).	48	NT

[1] "I-Immediate" is within one year; "NT-near-term" is 1–3 years; "MT-medium-term" is 3–5 years.

MACROFINANCIAL SETTING AND THE FINANCIAL SYSTEM STRUCTURE

A. The Crisis Response and Recent Experience

1. The banking sector weathered the global financial crisis relatively well. Fueled by a benign global environment and ample lending supported by foreign banks, bank credit to the private sector in Bosnia and Herzegovina (BiH) grew at an average annual rate of around 25 percent over 2003-07, taking the credit-to-GDP ratio from around 35 percent to 45 percent. Although it was the smallest expansion in the region, and banks relied on traditional lending activities rather than investment in riskier assets, the associated vulnerabilities became clear during the 2009 crisis when capital inflows came to a halt.

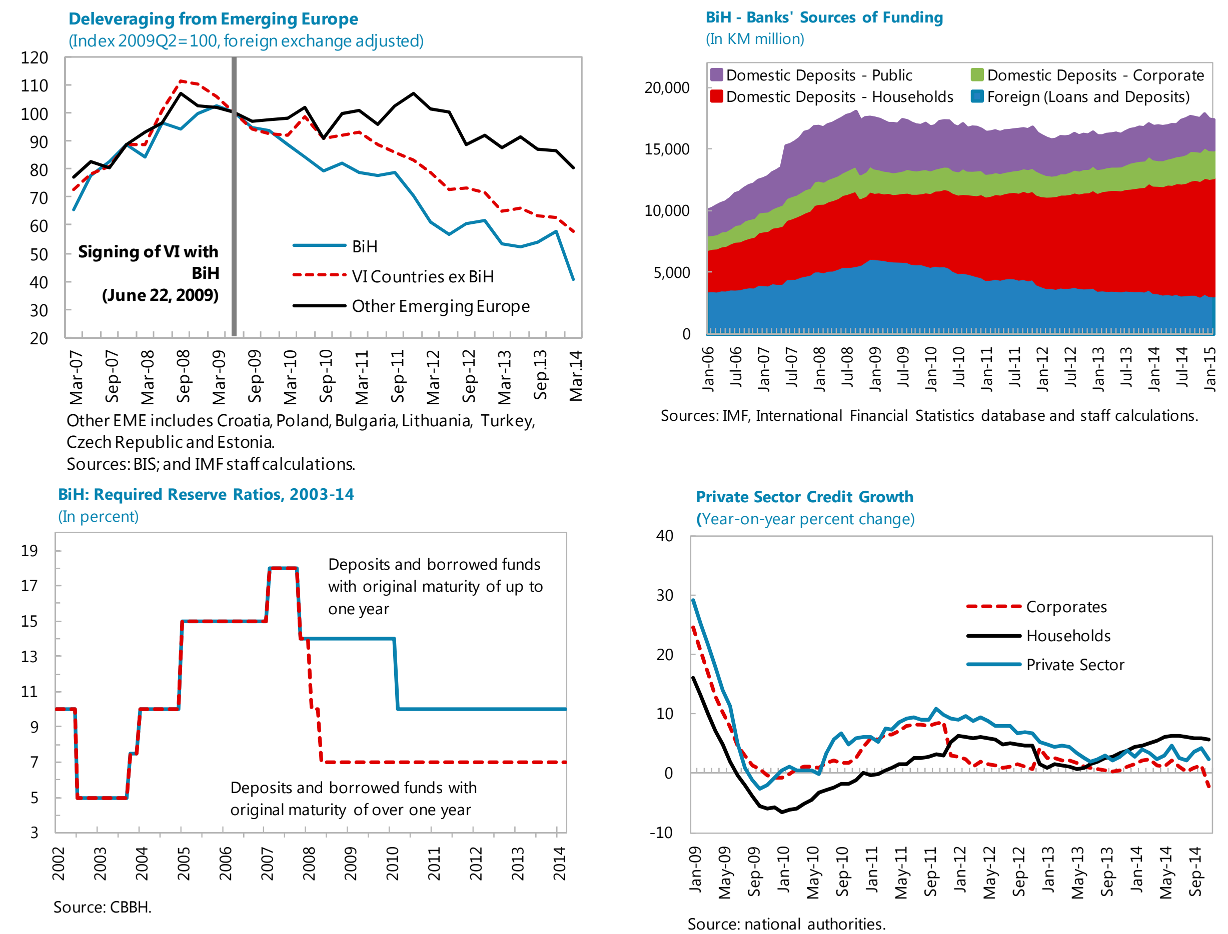
2. The authorities' response to the crisis shored-up depositors' confidence and helped to safeguard financial stability and sustain the currency board arrangement (CBA).[1] The Central Bank of Bosnia and Herzegovina (CBBH) swiftly responded to the crisis by lowering banks' reserve requirements in several steps. The negotiation of the 2009 SBA with the IMF, participation in the European Bank Coordination Initiative (EBCI) or "Vienna Initiative," and an increase of deposit insurance coverage to KM 50,000 (€25,000) helped to preserve market and depositor confidence. Moreover, a formalized coordination framework across the agencies through the Standing Committee for Financial Stability (SCFS) was established.[2]

3. Nonetheless, the economy and financial system are still dealing with the aftershocks of the global financial crisis and underlying vulnerabilities. The past strong economic growth relied increasingly on robust domestic demand and ample capital inflows, delivering GDP growth rates of around 5 percent on average over 2001–08. However, growth has since remained sluggish as foreign demand has been weak and domestic demand is being held back by stagnant wages, high unemployment, tight macroeconomic conditions, and slow credit growth. In the absence of foreign capital inflows, banks have had to become more reliant on domestic deposit funding, and the legacy of lax underwriting standards has been high NPLs and weakened profitability.

[1] The CBA is seen as a fundamental pillar for economic policies. The CBA fixes the convertible marka to Euro and introduces constraints on monetary policy and limits the options for systemic liquidity management. The CBBH foreign reserve cover stands at 107 percent of CBBH monetary liabilities as of 2014Q3.

[2] The SCFS was established by the CBBH, the banking agencies, the Deposit Insurance Authority and the Fiscal Council to ensure cooperation at all time for sharing information and assessments of each member to facilitate the achievement of their policy function and financial stability.

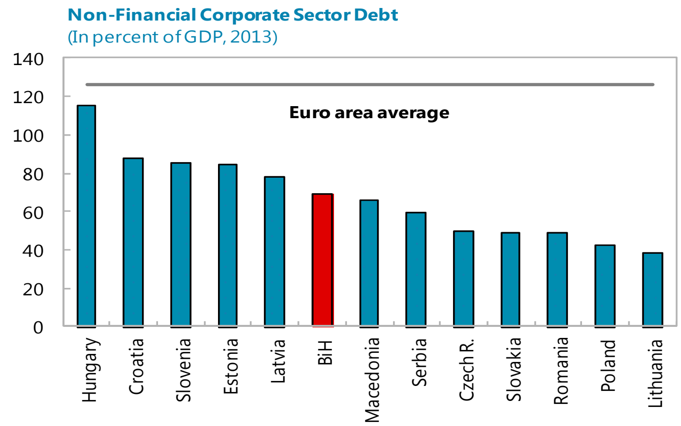
Figure 1. Bosnia and Herzegovina Economic Developments



4. Recent data suggests that the economy still is struggling. Reflecting the effects of severe flooding in May 2014, real GDP growth is estimated to have slowed to 1 percent in 2014, consumer prices fell by 0.9 percent in 2014, and the unemployment rate remains at above 27 percent. Credit to the private sector continues to grow slowly (averaging around 3 percent since 2010), although credit expansion is more rapid among some banks that are attempting to gain market share.

5. Although corporate and household debt levels seem manageable, there are signs of credit constraints. Corporates largely rely on bank credit for financing, although intercompany debt has been growing recently. At end-2013, corporate sector debt stood at around 69 percent of GDP, in line with peers. Household debt has remained steady at around 30 percent of disposable income, but there are signs of increased reliance on short-term debt in the form of credit card or general consumption loans, suggesting stretched incomes and increasing debt service liabilities.

Figure 2. Corporate Sector Debt



Sources: European Central Bank; National Bank of the Republic of Macedonia; National Bank of Serbia; APIF; AFIP; and CBBH.

B. Financial Sector Structure

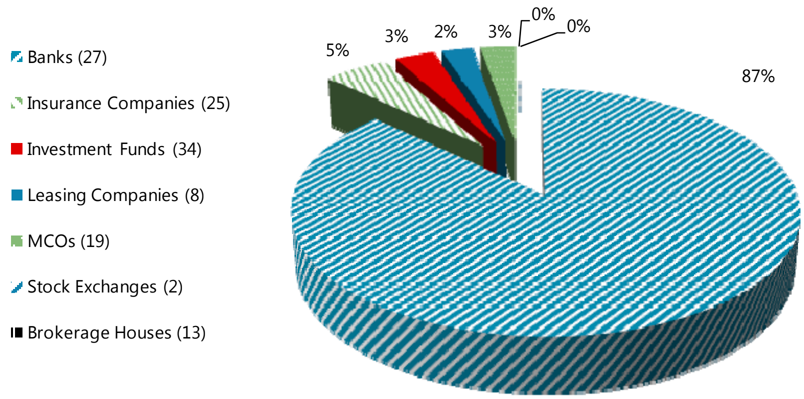
6. The financial system is fragmented. BiH is divided into two semi-autonomous political entities—the Federation of Bosnia and Herzegovina (FBiH) and the Republika Srpska (RS). Both entities have their own parliament, government, judicial system and stock exchange. Similarly, regulatory and supervisory responsibilities for banking, insurance, and capital markets lie at the entity level by Constitution.[3] Banks and insurance companies registered in each entity often have branches in the other. In addition, there is a central ("state") level administration but with few enumerated powers. In this context, the CBBH and Deposit Insurance Authority (DIA) reside at the state level.

7. The financial system is dominated by a moderately concentrated banking sector. The banking sector accounts for 87 percent of financial system assets, equivalent to 84 percent of GDP as of end-2013. There are twenty seven banks operating in the country (17 in FBiH and 10 in RS, with a share of 70 and 30 percent, respectively, of the country's banking system). The five largest banks represent over half of banking sector assets. The banking system comprises mostly foreign subsidiaries—82 percent of the banking sector assets, while domestically-owned and public banks account for 16 and 2 percent respectively.

[3]The Constitution of BiH was enacted upon signing the General Framework Agreement for Peace on December 14, 1995. All functions and mandates not explicitly referenced by the BiH Constitution to the Institutions of BiH are the responsibilities of the entities, therefore all existing entity level financial system legislation is derived from constitutional provisions of the entities.

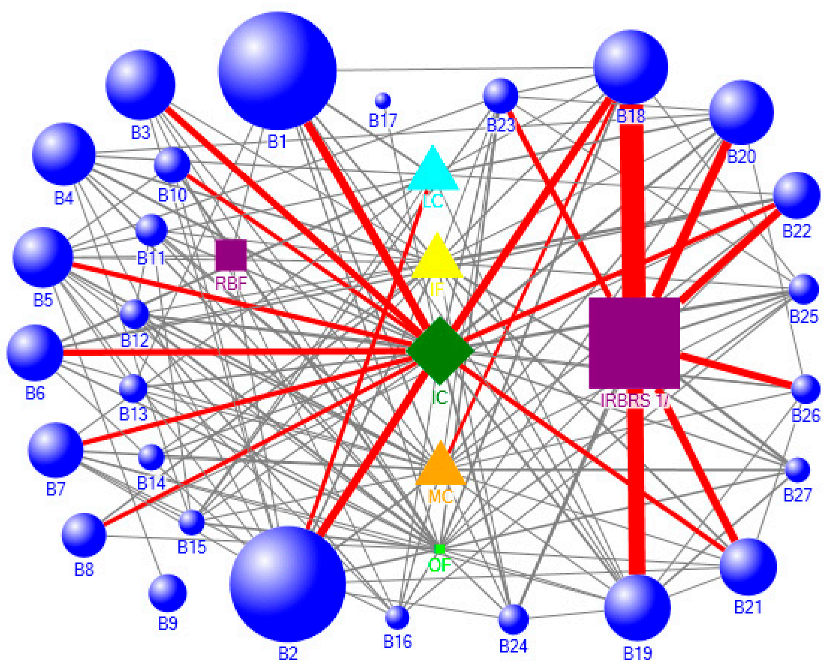
Figure 3. Financial System Structure and Linkages

Structure of the Financial System



Source: CBBH.

Linkages between Banking and Non-Banking Sectors



Sources: CBBH, Banking Agency of FBiH, and Banking Agency of RS.

1/ The size of the IRBRS reflects the total assets of the development bank in RS (IRBRS) consolidated with the 6 development funds under its management.

Note: The size of each node reflects the total assets of each institution. Linkages (edges) are bilateral claims and liabilities. Top 20 largest linkages are represented by red edges. Blue solid spheres B1–B17 and B18-27 denote commercial banks in FBiH and RS. The two purple solid squares denote the two development banks in FBiH (RBF) and RS (IRBRS), respectively. The green solid diamond represents insurance companies (IC). The aqua, yellow, and orange solid triangles represent leasing companies (LC), investment funds (IF), and microcredit organizations (MC), respectively, and the lime solid square denotes the other financial institutions (OF).

8. **The non-banking financial system is small (Figure 3).** Insurance penetration is low at about 2 percent of GDP. The nonlife segment collects over 80 percent of insurance premiums. There is one stock exchange in each entity, but capital markets remain underdeveloped despite advanced infrastructure. The real-time gross settlement (RTGS) system settles high-value credit funds transfers and net balances submitted by the GIRO clearing system (GCS) and card switching network.

9. **Interconnectedness among banks is limited, but linkages between banks and the insurance sector, as well as the RS development bank (IRBRS), are significant (Figure 3).** Insurance companies' deposits in the banking sector amount to about 40 percent of the insurers' total assets. The IRBRS plays a major role in the RS banking system through credit lines, deposits, and capital (see paragraph 14).[4] Two conglomerates are owners of a few financial institutions.

10. **As elsewhere in the region, the largest foreign banks operating in BiH are from Austria and Italy.** Foreign banks owned by these two countries constitute almost 60 percent of total banking sector assets in BiH (Appendix Table 6). In terms of direct exposure, BiH banking sector is mostly exposed to Austria and Germany, accounting for nearly 50 percent of banks' total foreign claims and comprising ⅓ of banking sector regulatory capital, through correspondent accounts.

FINANCIAL SYSTEM RESILIENCE

A. Moderately Concentrated Banking Sector with Pockets of Vulnerability

Snapshot

11. **The global financial crisis weakened asset quality and profitability of the banking system**. The system-wide NPLs ratio rose from 3 percent in 2006 to 14 percent at end-2014 (9 percentage points are provisioned) and banking sector profitability has also deteriorated, reflecting not only the impact the crisis had on the region but also past lax lending practices. Poor corporate resolution and insolvency frameworks mean that asset quality is becoming an important obstacle for re-establishing bank profitability. Although the average regulatory capital adequacy ratio exceeded 16 percent as of end 2014, the dispersion among banks is wide, ranging from about 7 percent to 48 percent. The recent natural disaster prompted regulatory forbearance for loan classification, but so far has had a mild impact on asset quality.

[4] The development banks in each entity are non-deposit taking institutions supporting investments and export-oriented activities.

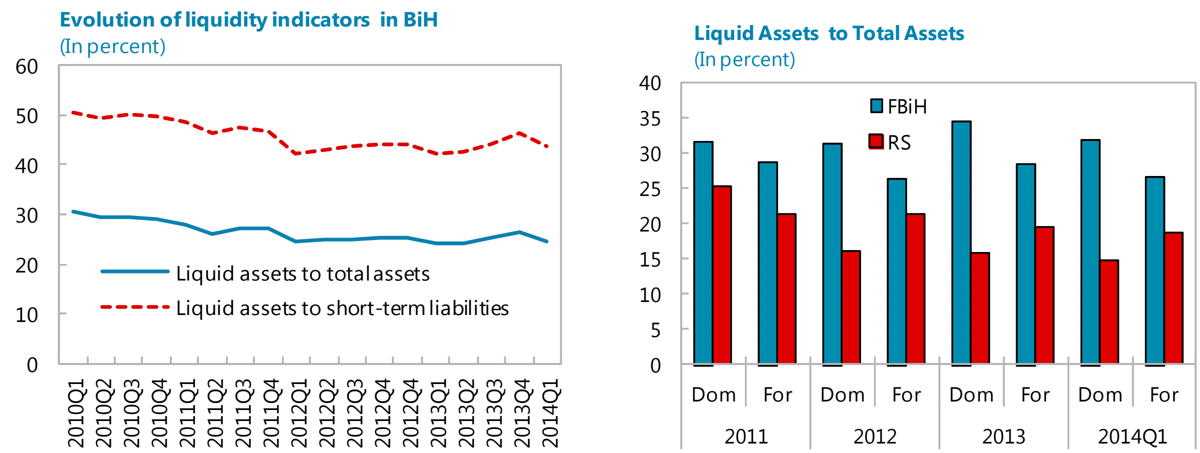
Figure 4. Key Financial Soundness Indicators: Cross-Country Comparisons

Sources: IMF Financial Soundness Indicators Database and National Bank of Serbia.
1/ 2014 data not available.
2/ The red bar represents data for 2014Q1.
3/ Provisions for credit impairment and other losses are also included in the non-interest expenses.
4/ 2006 data not available.

12. **Liquidity in the system is high, although also with significant dispersion**. Liquid assets stood at 26¾ percent and 46 percent of total assets and short term liabilities, respectively, as of 2014Q4. This is partly reflecting the importance that banks place on liquidity buffers under the CBA.

Despite high required reserves (RR), the excess reserves were 150 percent of requirements.[5] The funding profile of commercial banks has improved, although the loan-to-deposit ratio stands still at a relatively high 120 percent, underscoring a continued dependence on parent funding. The relatively higher level of liquidity in FBiH compared to RS is partly explained by different interpretation and enforcement of the regulation on maturity mismatch (Figure 5).

Figure 5. Liquidity Developments



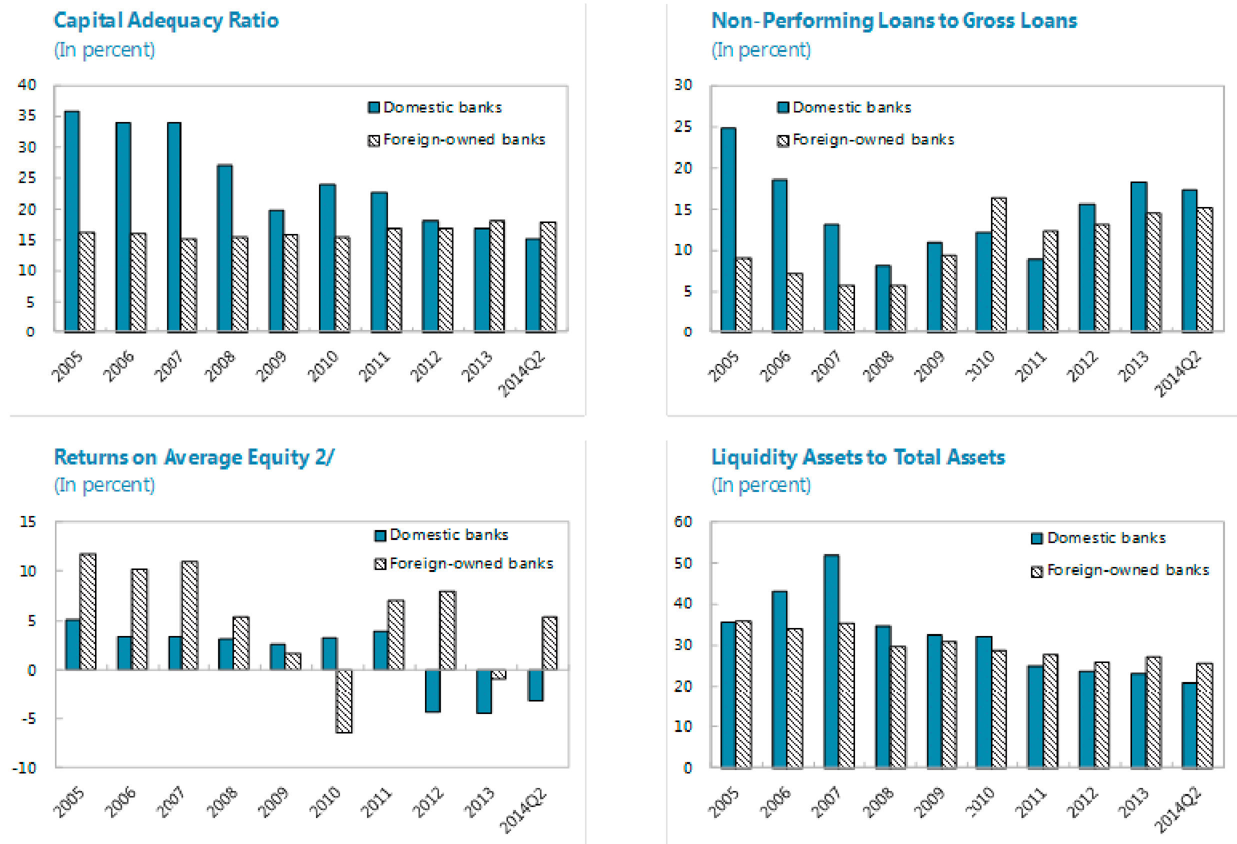
Sources: CBHH, FBA, and BARS.
Notes: Dom: Domestically-owned banks; For: Foreign banks.

13. While sector-wide indicators appear broadly sound, there are pockets of vulnerabilities among domestically-owned banks. This segment has lower and declining liquidity and capital ratios as well as large concentrations (Figure 6 and stress testing section). In addition, asset quality and profitability of domestically-owned banks are lower than that of foreign banks. The detailed asset quality reviews (AQRs) of the three domestically-owned banks under enhanced supervision that were available to the FSAP team have revealed capital shortages, of which only two had been corrected so far.

14. A number of domestically-owned banks rely heavily on public sector support and exit plans are undefined. In the RS, the IRBRS holds a sizeable amount of shares and subordinated debt in some domestically-owned banks that otherwise would be undercapitalized. It also has credit lines for on-lending to some banks and deposit placements in four domestically-owned banks. In the FBiH, some public sector entities have stakes in some domestically-owned banks.

[5] The RR is currently set at 10 percent for liabilities with a contractual maturity of up to one year, and 7 percent for other liabilities.

Figure 6. Key Financial Soundness Indicators: Domestic and Foreign Owned-Banks



Sources: Banking Agency of FBiH, and Banking Agency of RS, and IMF staff calculations. Foreign-owned banks includes Hypo.
1/ The classification of domestic and foreign-owned banks is listed in Appendix Table 6.
2/ Net income as percent of average equity capital.

Dealing with Weak Banks

15. Strong and timely action is needed to deal with weak banks. A number of banks do not meet the prudential capital requirements and others only do so as a result of public capital support. Since this capital support has been provided in the form of subordinated debt and preferred shares, existing equityholders have not been diluted. This contributes to moral hazard, lacks transparency, and is not conducive to a level playing field. Moreover, most of the weak banks still face significantly higher funding costs and suffer from legacy of loans to sub-par borrowers and related parties. Unless owners are willing to provide significant capital support, phase-out related party loans, and address asset quality issues, these banks will need to be restructured and/or resolved.[6]

16. The development and full implementation of a comprehensive bank restructuring strategy, including effective communications, is critical to preserve financial stability. Without

[6] Bobar Bank was liquidated on December 22, 2014—after the FSAP mission took place—and the DIA started the deposit pay-out within a month, on January 19, 2015. This constitutes the first deposit pay-out of the DIA.

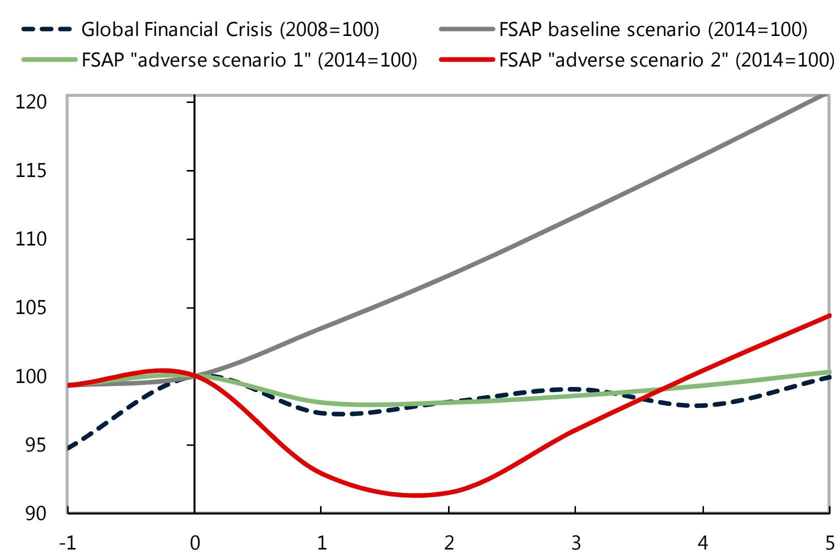
immediate and decisive actions banks' financial positions will continue to deteriorate, leading to an increase of potential resolution costs. Therefore, the team recommended that the authorities develop, as a matter of high priority, a thorough plan to either facilitate the recovery of these banks (if practicable) or implement a cost-effective resolution consistent with maintaining the stability of the financial system and protection of insured depositors. This will require additional time-bound AQRs of domestically-owned banks and a strategy to address potential implications. The strategy should explore all options for early action and ensure the technical readiness of the DIA to pay-out depositors promptly. A credible and transparent public backstop may be needed to deal with systemic cases.

Stress Tests and Tail Risks

17. The stress tests focused on the banking system and covered all 27 banks. Top-down solvency stress tests were conducted jointly by the FSAP team and CBBH, using supervisory data.[7] These stress tests were complemented by bottom-up stress tests by individual banks—using internal models with macroeconomic scenarios provided by the FSAP team—and coordinated by both banking agencies. In addition, liquidity stress tests and contagion risk analysis, together with complementary sensitivity analysis such as concentration risks, were also carried out.

18. Three macroeconomic scenarios were considered. In addition to a baseline scenario, based on the latest WEO staff projections, two alternative scenarios were designed. Full-fledged five-year macroeconomic projections were quantified (Figure 7 and Appendix Table 8).[8]

Figure 7. Evolution of the Level of Real GDP in the Stress Test Scenarios



Source: IMF staff calculations.

[7] Notwithstanding data quality issues, authorities provided detailed balance sheet supervisory data, as of March 31, 2014, for all 27 banks operating in BiH (see Appendix Table 8).

[8] The moderate adverse scenario relates to Risks #1 and 2 identified in the RAM; whilst the most severe adverse scenario relates to all four, Risks # 1, 2, 3, and 4, in the RAM.

19. Potential credit risk losses on the loan book represent the most important risk factor (Figure 8). Aggregate stress losses—mainly related to increased loan provisions—although non-negligible, remain broadly manageable.[9] However, given the relatively low asset quality and concerns regarding reported capital ratios of domestically-owned banks, the large impact of potential credit losses on these banks confirms the importance of urgent action as described in paragraphs 15 and 16. Top-down stress tests found that loan losses due to credit risk ranged from 1.9 percent of GDP in the first adverse scenario to 7 percent of GDP in the most severe scenario (Appendix Table 9).[10] Top-down and bottom-up stress test results are broadly consistent, with difference reflecting mainly the significantly larger provisions for impaired loans in the top-down results and the relatively modest response to macroeconomic conditions in the bottom-up results (Figures 8 and 9).

20. Concentration risks are high in a specific segment of the banking sector. Although the average large exposures remain moderate, a few domestically-owned banks present very large single (and common) name exposures mainly to large state-owned enterprises, confirming the relative severe weaknesses of this segment. Overall, sensitivity analysis shows that potential losses remain broadly manageable at the system level, but up to 11 banks could become insolvent if a few of their largest exposures were to default (Appendix Table 10).

21. Direct exchange rate risk and other sources of market risks appear to be contained. Nearly two-thirds of loans are in, or indexed to a foreign currency, mostly euros, and parent bank funding and relatively large remittance inflows have also contributed to the euroization of deposits.[11] However, all banks comply with regulatory limits and exhibit fairly small net open foreign-exchange (FX) positions. In fact, the net open FX positions for the different currencies do not necessarily move in the same direction, providing a natural hedge against currency risk.[12] Moreover, given the limited amount of securities on the banks' investment and trading portfolios, other sources of market risk appear to be contained.

22. However, indirect risks warrant closer monitoring in view of a large number of "unhedged borrowers." Most banks do not collect information on the denomination of their borrowers' income or assets. Owing to lack of data, potential losses related to indirect foreign-exchange risk (through credit risk) could not be appropriately quantified. Given the large issuance of FX-linked loans, the team recommends that banks and the supervisors close data gaps in this area and respond as appropriate.

[9] Top-down stress tests suggest that potential system-wide capital shortfalls could be around 0.1 percent of GDP in Adverse Scenario 1, and 4 percent of GDP in Adverse Scenario 2 (Appendix Table 9).

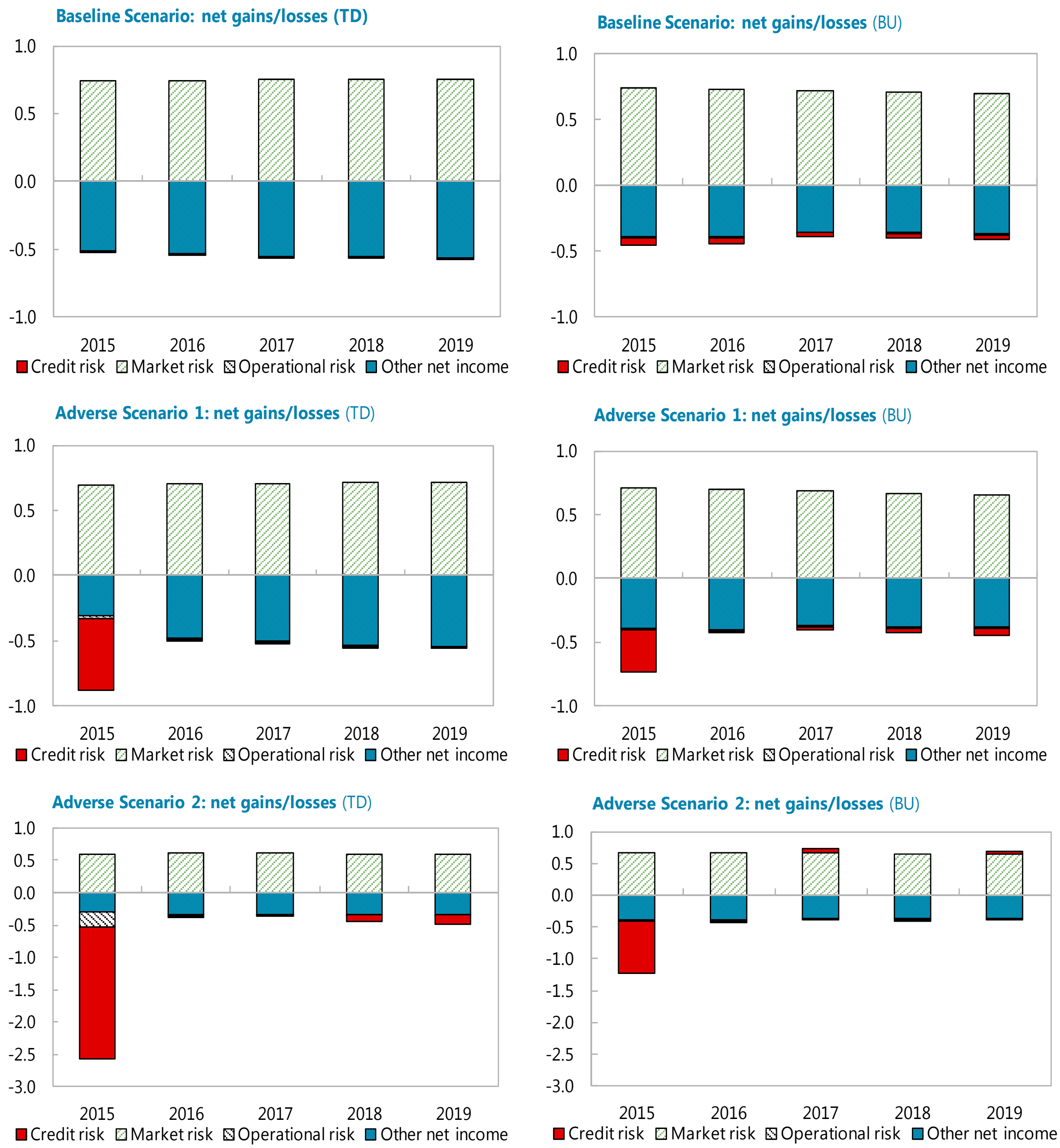
[10] Several banks in BiH were subject to comprehensive AQRs in recent months. However, at the time of the FSAP, only the results for the banks in FBiH were known. Given that the amounts involved are fairly small at the system level, the main conclusions from the stress tests remain unchanged when the results from these AQRs are taken into account.

[11] Loans in other foreign currencies are limited. Most of these are Swiss Franc-denominated loans, representing about 1 percent of total loans.

[12] Despite the small net open FX positions, most banks are "long EUR". Thus, in the hypothetical case of a depreciation of the domestic currency against the euro, banks would experience gains from their open FX positions.

Figure 8. Top-Down and Bottom-Up Estimated Potential Losses for the Banking System

(In billions of KM)



Sources: Individual banks (bottom-up stress tests), IMF, and CBBH staff calculations (top-down stress tests).

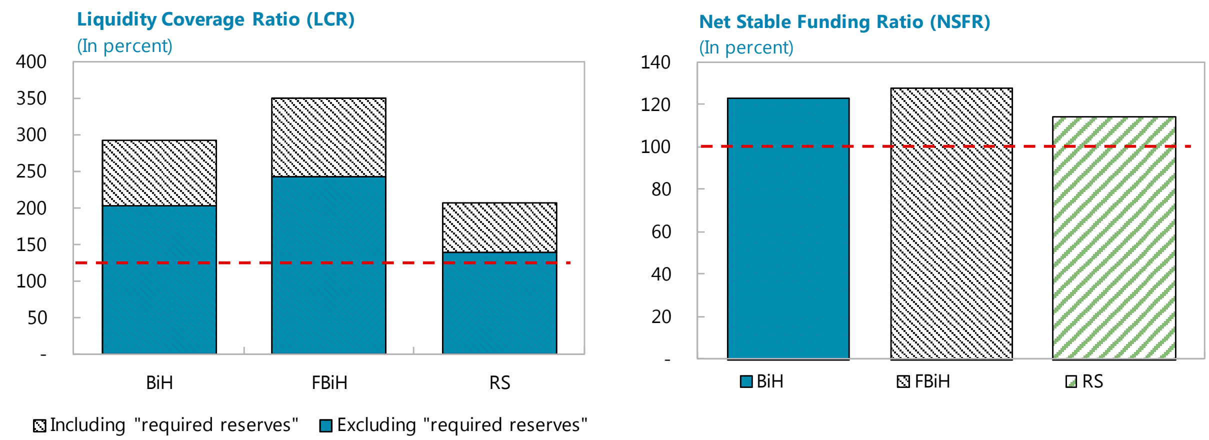
Figure 9. Top-Down and Bottom-Up Estimated Capital Adequacy Ratios

(In percent of risk-weighted assets)

Sources: Individual banks (bottom-up stress tests); IMF and CBBH staff calculations (top-down stress tests).

23. With a few exceptions, bank liquidity positions appear to be sound. Liquidity stress tests, based on Basel III Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR) type proxies, show that the system as a whole has ample liquidity, with the system-wide LCR exceeding 250 percent (Figure 10). Most banks exhibit sizeable amount of deposits at the CBBH. However, there are a few banks, mainly domestic-owned, that present relatively low liquidity ratios (Appendix Table 11). Overall, the potential liquidity shortfall could be around ¼ percent of GDP. If required reserves were excluded altogether from the banks' HQLA in the computation of the LCR, the potential system-wide liquidity shortfall would increase to just over 1 percent of GDP.

Figure 10. Liquidity Stress Tests Results



Source: Authorities supervisory data and IMF Staff Calculations.

24. Contagion risks through the domestic interbank market are small. Domestic interbank exposures among banks are less than 1 percent of total regulatory capital.[13] While some banks have engaged in overnight over-the-counter transactions of deposits, FX, and cash, system-wide exposures appear to be relatively small.

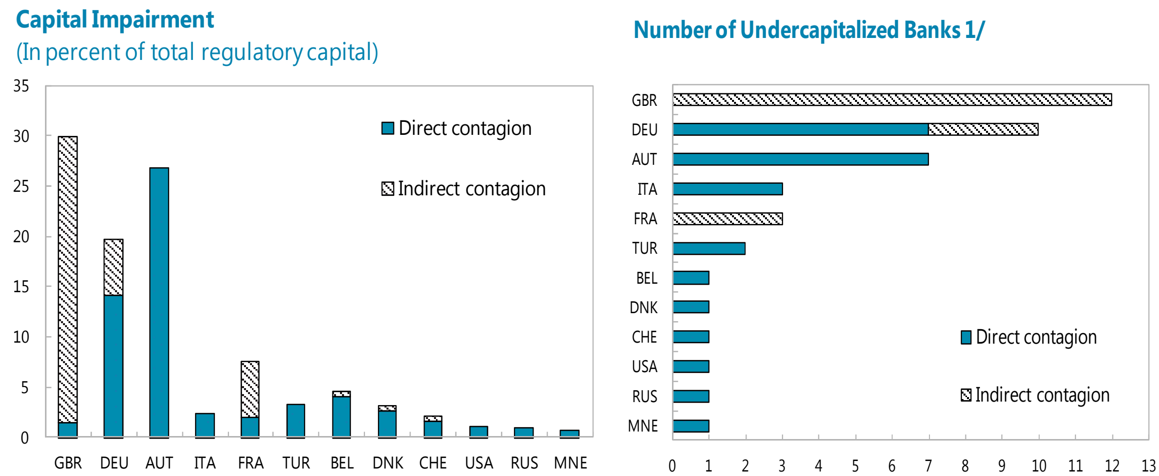
25. Banks still exhibit notable cross-border exposures.[14] Several foreign-owned banks benefit from credit lines from their parent banks, and most banks in BiH hold large amount of deposits in their correspondent accounts abroad, mainly with large global financial institutions. In addition, a few banks, mainly domestically-owned, seem to exhibit a "round-tripping" of cross-border exposures, where both claims and liabilities to a particular counterparty are roughly of the same amount. Furthermore, network analysis,[15] using bilateral exposures of BiH's banks, suggests that the effects (both direct and indirect) on capital adequacy of potential credit and funding shocks from abroad (through deposits in foreign correspondent accounts and parent funding) could be sizeable (Figure 11).

[13] Only in one particular case, the hypothetical default of a large domestic bank on its interbank obligations would trigger the undercapitalization (CAR below 12 percent) of a small domestic bank in the system.

[14] At end-March 2014, BiH banks had exposures to the banking systems of the following countries: Albania, Australia, Austria, Azerbaijan, Bahrain, Belgium, Bulgaria, Canada, Croatia, Denmark, Estonia, France, Germany, Greece, Hungary, Italy, Japan, Kosovo, Kuwait, Liechtenstein, Lithuania, Luxembourg, Macedonia, Montenegro, Netherlands, Norway, Russia, Saudi Arabia, Serbia, Slovakia, Slovenia, Sweden, Switzerland, Turkey, United Arab Emirates (UAE), U.K., and U.S. With sovereign exposures included, the number of countries increases to over 100.

[15] Based on Espinosa-Vega, M. and J. Solé, 2010, "Cross-Border Financial Surveillance: A Network Perspective," IMF Working Paper 10/105.

Figure 11. Cross-Border Spillovers to BiH's Banks: Credit and Funding Shocks



Sources: FBA, BARS, CBBH, BIS Locational Statistics Database, IMF Financial Soundness Indicators Database, and IMF staff calculations.
1/ An undercapitalized bank is defined as the CAR falling below the minimum requirement.
Note: Two banks are excluded from the exercise because their pre-shock CARs are already below the minimum requirement.

B. Insurance Sector Becoming Increasingly Competitive

26. Although the sector has high sector-wide solvency ratios, a number of insurance companies have thin solvency margins (Appendix Table 4). The system is dominated by non-life companies, since life insurance is still in its embryonic stage, and its solvency ratios may also be overstated owing to the use of Solvency I, which is not risk-sensitive. In addition, for some non-life insurance companies, their combined ratios (claims plus expenses over premiums) exceed 100 percent, which suggests that their profits are dependent on the performance of their investment portfolios.

27. Insurance sector liquidity is appropriately managed, but there are significant exposures to the banking system. Over 40 percent of insurance sector assets are in bank deposits (Table 2). A network analysis suggests that in the severe adverse scenario of the stress tests, the insurance sector would lose about 14 percent of its capital.

Table 2. Bosnia and Herzegovina: Insurance Sector, Size and Investments 2009–2013
(In KM million)

	2009	2010	2011	2012	2013
Total assets	1006.9	1011.3	1076.8	1173.8	1234.2
Gross premium	458.9	470.5	488.1	505.1	527.0
Investments	647.1	667.0	725.4	801.7	892.7
of which					
Government securities	10.7	19.0	27.3	36.7	56.1
Corporate securities	3.4	6.4	-	0.1	0.1
Equities	43.0	37.9	33.0	30.7	32.0
Real estate and real estate related	162.7	137.4	144.2	154.8	165.6
Cash and bank balances	347.1	380.1	433.8	495.7	571.5
Receivables	144.5	122.1	122.7	132.7	105.3
Intra-group/related company receivables	19.8	13.6	16.1	16.8	13.4
Reinsurance receivables	82.4	94.6	94.9	108.6	109.8
Other assets	105.7	106.3	109.0	104.5	102.4

Source: FBiH and RS agencies.

C. Payment System Risks

28. Resiliency of the interbank payment system was demonstrated during the recent floods. Contingency arrangements were earlier strengthened with the development of a disaster recovery site located at a distant location from the primary site to ensure the resumption of critical operations in the event of a wide scale disruption.

29. The CBA has helped protect the payment system from credit risks, but liquidity risks remain. There are no credit risks due to pre-funding requirements in the RTGS. Prohibiting the CBBH from extending intraday credit and strict rules on the use and replenishment of RR has established strong discipline within the banking system. Vulnerabilities from liquidity risks arise with the high concentration of payment transaction values (55 percent) across five banks, including two settlement banks.

RESOLUTION OF NON-PERFORMING LOANS: THE LEGACY PROBLEM

30. The share of NPLs has increased over recent years and weaknesses in the legal framework have impeded the resolution of NPLs. These have limited the ability of banks to transfer NPLs to other entities.[16] Steps are needed to address these, while also ensuring that bank supervisors are able to monitor NPLs that are held by AMCs within a banking group, through consolidated group supervision. In addition, relevant regulations should be amended so that NPLs

[16] The transfer of non-cancelled NPLs from banks to other entities is impeded by inconsistent interpretation of some provisions of the Law on Obligations and Laws on Banking as well as legal impediments on the Law on Protection of Users of Financial Services for loans to natural persons.

are maintained on a credit register to enable credit providers to identify the status of applicants for credit and to maintain incentives for borrowers to service their loans.

Table 3. Distribution of Non-Performing Loans
(In percent)

	2012Q4					2014Q3				
	TOTAL	**FBiH**	**RS**	**Foreign**	**Domestic**	**TOTAL**	**FBiH**	**RS**	**Foreign**	**Domestic**
NPL to total Loans	13.5	13.2	14.1	13.2	16.5	15.1	14.6	16.2	14.5	22.7
of which: corporates	8.5	8.2	9.3	8.1	13.7	11.0	10.7	11.8	9.7	27.0
of which: households	5.0	5.0	4.8	5.1	2.8	4.9	4.9	4.9	4.9	4.5
Memo item:										
Special mention loans (share of total loans)	9.8	9.0	11.6	9.2	17.5	8.7	7.9	10.6	8.0	17.2

Source: FBiH and RS agencies.

31. Another difficulty impeding the resolution of NPLs is the absence of an alternative to bankruptcy. There is no satisfactory streamlined process by which a company and its creditors can negotiate a restructuring of debt or the company itself to facilitate a least-cost solution to loan impairment. This results in a more piecemeal liquidation of assets than would otherwise be the case, with a consequential loss in recovery on the impaired loans and potentially greater costs to the economy in terms of loss of economic activity and jobs. Therefore, it is important that a framework be established to provide an efficient mechanism, overseen by the courts, for companies and creditors to negotiate a debt restructuring.

32. The insolvency and judicial framework also contributes to the NPL situation. Litigation, execution, and bankruptcy cases take too long to be completed, and additional resources and training in the courts are warranted.

33. Tax impediments to the resolution of NPLs should be also addressed. A review of relevant tax laws should be commissioned to ensure that issues related to debt-restructuring processes, NPLs, and loan loss provisions encourage creditors and debtors to restructure debts and to sell NPLs to third parties. Consideration should also be given to exempting transfers of NPLs (and associated collateral) from VAT, since this could improve the prospects for developing a secondary market for NPLs.

34. The legal framework governing creditor/debtor relationships is comprehensive; however, neither debt resolution nor bankruptcy liquidation work effectively. For instance, non-possessory pledges are not extensively used because banks do not consider such security as secure. Recovery rates of loans secured with pledges are very low. Several legal issues affect loan recovery rates—in particular, the ineffectiveness of execution procedures. Both the valuation of the asset that will be sold at auction and the reserve prices are problematic.

35. There is no insolvency regime for individual debtors. The insolvency law applies only to legal entities and partners in partnerships. Sole traders, craftsmen or entrepreneurs—making up the vast majority of enterprises—cannot benefit from the insolvency framework.

FINANCIAL SECTOR OVERSIGHT

A. Governance and Risk Management Pose Challenges for Weak Banks

36. The system of banking supervision oversight has significantly improved since the last review in 2006, but shortcomings remain. Both supervisory authorities have made progress in enhancing the regulatory framework and supervisory processes.[17] The banking agencies are preparing a new Law on Banks that should address a number of deficiencies in supervisory powers, recovery and resolution, and consolidated supervision. These reforms will likely impact the respective laws of the banking agencies, such as by adding more supervisory powers. The regulatory framework has been broadened by the issuance of regulations on corporate governance, credit risk management and capital. Harmonization in regulation between the entities has been largely achieved and joint planning continues.

37. Coordination among the various institutions involved in banking oversight is complex, having potential repercussions in times of financial sector stress. In addition, the key players tend to exchange information guided by specific arrangements and laws, but crucial information on the risk profile of banks is not always shared with relevant stakeholders. This could become problematic in a crisis. The development of an integral banking crisis contingency plan by the SCFS, and individual contingency plans by member agencies, is encouraging (see paragraph 63).

38. The banking agencies have signed MOUs with a number of home country supervisors. However, there are no MOUs with the home supervisors responsible for a number of systematically important banks (Austria, Italy and Russia).[18] Also, the existing MOUs do not cover arrangements for cross-border cooperation in times of stress.

39. Supervisory agencies do not have a full picture of several domestically-owned banks. This includes the identification of the ultimate beneficiary owner and its holdings. As a result, related party lending and group exposures are not fully identified. The root cause of this problem lies at the licensing and approval process, which should be more substantive. The review of an application must provide sufficient information not only on direct owners but also parent companies and related parties of the parent companies.

40. Weaknesses in governance and risk management at some banks, coupled with weak supervisory powers, have contributed to the current number of problem banks. Loan concentration levels of some banks exceed regulatory limits. Moral hazard issues are exacerbated by the fact that current owners, who are unable to meet a capital call from the supervisor, are allowed to remain involved in the bank. In response, the banking agencies have recently issued regulations on corporate governance and are in the process of developing bank-wide risk management

[17] The 2006 BCP assessment was based on the standards as of 1999. The BCP principles have since been revised in 2006 and 2012.

[18] The authorities are working on signing MoUs with Austria and Italy.

guidance. In conjunction with strengthened corrective action powers, compliance with the regulations would improve the resiliency of banks and the ability of the agencies to impose early corrective measures.

41. **The quality of the financial audits of banks bears improvement**. As described earlier, the recent AQRs showed weaknesses that bank audits did not reveal. Currently, most domestic banks have implemented IFRS 2009, but several auditors refer in their audit opinion to the local law instead of IFRS, complicating the comparison between different financial statements and leaving the quality of the external audit open to question. Also, the external auditors are appointed only for a year which may have an adverse effect on the continuity of the auditor and the quality of the audit.

42. **Loan loss provisioning is based on International Accounting Standards (IAS) and prudential requirements.** The IAS provisioning levels may not be adequate as reflected by the adjustments required by inspectors during onsite reviews. The focus going forward should be on developing supervisory standards to encourage the conservative implementation by banks of factors to be considered in determining incurred losses under IAS and moving away from the current prudential standard.

43. **The governance of state-owned banks is a concern.** The supervisory boards of state-owned banks provide little strategic direction and do not hold bank management accountable for executing its strategy, for the prudent operation of the bank, or for establishing strong systems and controls. A rigorous oversight of the government's bank related exposures is warranted by the IRBRS. See the companion development Financial Sector Assessment (FSA) report by the World Bank (WB).

B. Insurance Sector: Further Progress Needed

44. **The prudential framework will need to be updated as the market develops.** The current framework, which is based on Solvency I, is not risk-sensitive and ill-suited for supervising more complex markets. As more than half of insurance premiums are related to the mandatory Motor Third Party Liability (MTPL) insurance, the framework supporting tariff-compliance needs substantial improvements. Major work is underway to liberalize the MTPL tariffs, with the potential to benefit consumers. However, such step should be preceded by the introduction of early warning systems, stress testing, and a risk-based solvency framework, with a ladder of interventions that could trigger timely prompt corrective action.

45. **A few key supervisory powers are missing and the complexity of the institutional setup requires stronger cooperation.** The powers to remove members of the supervisory board is missing and the RS-Insurance Supervision Agency (ISA) lacks the power to enforce the voiding of voting rights of qualified shared acquired without its approval. The FBiH-ISA cannot appoint provisional administration without withdrawing license of the insurer. The FBIH-ISA is understaffed and its independence needs to be safeguarded. The staff in both agencies should have stronger legal protection. By merging insurance supervision into the respective banking agencies could yield

some efficiency gains and simplify the institutional set-up. Consumer protection and financial literacy are in urgent need of development.

46. Group supervision is lacking and cooperation with banking supervisors is weak. The regulation and supervision of insurance groups needs to be strengthened. In particular, it is important to supervise holding companies, limit intra-group transactions and require fit and proper tests for controlling positions at the holding company. Also, a comprehensive group supervision framework should be implemented. Given the sizeable exposure of insurance sector to the banks, strengthening cooperation between insurance and banking supervisors should be encouraged.

C. Financial Market Infrastructure: Oversight Needs

47. The formal assessment of the real-time gross settlement system (RTGS) suggests that many of the principles are observed, but also points to key areas needing improvement. First, the finality and netting arrangements require greater legal certainty at the statutory level as it cannot be ruled out that a transaction settled in the RTGS can be revoked by a court order in the event of insolvency of a participant. Greater legal certainty could also be achieved by eliminating zero-hour rules in insolvency law. Second, a comprehensive risk-management framework needs to be developed that involves a formal identification of risks, risk mitigation measures, and monitoring. Third, liquidity risk management should be more robust (see paragraph 29). Fourth, operational risk in payment systems is well managed, but a recovery time objective needs to be established to ensure that operations can resume within two hours following a disruptive event. And fifth, efficiency could be enhanced with fee schedule reviews and the setting of minimum service levels.

48. The assessment of authorities' responsibilities suggests the lack of oversight powers, limited resources and supervisory capacity, and the need to broaden and deepen oversight cooperation with other competent authorities. The CBBH Law mainly establishes its operational responsibilities, but does not give it sufficient powers in the oversight of payment systems. Recommendations for improvements include: (i) clearly establish oversight responsibilities, including powers to designate financial market infrastructures, and to protect finality and netting; (ii) adopt the Principles for Financial Market Infrastructures into the regulatory framework; (iii) establish a new oversight unit within Payment Systems Department, which is staffed with sufficient resources to carry out oversight responsibilities; and (iv) develop a MoU to strengthen the oversight of clearing agents, settlement banks, international payment clearing, and cooperation with relevant authorities.

D. Capital Markets Regulation and Development

49. The legal and regulatory framework for the capital market is sound, but more effective implementation and cooperation is essential. The adoption of the EU directives and protocols has improved the legal framework, but the regulators lack the resources necessary to supervise the large number of listed firms and implement the rules and regulations already in place. BiH could benefit from following a model used within the EU where efforts are made to link-up national exchanges and to harmonize legislation and regulation without member states giving up their stock exchanges or their rights to regulate home markets. In this regard, a so-called "passporting" framework has been implemented that allows for issuers, investors and market intermediaries to operate in each other's national market, creating a vastly larger common market. The companion development FSA report by the WB provides further details.

E. AML/CFT Issues

50. The MONEYVAL 2009 Mutual Evaluation Report identified strategic deficiencies in the BiH's AML/CFT framework.[19] These are notably with respect to criminalization of money laundering and the implementation of customer due diligence measures. BiH agreed to an action plan to remedy these shortcomings. As significant items of the action plan remained unaddressed, MONEYVAL issued several public statements in 2014, calling upon members to apply enhanced due diligence measures to transactions with persons and financial institutions from or in the BiH. Important progress has since been made, notably with the enactment of a new AML/CFT law and amendments to the Criminal Code, but further delay in addressing the remaining deficiencies may result in additional scrutiny from the FATF, with potentially greater negative repercussions for the BiH. Timely and effective implementation of the action plan is therefore strongly recommended, as well as a national assessment of ML/TF risks and greater coordination and cooperation amongst State and Entity level agencies in charge of AML/CFT.

MACROPRUDENTIAL FRAMEWORK IN ITS INFANCY

51. The macroprudential toolkit is relatively underdeveloped, but is being extended. The main instrument is reserve requirements, which were used actively in response to the pre-crisis credit boom and the subsequent liquidity crunch. However, the CBBH is developing its capacity to monitor systemic risks through the use of top-down stress tests, and is working with the banking agencies, developed a methodology to identify systemic domestic banks. Also, the banking agencies have included elements of Basel III in capital regulation, such as capital conservation buffers and a leverage ratio, and intend to introduce countercyclical capital buffers and capital surcharges on systemic banks. There are also limits for open FX positions. In the insurance sector, macroprudential supervision is limited to market-wide analysis of observed trends affecting the insurance sector.

52. The authorities are encouraged to broaden the macroprudential framework, taking into account the constraints posed by the country's institutional set-up. This should be underpinned by broader and more focused cooperation among the CBBH, FBA and BARS. The existing MoU among the three institutions could be a good platform to coordinate the work on systemic risk and vulnerabilities, and the calibration of and timing for macroprudential tools. For example, the authorities should examine LTV and DTI levels, household and corporate indebtedness, and debtors' currency mismatches. The respective institutions should undertake high-level consultations on systemic risks at least quarterly. When the insurance sector develops further,

[19] MONEYVAL is the Financial Action Task Force (FATF)—style regional body of which BiH is a member.

considerations should be made given to introduce a macroprudential supervision framework encompassing the insurance sector.

KEY ROLE OF SYSTEMIC LIQUIDITY MANAGEMENT UNDER THE CURRENCY BOARD

53. There are constraints on the ability of both banks and the CBBH to manage liquidity.[20] The system lacks a central bank liquidity window, and the secondary market for government securities is also small and illiquid. Despite the existing infrastructure, money market and interbank markets are also relatively small, reflecting both high levels of bank liquidity and the fact that foreign banks' internal risk management practises aim to minimise exposures vis-à-vis the domestically-owned banks. Given the CBA, the aforementioned limitations call for conservative liquidity management and liquidity buffers for banks.

54. The use of reserve requirements should be better tailored towards prudential purposes. There is scope to amend the system to support systemic liquidity management. First, the CBBH contemplates very harsh penalties for non-complying with RRs. In times of stress, the CBBH could consider increasing the flexibility of RR holdings and introducing daily or period-minimum holding thresholds. This should be combined with higher penalty rates, accompanied by enhanced supervision, before sanctions are applied. Second, for the RR base, the CBBH should consider residual maturities and set a minimum daily requirement. Moreover, some exemptions for non-resident deposits introduced during from the recent global financial crisis should be eliminated. Lastly, the CBBH should consider the adequacy of existing RR levels, since they were significantly lowered during the financial crises.

55. Liquidity regulations should be streamlined and the adoption of the LCR would strengthen liquidity management. For the purpose of maturity calculations of liquidity ratios, it would important to take into account early deposit withdrawal options. The minimum liquidity ratio should be raised above the RR to ensure that it is binding. Upon adoption of the LCR, care would be needed in treating RRs as high quality liquid assets (HQLA), given their uncertain availability to meet liquidity pressures. Also, there could be a need to calibrate the haircut applied to public securities for the purposes of the LCR, given the shallow market, the assumptions for deposits/borrowed funds run-off rates, and the treatment of liabilities maturing after 30 days with a prepayment clause. Given the high level of euroization, currency-specific LCRs should also be considered. The design and calibration of the revised and new liquidity regulations should be also reinforced by a quantitative impact study based on historical data with a special emphasis on stress situations.

[20] A number of limitations are related to the legal framework underpinning the CBA which requires all CBBH domestic liabilities to be backed by foreign net assets. Also, the CBBH Law does not allow the CBBH to grant any credit and engage in money market operations "involving securities of any type," ruling out emergency liquidity assistance and a standing liquidity facility.

CONSTRAINED FINANCIAL SAFETY NET

56. A number of key elements in the financial safety arrangements are either not present or not adequately developed. The main areas of deficiency are the lack of a comprehensive remedial action program, the inadequacy of resolution powers, and the inability to provide temporary emergency liquidity support to soundly capitalized and well managed banks.

A. Crisis Preparedness Framework

Correction Action Arrangements

57. The banking agencies have statutory authority to require corrective actions by banks, but enforcement powers are limited. The agencies have developed guidance on the use of corrective powers, including setting out triggers for corrective actions based on breaches of capital, liquidity, and asset quality requirements. However, their authority to impose financial penalties for noncompliance, or to permanently suspend board members and controlling owners is limited, except under provisional administration. Similarly, the authority for replacing or restricting the powers of controlling owners outside of provisional administration is also limited. This leads to regulatory forbearance, which should be avoided unless it is based on sound supervisory judgment and steps to ensure that banks are taking satisfactory remedial measures.[21]

Deposit Insurance Agency

58. The deposit insurance framework is a relatively well developed paybox scheme. The DIA is funded by member banks with reserves of about KM 285 million (€ 145 million) representing approximately 4½ percent of insured deposits. It is supported by a €50 million standby facility with the EBRD. The DIA has the infrastructure in place required for an effective deposit insurance framework, including MOUs to support coordination with the banking agencies, regular testing of depositor data and procedures for making deposit pay-outs.

59. The formal assessment of the DIA against the IADI standards suggests that the majority of the principles are compliant or largely compliant. The DIA has been constantly improving its legal framework and capacity and developed a sound governance framework and has a well-designed depositor reimbursement system capable of payouts, which includes the regular testing of depositor data.[22]

60. However, further enhancements of the deposit insurance arrangements would be beneficial. These would include (i) establishing the capacity for making prompt pay-outs to insured

[21] The draft banking laws are expected to provide the banking agencies much more comprehensive powers to facilitate prompt correction and resolution action.

[22] See companion development FSA by the WB for details on compliance with IADI's Core Principles for Effective Deposit Insurance Systems.

depositors, in line with the EU relevant directive; (ii) amending legislation to establish the means for the prompt pay out of depositors and authorize the use of DIA funds to facilitate a purchase and assumption transaction (P&A) under the least cost solution (see resolution section below); and (iii) ensuring that the DIA is involved at an early stage in the problem bank resolution process with bank supervision agencies.

Coordination and Contingency Planning

61. Better coordination is essential. All relevant authorities in the SCFS should ensure that the inter-agency contingency plan includes guidance on the actions required by the relevant SCFS members if a bank is closed, including public communications to minimize contagion. The MoU establishing the SCFS sets out the objectives and principles for bank resolution, responsibilities of the respective authorities and coordination procedures. Broadening the focus of the SCFS to include small banks in circumstances where their distress could have implications for financial stability is recommended.

62. Contingency plans were prepared in 2014 by the relevant agencies and a coordinated contingency plan was developed by the SCFS. While these represent significant progress, the plans need to be revised to incorporate procedures to manage each stage of a crisis, such as systemic impact assessment, diagnostics, assessment and implementation of resolution options, cross-border coordination and communications with relevant stakeholders. Regular crisis simulation testing is also required as part of the contingency planning and capacity-building process.

63. Cross-border cooperation and coordination requires attention. Currently, the banking agencies and other relevant authorities have no specific crisis resolution related arrangements with their respective foreign counterparts. Given the systemic importance of several foreign banks to the BiH financial system, this creates a significant risk of inadequate coordination with the home authorities to achieve a satisfactory whole-of-group resolution that would require the signing of MoUs (see paragraph 38).

B. Crisis Management Framework

Creating a Bank Resolution Framework

64. Building on recent initiatives, further progress is required to strengthen the financial safety net. Although improvements have been made to some of the legal powers for resolution in recent years and the authorities have developed financial crisis contingency plans, significant deficiencies remain in the financial safety net, including in respect of resolution powers, institutional responsibility for resolution, and recovery and resolution planning. As a consequence, the authorities are currently not well placed to implement bank resolution in the form of P&A, bridge bank, or bail-in, in a manner consistent with maintaining financial stability, avoiding public funding and minimizing moral hazard. The high level of NPLs in the banking system and the number of banks in various levels of stress make it imperative that the deficiencies in the financial safety net framework are given high priority.

65. There is a need to establish a resolution authority. At present, FBA and BARS have some resolution powers but are not formally designated as, or equipped, to be resolution authorities. The proposed new banking laws need to establish clear responsibility for bank resolution with appropriate accountability and transparency. Ideally, resolution powers should be vested in the DIA, establishing it as the resolution authority, but this would appear impossible in BiH owing to institutional constraints. Therefore, the team suggested instead to vest resolution powers in FBA and BARS and designate them as the resolution authorities for the banks in their respective jurisdictions. This would enable synergies to be reaped between the supervisor, in its responsibility to exercise early intervention, and the resolution authority, in executing resolution. However, this would require designing governance and accountability arrangements to avoid potential conflicts of interest. And if this option were to be taken forward, it would also be appropriate for the DIA management board to include representatives of the two banking agencies.

66. The scope to draw on the existing deposit insurance fund (DIF) should be broadened for funding bank resolution. Currently, the DIF currently can only pay out insured deposits. The DIF should be allowed to participate in bank resolution subject to it being least cost solution—i.e., up to the amount that would have been expended for insured depositor reimbursement in a liquidation—including P&A transactions. However, DIF resources should not be used to provide open bank assistance.

67. Over time, the safety net could be broadened by establishing a Financial Stability Fund (FSF) under the DIA for open bank assistance. Such assistance in a systemic crisis should be provided only if necessary to preserve financial stability and where there is no new capital forthcoming from private creditors. To protect the taxpayer, the FSF backstop option should be subject to a set of clearly defined criteria. Most importantly, all losses in failed banks should be absorbed up-front by existing shareholders, but also by other creditors according to the hierarchy of claims in liquidation and subject to financial stability considerations. This option should be used under strict conditions that minimize the risk of moral hazard and allow for ex-post recovery from the banking industry.[23]

Limited and Temporary Emergency Liquidity Assistance in the Context of a Currency Board

68. The CBBH is constrained from performing any Lender of Last Resort (LOLR) functions. Central banks in currency board arrangements usually face limits, but these are especially strict in the BiH: the CBBH Law does not allow the CBBH to grant any credit and engage in money market operations “involving securities of any type.” Moreover, the net excess reserves under the currency board arrangements are usually very limited to provide any meaningful basis for LOLR functions.

[23] The FSF could be based on the principles of the EU Bank Recovery and Resolution Directive (BRRD) with added limited and temporary liquidity support functions (see below).

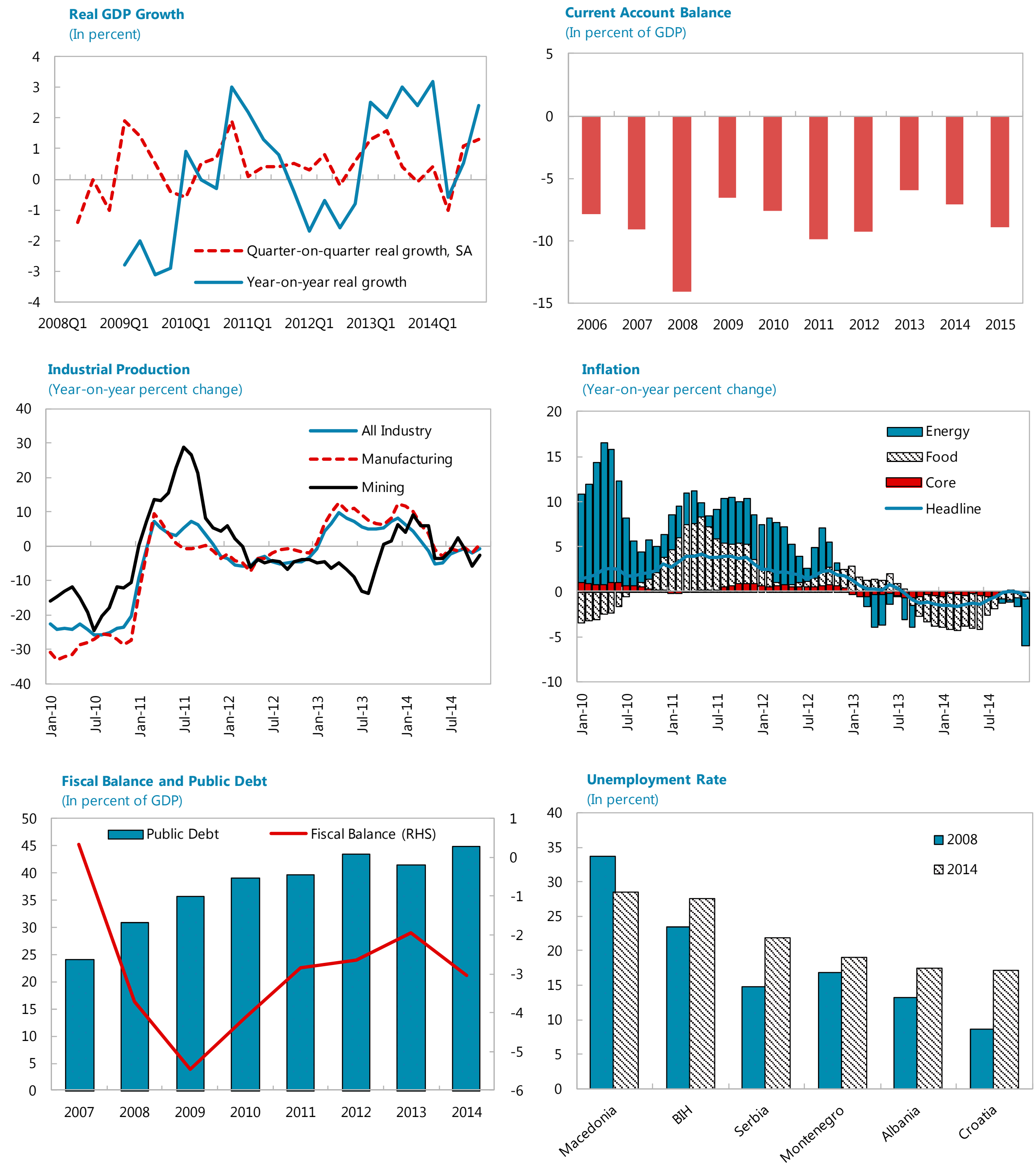
69. The FSF described above could also be designed to provide very limited liquidity support to solvent banks in the case of acute liquidity stress. The limited and temporary liquidity support—as an early prompt corrective action tool—should be triggered only after the bank has used all the available liquidity management options, including the interbank market, parent bank funding if available, and its reserve requirements—the framework of which should be amended along the lines recommended in paragraph 54. Moreover, such support should only be available to systemic banks that comply with the supervisory capital requirements, are under sound management, and have sufficient collateral or guarantees to cover credit risks for the liquidity provider.

70. Emergency liquidity support should be accompanied by enhanced monitoring and supervision to minimize moral hazard. The compliance with the terms and conditions of the use of the limited and temporary liquidity support would be monitored by the applicable banking agency, which would take enforcement actions as required. An un-remedied breach of the FSF terms and conditions would be grounds for the relevant banking agency to exercise resolution powers.

71. The FSF could be financed through ex-ante levies on banks and with the capacity for ex-post levies on banks to cover costs and any losses sustained by the fund. The FSF could be also supported by possible financing from an international financial institution (IFI). There could be scope to further support the FSF by switching a portion of potential increases in RR into the FSF. The FSF would be administered by the DIA and separated from the DIF. The FSF should be protected with various safeguards. These would include the objectives of the fund, the purposes for which it may be used, the preconditions for invoking it and the governance arrangements.

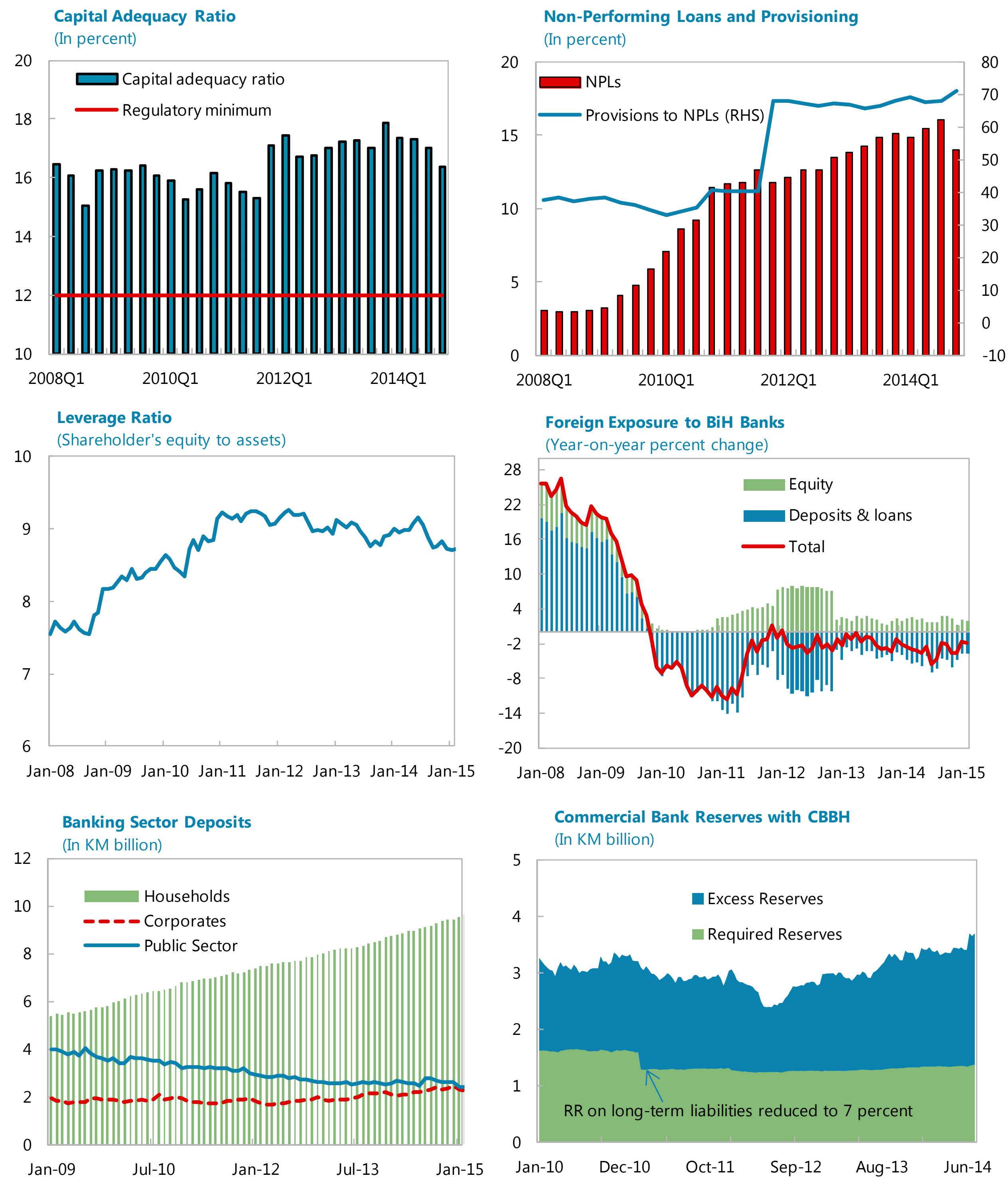
Appendix I. Figures and Tables

Appendix Figure 1. Economic Developments



Sources: Bosnia and Herzegovina Authorities; and IMF staff estimates.

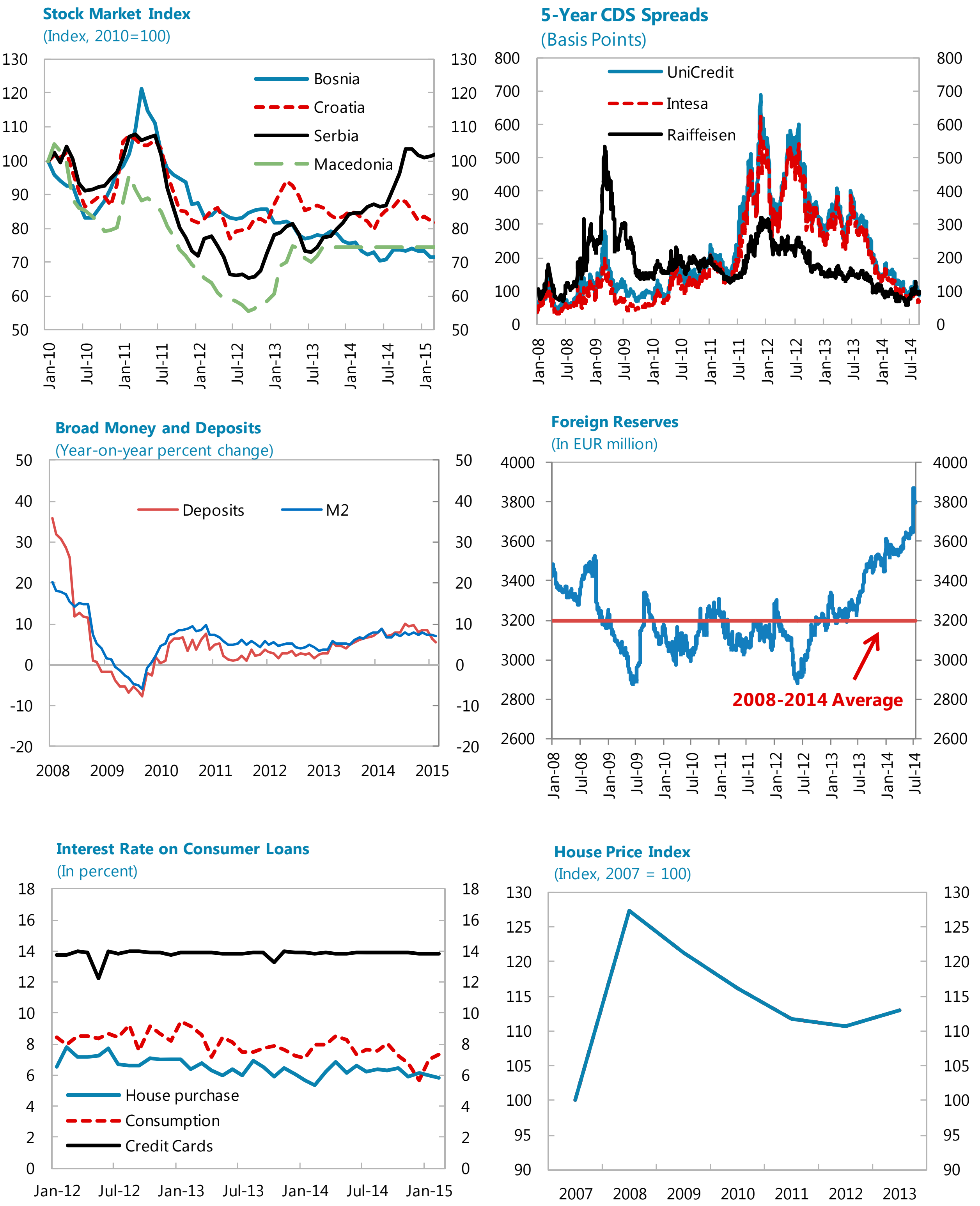
Appendix Figure 2. Banking Sector Developments



Sources: CBBH, and FBIH and RS Banking Agencies.

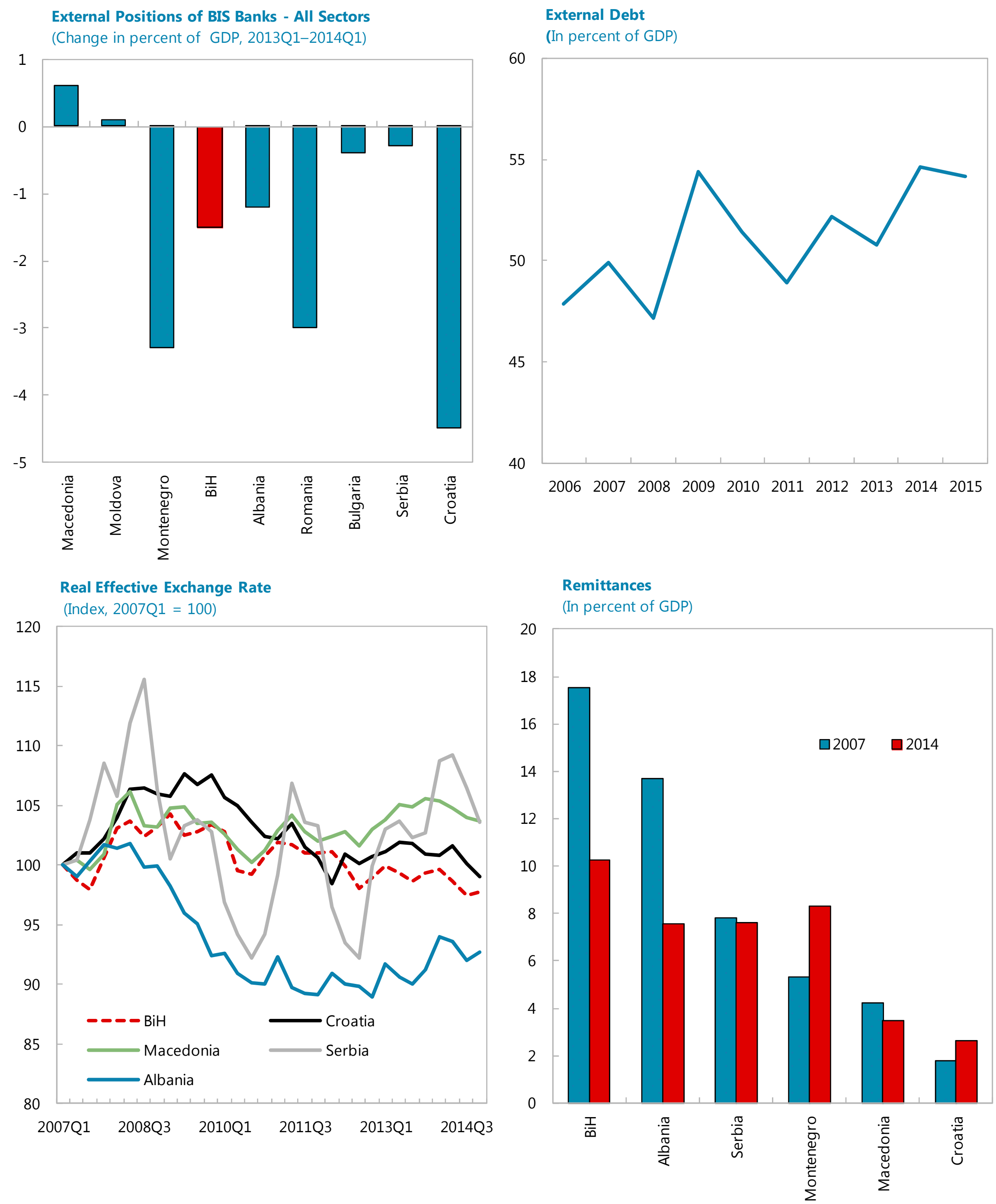
Note: Prior to 2010, assets classified as loss, alongside the provisions made against them, were held off-balance sheets by banks in BiH. This lowered the reported NPL ratios and coverage of nonperforming loans by provisions. Starting with the December 2010 date in the RS, and the December 2011 date in the Federation, banks recorded on-balance sheet the “loss” loans and related accrued interest and provisions, resulting in a structural break in the series.

Appendix Figure 3. Monetary and Capital Market Developments



Source: CBBH.

Appendix Figure 4. External Sector Developments



Sources: CBBH and BIS.

Appendix Table 1. Selected Economic Indicators, 2012-2018

	2012	2013	2014	2015	2016	2017	2018
			Est.		Proj.		
Nominal GDP (in KM million)	25,734	26,297	26,500	27,124	28,380	29,913	31,688
Gross national saving (in percent of GDP)	8.9	11.0	11.1	9.8	10.7	11.7	12.5
Gross investment (in percent of GDP)	18.1	17.0	18.2	18.8	18.9	18.9	18.9
			(Percent change)				
Real GDP	-1.2	2.5	0.8	2.3	3.1	3.6	3.8
CPI (period average)	2.0	-0.1	-0.9	0.6	1.1	1.2	1.3
Money and credit (end of period)							
Broad money	3.4	7.9	7.8	4.5	5.3	5.4	5.9
Credit to the private sector	2.8	2.3	1.7	2.1	2.8	4.9	6.5
Operations of the general government			(In percent of GDP)				
Revenue	46.3	45.3	46.5	47.1	47.7	47.9	48.0
Of which: grants	2.2	2.4	2.7	2.8	3.0	3.2	3.3
Expenditure	48.9	47.2	49.6	49.6	49.6	49.3	49.0
Of which: investment expenditure	6.3	6.4	7.3	7.7	7.8	8.0	8.1
Net lending	-2.7	-1.9	-3.1	-2.4	-1.9	-1.3	-1.0
Net lending, excluding interest payment	-1.9	-1.2	-2.3	-1.5	-0.7	-0.1	0.1
Total public debt	42.7	42.6	45.9	47.3	47.1	46.1	43.7
Domestic public debt	14.9	14.4	15.3	14.6	14.1	13.6	13.9
External public debt	27.8	28.2	30.5	32.7	33.0	32.5	29.8
Balance of payments			(In EUR million, unless otherwise indicated)				
Exports of goods and services	4,062	4,306	4,455	4,663	5,068	5,424	5,767
Imports of goods and services	7,278	7,152	7,562	7,984	8,480	8,882	9,290
Current transfers, net	1,881	1,879	1,978	1,902	2,028	2,126	2,231
Current account balance	-1,215	-797	-954	-1,243	-1,184	-1,110	-1,041
(In percent of GDP)	-9.2	-5.9	-7.0	-9.0	-8.2	-7.3	-6.4
Foreign direct investment (+=inflow)	260.3	224.7	280.8	362.9	390.2	419.9	452.0
(In percent of GDP)	2.0	1.7	2.1	2.6	2.7	2.7	2.8
Gross official reserves	3,326	3,613	3,997	4,184	4,410	4,801	4,949
(In months of imports)	5.6	5.7	6.0	5.9	6.0	6.2	6.1
External debt (in percent of GDP)	52.2	51.0	51.7	56.3	56.5	55.6	52.4
External debt service to GNFS exports (percent)	12.6	13.7	14.5	12.6	12.7	13.6	12.8

Sources: BiH authorities; and IMF staff estimates and projections.

Appendix Table 2. Financial System Structure, 2005-2014

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014Q1
Number										
Banks 1/	33	32	32	30	30	29	29	28	27	27
of which: Foreign-majority owned banks 2/3/	20	22	21	21	21	19	19	19	17	15
Domestic private banks 3/	7	5	8	7	7	9	9	8	8	10
Domestic state-owned banks	6	5	3	2	2	1	1	1	2	2
Insurance and reinsurance companies	24	24	26	26	27	26	26	25	25	...
Investment funds (asset management companies)	24	24	28	32	33	32	32	33	34	...
Leasing companies	6	6	8	9	9	9	9	9	8	...
Microcredit organizations	50	...	24	27	26	25	25	22	19	...
Stock exchanges	2	2	2	2	2	2	2	2	2	...
Brokerage houses	17	18	27	26	23	20	17	15	13	...
Financial system assets (in KM million)										
Banks 1/	11,726	14,683	19,570	20,813	20,608	20,416	20,995	21,186	22,023	21,862
of which: Foreign-majority owned banks (percent of total bank assets) 3/	90.8	94.0	93.8	95.0	94.5	92.8	92.1	91.9	90.5	82.4
Domestic private banks (percent of total bank assets) 3/	5.6	2.8	4.3	4.1	4.7	6.4	7.0	7.1	7.4	15.6
Domestic state-owned banks (percent of total bank assets)	3.6	3.2	1.9	0.9	0.8	0.8	0.9	1.0	2.1	2.1
Insurance and reinsurance companies	676	708	853	889	933	936	1,080	1,174	1,232	...
Investment funds (asset management companies)	1,793	1,553	1,762	1,225	871	888	810	796	762	...
Leasing companies	660	1,025	1,378	1,607	1,416	744	767	716	597	...
Microcredit organizations	314	488	946	1,213	1,087	853	742	676	667	...
Stock exchanges	3	5	7	7	7	7	8	7	8	...
Brokerage houses	1	5	7	4	4	7	6	4	4	...
Financial system assets (in percent of total assets)										
Banks 1/	77.3	79.5	79.8	80.8	82.7	85.6	86.0	86.3	87.1	...
Insurance and reinsurance companies	4.5	3.8	3.5	3.5	3.7	3.9	4.4	4.8	4.9	...
Investment funds (asset management companies)	11.8	8.4	7.2	4.8	3.5	3.7	3.3	3.2	3.0	...
Leasing companies	4.4	5.5	5.6	6.2	5.7	3.1	3.1	2.9	2.4	...
Microcredit organizations	2.1	2.6	3.9	4.7	4.4	3.6	3.0	2.8	2.6	...
Stock exchanges	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...
Brokerage houses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	...
Nominal GDP (in KM million)	17,148	19,567	22,065	24,984	24,307	24,879	25,772	25,734	26,297	6,091
Exchange rate (KM to USD, eop)	1.66	1.49	1.33	1.39	1.36	1.47	1.51	1.48	1.42	1.42

Sources: Central Bank of Bosnia and Herzegovina (CBBH); Banking Agency of FBiH; Banking Agency of RS; and Agency for Statistics of Bosnia and Herzegovina.

1/ Data of banks are from the supervisory data, and data of non-banking insitutions are from the statistical MFS data.

2/ The foreign-owned banks are subsidiaries of large foreign banks.

3/ One bank's ownership changed from foreign to domestic in Q3 2014. Another foreign bank (according to CBBH) is classified as a domestic private bank here because the major owners have dual citizenship (BiH and US) and the other shareholders are mostly domestic.

Appendix Table 3. Financial Soundness Indicators of the Banking System

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Capital adequacy										
Regulatory capital (in KM million)	1,488	1,861	2,345	2,637	2,642	2,739	2,860	2,821	2,995	2,784
Regulatory capital to risk-weighted assets (RWAs)	17.8	17.7	17.1	16.2	16.1	16.2	17.1	17.0	17.8	16.4
Asset quality										
Non-performing loans (NPLs) to gross loans	5.3	4.0	3.0	3.1	5.9	11.4	11.8	13.5	15.1	14.0
Provisions to NPLs	...	...	...	...	34.5	43.7	66.3	65.9	66.7	70.2
NPLs net of provisions to Tier 1 capital	...	...	...	...	25.5	42.0	25.9	30.0	31.0	27.0
Earnings and profitability										
Return on average assets (ROAA) 1/	0.7	0.9	0.8	0.4	0.1	-0.6	0.7	0.6	-0.2	0.8
Return on average equity (ROAE) 2/	6.2	8.4	8.6	4.2	0.8	-5.5	5.8	4.9	-1.4	6.0
Gross income to average assets	7.6	7.0	6.4	5.8	5.6	5.8	5.9	5.7	5.6	1.4
Net interest income to gross income	54.1	54.3	59.7	60.6	61.5	60.1	63.9	63.7	62.3	61.5
Non-interest expenses to gross income	90.1	86.5	85.1	90.6	97.4	109.0	86.5	87.4	101.2	83.9
Liquidity										
Liquid assets to total assets	36.1	35.9	37.7	30.0	30.9	29.0	27.2	25.4	26.4	26.8
Liquid assets to short-term liabilities	61.9	60.8	61.3	51.8	53.0	49.7	46.7	44.1	46.2	46.1
Deposits to assets (excluding interbank deposits)	58.0	58.9	60.9	55.1	56.0	58.8	59.1	60.5	62.2	64.4
Loans to deposits	103.8	102.5	97.2	122.3	116.9	116.0	117.9	118.6	114.8	108.2
Sensitivity to market risk										
Net long position in foreign exchange to Tier 1 capital	8.3	9.1	5.9	6.2	1.7	4.4	16.0	5.3	6.7	11.1
Foreign-currency-denominated loans to total loans	68.7	71.0	74.1	73.3	73.9	70.0	66.9	63.1	62.9	62.4
Foreign-currency-denominated liabilities to total liabilities	64.4	62.8	65.1	69.5	69.2	67.0	66.2	65.2	63.8	62.7

Sources: CBBH; Banking Agency of FBiH; and Banking Agency of RS.

1/ Net income as percent of average assets.

2/ Net income as percent of average equity capital.

Appendix Table 4. Financial Soundness Indicators of the Insurance Sector

	2009	2010	2011	2012	2013
	(In percent, unless otherwise specified)				
Non-life					
Capital adequacy					
Net premium as percent of capital	146.9	147.2	141.0	137.3	141.5
Reinsurance and actuarial issues					
Risk retention ratio (net premium as percent of gross premium)	89.2	87.5	80.6	82.6	82.7
Net technical reserves as percent of average net claims paid in last three years	195.7	186.7	191.1	201.9	203.6
Net technical reserves as percent of average net premium received in last three ye	92.1	88.2	91.6	96.3	92.5
Claims performance ratio					
Claims outstanding as percent of total claims paid	78.6	83.4	84.6	88.7	86.5
Liquidity					
Liquid assets as percent of current liabilities	404.3	409.8	443.9	359.3	626.7
Life					
Capital adequacy					
Capital as percent of technical reserves	26.3	23.3	21.5	20.7	19.1
Life and nonlife solvency status (in number of institutions)					
Actual solvency margin/minimum: <100 %	4	4	4	5	1
Actual solvency margin/minimum: 100-110 %	5	4	2	7	6
Actual solvency margin/minimum: 110-125 %	5	2	4	3	1
Actual solvency margin/minimum: 125-150 %	5	8	6	2	7
Actual solvency margin/minimum: >150 %	10	11	12	11	11

Source: Insurance Agency of BiH.

Appendix Table 5. Risk Assessment Matrix

Nature/Source of Main Threats	Overall Level of Concern (high, medium, or low)	
	Likelihood of Severe Realization of Threat in the Next 1–3 Years	**Expected Impact on Financial Stability if Threat is Realized**
1. Bond market stress from a reassessment in sovereign risk in the euro area,[24] or protracted period of slower growth in the euro area.	**Staff assessment: Low** • Financial stress in the euro area could re-emerge and bank-sovereign-real economy links could re-intensify as a result of stalled or incomplete delivery of policy commitments. • Euro area corporate and bank deleveraging as well as fiscal drag could affect the growth outlook for the euro and lead to heightened turmoil in financial markets.	**Staff assessment: Medium** • Euro area countries are BiH's largest trading partners. Export activity and revenues will be severely disrupted. • Remittances from euro area countries are sizeable and a large source of foreign exchange and banks' liquidity and deposits. • FDI and other capital flows may also come to a halt, further deteriorating BiH's growth outlook. • Given currency board arrangement, lower availability of FX will constrain base money. • Banks will likely suffer from funding retrenchment and asset quality deterioration due to the increase in NPLs. *The assessment ("medium") was based on the stress test results from the solvency stress test (adverse scenarios 1 and 2).*
2. Geopolitical tensions surrounding Russia/Ukraine.[25]	**Staff assessment: Medium** • These geopolitical tensions create significant disruptions in global financial, trade and commodity markets. • Disruptions in commodity production or transport raise oil and gas prices in Europe and neighboring countries. • Increased uncertainty and lower confidence could trigger a permanent increase in risk aversion that reduces global equity prices.	**Staff assessment: Low** • Russian banks own subsidiaries in European countries, which themselves are the parent companies for banks in BiH. • Banks would suffer from a potential funding retrenchment from the "grand-parent" banks. • Demand for BiH exports from Russia and neighboring countries would fall. *The assessment ("low") was based on the stress test results from the solvency stress test (adverse scenario 1; particularly, low impact on BiH's real GDP growth).*
3. External funding: Parent banks remove support of local subs and/or decide to withdraw from BIH market.	**Staff assessment: Medium** • As euro area banks address balance sheet strains they may opt to limit presence in the region as well as BiH. • AQR exercise may result in additional recapitalization needs and further balance sheet strains.	**Staff assessment: Medium** • BiH banking sector dominated by foreign banks, accounting for 82 percent of the sector's assets. • Subsidiaries of foreign banks are still reliant on parent bank support: while banks are becoming more reliant on domestic deposits, parent bank loans and deposits are still sizeable. • Parent bank capital still one of few options to raise fresh capital in BiH.

[24] In line with Risk #7 in the September 2014 Global Risk Assessment Matrix (GRAM).

[25] In line with Risk #4 in the September 2014 Global Risk Assessment Matrix (GRAM).

Appendix Table 5. Risk Assessment Matrix (concluded)

Nature/Source of Main Threats	Overall Level of Concern (high, medium, or low)	
	Likelihood of Severe Realization of Threat in the Next 1–3 Years	**Expected Impact on Financial Stability if Threat is Realized**
	• With limited capital available, in the competition for foreign capital and foreign bank funding, BiH banks are at a disadvantage given complex regulatory and institutional system.	• Repatriation of parent bank deposits may severely constrain liquidity in some large foreign-owned banks. • Confidence effects of foreign banks withdrawing from BiH could be significant. Depositors still trust the foreign bank brand. Domestic banks too small to compensate for intermediation loss. *The assessment ("medium") was based on liquidity stress test results using LCR and NSFR proxies for BiH's banking system.*
4. Further deterioration in the health of commercial banks and confidence loss by bank depositors.	**Staff assessment: Medium** • Slow economic activity could increase NPLs and require bank recapitalization. • A depositor confidence loss could lead to banking system liquidity shocks. • Addressing the ongoing deterioration of asset quality has been challenging, and hopes that growth recovery would restore bank balance sheets have not materialized. The high stock of NPLs constitutes a looming contingent liability for the state/public sector.	**Staff assessment: High** • Higher NPLs will call for additional provisioning, also negatively affecting banks' profits. • Bank recapitalization could be problematic in the absence of parent bank support. • Authorities unlikely to have the resources/framework to deal with problems in a large bank. • Liquidity strains may turn into solvency problems. • Currency Board Arrangement and lack of LOLR facilities limit the range of options available. *The assessment ("high") was based on the solvency stress test results (adverse scenarios 1 and 2) and liquidity stress tests using LCR and NSFR proxies.*
5. Unavailability of official budget financing and sovereign debt restructuring.	**Staff assessment: Low** • A challenging political and economic climate and difficult policy coordination could derail progress under the SBA and lead to unavailability of (or delay in) official budget support. • Entity governments have limited sources of alternative financing, already having saturated the domestic market. Pricing and availability of additional budget financing will become an issue.	**Staff assessment: Low** • Sluggish growth and weak tax revenue may complicate the servicing of domestic debt and a run-up in arrears. This may lead to additional austerity measures and weaker domestic demand, thus impacting banks' credit activity. • Both foreign and domestic banks have accumulated government securities through their purchases of entity debt. A potential restructure (or default) of entity government's debt would somewhat impact banks' balance sheets. • The official sector may be forced to accelerate the withdrawal of their banks' deposits, compromising banks' liquidity position. *The assessment ("low") was based on the stress test results from the solvency stress test and sensitivity analysis.*

Appendix Table 6. Banking System Assets, end-March 2014

Bank Name	**Total Assets** *(Percent of total banking assets in BiH)*	**Total Assets** *(Percent of total banking assets in the Entity)*	Ownership
	Federation of Bosnia and Herzegovina (FBiH)		
Raiffeisen bank d.d. Bosna i Hercegovina	17.4	24.9	Foreign bank (Austria)
UniCredit bank d.d.	16.7	24.0	Mostly foreign bank (Italy)
Intesa Sanpaolo banka d.d. Sarajevo	6.1	8.8	Mostly foreign bank (Italy)
Hypo Alpe-Adria bank d.d. Mostar	5.0	7.2	Foreign bank (Austria)
Sparkasse bank d.d.	4.6	6.5	Mostly foreign bank (Austria)
Sberbank BH d.d.	4.0	5.7	Foreign bank (Russia)
NLB banka d.d.	3.8	5.5	Mostly foreign bank (Slovenia)
Bosnia bank international d.d. Sarajevo	2.5	3.6	Foreign bank (UA Emirates and Dubai, 54.5%; and Saudi Arabia, 45.5%)
Ziraatbank BH d.d.	1.8	2.6	Foreign bank (Turkey)
ProCredit bank d.d.	1.6	2.4	Foreign bank (Germany)
Vakufska banka d.d. Sarajevo	1.3	1.9	Mostly domestic private bank
BOR banka d.d.	1.1	1.5	Mostly domestic private bank
UNION banka d.d.	1.0	1.5	State-owned bank
Investiciono Komercijalna banka d.d.	0.9	1.3	Mostly domestic private bank
Moja banka d.d.	0.8	1.2	Mostly domestic private bank
Privredna banka d.d	0.7	1.0	Mostly domestic private bank
Komercijalno Investiciona banka d.d.	0.3	0.5	Mostly domestic private bank
	Republika Srpske (RS)		
Nova banka a.d.	6.9	22.8	Mostly domestic private bank 1/
NLB Razvojna banka a.d.	5.5	18.2	Mostly foreign bank (Slovenia)
Hypo Alpe-Adria bank a.d.	5.2	17.3	Mostly foreign bank (Austria)
UniCredit bank a.d.	4.1	13.5	Mostly foreign bank (Austria)
Sberbank a.d.	2.8	9.2	Mostly foreign bank (Russia)
Bobar banka a.d.	1.6	5.2	Mostly domestic private bank
Komercijalna banka a.d.	1.2	3.8	Foreign bank (Serbia)
Pavlovic international bank a.d.	1.2	3.8	Mostly domestic private bank 2/
Banka Srpske a.d.	1.1	3.5	State-owned bank
MF banka a.d.	0.8	2.6	Domestic private bank

Sources: Banking Agency of FBiH; Banking Agency of RS, and staff calculations..
1/ The ownership of this bank changed in Q3 2014 from a mostly foreign bank to a mostly domestic private bank.
2/ This bank is classified as a mostly domestic private bank because the majority owners of this bank have dual citizenship (BiH and the U.S.) and the other shareholders are mostly domestic.

Appendix Table 7. Stress Test Matrix (STeM) for the Banking Sector: Solvency, Liquidity, and Contagion Risks				
Domain		Assumptions		
		Bottom-Up by Banks (if applicable)	Top-Down by Authorities (if applicable)[26]	Top-down by FSAP Team (if applicable)
BANKING SECTOR: SOLVENCY RISK				
1.Institutional Perimeter	Institutions included	• All banks (27 banks).	• All banks (27 banks).	• All banks (27 banks).
	Market share	• Percentage of total sector assets: 100 percent.	• Percentage of total sector assets: 100 percent.	• Percentage of total sector assets: 100 percent.
	Data and baseline date	• Supervisory data. • Banks' own data.	• Supervisory data.	• Supervisory data. • Publicly available data.
2. Channels of Risk Propagation	Methodology	• Combination of banks' own internal models and pre-defined benchmarks.	• CBBH's stress testing framework supplemented with the IMF balance sheet stress testing framework.	• IMF balance sheet stress testing framework (tailor-made for the Bosnia and Herzegovina FSAP).
	Satellite Models for Macro-Financial linkages	• Banks' own models for credit losses, pre-impairment income,; expert judgment.	• CBBH's models supplemented with IMF's econometric models for credit losses, pre-impairment income; expert judgment.	• IMF's econometric models for credit losses, pre-impairment income; expert judgment.
	Stress test horizon	• 5 years (2015-2019).	• 5 years (2015-2019)	• 5 years (2015-2019)
3. Tail shocks	Scenario analysis	• Shocks based on GDP trajectories, and translated in a consistent manner to all other variables in the macro-scenarios. • Three scenarios: baseline scenario; moderate external	• Shocks based on GDP trajectories, and translated in a consistent manner to all other variables in the macro-scenarios. • Three scenarios: baseline scenario; moderate external	• Shocks based on GDP trajectories, and translated in a consistent manner to all other variables in the macro-scenarios. • Three scenarios: baseline scenario; moderate external

[26] Solvency top-down stress tests to be done jointly by the FSAP team and the staff at the CBBH.

Appendix Table 7. Stress Test Matrix (STeM) for the Banking Sector: Solvency, Liquidity, and Contagion Risks (continued)

Domain		Assumptions		
		Bottom-Up by Banks (if applicable)	Top-Down by Authorities (if applicable)	Top-down by FSAP Team (if applicable)
		shock scenario; severe external shock scenario (implying output losses larger than those recorded in recent relevant historical crisis).	shock scenario; severe external shock scenario (implying output losses larger than those recorded in recent relevant historical crisis).	shock scenario; severe external shock scenario (implying output losses larger than those recorded in recent relevant historical crisis).
	Sensitivity analysis	• Single-factor shocks: interest rate; exchange rate; sovereign securities loss/haircut. • Credit concentration risk.	• Single-factor shocks: interest rate; exchange rate; sovereign securities loss/haircut. • Credit concentration risk.	• Single-factor shocks: interest rate; exchange rate; sovereign securities loss/haircut. • Credit concentration risk.
4.Risks and Buffers	Risks/factors assessed (How each element is derived, assumptions.)	• Comprehensive coverage of solvency risks: • *Credit risk*: credit risk on loan book; issuer default risk on government and corporate bond and other debt instrument holdings. • *Market risk*: interest rate risk impact on net interest income, government and corporate bond and other debt instrument holdings; FX risk. • *Equity investment-related risk* (includes both credit and market risk components).	• Comprehensive coverage of solvency risks: • *Credit risk*: credit risk on loan book; issuer default risk on government and corporate bond and other debt instrument holdings. • *Market risk*: interest rate risk impact on net interest income, government and corporate bond and other debt instrument holdings; FX risk. • *Equity investment-related risk* (includes both credit and market risk components).	• Comprehensive coverage of solvency risks: • *Credit risk*: credit risk on loan book; issuer default risk on government and corporate bond and other debt instrument holdings. • *Market risk*: interest rate risk impact on net interest income, government and corporate bond and other debt instrument holdings; FX risk. • *Equity investment-related risk* (includes both credit and market risk components).

Appendix Table 7. Stress Test Matrix (STeM) for the Banking Sector: Solvency, Liquidity, and Contagion Risks (continued)

Domain		Assumptions		
		Bottom-Up by Banks (if applicable)	Top-Down by Authorities (if applicable)	Top-down by FSAP Team (if applicable)
		• *Operational risk.*	• *Operational risk.*	• *Operational risk.*
	Behavioral adjustments	• Evolution of total assets and RWAs based on constant balance sheet assumption. • No management actions considered. • Other net income items, dividends, and taxes, based on macroeconomic scenarios and pre-determined rules.	• Evolution of total assets and RWAs based on constant balance sheet assumption. • No management actions considered. • Other net income items, dividends, and taxes, based on macroeconomic scenarios and pre-determined rules.)	• Evolution of total assets and RWAs based on constant balance sheet assumption. • No management actions considered. • Other net income items, dividends, and taxes, based on macroeconomic scenarios and pre-determined rules.
5. Regulatory and Market-Based Standards and Parameters	Calibration of risk parameters	• Expected losses or loan migration (downgrades) and changes in provisions based on banks' internal models. • Estimation of expected gains/losses on government and corporate bond holdings, real estate and equity investments based on banks' internal models.	• Expected losses or loan migration (downgrades) and changes in provisions based on satellite models. • Estimation of expected gains/losses on government and corporate bond holdings, real estate and equity investments based on satellite models (including gap and duration analysis).	• Expected losses or loan migration (downgrades) and changes in provisions based on satellite models. • Estimation of expected gains/losses on government and corporate bond holdings, real estate and equity investments based on satellite models (including gap and duration analysis).
	Regulatory/Accounting and Market-Based Standards	• Hurdle rates based on regulatory minimum for total regulatory capital (i.e., CAR of	• Hurdle rates based on regulatory minimum for total regulatory capital (i.e., CAR of	• Hurdle rates based on regulatory minimum for total regulatory capital (i.e., CAR of

Appendix Table 7. Stress Test Matrix (STeM) for the Banking Sector: Solvency, Liquidity, and Contagion Risks (continued)

Domain		Assumptions: Bottom-Up by Banks (if applicable)	Assumptions: Top-Down by Authorities (if applicable)	Assumptions: Top-down by FSAP Team (if applicable)
		• 12 percent). • Basel I rules.	• 12 percent). • Basel I rules.	• 12 percent). • Basel I rules.
6. Reporting Format for Results	Output presentation	• CAR, shortfall (if applicable). • Pass or fail; number of "undercapitalized" banks (i.e., with a CAR below 12 percent). • System-wide and by entity.	• CAR, shortfall (if applicable). • Pass or fail; number of "undercapitalized" banks (i.e., with a CAR below 12 percent). • System-wide and by entity.	• CAR, shortfall (if applicable). • Pass or fail; number of "undercapitalized" banks (i.e., with a CAR below 12 percent). • System-wide and by entity.
BANKING SECTOR: LIQUIDITY RISK				
1. Institutional Perimeter	Institutions included	• All banks (27 banks).		
	Market share	• Percentage of total sector assets: 100 percent.		
	Data and baseline date	• Supervisory data. • Banks' own data.		
2. Channels of Risk Propagation	Methodology	• Basel III LCR-type proxy. • Basel III NSFR-type proxy.		
3.Risks and Buffers	Risks	• Market liquidity. • Maturity mismatches.		
	Buffers	• Counterbalancing capacity (HQLA, ASF).		
4. Tail shocks	Size of the shock	• Haircuts and run-off rates as defined in Basel III for LCR and NSFR.		

Appendix Table 7. Stress Test Matrix (STeM) for the Banking Sector: Solvency, Liquidity, and Contagion Risks (continued)

Domain		Assumptions		
		Bottom-Up by Banks (if applicable)	Top-Down by Authorities (if applicable)	Top-down by FSAP Team (if applicable)
5. Regulatory and Market-Based Standards and Parameters	Regulatory standards	• LCR proxy should exceed 100 percent (not a legal/regulatory requirement). • NFSR proxy should exceed 100 percent (not a legal/regulatory requirement).		
6. Reporting Format for Results	Output presentation	• Pass rate, remaining buffers, and liquidity shortfall (if applicable). • System-wide and by entity.		
BANKING SECTOR: CONTAGION RISK				
1.Institutional Perimeter	Institutions included	• N/A	• N/A	• All banks (27); All insurance companies (25)
	Market share	• N/A	• N/A	• Percentage of total sector assets: 100 percent
	Data and baseline date	• N/A	• N/A	• Supervisory data. • Banks' own data. • Publicly available data.
2. Channels of Risk Propagation	Methodology	• N/A	• N/A	• Network analysis, using Espinosa-Vega and Solé (2010) methodology.
3. Tail shocks	Size of the shock	• N/A	• N/A	• Stress scenario with a credit shock: a severe stress in a bank or a banking system, causing a default on all of its liabilities to domestic institutions or foreign

Appendix Table 7. Stress Test Matrix (STeM) for the Banking Sector: Solvency, Liquidity, and Contagion Risks (concluded)

Domain		Assumptions		
		Bottom-Up by Banks (if applicable)	Top-Down by Authorities (if applicable)	Top-down by FSAP Team (if applicable)
				banks. • Stress scenario with a joint credit and funding shock when the default of a bank or a banking system also leads to a liquidity squeeze for those institutions funded by the defaulting bank or banking system.
4. Reporting Format for Results	Output presentation	• N/A	• N/A	• Capital impairment to domestic banking system, number of failed banks, and remaining buffers (at both banking-system level and bank level) • Capital impairment to domestic insurance sector, number of failed insurance companies, and remaining buffers (at both sector-wide level and company level).

Appendix Table 8. Macroeconomic Projections in the Stress Test Scenarios
(In percent, unless otherwise indicated)

	Historical				Projection					
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Baseline scenario:										
Real GDP growth	0.8	1.0	-1.2	2.1	0.7	3.5	3.7	4.0	4.0	4.0
CPI inflation	2.2	3.7	2.0	-0.1	1.1	1.5	1.8	2.0	2.1	2.1
Interest rates:										
Short-term interest rate	7.9	7.5	6.9	7.0	6.7	7.2	7.4	7.6	7.7	7.7
Long-term interest rate	8.4	7.5	7.8	7.1	7.3	7.5	7.7	7.8	7.8	7.8
Exchange rates:										
NEER (increase = appreciation)	100.0	100.5	99.5	101.6	109.2	109.8	110.5	111.2	111.8	112.5
REER (increase = appreciation)	100.0	100.8	98.9	99.9	100.6	100.1	99.8	99.6	99.6	99.5
House price index (2007=100):	116.2	111.7	110.7	113.0	110.4	117.8	124.4	130.6	135.3	138.7
Stock price index:										
Sarajevo stock exchange index (2007=100)	21.9	22.5	17.0	17.7	16.5	17.2	18.5	20.7	23.2	26.2
Banja Luka stock exchange index (2007=100)	25.0	28.2	23.3	21.8	20.3	21.1	23.0	25.9	29.4	33.5
Unemployment rate	44.4	44.9	45.5	44.6	44.5	43.2	41.8	40.4	39.0	37.8
Alternative scenario 1:										
Real GDP growth	0.8	1.0	-1.2	2.1	0.7	-2.0	0.0	0.5	0.8	1.0
CPI inflation	2.2	3.7	2.0	-0.1	1.1	2.2	2.4	2.7	2.7	2.8
Interest rates:										
Short-term interest rate	7.9	7.5	6.9	7.0	6.7	7.4	7.6	7.8	7.8	7.9
Long-term interest rate	8.4	7.5	7.8	7.1	7.3	7.6	7.7	7.9	7.9	7.9
Exchange rates:										
NEER (increase = appreciation)	100.0	100.5	99.5	101.6	109.2	108.0	107.9	107.9	107.9	107.8
REER (increase = appreciation)	100.0	100.8	98.9	99.9	100.6	98.9	98.4	98.1	97.9	97.7
House price index (2007=100):	116.2	111.7	110.7	113.0	110.4	105.0	99.9	95.8	91.1	86.4
Stock price index:										
Sarajevo stock exchange index (2007=100)	21.9	22.5	17.0	17.7	16.5	11.0	9.3	8.5	8.0	7.7
Banja Luka stock exchange index (2007=100)	25.0	28.2	23.3	21.8	20.3	12.5	10.4	9.3	8.6	8.1
Unemployment rate	44.4	44.9	45.5	44.6	44.5	45.1	44.2	43.1	41.4	39.9
Alternative scenario 2:										
Real GDP growth	0.8	1.0	-1.2	2.1	0.7	-7.1	-1.5	5.0	4.5	4.0
CPI inflation	2.2	3.7	2.0	-0.1	1.1	3.6	3.6	2.8	2.1	2.0
Interest rates:										
Short-term interest rate	7.9	7.5	6.9	7.0	6.7	8.1	8.2	8.1	7.7	7.6
Long-term interest rate	8.4	7.5	7.8	7.1	7.3	8.1	8.1	8.0	7.8	7.8
Exchange rates:										
NEER (increase = appreciation)	100.0	100.5	99.5	101.6	109.2	105.4	104.2	105.4	106.3	107.0
REER (increase = appreciation)	100.0	100.8	98.9	99.9	100.6	97.6	96.9	97.8	98.0	97.9
House price index (2007=100):	116.2	111.7	110.7	113.0	110.4	93.6	84.4	88.9	93.8	96.4
Stock price index:										
Sarajevo stock exchange index (2007=100)	21.9	22.5	17.0	17.7	16.5	4.2	3.2	4.0	5.0	5.9
Banja Luka stock exchange index (2007=100)	25.0	28.2	23.3	21.8	20.3	3.3	2.3	3.0	3.8	4.6
Unemployment rate	44.4	44.9	45.5	44.6	44.5	48.6	48.0	45.2	41.8	39.8

Source: Authorities historical data and IMF staff calculations.

1/ These scenarios are based on projections made in July 2014. Therefore, these numbers (in particular the projections for 2014) need to be interpreted in that context. In addition, the latest baseline projections from the IMF's Area Department team might differ slightly from those presented here. All numbers are period averages.

Note: The *moderate* adverse scenario illustrates an external shock driven mainly by a further weakening in the economic outlook of euro area countries, combined with a further deterioration of the current geopolitical crisis in Ukraine. The *severe* adverse scenario shows the external risks in the moderate scenario accompanied by a severe reduction in external funding for banks, compound with a further deterioration in the health of commercial banks and loss of confidence.

Appendix Table 9. Summary of the Solvency Stress Test Results – Entire Banking System (27 banks)
(In thousands of KM unless indicated otherwise)

	Baseline Scenario		Adverse Scenario 1		Adverse Scenario 2	
	Top-Down	**Bottom-Up**	**Top-Down**	**Bottom-Up**	**Top-Down**	**Bottom-Up**
Actual data as of 31-March-2014 - before any shock:						
Total regulatory capital - before shock	2,938,843	2,938,843	2,938,843	2,938,843	2,938,843	2,938,843
Tier 1 capital	2,624,308	2,624,308	2,624,308	2,624,308	2,624,308	2,624,308
Total risk-weighted assets (RWAs)	16,942,976	16,942,976	16,942,976	16,942,976	16,942,976	16,942,976
Total assets	21,783,153	21,783,153	21,783,153	21,783,153	21,783,153	21,783,153
Total regulatory capital-ratio (CAR; in percent of RWAs) - before shock	**17.3**	**17.3**	**17.3**	**17.3**	**17.3**	**17.3**
Stress test estimated losses after shock (2015):						
Credit risk:						
Increase in provisions due to loan migration	(4,067)	(55,062)	(545,431)	(326,040)	(2,019,179)	(829,554)
Expected net losses on BIH government bond holding (HTM) - "issuer default risk"	(1,267)	(230)	(2,025)	(537)	(3,127)	(1,071)
Expected net losses on BIH corporate bond holding (HTM) - "issuer default risk"	(2)	-	(4)	(2)	(6)	(5)
Risk related to equity instruments:						
Expected net losses on equity instruments	656	238	(3,161)	(4,001)	(7,349)	(8,717)
Market risk:						
Expected net interest income	743,575	733,660	703,600	709,078	601,218	679,485
Expected gains/losses on BIH government bond holding (AFS & HFT)	(4,102)	(1,579)	(5,604)	(3,688)	(11,829)	(8,645)
Expected gains/losses on BIH corporate bond holding (AFS & HFT)	-	-	-	-	-	-
Expected gains/losses on foreign bond holding (AFS, HFT & HTM)	(2,220)	303	(3,033)	120	(6,401)	(519)
Expected gains/losses on net open FX positions	(39)	217	551	935	728	1,076
Operational risk:						
Expected operational risk losses	(1,810)	(9,221)	(22,343)	(10,454)	(238,144)	(11,651)
Total net expected "stress losses"	730,724	668,328	122,551	365,411	(1,684,089)	(179,600)
Other net income after shock (2015):						
Total "other net income"	(512,265)	(390,860)	(307,845)	(387,684)	(303,081)	(384,748)
Stress test estimated capitalization after shock (2015):						
Total regulatory capital - after shock	3,157,302	3,216,311	2,753,549	2,916,570	951,673	2,374,494
Total regulatory capital-ratio (CAR; in percent of RWAs) - after shock	**18.6**	**19.0**	**16.3**	**17.2**	**5.6**	**14.0**
Implied capital shorfall (if any) 1/	-	144	26,147	2,941	1,149,405	122,731
Number of banks with a CAR below 12 percent	-	1	5	2	22	13
Number of banks with a CAR below "zero"	-	-	-	-	5	-

Source: Authorities supervisory data; individual banks (bottom-up stress tests); IMF and CBBH staff calculations (top-down stress tests).

1/ The “implied capital shortfall” is the amount of system wide recapitalization needs so that the CAR of each bank is equal or above 12 percent.

Appendix Table 10. Stress Test Results on Credit Concentration Risk

	Default of the largest borrower			Default of the largest 5 borrowers		
	BiH (27 banks)	FBiH (17 banks)	RS (10 banks)	BiH (27 banks)	FBiH (17 banks)	RS (10 banks)
Assumed recovery rate of 36 percent						
System-wide CAR (in percent of RWAs)	15.3	16.1	13.5	10.3	12.5	4.8
Implied capital shortfall (in millions of BAM) 1/	91	28	63	516	168	348
Number of banks with a CAR less than 12 percent	9	4	5	19	9	10
Number of banks with a CAR below "zero"	1	-	1	4	1	3
Assumed recovery rate of "zero" percent						
System-wide CAR (in percent of RWAs)	13.9	14.7	12.0	5.7	7.6	1.0
Implied capital shortfall (in millions of BAM) 1/	166	60	106	1,094	566	529
Number of banks with a CAR less than 12 percent	10	5	5	24	14	10
Number of banks with a CAR below "zero"	2	1	1	7	4	3
Assumed recovery rate of 70 percent						
System-wide CAR (in percent of RWAs)	16.3	16.8	14.9	13.2	15.2	8.3
Implied capital shortfall (in millions of BAM) 1/	39	14	25	249	46	203
Number of banks with a CAR less than 12 percent	6	3	3	11	4	7
Number of banks with a CAR below "zero"	-	-	-	2	-	2

Source: IMF staff calculations.

1/ The "implied capital shortfall" is the amount of system wide recapitalization needs so that the CAR of each bank is at least 12 percent of risk-weighted assets.

Appendix Table 11. Summary of the Liquidity Stress Test Results

	BiH (27 banks)	FBiH (17 banks)	RS (10 banks)
LCR (including "required reserves"):			
System-wide LCR (in percent)	291.7	348.6	205.2
Implied liquidity shortfall (in millions of BAM) 1/	70.2	49.7	20.4
Number of banks with a LCR below 100 percent	5	2	3
LCR (excluding "required reserves"):			
System-wide LCR (in percent)	200.5	241.5	138.1
Implied liquidity shortfall (in millions of BAM) 1/	324.6	142.7	181.9
Number of banks with a LCR below 100 percent	11	6	5
NSFR:			
System-wide NSFR (in percent)	123.0	127.4	114.0
Implied liquidity shortfall (in millions of BAM) 2/	322.8	209.9	112.9
Number of banks with a NSFR below 100 percent	7	4	3

Source: IMF staff calculations.

1/ The LCR “implied liquidity shortfall” is the amount of system wide liquidity needs (in terms of HQLA) so that the LCR of each bank is at least 100 percent.

2/ The NSFR “implied liquidity shortfall” is the amount of system wide liquidity needs (in terms of ASF) so that the NSFR of each bank is at least 100 percent.

Appendix II. Progress on 2006 FSSA Recommendations

2006 Main Recommendations	Implementing Agency	Status of Implementation
Improve bank capital adequacy, provisioning and loan classification and strengthen the capacity of supervisors to monitor and enforce these rules.	FBA, BARS	**Partially Implemented**. IAS has been introduced and the capital standard strengthened. However prudential provisioning standard has not been revised and capacity to enforce under IAS requires additional training.
Adjust prudential tools to foster a shift in financing of credit from foreign parent bank funding towards local deposits.	FBA, BARS, CBBH	**Not implemented**. However, market and economic changes have reduced the dependency of foreign funding.
Strengthen banks' risk measurement systems by improving the quality of data on credit, including by extending the CBBH credit registry to cover households.	FBA, BARS, CBBH	**Implemented**.
Strengthen the independence, powers and capacity of banking supervisors.	FBA, BARS	**Partially implemented.** The capacity of the supervisors is strengthened.
Enhance consolidated supervision and cooperation with the home country supervisors of the major foreign-owned banks in BiH, and work together to strengthen application of parent banks' risk management systems in BiH.	FBA, BARS	**Not implemented**. Although there has been a lot of progress in realizing MOU's with some key home supervisors, this is not yet finalized. Consolidated supervision is still to be implemented.
Unify two banking agencies within the CBBH with appropriate safeguards to ensure adequate protection for supervisors from political interference.	FBA, BARS	**Not implemented**. Legal protection in both entities should be enhanced. The constitutional and legal framework does not allow the unification of both banking agencies.
Implement a new State level Banking Law upgrading the regulatory framework.	FBA, BARS	**Not implemented.** The authorities argue that financial sector regulation falls under the competency of the entities.
Improve the mechanisms to enforce antitrust rules in the banking sector.		**Not implemented.** Formal cooperation mechanisms between the Competition Council and the banking agencies remain to be developed.

Clarify inter-agency mandates, especially in mergers and acquisitions		**Not implemented.** The respective mandates of the Competition Council and the banking agencies, especially in bank mergers and acquisitions, are yet to be clarified.
Develop specific contingent arrangements for borrowing by the Deposit Insurance Agency in case of possible shortfalls in the Deposit Insurance Fund.	DGS	**Implemented.** A standby facility of €50 million was established with the EBRD. It is due to expire in 2017 unless renewed.
Issue the necessary technical regulations as soon as possible.	Insurance agencies	**Implemented**. The bylaws on solvency, technical provisions and the guarantee fund have been issued, Both entities have implemented Solvency I regimes
Set up a mechanism to enforce and to supervise the tariff for compulsory Motor Third Party Liability insurance.	Insurance agencies	**Not implemented**. A project to liberalize the tariffs is in advanced stage.
Upgrade the institutional structure and enforcement capacity of insurance supervision in both entities.	Insurance agencies	**Implemented**. The budget and the staff have been increased. Operational infrastructure has been established. The powers of the ISAs have been regulated in bylaws and used.
Strengthen disclosure of beneficial owners, quality of financial reporting, accountability of corporate bodies and effectiveness of regulatory agencies.	FBA, BARS	**Partially implemented.** Despite commendable efforts towards better transparency since 2006, further improvements are warranted to enhance the overall quality of disclosures beyond the simple appearance of compliance. Supervisory agencies need to enforce more effectively IFRS for companies under their supervision.
Approve an investment funds law allowing Private Investment Funds (PIFs) to be converted into either funds or closed joint stock holding companies.	FBiH: Fed SC RS: RSSC	**Not implemented.** The RS Securities Commission developed and the RS government approved a draft Law on Changes to the Investment Funds in June 2013 which would have enabled this transformation. However, this proposed legislation was withdrawn. Consideration is currently being given to re-introducing this legislation. In the FBiH, no such tangible efforts to has yet been

		undertaken.
Approve microfinance and leasing legislation, strengthening oversight of MCIs.	FBA, BARS	**Implemented.** Legislation was passed and implemented with the Law on Microcredit Organizations and Law on Leasing. Oversight is undertaken by the entity banking agencies
Upgrade and restructure the infrastructure of the court system in both entities.	RS MoJ, FBiH MoJ	**Partially implemented.** In the RS a Commercial Court has been established, and in the FBiH certain judges have developed specialization in commercial cases. Nonetheless, there is still a large backlog of commercial cases. Mediation and arbitration have not been taken up and have not reduced the workload. Enforcement of both secured and unsecured debt is a very lengthy and cumbersome process. Bankruptcy proceedings too are inefficient and do not in practice support the reorganization of viable businesses.

Annex I. Report on the Observance of Standards and Codes: CPMI-IOSCO Principles for Financial Market Infrastructure—Summary Assessment

A. Introduction

1. **This report contains the assessment of the RTGS system and authorities' responsibilities in BiH.** The RTGS system is a systemically important payment system that handles large-value interbank settlements. The assessment was undertaken in the context of the IMF's FSAP to BiH in November 2014.[27]

2. **The objective of the assessment has been to identify potential risks related to the RTGS system that may affect financial stability.** The scope of the assessment includes the RTGS system and the CBBH, which is the authority responsible for its oversight. While safe and efficient payment systems contribute to maintaining and promoting financial stability and economic growth, they may also concentrate risk. If not properly managed, such FMIs can be sources of financial shocks, such as liquidity dislocations and credit losses, or a major channel through which these shocks are transmitted across domestic and international financial markets.

3. **The methodology for the assessments was derived from the CPMI-IOSCO PFMI Disclosure Framework and Assessment Methodology of December 2012. Prior to the mission, the CBBH prepared the self-assessment of the RTGS system and authorities' responsibilities against the PFMIs, and completed the Questionnaire on FMIs in BiH.** Furthermore, the assessor studied the relevant national laws, CBBH Annual Reports, CBBH Financial Stability Reports, and CBBH RTGS Operational Rules. The assessor had daily and thorough discussions with the CBBH, and met representatives from relevant public authorities and the private sector.

B. Main Findings

4. **Major achievements have been made in modernizing the payment system.** Bosnia and Herzegovina was the first country of the former Yugoslavia to dismantle the old payment system, leading to significant efficiency improvements and risk reduction. The Central Bank of Bosnia and

[27] The assessor was Tanai Khiaonarong, Senior Financial Sector Expert from the IMF's Monetary and Capital Markets Department.

Herzegovina played a key role in reducing transaction costs and the number of payment agencies. Risk was further reduced with the development and launch of the real-time gross settlement system for large-value payments and the giro clearing system for retail payments in 2001.

5. **Resiliency of the interbank payment system was demonstrated against the severe floods of May 2014, which had an impact on the real economy and parts of the financial services sector.** The interbank payment system has functioned normally since its launch in 2001. Contingency arrangements were earlier strengthened with the development of a disaster recovery site located at a distant location from the primary site to ensure the resumption of critical operations in the event of a wide scale disruption. Plans to adopt the Principles of Financial Market Infrastructures of 2012 into the regulatory framework are at the early stages.

6. **The currency board arrangement has helped protect the payment system from credit risks.** There is no credit risk due to pre-funding requirements in the real-time gross settlement system. Prohibition of the central bank from extending intraday credit and strict rules on the use and replenishment of reserve requirements has established strong discipline for commercial banks. This was tested with the provisional administration and liquidity management issues faced by some banks that helped contain settlement risks that could have led to potential systemic risks.

7. **The formal assessment of the real-time gross settlement system suggests that many of the standards are observed (table in section C), but also identifies key areas for improvement (table in section E) as follows:**

- The legal basis is relatively sound, but finality and netting arrangements require greater legal certainty and protection at the law level. It cannot be ruled out that a transaction settled in the real-time gross settlement system can be revoked by a court order in the event of insolvency of a participant. According to international best practices, greater legal certainty could be achieved with the adoption of an explicit law on settlement finality to empower authorities to designate payment systems and fully protect finality and netting, or elimination of 'zero-hour rules' in insolvency.
- **A comprehensive risk management framework needs to be developed.** Operational rules articulate risk mitigation measures on insufficient funds and contingency arrangements. However, there is no comprehensive risk management framework, which involves a formal

identification of the various risks, risk mitigation measures, and ongoing monitoring. This should be developed and include legal, liquidity, and operational risks among others.

- **Liquidity risk management is generally effective, but should be more robust.** Potential liquidity risk arises from the high concentration of transaction values in the payment systems across five banks. Liquidity risk may arise from settlement delays from the giro clearing system, clearing agents, or settlement banks, which may hinder liquidity recycling by other participants. Liquidity risk may also arise from the default of the largest participant and its affiliates in the payment system. Areas of improvement include stress testing the real-time gross settlement system to include the potential default of the largest participant and affiliates and establishment of throughput rules.

- **Operational risk in payment systems is well managed, but a recovery time objective needs to be established to ensure that operations can resume within two hours following a disruptive event**. The primary site is supported by a modern and well staffed secondary site located around 200 kilometers from the former, for which the latter acts as a disaster recovery site. The secondary site is tested regularly three times a year with participants with each test having duration of five days. However, the operational risk management framework and business continuity plan could be further improved by clearly establishing in writing the service availability and recovery time objectives.

- **Efficiency could be enhanced with fee schedule reviews and the setting of minimum service levels.** The pricing policy is aimed at recovering cost, but fees have not been regularly revised to reflect costs. Areas of improvements include conducting the cost accounting of the payment system on an annual basis, revising fee schedules to reflect costs where applicable, and finally, establishing, monitoring, and disclosing minimum service levels.

8. **The assessment of authorities' responsibilities suggests lack of oversight powers, limited resources and supervisory capacity, and the need to broaden and deepen oversight cooperation with other competent authorities (table in Section D).** The Law of the Central Bank of Bosnia and Herzegovina mainly establishes its operational responsibilities, but does not give it sufficient powers in the oversight of payment systems. Areas of improvements (table in Section F) include:

- Strengthen the legal framework to designate payment systems, and to protect settlement finality and netting in line with international standards;

- Adopt the Principles for Financial Market Infrastructures into the regulatory framework;
- Establish a new oversight unit within the Payment Systems Department, which is staffed with sufficient resources to carry out oversight responsibilities; and
- Develop memorandum of understanding to strengthen the oversight of clearing agents, settlement banks, international payment clearing, and cooperation with relevant authorities, respecting the mandates of each competent authority.

C. RTGS System: Summary of Compliance with the CPMI-IOSCO PFMIs

Principle	Comments
Legal Basis	The legal basis is relatively sound, but finality and netting arrangements require greater legal certainty and protection at the law level. The operations of the RTGS system as well as payment transfers through the system have a sound and a relatively solid legal basis. However, it cannot be ruled out that a transaction settled in the system can be revoked by a court order in the event of insolvency of a participant. Risk management such as loss sharing arrangements to manage participant defaults in the GCS, which is a deferred net settlement system, also appears to be lacking. According to international best practices, greater legal certainty could be achieved with the adoption of an explicit law on settlement finality to empower authorities to designate payment systems and fully protect finality and netting. Elimination of "zero-hour rules" in insolvency law could also prevent the reversal of payments that appears to have been settled in a payment system. Further clarification on whether the written statement between the CBBH and RTGS participants acts as a contractual agreement and could be used for legal action, and under what law, would help create greater legal certainty.
Governance	Governance arrangements are clear, accountable, and transparent. However, monthly reporting appears to largely focus on payment flows, while risks analysis appears to be limited both in scope and depth. The analysis of potential risks, and progress in mitigating them, should be reported on a quarterly basis at the regular meetings of the Governing Board.

Principle	Comments
Framework for the comprehensive management of risks	A comprehensive risk management framework is lacking. CBBH RTGS Operational Rules articulate risk mitigation measures on insufficient funds and contingency arrangements. However, there is no comprehensive risk management framework, which involves a formal identification of the various risks, risk mitigation measures, and ongoing monitoring.
Credit risk	There is no credit risk as intraday or overnight credit by the central bank is not permitted under the currency board arrangement. All RTGS transaction accounts are prefunded by transfers from reserve account balances at the start of a business day. Outgoing payments with insufficient funds enter a queue until sufficient funds are received. Payment instructions are returned to the sender if funds have not been secured. As the CBBH does not provide intraday credit, use of collateral is not applicable in this institutional set-up.
Collateral	Not applicable.
Margin	Not applicable.
Liquidity risk	Liquidity risk management is generally effective, but could be strengthened. Potential liquidity risk arises from the high concentration of transaction values in the payment systems across five banks. This includes two commercial banks that also act as settlement banks and have a large share of total transaction values. Liquidity risk may arise from settlement delays originating from the GCS, Bam Card, or settlement banks, which may hinder liquidity recycling by other participants. Liquidity risk may also arise from the default of the largest participant and its affiliates in the payment system. Each reserve maintenance period of 10 days, although effective, should be monitored closely on a daily basis to ensure that a commercial bank has sufficient liquidity in its reserve account for settlement purposes.
Settlement finality	Legal uncertainty remains for settlement finality in the event of an insolvent participant. As mentioned, the operations of the RTGS system as well as payment transfers through the system have a sound and a relatively solid legal basis. However, it cannot be ruled

Principle	Comments
	out that a transaction settled in the system can be revoked by a court order in the event of insolvency of a participant.
Money settlements	Money settlements are based on central bank money.
Physical deliveries	Not applicable.
Central securities depositories	Not applicable.
Exchange-of-value settlement systems	Not applicable.
Participant-default rules and procedures	Participant-default rules and procedures are clearly defined and available to all participants. However, such rules and procedures need to be established, tested, and reviewed on a periodical basis.
Segregation and portability	Not applicable.
General business risk	The RTGS system is owned and operated by the CBBH, which is part of its mandate to ensure payment and settlement operations in normal situations and extreme financial circumstances. As the Law on the CBBH stipulates its role in promoting or establishing and maintaining appropriate payment and settlement systems, the CBBH's ability to ensure continuity of the RTGS system as necessary in extreme financial circumstances means that the requirements to prepare recovery and orderly wind-down plans do not apply. Likewise, given the inherent financial soundness of the CBBH, the need to hold ring-fenced liquid assets funded by equity to cover business risks and the requirement to maintain a plan to raise additional equity do not apply. The CBBH is financially sound with net profits registered during 2011 to 2013.
Custody and investment risks	Not applicable.
Operational risk	Operational risk in payment systems is well managed, but a recovery time objective needs to be established to ensure operations resume within two hours following a disruptive event. The primary site is supported by a modern and well staffed secondary site located around 200 kilometers from the former, for which the latter acts as a disaster recovery site. The secondary site is tested regularly three times a year with participants with each test having duration of five days. However, the operational risk management framework and business continuity plan could be further improved by clearly establishing in

Principle	Comments
	writing the service availability and recovery time objectives. Such improvements would help ensure cyber resilience in critical infrastructures
Access and participation requirements	Access and participation requirements are clear, publicly available, fair, and objective. Rules relating to suspension, termination, and exclusion are also defined in CBBH RTGS Operational Rules.
Tiered participation arrangements	There are no tiered participation arrangements with only direct participation from commercial banks and the CBBH. For further clarification, it would be useful to establish in the CBBH RTGS Operational Rules that direct participation is only permitted for commercial banks and the CBBH with no tiered participation, and participants should be disclosed.
FMI links	Not applicable.
Efficiency and effectiveness	Efficiency could be enhanced with fee schedule reviews and the setting of minimum service levels. The pricing policy is aimed at recovering cost, but fees have not been regularly revised to reflect costs while service level objectives appear to be lacking. The RTGS fee schedule has been revised once since its introduction in 2001 and was in support of time-zone pricing. Minimum service levels do not appear to have been clearly established to monitor efficiency and effectiveness.
Communication procedures and standards	The RTGS system is based on internationally accepted communication procedures and standards. SWIFT communication network and messages are used to transmit financial information. Within SWIFT, a CUG is formed where payments are made within the group in BIH.
Disclosure of rules, key procedures, and market data	RTGS rules and procedures are publicly disclosed, but would be more complete with the disclosure of relevant laws, regulations, instructions, decisions, and memorandum of understanding issued by the competent authorities. Testing and training should increase focus on the understanding of CBBH RTGS Operational Rules, relevant rules and procedures, and potential risks and mitigation measures.
Disclosure of market data by trade repositories	Not applicable.

D. Authorities' Summary Compliance with the CPMI-IOSCO Responsibilities

Responsibility	Comments
Regulation, supervision, and oversight of FMIs	There are no clearly defined and publicly disclosed criteria to identify FMIs that should be subject to regulation, supervision, and oversight. The CBBH has plans to establish criteria after the completion of assessment of observance of the RTGS system and authorities' responsibilities against the CPMI-IOSCO under the IMF-World Bank Financial Sector Assessment Program. The Law of the CBBH clearly establishes its operational responsibilities, but does not provide sufficient powers for the oversight of payment systems. Operational responsibilities stated in the Law of the CBBH include: (i) promoting or establishing and maintaining appropriate payment and settlement systems; (ii) entering into international clearing and payment arrangements; and (iii) organizing facilities for the clearing and settlement of interbank payments. Powers to discharge oversight responsibilities for FMIs are not clearly established in the Law of the CBBH.
Regulatory, supervisory, and oversight powers and resources	The Payment Systems Department's resources are focused on carrying out operational duties and other ancillary services. Latter services are not directly related to inter-bank settlements such as maintaining the transaction registry and credit registry. Staff have not received adequate training on FMI oversight in the past two years, especially on the new CPMI-IOSCO PFMIs, which were released in April 2012. While the CBBH's Chief Internal Auditor (including 10 staff where two are technology specialists) conducts audits of the payment system, this takes place every two years and is narrowly focused on information security issues. Similarly, the Risk Management Department (including 4 staff) focuses its efforts in managing financial risks in foreign currency reserves and to a lesser extent operational risk management, which it collates from different departments on a quarterly basis and reports to CBBH Management. The establishment of an internal working group to

Responsibility	Comments
	address oversight of payment systems was put on hold since 2007 as a result of potential conflicts of interest that may arise between operational and oversight duties being located within the same organizational unit. The decision to determine its appropriate location within the central bank in order to preserve the impartiality of self-assessment results and prevent conflicts of interest is therefore pending at the CBBH Governing Board. In sum, there has been agreement on the need to establish a new oversight unit, but organizational issues have not been resolved.
Disclosure of policies with respect to FMIs	The CBBH's responsibilities in the payment system are disclosed through its Annual Report, Financial Stability Report, and website. However, there does not appear to be a coherent oversight policy document with respect to the RTGS system, which clearly describes its objectives, roles, and regulations.
Application of the principles for FMIs	The CBBH has not adopted the CPMI-IOSCO Principles for Financial Market Infrastructures and apply them consistently. However, the CBBH has plans to do so after the completion of assessment of observance of the RTGS system and authorities' responsibilities against the CPMI-IOSCO under the IMF-World Bank Financial Sector Assessment Program.
Cooperation with other authorities	The CBBH and entity banking agencies cooperate on cross-cutting issues between the payment system and banking supervision under a memorandum of understanding. However, advanced notification and coordination between competent authorities on the planned closure of a problem bank and its consequential suspension from the payment system could be further improved to prevent the unwinding of payments following a court order. Although the CBBH and entity securities commissions have a common interest in promoting safe and efficient FMIs, there is no formal cooperation. Given the systemic importance of CSDs, there is a potential role for their cooperative oversight by the securities commissions and the CBBH.

E. Recommended Actions to Improve the RTGS System Compliance with the CPMI-IOSCO PFMIs

Principle	Recommended Action
Legal basis and settlement finality	Strengthen the legal framework to designate payment systems, and to protect settlement finality and netting in line with international standards.
Governance	Improve risk analysis in the payment system, and report progress on a quarterly basis at the meetings of the Governing Board.
Framework for the comprehensive management of risks	Develop a comprehensive risk management framework for the RTGS system. This should include legal, liquidity, and operational risks among others. Risks should be monitored on an ongoing basis and include periodic reporting to the CBBH Governing Board and Management.
Liquidity risk	Stress test the RTGS system, including the default of the largest participant and affiliates. Establish throughput rules, and adopt tools to monitor intraday liquidity flows to assess the sufficiency of liquidity in the reserve account of commercial banks on a daily basis.
Operational risk	Establish service availability and recovery time objectives. The business continuity plan should be designed to ensure that critical information technology systems can resume operations within two hours following disruptive events. The plan should be designed to enable the RTGS system to complete settlement by the end of the day of the disruption, even in case of extreme circumstances.
Efficiency and effectiveness	Conduct the cost accounting of the payment system on an annual basis and revise fee schedules to reflect costs where applicable. Establish, monitor, and disclose minimum service levels for RTGS services.
Disclosure of rules, key procedures, and market data	Develop a description of the design and operations of the RTGS system, and disclose along with the relevant laws, regulations, instructions, decisions, and memorandum of understanding issued by the competent agencies in the CBBH Annual Report and web.

F. Recommended Actions to Improve the Compliance of Authorities' Responsibilities with the CPMI-IOSCO PFMIs

Responsibility	Recommended Action
Regulation, supervision, and oversight of FMIs	Establish clearly defined and publicly disclosed criteria to identify FMIs that should be subject to regulation, supervision, and oversight by the relevant competent authorities.
Regulatory, supervisory, and oversight powers and resources	Strengthen the legal framework to designate payment systems, and to protect settlement finality and netting in line with international standards. Establish memorandum of understanding to strengthen the oversight of clearing agents, settlement banks, international payment clearing, and cooperation with relevant authorities. Establish a new oversight unit in the Payment Systems Department, which is staffed with sufficient resources to carry out oversight responsibilities. Oversight and operational duties should be separated at either the department level or located within different units in the same department to avoid conflicts of interest, have a clear reporting line, and leverage on periodical external assessments for impartiality.
Disclosure of policies with respect to FMIs	Develop a policy document to clearly define and disclose the regulatory, supervisory, and oversight policies of the CBBH for the RTGS system.
Application of the principles for FMIs	Adopt the CPMI-IOSCO PFMIs with a time-bound plan and apply them consistently to the RTGS system.
Cooperation with other authorities	Improve advanced notification from the entity banking agencies to the CBBH to coordinate the timely closure of a bank and its suspension from the payment system. Develop memorandum of understanding between the CBBH, entity banking agencies, and securities commissions to collaborate on the development and oversight of FMIs, respecting the mandates of each competent authority.

G. Authorities' Response to the Assessment

9. **All above mentioned depend on the way of oversight establishment.** In the CBBH, since 2005, there has been a Commission for the Oversight of Payments Systems Operations, established by the Governing Board, with the task to elaborate the framework of the oversight in line with the policies and criteria for the FMI according to the "old" principles. However, on 2012 new principles were released (23 instead of then 10).

10. **Generally, the CBBH is decisive to arrange elaborately the functioning of all its operations via establishment of integrated internal controls system.** This is why the CBBH will publish the translation of new CPMI-IOSCO principles (23 principles) on its web site and work out the criteria for the identification of FMI that will be mandatory for all participants. Therefore, the GB will decide on which recommended variant of oversight is going to be optimal for the implementation in the CBBH and will publish it in format of enactments in the Official Gazettes of BH, RS, and FBiH, within the set deadline, adhering, at the same time, to the provisions of the CBBH Law.

11. **In the meantime, the internal audit, beside the detailed provisions and policies regulating this area, assessed the oversight of payments systems as very important business process in the Risk Map and defined it as the priority in performing the internal auditing process.**

12. **Within its authority, the CBBH will observe all recommendations from the Assessment of Observance of the CPMI/IOSCO Principles for Financial Market Infrastructures" as per suggested deadlines.**

13. **The CBBH will regularly inform your team on implementation of each individual recommendation.**