



BOSNIA AND HERZEGOVINA

FINANCIAL SECTOR ASSESSMENT PROGRAM

DETAILED ASSESSMENT OF OBSERVANCE OF THE CPMI-IOSCO PRINCIPLES FOR FINANCIAL MARKET INFRASTRUCTURES

July 2015

This Detailed Assessment of Observance of the CPMI-IOSCO Principles For Financial Market Infrastructures for 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 in July 2015.

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International Monetary Fund
Washington, D.C.



INTERNATIONAL MONETARY FUND

BOSNIA AND HERZEGOVINA

DETAILED ASSESSMENT OF OBSERVANCE

July 2015

ASSESSMENT OF OBSERVANCE OF THE CPMI-IOSCO PRINCIPLES FOR FINANCIAL MARKET INFRASTRUCTURES

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This Detailed Assessment Report was prepared in the context of an IMF Financial Sector Assessment Program (FSAP) mission in Bosnia and Herzegovina during October 27-November 18, 2014, led by Sònia Muñoz, IMF and overseen by the Monetary and Capital Markets Department, IMF.

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Glossary

APIF	Agency for Intermediary, Information Technology, and Financial Services
BAM	Bosnian Mark
BARS	Banking Agency of the Republic of Srpska
BCBS	Basel Committee on Banking Supervision
BiH	Bosnia and Herzegovina
BLSE	Banja Luka Stock Exchange
CBBH	Central Bank of Bosnia and Herzegovina
CPMI	Committee on Payments and Market Infrastructures
CRC	Central Registry of Credits
CRS	Central Registry of Securities JSC Banja Luka
CSDR	EU Central Securities Depositories Regulation
CUG	Closed User Group
DVP	Delivery Versus Payment
EBA	Entity Banking Agencies
EU	European Union
FBA	Banking Agency of the Federation of Bosnia and Herzegovina
FBiH	Federation of Bosnia and Herzegovina
FMI	Financial Market Infrastructure
FSC	Federation of Bosnia and Herzegovina Securities Commission
GCS	Giro Clearing System
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissions
ISIN	International Securities Identification Number
KM	Convertible Marka
LVPS	Large Value Payment System
MOU	Memorandum of Understanding
NBS	National Bank of Serbia
PFMI	Principles for Financial Market Infrastructures
PSD	Payment Systems Department
RMD	Risk Management Department
RS	Republic Srpska
RSSC	Republic Srpska Securities Commission
RTGS	Real Time Gross Settlement
RVP	Registry of Securities of the Federation of Bosnia and Herzegovina
SSE	Sarajevo Stock Exchange
SWIFT	Society for Worldwide Interbank Financial Telecommunication

EXECUTIVE SUMMARY

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 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.

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.

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.

The formal assessment of the real-time gross settlement system suggests that many of the standards are observed, but also identifies key areas for improvement 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.

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. 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 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.

INTRODUCTION

1. **This report contains the assessment of the real-time gross settlement (RTGS) system and authorities' responsibilities in Bosnia and Herzegovina (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 October and November 2014.¹ The assessor would like to thank the Central Bank of Bosnia and Herzegovina (CBBH) for the excellent cooperation and hospitality.
2. **The objective of the assessment has been to identify potential risks related to the RTGS system that may affect financial stability.** 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 financial market infrastructures (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 scope of the assessment includes the RTGS system and the CBBH, which is the authority responsible for its oversight.** The RTGS system is assessed using 18 of the 24 principles applicable for payment systems under the CPMI-IOSCO Principles for Financial Market Infrastructures (PFMIs).² This includes: Principle 1 (Legal basis), Principle 2 (Governance), Principle 3 (Framework for the comprehensive management of risks), Principle 7 (Liquidity risk), Principle 8 (Settlement finality), Principle 9 (Money settlements), Principle 13 (Participant-default rules and procedures), Principle 15 (General business risk), Principle 17 (Operational risk), Principle 18 (Access and participation requirements), Principle 19 (Tiered participation arrangements), Principle 21 (Efficiency and effectiveness), Principle 22 (Communication procedures and standards), and Principle 23 (Disclosure of rules, key procedures, and market data). The CBBH is also assessed against Responsibilities A to E of the PFMIs.
4. **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.

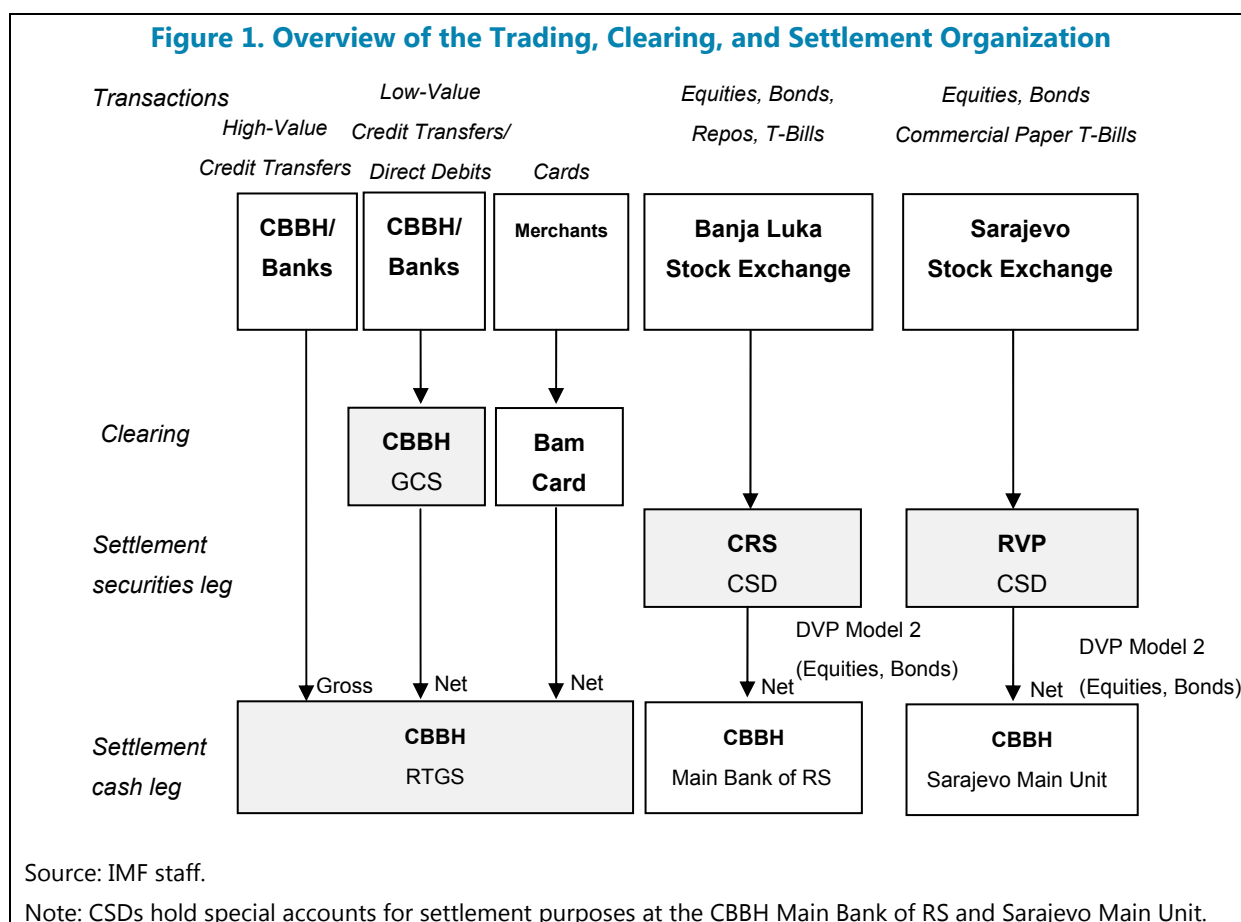
¹ The assessor was Tanai Khiaonrong, Senior Financial Sector Expert from the IMF's Monetary and Capital Markets Department.

² Due to the particular legal, institutional, and structural characteristics of the RTGS system, 4 principles for payment systems were assessed as not applicable. Principle 4 (Credit risk), Principle 5 (Collateral), and Principle 16 (Custody and investment risks) are not applicable as the CBBH does not provide intraday credit or have collateral arrangements. Principle 12 (Exchange-of-value settlement systems) is excluded as no system features are available to settle two linked obligations, particularly for securities and foreign exchange transactions.

OVERVIEW OF PAYMENT, CLEARING, AND SETTLEMENT LANDSCAPE

A. Description of Landscape

5. There are 4 FMIs located in BiH (Figure 1). There are two interbank payment systems, including the RTGS system which handles high-value credit transfers and the Giro Clearing System (GCS) that processes low-value transactions. The GCS and Bam Card, which is a card switching network, calculate and settle their net positions in the RTGS system. There are two central securities depositories (CSD) that also function as securities settlement systems. This includes the Central Registry of Securities (CRS) JSC Banja Luka that handles transactions for the Banja Luka Stock Exchange (BLSE), and the Registry of Securities of the FBiH (RVP) that supports the Sarajevo Stock Exchange (SSE). There are no central counter parties or trade repositories in either entity. International clearing services, transaction and credit registries, and internal payment systems also form part of the payments landscape, but are not considered FMIs.



B. Payment Systems

Real-Time Gross Settlement System

6. The RTGS is the large-value interbank payment system. The value of transaction settled was KM 9 billion when it was introduced in 2001. As of 2013, this increased seven fold to KM 63 billion, which was 2.42 times of GDP (Table 1). The average daily value of RTGS transactions was KM 298 million in 2014 (as of November 2014). This increased from KM 263 million in 2013. The system is owned and operated by the CBBH. Transactions are processed and settled continuously and irrevocably in real-time. Final settlement of financial obligations between its participants is executed by entries to their settlement account held at the CBBH. All large-value interbank transfers are channeled through the Society for Worldwide Interbank Financial Telecommunication (SWIFT) network. CBBH RTGS operational hours are weekdays from 8:00 a.m. to 4:30 p.m. Payments are accepted and settled until 4:00 p.m.

Table 1. Annual Transaction Volume and Value Processed by FMIs in 2013

	Volume	Value (KM billion)	Value (in GDP times)
Payment System			
RTGS	773,099	63	2.42
GCS	35,026,527	13	0.51
Securities Settlement System			
RVP	8,986	0.1	0.01
CRS	30,464	0.1	0.01

Sources: CBBH, RVP, CRS.

Note: Nominal GDP in 2013 amounted to BAM 26.12 billion.

7. The RTGS system accepts payment instructions for interbank payments and settles interbank obligations from net clearing arrangements. CBBH rules require use of the RTGS system for interbank payments above KM 10,000. There is no minimum amount for a payment to be made through the RTGS system, enabling it to also handle time-critical low-value payments. The RTGS system settles GCS net balances at 3 daily intervals (10:00 a.m., 1:00 p.m., and 3:00 p.m.). Net positions from the Bam Card switching and processing center are settled at 9:00 a.m. Inter-branch funds transfers within a same bank, which is a RTGS participant, is not permitted. Participants numbered 29 as of November 2014, including 28 commercial banks and the CBBH.

Giro Clearing System

8. The CBBH also owns and operates the GCS. The GCS handles low-value (equal to or below KM 10,000) and non-urgent credit transfers and direct debit transactions on a same-day basis. The CBBH also considers the GCS to be a systemically important payment system. As of 2013, it settled

KM 13 billion. The GCS is a deferred net settlement system based on multilateral clearing. The number of GCS participants is similar to the RTGS system. The GCS uses SWIFT message formats, but not the SWIFT network. The CBBH has developed a proprietary banking and telecommunications network in BiH, which connects all commercial banks to the 3 GCS main units (Banka Luka, Mostar, and Sarajevo) and the GCS center. All net positions from the GCS branches and the GCS center are sent to the RTGS system for final settlement. CBBH GCS operational hours are weekdays from 7:30 a.m. to 4:00 p.m.

Clearing of International Payments

9. The CBBH handles the clearing of euro payments between BiH and Serbia, which are settled afterwards in commercial bank money. Launched in February 2008, the service is operated by the National Bank of Serbia (NBS) and settles euro-denominated payments between BiH and Serbia on a same-day basis. Net positions of commercial banks are first cleared on a multilateral basis at the CBBH and NBS. Aggregate net positions are then calculated by each central bank and settled in their euro accounts held at a foreign commercial bank. Participants included 5 commercial banks located in BiH. Total payment orders amounted to 122 million euros in 2013. It is envisaged that such international payment arrangements will include the 7 members of the Central European Free Trade Agreement (Albania, BiH, Macedonia, Moldova, Montenegro, Serbia, and Kosovo), and create the basic prerequisites for accession to the European Union. A similar agreement was signed between the CBBH and the Central Bank of Montenegro in September 2007.

Transaction and Credit Registries

10. The CBBH maintains a transaction registry as part of its tasks in the payment system. The Single Registry of Legal Entities' Transaction Accounts aims to protect the internal payment system from financial integrity risks. Since July 2004, the CBBH has maintained this transactions registry, which monitors the disclosure of all financial transactions of business entities in BiH and is used by commercial banks, the tax administrator, and police for the purpose or preventing illegal activities such as tax evasion and money laundering. It also helps authorities identify shell companies and facilitate the enforced collection process. This provides information to all legal and physical entities whose settlement activities through authorized institutions are subject to mandatory requirements. A single database of all blocked accounts of legal entities in BiH was established in November 2012, and is disclosed on the CBBH's website and updated on a monthly basis. This helps business entities obtain the status of their current or potential business partners. As of 2013, the total number of access points to the transaction registry was 1,550, and was mainly used by commercial banks. There were a total of 279,511 accounts in the transaction registry, including 214,686 active and 64,825 blocked accounts.

11. The CBBH also operates a central credit registry to help assess client creditworthiness. Since April 2006, the CBBH has managed the Central Registry of Credits, which supports the assessment by financial institutions of the potential credit risks posed by legal and physical entities. This assessment is based on the collection of debt data from such entities, which is updated daily and supports the processing of loan applications. The beneficiaries of the credit registry include the

CBBH, banking agencies, and commercial banks. Data is submitted by 29 commercial banks, 18 microcredit organizations, 9 leasing companies, and 3 other institutions. The credit registry was accessed 2.7 million times in 2013 from 1,529 access points and used mainly by commercial banks.

C. Central Securities Depositories and Securities Settlement Systems

12. The stock exchange in each entity is supported by a separate CSD. The BLSE and SSE market capitalization amounted to KM 4.1 billion and KM 4.7 billion in 2013, respectively. CSDs in both entities handle dematerialized securities and settle on a delivery versus payment basis. The CBBH and custodian banks are involved in the payment process. Custodian banks inform the stock exchanges and/or CSDs on the amount of net debts or claims. CSDs open special purpose accounts at the CBBH. Such accounts are governed by two separate contracts signed between the CBBH and CSDs, which are for the purpose of deposit services and execution of electronic banking, and are used exclusively for the clearing and settlement of net debts or claims with settlement banks. Brokerage firms hold the records on securities and funds of their clients in collective and individual accounts opened with the CSD, and on the special purpose account with a settlement bank. Client funds stored in this special purpose account are separated from the broker's own funds. Settlement and custodian banks are commercial banks which have been issued with relevant licenses for this type of operations from the competent securities commission in each entity. Banks headquartered in one entity may obtain a license in the other entity.

Republic Srpska: Central Registry of Securities

13. The CRS acts as the registry and clearing house for securities. The CRS was established in February 2001 pursuant to the Law on the Central Registry of Securities and is incorporated as a joint stock company. The CRS opens and maintains the accounts of owners of securities, issuers, stock exchange intermediaries, other members of the CRS and their clients, custody accounts, and accounts for depositing securities. The CRS performs clearing, settlement, and the transfer of securities and financial obligations and claims arising from trading activities on the stock exchange. Financial instruments registered include shares, bonds, and treasury bills. There were 14 members as of December 31st, 2013, comprising of 10 stock exchange intermediaries and 4 custodian banks. The risk rating for the CRS was assessed as low by an international rating and advisory agency in 2013. The CRS registered net profits during 2012 and 2013 and its financial statements were independently audited.

14. The settlement of securities is based on two different models. For stock exchange transactions, delivery versus payment (DVP) Model 2 is used. Securities are settled on a gross basis and cash settlements are completed on a netting basis CRS' special account held at the CBBH Main Bank of the RS at T+3. The settlement cycle for stock exchange transactions will be shortened to T+2 starting in early 2015. For money market transactions (treasury bills, repos), DVP Model 1 is used. Securities are settled on a gross basis and cash settlements occur on a same day basis at T+0. All CRS registered securities are in dematerialized form and have allocated International Securities Identification Number (ISIN) codes.

15. A guarantee fund helps protect members from the potential default of a participant.

The CRS is required to establish a guarantee fund under the Law on Securities Markets. This requires the CRS to open and deposit funds (called basic payments) in a special account held at the CBBH. CRS' Management Board may decide to make a six months fixed deposit for all or part of the funds. The guarantee fund is made in cash by members and comprises of two parts, including basic and additional payments, for the clearing, settlement, and transfer of securities. Basic payments are calculated twice a year, fixed for the next six months, and applied similarly for all members. The amount of basic payments varies with the average daily value of net cash liabilities of all CRS members in the previous semi-annual financial period, the number of members, and the average risk coefficient. Additional payments are calculated on a monthly basis and are determined individually for each settlement member based on their obligations from stock exchange transactions executed during the past month. The guarantee fund was not used as of end-2013 and amounted to KM 1.7 million as of October 28, 2014. This comprises of KM 140,000 of basic payments and KM 1.77 million of additional payments.

Federation of Bosnia and Herzegovina: Registry of Securities**16. The RVP provides the gross settlement of securities against the net settlement of funds for the SSE.**

The RVP was established as a joint stock company in 1999. Under the Law on the Registrar of Securities (Article 2), the RVP performs securities clearing and settlement operations as part of its activities, which also include registration, safekeeping, maintaining information on securities, and securities transfers. The RVP holds securities, bonds, commercial paper, and treasury bills in dematerialized form. All financial instruments have been given ISIN codes. The RVP functions on DVP Model 2, where securities transfers are settled on an obligation-to-obligation basis. Cash settlement is on a netting basis at T+3 through the RVP's special account held at the CBBH Sarajevo Main Unit. There are currently plans to shorten the settlement cycle for stock exchange trades to T+2, which is under consideration by the Securities Commission of the FBiH. The RVP maintains securities accounts of participants. Participants contribute to a guarantee fund, which is also comprised of a basic and additional component. Total basic payments contributed by member amounted to KM 90,000 at end-October 2014. In addition to the RVP, participants include brokerage houses, custodian banks, the Securities Commission of the FBiH, the SSE, and commercial banks.

D. Regulatory, Supervisory, and Oversight Structure**Central Bank of Bosnia and Herzegovina**

17. The CBBH has oversight responsibilities for the RTGS system. The Law on the Central Bank of Bosnia and Herzegovina of 1997 (Chapter 1, Article 2, paragraph 3c) empowers the CBBH 'to promote or to establish and maintain appropriate payment and settlement systems.' The Law of the CBBH also establishes the rule for reserve requirements (Article 36) and money market operations (Article 37), which underpins the currency board arrangement.

18. CBBH payment systems are governed by operational rules, instructions, and decisions.

The CBBH's RTGS Operational Rules of 2004 establishes the rights and responsibilities of the CBBH

and RTGS participants, participation requirements, operational practices, clearing of net positions from the card switching network and the GCS, and contingency procedures. CBBH GCS Operational Rules of 2004 govern separately the giro clearing system. RTGS operational rules (Section 4.3.6) stipulate that the CBBH would act in accordance with GCS operational rules in the event that an RTGS participant has failed to obtain sufficient funds for settlement. Instructions that have been issued relate to the structure and use of the International Bank Account Number (IBAN) and reserve requirement. Decisions have included alternative back up procedures for RTGS operations, and minimal computer configurations and back up location for the GCS.

19. CBBH staff have mainly operational responsibilities in the payment system. There are currently 30 personnel whose tasks relate to payment operations. The Payment Systems Department (PSD) is located in the Sarajevo Main Unit of the CBBH and has three units, including: (i) Payment Systems Operations Unit, (ii) Information Technology Support Unit, and (iii) SWIFT Unit. The PSD is staffed with 18 persons, comprised of the department head, 3 unit managers, and 14 officers. The Department for Monitoring Payment Systems and Back-Up Systems is located at the Main Bank of RS of the CBBH in Banja Luka. It is staffed with 6 persons, including the department head, and is responsible for GCS operations and disaster recovery and back-up operations. The Unit for Monitoring and Payment Systems operates from two separate locations at the CBBH Sarajevo Main Unit and the CBBH Mostar Main Unit. Each unit is staffed with 3 persons and is responsible for GCS operations and back-up operations.

Entity Banking Agencies

20. Banking agencies in the entities are empowered to issue and revoke licenses for authorized organizations to perform operations in internal payment transactions. This includes the Banking Agency of RS (BARS) and the Banking Agency of the FBiH (FBA). Banks are permitted to participate in the payment system as part of their licenses under the RS Law on Banks and the FBiH Law on Banks. Authorized organizations include banks headquartered in the entities, bank branch offices, and other entities that perform operations in internal payment transactions on behalf of authorized organizations. The CBBH is also empowered to perform internal payment transactions. Internal payment transactions fall under 15 categories as follows: (i) opening, maintaining and closing of participants' accounts, (ii) keeping records on participants' accounts, (iii) receiving and processing data from payment orders, (iv) executing payment orders and transferring funds from one account to another, (v) conducting cashless payment transactions by means of telecommunication, digital and information technology facilities, (vi) recording payment transactions in accounts, (vii) performing payment transactions in cash, (viii) providing services related to issuance and/or acceptance of payment instruments, and money consignments, (ix) performing treasury-vault operations and ensuring cash storing and safeguarding, (x) settling interbank payment orders in keeping with the regulations governing payment transactions, (xi) keeping records on the sequence of payments and other prescribed records, submitting data and reports in accordance with the law and other regulations, (xii) sending reports to participants – holders of accounts on the balance and changes in their accounts, (xiii) executing orders for enforced collection in accordance with laws and regulations, (xiv) filing and storing documents containing data on

internal payment transactions, and (xv) performing other operations in accordance with the regulations.

21. BARS is empowered by law and decisions to ensure the financial soundness of banks.

The RS Law on Internal Payment Systems of 2012 (Article 46) gives supervisory powers to the agency and other regulatory authorities to cooperate in the monitoring of payment transactions of authorized organizations. Article 47 further empowers the agency to: (i) request relevant authorities to make available all information required to monitor compliance of payment transactions with the law and other legal provisions; (ii) directly supervise authorized organizations and their organizational units or any other agent, third party processor, (iii) issue recommendations and guidelines, and obligatory orders, if necessary, (iv) temporarily suspend or revoke the authorized organization's license to render services for internal payment transactions, if its operation does not comply with the Law and legal provisions of the agency, and (v) undertake measures and initiate procedures against authorized organizations in case of incompliance with provisions of this and other laws regulating payments and payment transactions.

22. FBA operates under a similar law with identical powers for the banking agency.

The FBiH Payment Transaction Law of 2000 empowers the banking agency in the FBiH to issue licenses to authorized organizations within its jurisdiction to perform operations in internal payment transactions. A Draft Law on Internal Payment Systems, which is largely identical to RS, is under parliamentary consideration in the FBiH as of November 2014.

23. A separate agency maintains a central database of internal payment transactions.

The Agency for Intermediary, Information Technology, and Financial Services (APIF) is empowered under the RS Law on Internal Payment Systems (Article 15) and the Law on Single Registry of Business Entities' Accounts to maintain a single registry of accounts. Authorized organizations are required to deliver to the registry data on open and closed accounts of business entities, types of accounts, main accounts, and the blocking and unblocking accounts, on a continuous and immediate basis after the occurrence of such changes in the records of authorized organizations. Authorized organizations have electronic access to review and take over data kept in the database. The Draft FBiH Law on Internal Payment Systems (Article 9) also establishes that the Financial and Information Technology Agency Sarajevo to maintain a similar registry.

Entity Securities Commissions

24. Securities commissions in the entities regulate separately the central securities depositories and securities settlement systems in their jurisdictions.

The Securities Commission of the RS regulates the CRS under the Law on Securities Market. The Regulation on the Clearing, Settlement, and Transfer of Securities came into force on February 2013. This was adopted as a rulebook for the CRS, covering: (i) instructions for payment to and use of the guarantee fund, (ii) procedures for processing the clearing, settlement, and transfer of securities, (iii) instructions on custody operations carried out in the CRS, and (iv) procedures for assigning the processing and deleting of registry code, and the opening and connecting of joint custody accounts. The Securities Commission of the FBiH regulates RVP clearing and settlement services under the Law on Securities

Market and the Law on the Registrar of Securities. The RVP operates under the Rules of the RVP in the FBiH of 2009. Articles 18 to 24 of the rules contain specific provisions on clearing and settlement.

E. Past and Ongoing Reforms

25. The financial infrastructure was further improved with the adoption of an electronic interbank money market for commercial banks. This provides real-time capabilities for managing domestic currency deposits, foreign exchange, and cash operations. While use of the electronic platform among commercial banks is on a voluntary basis, it is mandatory for their connection with the central bank.

26. Legal reforms are ongoing. The Parliament of the Federation of Bosnia and Herzegovina is expected to adopt a new Law on Internal Payment Systems that will ensure the necessary flow of bank account information across entities, including the central bank. This is aimed at creating an environment that is more conducive to credit growth and economic activity. A largely identical law was adopted in the RS in 2012.

27. There are plans to shorten the settlement cycle for stock exchange trades to T+2. Such changes are expected at the BLSE in early 2015 and are under review for the SSE. Such reforms would help harmonize local practices with the EU Central Securities Depositories Regulation (CSDR), which was adopted on April 15, 2014. This imposes a harmonized standard settlement date within the European Economic Area of two business days after the transaction date (T+2) for transferable securities, money market instruments, units in collective investment undertakings, and emission allowances. European markets that fall under the CSDR migrated from T+3 to T+2 with effect from October 6th, 2014.

SUMMARY ASSESSMENT OF THE RTGS SYSTEM

A. Observance of the Principles

General Organization (Principles 1-3)

28. 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.³ 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.⁴ 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.

29. 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.

30. 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 and liquidity risk management (Principles 4 and 7)

31. 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.

32. 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.

³ For example, see EU Settlement Finality Directive.

⁴ In the context of payment systems, “zero-hour rules” make all transactions by a bankrupt participant void from the start (“zero hour”) of the day of the bankruptcy (or similar event). In an RTGS system, for example, the effect could be to reverse payments that have apparently already been settled and were thought to be final. In a deferred net settlement system, such a rule could cause the netting of all transactions to be unwound. This could entail a recalculation of all net positions and could cause significant changes to participants’ balances.

Settlement (Principles 8-9)

33. 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 out that a transaction settled in the system can be revoked by a court order in the event of insolvency of a participant.

34. Money settlements are based on central bank money.

Exchange-of-Value Settlement Systems (Principle 12)

35. The RTGS is not an exchange-of-value settlement system. It does not involve the settlement of two linked obligations, such as the delivery of securities against cash payments or securities, or the delivery of one currency against the delivery of another currency.

Default Management (Principle 13)

36. 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.

General business and operational risks management (Principles 15 and 17)

37. 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.

38. 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 writing the service availability and recovery time objectives. Such improvements would help ensure cyber resilience in critical infrastructures.⁵

Access (Principles 18-19)

39. 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.

40. 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.

Efficiency (Principles 21-22)

41. 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.

42. 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.

Transparency (Principle 23)

43. 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.

Table 2. Ratings Summary of RTGS System

Assessment category	Principle
Observed	2, 9, 13, 15, 18, 22
Broadly observed	7, 8, 17, 19, 21, 23
Partly observed	1, 3
Not observed	
Not applicable	4, 5, 12, 16

⁵ CPMI (2014) Cyber Resilience in Financial Market Infrastructures, November.

B. Recommendations for the RTGS System

List of Prioritized Recommendations				
Principle	Issues of Concern and Other Gaps or Shortcomings	Recommended Action	Relevant Parties	Timeframe /1
1, 8	Legal uncertainty for finality and netting in the event of insolvency	Strengthen the legal framework to designate payment systems, and to protect settlement finality and netting in line with international standards	CBBH	Near-Term
2	Lack of risk analysis and reporting to the Governing Board.	Improve risk analysis in the payment system, and report progress on a quarterly basis at the meetings of the Governing Board.	CBBH	Immediate
3	Lack of a comprehensive risk management framework.	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.	CBBH	Immediate
7	Liquidity risk arises from the high concentration of transaction values in the payment systems across five banks.	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. ⁶	CBBH, BARS, FBA	Near-Term
17	Lack of a recovery time objective to resume operations following a disruptive event.	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	CBBH	Immediate

⁶ See BCBS (2013) Monitoring Tools for Intraday Liquidity Management, April; Ball A, E Denbee, M Manning, and A Wetherlit (2011) Intraday Liquidity: Risk and Regulation, Financial Stability Paper No. 11, Bank of England, June.

List of Prioritized Recommendations				
Principle	Issues of Concern and Other Gaps or Shortcomings	Recommended Action	Relevant Parties	Timeframe /1
		settlement by the end of the day of the disruption, even in case of extreme circumstances.		
21	Lack of regular fee schedule reviews to reflect costs and service level objectives.	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.	CBBH	Near-Term
23	Lack of disclosure of relevant laws, regulations, instructions, decisions, and memorandum of understanding.	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 website.	CBBH	Immediate

1/ "Immediate" is within one year; "near-term" is 1-3 years; "medium-term" is 3-5 years.

SUMMARY ASSESSMENT OF AUTHORITIES' RESPONSIBILITIES

A. Observance of the Responsibilities

44. 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.

45. 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.

46. 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 PFMI, 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 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.⁷

47. 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.

48. 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.

49. 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.

⁷ See Committee on Payment and Settlement Systems (2005) Central Bank Oversight of Payment and Settlement Systems, May, which establishes the effective principles for effective oversight and provides illustrations on the organization of the oversight function (pages 25 -26, paragraphs 114-118). Separation of oversight and operational duties can fall under three types, including: (i) institutional level; (ii) functional level (two functions are represented by different directors on the central bank's governing board); and (iii) divisional level (two functions are represented by the same director on the governing board; there are separate divisions in the same department).

Table 3. Ratings Summary of Authorities' Responsibilities

Assessment category	Responsibility
Observed	
Broadly observed	C, E
Partly observed	A, B, D
Not observed	
Not applicable	

B. Recommendations for Authorities

List of Prioritized Recommendations				
Responsibility	Issues of Concern and Other Gaps or Shortcomings	Recommended Action	Relevant Parties	Timeframe /1
A	Lack of established criteria to identify 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.	CBBH	Near-term
B	Lack of oversight powers for FMIs	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.	CBBH	Near-term
B	Lack of oversight resources for FMIs	Establish a new oversight unit in the Payment Systems Department, which is staffed with sufficient resources to carry out oversight responsibilities. Oversight and	CBBH	Near-term

List of Prioritized Recommendations				
Responsibility	Issues of Concern and Other Gaps or Shortcomings	Recommended Action	Relevant Parties	Timeframe /1
		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.		
C	Lack 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.	CBBH	Immediate
D	Lack of adoption and application of the PFMIIs.	Adopt the CPMI-IOSCO PFMIIs with a time-bound plan and apply them consistently to the RTGS system.	CBBH	Immediate
E	Lack of supervisory coordination in bank closure and suspensions in the payment system.	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.	CBBH, BARS, FBA, FBiH and RS Securities Commissions	Near-term
		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.		

1/ "Immediate" is within one year; "near-term" is 1-3 years; "medium-term" is 3-5 years.

DETAILED ASSESSMENT OF THE RTGS SYSTEM

Principle 1. Legal Basis	
An FMI should have a well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions.	
<p>Key Consideration 1</p> <p>The legal basis should provide a high degree of certainty for each material aspect of an FMI's activities in all relevant jurisdictions.</p>	<p>Material aspects and relevant jurisdictions</p> <p>CBBH RTGS Operational Rules of 2004 establishes the rights and responsibilities of the CBBH and RTGS participants, participation requirements, and the protection of irrevocability and finality. The RTGS system is only subject to the laws of BiH.</p> <p>The legal basis for each material aspect</p> <p><i>Rights and responsibilities</i></p> <p>CBBH RTGS Operational Rules (Sections 1.3 and 1.4) establishes the rights and responsibilities of the CBBH and RTGS participants, respectively.</p> <p><i>Participation requirements</i></p> <p>CBBH RTGS Operational Rules (Section 2) establishes technical requirements for participation, authorized persons, termination by participants, and exclusion by the CBBH.</p> <p><i>Legal protection for irrevocability and finality</i></p> <p>CBBH RTGS Operational Rules (Section 3.2.1) establishes funds availability and irrevocability of payment orders, noting: "Payment orders that include amounts up to the cover on the settlement account of any RTGS system participant may not be reversed once transmitted through the RTGS system and shall be executed on the same day and by the RTGS close of business on that day."</p> <p>Section 3.2.2 establishes finality as follows: "Any payment shall be deemed as final once the funds have been accounted for on the settlement account of the RTGS system participants."</p> <p>Section 4.2.4 establishes finality for the settlement of net positions from clearing agents (for example, a card switching network operator), stating: "After the CBBH has debited the settlement account of a RTGS participant/net debtor, it shall immediately credit the settlement account of a RTGS participant/net creditor, as described in the submitted clearing report. Settlement of obligations and claims arising from clearing shall be deemed as</p>

	<p>final once the settlement account of the RTGS participant/net creditor has been credited.”</p> <p><i>Netting arrangements</i></p> <p>Netting does not occur in the RTGS system. However, for the other deferred net settlement systems (GCS and card switching network), there is no explicit legal protection for the finality of multilateral netting.</p>
<p>Key Consideration 2</p> <p>An FMI should have rules, procedures, and contracts that are clear, understandable, and consistent with relevant laws and regulations.</p>	<p>CBBH RTGS Operational Rules largely provides the legal basis for the RTGS system and payment transfers executed in this system. Relevant laws, and regulations, instructions, and decisions issued include:</p> <p><u>State-level:</u></p> <ul style="list-style-type: none"> - <i>Law on the Central Bank of Bosnia and Herzegovina</i> (Article 2, 3c) stipulates the role of the CBBH in promoting or establishing and maintaining appropriate payment and settlement systems. Article 70 stipulates that CBBH regulations, guidelines and instructions shall have the force of law throughout BiH; - <i>CBBH Instructions and Decisions include:</i> (i) Instruction on Payment Account Structure; (ii) Instruction on the Structure and Use of the International Bank Account Number (IBAN); (iii) Instruction on Reserve Requirement; (iv) Operational Rules for the GCS; (v) CBBH Decision on the Back Up Ways to Perform RTGS Operations; and (vi) Decision on Minimal Computer Configurations and the Back Up Location for Giro Clearing; - <i>Law on Electronic Signature;</i> and - <i>Law on Electronic Legal and Business Transactions.</i> <p><u>Federation of Bosnia and Herzegovina:</u></p> <ul style="list-style-type: none"> - <i>FBiH Payment Transaction Law</i> empowers the banking agency in the FBiH to issue licenses to authorized organizations within its jurisdiction to perform operations in internal payment transactions; - <i>Draft FBiH Law on Internal Payment Systems</i> (under consideration by the FBiH parliament as of November 2014);

	<ul style="list-style-type: none"> - <i>FBiH Law on Banks</i> provides the fundamental framework for banking regulation and supervision; - <i>FBiH Law on Registrar of Securities</i> empowers the FBiH Securities Commission to regulate clearing and settlement services; and - <i>Law on Bankruptcy Proceeding of FBiH</i>, adopted in 2003 and amended in 2004 and 2006 ("Official Gazette of FBiH" No. 29/03, 33/04, 47/06). <p><u>Republic Srpska:</u></p> <ul style="list-style-type: none"> - <i>RS Law on Internal Payment Systems</i> empowers the banking agency in the RS to issue licenses to authorized organizations within its jurisdiction to perform operations in internal payment transactions; - <i>RS Law on Banks</i> provides the fundamental framework for banking regulation and supervision; - <i>RS Law on the Single Registry of Accounts of Business Entities</i> empowers the Agency for Intermediary, Information Technology, and Financial Services to maintain a central database on open and closed accounts of business entities, types of accounts, main accounts, as well as information on the blocking and unblocking accounts; - <i>RS Law on Securities Market</i> gives power to the RS Securities Commission to regulate the central securities depositories and securities settlement systems; - <i>Law on Bankruptcy Proceeding of RS</i> adopted in 2003, amended in 2002, 2003, 2007 and 2010, while the consolidated text was published 15 March 2010 (Official Gazette of RS" No. 67/02; 77/02; 38/03; 96/03; 68/07; 12/10, 16/10); - <i>RS Securities Commission Regulation on Clearing, Settlement, and Transfer of Securities</i>; - <i>CRS Rulebook on Clearing, Settlement, and Transfer of Securities</i> includes: (i) instructions for payment to and use of the guarantee fund, (ii) procedures for processing the
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	<p>clearing, settlement, and transfer of securities, (iii) instructions on custody operations carried out in the CRS, and (iv) procedures for assigning the processing and deleting of registry code, and the opening and connecting of joint custody accounts; and</p> <p>- <i>CRS Instruction for Payment and Use of Guarantee Fund</i> includes calculation methods for basic and additional payments from members of the CRS.</p>
<p>Key consideration 3</p> <p>An FMI should be able to articulate the legal basis for its activities to relevant authorities, participants, and, where relevant, participants' customers, in a clear and understandable way.</p>	<p>The Law of the CBBH, CBBH RTGS Operational Rules and relevant instructions and decisions, FBiH Payment Transaction Law, and RS Law on Internal Payments System are publicly available.</p>
<p>Key Consideration 4</p> <p>An FMI should have rules, procedures, and contracts that are enforceable in all relevant jurisdictions. There should be a high degree of certainty that actions taken by the FMI under such rules and procedures will not be voided, reversed, or subject to stays.</p>	<p>Enforceability of rules, procedures and contracts</p> <p>CBBH RTGS Operational Rules (Section 6.1.2) requires RTGS participants to endorse rules with a written statement. Section 6.1.3 requires RTGS participants to harmonize its regulations with the RTGS Operational Rules. Failure to comply would revoke the membership of the RTGS participant.</p> <p>CBBH Instruction on the Manner of Operation, Activities and Measures of the CBBH for Cases Involving a Commercial Bank Failing to Meet Obligations on Determining and Maintaining Required Reserves and in Cases of Status Changes in a Commercial Bank of March 31st, 2014 defines the terms of holding balances with the CBBH for settlement purposes, and includes measures for banks that are unable to fulfill the prescribed reserve requirement. Such measures range from temporary suspension to permanent exclusion from the payment system. The instructions: (i) define the rights and obligations of participants; (ii) are applicable after the signing of an agreement, and (iii) include penal measures for noncompliance.</p> <p>Degree of certainty for rules and procedures</p> <p>CBBH RTGS Operational Rules protect the irrevocability and finality of payment orders. 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.</p>

Key Consideration 5 An FMI conducting business in multiple jurisdictions should identify and mitigate the risks arising from any potential conflict of laws across jurisdictions.	The RTGS system has no links with to foreign payment systems located in other jurisdictions. The RS Law on Internal Payment Systems, which is also under consideration by the FBiH parliament, is largely harmonized.
Key Conclusions for Principle 1	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. 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.
Assessment of Principle 1	Partly Observed
Recommendations and comments	Strengthen the legal framework to designate payment systems, and to protect settlement finality and netting in line with international standards.

Principle 2. Governance

An FMI should have governance arrangements that are clear and transparent, promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders.

Key Consideration 1 An FMI should have objectives that place a high priority on the safety and efficiency of the FMI and explicitly support financial stability and other relevant public interest considerations.	<p>The Law on the CBBH has specific provisions relating to payment, clearing, and settlement systems that seek to ensure their safety and efficiency as follows:</p> <ul style="list-style-type: none"> - Article 2 (3c) stipulates the role of the CBBH 'to promote or to establish and maintain appropriate payment and settlement systems'; - Article 49 states that the CBBH may, 'either for its own account or for the account and by order of Bosnia and Herzegovina, enter into clearing and payments agreements or any other contracts for the same purpose with public and private central clearing institutions domiciled abroad'; - Article 58 states that the CBBH 'through its head office and main units may assist banks in organizing facilities for the
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	<p>clearing and settlement of interbank payments, including payments by check and other payment instruments, and may establish such procedures and issue such regulations relating thereto as it shall deem appropriate.’</p> <p>The CBBH coordinates with Entity Banking Agencies, which are responsible for banking regulation, supervision, and the licensing of authorized organizations that perform operations in internal payment transactions.</p>
<p>Key Consideration 2</p> <p>An FMI should have documented governance arrangements that provide clear and direct lines of responsibility and accountability. These arrangements should be disclosed to owners, relevant authorities, participants, and, at a more general level, the public.</p>	<p>Governance arrangements</p> <p>The RTGS system is owned and operated by the CBBH. The Payment Systems Department (PSD) manages daily operations and has three units, including: (i) Payment Systems Operations, (ii) Information Technology Support, and (iii) SWIFT. The Head of the PSD reports directly to the Vice Governor overseeing the Sector for Statistics, External Debt Servicing, European Integrations, and Payment Systems. The Vice Governor is part of CBBH Management and reports to the Governor.</p> <p>Disclosure of governance arrangements</p> <p>Governance arrangements are established in the Law on the CBBH and are publicly available on the CBBH Annual Report and website.</p>
<p>Key Consideration 3</p> <p>The roles and responsibilities of an FMI’s board of directors (or equivalent) should be clearly specified, and there should be documented procedures for its functioning, including procedures to identify, address, and manage member conflicts of interest. The board should review both its overall performance and the performance of its individual board members regularly.</p>	<p>Roles and responsibilities of the board</p> <p>The Law on the CBBH (Chapter II, Articles 5 to 24) has specific provisions on the organization and administration of the central bank, which includes the powers, functions, and constitution of the Governing Board. The CBBH conducts its activities through its Governing Board, Management, and staff. The Governor, who is the chairperson of the CBBH Governing Board and Management, approves the operational rules, instructions, and decisions for the RTGS system.</p> <p>The Law on the CBBH (Article 23) establishes rules on conflicts of interest. This includes prohibitions for the Governing Board, Management, or staff of the CBBH to ‘accept any gift or credit for himself, or on behalf of any person with whom he has family, business, or financial connections, if the acceptance thereof would result, or give the appearance of resulting, in a diminishment of his impartial devotion to his duties to the central bank’.</p> <p>CBBH Rules of Business Conduct (May 30, 2013) further establishes</p>

	<p>rules of avoiding conflict of interest (Article 11). This seeks to prevent: (i) abuse of authority and office aimed at generating material or other gain for oneself or any other legal and natural person; (ii) situations that may challenge the impartial performance of an officer's duties. An officer who may objectively expect in a given case either an apparent or actual conflict of interest shall immediately withdraw and notify his or her immediate superior; and (iii) employment by an officer in another job unless approved by the competent body within the CBBH under the Law of the CBBH.</p>
	<p>Review of performance</p> <p>The Law on the CBBH (Article 64) defines the obligations of the CBBH to submit to the Parliamentary Assembly of BiH the following documents within three months after the end of the financial year: (i) Report on the State of the Economy; (ii) Report on Operations during the year; and (iii) Financial Statement certified by the auditor. These are included in the CBBH Annual Report, which includes a section on the performance of payment systems.</p> <p>The Head of Payment Systems Department prepares and submits monthly reports on the performance of the RTGS system and GCS to individual members of the Governing Board and Management. This contains their transaction volumes and values, and the percentage shares of each payment system to total figures. Participation of the Head of Payment Systems Department in the regular meetings of the Governing Board are based as requested. Recent agenda has included discussion on the FBiH Draft Law on Internal Payment Systems.</p>
<p>Key Consideration 4</p> <p>The board should contain suitable members with the appropriate skills and incentives to fulfill its multiple roles. This typically requires the inclusion of non-executive board member(s).</p>	<p>The Governing Board includes 5 members appointed by the Presidency of BiH. Members elect the CBBH Governor who serves as the chairman of this body and of CBBH Management. CBBH Governing Board member's skills and experience are publicly available on the CBBH website.</p>
<p>Key Consideration 5</p> <p>The roles and responsibilities of management should be clearly specified. An FMI's management should have the appropriate</p>	<p>Roles and responsibilities of management</p> <p>The Governor is the chief executive officer in charge of daily operations of the CBBH. CBBH Management consists of the Governor and 3 Vice Governors (appointed by the Governor, with the approval of the CBBH Governing Board). It performs the</p>

<p>experience, a mix of skills, and the integrity necessary to discharge their responsibilities for the operation and risk management of the FMI.</p>	<p>operational activities and coordinates the activities of organizational units of the CBBH.</p> <p>Experience, skills and integrity</p> <p>CBBH Management skills and experience are publicly disclosed on the CBBH website.</p>
<p>Key Consideration 6</p> <p>The board should establish a clear, documented risk-management framework that includes the FMI's risk-tolerance policy, assigns responsibilities and accountability for risk decisions, and addresses decision making in crises and emergencies. Governance arrangements should ensure that the risk-management and internal control functions have sufficient authority, independence, resources, and access to the board.</p>	<p>Risk management framework</p> <p>The CBBH operates payment systems and manages risks using the following framework:</p> <ul style="list-style-type: none"> - The Law of the CBBH (Chapter 4, Articles 31 to 37) establishes the broad framework of the currency board arrangement, including the rules for issuing currency, official exchange rate, guaranteed convertibility, required reserves, and money market operations. The CBBH's Annual Report Financial Statement and Report of Independent External Auditor section includes an assessment of credit risk and operational risk in domestic payment and settlement systems. The CBBH does not provide credit to RTGS or GCS participants, which would serve as liquidity. The CBBH also defines its contingency plans and backup locations. - The CBBH's Instruction on the Manner of Operation, Activities and Measures of the CBBH for Cases Involving a Commercial Bank Failing to Meet Obligations on Determining and Maintaining Required Reserves and in Cases of Status Changes in a Commercial Bank establishes the framework for liquidity management in the payment system, which includes interest rate penalties for banks failing to replenish liquidity in reserve accounts in a timely manner as stipulated under the Law of the CBBH. - The CBBH's Business Continuity Plan establishes the risk management framework for critical operations, which includes ensuring the operation of payment systems in the event of wide scale operational disruptions. - CBBH RTGS Operational Rules provide details on contingency settlement procedures.

	<p>Authority and independence of risk management and audit functions</p> <p>Under the Law on the CBBH, the Governor, with the approval of the Governing Board, appoints the Chief Internal Auditor and three deputies. The Chief Internal Auditor conducts an audit of the payment system once every two years or as requested by the Governing Board or Management if there are emerging issues. Past assessments have narrowly focused on information security issues, and have not covered other types of risks such as legal, liquidity, etc. This covers all types of risks and involves the completion of a questionnaire by the Payment Systems Department. The Chief Internal Auditor reports directly and makes recommendations to the Governing Board.</p> <p>The Payment Systems Department assesses risks in the payment system and publishes results in the CBBH Annual Report.</p>
<p>Key Consideration 7</p> <p>The board should ensure that the FMI's design, rules, overall strategy, and major decisions reflect appropriately the legitimate interests of its direct and indirect participants and other relevant stakeholders. Major decisions should be clearly disclosed to relevant stakeholders and, where there is a broad market impact, the public.</p>	<p>Identification and consideration of stakeholder interests</p> <p>CBBH RTGS Operational Rules (Section 1) require the CBBH to provide a copy of such rules to all RTGS participants. In the event that the Operational Rules have been amended, the CBBH is required to provide an amended copy to all RTGS participants. RTGS participants will be required to harmonize their procedures and regulations with these Operational Rules.</p> <p>The CBBH engages commercial banks through the SWIFT Closed User Group (CUG), annual meetings, and bank visits. The CBBH's Head of Information Technology Department is the chairperson of the SWIFT CUG and convenes regular meetings (at least once a year) with commercial banks to seek views on the payment system.</p> <p>Disclosure</p> <p>Major decisions are published in the media and through regular meetings held with banks.</p>
<p>Key conclusions for Principle 2</p>	<p>The RTGS system's governance arrangements are clear, accountable, and transparent. However, monthly reporting appears to largely focus on payment flows. 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.</p>
<p>Assessment of Principle 2</p>	<p>Observed</p>
<p>Recommendations and comments</p>	<p>Improve risk analysis and management in the payment system, and report progress on a quarterly basis at the meetings of the Governing Board.</p>

Principle 3. Framework for the Comprehensive Management of Risks

An FMI should have a sound risk-management framework for comprehensively managing legal, credit, liquidity, operational, and other risks.

Key Consideration 1

An FMI should have risk-management policies, procedures, and systems that enable it to identify, measure, monitor, and manage the range of risks that arise in or are borne by the FMI. Risk-management frameworks should be subject to periodic review.

Risks that arise in or are borne by the FMI

There is no explicit comprehensive risk management framework for the RTGS system. As described in Principle 2 on Governance Key Consideration 6, the broad framework comprises of:

- Law of the CBBH;
- CBBH's Instruction on the Manner of Operation, Activities and Measures of the CBBH for Cases Involving a Commercial Bank Failing to Meet Obligations on Determining and Maintaining Required Reserves and in Cases of Status Changes in a Commercial Bank;
- CBBH's Business Continuity Plan;
- CBBH RTGS Operational Rules; and
- CBBH Decision on the Back Up Ways to Perform RTGS Operations describes contingency measures.

The range of potential risks that may arise include:

- *Legal risk*: Legal uncertainty for finality as 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;
- *Credit risk*: There is no credit risk. The Law on the CBBH does not permit the CBBH to provide any credit to RTGS and GCS participants, which would serve as liquidity.
- *Liquidity risk*: Default from the largest participant and its affiliates, and the consequential liquidity pressures faced by other participants in the payment system. Delayed settlement of net positions from the GCS or card switching network, or from an RTGS participant that also acts as a settlement bank to settle net positions for foreign card companies, could build up liquidity pressures for other RTGS participants that rely on

	<p>incoming payments for making outgoing settlements;</p> <ul style="list-style-type: none"> - <i>Operational risk</i>: A clearly established recovery time objective is lacking to resume RTGS operations at the secondary and back-up sites in the event that outages occur at the main site. <p>Risk management policies, procedures and systems</p> <p>CBBH RTGS Operational Rules mainly establishes measures to mitigate operational risks with contingency settlement procedures.</p> <p>CBBH Instruction on the Manner of Operation, Activities and Measures of the CBBH for Cases Involving a Commercial Bank Failing to Meet Obligations on Determining and Maintaining Required Reserves and in Cases of Status Changes in a Commercial Bank establishes the framework for liquidity management in the payment system, which includes interest rate penalties for banks failing to replenish liquidity in reserve accounts in a timely manner as stipulated under the Law of the CBBH.</p> <p>Review of risk management policies, procedures and systems</p> <p>No information</p>
<p>Key Consideration 2</p> <p>An FMI should provide incentives to participants and, where relevant, their customers to manage and contain the risks they pose to the FMI.</p>	<p>Time-zone pricing is used as an incentive to encourage the early submission of payment orders in the day for the RTGS system. Transaction fees are KM 1.2 per item from 8.00 a.m. to 12 p.m., and increase to KM 3 per item from 12 p.m. to 4 p.m.</p>
<p>Key Consideration 3</p> <p>An FMI should regularly review the material risks it bears from and poses to other entities (such as other FMIs, settlement banks, liquidity providers, and service providers) as a result of interdependencies and develop appropriate risk-management tools to address these risks.</p>	<p>Material risks</p> <p>The RTGS system has material risks from its interdependency with two deferred net settlement systems, including the GCS and card switching network (Bam Card). The GCS settles net positions on a same day settlement basis with 3 daily intervals (10:00 a.m., 1:00 p.m., and 3:00 p.m.) Bam Card settles net positions once a day at 9:00 a.m. at T+1. Loss-sharing arrangements following a participant default do not appear in CBBH GCS Operational Rules or relevant instructions or decisions. No information is available on the risk management framework for Bam Card.</p> <p>The RTGS system also has material risks from its interdependency with participants that act as settlement banks for foreign card companies. This currently includes Raiffeisen Bank dd Sarajevo for</p>

	<p>MasterCard and UniCredit Bank dd Mostar for Visa. Both foreign card networks use their settlement banks to settle their net positions in the RTGS system at T+2.</p>
	<p>Risk management tools</p> <p><i>Liquidity risk:</i> The CBBH's has tools to monitor and manage the movement of liquidity between a commercial bank's reserve account and settlement account it holds. CBBH RTGS Operational Rules (Section 4.3.3) provides the immediate direct debiting of an RTGS participant's settlement account by the CBBH if there are sufficient funds. In the case of insufficient funds at the time of direct debiting, Section 4.3.5 requires the RTGS participant/net debtor to obtain sufficient funds immediately upon notification and no later than 15 minutes upon such notification. In the event that the RTGS participant/net debtor has failed to obtain sufficient funds in a timely fashion, the CBBH may transfer funds from RTGS participant/net debtor reserve accounts to settlement accounts to effect payments.</p> <p><i>Operational risk:</i> CBBH RTGS Operational Rules (Section 5) establishes contingency settlement procedures. CBBH Decision on the Back Up Ways to Perform RTGS Operations requires commercial banks to provide their own back up locations for the performance of the RTGS in contingency situations. Otherwise, commercial banks are required to contract the backup agreement to another commercial bank to perform such operations in contingency situations.</p>
<p>Key Consideration 4</p> <p>An FMI should identify scenarios that may potentially prevent it from being able to provide its critical operations and services as a going concern and assess the effectiveness of a full range of options for recovery or orderly wind-down. An FMI should prepare appropriate plans for its recovery or orderly wind-down based on the results of that assessment. Where applicable, an FMI should also provide relevant authorities with the information</p>	<p>Scenarios that may prevent an FMI from providing critical operations and services.</p> <p>The CBBH Business Continuity Plan includes a scenario whereby a wide-scale disaster necessitates the movement of payment and settlement operations from the main and secondary sites in Sarajevo to the disaster recovery site in Banja Luka.</p> <p>Recovery and orderly wind-down plans</p> <p>Not applicable. The CBBH owns and operates the RTGS system as one of the services which it has undertaken to provide to ensure continuity of operations as necessary in extreme financial circumstances. The RTGS pricing policy is aimed at recovering maintenance costs rather than making a profit.</p>

needed for purposes of resolution planning.	
Key Conclusions for Principle 3	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.
Assessment of Principle 3	Partly Observed
Recommendations and comments	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.

Principle 7. Liquidity Risk

An FMI should effectively measure, monitor, and manage its liquidity risk. An FMI should maintain sufficient liquid resources in all relevant currencies to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate liquidity obligation for the FMI in extreme but plausible market conditions.

Key Consideration 1 An FMI should have a robust framework to manage its liquidity risks from its participants, settlement banks, nostro agents, custodian banks, liquidity providers, and other entities.	<p>The framework for managing liquidity risks comprises of three components, including:</p> <ul style="list-style-type: none"> - <i>CBBH Law</i>, which establishes the rule for reserve requirements (Article 36) and money market operations (Article 37); - <i>CBBH Instruction on the Manner of Operation, Activities and Measures of the CBBH for Cases Involving a Commercial Bank Failing to Meet Obligations on Determining and Maintaining Required Reserves and in Cases of Status Changes in a Commercial Bank</i> establishes the framework for liquidity management in the payment system, which includes interest rate penalties for banks failing to replenish liquidity in reserve accounts in a timely manner as stipulated under the Law of the CBBH; and
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	<ul style="list-style-type: none"> - <i>CBBH RTGS Operational Rules</i> (Section 4.3.5), which permits the CBBH to transfer funds from participant/net debtor reserves to settlement accounts if there are insufficient funds to effect payments in accordance with the CBBH Instruction on Reserve Requirement.
<p>Key Consideration 2</p> <p>An FMI should have effective operational and analytical tools to identify, measure, and monitor its settlement and funding flows on an ongoing and timely basis, including its use of intraday liquidity.</p>	<p>The RTGS system prevents settlement without pre-funding. RTGS participants are required to secure funds in settlement accounts held with the CBBH prior to settlement. The CBBH could dispose of entire reserve funds of participants in settlement, which they hold with the CBBH (including required reserves).</p> <p>CBBH Law (Article 36) on Required Reserves of Banks stipulates that: 'Required reserves shall be maintained by way of cash holdings or by way of deposits with the central bank, through its head office and main units, and shall be calculated as average daily reserves over 10 day periods.' Further details include:</p> <ul style="list-style-type: none"> - <i>Funds to meet reserve requirements:</i> Funds comprise of the average amount of funds of banks in reserve accounts, and deposits and borrowed funds in foreign currencies. Cash in the vaults of commercial banks were excluded as of June 1, 2003. - <i>Calculation period for reserve requirements:</i> There are three calculation periods per month, including (i) first to the tenth; (ii) eleventh to the twentieth, and (iii) twenty first to the last day of the month. The maintenance period follows the calculation period. Every year consists of 36 calculations and maintenance periods. - <i>Required reserves rate:</i> As of February 1, 2011, the required reserves rate was lowered from 14 percent to 10 percent on the base with maturity up to one year, representing a measure to increase liquidity and free up credit potential. - <i>Remuneration on required reserves:</i> As of August 1, 2011, remuneration was calculated as 70 percent of the rate that is equal to the weighted average of the interest rates the CBBH earns in the same period in the market on its deposits invested up to a month. The remuneration rate on excess reserves is 90 percent of that rate.

	CBBH Law (Article 37 on Money Market Operations) stipulates that the central bank 'shall not engage in money market operations involving securities of any type.'
<p>Key Consideration 3</p> <p>A payment system or SSS, including one employing a DNS mechanism, should maintain sufficient liquid resources in all relevant currencies to effect same-day settlement, and where appropriate intraday or multiday settlement, of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate payment obligation in extreme but plausible market conditions.</p>	<p>The RTGS system only settles transactions in domestic currency. The CBBH can intervene on a daily basis to ensure sufficient liquidity is available for RTGS participants for settlement. This involves transferring funds from commercial bank reserve accounts to settlement accounts.</p> <p>Potential risk scenarios include the delayed settlement of net positions from the GCS.</p>
<p>Key Consideration 4</p> <p>A CCP should maintain sufficient liquid resources in all relevant currencies to settle securities-related payments, make required variation margin payments, and meet other payment obligations on time with a high degree of confidence under a wide range of potential stress scenarios that should include, but</p>	<p>Sufficient liquid resources</p> <p>Not applicable</p>

<p>not be limited to, the default of the participant and its affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions. In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should consider maintaining additional liquidity resources sufficient to cover a wider range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would generate the largest aggregate payment obligation to the CCP in extreme but plausible market conditions.</p>	<p>Risk profile and systemic importance in multiple jurisdictions</p> <p>Not applicable</p>
<p>Key Consideration 5</p> <p>For the purpose of meeting its minimum liquid resource requirement, an FMI's qualifying liquid resources in each currency include cash at the central bank of issue and at creditworthy commercial banks, committed lines of credit, committed foreign exchange swaps, and committed repos, as well as highly marketable collateral held in custody and investments that are readily available and convertible into cash with prearranged and highly reliable funding arrangements, even in extreme but plausible market conditions. If an FMI has access to routine credit at the central bank of issue, the FMI may count such access as part of the minimum requirement to the extent it has</p>	<p>Size and composition of qualifying liquid resources</p> <p>Commercial bank reserves held with the CBBH amounted to KM 3.7 billion as of June 31, 2014, comprised around KM 1.37 billion of required reserves and KM 2.32 billion of excess reserves.</p> <p>Availability and coverage of qualifying liquid resources</p> <p>RTGS participants maintain settlement accounts at the CBBH. CBBH RTGS Operational Rules (Section 4.3.5) permits the CBBH to transfer funds from participant/net debtor reserves to settlement accounts if there are insufficient funds to effect payments.</p>

<p>collateral that is eligible for pledging to (or for conducting other appropriate forms of transactions with) the relevant central bank. All such resources should be available when needed.</p>	
<p>Key Consideration 6</p> <p>An FMI may supplement its qualifying liquid resources with other forms of liquid resources. If the FMI does so, then these liquid resources should be in the form of assets that are likely to be saleable or acceptable as collateral for lines of credit, swaps, or repos on an ad hoc basis following a default, even if this cannot be reliably prearranged or guaranteed in extreme market conditions. Even if an FMI does not have access to routine central bank credit, it should still take account of what collateral is typically accepted by the relevant central bank, as such assets may be more likely to be liquid in stressed circumstances. An FMI should not assume the availability of emergency central bank credit as a part of its liquidity plan.</p>	<p>Size and composition of supplemental liquid resources</p> <p>Not applicable</p> <hr/> <p>Availability of supplemental liquid resources</p> <p>Not applicable</p>
<p>Key consideration 7</p> <p>An FMI should obtain a high degree of confidence, through rigorous due</p>	<p>Use of liquidity providers</p> <p>Not applicable</p>

<p>diligence, that each provider of its minimum required qualifying liquid resources, whether a participant of the FMI or an external party, has sufficient information to understand and to manage its associated liquidity risks, and that it has the capacity to perform as required under its commitment. Where relevant to assessing a liquidity provider's performance reliability with respect to a particular currency, a liquidity provider's potential access to credit from the central bank of issue may be taken into account. An FMI should regularly test its procedures for accessing its liquid resources at a liquidity provider.</p>	<p>Reliability of liquidity providers</p> <p>Not applicable</p>
<p>Key consideration 8</p> <p>An FMI with access to central bank accounts, payment services, or securities services should use these services, where practical, to enhance its management of liquidity risk.</p>	<p>Not applicable</p>
<p>Key Consideration 9</p> <p>An FMI should determine the amount and regularly test the sufficiency of its liquid resources through rigorous stress testing. An FMI should have clear procedures to report the results of its stress tests to appropriate decision makers at the FMI and to use these results to evaluate the adequacy of and adjust its liquidity risk-management framework. In conducting stress testing, an FMI should consider a wide range of relevant scenarios.</p>	<p>Stress test program</p> <p>There is no stress testing of the payment system to test the sufficiency of liquid resources.</p> <p>The CBBH conducts regular stress tests to determine the appropriate level of capacity of the banking sector to absorb extreme, but likely unfavorable scenarios. This focuses on identifying vulnerabilities in the quality of assets and capital structure due to the deterioration of macroeconomic conditions and rising risks, particularly credit risk, but also liquidity risk and interest rate risk.</p>

<p>Scenarios should include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions. Scenarios should also take into account the design and operation of the FMI, include all entities that might pose material liquidity risks to the FMI (such as settlement banks, nostro agents, custodian banks, liquidity providers, and linked FMIs), and where appropriate, cover a multiday period. In all cases, an FMI should document its supporting rationale for, and should have appropriate governance arrangements relating to, the amount and form of total liquid resources it maintains.</p>	<p>Stress test scenarios</p> <p>There are no forward-looking stress test scenarios in a variety of extreme but plausible market conditions.</p>
	<p>Review and validation</p> <p>As there is no stress test, there are no reviews or validation to test the sufficiency of liquid resources.</p>
<p>Key consideration 10</p> <p>An FMI should establish explicit rules and procedures that enable the FMI to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations on time following any individual or combined default among its participants. These rules and procedures should address unforeseen and potentially uncovered liquidity shortfalls and should aim to avoid unwinding, revoking, or delaying the same-day settlement of payment obligations. These rules and procedures should also indicate the FMI's process to replenish any liquidity resources it may employ during a stress event, so that it can continue to operate in a safe and sound manner.</p>	<p>Same day settlement</p> <p>The RTGS system operates on a same-day settlement basis.</p> <p>Replenishment of liquidity resources</p> <p>CBBH Law (Article 36, Point 5) on Required Reserves of Banks stipulates that: 'If a bank fails to fulfill its required reserves for two consecutive periods, the central bank will cease to process withdrawal transactions for the bank, and will inform the appropriate banking authorities so that the appropriate measures are taken to correct the shortfall within the same week. If the failure to fulfill the reserve requirement continues for another week, the central bank will inform the appropriate banking authorities so they can initiate procedures to close the bank. The central bank will impose on and collect from any bank that fails to maintain the required reserves prescribed by the central bank a penalty up to five per mil (5/1000) per day on the shortfall in such bank's required reserves, until the shortfall is corrected.'</p>

	<p>The CBBH Instruction on the Manner of Operation, Activities and Measures of the CBBH for Cases Involving a Commercial Bank Failing to Meet Obligations on Determining and Maintaining Required Reserves and in Cases of Status Changes in a Commercial Bank establishes the framework for liquidity management in the payment system, which includes interest rate penalties for banks failing to replenish liquidity in reserve accounts in a timely manner as stipulated under the Law of the CBBH. Specific measures taken under this instruction fall into three reserve maintenance periods if a commercial bank fails to meet minimum reserve requirements and include:</p> <ul style="list-style-type: none"> - <i>Article 2:</i> 'When the bank fails to meet the reserve requirements after one maintenance period, the CBBH shall: (i) make calculation of the required reserves and notify the bank about the amount of deficit and calculated penalty interests; (ii) upon performed calculation, inform the competent banking agency in FBiH or RS; (iii) collect the calculated penalty interests from the bank's reserve account in favor of the CBBH account no later than 5 days after the expiry of the previous maintenance period. If the bank's reserve account does not contain sufficient funds, the collection shall be made successively until the final payment of the total amount'; - <i>Article 3:</i> 'When the bank fails to meet the reserve requirements after two consecutive maintenance periods, the CBBH shall: (i) on the next working day, after the expiry of the second consecutive maintenance period in which the bank failed to meet the reserve requirements, discontinue transactions that relate to reducing reserve account upon request of the bank; (ii) enable the bank to make payments from the settlement account in the RTGS system only up to the amount of achieved daily inflow on that account; (iii) make calculation of the required reserves and notify the bank about the amount of deficit and calculated penalty interests; (iv) upon performed calculation, inform the competent banking agency in order to undertake appropriate measures; (v) proceed with settlement account balance transfer in the RTGS system on the bank reserve account; and (vi) collect the calculated penalty interests from the bank's reserve account in favor of the CBBH account no later than 5 days after the expiry of the previous maintenance period. If the bank's reserve
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	<p>account does not contain sufficient funds, the collection shall be made successively until the final payment of the total amount. Article 4 stipulates that the CBBH shall resume the performance of transactions that relate to reducing the reserve account upon request of the Bank referred to in Article 3 of this Instruction on the following working day after the bank meets the reserve requirements for the current maintenance period; and</p> <p>- <i>Article 5:</i> 'When the bank fails to meet the reserve requirements after three consecutive maintenance periods, the CBBH shall: (i) on the next working day, after the expiry of the third consecutive maintenance period in which the bank failed to meet the reserve requirements, discontinue all payments from the settlement account in the RTGS system; (ii) make calculation of the required reserves and notify the bank about the amount of deficit and calculated default interests; (iii) upon performed calculation, inform the competent agency in order to be able to undertake appropriate measures against the bank; (iv) proceed with settlement account balance transfer in the RTGS system on the bank reserve account; and (v) collect the calculated penalty interests from the bank's reserve account in favor of the CBBH account no later than five days after the expiry of the previous maintenance period. If the bank's reserve account does not contain sufficient funds, the collection shall be made successively until the final payment of the total amount.</p>
Key Conclusions for Principle 7	<p>The framework to manage liquidity risk is generally effective and robust, but could be strengthened. There are no intraday liquidity facilities. 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.</p>
Assessment of Principle 7	Broadly Observed

Recommendations and comments	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.
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Principle 8. Settlement Finality

An FMI should provide clear and certain final settlement, at a minimum by the end of the value date. Where necessary or preferable, an FMI should provide final settlement intraday or in real time.

<p>Key Consideration 1</p> <p>An FMI's rules and procedures should clearly define the point at which settlement is final.</p>	<p>Point of settlement finality</p> <p>CBBH RTGS Operational Rules (Section 3.2.1) establishes funds availability and irrevocability of payment orders. Section 3.2.2 establishes finality. Section 3.2.2 states: 'Any payment shall be deemed as final once the funds have been accounted for on the settlement account of the RTGS system participants.'</p> <p>Finality in the case of links</p> <p>Not applicable</p>
<p>Key Consideration 2</p> <p>An FMI should complete final settlement no later than the end of the value date, and preferably intraday or in real time, to reduce settlement risk. An LVPS or SSS should consider adopting RTGS or multiple-batch processing during the settlement day.</p>	<p>Final settlement on the value date</p> <p>CBBH RTGS Operational Rules (Section 3.2.1) establishes funds availability and irrevocability of payment orders. Section 3.2.2 establishes finality.</p> <p>Intraday or real-time final settlement</p> <p>CBBH RTGS Operational Rules (Section 3.2.1) establishes funds availability and irrevocability of payment orders. Section 3.2.2 establishes finality.</p>
<p>Key Consideration 3</p> <p>An FMI should clearly define the point after which unsettled payments, transfer instructions, or other obligations may not be revoked by a participant.</p>	<p>CBBH RTGS Operational Rules (Section 3.2.1) states: 'Payment orders that include amounts up to the cover on the settlement account of any RTGS system participant may not be reversed once transmitted to the RTGS system and shall be executed on the same day and by the RTGS close of business on that day.'</p>
<p>Key conclusions for Principle 8</p>	<p>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.</p>

Assessment of Principle 8	Broadly Observed
Recommendations and Comments	Strengthen the legal framework to designate payment systems, and to protect settlement finality and netting in line with international standards.

Principle 9. Money Settlements	
An FMI should conduct its money settlements in central bank money where practical and available. If central bank money is not used, an FMI should minimize and strictly control the credit and liquidity risks arising from the use of commercial bank money.	
<p>Key Consideration 1</p> <p>An FMI should conduct its money settlements in central bank money, where practical and available, to avoid credit and liquidity risks.</p>	Money settlements are based on central bank money. Commercial banks hold settlement accounts and reserve accounts at the CBBH.
<p>Key Consideration 2</p> <p>If central bank money is not used, an FMI should conduct its money settlements using a settlement asset with little or no credit or liquidity risk.</p>	Not applicable
<p>Key Consideration 3</p> <p>If an FMI settles in commercial bank money, it should monitor, manage, and limit its credit and liquidity risks arising from the commercial settlement banks. In particular, an FMI should establish and monitor adherence to strict criteria for its settlement banks that take account of, among other things, their regulation and supervision, creditworthiness, capitalization, access to liquidity, and operational reliability. An FMI should also monitor and manage the concentration of credit and liquidity exposures to its commercial</p>	Not applicable

settlement banks.	
Key Consideration 4 If an FMI conducts money settlements on its own books, it should minimize and strictly control its credit and liquidity risks.	Not applicable
Key Consideration 5 An FMI's legal agreements with any settlement banks should state clearly when transfers on the books of individual settlement banks are expected to occur, that transfers are to be final when effected, and that funds received should be transferable as soon as possible, at a minimum by the end of the day and ideally intraday, in order to enable the FMI and its participants to manage credit and liquidity risks.	Not applicable
Key Conclusions for Principle 9	Money settlements are based on central bank money.
Assessment of Principle 9	Observed
Recommendations and Comments	None

Principle 13. Participant-default Rules and Procedures

An FMI should have effective and clearly defined rules and procedures to manage a participant default. These rules and procedures should be designed to ensure that the FMI can take timely action to contain losses and liquidity pressures and continue to meet its obligations.

Key Consideration 1 An FMI should have default rules and procedures that enable the FMI to continue to meet its obligations	<p>Participant default rules and procedures</p> <p>Default rules and procedures are described in the CBBH Instruction on the Manner of Operation, Activities and Measures of the CBBH for Cases Involving a Commercial Bank Failing to Meet Obligations</p>
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<p>in the event of a participant default and that address the replenishment of resources following a default.</p>	<p>on Determining and Maintaining Required Reserves and in Cases of Status Changes in a Commercial Bank establishes the framework for liquidity management in the payment system, which includes interest rate penalties for banks failing to replenish liquidity in reserve accounts in a timely manner as stipulated under the Law of the CBBH. It also defines the rules and procedures for managing the cases of changes in the status of participants (institution of bankruptcy or liquidation proceedings, merger with another participant or a participant's exit). Specific measures are described in Principle 7 (Key Consideration 10).</p> <p>Use of financial resources</p> <p>See Principle 7 (Key Consideration 10)</p>
<p>Key Consideration 2 An FMI should be well prepared to implement its default rules and procedures, including any appropriate discretionary procedures provided for in its rules.</p>	<p>Procedures are clear, defined, applied in practice and available to all participants. Default rules are well prepared and have been implemented against a commercial bank in practice when it faced interest rate penalties after failing to fulfill minimum reserve requirements.</p>
<p>Key Consideration 3 An FMI should publicly disclose key aspects of its default rules and procedures.</p>	<p>Procedures are clear, defined, applied in practice and available to all participants.</p>
<p>Key Consideration 4 An FMI should involve its participants and other stakeholders in the testing and review of the FMI's default procedures, including any close-out procedures. Such testing and review should be conducted at least annually or following material changes to the rules and procedures to ensure that they are practical and effective.</p>	<p>There is no involvement of participants in the testing and review of default procedures.</p>
<p>Key Conclusions for Principle 13</p>	<p>Participant default rules and procedures are clearly defined and available to all participants.</p>
<p>Assessment of Principle 13</p>	<p>Observed</p>
<p>Recommendations and comments</p>	<p>Participant default rules and procedures need to be tested and reviewed annually.</p>

Principle 15. General Business Risk

An FMI should identify, monitor, and manage its general business risk and hold sufficient liquid net assets funded by equity to cover potential general business losses so that it can continue operations and services as a going concern if those losses materialize. Further, liquid net assets should at all times be sufficient to ensure a recovery or orderly wind-down of critical operations and services.

<p>Key Consideration 1</p> <p>An FMI should have robust management and control systems to identify, monitor, and manage general business risks, including losses from poor execution of business strategy, negative cash flows, or unexpected and excessively large operating expenses.</p>	<p>The RTGS system is owned and operated by the CBBH. Pursuant to the Law of the CBBH, CBBH Management is required to prepare financial statements for each financial year which give a true and fair view of the financial position of the CBBH and of the results of its operations and cash flows, in accordance with International Financial Reporting Standards as published by the International Accounting Standards Board. CBBH is responsible to submit its annual financial statements to its Governing Board for approval and later submission to the Parliamentary Assembly of BiH.</p> <p>The Law of the CBBH establishes the criteria for profit allocation. The CBBH allocates 60 percent of the current profit to the account of the Ministry of Finance and Treasury of the Council of Ministers, which is responsible for the Budget of BiH. The amount of the subscribed capital and general reserves (retained earnings) must be equal or higher than 5 percent of total monetary liabilities. Alternatively, the aforementioned ministry is under an obligation to secure funds for CBBH operations if there is no net profit.</p> <p>The CBBH's Risk Management Department and Financial Stability Department also monitor, manage and warn about potential risks. Likewise, the findings of internal and external audits (which regularly carry out the analysis) cover the area of risks. Such analyses use data and information provided by EBAs.</p>
<p>Key Consideration 2</p> <p>An FMI should hold liquid net assets funded by equity (such as common stock, disclosed reserves, or other retained earnings) so that it can continue operations and services as a going concern if it incurs general business losses. The amount of liquid net assets funded by equity an FMI should hold should be determined by its general business risk profile and the length of time</p>	<p>Not applicable</p>

<p>required achieving a recovery or orderly wind-down, as appropriate, of its critical operations and services if such action is taken.</p>	
<p>Key Consideration 3 An FMI should maintain a viable recovery or orderly wind-down plan and should hold sufficient liquid net assets funded by equity to implement this plan. At a minimum, an FMI should hold liquid net assets funded by equity equal to at least six months of current operating expenses. These assets are in addition to resources held to cover participant defaults or other risks covered under the financial resources principles. However, equity held under international risk-based capital standards can be included where relevant and appropriate to avoid duplicate capital requirements.</p>	<p>Recovery or orderly wind-down plan Not applicable</p> <p>Resources Not applicable</p>
<p>Key Consideration 4 Assets held to cover general business risk should be of high quality and sufficiently liquid in order to allow the FMI to meet its current and projected operating expenses under a range of scenarios, including in adverse market conditions.</p>	<p>Not applicable</p>
<p>Key Consideration 5 An FMI should maintain a viable plan for raising additional equity should its equity fall close to or below the amount needed. This plan should be approved by the board of directors and updated regularly.</p>	<p>Not applicable</p>

Key Conclusions for Principle 15	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. The CBBH is financially sound with net profits registered during 2011 to 2013.
Assessment of Principle 15	Observed
Recommendations and Comments	None

Principle 17. Operational Risk

An FMI should identify the plausible sources of operational risk, both internal and external, and mitigate their impact through the use of appropriate systems, policies, procedures, and controls. Systems should be designed to ensure a high degree of security and operational reliability and should have adequate, scalable capacity. Business continuity management should aim for timely recovery of operations and fulfillment of the FMI's obligations, including in the event of a wide-scale or major disruption.

Key Consideration 1 An FMI should establish a robust operational risk-management framework with appropriate systems, policies, procedures, and controls to identify, monitor, and manage operational risks.	<p>Identification of operational risk</p> <p>CBBH RTGS Operational Rules (Section 5) establishes contingency settlement procedures. CBBH Decision on the Back Up Ways to Perform RTGS Operations requires commercial banks to provide their own back up locations for the performance of the RTGS in contingency situations. Otherwise, commercial banks are required to contract the backup agreement to another commercial bank to perform such operations in contingency situations.</p> <p>The CBBH has a Business Continuity Plan for internal use. Operational risks are identified as follows:</p> <ul style="list-style-type: none"> - Internal factors (unauthorized activities, theft, fraud); - External factors (robbery, fraud, external security system, external disasters); - Human resource relations, and occupational health and safety (including discrimination, bullying); - Payment systems, commercial banks in BiH, and correspondent foreign bank relationships and business processes (incorrect or incomplete reports received from or sent to commercial banks); - Systems (hardware; software; telecommunication networks; disruption in electricity, water, gas, and other energy supplies for the CBBH);
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	<ul style="list-style-type: none"> - Outsourcing of activities; and - Transactions management and reporting for payment systems, foreign currency reserve management, and central bank deposits. <p>The Information Management System (IMS) acts as an incident monitoring and reporting system within the CBBH, which includes the RTGS operations.</p>
	<p>Management of operational risk</p> <p>CBBH operational risks are managed based on an internal document on “Methodology for Operational Risk Management in the CBBH,” dated 2014, which defines the operational risk management framework and steps within the framework.</p> <p>The Chief Internal Audit conducts an audit of the payment system once every two years or as requested by the Governing Board or Management if there are emerging issues. This covers all types of risks (including operational risk) and involves the completion of a questionnaire by the Payment Systems Department. The Chief Internal Auditor reports directly to the Governing Board.</p> <p>The Payment Systems Department assesses risks in the payment system and publishes results in the CBBH Annual Report. This includes operational and liquidity risks.</p>
	<p>Policies, processes and controls</p> <p>Staff from different organizational units report events that are sources of operational risk, which undergo validation and used to create a database of operational risks. Reports are created in the application Operational Risk Tool. They include data on Value at Risk amounts with confidence levels of 99 percent and 99.9 percent. Information on expected losses is also included. Value at Risk developments is monitored in time in order to identify any change in operational risk exposures. Statistical loss reports are also created in the same application. The loss statistics report indicates the number of events, gross loss, average loss, and highest individual loss for each CBBH business line. This report reviews the number of events over a period of time, the distribution of total losses by business line, and the number of events and level of total loss by business line.</p> <p>Risk control tasks include: (i) risk analysis, and (ii) participation in</p>

	the development, implementation, and oversight of the functioning of risk management methods and models.
<p>Key Consideration 2</p> <p>An FMI's board of directors should clearly define the roles and responsibilities for addressing operational risk and should endorse the FMI's operational risk-management framework. Systems, operational policies, procedures, and controls should be reviewed, audited, and tested periodically and after significant changes.</p>	<p>Roles, responsibilities and framework</p> <p>The Governor, with the approval of the Governing Board of the CBBH, appoints the Chief Internal Auditor and Deputies to control risks in the CBBH. The Chief Internal Auditor reports directly to the CBBH Governing Board.</p> <p>All CBBH organizational units participate in operational risk management. Department or sub-department managers are responsible for setting up a system to report operational risk. Each responsible organizational unit nominates an officer responsible for entering data on operational risks in the Vivaldi (Virtual Validator and Data Importer).</p> <p>The CBBH has a Risk Management Department (RMD), which is responsible for the following:</p> <ul style="list-style-type: none"> - Entering of data within its department; - Validation of data in the Vivaldi application; - Calculation of Value at Risk; - Generating Value at Risk reports; and - Generating statistical operational loss reports for the bank using the Operational Risk Tool application. <p>The CBBH operational risk management framework follows a six steps process, including risk identification, measurement, monitoring, reporting, control, and financing of losses.</p> <p>Operational risks are classified into 28 types, which includes risks associated with (i) recording and executing of transactions, executing domestic payments, accounting, etc, and (ii) payment systems and payment systems management. This classification follows Basel 2, as approved by the Governing Board.</p> <p>Review, audit and testing</p> <p>Directors and managers of organizational units in the CBBH's head office submit to the RMD quarterly reviews of all entered and new events that occurred in their units in the reporting period. The RMD generates two types of reports for the purpose of monitoring operational risks, including the operational Value at Risk report and loss statistics report. The RMD reports to CBBH Management</p>

	on a semi-annual basis. CBBH Management reports to the CBBH Governing Board on an annual basis.
<p>Key Consideration 3</p> <p>An FMI should have clearly defined operational reliability objectives and should have policies in place that are designed to achieve those objectives.</p>	No information is available.
<p>Key Consideration 4</p> <p>An FMI should ensure that it has scalable capacity adequate to handle increasing stress volumes and to achieve its service-level objectives.</p>	The RTGS system has scalable capacity that could settle around 260,000 transactions over an 8 hour period. This provides adequate capacity with the current level of transactions, which were around 3,000 transactions per day in 2014.
<p>Key Consideration 5</p> <p>An FMI should have comprehensive physical and information security policies that address all potential vulnerabilities and threats.</p>	<p>Physical security</p> <p>All RTGS systems at both primary and disaster recovery sites are located in an environment with different risk profiles with around-the-clock close circuit television surveillance, access control, air conditioning, uninterrupted power supplies, and fire prevention systems.</p> <p>Information security</p> <p>Modern software and hardware tools are used to protect information security. The primary and disaster recovery sites are supported with hot standby equipment. Penetration testing is conducted on a regular basis to confirm information security.</p>
<p>Key Consideration 6</p> <p>An FMI should have a business continuity plan that addresses events posing a significant risk of disrupting operations, including events that could cause a wide-scale or major disruption. The plan should incorporate the use of a secondary site and should be designed to ensure that critical information technology (IT) systems can resume</p>	<p>Objectives of business continuity plan</p> <p>The CBBH has a Business Continuity Plan for internal use. The BCP plan aims to successfully close the current business day and notify all parties on their account balances. Depending on the circumstances, a business day on the disaster recovery site resumes on the day of disruption, and no later than the following business day.</p> <p>Design of business continuity plan</p> <p>The BCP plan details the parties, tools and measures to be implemented in case work resumes on the disaster recovery site.</p>

<p>operations within two hours following disruptive events. The plan should be designed to enable the FMI to complete settlement by the end of the day of the disruption, even in case of extreme circumstances. The FMI should regularly test these arrangements.</p>	<p>Secondary site</p> <p>RTGS, GCS, and SWIFT operations functions from their primary site in Sarajevo. The primary site has back-up facilities, which operate on a synchronous basis.</p> <p>A disaster recovery site was established in the Main Bank of the RS in Banja Luka, which is located around 200 kilometers from Sarajevo. Both sites in Sarajevo and Banja Luka are linked through multiprotocol label switching, which is a high-performance telecommunications network.</p> <p>The CBBH has trained personnel and equipment at its disaster recovery site to carry out operations, following any disruptions, until the primary site resumes operations. The RTGS system on the primary site has a hot standby back-up system, which immediately resumes operations in case of disruptions. Detailed operational procedures are established on the primary, back-up, and disaster recovery sites.</p> <p>Review and testing</p> <p>The disaster recovery site is tested three times a year. This is carried out through live operations with participants that have duration of five days.</p> <p>All information from the primary site is uploaded to the disaster recovery site and archived. This covers the following: RTGS, GCS, Electronic Interbanking Money Market, Central Registry of Credits, and the Single Registry of Legal Entities' Transaction Accounts, and Clearing of International Payments. There are agreements for maintaining all of these systems.</p>
<p>Key Consideration 7</p> <p>An FMI should identify, monitor, and manage the risks that key participants, other FMIs, and service and utility providers might pose to its operations. In addition, an FMI should identify, monitor, and</p>	<p>Risks to the FMI's own operations</p> <p>The CBBH and banking agencies prescribe technical and organizational requirements for all participants' operations to minimize risks to their operations. The RTGS system procures services, wherever possible, from different service providers. For example, primary and secondary SWIFT connections are procured from different service providers.</p>

manage the risks its operations might pose to other FMIs.	Risks posed to other FMIs Not applicable
Key Conclusions for Principle 17	Operational risk in payment systems is well managed as part of critical operations in the business continuity plan and internal procedures. The primary site is supported by a modern and well staffed secondary site located around 200 kilometers from the primary site, which acts as a disaster recovery site following a disruptive event. The disaster recovery site is tested regularly three times a year with participants with each test having duration of five days. However, the operational risk management framework could be further improved by clearly establishing in writing the service availability and recovery time objectives.
Assessment of Principle 17	Broadly Observed
Recommendations and Comments	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.

Principle 18. Access and Participation Requirements

An FMI should have objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access.

Key Consideration 1 An FMI should allow for fair and open access to its services, including by direct and, where relevant, indirect participants and other FMIs, based on reasonable risk-related participation requirements.	Participation criteria and requirements CBBH RTGS Operational Rules (Section 1.2.3) establish the CBBH and licensed banks as participants. Section 1.2.4 states that the RTGS system settles payment orders from the GCS and any other legal person acting in the capacity of a clearing agent (Bam Card). There is categorization of direct or indirect participation. Future direct participants (banks) are required to have licenses issued by the EBAs and meet technical requirements. There were 29 participants at end-November 2014, including 28 commercial banks and the CBBH.
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	<p>Access to trade repositories</p> <p>Not applicable</p>
<p>Key Consideration 2</p> <p>An FMI's participation requirements should be justified in terms of the safety and efficiency of the FMI and the markets it serves, be tailored to and commensurate with the FMI's specific risks, and be publicly disclosed. Subject to maintaining acceptable risk control standards, an FMI should endeavor to set requirements that have the least-restrictive impact on access that circumstances permit.</p>	<p>Justification and rationale of participation criteria</p> <p>Any changes to the defined requirements and rules are presented to participants in a clear manner during their review and especially after their approval. For example, the operational rules of the RTGS system and GCS and their changes, in addition to being published on the CBBH website, are also submitted in writing to each participant. Participants are obliged to sign that they accept the proposed rules.</p> <p>Least restrictive access</p> <p>CBBH RTGS Operational Rules (Section 1.2.3) establish that participants shall be the CBBH and commercial banks, which have a license issued by a competent banking agency to perform payment operations and a settlement account held at the CBBH.</p> <p>CBBH RTGS Operational Rules (Section 1.2.4) establish that the RTGS system shall settle all payment orders, irrespective of amount, sent for execution by any RTGS participant, the CBBH, the GCS, and any other legal person acting in their capacity of a clearing agent (Bam Card).</p> <p>Disclosure of criteria</p> <p>CBBH RTGS Operational Rules, which include participation criteria (Section 2), are publicly disclosed.</p>
<p>Key Consideration 3</p> <p>An FMI should monitor compliance with its participation requirements on an ongoing basis and have clearly defined and publicly disclosed procedures for facilitating the suspension and orderly exit of a participant that breaches, or no longer meets, the participation requirements.</p>	<p>Monitoring compliance</p> <p>EBA's conduct regular supervision of commercial banks to ensure their compliance with participation requirements.</p> <p>Suspension and orderly exit</p> <p>CBBH RTGS Operational Rules (Section 1.3.9) empowers the CBBH to restrict settlement operations between individual RTGS participants and suspend operations of the RTGS system on a prolonged or brief period of time if such action is in the best interest of the CBBH and RTGS participants.</p> <p>CBBH RTGS Operational Rules (Section 2.5.1) permits the CBBH to exclude any RTGS participant, provisionally or permanently, in the</p>

	<p>event that such participant has not met participation requirements, breached rules, and whose further participation may have adverse effects to the RTGS system.</p> <p>CBBH RTGS Operational Rules (Section 2.5.2) establish that each participant may be excluded from the RTGS system immediately if a supervisory measure taken against such participant precludes it to carry out payment services or in the event of any other hindrance to carry out payment services.</p>
Key Conclusions for Principle 18	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.
Assessment of Principle 18	Observed
Recommendations and Comments	None

Principle 19. Tiered Participation Requirements

An FMI should identify, monitor, and manage the material risks to the FMI arising from tiered participation arrangements.

<p>Key Consideration 1</p> <p>An FMI should ensure that its rules, procedures, and agreements allow it to gather basic information about indirect participation in order to identify, monitor, and manage any material risks to the FMI arising from such tiered participation arrangements.</p>	<p>Tiered participation arrangements</p> <p>The RTGS system only has direct participants, which are comprised solely of commercial banks and the CBBH. There is no category for indirect participants.</p>
	<p>Risks to the FMI</p> <p>Not applicable</p>
<p>Key Consideration 2</p> <p>An FMI should identify material dependencies between direct and indirect participants that might affect the FMI.</p>	Not applicable

<p>Key consideration 3</p> <p>An FMI should identify indirect participants responsible for a significant proportion of transactions processed by the FMI and indirect participants whose transaction volumes or values are large relative to the capacity of the direct participants through which they access the FMI in order to manage the risks arising from these transactions.</p>	Not applicable
<p>Key consideration 4</p> <p>An FMI should regularly review risks arising from tiered participation arrangements and should take mitigating action when appropriate.</p>	Not applicable
<p>Key conclusions for Principle 19</p>	There are no tiered participation arrangements with only direct participation from commercial banks and the CBBH. The RTGS system does not currently identify, monitor, and manage material risks that may potentially come from indirect participants.
<p>Assessment of Principle 19</p>	Broadly Observed
<p>Recommendations and Comments</p>	Clarify in CBBH RTGS Rules that direct participation is only permitted for commercial banks and the CBBH with no tiered participation, and participants should be disclosed. Identify material risks from potential indirect participants.

Principle 21. Efficiency and Effectiveness

An FMI should be efficient and effective in meeting the requirements of its participants and the markets it serves.

<p>Key Consideration 1</p> <p>An FMI should be designed to meet the needs of its participants and the markets it serves, in particular, with regard to choice of a clearing and settlement arrangement; operating structure; scope of products cleared, settled, or recorded; and use of</p>	<p>The RTGS system was designed to meet the need for inter-bank settlement for commercial banks. The operational and technological structure of the system provides all participants with equal and immediate access to the system. Working hours of the system are adapted to the participants and the system is always available regardless of different holidays in various parts of the country.</p>
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technology and procedures.	
<p>Key Consideration 2</p> <p>An FMI should have clearly defined goals and objectives that are measurable and achievable, such as in the areas of minimum service levels, risk-management expectations, and business priorities.</p>	<p>The main objective of the RTGS system is to ensure the smooth and immediate execution of payment orders.</p> <p>The pricing policy is aimed at recovering maintenance cost and is not profit-oriented.</p> <p>RTGS tariffs for commercial banks are set at fixed rates regardless of transaction volume or values. Time zone pricing is used to incentivize the early submission of payment instructions. Transactions are charged KM 1.2 per item from 8:00 a.m. to noon, and increase to KM 3 per item between noon and 4:00 p.m. The RTGS fee schedule was reviewed and amended once since services started in 2001 to introduce time zone pricing.</p>
<p>Key Consideration 3</p> <p>An FMI should have established mechanisms for the regular review of its efficiency and effectiveness.</p>	<p>CBBH Internal Audit monitors regularly the operation of the RTGS system with respect to risks, security, efficiency, and effectiveness.</p> <p>The PSD conducts cost accounting of the payment systems regularly with the Accounting and Finance Department.</p>
<p>Key Conclusions for Principle 21</p>	<p>The pricing policy is aimed at recovering maintenance cost and is not profit-oriented. 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.</p>
<p>Assessment of Principle 21</p>	<p>Broadly Observed</p>
<p>Recommendations and Comments</p>	<p>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.</p>

Principle 22. Communication Procedures and Standards

An FMI should use, or at a minimum accommodate, relevant internationally accepted communication procedures and standards in order to facilitate efficient payment, clearing, settlement, and recording.

<p>Key Consideration 1</p> <p>An FMI should use, or at a minimum accommodate, internationally</p>	<p>Communication procedures</p> <p>SWIFT communication procedures and network are used. Within SWIFT, a Closed User Group (CUG) is formed where payments are</p>
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accepted communication procedures and standards.	<p>made within the group in BiH. A Central Accounting System (CAS) is incorporated to hold all transaction accounts of commercial banks and participants at the CBBH.</p> <p>Communication standards</p> <p>SWIFT communication standards are used. RTGS SWIFT messages include FIN (message type that transmits financial information from one financial institution to another) and FIN-COPY (enables the sender of a message to trigger a copy to a copy destination for authorization, further processing, or monitoring by the CBBH).</p> <p>There are 4 payment message types:</p> <ul style="list-style-type: none"> - MT 102 – Multiple Customer Credit Transfer - MT 103 – Single Customer Credit Transfer - MT 202 – Financial Institution Transfer for its Own Account - MT 205 – Financial Institution Transfer Execution <p>Other RTGS messages include:</p> <ul style="list-style-type: none"> - MT 900 – Confirmation of Debit - MT 910 – Confirmation of Credit - MT 950 – Statement Message - MT 920 – Request Message - MT 941 – Balance Report - MT 942 – Interim Transaction Report
Key Conclusions for Principle 22	The RTGS system is based on internationally accepted communication procedures and standards.
Assessment of Principle 22	Observed
Recommendations and comments	None

Principle 23. Disclosure of Rules, Key Procedures and Market Data

An FMI should have clear and comprehensive rules and procedures and should provide sufficient information to enable participants to have an accurate understanding of the risks and fees and other material costs they incur by participant in the FMI. All relevant rules and key procedures should be publicly disclosed.

<p>Key Consideration 1</p> <p>An FMI should adopt clear and comprehensive rules and procedures that are fully disclosed to</p>	<p>Rules and procedures</p> <p>CBBH RTGS Operational Rules provide the comprehensive rules and procedures for the RTGS system and have been accepted in writing by all RTGS participants. The relevant rules and key</p>
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<p>participants. Relevant rules and key procedures should also be publicly disclosed.</p>	<p>procedures include:</p> <ul style="list-style-type: none"> - CBBH GCS Operational Rules - CBBH Instruction on the Manner of Operation, Activities and Measures of the CBBH for Cases Involving a Commercial Bank Failing to Meet Obligations on Determining and Maintaining Required Reserves and in Cases of Status Changes in a Commercial Bank - CBBH Instruction on the Payment Account Structure - CBBH Instruction on the Structure and Use of the International Bank Account Number - CBBH Work Plans for the RTGS and GCS - CBBH Decision on the Back Up Methods to Perform Real Time Gross Settlement Operations - CBBH Decision on Minimum Computer Configurations and the Backup Location for the GCS - Tariffs for Payment Transactions Services <p>Disclosure</p> <p>CBBH RTGS Operational Rules and most relevant rules and procedures are publicly disclosed in the CBBH website.</p>
<p>Key Consideration 2</p> <p>An FMI should disclose clear descriptions of the system's design and operations, as well as the FMI's and participants' rights and obligations, so that participants can assess the risks they would incur by participating in the FMI.</p>	<p>RTGS participants are provided with detailed functional system specifications of the RTGS system. The description of the RTGS system's design and operations are not publicly disclosed.</p> <p>CBBH RTGS Operational Rules (Sections 1.3 and 1.4) establish the rights and responsibilities of the CBBH and RTGS participants, respectively.</p>
<p>Key Consideration 3</p> <p>An FMI should provide all necessary and appropriate documentation and training to facilitate participants' understanding of the FMI's rules and procedures and the risks they face from participating in the FMI.</p>	<p>The CBBH provides all relevant documents to participants. Changes to the RTGS system or the admission of a new participant are subject to testing and training, which are required before live operations.</p>

<p>Key Consideration 4</p> <p>An FMI should publicly disclose its fees at the level of individual services it offers as well as its policies on any available discounts. The FMI should provide clear descriptions of priced services for comparability purposes.</p>	<p>Tariffs for payment transaction services are published in the Official Gazette and available on the CBBH website. Prices and service descriptions are clearly defined both in the tariffs for services, and in each individual invoice that is sent once a month to the participants for the services rendered.</p>
<p>Key Consideration 5</p> <p>An FMI should complete regularly and disclose publicly responses to the CPMI-IOSCO Disclosure framework for FMIs. An FMI also should, at a minimum, disclose basic data on transaction volumes and values.</p>	<p>The CBBH has work-in-progress on the CPMI-IOSCO Disclosure Framework for FMIS, and has plans to publicly disclose them after the completion of assessments of FMIs under the IMF-World Bank Financial Sector Assessment Program.</p> <p>RTGS transaction volume and values are disclosed on the CBBH website on a monthly basis. All RTGS participants receive a detailed report on their transactions for the previous month.</p>
<p>Key Conclusions for Principle 23</p>	<p>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.</p>
<p>Assessment of Principle 23</p>	<p>Broadly Observed</p>
<p>Recommendations and Comments</p>	<p>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 website.</p>

DETAILED ASSESSMENT OF AUTHORITIES' RESPONSIBILITIES

Responsibility A: Regulation, Supervision, and Oversight of Financial Market Infrastructures	
FMI should be subject to appropriate and effective regulation, supervision, and oversight by a central bank, market regulator, or other relevant authority.	
Key Consideration 1 Authorities should clearly define and publicly disclose the criteria used to identify FMIs that should be subject to regulation, supervision, and oversight.	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.
Key Consideration 2 FMIs that have been identified using these criteria should be regulated, supervised, and overseen by a central bank, market regulator, or other relevant authority.	The CBBH has plans to carry out FMI oversight responsibilities for payment systems it owns and operates, and cooperate with other competent authorities in areas where there is common interest to promote the efficiency and safety of FMIs. This is planned 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.
Key Conclusions for Responsibility A	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.
Assessment of Responsibility A	Partly Observed
Recommendations and Comments	Establish clearly defined and publicly disclosed criteria to identify FMIs that should be subject to regulation, supervision, and oversight by the relevant competent authorities.

Responsibility B. Regulatory, Supervisory, and Oversight Powers and Resources	
Central banks, market regulators, and other relevant authorities should have the powers and resources to carry out effectively their responsibilities in regulating, supervising, and overseeing FMIs.	
<p>Key Consideration 1</p> <p>Authorities should have powers or other authority consistent with their relevant responsibilities, including the ability to obtain timely information and to induce change or enforce corrective action.</p>	<p>Powers or other authority consistent with relevant responsibilities</p> <p>CBBH RTGS Operational Rules (Section 1.3.2) establishes the CBBH’s responsibilities to oversee and scrutinize operations performed by banks participating in the RTGS system and their compliance with the operational rules.</p>
	<p>Powers to obtain timely information</p> <p>CBBH RTGS Operational Rules (Section 1.3.3) establishes responsibilities to oversee and scrutinize the records and entries made and kept by RTGS participants. The CBBH is also empowered to hire and authorize an auditing firm to carry out oversight and scrutiny of banks with respect to compliance.</p>
	<p>Powers to induce change or enforce corrective action</p> <p>CBBH RTGS Operational Rules (Section 2.5.1) empowers the CBBH to exclude any RTGS participant, provisionally or permanently, in the event that such participant has not met the RTGS participation requirements or has breached the operational rules and whose further participation may have adverse effects to the operations of the entire RTGS system. Section 2.5.2 further states that each participant may immediately be excluded from the RTGS system if a supervisory measure taken against such participant precludes it to carry out payment operation services or in the event of any other hindrance to carry out payment operations services.</p>
<p>Key Consideration 2</p> <p>Authorities should have sufficient resources to fulfill their regulatory, supervisory, and oversight responsibilities.</p>	<p>Resources</p> <p>The CBBH has 30 staff whose responsibilities are on payment system operations.</p> <p>The Payment Systems Department (PSD) is located in the Sarajevo Main Unit of the CBBH and has three units, including: (i) Payment Systems Operations Unit, (ii) Information Technology Support Unit (which also handles inquiries relating to the credit registry managed by the CBBH), and (iii) SWIFT Unit. The PSD is staffed with 18 persons, comprised of the</p>

	<p>department head, 3 unit managers, and 14 officers.</p> <p>The Department for Monitoring Payment Systems and Back-Up Systems is located at the Main Bank of the RS of the CBBH in Banja Luka. It is staffed with 6 persons, including the department head, and is responsible for GCS operations and disaster recovery and back-up operations.</p> <p>The Unit for Monitoring and Payment Systems operates from two separate locations at the CBBH Sarajevo Main Unit and the CBBH Mostar Main Unit. Each unit is staffed with 3 persons and is responsible for GCS operations and back-up operations.</p> <p>Legal protections</p> <p>CBBH RTGS Operational Rules (Section 1.3.10) establishes a form of legal protection for staff by stating that the CBBH shall not be held responsible for suspension or strained execution of payment orders where such suspension or strained execution has been result of SWIFT network related difficulties. Section 1.3.11 notes that the CBBH shall not be held responsible for non-execution, erroneous execution or delayed execution of a payment order caused by a RTGS participant, any third party or an action which could not have been predicted or avoided.</p>
Key Conclusions for Responsibility B	<p>The Law of the CBBH mainly establishes the operational responsibilities of the central bank, including: (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. Resources in the Payment Systems Department are focused on carrying out operational duties in the payment system, and other services that are not directly related to inter-bank settlements such as maintain 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 PFMI, which were released in April 2012.</p>
Assessment of Responsibility B	Partly Observed
Recommendations and Comments	Strengthen the legal framework to designate payment systems, and to protect settlement finality and netting in line with

	international standards. Establish a new oversight unit in the Payment Systems Department, which is staffed with sufficient resources to carry out oversight responsibilities. Establish memorandum of understanding to strengthen the oversight of clearing agents, settlement banks, international payment clearing, and cooperation with relevant authorities.
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Responsibility C. Disclosure of Policies with Respect to Financial Market Infrastructures	
Central banks, market regulators, and other relevant authorities should clearly define and disclose their regulatory, supervisory, and oversight policies with respect to FMIs.	
Key Consideration 1 Authorities should clearly define their policies with respect to FMIs, which include the authorities' objectives, roles, and regulations.	There is no clearly defined policy document with respect to FMIs.
Key Consideration 2 Authorities should publicly disclose their relevant policies with respect to the regulation, supervision, and oversight of FMIs.	<p>Disclosure of policies and developments with respect to the RTGS system are contained in the CBBH Annual Report, CBBH Financial Stability Report, and the CBBH website.</p> <p>The CBBH Annual Report includes a section on payment systems that describe developments in inter-bank versus intra-bank payment systems, and the performance of the payment cards market. The section on Financial Statements and Report of Independent External Auditor includes a description of credit and operational risks relating to the domestic payment and settlement system.</p> <p>The CBBH Financial Stability Report includes a section on financial infrastructure which covers payment systems and regulatory framework.</p> <p>The CBBH website contains information on regulations, statements, tariffs, and transaction reports relating to the RTGS system.</p>
Key Conclusions for Responsibility C	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.
Assessment of Responsibility C	Broadly Observed

Recommendations and Comments	Develop a policy document to clearly define and disclose the regulatory, supervisory, and oversight policies of the CBBH with respect to the RTGS system.
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Responsibility D. Application of the Principles for Financial Market Infrastructures	
Central banks, market regulators, and other relevant authorities should adopt the CPMI-IOSCO Principles for financial market infrastructures and apply them consistently.	
Key Consideration 1 Authorities should adopt the CPMI-IOSCO Principles for financial market infrastructures.	The CBBH has not formally adopted the CPMI-IOSCO PFMIIs, but plans to adopt them 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.
Key consideration 2 Authorities should ensure that these principles are, at a minimum, applied to all systemically important payment systems, CSDs, SSSs, CCPs, and TRs.	The CBBH has not formally applied the CPMI-IOSCO PFMIIs to the RTGS system, but plans to adopt them 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.
Key Consideration 3 Authorities should apply these principles consistently within and across jurisdictions, including across borders, and to each type of FMI covered by the principles.	The CBBH has not formally applied the CPMI-IOSCO PFMIIs to the RTGS system. There are no links with overseas jurisdictions.
Key Conclusions for Responsibility D	The CBBH has not adopted the CPMI-IOSCO Principles for financial market infrastructures and apply them consistently, but have 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.
Assessment of Responsibility D	Partly Observed
Recommendations and Comments	Adopt the CPMI-IOSCO PFMIIs with a time-bound plan and apply them consistently to the RTGS system.

Responsibility E. Cooperation with Other Authorities	
<p>Central banks, market regulators, and other relevant authorities should cooperate with each other, both domestically and internationally, as appropriate, in promoting the safety and efficiency of FMIs.</p>	
<p>Key consideration 1</p> <p>Relevant authorities should cooperate with each other, both domestically and internationally, to foster efficient and effective communication and consultation in order to support each other in fulfilling their respective mandates with respect to FMIs. Such cooperation needs to be effective in normal circumstances and should be adequately flexible to facilitate effective communication, consultation, or coordination, as appropriate, during periods of market stress, crisis situations, and the potential recovery, wind-down, or resolution of an FMI.</p>	<p>The CBBH, banking agencies, and securities commissions in the entities have an interest in promoting the safety and efficiency of the payment system in BiH.</p> <ul style="list-style-type: none"> - <i>The CBBH:</i> The central bank has operational and oversight responsibilities of the RTGS system. It maintains the settlement account of banks in the payment system. - <i>Entity Banking Agencies:</i> The FBA and BARS are responsible for banking supervision in each respective entity. They regulate and supervise commercial banks, which are RTGS participants, to ensure that they do not pose potential risks. They provide advanced notice to the CBBH, which makes decisions to suspend a bank from the RTGS system. They are also tasked to oversee the financial integrity of internal payment systems to prevent its use in money laundering. - <i>Entity Securities Commissions:</i> The Securities Commission of the FBiH and the Securities Commission of the Republic of Srpska both have oversight responsibilities for the CSDs and SSSs that operate in their respective jurisdictions. <p>The CBBH and CSDs in the FBiH and the RS have cooperated to improve the efficiency of cash settlements after securities trading, which have involved meetings with the central banks and CSDs in Serbia and Croatia.</p>
<p>Key consideration 2</p> <p>If an authority has identified an actual or proposed operation of a cross-border or multicurrency FMI in its jurisdiction, the authority should, as soon as it is practicable, inform other relevant authorities that may have an interest in the FMI's observance of the CPMI-IOSCO Principles for financial market infrastructures.</p>	<p>The RTGS system settles on domestic currency payments and has no interdependencies with cross-border or multi-currency FMIs.</p> <p>The CBBH and the National Bank of Serbia (NBS) have signed an Agreement on Clearing of Payments in Foreign Exchange in 2007. The NBS acts as the clearing operator to enable international payment clearing services in euros to be provided by commercial banks in BiH and Serbia. Multilateral net positions are calculated by each central bank and settled through a giro account held by commercial banks at the NBS. Final settlement is effected in an overseas commercial bank (Deutsche Bank AG Frankfurt). The agreement seeks to establish more efficient, faster and economical payment systems between natural persons and legal entities both jurisdictions. This provides the basis of</p>

	<p>daily cooperative oversight and contacts between the authorities. A similar agreement was signed between the CBBH and the Central Bank of Montenegro in September 2007.</p>
<p>Key Consideration 3</p> <p>Cooperation may take a variety of forms. The form, degree of formalization and intensity of cooperation should promote the efficiency and effectiveness of the cooperation, and should be appropriate to the nature and scope of each authority's responsibility for the supervision or oversight of the FMI and commensurate with the FMI's systemic importance in the cooperating authorities' various jurisdictions. Cooperative arrangements should be managed to ensure the efficiency and effectiveness of the cooperation with respect to the number of authorities participating in such arrangements.</p>	<p>Forms of cooperation</p> <p>The Memorandum on the Principles of Coordination of Banking Supervision and Cooperation and Exchange of Data and Information of June 2008 establishes the basis for cooperation between the CBBH and banking agencies in the entities. Information on issues that relate to banking supervision and activities are shared by the banking agencies to the CBBH. Information pertaining to the strengthening of monetary and financial stability is shared with the banking agencies by the CBBH. Specific provisions that are applicable to payment systems include the following:</p> <ul style="list-style-type: none"> - <i>Article 7</i> establishes that the exchange of data and information should include: (i) the situation in individual banks and the situation in the banking sector; (ii) licensing, banking supervision and regulations governing banking supervision; (iii) maintenance of required reserves; (iv) financial stability reporting and analysis; (v) prevention of money laundering and terrorist financing and funds frozen on that account; (vi) payment operations; (vii) the credit register and register of transaction accounts; and (viii) other financial organizations subject to supervision by the banking agencies; - <i>Article 8</i> states that the exchange of data and information on the situation in individual banks and the banking sector should include: (i) serious weaknesses in a bank's operations as observed, which may have detrimental effects and/or undermine the future survival of the bank and impact on the financial sector; (ii) maintenance of required reserves; (iii) data on banks' capital and shareholders; and (iv) financial stability indicators for the banking system and individual

	<p>banks as necessary;</p> <ul style="list-style-type: none"> - <i>Article 10</i> establishes that the exchange of data from the monetary area should include data and information on the maintenance of required reserves and measures in the event of a bank's failure to observe reserve requirements. The central bank shall notify the banking agencies of the measures it has undertaken due to a bank's failure to observe reserve requirements, in line with a specific instruction providing for the procedure for undertaking certain measures; and - <i>Article 13</i> establishes cooperation in respect of payment operations, which should entail the observance of operational rules in the area of payment operations such as proposed measures to improve payment operations. <p>The Memorandum of Understanding on the Establishment of the Standing Committee for Financial Stability of December 2009 provides a broader framework for cooperation across five authorities, including the Fiscal Council, CBBH, BARS, FBA, and the BiH Deposit Insurance Agency. The memorandum notes that the parties commit themselves to open, full, constructive and timely cooperation. Cooperation between the Parties both in normal times and financial crises will involve: (i) setting up an appropriate framework for cooperation with the aim to prepare common assessments on threats to financial stability; (ii) preparing common solutions and actions to manage potentially detrimental effects of a crisis; (iii) exchanging information relevant for the analysis of threats to financial stability, and the preparation, management and resolution of a financial crisis, including assessments of the situation in order to allow the parties to promptly assess the systemic nature of the crisis; (iv) coordinating joint public communication; and (v) establishing contingency plans, including stress testing and simulation exercises.</p> <p>The CBBH has no formal cooperative arrangements with securities commissions in the entities.</p>
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	<p>Efficiency and effectiveness of cooperation</p> <p>Under the Memorandum on the Principles of Coordination of Banking Supervision and Cooperation and Exchange of Data and Information, the CBBH and EBAs meet on quarterly basis at the minimum or as required. The CBBH Governor serves as the chairperson of the meetings. The PSD could propose an agenda on payment systems to be discussed at such meetings.</p>
<p>Key consideration 4</p> <p>For an FMI where cooperative arrangements are appropriate, at least one authority should accept responsibility for establishing efficient and effective cooperation among all relevant authorities. In international cooperative arrangements where no other authority accepts this responsibility, the presumption is the authority or authorities with primary responsibility in the FMI's home jurisdiction should accept this responsibility.</p>	<p>Not applicable. There are currently no FMI links.</p>
<p>Key consideration 5</p> <p>At least one authority should ensure that the FMI is periodically assessed against the principles and should, in developing these assessments, consult with other authorities that conduct the supervision or oversight of the FMI and for which the FMI is systemically important.</p>	<p>Not applicable. There are currently no FMI links.</p>
<p>Key consideration 6</p> <p>When assessing an FMI's payment and settlement arrangements and its related liquidity risk-management procedures in any currency for which the FMI's settlements are systemically important against the principles, the authority or authorities with primary responsibility with respect to the FMI should consider the views of the</p>	<p>Not applicable. There are currently no FMI links. The RTGS system settles only in domestic currency. The CBBH has primary responsibilities and conducts its own assessment of the RTGS system.</p>

<p>central banks of issue. If a central bank of issue is required under its responsibilities to conduct its own assessment of these arrangements and procedures, the central bank should consider the views of the authority or authorities with primary responsibility with respect to the FMI.</p>	
<p>Key consideration 7 Relevant authorities should provide advance notification, where practicable and otherwise as soon as possible thereafter, regarding pending material regulatory changes and adverse events with respect to the FMI that may significantly affect another authority's regulatory, supervisory, or oversight interests.</p>	<p>EBA's provide advanced notification to the CBBH regarding the financial conditions of a commercial bank, which may have an adverse impact on the payment system. See Responsibility E (Key Consideration 3) for details.</p>
<p>Key consideration 8 Relevant authorities should coordinate to ensure timely access to trade data recorded in a TR.</p>	<p>Not applicable</p>
<p>Key consideration 9 Each authority maintains its discretion to discourage the use of an FMI or the provision of services to such an FMI if, in the authority's judgment, the FMI is not prudently designed or managed or the principles are not adequately observed. An authority exercising such discretion should provide a clear rationale for the action taken both to the FMI and to the authority or authorities with primary responsibility for the supervision or oversight of the FMI.</p>	<p>CBBH RTGS Operational Rules (Section 1.3.9) empowers the CBBH to restrict settlement operations between individual RTGS participants and suspend operations of the RTGS system on prolonged or brief period of time if such action is in the best interest of the CBBH and the RTGS participants. In such situations, execution of payment orders shall be suspended or restricted and the Central Bank may not be held responsible for such suspension or restriction.</p>
<p>Key consideration 10 Cooperative arrangements between authorities in no way prejudice the</p>	<p>The Memorandum on the Principles of Coordination of Banking Supervision and Cooperation and Exchange of Data and Information establishes the basis for cooperation between the CBBH and banking agencies in the entities. Article 2 states that</p>

<p>statutory or legal or other powers of each participating authority, nor do these arrangements constrain in any way an authority's powers to fulfill its statutory or legislative mandate or its discretion to act in accordance with those powers.</p>	<p>'The purpose of this Memorandum is to strengthen coordination of banking supervision, which shall be based on the principles of mutual cooperation, trust and observance of work independence.'</p>
<p>Key Conclusions for Responsibility E</p>	<p>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.</p>
<p>Assessment of Responsibility E</p>	<p>Broadly Observed</p>
<p>Recommendations and comments</p>	<p>Improve the advanced notification from the entity banking agencies to the CBBH in order to coordinate the timely closure of a bank and its suspension from the payment system. Establish a memorandum of understanding between the CBBH, entity banking agencies, and entity securities commissions to collaborate on the development, regulation, supervision, and oversight of FMIs, respecting the mandates of each competent authority.</p>

AUTHORITIES' RESPONSE TO THE ASSESSMENT

50. All above mentioned (from A to E) 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.

51. However, in 2012, new principles were released (23 instead of then 10).

52. Generally, the CBBH is decisive to arrange elaborately the functioning of all its operations via establishment of integrated internal controls system.

53. 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.

54. Therefore, the GB will decide 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 FBH, within the set deadline, adhering, in the same time, to the provisions of the CBBH Law.

55. 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.

56. 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.

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