

**India: Financial Sector Assessment Program—Detailed Assessments Report on  
CPSS-IOSCO Recommendations for Securities Settlement Systems and  
Central Counterparties**

This paper on India was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on February 22, 2012. The views expressed in this document are those of the staff team and do not necessarily reflect the views of the government of India or the Executive Board of the IMF.

The policy of publication of staff reports and other documents by the IMF allows for the deletion of market-sensitive information.

Copies of this report are available to the public from

International Monetary Fund • Publication Services  
700 19<sup>th</sup> Street, N.W. • Washington, D.C. 20431  
Telephone: (202) 623-7430 • Telefax: (202) 623-7201  
E-mail: [publications@imf.org](mailto:publications@imf.org) Internet: <http://www.imf.org>

**International Monetary Fund  
Washington, D.C.**

FINANCIAL SECTOR ASSESSMENT PROGRAM UPDATE

INDIA

CPSS-IOSCO RECOMMENDATIONS FOR SECURITIES  
SETTLEMENT SYSTEMS AND CENTRAL COUNTERPARTIES

DETAILED ASSESSMENT

AUGUST 2013

INTERNATIONAL MONETARY FUND  
MONETARY AND CAPITAL MARKETS DEPARTMENT

THE WORLD BANK  
FINANCIAL AND PRIVATE SECTOR DEVELOPMENT  
VICE PRESIDENCY  
SOUTH ASIA REGION VICE PRESIDENCY

| Contents  | Page |
|---|------|
| Glossary .....  | 3    |
| Executive Summary .....   | 5    |
| I. General.....   | 12   |
| II. Overview of the Infrastructure for Securities and Derivatives Clearing and Settlement Systems .....                             | 12   |
| A. Clearing and Settlement Arrangements for Government Securities, Money Market, and Foreign Exchange Instruments .....             | 17   |
| B. Clearing and Settlement Arrangements for Corporate Securities and Financial Derivatives .....                                    | 19   |
| III. Detailed Assessments.....  | 23   |
| A. Authorities' Response.....   | 80   |
| <br>Annex   |      |
| I. The RTGS System in India   | 83   |
| <br>Tables  |      |
| 1. Legal Status and Ownership Structure of CCPs and CSDs .....  | 15   |
| 2. Cash Market Volumes as Percentage of GDP in 2010 .....   | 16   |
| 3. CCIL Forex Market as Percentage of GDP in 2010 .....   | 16   |
| 4. Derivatives Market Volumes as Percentage of GDP in 2010.....   | 16   |
| 5. Detailed Assessment of Implementation of the CPSS-IOSCO Recommendations for Securities Settlement Systems—PDO System of RBI..... | 23   |
| 6. Detailed Assessment of Implementation of the CPSS-IOSCO Recommendations for Securities Settlement Systems—NSDL and CDSL .....    | 34   |
| 7. Detailed Assessment of Implementation of the CPSS-IOSCO Recommendations for Central Counterparties—CCIL .....                    | 48   |
| 8. Detailed Assessment of Implementation of the CPSS-IOSCO Recommendations for Central Counterparties—NSCCL, BSE, and ICCL .....    | 61   |
| 9. Summary of RSSS Implementation—PDO System .....  | 75   |
| 10. Summary of RSSS Implementation—NSDL and CDSL.....   | 76   |
| 11. Summary of RCCP Implementation—CCIL.....  | 76   |
| 12. Summary of RCCP Implementation—NSCCL, BSE, and ICCL.....  | 76   |
| 13. Recommended Actions to Improve RSSS Implementation—PDO System.....  | 77   |
| 14. Recommended Actions to Improve RSSS Implementation—NSDL and CDSL .....  | 77   |
| 15. Recommended Actions to Improve RCCP Implementation—CCIL.....  | 78   |
| 16. Recommended Actions to Improve RCCP Implementation—NSCCL, BSE, and ICCL.....  | 79   |
| <br>Figures   |      |
| 1. Infrastructure of Securities Market in India.....  | 13   |
| 2. CCIL Average Daily Volumes.....  | 19   |

**GLOSSARY**

|            |  |
|------------|--|
| AMFI       | Association of Mutual Funds of India                         |
| BCP        | Business Continuity Planning                                 |
| BSE        | Bombay Stock Exchange  |
| BOISL      | Bank of India Shareholding Limited                           |
| BOLT       | BSE Online Trading System                                    |
| CA         | Contract Act   |
| CBLO       | Collateralized Borrowing and Lending Obligation              |
| CCIL       | Clearing Corporation India Limited                           |
| CCP        | Central Counterparty   |
| CDSL       | Central Depository Services Limited                          |
| CEO        | Chief Executive Officer                                      |
| CFSA       | Committee on Financial Sector Assessment                     |
| CPSIPS     | Core Principles for Systemically Important Payment Systems   |
| CPSS       | Committee on Payment and Settlement Systems                  |
| CROMS      | Clearcorp Repo Order Matching System                         |
| CSD        | Central Securities Depository                                |
| DR         | Disaster Recovery  |
| DvP        | Delivery versus Payment                                      |
| EOMS       | Electronic Order Matching System                             |
| ETF        | Exchange Traded Fund   |
| FEDAI      | Foreign Exchange Dealers Association of India                |
| FIMMDA     | Fixed Income Money Market & Derivatives Association of India |
| FMC        | Forwards Market Commission                                   |
| FOP        | Free of Payment  |
| FSAP       | Financial Sector Assessment Program                          |
| FSDC       | Financial Stability and Development Council                  |
| FTE        | Full Time Employee   |
| GDP        | Gross Domestic Product                                       |
| GSA        | Government Securities Act                                    |
| GSR        | Government Securities Regulation                             |
| ICCL       | Indian Clearing Corporation Limited                          |
| ICEX       | Indian Commodity Exchange Limited                            |
| IIM        | Indian Institute of Management                               |
| IMF        | International Monetary Fund                                  |
| INFINET    | Indian Financial Network                                     |
| Rs         | Indian rupees  |
| IOSCO      | International Organization of Securities Commissions         |
| IRDA       | Insurance Regulatory and Development Authority               |
| ISIN       | International Securities Identification Number               |
| IT         | Information Technology                                       |
| MCX        | Multi Commodity Exchange                                     |
| MCX-SX     | MCX-Stock Exchange   |
| MCX-SX CCL | MCX-SX Clearing Corporation Limited                          |
| MOF        | Ministry of Finance  |

|        |  |
|--------|--|
| MoU    | Memorandum of Understanding                        |
| MTM    | Mark To Market                                     |
| NBFI   | Nonbank Financial Institution                      |
| NCDEX  | National Commodity & Derivatives Exchange Limited  |
| NDC    | Net Debit Cap                                      |
| NDS    | Negotiated Dealing System                          |
| NDS-OM | Negotiated Dealing System – Order Matching         |
| NEAT   | National Stock Exchange for Automated Trading      |
| NMCE   | National Multi Commodity Exchange of India Limited |
| NPC    | National Payments Council                          |
| NSCCL  | National Securities Clearing Corporation Limited   |
| NSDL   | National Securities Depository Limited             |
| NSE    | National Stock Exchange                            |
| OTC    | Over The Counter                                   |
| PDAI   | Primary Dealer Association of India                |
| PDO    | Public Debt Office                                 |
| PFRDA  | Pension Fund Regulatory and Development Authority  |
| PSSA   | Payment and Securities Systems Act                 |
| RCCP   | Recommendations for Central Counterparties         |
| RBI    | Reserve Bank of India                              |
| Rs     | Rupees   |
| RSSS   | Recommendations for Securities Settlement Systems  |
| RTGS   | Real Time Gross Settlement                         |
| SAN    | Storage Area Network                               |
| SCB    | Scheduled Commercial Banks                         |
| SCRA   | Securities Contracts Regulation Act                |
| SCRR   | Securities Contracts Regulation Rules              |
| SEBI   | Securities and Exchange Board of India             |
| SGF    | Settlement Guarantee Fund                          |
| SGL    | Subsidiary General Ledger                          |
| SIPS   | Systemically Important Payment System              |
| SLB    | Securities Lending and Borrowing                   |
| SPAN   | Standard Portfolio Analysis of Risk                |
| SRO    | Self Regulatory Organization                       |
| SSS    | Securities Settlement System                       |
| STP    | Straight Through Processing                        |
| TGF    | Trade Guarantee Fund                               |
| TM     | Trading Member                                     |
| TOR    | Terms of Reference                                 |
| TR     | Trade Repository                                   |
| U.S.E  | United Stock Exchange                              |
| VaR    | Value at Risk                                      |

## EXECUTIVE SUMMARY

**The securities and derivatives clearing and settlement systems in India are organized around different types of products, which are (1) government securities, money market instruments and forex instruments; (2) corporate securities and financial derivatives; and (3) commodity derivatives.** The scope of this assessment is limited to the clearing and settlement systems for the first two sets of products. The different sets are subject to different legal frameworks, different regulatory arrangements and the clearing and settlement systems are operated by different entities. The different securities and derivatives clearing and settlement systems handle a large number of transactions and are as such of systemic importance. Volumes in the derivatives segments increased strongly during the last years. Given the growth and volumes of the commodity derivatives market it is recommended that a detailed self-assessment by the Forwards Market Commission (FMC) and/or an independent assessment of the commodity derivatives clearing and settlement systems be considered in the immediate future.

**Government securities are cleared by the Clearing Corporation of India (CCIL) and settled in the books of the Public Debt Office (PDO) system of Reserve Bank of India (RBI).** Money market and forex instruments are also cleared by CCIL. Cash settlement takes place in the Real Time Gross Settlement (RTGS) system of the RBI. CCIL guarantees the settlement of the transactions and as such acts as a central counterparty (CCP). The RBI is the regulator and overseer, based on the Payment System and Settlement Act of 2007 (PSSA).

**Corporate securities and financial derivatives are traded on the National Stock Exchange (NSE), Bombay Stock Exchange (BSE), United Stock Exchange (U.S.E), MCX Stock Exchange (MCX-SX) and 17 regional exchanges.** Corporate securities and financial derivatives traded on the NSE are cleared by the National Securities Clearing Corporation Limited (NSCCL). Corporate securities and equity derivatives traded on the BSE are cleared by the BSE, except for the mutual funds and corporate bonds, which are cleared by Indian Clearing Corporation Limited (ICCL). The ICCL also clears currency derivatives traded on the U.S.E. The MCX-SX clears the transactions executed on its trading platform by the MCX-SX Clearing Corporation Limited (MCX-SX CCL). NSCCL, BSE, ICCL and MCX-SX CCL act as CCP for corporate securities and derivatives. The securities leg of transactions is settled in the National Securities Depository Limited (NSDL) and Central Depository Services Limited (CDSL). The cash leg is settled in one of the commercial banks that act as clearing bank for the exchanges. The Securities and Exchange Board of India (SEBI) is the regulator and supervisor of these stock exchanges, including its clearing and settlement systems.

**The assessment results indicate that, in general, the risk management framework for the securities and derivatives clearing and settlement systems in India is prudent, the operational reliability is high and the regulation and oversight functions are effective.**

The National Payments System in India has undergone a major reform over the last two decades, in particular the securities and derivatives clearing and settlement systems. These systems are comprehensive and designed to minimize risks in the rapidly developing securities and derivatives markets. In addition, the RTGS system, implemented in 2004, has provided an effective system for settlement of large value transactions including for the cash leg of government securities transactions.

**On the other hand, the assessment results indicate that the regulation and oversight of all systems should be improved by implementing formal arrangements for information sharing and policy coordination between the various regulators.**

Securities and derivatives market regulators and overseers are encouraged to cooperate in a consistent and formalized way to ensure the overall safety and efficiency of the market infrastructure. RBI—as overseer of CCIL and the PDO CSD—and the SEBI—as supervisor of the corporate securities market—cooperate with each other on various matters in various *fora*. The cooperation on payment and securities clearing and settlement systems is, however, not formalized. No explicit agreements are in place with regard to information sharing or coordination of policy implementation. The overall quality of the oversight and supervision on payment and securities clearing and settlement systems would be enhanced if the RBI and SEBI met regularly on a technical and higher level, and had formal arrangements for information sharing and policy coordination. Relevant topics include improvements in liquidity risk management of the CCPs, an orchestrated approach toward crisis management and default plans, settlement in central bank money, and increasing the use of government securities as collateral to cover positions in corporate securities and derivatives. In addition, the RBI and SEBI are strongly encouraged to include the FMC in regular meetings, since many of the above-mentioned issues are of relevance to the supervisor of the commodities market.

**The assessment results indicate that the crisis management procedures of all systems should be improved, as part of the operational risk management.** The operational reliability of the systems is high and Business Continuity Planning (BCP) and Disaster Recovery (DR) sites are in place. The readiness to respond to a crisis in an orchestrated manner would, however, benefit from the establishment and regular testing of detailed crisis management. All systems test the connectivity to their back-up sites on a regular basis together with participants. But no system has crisis management plans in place that include detailed procedures and actions to be taken in case of a major crisis. Such crisis management plans should include the definition of a crisis management team as well as procedures to consult and inform participants and regulators. Crisis management procedures should be tested regularly, for example by simulating stress scenarios that affect the financial and operational soundness of the system.

**The assessment results indicate that the transparency of all systems can be improved.**

The current and forthcoming relevant international disclosure framework should be published on the websites of the different system operators.<sup>1</sup> The 2009 assessment results of the Committee on Financial Sector Assessment (CFSA) are available on Internet, however, these results are not updated and not all key questions are answered.

**In general, the securities market infrastructure in India is segmented per product type, which may raise concerns on the overall efficiency of the capital market.** A key concern in this regard is the segregation between the government bond market and the corporate equity and derivative market, which are not only organized as vertical silo's but in practice also prevent stock brokers and retail clients who trade on the stock exchanges to access the market for government bonds. This prevents retail investors to invest in government bonds and thus to access a full range of available investment products. Another drawback of the current segregation is that government bonds are not used by stock brokers and custodians to comply with the margin requirements of CCPs. The multiplicity of systems does not negatively influence the stability of the financial infrastructure. In fact, two CCPs and CSDs for the same products may enhance the stability, since a CCP or CSD may function as a backup in case of problems with the other CCP or CSD.

**The assessment of the PDO system against the RSSS concludes that the systems observe or broadly observe seventeen out of the 19 recommendations, with two being not applicable.** However, there are improvement opportunities in several areas:

- **Legal framework:** The legal framework with regard to the protection of customers' assets will be strengthened by the explicit statement that the assets of a client may not be used to cover any obligations toward a third party in case of the insolvency of the participant of the PDO system.
- **Transparency:** Although participants of the PDO system have access to all relevant information as part of the access process the RBI website does not contain dedicated information about the PDO system. The Government Securities Regulation and the PDO manual are not available in the public domain. The 2009 assessment results of the CFSA are available on Internet, however, these results should be updated and all key questions need to be answered. Transparency will increase if the RBI website includes all relevant information, including an overview of the legal framework, the governance arrangements and objectives of the system, to guide potential participants of the PDO system.

---

<sup>1</sup> International guidance for disclosure framework arrangements is being reviewed in the context of the production of the new CPSS-IOSCO Principles for Financial Market Infrastructures.



- **Protection of customer assets:** No arrangements are available to enable a customer's positions to be moved to a solvent custodian in case of insolvency of its own custodian. It is recommended to implement these tools as a further protection of client assets and a means to smoothen the handling of a default of one of the participants of the PDO system.

**The assessment of the NSDL and CDSL against the RSSS concludes that the CSDs observe (observed or broadly observed) sixteen out of the 19 recommendations, with three being not applicable.** However, there are improvement opportunities in several areas:

- **Legal framework:** Since the PSSA is not applicable to stock exchange trading, clearing and settlement systems neither are the concepts of finality and netting. Currently, finality and netting for stock exchange transactions are addressed at the level of the bylaws of the NSCCL, BSE and ICCL. The Securities Contracts Regulation Act (SCRA), supported by Supreme Court rulings, recognizes these bylaws as a valid basis to organize the functioning of the institutions. Nevertheless, it is recommended that the legal backing for finality and netting of stock exchange transactions be strengthened by addressing these aspects at the level of law.
- **Governance:** The constitution of user groups would give a voice to participants of the NSDL and CDSL that are not included in any of the committees or the Board to further improve its governance.
- **Efficiency:** The SEBI may conduct a periodic assessment of the performance of the CSDs to benchmark against international peers and request the CSDs to maintain the fee schedule in an easily comparable format. It is also recommended improving the clearing and settlement arrangements in the wholesale segment for corporate bonds. Despite the existence of a DvP model 1 mechanism for Over-the-Counter (OTC) traded corporate bonds, the payment and securities transfers have to be initiated by the participant, both in the RTGS system and in the NSDL and CDSL. The participant has to initiate a payment instruction in the RTGS system, which is an automated process. For the securities transfer in some cases a paper form needs to be filled by the participant and sent to the NSDL and CDSL. The efficiency of the DvP process should be enhanced by automating the DvP process, and eliminating the need for (manual) interventions by some of the participants.
- **Communication standards:** The CSDs may consider providing their participants an option to use ISO 15022 and, also, migrating its interfaces with the clearing corporations to ISO 15022.

**The assessment of the CCIL against the RCCP concludes that the CCP observes or broadly observes twelve out of the 15 recommendations, with two being not applicable.** However, there are improvement opportunities in several areas:

- **Measurement of credit exposure:** The CCIL needs to be able to calculate its exposures in all segments on an intraday basis, using up to date positions and up to date prices. It should also be possible to value available collateral based on up to date prices and positions on an intraday basis. It is noted that the CCIL has recognized this issue and has taken the initiative to implement proper intraday calculation facilities in some segments.
- **Financial resources:** The liquidity risk management framework of the CCIL should be enforced to ensure that the CCIL is able to sufficiently cope with immediate liquidity demands. It is noted that the CCIL is in the process of developing arrangements with the RBI in this regard. Also, comprehensive tests, which include full model and parameter validations, should be performed at least annually. It is recommended that default funds for all segments be established and other risk mitigating tools be developed in order to enlarge the guarantee function of CCIL to situations where the available SGF collateral would be insufficient to cover the exposure of CCIL toward a particular participant. This will increase not only the safety of CCIL, but for the whole market.
- **Custody and settlement bank risks:** The CCIL is vulnerable to any potential problems related to the large foreign bank that provides not only cash settlement services in the forex segment, but also provides credit lines and custody services. The CCIL should reduce its concentration risk in the forex segment by opening a U.S. dollar account in at least one other bank. The CCIL should also select one additional settlement bank. It is recommended that the frequency and intensity of the monitoring of the financial condition of the different custodian and settlement banks be increased, including the foreign settlement banks. The CCIL should install mechanisms to monitor the financial condition of all banks to which it has exposures on an ongoing basis. The CCIL should develop tools to monitor the concentration of settlement flows among the different settlement banks that provide cash settlement in Indian Rupees (Rs).
- **Default procedures:** No explicit arrangements exist for the segregation and portability of client accounts in case of a default of one of the clearing participants of CCIL. It is recommended that these provisions be included in the legal framework as well as in the default procedures of the CCIL.

**The assessment of the NSCCL, BSE and ICCL against the RCCP concludes that the CCPs observe or broadly observe eleven out of the 15 recommendations, with two being not applicable.** However, there are improvement opportunities in several areas:

- **Legal risk:** It is recommended that the legal backing of the clearing and settlement process be improved by addressing the issues of finality and netting at the level of a law.

- **Financial resources:** The stress testing procedures of the CCPs should be strengthened. The robustness of the CCPs needs to be increased by improving the liquidity risk management in addition to the management of credit risk. The CCPs should include liquidity aspects in their periodic stress testing and also ensure that their credit lines cannot be revoked. The stress testing should be conducted on a more frequent basis. BSE/ICCL conducts stress only on a yearly basis, whereas the assessment of the adequacy of resources in extreme situations should be conducted at least monthly. On a yearly basis comprehensive tests should be performed, which include full model and parameter validation and consideration of scenario choices. The current stress scenario's should not only include the most extreme circumstances during the last year, but should include the most volatile periods of the cash and derivative markets during the last couple of years, preferably the last one or two decades. In addition, stress scenarios should include some appropriate theoretical scenarios as well.
- **Default procedures:** In addition to the default provisions in the bylaws, rules and regulations the CCPs should draft a detailed action plan, with the objective to be able to implement its default procedures in a timely and flexible manner. The action plan may contain the definition of a crisis manager and crisis team, the range of decisions such a crisis manager and crisis team may consider under what conditions and according to what timelines, and the reporting of information to different stakeholders, being regulators, clearing participants, the stock exchanges, CSDs, and clearing banks.
- **Operational reliability:** It is recommended that the recovery time objective be reduced from one day to two hours, which is considered best practice for payment and securities clearing and settlement systems. It is noted that the SEBI is currently drafting detailed guidelines on these topics.
- **Money settlements:** The replacement of the commercial bank settlement model with the central bank settlement model should be considered for the medium term. Corporate securities are settled in commercial bank money, which - in principle - exposes the corporate securities markets to settlement bank risk. Although more than a dozen clearing banks are selected by the stock exchanges, in practice the cash flows are concentrated in very few banks. The systemic importance of these clearing banks is even more significant as they also provide guarantees to the stock exchanges for the collection of collateral from brokers with derivative positions. The failure of one or two clearing banks with a dominant position could seriously affect the stability of the market for corporate securities. Settlement in the RTGS system of the RBI for all securities and derivatives trades would mitigate settlement bank risk, reduce the dependency of CCPs on the collateral and liquidity services of clearing banks, and facilitate the role of the RBI as lender of last resort. Such a model would require the RBI to review and adapt its rules, procedures, services and staff requirements, but

would significantly increase the robustness of the securities and derivatives market infrastructure.

- **Governance:** It is recommended that independent risk committees be established, consisting of internal and external experts that report directly to the Board of the CCPs. The CCPs may benefit from such dedicated risk committees, since they concentrate internal and external risk management expertise and may provide high level and independent advice to the Board on risk management matters. The risk committee may advise on issues such as changes to the margin model, collateral, default procedures and the clearing of new products.
- **Participation requirements:** It is recommended that small trading members be excluded from membership of the CCPs. Although restrictions exist on the portfolio of such brokers and the risk measures are tight it is recommended that a tiered system be established in the cash market as is already in place in the derivatives markets. The CCPs will benefit from a structure in which only the largest, most solid brokers are clearing participants of the CCP.

## I. GENERAL

1. **The present document is the assessment of securities and derivatives clearing and settlement systems in India based on the Recommendations of the Committee for Payment and Settlement Systems (CPSS) and the International Organization of Securities Commissions (IOSCO) for Securities Settlement Systems (RSSS) and the Recommendations of CPSS-IOSCO for Central Counterparties (RCCP).** This assessment was conducted during a field mission of the Financial Sector Assessment Program to India in September 2011.<sup>2</sup>

2. **The information used in the assessment includes relevant laws, bylaws, regulations, rules and procedures governing the systems, and other available material.**<sup>3</sup> In addition, extensive discussions were held with regulators, overseers, supervisors and operators, being the RBI, SEBI, FMC, CCIL, NSE, BSE, U.S.E, MCX, MCX-SX, NSCCL, ICCL, NSDL, CDSL and several stakeholders, including primary dealers, banks and broker-dealers active on the government securities market, the corporate securities and the derivatives markets in India as well as clearing banks that facilitate cash settlement for corporate securities and derivatives. A self assessment was prepared by the CCIL. The CFSA assessed the financial sector of India in 2009, including the payment and securities clearing and settlement systems.

## II. OVERVIEW OF THE INFRASTRUCTURE FOR SECURITIES AND DERIVATIVES CLEARING AND SETTLEMENT SYSTEMS

3. **The securities and derivatives clearing and settlement systems in India are organized around different types of products, which are: (1) government securities, money market instruments and forex instruments; (2) corporate securities and financial derivatives; and (3) commodity derivatives.** The three sets of products are subject to different legal frameworks, different regulators and the clearing and settlement systems are operated by different entities. Figure 1 illustrates the securities and derivatives clearing and settlement systems for the first two sets of products.

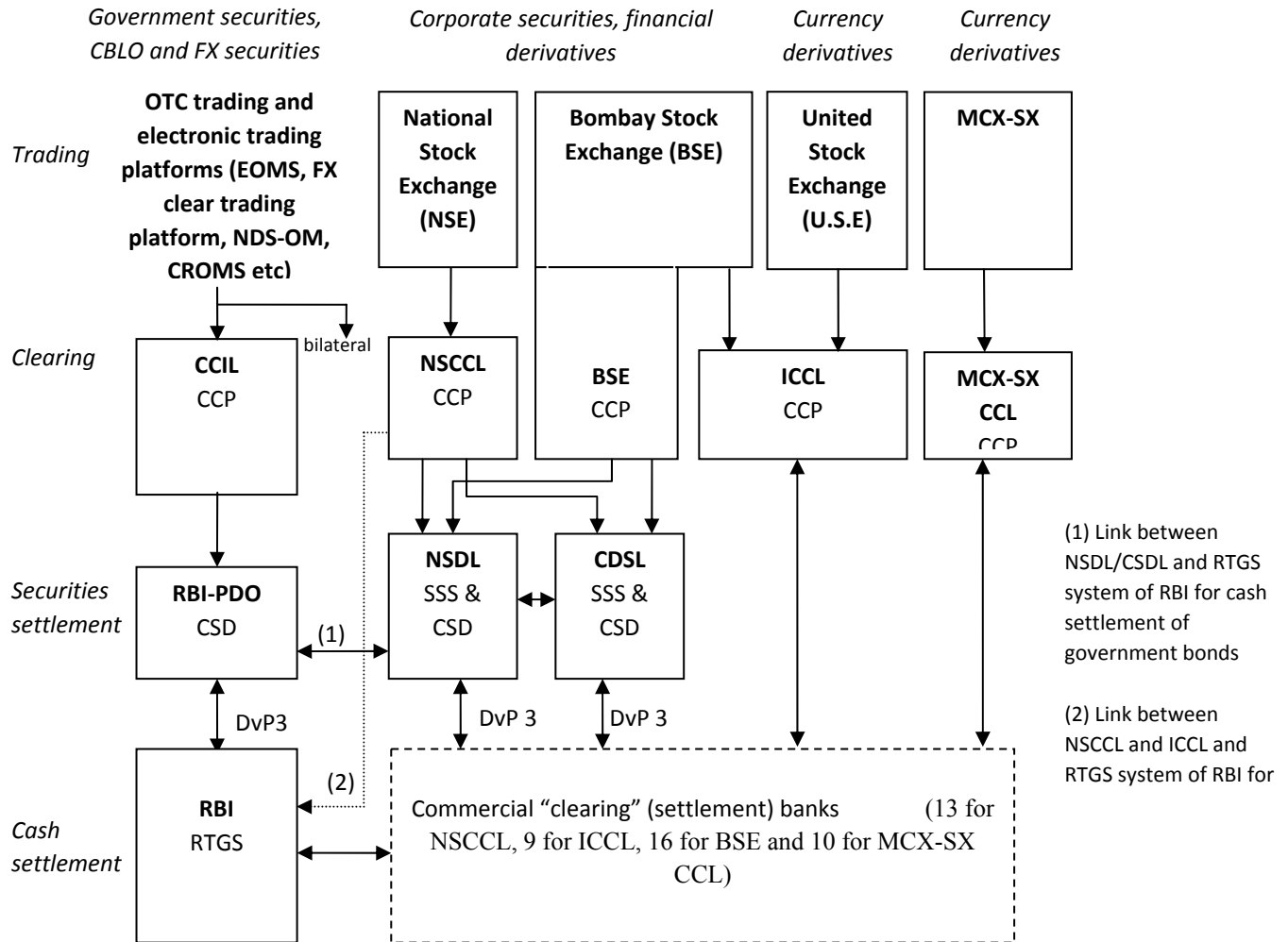
4. **Government securities are cleared by the CCIL and settled in the books of the PDO system of the RBI.** Money market and forex instruments are also cleared by the CCIL. Cash settlement takes place in the Real Time Gross Settlement (RTGS) system of the RBI. Appendix 1 describes the RTGS system of the RBI and provides a summary of the most recent assessment results of the system. CCIL guarantees the settlement of the transactions and as such acts as CCP. The RBI is the regulator and overseer, based on the PSSA.

---

<sup>2</sup> The assessor was Massimo Cirasino, supported by Froukelien Wendt and Harish Natarajan (all World Bank).

<sup>3</sup> Other available material included annual reports, RBIs and SEBIs responses on the FSAP questionnaire for securities clearing and settlement systems; websites from the regulators, overseers, supervisors, operators and stakeholders and other relevant documents.

Figure 1. India: Infrastructure of Securities Market in India



5. **Corporate securities and financial derivatives are traded on the NSE, BSE, U.S.E, MCX-SX, and 17 regional exchanges.** Corporate securities and financial derivatives traded on the NSE are cleared by the NSCCL. Corporate securities and equity derivatives traded on the BSE are cleared by the BSE, except for the mutual funds and corporate bonds, which are cleared by the ICCL. The ICCL also clears currency derivatives traded on the U.S.E. The MCX-SX clears the transactions executed on its trading platform by the MCX-SX CCL. NSCCL, BSE, MCX-SX CCL and ICCL act as the CCP for corporate securities and derivatives. The securities leg of transactions is settled in the NSDL and CDSL. The cash leg is settled in one of the commercial banks that act as clearing bank for the exchanges. The SEBI is the regulator and supervisor of these stock exchanges, including its clearing and settlement systems.

**6. Commodity derivatives are traded on four national commodity exchanges and 17 regional exchanges.** The four national commodity exchanges are the National Multi Commodity Exchange of India Limited (NMCE), the Multi Commodity Exchange of India Limited (MCX), the National Commodity & Derivatives Exchange Limited (NCDEX) and the Indian Commodity Exchange Limited (ICEX). Commodity derivatives are traded on bullion (41 percent in 2009), base metals (23 percent), energy products (20 percent) and agricultural commodities (16 percent). The commodity exchanges provide a trading platform for these securities as well as CCP facilities. Cash settlement takes place in the books of a number of clearing banks, which are the same clearing banks as for the corporate securities. The commodity market is regulated and supervised by the FMC acting under a different Ministry, being the Ministry of Consumer Affairs, Food and Public Distribution. The FMC is a statutory body set up in 1953 under the Forward Contracts (Regulation) Act, 1952. It supervises four national commodity exchanges and 17 regional commodity exchanges.

**7. The CCPs and CSDs are user-owned companies and fall under the Companies Act, except for the PDO system, which is owned by the RBI.** Table 1 reflects the interest of the NSE and the BSE in the different CCPs and CSDs. The NSDL and CDSL are partly owned by the stock exchanges and partly by professional market participants like banks and institutional investors. The CCPs are fully owned by the stock exchanges, whereas the stock exchanges are owned by banks, institutional investors and other financial institutions. CCIL is owned by banks, institutional investors and primary dealers.

**8. The different securities and derivatives clearing and settlement systems handle a large number of transactions and are as such of systemic importance.** Tables 2 to 4 show the transaction volumes for the different products. Especially the derivatives segments saw increased activity during the last year. The cash market segments on the NSE and BSE are stable. The government securities and Collateralized Borrowing and Lending Obligations (CBLO)<sup>4</sup> saw a decrease in 2010, but volumes are increasing again in 2011.

**9. The scope of this assessment is limited to the first two sets of products.** It is recommended that the clearing and settlement arrangements for the commodity derivatives market be assessed in the near future. The PDO system, NSDL and CDSL are subject to a detailed assessment using the CPSS-IOSCO Recommendations for SSS. ICCL, NSCCL, BSE and ICCL are subject to detailed assessments using the CPSS-IOSCO Recommendations for CCPs. Given the growth and volumes of the commodity derivatives market it is recommended that a more detailed assessment of the commodity derivatives clearing and settlement systems be considered in the immediate future.

---

<sup>4</sup> CBLO is a money market instrument, developed by CCIL and launched in 2003. CBLO enables borrowing/lending of funds of various maturities up to one year, fully backed by collaterals in the form of central government securities and treasury bills.

**Table 1. India: Legal Status and Ownership Structure of CCPs and CSDs**

| <b>Name</b>       | <b>Type</b> | <b>Legal status</b>   | <b>Ownership structure</b>  |
|-------------------|-------------|---|---|
| <b>PDO system</b> | CSD/SSS     | No independent legal status   | Fully owned by RBI  |
| <b>NSDL</b>       | CSD/SSS     | Public Limited Company under the Companies Act 1956; sponsors are required to collectively hold at least a 51 percent stake in the CSD. The legal framework specifies the types of entities that can be sponsors - primarily banks or securities market players. The maximum ownership of a non-sponsor entity is set at 5 percent. | The NSDL is promoted by the NSE, IDBI and UTI; the NSE is the largest share-holder with a 25 percent stake. The other shareholders are commercial banks.  |
| <b>CDSL</b>       | CSD/SSS     | Public Limited Company under the Companies Act 1956; sponsors are required to collectively hold at least a 51 percent stake in the CSD. The legal framework specifies the types of entities that can be sponsors - primarily banks or securities market players. The maximum ownership of a non-sponsor entity is set at 5 percent. | The promoter is the BSE with a 54.2 percent stake. The other share-holders are commercial banks.  |
| <b>CCIL</b>       | CCP         | Public Limited Company under the Companies Act 1956.  | Banks (62.50 percent), financial institutions (20.50 percent) and primary dealers (17.00 percent). Promoters have been State Bank of India, IDBI Bank Limited (formerly Industrial Development Bank of India), ICICI Bank Ltd, Life Insurance Corporation of India, Bank of Baroda and HDFC Bank Limited. |
| <b>NSCCL</b>      | CCP         | Clearing corporation under the SCRA; NSE is a Public Limited Company under the Companies Act 1956.  | NSCCL is a 100 percent subsidiary of NSE. NSE is owned by a range of banks, insurance companies and other financial institutions, with a maximum share of 15 percent each.  |
| <b>BSE</b>        | CCP         | Public Limited Company under the Companies Act 1956.  | BSE is owned by a range of banks, insurance companies and other financial institutions, with a maximum share of 15 percent each.  |
| <b>ICCL</b>       | CCP         | Clearing corporation under the Securities Law   | ICCL is 100 percent subsidiary of BSE.  |



**Table 2. India: Cash Market Volumes as Percentage of GDP in 2010**

| Cash market           | Nr of transactions<br>(‘000) | Value of trading<br>(million U.S.D) | Percent of GDP | percent<br>Change<br>2010/2009 |
|-----------------------|------------------------------|-------------------------------------|----------------|--------------------------------|
| Government securities | 360                          | 1,225,400<br>(2010/2011)            | 71             | -24                            |
| CBLO                  | na                           | 1,998,920<br>(2010/2011)            | 116            | -24                            |
| NSE – Equities        | 1,556,620                    | 798,636                             | 46             | 2                              |
| BSE – Equities        | 555,719                      | 258,575                             | 15             | -1                             |

Source: World Federation of Exchanges and CCIL

**Table 3. India: CCIL Forex Market as Percentage of GDP in 2010**

| Forex market | Nr of transactions | Value of trading<br>(million U.S.D) | Percent of GDP | percent<br>Change<br>2010/2009 |
|--------------|--------------------|-------------------------------------|----------------|--------------------------------|
| Forex        | na                 | 3,841,860<br>(2010/2011)            | 222            | 34                             |

Source: CCIL

**Table 4. India: Derivatives Market Volumes as Percentage of GDP in 2010**

| Derivatives market                 | Nr of transactions | Value of trading<br>(million U.S.D) | Percent of GDP | percent<br>Change<br>2010/2009 |
|------------------------------------|--------------------|-------------------------------------|----------------|--------------------------------|
| NSE stock index<br>derivatives     | 686,124,968        | 4,109,956                           | 238            | 33                             |
| NSE equity derivatives             | 204,037,495        | 1,416,889                           | 82             | 17                             |
| NSE and MCX-SX<br>Currency futures | 1,603,956,124      | 1,635,183                           | 95             | 256                            |
| MCX commodity futures              | 197,206,801        | 1,905,339                           | 110 percent    | 22 percent                     |

Source: World Federation of Exchanges.

## **A. Clearing and Settlement Arrangements for Government Securities, Money Market, and Foreign Exchange Instruments**

10. **During the last two decades, the clearing and settlement systems for the government securities market have been subject to many improvements.** The DVP model 1 mechanism was introduced in 1995, the CCIL started operations in 2002, the same year as the introduction of the mandatory holding of government securities in dematerialized form. In 2002, the Negotiated Dealing System (NDS) was introduced as a trade reporting platform linked to the CCIL. The introduction of the RTGS system in 2004 enabled settlement in central bank money for government securities. The Negotiated Dealing System Order Matching (NDS-OM) was introduced in 2005 as an anonymous order matching system. A standardized settlement cycle of T+1 has been implemented in 2005 for all outright OTC and NDS-OM transactions in government securities.

11. **The current trading, clearing and settlement arrangements allow for straight through processing (STP) of transactions in government securities, CBLOs and forex instruments.** Transactions in government securities can be anonymously executed on the NDS-OM platform or traded in the OTC segment. OTC transactions have to be reported on the NDS platform. The NDS-OM and NDS platform automatically confirm the transactions and send them to the CCIL for clearing. The CCIL receives around 20 percent of the secondary market transactions in government securities from the NDS system and approximately 80 percent from the NDS-OM. Repos can be electronically traded on the Clearcorp Repo Order Matching system (CROMS) and OTC transactions in repos have to be reported on the NDS. For transactions in CBLOs, participants may use the CBLO Trading System operated by the CCIL. Transactions in forex and forex forward instruments are mostly conducted bilaterally between market participants using telephone trading. Participants may also use the Electronic Order Matching System (EOMS), Reuters and CCIL's Fx Clear trading platform.

12. **The CCIL is the CCP for all transactions in government securities and CBLOs, whereas only a part of the transactions in forex and forex forwards instruments are settled through the CCIL.** Interest Rate Swaps are settled through the CCIL on a nonguaranteed mode. For guaranteed transactions the CCIL nets the positions of its participants on a multilateral basis at the end of every trading day, after which novation takes place. The CCIL has adopted a comprehensive risk management framework to protect itself against the failure of one of its participants. Participants of the CCIL have to comply with specific access criteria. The CCIL has 222 participants in the CBLO segment and 169 in the government securities segment, being banks, financial institutions, primary dealers and mutual funds. The CCIL measures its exposure toward participants on a daily basis and covers this by requesting participants to deposit margins and other collateral. The RBI is the regulator and overseer of the CCIL, ensuring that the legal, risk management and operational frameworks are safe and efficient. The CCIL is owned by banks, financial institutions and primary dealers, with the State Bank of India having a dominant position. The CCIL offers

its participants the service of settlement of foreign exchange transactions (14 currencies) in CLS through the CCIL. The CCIL on its turn uses Royal Bank of Scotland (RBS) in London as a settlement participant in CLS.

13. **The CCIL coordinates the cash settlement in the RTGS system of the RBI and the securities settlement in the PDO system of the RBI.** Government securities are settled using a DVP model 3 mechanism on T+1. Repos are settled on T+0 or T+1. The PSSA supports the final and irrevocable character of the transactions, as well as the netting. Cash settlement takes place in designated settlement banks for those participants who do not have a current account at the RBI.

14. **The PDO system is the CSD for dematerialized government securities as well as the registrar.** Participants may open own accounts and client accounts. Participants with own accounts may be banks, primary dealers, central and state governments, pension funds, insurance funds, mutual funds, financial institutions and the NSDL and CDSL. Participants who open client accounts and fulfil custody services may be banks, primary dealers, NSDL, CDSL and CCIL. In August 2011 the PDO system counted 233 active own accounts and 88 client accounts.

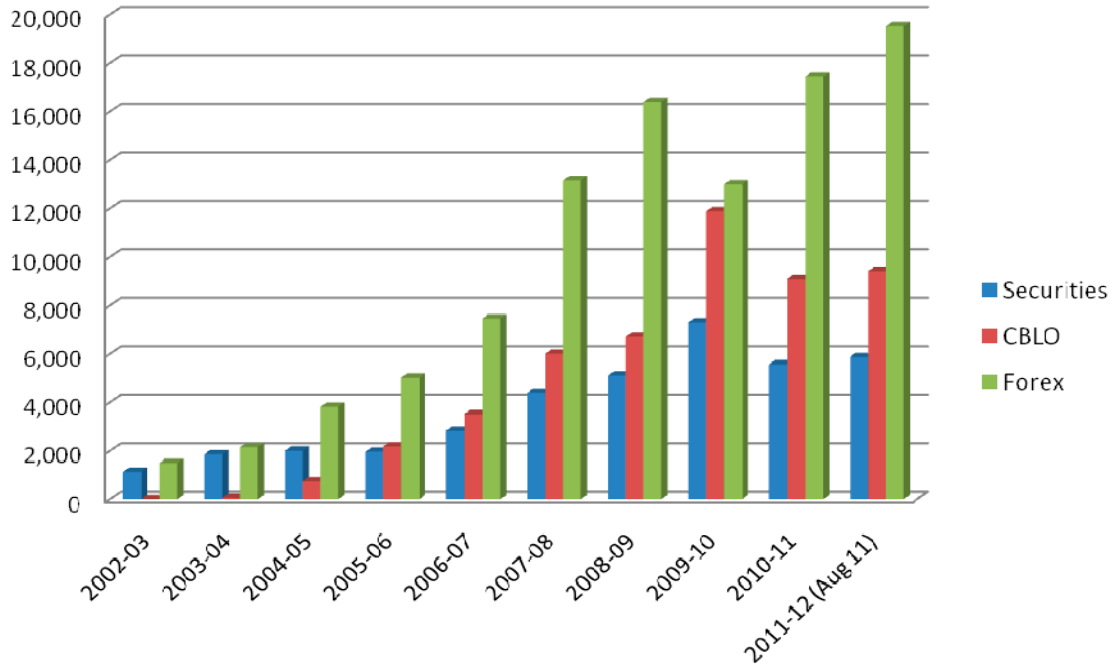
15. **Trading in government securities, CBLOs and forex instruments is dominated by professional market participants.**<sup>5</sup> Around 80 percent of volumes in government securities originate from banks, 8 percent from funds and 12 percent from other institutions. Retail investors can also trade in government securities on the NSE and BSE. The NSDL and CDSL provide settlement services, by acting as sub-custodians for government securities, having accounts in the PDO system. In practice however, retail participation in government securities is close to zero.

16. **Volumes in all products have grown strongly, especially in the forex segment.** Figure 2 shows that the average daily volume in 2011 (January to August) was US\$19.5 billion for forex instruments, US\$9.4 billion for CBLOs and US\$5.9 billion for government securities and repos. The volumes in 2011 (January to August) are higher than the volumes for the full year of 2010.

---

<sup>5</sup> Professional participants are participants that are not retail investors, but are entities like banks, primary dealers, brokers and institutional investors.

Figure 2. India: CCIL Average Daily Volumes  
(In millions of U.S. dollars)



Source: CCIL.

### B. Clearing and Settlement Arrangements for Corporate Securities and Financial Derivatives

17. **The securities clearing and settlement systems in India have seen significant changes during the last two decades.** With the liberalization of the capital market in 1992 the SEBI was established. The SEBI has been supportive of competition in the securities market, and has created an enabling environment for development of new stock exchanges. As an outcome of this policy, the NSE was established. The NSE offered trading on an electronic trading platform, which successfully gained a substantial part of trading. The dematerialization of securities has increased the efficiency of the market the NSDL and later CDSL were established as central securities depositories (CSDs) The CCPs were established and risk management measures were taken to further reduce the clearing and settlement risk, for example by the introduction of rolling settlement, the compression of the settlement cycle to T+2 and the introduction of Delivery versus Payment (DvP) mechanisms.

18. **Corporate securities and derivatives can be traded on four national stock exchanges and 17 regional stock exchanges.**<sup>6</sup> The BSE is the stock exchange with the largest market capitalization in India (US\$1,632 billion), ranking as the ninth largest stock exchange worldwide. The NSE is the second stock exchange in India and the tenth largest stock exchanges worldwide, based on market capitalization (US\$1,596 billion). In terms of volumes the NSE is the stock exchange with the highest turnover (US\$798 billion in 2010) in India, ranking as the sixteenth largest stock exchange worldwide. The BSE is the second largest stock exchange in India and the twenty-fourth stock exchange worldwide, based on turnover (US\$259 billion in 2010).<sup>7</sup> The main indices are the BSE Sensex and the S&P CNX Nifty. The derivatives exchanges in India also rank high in international comparisons. Based on the number of contracts traded and/or cleared the NSE ranks fifth, the MCX, including the MCX-SX, ranks ninth, and the U.S.E ranks thirteenth.<sup>8</sup>

19. **The NSE offers trading in equities, government and corporate bonds, warrants, exchange traded funds (ETFs), mutual funds, stock index options and futures, stock options and futures and currency options and futures.** Transactions at NSE are executed on the National Exchange for Automated Trading (NEAT). BSE offers the same range of products except for the currency derivatives. Instead, BSE has a stake in the U.S.E that started a trading platform for currency futures and options in 2010. Transactions on BSE are executed on the BSE Online Trading System (BOLT).

20. **The NSCCL is the CCP for transactions executed on the NSE.** The NSCCL is a wholly-owned subsidiary of the NSE and legally a clearing corporation. The BSE is the CCP for transactions executed on the BSE trading platforms and legally a clearing house. Whereas the BSE offers the guarantee and risk management functions, the BOISL handles the operational processing of BSE transactions. BSE owns 49 percent of the BOISL and Bank of India 51 percent. ICCL is currently the CCP for currency derivatives traded on the U.S.E, as well as mutual funds traded on the BSE. The ICCL is legally a clearing corporation. The ICCL is a 100 percent subsidiary of the BSE. MCX-SX CCL acts as CCP to all the trades, provides full novation and carries out the business of clearing and settlement for currency futures contracts on MCX-SX. NSCCL, BSE, MCX-SX CCL and ICCL net the positions of their clients on a multilateral basis, after which novation takes place real time.

---

<sup>6</sup> Stock Exchanges are located in Ahmedabad, Bangalore, Bhubaneswar, Calcutta, Cochin, Coimbatore, Delhi, Gauhati, Indore Jaipur, Kanpur, Ludhiana, Madras, Pune, and Vadodara as well as the BSE, ISE, MPSE, NSE, OTCEI, and UPSE.

<sup>7</sup> Source: World Federation of Exchanges.

<sup>8</sup> Source: Futures Industry, ranking is based on data from January to June 2011.

21. **The CCPs have comprehensive risk management models to protect itself against the default of one of its members.** Exposures and margin requirements are calculated on a real time basis for all client levels. The CCPs calculate several types of margin, including initial margin and variation margin, based on the internationally used VaR/SPAN model. Stress tests calculate whether the CCPs are able to withstand the default of the ten participants with the largest exposures.

22. **The CCPs handle the DVP process for corporate securities.** Transactions are settled using a DVP model 3 mechanism, with settlement on T+2. The securities leg of the transactions is settled in the books of the NSDL and CDSL. The cash settlement takes place in commercial bank money. The CCPs have appointed more than a dozen settlement banks as designated clearing banks. Criteria exist for their enrollment. Brokers and custodians have to designate one clearing bank for cash settlement purposes. Finality and netting as critical elements of the clearing and settlement process are covered by provisions of the bylaws of the stock exchanges. The PSSA is not applicable to stock exchange transactions.

23. **Investors access the markets through registered intermediaries called stock brokers.** The NSE has around two to three million investors participating in the market on a daily basis. Retail investors are a substantial part of the total investor based for corporate securities and derivative markets in India. The total number of retail investors was estimated to be eight million in 2007<sup>9</sup> and the estimate for 2009–10 was 12 million,<sup>10</sup> representing the rapid growth in retail participation. Though these numbers are small compared in relation to the population of India, to put this in perspective, the estimated number of tax payers in India is only 26 million. Only intermediaries who have obtained a license from the SEBI are permitted to deal on behalf of investors. Given the vast geographical spread of the country and the large number of retail investors, investor empowerment and protection is a core function of both SEBI and the exchanges. The number of registered stock brokers was 9,325 on March 31, 2011. The NSE counted 1,389 registered brokers, of which 1,239 were corporate brokers and 1,301 on the BSE, of which 1,087 were corporate brokers.

24. **Corporate bonds are tradable on the stock exchanges as well as in the OTC segment.** The NSE and BSE offer trading in publically issued corporate bonds on the same platform as the corporate equities. Clearing and settlement arrangements are also similar, with NSCCL and BSE acting as the CCP for transactions in corporate bonds. NSDL and CDSL act as the CSDs for corporate bonds. OTC transactions are not guaranteed by NSCCL and ICCL, but the CCPs nevertheless coordinate the DvP settlement for corporate bonds, with cash settlement in the RTGS system of the RBI and the securities settlement in the books of NSDL and CDSL.

---

<sup>9</sup> Swarup Committee on Investor Awareness and Protection.

<sup>10</sup> NSE press release dated January 5, 2011 – “NSE receives financial inclusion award.”

25. **The RBI has taken several initiatives to develop the corporate bond market.** However, settlement arrangements for corporate bonds traded in the OTC market are still not fully developed. The corporate bond market in India is underdeveloped compared to the equity and derivatives market. The RBI has supported the development of this market by enhancing the clearing and settlement arrangements, for example by (1) facilitating the settlement of secondary market trades in corporate bonds in the RTGS system, using a DvP model 1 mechanism. The NSCCL and the ICCL have obtained approval to maintain transitory pooling accounts with the RBI. Guidelines have been issued to all RBI regulated entities to mandatorily clear and settle all OTC trades in corporate bonds using the above arrangement with effect from December 1, 2009; (2) facilitating the development of an active repo market in corporate bonds. The guidelines for repo transactions in corporate debt securities were issued early 2010. The guidelines will enable repo in listed corporate debt securities rated 'AA' or above. The Fixed Income Money Market and Derivatives Association of India (FIMMDA) is working on the development of reporting platform and also on the Global Master Repo Agreement to standardize the repo transactions in corporate bonds.

26. **The RBI has taken initiatives to increase the transparency and safety of the OTC derivatives market in India, in line with international standards.**<sup>11</sup> The RBI has set up a working group consisting of members of the RBI, CCIL and the FIMMDA to work out the modalities for an efficient, single reporting mechanism for all OTC interest rate and forex derivative transactions. Currently, several types of OTC derivatives are subject to different reporting requirements. The interbank reporting of interest rate derivative transactions is done electronically on CCIL, whereas client transactions are being collected on a weekly basis. Transactions in forex forwards and forex interest rate swaps are published in the Weekly Statistical Supplement of the RBI, with a time lag of two–three weeks. Cross currency derivative transactions are reported on a half yearly basis. The OTC trades in corporate bonds have to be reported on the corporate bond platform of the BSE, NSE or FIMMDA within 30 minutes after the transactions and repos in corporate bonds have to be reported on the FIMMDA platform within 15 minutes after the transaction. In addition, the RBI has proposed to set up a centralized Trade Repository (TR) for credit default swaps.

---

<sup>11</sup> See for example the draft CPSS-IOSCO reports 'Guidance on the application of the 2004 CPSS-IOSCO Recommendations for Central Counterparties to OTC derivatives CCPs' and 'Considerations for trade repositories in OTC derivatives markets' of May 2010. These reports will be incorporated in the new CPSS-IOSCO Principles for Financial Market Infrastructures, which are expected to be published in 2012.

### III. DETAILED ASSESSMENTS

**Table 5. India: Detailed Assessment of Implementation of the CPSS-IOSCO Recommendations for Securities Settlement Systems—PDO System of RBI**

| <b>RSSS 1 Securities settlement systems should have a well-founded, clear and transparent legal basis in the relevant jurisdiction.</b> |  |
|---|--|
| Description   | <p>The legal framework in India for the clearing and settlement of government securities consists of statutory laws, regulations and rules. The laws and regulations relevant for the PDO system are clearly stated (in English) and are accessible to system participants. Most laws and regulations are available on the Internet.</p> <p>The critical elements for securities clearing and settlement are covered by the Securities Contracts Regulation Act (SCRA; 1956), the Government Securities Act (GSA; 2006) Payment and Settlement Systems Act (PSSA; 2007) and the Contract Act (1872). The PDO-system is governed by the Subsidiary General Ledger (SGL) and Constituents' Subsidiary General Ledger (CSGL) regulations and the Government securities regulations (GSR), 2007. No court in India has failed to uphold this legal basis.</p> <p>The legal framework covers enforceability of transactions (Contract Act), dematerialization (GSA art 2, GSR art 3), netting (PSSA, art 23), finality (PSSA, art 23), securities lending (RBI Act, art 17 (12AA), and delivery versus payment. The rules of the system and contracts are enforceable in case of the insolvency of a participant (PSSA, art 23).</p> <p>The protection of customers' assets is covered by the GSA art 4 (2) and (3). The GSA art 4( 2) specifies that notwithstanding any other law the PDO participant (custodian) is seen as the holder of the government securities that it holds on behalf of a client in a CSGL account. The client is entitled to claim from the custodian all the benefits related to the government securities in its account. The GSA art 4(3) states that the holder of a constituents' subsidiary general ledger account shall maintain such records and adopt such procedure for safeguarding the interests of the constituents as may be specified. The CSGL regulations describe this in more detail. The current legal framework gives sufficient protection to the client's securities in case of insolvency of the bank. Indian Courts have held this protection, e.g., the Madras High Court Judgment – Manasuba and Co Pt Ltd, 1973.</p> <p>No cross-border participation is allowed in the PDO. System participants should be located in India.</p> |
| Assessment  | Observed   |
| Comments  | <p>The GSR is available to system participants, but it is not available in the public domain. The RBI may consider publishing the GSR on its website, to increase transparency.</p> <p>It is noted that the RBI intends to improve the clarity of the legal framework to mitigate legal risks to the highest extend. The assessors support this intention to realize greater clarity, having noted that the critical elements related to securities clearing and settlement are scattered around different laws and regulations, which challenges system participants to assess the risks related to securities clearing and settlement.</p>   |



|  |  |
|--|--|
| <b>RSSS 2. Confirmation of trades between market participants should occur as soon as possible after trade execution, but no later than trade date (T+0). Where confirmation of trades by indirect market participants (such as institutional investors) is required, it should occur as soon as possible after trade execution, preferably on T+0, but no later than T+1.</b> |  |
| Description  | All transactions in government securities and repos have to be reported on NDS or executed on NDS-OM (only for government securities) or CROMS (only for repo transactions). OTC transactions have to be reported within 15 minutes after the trade is executed at NDS, whereas the transactions on NDS-OM and CROMS are confirmed real time. The NDS-OM and CROMS platforms also facilitate real time dissemination of trade information to the market. Approximately 20 percent of all trades in government securities are reported through NDS, whereas approximately 80 percent of transactions are executed on the NDS-OM platform. Only confirmed transactions will be sent to the PDO system.   |
| Assessment   | Observed   |
| Comments   | Although transactions in CBLO, forex and forex derivative products are out of the scope of the PDO system, it is important to ensure that these transactions are also reported as soon as possible after the transaction, especially if they are executed in the OTC market.   |
| <b>RSSS 3. Rolling settlement should be adopted in all securities markets. Final settlement should occur no later than T+3. The benefits and costs of a settlement cycle shorter than T+3 should be evaluated.</b>   |  |
| Description  | <p>The agreed settlement standard for secondary market transactions in government securities is one day after trade (T+1). The settlement standard for repo transactions is T+0 or T+1.</p> <p>The settlement fails are low due to a strict penalty regime of the RBI. In case of a shortfall of securities or funds during settlement a penalty is imposed on the participant. In case a shortfall occurs three times in six months, the PDO participant is not allowed to trade for a period of six months. If the participant again has a shortage the participant will be permanently excluded from the PDO system.</p> <p>All transactions in government securities are guaranteed by CCIL. In case of a failure the risk management system of CCIL addresses the exposure toward the failed transaction.</p> |
| Assessment   | Observed   |
| Comments   | -  |
| <b>RSSS 4. The benefits and costs of a central counterparty should be assessed. Where such a mechanism is introduced, the central counterparty should rigorously control the risks it assumes.</b>   |  |
| Description  | CCIL is the central counterparty for transactions in government securities, money market and forex instruments. CCIL has been established to reduce the liquidity needs within the system through multilateral netting. CCIL is assessed against the CPSS-IOSCO Recommendations for CCPs, see Table 6.   |
| Assessment   | Observed   |
| Comments   | -  |

|   |   |
|---|---|
| <b>RSSS 5. Securities lending and borrowing (or repurchase agreements and other economically equivalent transactions) should be encouraged as a method for expediting the settlement of securities transactions. Barriers that inhibit the practice of lending securities for this purpose should be removed.</b> |   |
| Description   | <p>No regulatory or tax impediments exist for the functioning of the repo market or the securities lending facility. According to the Reserve Bank of India Act 1934 (RBI Act) the RBI is allowed to offer a lending and borrowing facility for government securities. The RBI, as overseer of the CCIL and the PDO-system, monitors and controls the efficiency of settlements and has the powers to undertake action if needed.</p> <p>Securities lending and borrowing is mainly done through repurchase agreements (repos). Repos are allowed for all government securities except those issued by the government of India with a specific condition on ineligibility for repo transactions, which in practice is a very low percentage. Banks, primary dealers, nonbanking financial companies, insurance companies, financial institutions, mutual fund and housing finance companies are all allowed to participate in repos. Corporate investors may only lend in the repo market (minimum period of 7 days) and only to banks.</p> <p>In addition, a limited purpose securities lending facility expedites the settlement of securities that are guaranteed by the CCIL. The CCIL has arrangements for securities lines of credit with participants for meeting securities shortfall in the government securities segment.</p> |
| Assessment  | Observed  |
| Comments  | -   |
| <b>RSSS 6. Securities should be immobilized or dematerialized and transferred by book entry in CSDs to the greatest extent possible.</b>  |   |
| Description   | <p>Government securities are issued only in dematerialized form and the great majority of government securities is now dematerialized. Government securities should be mandatorily held in dematerialized form by all RBI-regulated entities, which include the participants of the PDO system. While almost all the securities issued are in dematerialized form, provisions are still available to issue securities in physical form as laid down in the GSA.</p> <p>The PDO system is the registrar for government securities. The transfer of the securities in the PDO system automatically results in the transfer of ownership of the securities.</p>  |
| Assessment  | Observed  |
| Comments  | -   |
| <b>RSSS 7. CSDs should eliminate principal risk by linking securities transfers to funds transfers in a way that achieves delivery versus payment.</b>  |   |
| Description   | <p>All the secondary market transactions in government securities are cleared and settled through the CCIL, using a DvP model 3 mechanism, with netting of securities as well as funds. For that purpose CCIL has a securities account in the PDO system and a cash account in the RTGS system of the RBI.</p> <p>At the end of each trading day, the CCIL nets all the settlement instructions on a multilateral basis per SGL and per CSGL account per PDO participant. CCIL sends the netted file, both for securities (per ISIN) as well as cash, to the PDO system. The multilateral net settlement file has priority over other RTGS transactions.</p>  |

|   |   |
|---|---|
|   | <p>In the PDO system the securities of the seller are transferred to the securities account of the CCIL. Then a payment instruction is initiated to transfer the cash from the account of the buyer to the account of the CCIL in the RTGS system. Once the payment is received, the CCIL transfers the securities to the account of the buyer and the cash to the account of the seller.</p> <p>The PDO participants who do not have an account in the RTGS system have to use one of the six designated settlement banks.</p>   |
| Assessment  | Observed  |
| Comments  | -   |
| <p><b>RSSS 8. Final settlement should occur no later than the end of the settlement day. Intra-day or real-time finality should be provided where necessary to reduce risks.</b></p>  |   |
| Description   | <p>Irrevocability is achieved once the transactions are accepted for guaranteed settlement and are novated by CCIL at the end of the trading day. Finality is achieved at the end of the settlement day when the securities and cash settlement takes place in the accounts of the PDO-system and the RTGS system of RBI.</p> <p>The legal framework, e.g. art 23 of the PSSA, supports the final and irrevocable character of the transactions. Any transaction, whether settled on the settlement day in the settlement batch, or any intraday settlement for monetary policy or payment operations or intraday margin calls by CCPs, are protected under this article. The settlement, whether gross or net is final and irrevocable as soon as the money, securities, foreign exchange or derivatives or other transactions payable as a result of such settlement is determined, whether or not such assets are actually paid.</p> |
| Assessment  | Observed  |
| Comments  | -   |
| <p><b>RSSS 9. CSDs that extend intraday credit to participants, including CSDs that operate net settlement systems should institute risk controls that, at a minimum, ensure timely settlement in the event that the participant with the largest obligation is unable to settle. The most reliable set of controls is a combination of collateral requirements and limits.</b></p>               |   |
| Description   | <p>The PDO system does not provide intraday credit facilities to its participants and no overdrafts in the CSD are allowed. Participants can make use of the facility of pledge or hypothecation of the securities (by the borrower) to obtain a loan or credit (from the lender) within the RTGS system of the RBI. The credit risk is typically covered through appropriate haircut. The CSD is not exposed to credit risk, since it is not a party of the credit arrangement.</p>  |
| Assessment  | Not applicable  |
| Comments  |   |
| <p><b>RSSS 10. Assets used to settle the ultimate payment obligations arising from securities transactions should carry little or no credit or liquidity risk. If central bank money is not used, steps must be taken to protect CSD members from potential losses and liquidity pressures arising from the failure of the cash settlement agent, whose assets are used for that purpose.</b></p> |   |
| Description   | <p>All government securities are settled in central bank money, i.e. in the RTGS system of the RBI. Participants of the PDO system either have an account in the RTGS system themselves or need to have an account with one of the designated settlement banks, as approved by the CCIL from time to time.</p>  |

|   |   |
|---|---|
|   | The CCIL determines what banks may function as designated settlement bank. The CCIL is also responsible for the monitoring of the concentration of settlement flows and the financial condition of the designated settlement banks (see RCCP 9). The cash and securities are directly available to the PDO participants, following the settlement process at the end of each settlement day. The RTGS system of the RBI is generally compliant with the Core Principles for Systemically Important Payment Systems (CPSIPS).  |
| Assessment  | Observed  |
| Comments  | -   |
| <b>RSSS 11. Sources of operational risk arising in the clearing and settlement process should be identified and minimized through the development of appropriate systems, controls and procedures. Systems should be reliable and secure, and have adequate, scalable capacity. Contingency plans and back-up facilities should be established to allow for timely recovery of operations and completion of the settlement process.</b> |   |
| Description   | <p>The PDO system is fully automated and designed to minimize operational risks. The RBI has developed internal guidelines and procedures, including security measures, to limit operational risks.</p> <p>The PDO system has an on city hot back-up with Disaster Recovery (DR) data center and a third off-city back-up site with a different risk profile, especially with regard to earthquakes. Quarterly DR drills are conducted to test and ensure the system resilience and include connectivity tests for systems of PDO participant. The replication of data between the primary site and on-city data centre is done on a real time basis. Replication between the primary data centre and the off-city data centre takes place with a small time lag. The operations can be switched over to the on-city datacenter and off-site datacenter from the primary datacenter within 30 minutes and 2 hours respectively.</p> <p>The systems are subject to regular audits, both independent internal as well independent external audits. During the last couple of years no major incident or failure has occurred.</p> |
| Assessment  | Observed  |
| Comments  | While the PDO system has appropriate back-up sites and connectivity tests there is room to improve the crisis management arrangements with regard the continuity of the PDO system. <sup>12</sup> The RBI and preferably also the participants and other infrastructure service provider should draft an action plan, including a detailed description of all actions to be taken in case of a crisis with all involved people and institutions, their contact details, the information flows and the potential range of decisions. The RBI should, in addition, carry out a formal exercise with relevant participants to test this action plan in a variety of scenarios and adapt the action plan according to lessons learnt and as such addressing the human factor in stress situations. The stress scenarios can involve the failure of each of the central systems, systems of the participants, as well as the infrastructure services used or an external threat like a cybercrime attack. <sup>13</sup>  |

<sup>12</sup> In line with the relevant assessment methodology the system is assessed as ‘observed,’ despite the lack of comprehensive crisis management procedures. The assessment may be different once the system will be assessed using the assessment methodology of the CPSS-IOSCO Principles for Financial Market Infrastructures, which are expected to be published in 2012.

<sup>13</sup> See also for example the CPSIPS, paragraph 7.7.18 and the draft CPSS-IOSCO Principles for FMIs, paragraphs 3.17.14 and 3.17.15.

|   |  |
|---|--|
|   | It is recommended that crisis management procedures be further developed and tested with all or the main participants. In addition, the PDO should start validating the DR plans of the participants periodically.   |
| <b>RSSS 12. Entities holding securities in custody should employ accounting practices and safekeeping procedures that fully protect customers' securities. It is essential that customers' securities be protected against the claims of a custodian's creditors.</b> |  |
| Description   | <p>The PDO system records the beneficial ownership for the securities that are owned by the PDO participant in its SGL account. The PDO participant may offer custody services to clients that do not have an account within the PDO system. The PDO participant (custodian) maintains client accounts (CSGL accounts) which are separated from its proprietary account (SGL account). Clients cannot be identified as beneficial owner in the PDO system, rather the beneficial ownership for securities of clients is recorded in the books of its custodian.</p> <p>The GSA (art 2) specifies that notwithstanding any other law the PDO participant (custodian) is seen as the holder of the government securities that it holds on behalf of a client in a CSGL account. The client is entitled to claim from the custodian all the benefits related to the government securities in its account. The GSA (art 3) and the CSGL regulation define ,in addition, operational requirements and procedures to protect the securities of the client. The CSGL regulations specify operational requirements to ensure the safe handling of client assets, for example with regard to IT infrastructure, legal agreement with the client, audit trails, administration and reconciliation.</p> <p>The custodian needs to provide system generated audit trail, whenever called for by the client or the RBI (CSGL art 7). The custodian shall ensure daily reconciliation of outstanding balances and any mismatch should be reported immediately to the PDO department of the RBI to ensure reconciliation of balances before the end of the next day.</p> <p>The custodian shall provide an audit report at least on a quarterly basis to the Audit Committee of the Board of RBI (CSGL art 14). The custodians are subject to supervision of the RBI.</p> <p>In case of pledges the securities are earmarked electronically. Appropriate systems are in place to ensure that these pledges are adequately registered.</p> |
| Assessment  | Observed   |
| Comments  | No arrangements are available to enable a customer's positions to be moved to a solvent custodian in case of insolvency of its own custodian. The draft CPSS-IOSCO Principles for Financial Market Infrastructures addresses the benefits of segregation and portability of accounts in a dedicated principle. It is recommended that these tools be implemented as a further protection of client assets and a means to smoothen the handling of a default of one of the PDO and/or CCIL participants.  |
| <b>RSSS 13. Governance arrangements for CSDs and central counterparties should be designed to fulfill public interest requirements and to promote the objectives of owners and users.</b>   |  |
| Description   | <p>The PDO system is owned by the RBI and operated by the Public Debt Office, which is part of the department of Government and Bank accounts. The PDO system is governed by the Board members of the RBI, who are appointed by the government of India.</p> <p>As indicated in Recommendation 1, the Acts underpinning the operations of the PDO system are available on the Internet, including most regulations supporting these</p>  |

|  |   |
|--|---|
|  | <p>statutes. The RBI Act outlines the governance arrangements for the RBI, containing provisions on the appointment of the governor and the deputies. The organization structure of the central bank is available on the website.</p> <p>In general the governance of the RBI is transparent and its objectives for public debt management, payment systems and payment system oversight are publicly available, including objectives and major decisions. On the other hand, no information is available on the objectives of RBI in providing government securities settlement services, neither is any information available with regard to the PDO system. The GSR and the PDO manual are not publicly available.</p> <p>Participants are consulted before any major decisions are taken that affect the participants. The process followed in arriving at these decisions is, however, not for public consumption. On a half yearly basis a customer service meeting is held in which users of the PDO system may express their concerns, suggestions and level of satisfaction with regard to the system.</p>   |
| Assessment   | Observed  |
| Comments   | The amount of public information with regard to the PDO system could be increased (see RSSS 17).  |
| <p><b>RSSS 14. CSDs and central counterparties should have objective and publicly disclosed criteria for participation that permit fair and open access.</b></p> |   |
| Description  | <p>The RBI has set objective criteria for participation in the PDO system. The SGL and CSDL regulations specify the eligibility criteria for participation in the PDO system.</p> <p><i>SGL account (own account)</i></p> <p>The entities mentioned below are eligible to open and maintain a SGL account:</p> <ul style="list-style-type: none"> <li>(i) A bank according to the RBI Act (2 of 1934).</li> <li>(ii) Primary dealers.</li> <li>(iii) Central government.</li> <li>(iv) State governments.</li> <li>(v) Insurance companies regulated by the Insurance Regulatory and Development Authority (IRDA).</li> <li>(vi) Mutual funds regulated by the SEBI.</li> <li>(vii) Financial institutions as defined in terms of section 45-I (c) (ii) of the RBI Act (2 of 1934).</li> <li>(viii) Provident and pension funds having investments in government securities of Rs. 500 crores or more.</li> <li>(ix) Foreign central banks with prior approval.</li> <li>(x) Pension fund managers regulated by the Pension Fund Regulatory and Development Authority (PFRDA).</li> </ul> <p>Additionally, the NSDL, CDSL, the Stock Holding Corporation of India Limited (SHCIL) may open an account as well as other entities as approved by the RBI.</p> <p><i>CSDL account (client account)</i></p> |

|  |   |
|--|---|
|  | <p>The entities mentioned below are eligible to open and maintain a CSLG account on behalf of their clients, provided that the entities obtain a no-objection certificate from the concerned regulatory department of the RBI and that the RBI has no regulatory/supervisory discomfort:</p> <ul style="list-style-type: none"> <li>(i) Commercial banks.</li> <li>(ii) Urban co-operative banks.</li> <li>(iii) State co-operative banks.</li> <li>(iv) Primary dealers.</li> </ul> <p>Additionally, the NSDL, CDSL, CCIL, SHCIL and the National Bank for Agriculture and Rural Development may open an account as well as other entities as approved by the RBI.</p> <p>The GSA art 27 clearly specifies under what conditions the bank may terminate the membership of a participant, including the procedure that will be followed. The conditions are</p> <ul style="list-style-type: none"> <li>• the account is being operated contrary to the term and conditions subject to which the account was opened;</li> <li>• insufficiency of securities or cash;</li> <li>• the account is operated contrary to the banking practice or in a way that is prejudicial to the interests of the holders of government securities; and</li> <li>• the account is being misused.</li> </ul> <p>These eligibility criteria are publicly available.</p> |
| Assessment   | Observed  |
| Comments   | -   |
| <b>RSSS 15. While maintaining safe and secure operations, securities settlement systems should be cost-effective in meeting the requirements of users.</b> |   |
| Description  | <p>The RBI does not charge any fees for participation in the PDO system or for settling transactions, neither are any fees charged for membership of or trading on the NDS and NDS-OM platforms. CCIL does charge for the use of its CCP services, see Table 6. The clients may use the different systems in a straight-through-processing (STP) environment, with high operational standards. As part of improvements in service levels a new core banking solution for the RBI is being rolled out, of which the PDO system is an integral component.</p> <p>No regular studies do review the cost of operation, but client satisfaction is high. Every half year, the RBI organizes customer service meetings to obtain information from its users about the service level and potential improvements. The feedback from market users during the FSAP mission indicated a high level of satisfaction with the PDO system.</p>  |
| Assessment   | Observed  |
| Comments   | <p>The absence of any fees for the trading and settlement systems of government securities is possible as long as no other parties offer such services that cannot benefit from subsidization of the RBI. It is recommended that the RBI Oversight department explicitly monitor the efficiency of the PDO system, including the cost of operation.</p>   |

|  |  |
|--|--|
| <b>RSSS 16. Securities settlement systems should use or accommodate the relevant international communication procedures and standards in order to facilitate efficient settlement of cross-border transactions.</b>                  |  |
| Description  | Currently, no cross-border transactions can be conducted in government securities. The PDO system makes use of INFINET, which is a closed user group network. The communication procedures and standards can be converted into international communication procedures and standards without great difficulty.  |
| Assessment   | Observed   |
| Comments   | -  |
| <b>RSSS 17. CSDs and central counterparties should provide market participants with sufficient information for them to accurately identify the risks and costs associated with using the CSD or central counterparty services.</b>   |  |
| Description  | <p>PSSA, art 21 specifies that every system provider shall disclose to the existing or potential system participants, the terms and conditions including the charges and the limitations of liability under the payment system, supply them with copies of the rules and regulations governing the operation of the system, netting arrangements and other relevant documents.</p> <p>The existing participants of the PDO system do have the access to the relevant laws, regulations, rules and other information, necessary to obtain a full and clear description of their rights, obligations and the risks related to participation in the system. The information is available as part of the membership process.</p> <p>The PDO system was assessed as part of the CFSA in March 2009. The report of the CFSA contains answers to many key questions of the CPSS-IOSCO Recommendations for Securities Settlement Systems: <a href="http://rbi.org.in/scripts/PublicationReportDetails.aspx?UrlPage=&amp;ID=547">http://rbi.org.in/scripts/PublicationReportDetails.aspx?UrlPage=&amp;ID=547</a> . The answers are however not updated and not all key questions are addressed.</p> <p>Potential system participants may find it difficult to obtain a clear picture of their rights, obligations and risks, since not all information is easily accessible through the RBI website. The website does not have dedicated information about the PDO system. The section on payment systems does not include any reference to this system. Although all Acts and most regulations are available on Internet the relevant provisions are scattered among different legal documents. The GSR is not available on the website.</p> |
| Assessment   | Broadly observed   |
| Comments   | In order to fully observe this recommendation the answers to the CPSS-IOSCO disclosure framework need to be updated, answered in more detail and regularly reviewed by the RBI. It will be helpful to develop a dedicated section on the website of the RBI, which includes all relevant information, including an overview of the legal framework, the governance arrangements and objectives of the system, to guide (potential) participants of the PDO system.   |
| <b>RSSS 18. Securities settlement systems should be subject to transparent and effective regulation and oversight. Central banks and securities regulators should cooperate with each other and with other relevant authorities.</b> |  |
| Description  | The PDO system is a settlement system as defined by the PSSA. The PSSA empowers the RBI to regulate and supervise payment and settlement systems within the country.   |



The scope of the oversight function of the RBI is guided by the policy objectives set out in the Mission Statement “Payment Systems in India Vision 2009–12 (July–June),” stating that the RBI strives “to ensure that all payment and settlement systems operating in the country are safe, secure, sound, efficient, accessible and authorized.” Oversight necessitates that “the objectives of safety and efficiency are promoted by monitoring existing and planned systems, assessing them against these objectives and, where necessary, inducing change.”

The oversight department of the RBI is part of the Department of Payment and Settlement Systems and comprises a staff of 5 FTE that cover all payment and settlement systems as defined by the PSSA. Different executive directors are in charge of reporting about oversight matters on the one hand and the different systems (RTGS system, PDO system and CCIL) on the other hand.

The oversight department assesses the payment and settlement systems, using off-site surveillance as well as on-site inspections. Off-site surveillance involves data collection and analysis, self-assessment by the authorized entities, periodical system audits by qualified professionals and market intelligence. The assessment framework is based on international standards for example the CPSIPS and CPSS-IOSCO Recommendations for SSS and CCPs.

The government of India has constituted the Financial Stability and Development Council (FSDC) under the chairmanship of the Union Minister of Finance in December 2010. The members are the heads of all four regulators (RBI, SEBI, IRDA, and PFRDA), Finance Secretary, Chief Economic Advisor, Secretary, Economic Affairs, Secretary, Financial Service, Additional and Joint Secretary (Member Secretary) from the Capital Markets Division of the MOF. Its mandate includes issues related to financial stability, financial sector development, inter-regulatory coordination, monitoring of financial conglomerates and financial inclusion and financial literacy.

A sub-committee of the FSDC is chaired by the Governor of the RBI with all FSDC members (except the Finance Minister) along with the Deputy Governors of RBI. Its mandate is to assist the FSDC and meetings are organized on a quarterly basis.

The FSDC sub-committee has constituted an Inter Regulatory Technical Group to meet more frequently and to deal with inter-regulatory issues proactively. This sub-committee is set up with the Executive Director in charge of the Financial Stability Unit of the RBI at the Chair and includes representatives from the four regulators (RBI, SEBI, IRDA, and PFRDA) at the level of the Chief General Manager or Executive Directors. This group meets once every two months and discusses issues related to risks to systemic financial stability and inter-regulatory coordination. It provides essential inputs for the meetings of the Sub-Committee. A second sub-committee is the already existing RBI-SEBI Technical Committee on exchange traded currency futures and interest rate futures.

Despite this important cooperation on inter regulatory matters, the cooperation on payment and securities clearing and settlement systems is not formalized. No explicit agreements are in place with regard to information sharing or coordination of policy implementation. The overall quality of the oversight and supervision on payment and securities clearing and settlement systems will improve if the RBI and SEBI regularly meet on a technical and higher level, according to formal arrangements that handle information sharing and the coordination of policy implementation. In addition, the RBI and SEBI are strongly encouraged to include the FMC in the regular meetings, since many of the above mentioned issues are of relevance to the supervisor of the commodities market as well.

|   |   |
|---|---|
| Assessment  | Broadly Observed  |
| Comments  | In order to observe this recommendation, the RBI should establish a framework for cooperation with the SEBI and the FMC to exchange information and coordinate on policy implementation. One option is to use the FSDC structure to realize this cooperation, but other ways may be chosen as well. |
| <b>RSSS 19. CSDs that establish links to settle cross-border trades should design and operate such links to reduce effectively the risks associated with cross-border settlement.</b> |   |
| Description   | The PDO system has not established any cross-border links.  |
| Assessment  | Not applicable  |
| Comments  | -   |

**Table 6. India: Detailed Assessment of Implementation of the CPSS-IOSCO Recommendations for Securities Settlement Systems—NSDL and CDSL**

| <b>RSSS 1 Securities settlement systems should have a well-founded, clear and transparent legal basis in the relevant jurisdiction.</b> |  |
|---|--|
| Description   | <p>The legal framework governing corporate securities settlement systems comprises of a set of laws, regulations issued under these laws and bylaws of the underlying institutions.</p> <p>The (SCRA and its subsequent amendments define the various terminologies relating to securities settlement systems (Sec 2), prescribes certain listing requirements, recognizes bylaws as valid means of organizing operations of institutions like stock exchanges, depositories and clearing houses (Sec 7 and 8), recognizes the powers of the SEBI and provides powers to the SEBI and the government to intervene in public interest (Sec 6, 10, and 11). An approval from SEBI is required for the bylaws and rules, and changes made to them.</p> <p>These bylaws of the stock exchanges contain various provisions related to conduct of securities settlement systems and detailed operating procedures. In particular the bylaws of the clearing corporations deem all settlements completed by them as final and irrevocable; and, provide the clearing corporation full-powers over the collateral placed with the clearing corporation to provide for orderly conduct of the securities settlement process. The applicability of these bylaws have also been upheld by a few Supreme Court rulings – Vinay Bubna vs. Bombay Stock Exchange, Supreme Court, 1999; and, Bombay Stock Exchange Vs Jaya I. Shah and another, Supreme Court, 2004.</p> <p>The laws and regulations are publicly available on the SEBI website. The bylaws and rules governing the operations of institutions like the stock exchanges, clearing corporations and depository participants are available to respective participants as part of the membership process.</p> <p>As the bylaws and rules of the stock exchanges are published in the official Gazette, they are deemed to enjoy status equivalent to an Act. This view has been further strengthened by Supreme Court rulings mentioned above.</p> <p>The SEBI Act, 1992 and its subsequent amendments, provides for the constitution of the regulator of corporate securities market – the SEBI, its powers, and how it should function; and, also provides for establishment of an appellate tribunal to provide quick redress for any disputes related to actions of the SEBI (various sections in Ch. 4-IV, V, and VIB). This Act clearly vests the responsibility for approving applications for establishment of stock exchanges, depository, custodians and collective investment schemes; and, regulation and oversight of entire corporate securities market including corporate securities settlement systems with the SEBI. The SEBI has issued regulations on securities lending and borrowing scheme, the most recent one was in 2002. This is described in more detail in RSSS 5.</p> <p>The Depositories Act, 1996 and its subsequent amendments, provides for the establishment of depositories (preamble and various sections in Ch. II), dematerialization of securities and protection of beneficial owners interests in particular indemnifying the beneficial owner from any errors of the depositories or depository participants (various sections in Ch III), and, allows the depository establish to bylaws to govern its relationships with depository participants including operational procedures (Sec 26). The</p> |

|            |  |
|------------|--|
|            | <p>regulations issued under this Act further details the process and requirements to become a depository or a depository participant; in particular this requires all depositories to maintain online real-time communication with all its depository participants, with stock exchanges and other depositories. The depository participants are also required to reconcile their records with the depository periodically to ensure that errors are identified promptly.</p> <p>The SEBI issued regulations under the Depositories Act – SEBI (Depositories and Participants) Regulations, 1996 (Depositories Regulations) to elaborate the arrangements between the depositories and their participants and the rights and obligations of the participants.</p> <p>The Depositories Act and the Depositories Regulations provide for recognition of the records of the beneficial ownership in the depository’s records as final. The rules and by laws of the exchanges and the clearing corporations describe the operating procedures for the settlement of securities transactions and these rules and by laws consider settlement completed in accordance with those procedures as final.</p> <p>The Depositories Act and the Depositories Regulation have a number of provisions that specifically address protection of customer’s assets. The Act defines the term beneficial owner and requires all depositories to maintain records at the level of the beneficial owner (Sec 11), and clearly specifies that the assets in the name of the beneficial owner are protected from any legal claims on the depository (Sec 9) or the concerned depository participant (depositories regulation, Reg 42) . In addition, the Depositories Regulations requires all transactions impacting the beneficial owner’s account be done only with prior consent of the beneficial owner and the same be communicated to the beneficial owner (Reg 42); and, requires the participant to periodically reconcile the record of the ownership in its books with that in the depository to ensure prompt correction of any errors (Reg 47). The Depositories Act requires the bylaws of the depositories to provide an option to the beneficial owner to move the holdings from one participant to another and also to re-materialize the underlying stocks (Sec 26).</p> <p>As per the Depositories Act , beneficial owner is allowed to pledge the securities in his depository account, but this is required to be done under intimation to the depository and the depository in turn is required to maintain a record of this ( Sec 12).</p> <p>The by laws and rules of the exchange and clearing corporations also recognize the assets of the customers as being distinct from that of the exchange, the clearing corporation and other participants.</p> <p>DVP Model 3 is used for securities settlements. Depending on the type of securities or the exchange where they are traded, the entity responsible for managing the DVP process varies. The by-laws, and rules of the exchanges and the clearing corporations require all the participants to have the necessary systems in place and defines the operating procedures.</p> <p>There are no cross-border linkages of the corporate securities settlement systems. A number of Indian securities are listed in foreign exchanges and there is a foreign security listed in Indian exchanges, but these are traded as depository receipts, and as such transactions on these do not involve any linkages with securities settlement systems of foreign countries.</p> |
| Assessment | Broadly Observed   |
| Comments   | It is recommended that the legal backing of the clearing and settlement process be improved by addressing the issues of finality, netting and protection of customer assets at   |

|   |   |
|---|---|
|   | <p>the level of a law. The topics related to protection of customer assets held with custodians and clearing corporations; and finality of settlement is addressed at the level of bylaws of the exchanges and clearing corporations. The bylaws and rules of the stock exchanges are however published in the Official Gazette and thereby could accord it the power of a law. A couple of Supreme Court rulings have also affirmed the primacy of these bylaws and rules in adjudication of disputes related to operation of these institutions. Therefore it appears that though the topics mentioned are not addressed at the level of law, the legal basis is sound. However, no dispute impacting clearing and settlement topics has arisen to date, and in particular protection of settlement assets in the event of insolvency proceedings. The SEBI is currently reviewing the legal and regulatory framework and this particular is also being deliberated upon.</p>   |
| <p><b>RSSS 2. Confirmation of trades between market participants should occur as soon as possible after trade execution, but no later than trade date (T+0). Where confirmation of trades by indirect market participants (such as institutional investors) is required, it should occur as soon as possible after trade execution, preferably on T+0, but no later than T+1.</b></p> |   |
| Description   | <p>All trades are conducted on an electronic trading platform and are matched using electronic order matching systems. The brokers are connected online to the trading platforms. All trades by direct participants are matched at the time of the trade. All institutions investors are required to settle their trades through custodians. These investors are however required to place their trade through brokers, The trades are made on the exchange by the brokers indicating the custodian of their client who would settle the transaction. Such transactions need to be confirmed by the custodians on T+1 by, by 1:00 PM and the net positions of the participants are calculated by 2.30 PM on T+1. The trade confirmation by custodians is communicated online to the exchanges.</p> <p>The details of the trades and associated pay-in/payout information for both securities and funds can be downloaded from the NSCCL site for trades done on the NSE and from BOISL for trades done on the BSE.</p>  |
| Assessment  | Observed  |
| Comments  | -   |
| <p><b>RSSS 3. Rolling settlement should be adopted in all securities markets. Final settlement should occur no later than T+3. The benefits and costs of a settlement cycle shorter than T+3 should be evaluated.</b></p>   |   |
| Description   | <p>A rolling settlement of T+2 is followed for trades at both the exchanges. There are categories of stocks that are designated as “trade-to-trade,” these stocks are settled on gross-basis, the rest are settled on net basis. The traded value of such securities during FY201-11 in the BSE was around 1 percent of the overall traded value, in the case of the NSE for the period September 2010-August 2011 trading in these securities was only 0.06 percent. The funds position is computed as a consolidated net for all trades irrespective of category.</p> <p>The pay-in obligations for both securities and funds are to be met by 11:00 AM on T+2, and the pay-out is completed by 1:30 PM on T+2.</p> <p>The settlement fails are very small – 0.2 to 0.3 percent of total trades at BSE and in the case of NSCCL, settlement fails are around 0.2 to 0.4 percent of total trades. There are well-laid out procedures in the bylaws of the clearing corporations for handling settlement fails. For “trade-to-trade” stocks, settlement fails would result in a financial closeout of the transaction as per the price-calculation mechanism specified by the SEBI. In the case of other securities, an auction is attempted on T+2 which is settled on T+3. If the auction</p> |

|  |  |
|--|--|
|  | <p>fails, a financial closeout is done on T+3, the price calculation is again based on the guidelines established by the SEBI.</p> <p>The risk management mechanism for mitigating risks arising from settlement fails are elaborated in detail in the assessment of the CCPs.</p> <p>The market participants interviewed by the mission team were satisfied with the settlement cycle and did not see any value in bringing it down further to T+1. The challenge of receiving confirmation from the international clients of custodians, working in different time-zones makes reducing the settlement cycle any further difficult.</p>  |
| Assessment   | Observed   |
| Comments   | -  |
| <p><b>RSSS 4. The benefits and costs of a central counterparty should be assessed. Where such a mechanism is introduced, the central counterparty should rigorously control the risks it assumes.</b></p>  |  |
| Description  | The corporate securities settlement process uses CCP arrangements. This is described in detail in the assessment of CCPs (Table 8).  |
| Assessment   | Observed   |
| Comments   | -  |
| <p><b>RSSS 5. Securities lending and borrowing (or repurchase agreements and other economically equivalent transactions) should be encouraged as a method for expediting the settlement of securities transactions. Barriers that inhibit the practice of lending securities for this purpose should be removed.</b></p> |  |
| Description  | <p>The SEBI reactivated a securities lending and borrowing scheme by announcing a new framework - "Securities Lending and Borrowing" (SLB) scheme on December 2007 and specified guidelines for this. The key provisions in these guidelines are listed below:</p> <ul style="list-style-type: none"> <li>• The SLB scheme is to be offered for all classes of investors through approved intermediaries on a separate online order matching platform from the regular trading platforms. To begin with through the clearing corporations of the exchanges.</li> <li>• Only securities, on which futures and options are allowed, can be used for SLB.</li> <li>• The settlement cycle for SLB should be T+1 on a gross basis and separately from settlement of regular trades.</li> <li>• A detailed risk management guideline was specified, which includes establishing market-wise limits for SLB on securities based on free-float capital and clearing member-wise and client wise limits based on this market-wise limit.</li> <li>• The exchanges, clearing corporations and the depositories are required to distinguish transactions and holdings arising from SLB from transactions and holdings arising from regular trades.</li> <li>• Various provisions related to know your customer requirements, transparency and consumer protection have been specified.</li> <li>• The exchanges and approved intermediaries have been asked to establish more detailed rules based on these guidelines.</li> </ul> <p>The NSE and BSE have introduced SLB schemes in conformance with these guidelines since then through NSCCL on April 2008 and BOISL on November 2010 respectively. The usage of SLB scheme however has been very limited, in the NSCCL operated SLB over a</p> |

|  |   |
|--|---|
|  | <p>12-month period ending July 2011, a total of 18.6 million shares amounting to around Rs 10 billion were transacted. In the BOISL operated SLB over the period November 2010 to March 2011, only 55 shares amounting to Rs 0.1 million were transacted. The tax implications for SLB schemes have been clarified by the tax authorities.</p> <p>The rules established by the exchanges and approved intermediaries have further elaborated the risk management requirements. One key provision of this relates to using a higher “close-out” price for auctions related to fails on SLB scheme in comparison to that of regular trades.</p> <p>The tenure of contracts in SLB can be up to a maximum period of 12 months. The Approved Intermediary (Clearing corporation/ Clearing House) has the flexibility to decide the tenure (maximum period of 12 months). The schemes also support early repayment, further on-lending and early recall.</p> <p>In the case of repo in corporate bonds, the same is permitted on bonds having a credit rating of ‘AA’ and above. Repo in corporate bonds, again, is available only to institutional investors.</p>   |
| Assessment   | Observed  |
| Comments   | -   |
| <b>RSSS 6. Securities should be immobilized or dematerialized and transferred by book entry in CSDs to the greatest extent possible.</b> |   |
| Description  | <p>The Depositories Act created the legal framework for establishment of multiple depositories; allowing depositories to use depository participants as agents to spread awareness and open depository accounts for investors; recognizes maintenance of ownership details of securities in book entry form; and, provides for protection of beneficial owners interests. This Act, also allows investors to de-materialized physically held securities and also if required re-materialize them subsequently.</p> <p>As per the Depositories Act the CSDs are to be recorded as registered owners in the books of the registrars of the issuers and the actual investors are to be regarded as beneficial owners and their holding details held with the CSDs are to be considered final. The registrars however also periodically extract information on the holders of their securities from the CSDs for updating their books.</p> <p>The Companies Act 1956 was amended to require that all public issues by companies over Rs 100 million in value, would need to allow for dematerialized issuance of securities.</p> <p>Currently there are two depositories functioning in India – NSDL and CDSL. These two depositories are connected to the two main stock exchanges – NSE and BSE, These depositories are also interconnected to allow for inter depository transfers. NSDL has 295 participants and collectively service 11.85 million depository accounts through 13,379 service centers. CDSL has 556 participants and collectively service 7.69 million depository accounts. The securities dematerialized in these CSDs can be traded in both the NSE and BSE.</p> <p>In FY 2010-11, the market capitalization of the NSE and BSE was Rs 67 trillion and Rs 68 trillion respectively. The following statistics of the CSDs for FY 2010–11 confirm that a large-proportion of securities actively traded are held in dematerialized form.</p> |

|   | CSD   | # of companies | Value of dematerialized settlement<br>(in Rs trillions) | Market Capitalization of companies available for dematerialization<br>(in Rs trillions) |
|---|---|----------------|---|---|
|   | NSDL  | 8842           | 15.47   | 78.19   |
|   | CDSL  | 7490           | 4.39  | 66.97   |
| The growth rates for value of the settlement of dematerialized securities in the period 2009-10 over the previous year was 37.6 percent for NSDL and 91.9 percent for CDSL. |   |                |   |   |
| Assessment  | Observed  |                |   |   |
| Comments  | -   |                |   |   |
| <b>RSSS 7. CSDs should eliminate principal risk by linking securities transfers to funds transfers in a way that achieves delivery versus payment.</b>                      |   |                |   |   |
| Description   | <p>The corporate securities settlement process involves usage of CCP arrangements and the CCP involved is responsible for ensuring the DVP process. DVP model 3 on a T+2 rolling settlement basis is used for settlement of all corporate securities traded on the BSE and NSE. The CSDs are responsible for only the settlement of the securities leg.</p> <p>The exchanges provide information to the brokers and custodians on their securities and funds receivables and obligations positions on T+1 and this is also passed onto the CCPs. The CCPs control the execution of the settlement process and ensure achievement of DVP. The pay-in obligations for funds are to be met by 10.30 AM on T+2 and for securities by 11 AM on T+2, and the pay-out of funds is completed by 2.30 PM on T+2 and securities by 1.30 PM on T+2.</p> <p>The NSCCL functions as the CCP for settlement of trades at the NSE, and in the case of trades at the BSE, the BSE itself functions as the CCP and uses the services of BOISL. The NSCCL and BOISL have “clearing” depository accounts with the CSDs, and these accounts are used to receive the pay-in securities from brokers and for pay-out of securities to brokers.</p> <p>The beneficiary owner accounts are held with the depositories and are operated by the owners through their participants or directly. The brokers operate a “pool” account with the CSDs- NSDL and CDSL, to receive pay-in of securities by their selling clients. The “selling” clients provide instructions for transfer from their depository account to that of the brokers pool account with the CSDs through their participants or directly. The pay-in of securities to the recipient brokers also is made into these pool accounts. The brokers then have one day to transfer the securities from their pool accounts to the depository account of the buyer of securities. The procedures related to this are laid out in the bylaws of the clearing corporations, which as described earlier, are approved by the SEBI and published in the official gazette.</p> <p>By 10.30 AM on T+2, the CCP receives the funds from members with net funds payable position into its accounts with designated clearing banks; and securities by 11 AM on T+2 in its “clearing” depository accounts with the CSDs. The CCPs receive online notifications of the receipts from both the clearing banks and the CSDs and are also able to view the transactions online. Upon successful receipt of the pay-in funds and securities, the CCPs</p> |                |   |   |



|   |  |
|---|--|
|   | <p>commence the pay-out process – payout of securities to the pool accounts of the brokers with the CSDs and into the bank accounts of the brokers with the designated clearing banks. The entire process is automated and the payout process is completed by 2:30 PM on T+2. There is a facility available for direct payout of securities to the accounts of the beneficial owners, which can be used to avoid delays in the transfer of securities from the brokers pool account to the beneficial owner.</p> <p>The bylaws of the CCPs and the exchanges, recognize the securities and funds in the settlement accounts of the CCPs with the depositories and clearing banks as being only for the purposes of settlement and that these should not be treated as the assets of the CCP.</p> <p>Corporate bonds traded in the wholesale segment are settled on a DvP model 1 mechanism on T+0, T+1 or T+2, without guarantee of the CCPs. The majority of transactions are done on T+1, which means that the professional traders are exposed to the default of its counterparty overnight. The professional investors need to address this risk in their risk management policies and procedures.</p> |
| Assessment  | Observed   |
| Comments  | -  |
| <p><b>RSSS 8. Final settlement should occur no later than the end of the settlement day. Intra-day or real-time finality should be provided where necessary to reduce risks.</b></p>  |  |
| Description   | <p>The DVP settlement process is described in detail under RSSS 7. The bylaws of the CCPs and the exchanges designate all pay-ins to the depository and funds accounts of the CCPs as being final. Subsequently all payouts of the CCPs to the depository accounts and funds accounts of the brokers are final at the completion of the transfer, (i.e.) there is intra-day finality.</p> <p>For purposes of margin collaterals, the brokers can instruct their participants or the CSD directly to transfer securities from their accounts to the accounts of the CCP. Such transfers are also deemed final as soon as it is reflected in the books of the CSD, as per the bylaws of the CCP.</p> <p>The settlement of the transactions under the SLB scheme also have intra-day finality thereby enabling the borrower to use securities received under the SLB scheme for his settlement obligations in the regular trades settlement that day.</p>   |
| Assessment  | Observed   |
| Comments  | -  |
| <p><b>RSSS 9. CSDs that extend intraday credit to participants, including CSDs that operate net settlement systems should institute risk controls that, at a minimum, ensure timely settlement in the event that the participant with the largest obligation is unable to settle. The most reliable set of controls is a combination of collateral requirements and limits.</b></p> |  |
| Description   | The corporate securities settlement process is controlled by the CCPs. The CSDs only facilitate the settlement of securities and do not have any role in the funds settlement leg.   |
| Assessment  | Not applicable   |
| Comments  |  |

|   |  |
|---|--|
| <b>RSSS 10. Assets used to settle the ultimate payment obligations arising from securities transactions should carry little or no credit or liquidity risk. If central bank money is not used, steps must be taken to protect CSD members from potential losses and liquidity pressures arising from the failure of the cash settlement agent, whose assets are used for that purpose.</b>  |  |
| Description   | The corporate securities settlement process is controlled by the CCPs. The CSDs only facilitate the settlement of securities and do not have any role in the funds settlement leg. The CCPs are responsible for the risk management; the process being followed is described in detail in Table 8, RCCP 9.   |
| Assessment  | Not applicable.  |
| Comments  | -  |
| <b>RSSS 11. Sources of operational risk arising in the clearing and settlement process should be identified and minimized through the development of appropriate systems, controls and procedures. Systems should be reliable and secure, and have adequate, scalable capacity. Contingency plans and back-up facilities should be established to allow for timely recovery of operations and completion of the settlement process.</b> |  |
| Description   | <p>SEBI vide circular no. MIRSD/DPS-III/ Cir-22 /2008 dated July 23, 2008, had mandated that exchanges shall conduct an annual system audit covering areas such as trading systems, clearing and settlement systems (clearing corporation /clearing house), risk management, databases, disaster recovery sites, business continuity planning, security, capacity management and information security audit by a reputed independent auditor. The stock exchanges are required to submit the system audit report to the SEBI after placing before their governing Board.</p> <p>A similar framework was also prescribed for securities depositories vide letter no. MIRSD/DPS-III/132833/2008 dated July 23, 2008.</p> <p>Also, the SEBI, in consultation with its Technical Advisory Committee, is in the process of framing a detailed BCP and DR guidelines for the stock exchanges (that would include clearing corporations) and securities depositories.</p> <p>The CSDs have complied with SEBI regulations and guidelines, and have an annual system audit which is placed for approval to their Boards. The CSDs, in addition, have detailed BCPs which are tested periodically. The CSDs have fully functional back-up systems in place at DR sites on hot stand-by with recovery time objectives of 150 minutes for NSDL and 60 minutes for CDSL. The participants are also required to participate in the BCP testing conducted by the CSDs. The CSDs have a process in place to enable participants to re-post transactions impacted while shifting from primary site to the back-up sites.</p> <p>The CSDs in their bylaws and circulars to their participants also require them to have data security arrangements and BCP arrangements in place. Compliance to this is ascertained as part of the annual audits of all participants by the CSDs.</p> <p>The SEBI regulations require the CSDs to retain transaction records for five years; however, both the CSDs have retained records since inception of their business.</p> <p>The CSDs have detailed procedures for ensuring data integrity and have access control mechanisms in place. The CSDs also have ISO 27001 information security management system certification.</p> <p>The CSDs conduct periodic audits for monitoring operational risks and the same is shared with the audit committee and the SEBI. The CDSL has appointed an external auditor for</p> |

|  |   |
|--|---|
|  | <p>this. In addition, the SEBI also audits the operations of the CSDs and select participants annually. The CSDs have conducted an assessment of their processes and have identified a set of risk-prone processes which are subject to concurrent audits. The CSDs have also developed operational manuals and standard operating procedures.</p> <p>There has been no instance of operational failure of the CSDs in the last year of its operations. The CSDs periodically monitor the utilization of their systems and also conduct periodic stress tests.</p>  |
| Assessment   | Observed  |
| Comments   | <p>While the CSDs have appropriate back-up sites and connectivity tests there is room to improve the crisis management arrangements with regard to the continuity of the operational processes<sup>14</sup>. The CSDs and preferably also the participants and other infrastructure service provider should draft an action plan, including a detailed description of all actions to be taken in case of a crisis with all involved people and institutions, their contact details, the information flows and the potential range of decisions. The CSDs should, in addition, carry out a formal exercise with relevant participants to test this action plan in a variety of scenarios and adapt the action plan according to lessons learnt and as such addressing the human factor in stress situations. The stress scenarios can involve the failure of each of the central systems, systems of the participants, as well as the infrastructure services used or an external threat like a cybercrime attack.<sup>15</sup></p>  |
| <p><b>RSSS 12. Entities holding securities in custody should employ accounting practices and safekeeping procedures that fully protect customers' securities. It is essential that customers' securities be protected against the claims of a custodian's creditors.</b></p> |   |
| Description  | <p>Custodians holding customer securities are required to be registered with the SEBI and comply with all rules and regulations established by the SEBI. The custodians also become depository participants to effectively service their clients. The accounts of all beneficial owners are maintained within the CSDs.</p> <ul style="list-style-type: none"> <li>• The SEBI is entrusted with the task of providing approval to custodians to commence custodian business and also for overseeing and regulating their operations. The SEBI has issued 'The SEBI Custodian of Securities regulation, 1996,' which has a number of requirements relating to protection of interests of the custodians clients:</li> <li>• The custodian is required to maintain separate records for each client, and keep it separate from its own business accounts. The custodian staff handling the custodian functions cannot work on any other business functions of the custodian.</li> <li>• The custodian is required to have an internal risk management mechanism in place including internal audits and has an internal compliance officer.</li> <li>• The custodian needs to have an agreement with each of its clients and is required to exhibit utmost transparency with respect to the terms of the service.</li> </ul> |

<sup>14</sup> In line with the relevant assessment methodology the system is assessed as 'observed,' despite the lack of comprehensive crisis management procedures. The assessment may be different once the system will be assessed using the assessment methodology of the CPSS-IOSCO Principles for Financial Market Infrastructures, which are expected to be published in 2012.

<sup>15</sup> See also for example the CPSIPS, paragraph 7.7.18 and the draft CPSS-IOSCO Principles for FMIs, paragraphs 3.17.14 and 3.17.15.

|   |   |
|---|---|
|   | <p>The Depositories Act, Depositories Regulation and the bylaws of the CSDs have a number of provisions to protect customers securities:</p> <ul style="list-style-type: none"> <li>• The participants are required to open separate client accounts for each of the beneficial owners and ensure that any transfers from the client account are made only upon receipt of express permission from the beneficiary owner.</li> <li>• To protect the client from any risks arising out of the action of the CSD, the CSDs are required to take an operational risk insurance cover.</li> <li>• The clients are expressly indemnified for losses arising out of actions of the CSDs.</li> <li>• Both the CSDs and the participants are required to maintain detailed transaction records and securities holding information.</li> <li>• The clients are provided an option to transfer their holding from one participant to another, and also to re-materialize their securities holdings. This option can also be used by the beneficiary owners in the event of an insolvency of the participant.</li> <li>• The holdings of the beneficiary owners with a custodian are protected from any insolvency of the custodian.</li> <li>• The participants are required to reconcile their internal records of holdings with that in the CSD on a daily basis.</li> </ul> <p>The CSDs and custodians are subject to annual audits by the SEBI, and the SEBI retains the right to inspect and audit any time. The CSDs also have internal audit mechanisms in place and also audit all their participants at least once in a year.</p> <p>The CSDs and custodians are subject to oversight of the SEBI.</p> |
| Assessment  | Observed  |
| Comments  | -   |
| <b>RSSS 13. Governance arrangements for CSDs and central counterparties should be designed to fulfill public interest requirements and to promote the objectives of owners and users.</b> |   |
| Description   | <p>The CSDs are regulated and overseen by the SEBI. The SEBI has specified the list on entities that can be sponsors in a CSD and are required to collectively hold at least a 51 percent stake in the CSD. Also the maximum ownership of any particular non-sponsor institution/individual is set at 5 percent.</p> <p>The NSDL is promoted by the NSE, IDBI and UTI; the NSE is the largest share-holder with a 25 percent stake. The other shareholders are commercial banks. The promoter of the CDSL is the BSE and it has a 54.2 percent stake. The other share-holders of the CDSL are commercial banks. There are multiple banks which are shareholders in both the CDSL and NSDL.</p> <p>The Board of the NSDL is comprised of 10 directors, with five representing the shareholders and five being independent. In addition, there are various committees which report to the Board, including the audit committee. The CDSL also has an independent risk management committee which also reports to the Board. The Board of the CDSL is appointed by the share-holders and in general has at least 50 percent representation for independent directors. All Board meeting proceedings are communicated to the SEBI. The directors of the both the CDSL and the NSDL are eminent persons in their respective fields and include, former bureaucrats and former CEOs of commercial banks.</p>  |

|   |  |
|---|--|
|   | <p>The NSDL and CDSL are companies registered under the Companies Act, 1956. Their memoranda of association describe their objectives, in line with their activities as a CSD. These are available to the public from the Ministry of Corporate Affairs and are also available on the ministry's website. These also have fully functional websites where their shareholding, information about their management team and annual reports are available. In the CDSL though not a listed company has constituted governance arrangements in line with that of listed companies.</p> <p>The NSDL and CDSL have published their bylaws on their websites and provide a range of information on their websites including list of their participants, their guidelines for conduct of audits of the participants, and information and statistics on their grievance handling process.</p> <p>The NSDL and the CDSL issue circulars to their participants to communicate change in procedures or any new procedures. These circulars are also available on their websites. The CSDs in general hold consultation meetings with their participants before embarking on any major changes. The NSDL also conducts annual conferences to provide a forum for the participants to share their views and interact with the senior management of the NSDL. In addition, the CSDs also conduct investor meetings to hear the views of the end users of the depository. The CSDs also produce a monthly newsletter which is circulated to their participants and is also available on their websites. The newsletters contain articles of general interest, market trends and also any upcoming changes in rules and procedures.</p> |
| Assessment  | Observed   |
| Comments  | It is recommended that the NSDL and CDSL further improve their corporate governance by constituting user groups to give a voice to entities that are not included in any of the committees or the Board.   |
| <b>RSSS 14. CSDs and central counterparties should have objective and publicly disclosed criteria for participation that permit fair and open access.</b> |  |
| Description   | <p>The SEBI (Depositories and Participants) Regulations, 1996 provides a broad framework for membership and access requirements and operational procedures for participants. The CSDs have developed internal procedures in conformance with this framework and these have been published in their websites. The CSDs also have bylaws which govern the operations of the participants on an ongoing basis. All participants sign and agree to be bound by these bylaws.</p> <p>The following entities are eligible to become a depository participant:</p> <ul style="list-style-type: none"> <li>• Public financial institution as defined in Companies Act, 1956;</li> <li>• A scheduled commercial bank;</li> <li>• A foreign bank operating in India with permission from the RBI;</li> <li>• A state financial corporation;</li> <li>• An entity promoted by the entities listed above;</li> <li>• Custodians;</li> <li>• Clearing corporations; and</li> <li>• Stock brokers.</li> </ul> <p>The participants have specific net-worth criteria. The clearing corporations are however allowed restricted membership to facilitate the clearing and settlement operations without any deposit. Stock broker participants with net-worth lower than Rs 100 million to only hold securities 100 times their net-worth.</p>  |

|   |  |
|---|--|
|   | <p>The bylaws of the CSDs provide the circumstances under which the participants can be terminated. These include – insolvency, breach of provisions of bylaws or other law, failure to redress customer grievances adequately and failure to pay security deposit and fees.</p> <p>There are well-laid out procedures to enable orderly termination of participants. The clients of the participants are provided an option to transfer their holdings to another functional participant of their choice or to receive the securities in re-materialized form.</p> <p>The bylaws, list of active and terminate participants and other information pertaining to the access criteria are available on the websites of the CSDs.</p>  |
| Assessment  | Observed   |
| Comments  | -  |
| <p><b>RSSS 15. While maintaining safe and secure operations, securities settlement systems should be cost-effective in meeting the requirements of users.</b></p> |  |
| Description   | <p>The SEBI has taken measures to regulate the costs of various depository services. These include requiring no fees be charged for opening of beneficiary owner accounts, transfer of securities, custody fees and account closure. The fees schedule is listed on the websites of the depositories. The NSDL and CDSL in addition also list the fees schedule of its participants.</p> <p>The CSDs periodically review their pricing against their cost structure and also against the competing CSD. As per the CDSL, in the last 10 years on an overall basis charges have dropped by over 80 percent.</p> <p>The CSDs have procedures in place to ensure operational reliability; these are described in detail under assessment for RSSS 11.</p> <p>The existence of two fully inter-operable CSDs and multiple participants enhances competition in the market, and also the barriers to switching between the two CSDs have been lowered by regulation.</p> <p>There is competition among participants and among CSDs.</p> |
| Assessment  | Observed   |
| Comments  | <p>It is recommended that the SEBI conduct a periodic assessment of the performance of the CSDs and benchmarks this against international peers.</p> <p>The FSAP team also recommends improving the clearing and settlement arrangements in the wholesale segment for corporate bonds. Despite the existence of a DvP model 1 mechanism, the DvP process is not fully automated. Payment and securities transfers have to be initiated by the participants, both in the RTGS system and in the NSDL and CDSL. The participant has to initiate a payment instruction in the RTGS system, which is an automated process. For the securities transfer in some cases a paper form needs to be filled by the participant and sent to the NSDL and CDSL. The efficiency of the DvP process should be enhanced by automating the DvP process, and eliminating the manual interventions by some of the participants.</p>   |

|  |  |
|--|--|
| <b>RSSS 16. Securities settlement systems should use or accommodate the relevant international communication procedures and standards in order to facilitate efficient settlement of cross-border transactions.</b>                  |  |
| Description  | <p>The CSDs have five sets of interfaces – with their participants; with the other CSD; with issuers and registrars; with the clearing corporations for CCP arrangements; and, with clients of the depository participants that avail certain services directly from the CSD.</p> <p>The interface between the CSDs and their participants is through a VPN and uses proprietary message formats. The interface between the CSDs uses ISO 15022 messaging standards. The interface with clearing corporations uses proprietary message formats. The interfaces with issuers/registrars and clients of the depository participants that avail certain services directly from the CSD is manual through an internet website.</p> <p>The CSDs believe many of their smaller participants would not be able to incur the cost related to ISO 15022 migration.</p> <p>The proprietary message format is well publicized and the existing arrangements have been adequate to support end-to-end straight through processing.</p> |
| Assessment   | Observed.  |
| Comments   | It is recommended that the CSDs consider providing their participants an option to use ISO 15022 and also migrating its interfaces with the clearing corporations to ISO 15022.  |
| <b>RSSS 17. CSDs and central counterparties should provide market participants with sufficient information for them to accurately identify the risks and costs associated with using the CSD or central counterparty services.</b>   |  |
| Description  | <p>The CSDs have published their bylaws and rules and each participant formally accepts to be bound by the bylaws and rules. The bylaws and rules describe the responsibilities and obligations of both the CSD and the participant. The CSDs also issue circulars and conduct periodic meetings with the participants. The circulars are available on the website of the CSDs and also sent electronically to the participants.</p> <p>The CSDs also publish an annual report, which has information on their overall business performance and operational metrics.</p> <p>The CFSA convened by the RBI in 2009 conducted a detailed self-assessment of the payments and settlement systems. The CSDs were assessed against the RSSS, this report was published and is available in the public domain. The answers are however not updated and not all key questions are addressed.</p>   |
| Assessment   | Observed   |
| Comments   | It is recommended that the relevant CPSS-IOSCO disclosure framework on the CCIL website, with updated and detailed answers to the key questions.   |
| <b>RSSS 18. Securities settlement systems should be subject to transparent and effective regulation and oversight. Central banks and securities regulators should cooperate with each other and with other relevant authorities.</b> |  |
| Description  | The corporate securities market is overseen and regulated by the SEBI. The authority to approve establishment of exchanges, depositories and clearing corporations is vested with the SEBI. The SEBI is also vested with authority to review and approve the bylaws and rules of these institutions and also approve enrollment of new participants. The SEBI also very broad powers to audit and inspect each of the institutions functioning in the corporate securities market. The SEBI regularly audits the exchanges, CCP arrangements and the participants, and also receives periodic reports from these institutions which is used for its regulation and oversight activities.   |

|   |   |
|---|---|
|   | <p>The SEBI, the RBI, IRDA and PFRDA are all part of the Financial Stability and Development Council (FSDC) headed by the Finance Minister of India. This council has established a sub-committee chaired by the Governor of the RBI. The FSDC platform is intended to be used extensively by the SEBI and the RBI to collaborate on oversight of aspects relating to securities settlement systems. The SEBI and the RBI have collaborated closely on various aspects through establishment of specific technical committees and working groups – for (e.g.) for the settlement of corporate bonds in the RTGS and arrangements for interest rate futures. No explicit agreements are in place with regard to information sharing or coordination of policy implementation. The overall quality of the oversight and supervision on payment and securities clearing and settlement systems will improve if the RBI and SEBI regularly meet on a technical and higher level, according to formal arrangements that handle information sharing and the coordination of policy implementation. In addition, the RBI and SEBI are strongly encouraged to include the FMC in the regular meetings, since many of the above mentioned issues are of relevance to the supervisor of the commodities market as well.</p> <p>The SEBI has MoUs with regulators of 17 international securities regulators and is also a member of IOSCO and a signatory of the MMOU.</p> |
| Assessment  | Broadly Observed  |
| Comments  | In order to observe this recommendation the SEBI should establish a framework for cooperation with the RBI and the FMC to exchange information and coordinate on policy implementation. The RBI and the SEBI have always collaborated closely on various topics. These interactions have been topic specific and have involved broad macro issues and policy aspects. With respect to securities settlement systems, there is no formal mechanism in place for collaboration on oversight. The topics which can be included in the ambit of such an arrangement could include identification of systemically important banks which play a dominant role in the securities settlement systems and developing procedures for crisis management.   |
| <b>RSSS 19. CSDs that establish links to settle cross-border trades should design and operate such links to reduce effectively the risks associated with cross-border settlement.</b> |   |
| Description   | The CSDs do not have cross-border links.  |
| Assessment  | Not Applicable  |
| Comments  | -   |



**Table 7. India: Detailed Assessment of Implementation of the CPSS-IOSCO Recommendations for Central Counterparties—CCIL**

| <b>RCCP 1 A CCP should have a well founded, transparent and enforceable legal framework for each aspect of its activities in all relevant jurisdictions.</b>  |  |
|---|--|
| Description   | <p>The legal framework in India for the clearing and settlement of government securities consists of statutory laws, regulations and rules. The laws, bylaws, rules and regulations governing the CCIL are clearly stated (in English) and are accessible to system participants. The laws, bylaws, rules and regulations are available on the Internet.</p> <p>The critical elements for securities clearing and settlement are covered by the PSSA, the Contract Act (CA; 1872) and the bylaws, rules and regulations. The bylaws, rules and regulations of the CCIL have legal recognition under the PSSA. The CCIL has concluded an agreement with its participant. The rules and regulations are part of the terms and conditions of that agreement. No court in India has failed to uphold this legal basis.</p> <p>The legal framework covers the CCP to act as counterparty, including the legal basis for novation (PSSA, art 23; CA, art 62; Bylaws art VI.6), netting (PSSA, art 23), collateral pledges (PSSA, art 23), default procedures (bylaws Ch XIII), and finality (PSSA, art 23).</p> <p>The rules of the system and contracts are enforceable in case of the insolvency of a participant (PSSA, art 23). The CCIL has the absolute right to set off the liability of a defaulting participant in one segment against its receivables in any other segment of the CCIL (bylaws VIII.12). The participants provide the CCIL with a Power of Attorney to effectuate its rights with regard to the securities of the participants, which are deposited as collateral.</p> <p>The timing of assumption of liability as CCP is described by the bylaws art VI.6, stating that each transaction entered into by a participant with another participant shall be deemed to have been individually novated by a new obligation, being a contract with CCIL under its bylaws, rules and regulations for the same value date. The amounts that would otherwise have been delivered or received by each participant to or from another participant on such settlement date shall be netted and replaced by a contract for the net deliverable or receivable to or from the CCIL. This suggests that novation occurs at the moment of netting, which occurs at the end of the day.</p> <p>The CCIL is not involved in any cross border participation agreement with regard to clearing and settlement. System participants should be located in India.</p> |
| Assessment  | Observed   |
| Comments  | -  |
| <b>RCCP 2. A CCP should require participants to have sufficient financial resources and robust operational capacity to meet obligations arising from participation in the CCP. A CCP should have procedures in place to monitor that participation requirements are met on an ongoing basis. A CCP's participation requirements should be objective, publicly disclosed, and permit fair and open access.</b> |  |
| Description   | <p>The CCIL has 222 participants in the CBLO segment, 169 in the government securities segment, and 76 participants in the forex and forex forward segment. The CCIL has established clear requirements for participation in its system, which include requirements with regard to financial soundness and operational capacity. The requirements vary, depending on the segment.</p>  |

The minimum eligibility criteria for participation in the *securities segment* of CCIL specify that the applicant shall:

- (a) be a bank, financial institution, primary dealer, mutual fund or a statutory corporation or a body corporate including a company as defined in the Companies Act, 1956 or any entity as may be permitted by the RBI;
- (b) have opened SGL account or gilt account;
- (c) have opened a current account with the RBI or settlement bank;
- (d) be a participant of NDS and /or INFINET;
- (e) not have any record of repeated failure in complying with the regulatory requirements;
- (f) not have been subject to an order of statutory disqualification or an order of similar effect issued by a regulatory authority;
- (g) have adequate risk management systems in place and shall have qualified personnel in its employment;
- (h) fulfilled capital adequacy norms or minimum net worth requirements as laid down by their respective regulators; if no such norm is prescribed or if the applicant is exempted from fulfilling the same, then the applicant shall have adequate Net Worth to support the scale of operations undertaken or proposed to be undertaken; and
- (i) be a profitable organization.

The requirements for the *CBLO segment* initially were aimed at those entities who were already members of the NDS. However, participation in the CBLO segment has been extended to cover other market players such as co-operative banks, nonbank financial companies, corporate, etc. who are not members of the NDS. Such non-NDS members are eligible to be admitted as 'associate members' of CCIL's CBLO segment.

The participation requirements CBLO members, which are NDS members, are the same as for the securities segment.

CBLO participation for associate members require:

- not be eligible, as per the RBI guidelines, to open an account in the PDO system of RBI;
- open a gilt account with CCIL when required;
- maintain a current account with a bank identified as settlement bank by CCIL
- be familiar with treasury operations;
- have experienced and qualified personnel in its treasury and/or finance departments who have the requisite experience required for undertaking trading, clearing and settlement operations;
- have adequate risk management systems in place;
- not have any record of failure in honoring its obligations to the market intermediary, which shall be duly certified by its internal auditors;

|   |  |
|---|--|
|   | <ul style="list-style-type: none"> <li>• not have been subject to an order of statutory disqualification or an order of similar effect issued by a regulatory authority;</li> <li>• be a profitable organization and must have reported net profits in at least preceding three financial years; and</li> <li>• have sufficient capital which in the opinion of CCIL is adequate to support its proposed level of activities in money market/treasury operations.</li> </ul> <p>The requirements for the <i>forex segment</i> state that the applicant shall:</p> <ol style="list-style-type: none"> <li>(a) be an authorized foreign exchange dealer;</li> <li>(b) have a current account with the RBI for settlement of transactions in Indian Rupees;</li> <li>(c) have a nostro accounts(s) with its correspondent(s);</li> <li>(d) have adequate risk management systems and policies in place and qualified personnel in its employment; and</li> <li>(e) have an INFINET connection.</li> </ol> <p>CCIL has a dedicated membership department responsible for the admission of participants as well as for the ongoing monitoring of the member's performance against the participation requirements. The department also carries out regularly a membership review in respect of all the members to ensure their continued adherence to the prescribed membership eligibility norms of the respective business segment and is able to initiate disciplinary action against the nonconforming members. Participants have to provide the CCIL with audited financial statements on a yearly basis.</p> <ul style="list-style-type: none"> <li>• The bylaws and rules clearly state the conditions under which membership shall be suspended or terminated. These conditions are risk based and include insolvency, non compliance with the rules, settlement default and failure to comply with collateral requirements. The bylaws and rules provide the Board of the CCIL with some discretionary power to amend, alter, vary or exempt the eligibility criteria for participation in the CCIL.</li> </ul> |
| Assessment  | Observed   |
| Comments  | -  |
| <b>RCCP 3. A CCP should calculate its credit exposures to participants on a daily basis and hold collateral that in normal market conditions covers its potential losses from closing out positions held by a defaulting participant.</b> |  |
| Description   | <p>The CCIL offers its clearing services to four different segments, being the securities segment, CBLO segment, forex segment and forex forward segment. For all segments, the CCIL is able to measure its credit exposures to participants at the end of every trading day, using up to date prices and positions.</p> <p>The CCIL is not able to calculate intraday exposures with up to date prices and positions. For the <i>securities segment</i>, the CCIL cannot yet calculate intraday exposures, but is in the process of implementing such a facility. For <i>CBLOs</i> no intraday margining facility exists. In the <i>forex segment</i> CCIL has no capacity to calculate exposures on an intraday basis, however, if the volatility of exchange rates is considered high CCIL may impose a volatility margin during the day. In the <i>forex forward segment</i> the calculation of intraday exposures is possible with up to date prices, but with the positions as at the start of the day.</p>  |

|  |   |
|--|---|
|  | <p>At the end of every trading day, the day initial margin is calculated for every new transaction to cover potential future price movements. In addition, CCIL calculates mark to market (MTM) margin to cover losses on open positions following price movements during the day (Rules VII.7). Volatility margin may be calculated in addition to initial margin in case of increased volatility at the moment of the transaction. The total of initial margin, MTM margin and volatility margin is determined per participant and compared with the Settlement Guarantee Fund (SGF) contribution of that specific participant. The SGF is a fund to which the participant should contribute to meet its margin requirements and consists of cash and securities. Currently, participants can transfer securities and cash to the SGF on an intraday basis; however, the securities are valued based on prices of the end of the previous day minus the haircut.</p> <p>The CCIL has specified procedures in case up to date prices are unavailable. In case of unavailability of current prices, the CCIL uses the CCIL model price. For example, government securities prices may be determined by taking the weighted average price derived from the prices of the last five last traded prices. In case there is no trade in such security on subsequent dates, the price is repeated for the next six working days. If such prices are also unavailable the CCIL model price is taken as the MTM price. CCIL model prices are based on the zero coupon yield curve generated from the data on trades in government securities done by market participants during the day, with a liquidity or illiquidity premium or discount.</p> |
| Assessment   | Broadly observed  |
| Comments   | <p>In order to observe this recommendation, the CCIL needs to be able to calculate its exposures intraday in all segments, using up to date positions and up to date prices. It should also be possible to value available collateral in the SGF based on up to date prices and positions on an intraday basis. It is noted that The CCIL has recognized this issue and has taken the initiative to implement proper intraday calculation facilities in some segments.</p>  |
| <p><b>RCCP 4. If a CCP relies on margin requirements to limit its credit exposures to participants, those requirements should be sufficient to cover potential exposures in normal market conditions. The models and parameters used in setting margin requirements should be risk-based and reviewed regularly.</b></p> |   |
| Description  | <p>The CCIL uses initial, variation and volatility margin to cover potential losses from the default of its clearing participants. Per segment, details may differ in the margin calculation and the determination and composition of the SGF. In the forex forward segment, the CCIL may ask participants to transfer spread margin to take care of a nonparallel shift in the forward premium.</p> <p>For every participant the initial margin requirement is calculated by multiplying a margin factor to the netted positions per security per settlement date of that participant. The margin factor is a percentage determined per security. For the <i>securities, CBLO and forex segments</i> the margin factor is based on Value at Risk (VaR) calculations for a three day holding period at a 99 percent confidence level. Compared to international best practices this holding period is prudent. For the <i>forex forward segment</i> the holding period is 1.5 days at a 99 percent confidence level. The 1.5 days holding period is reasonable in normal market conditions. For this segment a default fund is established to cover losses in extreme market circumstances (see RCCP 5).</p> <p>Initial margin for a repo transaction, based on a security, is computed by applying the margin factor to that concerned security in the position of the participant. The first leg of</p>   |

the repo transaction is margined until it is settled. After settlement of the first leg, the second leg is margined. MTM margin is only calculated for the first leg if the transaction has been done at an off market price. MTM margin on the second leg is calculated at the end of the day of settlement of the first leg.

The margin factor for CBLOs is currently 0.50 percent of the face value of the concerned CBLOs. This margin factor is the same for CBLOs of all maturities. Participants of CBLO that borrow are subject to a borrowing limit, which is calculated as the aggregate value of the collateral of a participant, minus the haircut.

For the CBLO, forex and forex forward segment provisions exist to set maximum exposure limits for the participants. Participants of the Forex segment are subject to a Net Debit Cap (NDC), which is a limit set in U.S. dollars for each bank. A participant is not allowed to have a net sale position in excess of this limit with respect to deals submitted for settlement through CCIL on any given day. The NDC is set by CCIL on the basis of parameters such as a participant's credit rating, capital, asset value, management quality etc.

#### *Back testing*

The margin models are back tested on a daily basis and the results are shared with the top management. The back-testing results are used to assess the adequacy of the margin models in covering the exposure of the CCIL. In all the segments back-testing has shown that the margin models are adequately covering the credit risks of CCIL.

In addition, the margin models have been subject to peer reviews of the European Central Bank in 2003 and Bank de France in 2006. CCIL had also organized an external assessment of the risk management framework by the Indian Institute of Management (IIM) Bangalore in 2006 and IIM Ahmedabad in 2009. Finally, the RBI also reviews the risk management process as part of onsite inspection and offsite surveillance. The RBI oversight department receives internal support from RBI experts to analyze the quantitative aspects of the margin models.

#### *Intraday margin*

For the *securities and CBLO segments* a provision exist to collect margins on an ad hoc intraday basis. A process to revalue collaterals and outstanding positions on an intraday basis and collecting margin is under consideration. For the *forex and forex forward segments* additional margin may be required in case of increased market volatility.

#### *Collateral*

The participants' contributions to the SGF (collateral) are in the form of cash, treasury bills and government securities. The minimum percentage of cash contributions differs per segment, with cash being not less than 10 percent of the total margin requirement for the securities segment and not less than 5 percent for the forex forwards segment. Margins for the forex segment can only be paid in cash (U.S. dollars). MTM margin has to be paid by the participant on the next day, which is 12.30 pm for weekdays and 11.30 am for Saturdays.

CCIL publishes the list of eligible securities through a notification. The haircut is security specific and based on the Value at Risk for the security for a 5 day holding period, multiplied by a factor (multiplicant) that takes into account to liquidity of the security.

The bylaws, rules and regulations of CCIL detail the type, timing and frequency of collateral deposits. CCIL notifications provide additional details. CCIL has developed the

|  |  |
|--|--|
|  | CCIL margin calculator, which helps participants compute their initial margin and MTM margin requirements.   |
| Assessment   | Observed   |
| Comments   | -  |
| <b>RCCP 5. CCP should maintain sufficient financial resources to withstand a default by the participant to which it has the largest exposure in extreme but plausible market conditions that produces losses not fully covered by collateral requirements.</b> |  |
| Description  | <p>Stress test results have shown that the resources available to the CCIL are adequate to cover the credit risk to which the CCIL is exposed, following the default of the participant with the largest exposure. The resources are not sufficient to cover the liquidity risk of such a default. Stress tests have indicated that the lines of credit available to the CCIL failed to provide sufficient liquidity to meet the needs of the CCIL following default of the participant with the largest exposure. This is the case for the <i>securities, CBLO and forex segment</i>. In the <i>forex forward</i> segment the stress test shows adequacy of liquid resources.</p> <ul style="list-style-type: none"> <li>• The CCIL uses stress tests to assess the adequacy of its available resources in meeting the extreme, but plausible event of a market-wide crisis resulting in single or multiple defaults of CCIL's clearing participants. Stress testing is carried out on a monthly basis for all segments. Any concerns resulting from stress testing are further analyzed and measures are taken for further risk mitigation. The model parameters and scenarios have been reviewed by an external team of experts from IIM, Bangalore in July 2006 and IIM Ahmedabad in 2009.</li> <li>• The stress test scenario's cover the most volatile periods since the CCIL started its operations in 2002.</li> <li>• The stress scenario for the securities segment is a parallel shift in the yield curve of 75 basis points in both directions, as well as a set of nonparallel yield shifts.</li> <li>• The stress scenario for the CBLO segment is an upward and downward shift in the yield curve of 500 basis points for the first three days and 200 basis points for the next three days.</li> <li>• The stress scenario for the forex segment the impact of a shift in exchange rate by 4.7 percent or Rs 2.25 per U.S.D (maximum 1 day change in past 8 years), whichever is higher.</li> <li>• The stress scenario for the forex forward segment is a shift in exchange rate by Rs 2.50 to Rs 4.50 per U.S. dollar.</li> </ul> <p>The CCIL has the following resources to draw upon in the event of a default (December 31, 2010):</p> <ul style="list-style-type: none"> <li>• Securities Segment SGF of Rs 9,353 Cr (securities) and Rs 1,450 Cr (cash);</li> <li>• CBLO Segment SGF of Rs 1.47.396 Cr (securities) and 367 Cr (cash);</li> <li>• Forex Segment SGF of U.S.D 382 million;</li> <li>• Forex forward Segment SGF and Default fund of Rs 403 Cr (securities); and</li> <li>• Own resources, which are capital and reserves (Rs 541.34 crores, including a Settlement Reserve Fund of Rs 210 crores). The medium term target for the Settlement Reserve fund is Rs.1,000 crores.</li> </ul> |

|            |   |
|------------|---|
|            | <p>There is a high degree of assurance that the CCIL will be able to draw on those resources. The quality of the collateral is high (government securities, treasury bills and cash) and the cash are deposited as short term deposits at banks with high credit standings. The CCIL does have a beneficial interest in the collaterals which are legally enforceable under the PSSA, section 23 as well as under the GSA.</p> <p>The CCIL is able to draw on credit lines without delay. Credit lines are offered by several banks and cash transfers will be made within the RTGS system of RBI. The credit lines are registered with the RBI, and can be invoked by just notifying the RBI, without any additional action from the issuing bank. For its forex and forex forward segments CCIL can draw on credit lines from a large foreign bank for liquidity needs in U.S. dollars for its forex and forex forward segments.</p> <p>If the total of the required margin is less than the available SGF contribution the participant is considered to be within his exposure limit. If new transactions fall beyond the risk exposure limit, then the CCIL will not guarantee these transactions for settlement. These transactions will only be guaranteed if the participant transfers additional cash or securities to the SGF. The participant can make intraday deposits of cash and securities. This approach protects the CCIL against the risk of uncovered exposures by simply transferring this risk to the original counterparty, which is one of the CCIL participants. Such CCP participants may be confronted with sudden, unexpected but significant exposures toward other CCIL participants, without the CCIL providing any protection. These potential exposures should be covered by the risk management frameworks of the individual CCIL participants. Another solution is to establish robust intraday margin facilities for all segments and in addition a default fund for other segments.</p> <p>The CCIL has an enforceable and transparent loss allocation rule to protect itself. If a participant defaults and the collateral is insufficient to cover the loss, CCIL may divide this loss among the surviving participants who had to receive payment from the defaulting participant. The loss allocation is in proportion to the individual net exposure of the surviving participants to the defaulting participant on the value date.</p> <p>A particular concern is apparent in the CBLO segment regarding the exposures toward the settlement banks of nonbank participants. The nonbank participants are insurance companies, mutual funds and corporates, which are typically lenders of money. No limit is set on the amount of lending and the volumes of payouts of the settlement banks are increasing. Stress tests carried out by CCIL indicate that there may be liquidity shortages in case of a failure of a settlement bank. The current solution is to net the settlement file in the CBLO segment with the net settlement file in the government securities segment. This netting of net files reduces the liquidity need of CCIL in case of a failure of settlement banks; however, doubts exist whether this solution is legally valid under the PSSA.</p> |
| Assessment | Partly observed   |
| Comments   | <p>In order to comply with this recommendation the liquidity risk management framework of the CCIL should be enforced to ensure that the CCIL is able to sufficiently cope with immediate liquidity demands. It is noted that the CCIL is in the process of developing arrangements with RBI in this regard. Also, comprehensive tests, which include full model and parameter validations, should be performed at least annually.</p> <p>It is recommended that default funds for all segments be established and other risk mitigating tools be developed in order to enlarge the guarantee function of CCIL to situations where the available SGF contribution of one participant may (temporarily) be</p>   |

|  |  |
|--|--|
|  | <p>insufficient to cover the exposure of the CCIL toward this participant. This will increase not only the safety of the CCIL, but of the whole market.</p> <p>With regard to the liquidity risk in the CBLO segment it is recommended to address the liquidity risk in relation to the settlement banks of nonbank participants. Possible solutions are to increase the availability of short term liquidity within CCIL or imposing a NDC as is currently the case in the forex segment. The validity of the current netting of net files requires further legal analysis. Although netting of cash obligations between asset classes is not uncommon in the international context the legal framework differs per country and may result in different possibilities for netting between asset classes.</p>  |
| <p><b>RCCP 6. A CCP's default procedures should be clearly stated, and they should ensure that the CCP can take timely action to contain losses and liquidity pressures and to continue meeting its obligations. Key aspects of the default procedures should be publicly available.</b></p> |  |
| Description  | <p>The bylaws, rules and regulations of CCIL clearly state the event of a default as well as the default procedures that the CCIL may use to reduce any losses following the default of one of its participants. As indicated in RCCP 1 the bylaws, rules and regulations are publicly available on the website of the CCIL. The PSSA supports the enforceability of the default handling by the CCIL.</p> <p>Bylaws chapter XIII and Rules chapter VI describe what constitutes a default. Among others, a participant will be declared in default by the CCIL if:</p> <ul style="list-style-type: none"> <li>• it is unable to fulfill its clearing or settlement obligations; or</li> <li>• it admits or discloses its inability to fulfill its duties, obligations and liabilities; or</li> <li>• it is unable to fulfill within the specified time the margin obligations including initial and MTM margins;</li> <li>• it fails or is unable to pay within the specified time the damages and the money difference due on a closing-out effected against it under byelaws, rules and regulations; or</li> <li>• proceedings have been commenced for winding up.</li> </ul> <p>CCIL has drafted a detailed action plan to be able to implement its default procedures in a timely and flexible manner. This action plan is reviewed every year.</p> |
| Assessment   | Observed   |
| Comments   | <p>No explicit arrangements exist for the segregation and portability of client accounts in case of a default of one of the clearing participants of CCIL. It is recommended that these provisions be included in the legal framework as well as in the default procedures of the CCIL. The draft CPSS-IOSCO Principles for Financial Market Infrastructures address the segregation and portability of accounts in a dedicated principle.</p>   |
| <p><b>RCCP 7. A CCP should hold assets in a manner whereby risk of loss or of delay in its access to them is minimized. Assets invested by a CCP should be held in instruments with minimal credit, market and liquidity risks.</b></p>  |  |
| Description  | <p>The collateral that participants deposit with the CCIL consists of cash, government securities and treasury bills. The securities have to be deposited on the CSGI account of CCIL in the PDO system of the RBI. Cash contributions need to be sent to the RTGS settlement account of the CCIL. If participants do not have an account in the RTGS account of RBI they should send their cash collateral to CCIL's current account with one of the settlement banks.</p>  |



|  |   |
|--|---|
|  | <p>The participants in the forex segment need to contribute their collateral in U.S. dollars. These dollar contributions have to be transferred to the U.S. dollar nostro current account of CCIL maintained with a large foreign bank. The margin contribution is received by CCIL in a separate RBI Account, distinct from the settlement account. The margins are immediately invested in U.S. T-bills. Only a small percentage of the margin (less than 2 percent) is retained as cash balance on the account.</p> <p>The CCIL has a detailed investment policy to ensure that investments are held as in highly liquid securities or cash deposits. Cash (Indian rupees) is invested mainly in government securities and in bank deposits with banks of a high credit rating. The investments are short term to ensure that liquidity risk is low. CCIL monitors the exposures per settlement bank are monitored. Cash (U.S. dollars) is invested in U.S. Treasury bills by two large foreign banks. CCIL monitors the financial conditions of its custodians on a yearly basis. A small portion of the U.S. dollar funds are kept on the current accounts of CCIL with the settlement banks.</p> <p>The e-Notice system is a web-base application for the submission of collateral notices and membership related data electronically. The collateral module is used for collateral notices of deposits and withdrawals and facilitates online monitoring of the status by the users.</p> |
| Assessment   | Observed  |
| Comments   | It is recommended that the frequency and intensity of the monitoring of the financial condition of the different settlement banks be increased, including the foreign settlement banks. It is also recommended to proceed with the establishment of a backup solution for the collection of margins in case the account at the foreign bank is not available.   |
| <p><b>RCCP 8. A CCP should identify sources of operational risk and minimize them through the development of appropriate systems, controls and procedures. Systems should be reliable and secure, and have adequate, scalable capacity. Business continuity plans should allow for timely recovery of operations and fulfillment of a CCP's obligations.</b></p> |   |
| Description  | <p>The CCIL identifies actively sources of operational risks and implements measures to reduce these risks. In addition, operational audits are conducted by internal auditors as well as by an external audit firm. Appropriate security policies are in place. Operational risk related issues are also reviewed by the Technical Advisory Committee of the Board of the CCIL.</p> <p>The CCIL operates its own systems. M/s. Tata Consultancy Services designs and develops software for CCIL in close coordination with the CCIL. INFINET connects the back office of the participants with the CCIL and data is transmitted in IFN300 format.</p> <p>The CCIL has business continuity plans as well as disaster recovery sites in place. An on-city back up site is available as well as an off-city back-up site (in Pune), which is fully operational. CCIL conducts connectivity tests with participants on a quarterly basis. The replication of data between the primary site and on-city data centre is done on a real time basis. Replication between the primary data centre and the off-city data centre takes place with a small time lag. With the implementation of automated 3-way storage area network (SAN) based replication solution, the data loss is expected to become close to zero.</p> <p>No major incident has occurred during the previous year. Capacity plans are in place to handle stress volumes.</p>  |
| Assessment   | Observed  |

|   |   |
|---|---|
| Comments  | It is recommended that crisis management procedures be developed and tested with all or the main participants. While the CCIL has appropriate back-up sites and connectivity tests there is room to improve the crisis management arrangements with regard the continuity of the operational processes. <sup>16</sup> The CCIL and preferably also the participants and other infrastructure service provider should draft an action plan, including a detailed description of all actions to be taken in case of a crisis with all involved people and institutions, their contact details, the information flows and the potential range of decisions. The CCIL should in addition carry out a formal exercise with relevant participants to test this action plan in a variety of scenarios and adapt the action plan according to lessons learnt and as such addressing the human factor in stress situations. The stress scenarios can involve the failure of each of the central systems, systems of the participants, as well as the infrastructure services used or an external threat like a cybercrime attack. <sup>17</sup>  |
| <b>RCCP 9. A CCP should employ money settlement arrangements that eliminate or strictly limit its settlement bank risks, that is, its credit and liquidity risks from the use of banks to effect money settlements with its participants. Funds transfers to a CCP should be final when effected.</b> |   |
| Description   | <p>The cash leg of the securities, CBLO and forex segment take place in the RTGS system of the RBI. CCIL participants without access to the RTGS system should use one of the settlement banks for the cash settlement of their transactions. The U.S. dollar cash settlements for the forex segment take place in the books of a large foreign bank. The cash settlement instructions as determined by CCIL result in final settlements in line with PSSA (art 23).</p> <p>Settlement banks should explicitly apply for the role of settlement bank and comply with strict requirements, related to their credit rating, capital adequacy, operational efficiency, liquidity position, earnings/profitability, and regulatory conduct. CCIL does not have any tools to monitor the concentration of exposures toward the different settlement banks, neither for the settlement banks in Rs nor for settlement in U.S. dollars. For the U.S. dollar settlements, the CCIL is heavily dependent on the large foreign bank as its single settlement bank for this currency. In addition, this bank is the only credit line provider in U.S. dollars as well as the only custodian for cash collateral in U.S. dollars.</p> |
| Assessment  | Broadly observed  |
| Comments  | In order to comply with this recommendation CCIL should develop tools to monitor the concentration of settlement flows among the different settlement banks that provide cash settlement in Indian Rs. If settlement flows and cash accounts are concentrated in one of these settlement banks CCIL will become vulnerable to the financial condition of such a settlement bank and should take appropriate measures to mitigate any associated risks. In addition, CCIL should select at least one more settlement bank for the cash settlement in U.S. dollars. CCIL is clearly vulnerable to any potential problems related to the large foreign bank that provides many key services; not only for the cash settlement, but also for the provision of credit lines and the custody activities (see RCCP 5 and 7).   |

<sup>16</sup> In line with the relevant assessment methodology the system is assessed as ‘observed,’ despite the lack of comprehensive crisis management procedures. The assessment may be different once the system will be assessed using the assessment methodology of the CPSS-IOSCO Principles for Financial Market Infrastructures, which are expected to be published in 2012.

<sup>17</sup> See also for example the CPSIPS, paragraph 7.7.18 and the draft CPSS-IOSCO Principles for FMIs, paragraphs 3.17.14 and 3.17.15.

|   |   |
|---|---|
| <b>RCCP 10. A CCP should clearly state its obligations with respect to physical deliveries. The risks from these obligations should be identified and managed.</b>  |   |
| Description   | The CCIL does not conduct any physical deliveries.  |
| Assessment  | Not applicable  |
| Comments  | -   |
| <b>RCCP 11. CCPs that establish links either cross-border or domestically to clear trades should evaluate the potential sources of risks that can arise, and ensure that the risks are managed prudently on an ongoing basis. There should be a framework for cooperation and coordination between the relevant regulators and overseers.</b> |   |
| Description   | The CCIL has not established any links with other CCPs.   |
| Assessment  | Not applicable  |
| Comments  | -   |
| <b>RCCP 12. While maintaining safe and secure operations, CCPs should be cost-effective in meeting the requirements of participants.</b>  |   |
| Description   | <p>The CCIL has conducted several cost benefit analyses, e.g. for the forex and the forex forward segments. For the other segments, user group meetings were conducted and the cost and benefit aspects have been discussed with participants.</p> <p>The CCIL may prescribe from time to time the fees, charges and recoveries to be levied on the participants in respect of clearing and settlement of their transactions (Bylaws, art VIII.11). It usually does so after comprehensive consultation of its participants.</p> <p>The CCIL regularly reviews its service levels, using frequent interaction with its user committees and participants. The CCIL has in place procedures to regularly review its operational reliability, for example, through internal and external operational audits.</p>   |
| Assessment  | Observed  |
| Comments  | It is suggested that a regulatory approval on any fee changes be applied, in order to have an additional tool to ensure an efficient market in which the CCP has a monopoly position.   |
| <b>RCCP 13. Governance arrangements for a CCP should be clear and transparent to fulfill public interest requirements and to support the objectives of owners and participants. In particular, they should promote the effectiveness of a CCP's risk management procedures.</b>   |   |
| Description   | <p>The CCIL has been incorporated as a Public Limited Company under the Companies Act, 1956. Six core promoters helped CCIL start up in 2002, which are State Bank of India, IDBI Bank Limited (formerly Industrial Development Bank of India), ICICI Bank Ltd, Life Insurance Corporation of India, Bank of Baroda and HDFC Bank Limited.</p> <p>The CCIL is owned by its users, being banks (62.50 percent), financial institutions (20.50 percent) and primary dealers (17.00 percent). The ownership structure and the composition of the Board of Directors are available on the website of CCIL.</p> <p>The objectives of the CCIL are expressed in a memorandum of association which by virtue of filing with the registrar of companies has become a public document and is publicly available. Annual financial statements inform stakeholders about the financial situation of the CCIL. These statements are available on the website of the CCIL.</p> |

|   |  |
|---|--|
|   | <p>The Board comprises of representatives of CCIL's core promoters. These representatives have experience in the areas of banking and financial markets. In addition, the Board consists of independent directors who have expertise in the areas of forex markets, risk management and capital markets, law and accountancy. The chairman and managing director of the CCIL have been nominated by the State Bank of India. Both have suitable experience to achieve the objectives of the CCIL. The directors are accountable under the provisions of the Companies Act and the PSSA under which the company operates its systems.</p> <p>Participants not represented on the Board can express their views in the general shareholder meetings and in the user group meetings. As required under the Companies Act, the CCIL organizes a general shareholder meeting every year, during which shareholders can discuss the performance of the company, based on the directors' report along with other performance documents. The CCIL has set up user groups for its various business segments. The user groups consist of representatives from all market segments as well as representatives of organizations like FIMMDA, PDAI, AMFI, FEDAI etc. All important changes to CCIL's rules, regulations and procedures are discussed within the user groups of the CCIL.</p> <p>The CCIL has formulated the following Board committees:</p> <ul style="list-style-type: none"> <li>▪ Audit Committee - to review the internal, operational and statutory audit reports and the periodic financial statements.</li> <li>▪ Committee for bylaws, rules and regulations - to review draft bylaws, rules and regulations of CCIL and to review any proposed changes.</li> <li>▪ Risk Management Committee of Directors - to address and decide on all issues relating to the risk management of CCIL and also to approve admission of new participants.</li> <li>▪ Technical Approval Committee with experts in IT related matters as invitees to address and decide on IT related issues.</li> </ul> <p>There is clear separation between the risk management and operational functions. The head of the risk management department reports directly to the Managing Director. There is a separate Board committee on risk management to oversee the risk functions. Members of this committee consist of directors with significant expertise in risk management.</p> |
| Assessment  | Observed   |
| Comments  | -  |
| <b>RCCP 14. A CCP should provide market participants with sufficient information for them to identify and evaluate accurately the risks and costs associated with using its services.</b> |  |
| Description   | <p>PSSA art 21 specifies that every system provider shall disclose to the existing or potential system participants, the terms and conditions including the charges and the limitations of liability under the payment system, supply them with copies of the rules and regulations governing the operation of the system, netting arrangements and other relevant documents.</p> <p>The CCIL provides participants with comprehensive information on its website and through other means. The participants have access to relevant laws, regulations, rules and other information, to obtain a full and clear description of their rights, obligations and the risks related to participation in the system.</p>  |

|   |  |
|---|--|
|   | The CCIL was assessed by the Committee on Financial Sector Assessment in March 2009, which includes answers to many key questions of the CPSS-IOSCO Recommendations for Securities Settlement Systems: <a href="http://rbi.org.in/scripts/PublicationReportDetails.aspx?UrlPage=&amp;ID=547">http://rbi.org.in/scripts/PublicationReportDetails.aspx?UrlPage=&amp;ID=547</a> . The answers are however not updated and not all key questions are addressed.  |
| Assessment  | Observed   |
| Comments  | It is recommended that the CPSS-IOSCO relevant disclosure framework be published on the CCIL website, with updated and detailed answers to the key questions.  |
| <b>RCCP 15. A CCP should be subject to transparent and effective regulation and oversight. In both a domestic and an international context, central banks and securities regulators should cooperate with each other and with other relevant authorities.</b> |  |
| Description   | <p>The CCIL is regulated and overseen by the RBI as an authorized entity under the provisions of the PSSA. The PSSA empowers the RBI to regulate and supervise payment and settlement systems within the country. The scope of the oversight function of the RBI is guided by the policy objectives spelt out in the Mission Statement “Payment Systems in India Vision 2009-12 (July-June),” in terms of which the RBI strives “to ensure that all payment and settlement systems operating in the country are safe, secure, sound, efficient, accessible and authorized.” Oversight necessitates that “the objectives of safety and efficiency are promoted by monitoring existing and planned systems, assessing them against these objectives and, where necessary, inducing change.”</p> <p>The oversight department of the RBI is part of the Department of Payment and Settlement Systems and comprises a staff of 5 FTE that cover all payment and settlement systems as defined by the PSSA. Different executive directors are in charge for reporting on the RTGS system and CCIL on the one hand and oversight matters on the other hand.</p> <p>The oversight department assessed the payment and settlement systems, using off-site surveillance as well as on-site inspections. Off-site surveillance involves data collection and analysis, self-assessment by the authorized entities, periodical system audits by qualified professionals and market intelligence. The assessment framework is based on international standards for example the CPSIPS and CPSS-IOSCO Recommendations for SSS and CCPs.</p> <p>The RBI cooperates with SEBI on various matters, in various group, see also the assessment under RSSS 18 for the PDO system. However, the cooperation on payment and securities clearing and settlement systems is not formalized. No explicit agreements are in place with regard to information sharing or coordination of policy implementation. The overall quality of the oversight and supervision on payment and securities clearing and settlement systems will improve if the RBI and SEBI regularly meet on a technical and higher level, according to formal arrangements that handle information sharing and the coordination of policy implementation. In addition, the RBI and SEBI are strongly encouraged to include the FMC in the regular meetings, since many of the above mentioned issues are of relevance to the supervisor of the commodities market as well.</p> |
| Assessment  | Broadly Observed   |
| Comments  | In order to observe this recommendation, the RBI should establish a framework for cooperation with the SEBI and the FMC to exchange information and coordinate on policy implementation. One option is to use the FSDC structure to realize this cooperation, but other ways may be chosen as well.  |

**Table 8. India: Detailed Assessment of Implementation of the CPSS-IOSCO Recommendations for Central Counterparties –NSCCL, BSE, and ICCL**

| <b>RCCP 1 A CCP should have a well founded, transparent and enforceable legal framework for each aspect of its activities in all relevant jurisdictions.</b> |  |
|--|--|
| Description  | <p>The legal framework governing clearing systems and CCPs for corporate securities and derivatives comprises of a set of laws, bylaws, rules and regulations.</p> <p>Relevant laws are:</p> <ul style="list-style-type: none"> <li>• The SCRA and its subsequent amendments defines the various terminologies relating to securities settlement systems (Sec. 2), prescribes certain listing requirements, recognizes bylaws as valid means of organizing operations of institutions like stock exchanges, depositories and clearing houses (Sec. 7 and 8), recognizes the powers of the SEBI and provides powers to the SEBI and the Government to intervene in public interest (Sec. 6, 10 and 11). An approval from SEBI is required for the bylaws and rules, and changes made to them.</li> <li>• The SEBI Act, 1992 and its subsequent amendments, provides for the constitution of the regulator of corporate securities market – the SEBI, its powers, and how it should function; and, also provides for establishment of an appellate tribunal to provide quick redress for any disputes related to actions of the SEBI (various sections in Ch. IV, V and VIB). This Act clearly vests the responsibility for approving applications for establishment of stock exchanges, depository, custodians and collective investment schemes; and, regulation and oversight of entire corporate securities market including corporate securities settlement systems with the SEBI.</li> </ul> <p>SEBI has in addition issued the Securities Contracts Regulation Rules (SCRR), 1957. Relevant by laws are the bylaws of the NSE, BSE and NSCCL. These bylaws of the stock exchanges contain various provisions related to conduct of securities settlement systems and detailed operating procedures. In addition, the NSE, BSE and NSCCL have issued rules and regulations.</p> <p>In particular the bylaws of the clearing corporations deem all settlements completed by them as final and irrevocable and support netting. They specify default procedures and provide the clearing corporation full-powers over the collateral placed with the clearing corporation to provide for orderly conduct of the securities settlement process. They specify the default procedures. The applicability of these bylaws have also been upheld by a few supreme court rulings – Vinay Bubna Vs Bombay Stock Exchange, Supreme Court, 1999; and, Bombay Stock Exchange Vs Jaya I. Shah and another, Supreme court, 2004. Novation is supported by the Contract Act.</p> <p>The laws and regulations are publically available on the website of the SEBI. The bylaws, rules and regulations governing the operations of NSE, BSE and NSCCL are available on the websites of the exchanges.</p> <p>The CCPs do not have any cross-border linkages.</p> |
| Assessment   | Broadly Observed   |
| Comments   | It is recommended that the legal backing of the clearing and settlement process be improved by addressing the issues of finality and netting at the level of a law. In   |

|   | addition, the FSAP team supports SEBI's review of the legal and regulatory framework to streamline the different laws, bylaws, rules and regulations, which may improve the clarity of the legal system.  |       |     |     |                            |       |       |                                       |  |  |                |       |     |                 |     |     |                      |     |    |   |  |  |                |     |     |                 |     |    |
|---|---|-------|-----|-----|----------------------------|-------|-------|---------------------------------------|--|--|----------------|-------|-----|-----------------|-----|-----|----------------------|-----|----|---|--|--|----------------|-----|-----|-----------------|-----|----|
| <b>RCCP 2. A CCP should require participants to have sufficient financial resources and robust operational capacity to meet obligations arising from participation in the CCP. A CCP should have procedures in place to monitor that participation requirements are met on an ongoing basis. A CCP's participation requirements should be objective, publicly disclosed, and permit fair and open access.</b> |   |       |     |     |                            |       |       |                                       |  |  |                |       |     |                 |     |     |                      |     |    |   |  |  |                |     |     |                 |     |    |
| Description   | <p>Different types of participants are accepted for different segments of NSE and BSE. The number of participants per segment is as follows:</p> <table border="1"> <thead> <tr> <th></th> <th>NSE</th> <th>BSE</th> </tr> </thead> <tbody> <tr> <td>Stock brokers cash segment</td> <td>1,389</td> <td>1,301</td> </tr> <tr> <td>Members in equity derivatives segment</td> <td></td> <td></td> </tr> <tr> <td>  Trading member</td> <td>1,299</td> <td>787</td> </tr> <tr> <td>  Clearing member</td> <td>259</td> <td>131</td> </tr> <tr> <td>  Self-clearing member</td> <td>396</td> <td>28</td> </tr> <tr> <td>Members in currency derivatives segment</td> <td></td> <td></td> </tr> <tr> <td>  Trading member</td> <td>760</td> <td>161</td> </tr> <tr> <td>  Clearing member</td> <td>172</td> <td>32</td> </tr> </tbody> </table> <p>Source: SEBI Annual report 2010/2011.</p> <p>The stock exchanges have established clear requirements for participation in the different segments, which include requirements with regard to financial soundness and operational capacity. The requirements vary, depending on the segment.</p> <p>The minimum eligibility criteria for participation in the <i>stock broker</i> specify that the applicant shall be:</p> <ul style="list-style-type: none"> <li>• Individuals</li> <li>• Registered firms</li> <li>• Corporate bodies</li> <li>• Companies defined in the Companies Act</li> <li>• Other persons or entities as permitted under the SCRR</li> </ul> <p>The following persons are eligible as <i>clearing member in the derivatives segment</i>:</p> <p>Individuals</p> <ul style="list-style-type: none"> <li>• Registered Firms</li> <li>• Corporate bodies</li> <li>• Companies defined in the Companies Act, 1956</li> </ul> <p>Trading members are members of the stock exchanges, whereas clearing members are responsible for settling the obligations as determined by the CCPs. They have to have accounts within the clearing banks and depositories.</p> <p>NSCCL has specified three different types clearing members for its cash market:</p> <ul style="list-style-type: none"> <li>• TM clearing member, which is a trading member that may clear and settle transactions either on its own account or on account of its clients.</li> </ul> |       | NSE | BSE | Stock brokers cash segment | 1,389 | 1,301 | Members in equity derivatives segment |  |  | Trading member | 1,299 | 787 | Clearing member | 259 | 131 | Self-clearing member | 396 | 28 | Members in currency derivatives segment |  |  | Trading member | 760 | 161 | Clearing member | 172 | 32 |
|   | NSE   | BSE   |     |     |                            |       |       |                                       |  |  |                |       |     |                 |     |     |                      |     |    |   |  |  |                |     |     |                 |     |    |
| Stock brokers cash segment  | 1,389   | 1,301 |     |     |                            |       |       |                                       |  |  |                |       |     |                 |     |     |                      |     |    |   |  |  |                |     |     |                 |     |    |
| Members in equity derivatives segment   |   |       |     |     |                            |       |       |                                       |  |  |                |       |     |                 |     |     |                      |     |    |   |  |  |                |     |     |                 |     |    |
| Trading member  | 1,299   | 787   |     |     |                            |       |       |                                       |  |  |                |       |     |                 |     |     |                      |     |    |   |  |  |                |     |     |                 |     |    |
| Clearing member   | 259   | 131   |     |     |                            |       |       |                                       |  |  |                |       |     |                 |     |     |                      |     |    |   |  |  |                |     |     |                 |     |    |
| Self-clearing member  | 396   | 28    |     |     |                            |       |       |                                       |  |  |                |       |     |                 |     |     |                      |     |    |   |  |  |                |     |     |                 |     |    |
| Members in currency derivatives segment   |   |       |     |     |                            |       |       |                                       |  |  |                |       |     |                 |     |     |                      |     |    |   |  |  |                |     |     |                 |     |    |
| Trading member  | 760   | 161   |     |     |                            |       |       |                                       |  |  |                |       |     |                 |     |     |                      |     |    |   |  |  |                |     |     |                 |     |    |
| Clearing member   | 172   | 32    |     |     |                            |       |       |                                       |  |  |                |       |     |                 |     |     |                      |     |    |   |  |  |                |     |     |                 |     |    |

|            |   |
|------------|---|
|            | <ul style="list-style-type: none"> <li>• Custodian clearing members, which includes custodians and other clearing members, but not trading members. A custodian clearing member may clear and settle deals for trading members.</li> <li>• Participant clearing members, which includes banks, financial institutions, primary dealers and other RBI / SEBI regulated entities, that may clear and settle their own deals only in derivative contracts based on interest rates and such other underlying values. They have to use a trading member for concluding transactions on the stock exchanges.</li> </ul> <p>For the derivatives market a fourth type of clearing member is defined:</p> <ul style="list-style-type: none"> <li>• Professional Clearing Member, who may settle deals for its own account, for clients (mainly institutional investors) and trading members.</li> </ul> <p>BSE has similar categories of clearing members, being trading cum clearing member, self clearing member, professional clearing member.</p> <p>A particular feature of the markets of NSE and BSE is that in the case of custodian clearing members the broker accepts the transaction on T+0, the custodian confirms the transaction on T+1 and then officially settles the transaction for its clients on T+2. In the cash market the CCP is first exposed to the broker and subsequently to the custodian. In the derivatives market the CCP has no direct exposure toward the broker or the custodian, because in the derivatives segment the clearing banks (see RCCP 9) guarantee that the broker or its clients will fulfill their collateral obligations.</p> <p>The different trading and clearing members shall comply with a set of conditions, including compliance with the rules, bylaws and regulations. The stock exchanges and CCPs have procedures in place to monitor that participation requirements are met. Clearing members supply the CCP with an annual auditors' certificate that specified requirements are met. In addition, clearing members shall supply audited and/or unaudited financial or qualitative information and statements as required</p> <p>The bylaws, rules and regulations clearly state the conditions under which membership shall be suspended or terminated. Such conditions are de-mergers, amalgamations, nonfulfillment of membership criteria, defaults etc.</p> |
| Assessment | Observed  |
| Comments   | <p>It is recommended that strengthening of the tiered system be considered by excluding any small trading members from membership of the CCPs. In the cash markets of the NSE and BSE the CCPs have exposure toward many small brokers, which can be very small broker firms (individuals). Although restrictions exist on the portfolio of such brokers and the risk measures are tight (see RCCP 3) it is recommended to implement a tiered system in the cash market as is already in place in the derivatives markets. The CCPs will benefit from a structure in which only the largest, most solid brokers are clearing members of the CCP. As such they will provide a security cushion for the CCP, which is not exposed anymore to defaults of the smaller, less solid securities companies. The financial and operational access criteria of the CCP should reflect this.</p> <p>Such a structure exists in the derivatives market. Nevertheless, this tiered structure may be enhanced by excluding the smaller trading members from the possibility of being a clearing member. In this case however, the clearing banks provide a guarantee function.</p>   |



**RCCP 3. A CCP should calculate its credit exposures to participants on a daily basis and hold collateral that in normal market conditions covers its potential losses from closing out positions held by a defaulting participant.**

|             |  |
|-------------|--|
| Description | <p>The CCPs measure their exposure toward their participants on a real time basis, using up to date prices and positions. Every transaction of a trading member results automatically in the immediate calculation of the new exposure toward its clearing participant. The initial /VaR margin rate is calculated six times a day based on intraday volatility. The exposures are automatically compared to the available collateral (minus haircut). The valuation of the available collateral is also done automatically during the day, based on the last available prices.</p> <p>System alerts indicate when the exposures are 70 percent, 85 percent, 90 percent, 95 percent and 100 percent of the available collateral. When the 100 percent barrier is reached participants are not allowed to trade anymore, unless they increase their collateral. Participants are able to increase their collateral deposits during the day.</p> <p>The CCPs calculate initial margin, extreme loss margin, MTM margin and other types of margins to cover their exposures (see RCCP 4).</p> |
| Assessment  | Observed   |
| Comments    | -  |

**RCCP 4. If a CCP relies on margin requirements to limit its credit exposures to participants, those requirements should be sufficient to cover potential exposures in normal market conditions. The models and parameters used in setting margin requirements should be risk-based and reviewed regularly.**

|             |   |
|-------------|---|
| Description | <p>The CCPs base their margin requirements on the same detailed requirements of SEBI, although details may differ per exchange. In addition, the CCPs have different margin requirements for the different products. For example, the NSCCL has different margin calculation methods for equities, equity derivatives, currency derivatives, interest rate futures, retail debt and the securities lending and borrowing service. The description below concerns the margin calculation methods for the equity and equity derivative markets cleared by the NSCCL, being the largest market segments.</p> <p>For the <i>equities</i>, the NSCCL uses initial, extreme loss and MTM to cover potential losses from the default of their clearing participants. Participants have to pay on a daily basis (T+1) the sum of the initial, extreme loss and MTM margin. The margin is determined for the net outstanding position (buy value-sell value) per security, per client, per participant. The participant has to provide margin for the sum of all the net positions of every client plus its own position.</p> <p>The initial margin (or VaR margin) is calculated for a one day holding period, using a 99 percent confidence level. All securities are classified into three groups on the basis of their liquidity and impact cost. Securities listed in Group I are the most liquid ones, with the lowest impact cost. Per security the daily volatility is calculated using the exponentially weighted moving average methodology applied to daily returns. Daily VaR is 3.5 times the volatility, subject to a minimum of 7.5 percent. For securities with higher impact cost are listed in Group II and III, for which higher VaR margins are calculated, taking into account the higher risk of liquidating these securities upon the default of a participant.</p> |
|-------------|---|

The extreme loss margin for any security is the highest of (1) 5 percent or (2) 1.5 times the standard deviation of daily logarithmic returns of the security price in the last six months. This computation is done at the end of each month by taking the price data on a rolling basis for the past six months and the resulting value is applicable for the next month.

MTM margin is calculated by marking each transaction in security to the closing price of the security at the end of trading.

Participants can download the details of all their to-be-paid margins (VaR, extreme loss margin and MTM) at the end of each day in their respective Extranet directory.

For the *equity derivatives market* NSCCL uses initial margin and exposure margin to cover its exposure toward clearing participants. NSCCL uses the SPAN® (Standard Portfolio Analysis of Risk) system for the purpose of margining, which is a portfolio based system.

The NSCCL collects initial margin up-front for all the open positions of a clearing member based on the margins computed by NSCCL-SPAN®. The clearing member is in turn required to collect the initial margin from the trading members and his respective clients. Similarly, a trading member should collect upfront margins from his clients.

Initial margin requirements are based on 99 percent value at risk over a one day time horizon. However, in the case of futures contracts (on index or individual securities), where it may not be possible to collect mark to market settlement value, before the commencement of trading on the next day, the initial margin is computed over a two-day time horizon, applying the appropriate statistical formula.

Client positions are netted at the level of individual client and grossed across all clients, at the level of the participant without any setoffs between clients. Own positions are netted at participant level without any setoffs between client and proprietary positions.

As part of the initial margin, the NSCCL also calculates premium margin and assignment margin. Premium margin is a client wise premium amount payable by the buyer of the option and is levied till the premium is paid. Assignment margin is levied on a clearing member for any assigned positions in the exercise process, until the settlement is completed.

In addition to initial margin, the NSCCL calculates exposure margin, which is an additional percentage (or standard deviation) from the notional value of the contract.

#### *Back testing*

The margin models are back tested on a quarterly basis. The back-testing results are used to assess the adequacy of the margin models in covering the exposure of the CCPs. In case back-testing shows that the margin models are less adequate in covering the credit risks of the CCPs the CCPs will undertake action to improve the adequacy on the margin models.

The SEBI reviews the risk management process as part of its supervisory and regulatory activities. The SEBI has the appropriate resources to analyze the quantitative aspects of the margin models.

|   |  |
|---|--|
|   | <p><i>Intraday margin and other risk mitigating tools</i></p> <p>The CCPs are able to require intraday collateral to cover their exposures as outlined in RCCP 3. In addition, CCPs have additional risk mitigating tools, which are position limits based on capital of participants, online monitoring of positions, automatic disablement from trading when limits are breached and the upfront blocking of collateral.</p> <p><i>Collateral</i></p> <p>As prescribed by SEBI, the collateral can be deposited in the form of cash, cash equivalents (fixed deposits of specified banks, bank guarantees of specified banks, government securities, units of liquid mutual funds and government securities mutual funds) and as eligible securities and other mutual fund units with appropriate haircuts. In practice, government securities are not used, since the participants of the NSE and BSE are not participating in government securities. Bank guarantees are available to the CCP within 24 hours. Participants will use cash to fulfill intraday margin requirements.</p> <p>The bylaws, rules and regulations of the CCPs support the risk management framework of the CCPs.</p>   |
| Assessment  | Observed   |
| Comments  | -  |
| <p><b>RCCP 5. CCP should maintain sufficient financial resources to withstand a default by the participant to which it has the largest exposure in extreme but plausible market conditions that produces losses not fully covered by collateral requirements.</b></p> |  |
| Description   | <p>Stress test results have shown that the resources available to the CCPs are adequate to cover the credit risk to which they are exposed, following the default of the participant with the largest exposure. The resources are also sufficient to cover the liquidity risk of such a default.</p> <p>In addition to the margin deposits, the CCPs also maintain a 'Settlement Guarantee Fund' (SGF). The SGF provides the cushion for any residual risk. Different SGFs are established for different segments of the stock exchange. The corpus of the SGF is built up from contributions of both exchanges and the trading members and the accrual income of the corpus. The contributions to the settlement guarantee fund are made in accordance to the bylaws, rules and regulations of the stock exchanges and CCPs. The norms, procedures, terms and conditions inter-alia specifying the amount of deposit or contribution to be made by each participant to the relevant fund, the terms, manner and mode of deposit or contributions, conditions of repayment of deposit or withdrawal of contribution from the fund, charges for utilization, penalties and disciplinary actions for nonperformance thereof.</p> <p>CCPs do regularly conduct stress tests to determine the adequacy of the SGF. The adequacy of the fund is evaluated assuming the default of the ten members with the largest exposures, using transaction data of the day where the CCPs had the highest exposures in the last one month / year period. NSCCL conducts SGF stress tests on a monthly basis while BSE/ICCL undertakes yearly stress tests. Any concerns resulting from stress testing are further analyzed and measures are taken for further risk mitigation.</p> <p>To reduce liquidity risks CCPs have installed credit lines,. The NSCCL uses credit lines from its clearing banks and the operational procedures for the credit lines are part of the</p> |

|  |  |
|--|--|
|  | <p>clearing bank agreements. The BSE uses its Board approved investment policy to identify banks from which to avail credit lines. The credit lines used by BSE are funded credit lines – backed by fixed deposits, while the credit lines availed by the NSE are unfunded credit lines. The CCPs are able to draw on these credit lines without delay. Credit lines are offered by all the major clearing banks (see also RCCP 9).</p> <p>There is a high degree of assurance that the CCPs will be able to draw on those resources, however, this assurance is not 100 percent. The quality of the collateral is high (cash, cash equivalents, government securities and eligible securities) and the cash is invested as short term deposits at specified banks. The bylaws empower the CCPs to promptly draw the funds from the SGF and other sources to manage a default of a participant. However, of concern is that the CCPs need to draw on credit lines of clearing banks during a default of a member in extreme market circumstances. In such circumstances, clearing banks may not be able to offer sufficient liquid assets to the CCPs.</p> <p>The NSCCL bylaws specify that ‘the liability of the Clearing Corporation resulting from the deemed contracts of clearing members with the Clearing Corporation and to losses in connection there from would be limited to the extent of contributions available to the Settlement Fund [SGF]’ (NSCCL Bylaws XII.12). Further, NSCCL bylaw XII.7 provides that the retained earnings of the CCP to the extent available and the profits of the CCP available for appropriation in the respective year in which the default took place, are also available to meet obligations arising out of the default of the member. This approach protects the CCPs against the risk of uncovered exposures by transferring this risk to the original counterparty, which is one of the CCPs participants. Such CCP participants may be confronted with sudden, unexpected but significant exposures toward other participants. These potential exposures should be covered by the risk management frameworks of the individual participants.</p> |
| Assessment   | Partly observed  |
| Comments   | <p>In order to comply with this recommendation, the stress testing procedures of the CCPs should be strengthened. It is recommended that: (1) the robustness of the CCPs be increased by improving the liquidity risk management, in addition, to the management of credit risk. The CCPs should include liquidity aspects in their periodic stress testing and also ensure that their credit lines cannot be revoked; (2) the stress testing be conducted on a more frequent basis. BSE/ICCL conducts stress only on a yearly basis, whereas the assessment of the adequacy of resources in extreme situations should be conducted at least monthly. On a yearly basis comprehensive tests should be performed, which include full model and parameter validation and consideration of scenario choices. (3)The current stress scenario’s should not only include the most extreme circumstances during the last year, but should include the most volatile periods of the cash and derivative markets during the last couple of years, preferably the last one or two decades. In addition, stress scenarios should include some appropriate theoretical scenarios as well.</p>  |
| <p><b>RCCP 6. A CCP’s default procedures should be clearly stated, and they should ensure that the CCP can take timely action to contain losses and liquidity pressures and to continue meeting its obligations. Key aspects of the default procedures should be publicly available.</b></p> |  |
| Description  | <p>The bylaws, rules and regulations of the CCPs clearly state the event of a default as well as the default procedures that they may use to reduce any losses following the default of one of its participants. As indicated in RCCP 1 the bylaws, rules and regulations are publicly available on the website of the CCPs.</p>   |

|   |   |
|---|---|
|   | <p>NSCCL Bylaws chapter XII describes what constitutes a default. A participant will be declared in default if:</p> <ul style="list-style-type: none"> <li>• he is unable to fulfill his clearing or settlement obligations;</li> <li>• he admits or discloses his inability to fulfill or discharge his duties, obligations and liabilities;</li> <li>• he fails or is unable to pay within the specified time the damages and the money difference due on a closing-out effected against him under the Rules, Bye Laws and Regulations;</li> <li>• he fails to pay any sum due to the CCP as the relevant authority may from time to time prescribe;</li> <li>• he fails to pay or deliver all moneys, securities and other assets due to a clearing member who has been declared a defaulter within such time of declaration of default of such clearing member in such manner and to such person as the relevant authority may direct;</li> <li>• he fails to abide by the arbitration award as laid down under the rules, bylaws and regulations</li> <li>• under any other circumstances as may be decided by the relevant authority from time to time.</li> </ul> <p>The legal framework contains appropriate rules for segregation and portability of clients' margins. The CCPs do not have a detailed, internal action plan that outlines the different actions that need to be undertaken in case of a default of one or more clearing participants.</p> |
| Assessment  | Partly observed   |
| Comments  | <p>In order to comply with this recommendation, the CCPs should draft a detailed action plan, with the objective to be able to implement its default procedures in a timely and flexible manner. The action plan may contain the definition of a crisis manager and crisis team, the range of decisions such a crisis manager and crisis team may consider under what conditions and according to what timelines, and the reporting of information to different stakeholders, being regulators, clearing participants, the stock exchanges, CSDs and clearing banks. This action plan needs to be reviewed every year.</p>  |
| <p><b>RCCP 7. A CCP should hold assets in a manner whereby risk of loss or of delay in its access to them is minimized. Assets invested by a CCP should be held in instruments with minimal credit, market and liquidity risks.</b></p> |   |
| Description   | <p>The CCPs accept collateral from trading members and clearing members in the form of cash, bank guarantees, bank deposits and eligible securities of companies. The securities have to be deposited on the accounts of the CCPs in the depositories NSDL and CDSL. Cash contributions need to be sent to the CCP accounts within the clearing banks.</p> <p>The CCPs have an investment policy in place to ensure that investments are held in highly liquid securities or cash deposits. SEBI vide circular No.MRD/DoP/SE/Cir-07/2005 dated February 23, 2005 has specified that the exchanges shall lay down exposure limits either in rupee terms or as percentage of the trade guarantee fund (TGF) and/or SGF that define the maximum exposure of the CCPs to a single bank</p>  |

|  |  |
|--|--|
|  | <p>directly or indirectly. The total exposure would include guarantees provided by the bank for itself or for others as well as debt or equity securities of the bank which have been deposited by members toward total liquid assets. Further, not more than 5 percent of the TGF/SGF or 1 percent of the total liquid assets deposited with the exchange, whichever is lower, shall be exposed to any single bank which has a net worth of less than Rs 500 crores and is not rated P1 (or P1+) or equivalent, by a RBI recognized credit rating agency or by a reputed foreign credit rating agency, and not more than 50 percent of the TGF/SGF or 10 percent of the total liquid assets deposited with the exchanges, whichever is lower, shall be exposed to all such banks put together.</p> <p>NSCCL has specified maximum exposure limits to a single bank in respect of bank guarantees and bank securities that can be accepted as collaterals. These norms are periodically monitored for adherence to specified limits. BSE verifies the net worth of the banks periodically and follows the requirements specified above. Restrictions on the maximum exposure to each bank, corporate and mutual fund have been specified in the investment policy of the BSE.</p> <p>The CCPs invests cash in debt schemes of mutual funds, bank fixed deposits, public sector bonds and undertakings as per the prudential norms approved by its Board of directors. Direct investments are made in instruments having a high credit rating. The CCP has specified limits on their exposure to banks. These limits are member specific as well as bank specific.</p> <p>Prudential norms specify the extent in absolute and percentage terms to which investments can be made. Overall exposure limits are fixed for each class of investments and institutions. The CCPs obtain regular reports on their exposure toward the different clearing banks, which enable them to monitor their risks on an ongoing basis.</p> |
| Assessment   | Observed   |
| Comments   | -  |
| <p><b>RCCP 8. A CCP should identify sources of operational risk and minimize them through the development of appropriate systems, controls and procedures. Systems should be reliable and secure, and have adequate, scalable capacity. Business continuity plans should allow for timely recovery of operations and fulfillment of a CCP's obligations.</b></p> |  |
| Description  | <p>The CCPs identify actively sources of operational risks and implement measures to reduce these risks. SEBI vide circular no. MIRSD/DPS-III/ Cir-22 /2008 dated July 23, 2008, had mandated that exchanges shall conduct an annual system audit covering areas such as trading systems, clearing and settlement systems, risk management, databases, disaster recovery sites, business continuity planning, security, capacity management and information security audit by an independent auditor. The stock exchanges are required to submit the audit report regarding their operational systems to their governing Board and to SEBI. In addition, the system operators have a process for identifying and managing its operational risks, arising out of introduction of new products, services, processes and regulatory interventions.</p> <p>The CCPs have business continuity plans as well as disaster recovery sites in place. An on-city back up site is available as well as an off-city back-up site, with a different risk profile relating to earthquakes. Failure scenarios are identified and risk mitigation plans</p>  |

|            |   |
|------------|---|
|            | <p>in place. With every system enhancement, these plans are reviewed and updated. The plans are reviewed by senior management as well. SEBI, in consultation with its Technical Advisory Committee, is in the process of framing detailed business continuity planning and disaster recovery guidelines for the stock exchanges (that would include the CCPs) and securities depositories.</p> <p>The NSCCL has categorized disaster failures into four levels. Level 1 concerns a failure affecting a single department, level 2 concerns a failure affecting multiple departments, level 3 concerns the inaccessibility of premises, and level 4 concerns premises unavailability. The BCP plan does not consider level 1 and 2 as a disaster. The issues will be solved using exception handling and operations resiliency procedures. The BCP plan does consider level 3 and 4 as a disaster, given the complexity of operations and the dependency on external interfaces. The recovery time objective is defined as the next trading day. The plans are regularly tested.</p> <p>The CCPs have in place procedures for the preservation of all transaction data. Backups are taken on tapes and also stored on the off-city location. Procedures for restoring data are tested regularly. For all critical systems and databases, primary SAN to secondary SAN replication is done synchronously using true copy software. The secondary SAN is replicated to the DR site using Hitachi Universal Replicator.</p> <p>The operational reliability issues are reviewed regularly by senior management. The operations are subject to internal audits done by a qualified audit firm. The report of the internal audit is considered by the Audit Committee of the Board along with management comments. The regular review of processes and procedures are conducted through the system audits. The operational systems of the CCPs are also subject to regular external audits.</p> <p>No major incident has occurred during the previous year. Capacity plans are in place to handle stress volumes. The capacity planning is done based on the actual utilization of resources vis-à-vis available capacity. Additionally, the key systems are tested periodically for stress volumes.</p> |
| Assessment | Observed  |
| Comments   | <p>It is recommended that crisis management procedures be developed and tested these with all or the main participants. While the CCPs have installed back-up procedures and DR, there is room to improve the crisis management arrangements with regard to the continuity of the operational processes<sup>18</sup>. The CCPs and preferably also the participants and other infrastructure service provider should draft an action plan, including a detailed description of all actions to be taken in case of a crisis with all involved people and institutions, their contact details, the information flows and the potential range of decisions. The CCPs should, in addition, carry out a formal exercise with relevant participants to test this action plan in a variety of scenarios and adapt the action plan according to lessons learnt and as such addressing the human factor in stress situations. The stress scenarios can involve the failure of each of the central systems,</p>   |

<sup>18</sup> In line with the relevant assessment methodology the system is assessed as 'observed,' despite the lack of comprehensive crisis management procedures. The assessment may be different once the system will be assessed using the assessment methodology of the CPSS-IOSCO Principles for Financial Market Infrastructures, which are expected to be published in 2012.

|  |  |
|--|--|
|  | <p>systems of the participants, as well as the infrastructure services used or an external threat like a cybercrime attack.<sup>19</sup></p> <p>In addition, it is recommended to reduce the recovery time objective from one day to two hours, which is considered best practice for payment and securities clearing and settlement systems. It is noted that the SEBI is currently drafting detailed guidelines on these topics, which may include the recommendations of the FSAP mission team.</p>   |
| <p><b>RCCP 9. A CCP should employ money settlement arrangements that eliminate or strictly limit its settlement bank risks, that is, its credit and liquidity risks from the use of banks to effect money settlements with its participants. Funds transfers to a CCP should be final when effected.</b></p> |  |
| Description  | <p>The CCPs use the commercial bank settlement model for the settlement of the cash leg of transactions. These commercial banks are called clearing banks. They are also used by the CCPs and their participants for the transfers and deposits of cash collateral. For this purpose the CCPs maintain accounts in all the clearing banks. The participants have to choose one specific clearing bank to enable the cash settlement of their transactions as well as to fulfill any cash collateral obligations. The cash transfers are final according to the bylaws, rules and regulations of the CCPs (see also RCCP 1). The fund transfers between the CCP and the clearing banks go through the RTGS system of RBI.</p> <p>The CCPs have appointed multiple private and public sector banks as designated clearing banks and have concluded an agreement with these banks. The clearing banks have to comply with specific criteria, such as capital requirements and the type of bank (scheduled commercial bank). The CCPs monitor the creditworthiness, access to liquidity and operational reliability during the year. The financial conditions of the banks are monitored by CCPs on a half yearly basis. The clearing banks are subject to the prudential supervision by the RBI. The concentration of exposures in the various banks is monitored by the CCPs.</p> <p>The NSCCL currently uses 13 clearing banks, BSE uses 16 clearing banks, MCX-SX CCL uses 10 clearing banks and ICCL uses 9 clearing banks. The CCPs monitor their exposure toward the clearing banks as part of their investment policy monitoring, as described in RCCP 7. In practice, the clearing participants of the CCPs have selected only a very few, large clearing banks, so cash settlement flows are concentrated in these few banks. The dominance of these clearing banks is not only visible in the corporate securities and financial derivatives markets, but also in the commodity derivatives market. In addition to the role of cash settlement bank, the clearing banks also guarantee to the CCPs the fulfillment of collateral obligations of brokers. The CCPs do not have any default procedures in place that specify dedicated actions in case of a default of a clearing bank.</p> |
| Assessment   | Broadly observed   |
| Comments   | In order to fully comply with this recommendation, the CCPs should take measures to reduce its dependence on the few, large clearing banks that settle the majority of the cash flows. The CCPs should more actively monitor the financial condition of these banks and develop plans to cope with the failure of one or more of the banks. For the medium term it is recommended to replace the commercial bank settlement model with   |

<sup>19</sup> See also for example the CPSIPS, paragraph 7.7.18 and the draft CPSS-IOSCO Principles for FMIs, paragraphs 3.17.14 and 3.17.15.



|   |   |
|---|---|
|   | the central bank settlement model. This will significantly reduce the systemically important role of these banks as well as the settlement bank risk to which the market is exposed. Instead the central bank settlement model should be used, with cash settlement in the RTGS system of the RBI for all securities and derivatives.   |
| <b>RCCP 10. A CCP should clearly state its obligations with respect to physical deliveries. The risks from these obligations should be identified and managed.</b>  |   |
| Description   | The CCPs do not conduct any physical deliveries.  |
| Assessment  | Not applicable  |
| Comments  | -   |
| <b>RCCP 11. CCPs that establish links either cross-border or domestically to clear trades should evaluate the potential sources of risks that can arise, and ensure that the risks are managed prudently on an ongoing basis. There should be a framework for cooperation and coordination between the relevant regulators and overseers.</b> |   |
| Description   | None of the CCPs has established any links with other CCPs.   |
| Assessment  | Not applicable  |
| Comments  | -   |
| <b>RCCP 12. While maintaining safe and secure operations, CCPs should be cost-effective in meeting the requirements of participants.</b>  |   |
| Description   | <p>The CCPs, as part of the stock exchanges, operate in a competitive environment, which positively affects the efficiency of the CCPs. In the last two decades, the competition between the NSE and BSE has positively influenced the fee structure as well as the service level of the stock exchanges and the CCPs.</p> <p>The fee structure is regularly reviewed by the stock exchanges, CCPs and CSDs, taking into account their business performance, business requirements and competitive factors. In doing so they have to take into account (vide SEBI circular, 14 October 2009):</p> <ul style="list-style-type: none"> <li>• The stock exchange system is capable of handling additional transactions.</li> <li>• The new fee structure does not affect the existing risk management system.</li> <li>• The new fee structure does not favor specific transactions or a specific category of investors.</li> <li>• The new fee structure does not generate artificial demand.</li> <li>• The new fee structure does not result in any market irregularities.</li> <li>• The new fee structure is uniformly applied to trades of a similar nature.</li> <li>• The new fee structure is imposed in a fair and transparent manner.</li> </ul> <p>The CCPs regularly review their service levels, after taking into account user feedback, which is obtained through business development channels. The CCPs also have in place procedures to regularly review operational reliability as outlined in RCCP 8. A SEBI requirement is that the system audit of the stock exchanges, including CCPs, should be carried out once every year which covers a review of the operational reliability and capacity planning. The system audit report along with the compliance status should be discussed by the governing Board of the stock exchanges.</p> |

|   |   |
|---|---|
| Assessment  | Observed  |
| Comments  |   |
| <b>RCCP 13. Governance arrangements for a CCP should be clear and transparent to fulfill public interest requirements and to support the objectives of owners and participants. In particular, they should promote the effectiveness of a CCP's risk management procedures.</b> |   |
| Description   | <p>The NSE and BSE are demutualized exchanges, with a strict separation between ownership of the exchange, management of the exchange and trading on the exchange. This structure reduces the occurrence of conflicts of interest and helps NSE and BSE to fulfill public interest requirements. The NSE and BSE are recognized stock exchanges under the SCRA as well as companies registered under the Companies Act, 1956.</p> <p>NSE and BSE are owned by a range of large financial institutions, banks, insurance companies and other financial institutions. The maximum stake a single investor is permitted to hold in any Indian stock or derivative exchange is 15 percent. At least two foreign investors - NYSE Euronext and Goldman Sachs - have taken a stake in the NSE. Deutsche Börse and the Singapore Exchange both own a stake in the BSE.</p> <p>In 2004 the SCRA was amended in order to provide a legal basis for a 'clearing corporation,' which is a separate legal entity, as opposed to a 'clearing house,' which is part of the stock exchange and not a separate legal entity. An exchange is allowed to transfer its clearing and guarantee functions to such a clearing corporation. The clearing corporation needs to be recognized as such by SEBI and should have its own bylaws, rules and regulations approved by SEBI.</p> <p>The NSCCL is a clearing corporation and a wholly owned subsidiary of NSE. It was incorporated in August 1995 with the following objectives:</p> <ul style="list-style-type: none"> <li>• to bring and sustain confidence in clearing and settlement of securities;</li> <li>• to promote and maintain, short and consistent settlement cycles;</li> <li>• to provide counter-party risk guarantee, and</li> <li>• to operate a tight risk containment system.</li> </ul> <p>The NSCCL has its own Board, formed by experts from the field of economics, taxation, law finance etc. While the Board deals with broad policy issues, decisions relating to market operations of derivatives are delegated to an executive committee.</p> <p>The ICCL is a clearing corporation and a wholly owned subsidiary of BSE. Currently, the ICCL only functions as the CCP for mutual funds and corporate bonds traded on the BSE and currency derivatives traded on the U.S.E. BSE is still the CCP for all other products traded on the BSE. Plans exist to migrate the CCP activities of BSE to ICCL in the coming months. <i>BOISL</i> is a company jointly promoted by BSE (49 percent) and Bank of India (51 percent). <i>BOISL</i> handles the settlement related activities for BSE and will continue to do so when the CCP function is transferred from BSE to ICCL.</p> <p>The exchanges and clearing corporations do accommodate involvement, support and contribution of trading members in a variety of ways. The Boards comprise of senior executives from promoter institutions, eminent professionals in the fields of law, economics, accountancy, finance, taxation, etc, public representatives and nominees of SEBI.</p> <p>The day-to-day management of the exchanges is delegated to an executive committee or management. The Board is responsible for selecting, evaluating and if necessary,</p> |

|   |  |
|---|--|
|   | <p>removing senior management. The management reports to the Board of directors. While the Boards deal with broad policy issues, decisions relating to market operations are delegated to various committees. Such committees include representatives from trading members, professionals, the public and the management. The legal framework of the exchanges contains provisions on the appointment, composition and powers of the Boards and the executive committees of the exchanges. The rules on the composition of the Boards are designed to ensure that the Board members have the necessary skills, and also represent the interests of different stakeholders. Public interest is taken into account by nomination of independent directors and/ a public interest director in the Boards.</p> <p>The objectives of the exchanges and CCPs reflect the needs of users as well as owners at CCPs. The ownership structure and financial information is available with the statutory and regulatory authorities and is also publicly available. Periodical reports containing operational and financial information and major decisions are periodically sent to the members of the Boards, shareholders and regulatory authorities.</p> <p>The Boards have constituted committees comprising of members having the requisite skill sets, knowledge and experience. The CCPs do not have independent risk management committees. The risk management departments do have a separate reporting line to the management and the Board of the organizations.</p> |
| Assessment  | Observed   |
| Comments  | It is suggested that independent risk committees be established, consisting of internal and external experts that report directly to the Board of the CCPs. The CCPs may benefit from such dedicated risk committees, since it concentrates internal and market expertise and interests and ensures high level advice to the Board on risk management matters. The risk committee may advice on issues such as changes to the margin model, SGF, default procedures and the clearing of new products.  |
| <b>RCCP 14. A CCP should provide market participants with sufficient information for them to identify and evaluate accurately the risks and costs associated with using its services.</b> |  |
| Description   | <p>The CCPs provide participants with sufficient information on their websites and through other means. The CCPs notify their market participants and other stakeholders about various operational and systemic requirements, rules regarding risk management and other relevant rules, regulations and procedures by way of circulars and other announcements. Circulars are distributed electronically and all policy related circulars are displayed on the website of the CCPs. The circulars are also available to the market participants in hardcopy format.</p> <p>The participants have access to relevant laws, regulations, rules and other information, to obtain a full and clear description of their rights, obligations and the risks related to participation in the system. The websites are updated when necessary.</p> <p>The CCPs were assessed by the Committee on Financial Sector Assessment in March 2009, which includes answers to many key questions of the CPSS-IOSCO Recommendations for Securities Settlement Systems: <a href="http://rbi.org.in/scripts/PublicationReportDetails.aspx?UrlPage=&amp;ID=547">http://rbi.org.in/scripts/PublicationReportDetails.aspx?UrlPage=&amp;ID=547</a> . The answers are however not updated and not all key questions are addressed.</p>   |
| Assessment  | Observed   |
| Comments  | It is recommended that the relevant CPSS-IOSCO disclosure framework be published on the websites of NSCCL, BSE and ICCL, with updated and detailed answers to the key questions.   |

| <b>RCCP 15. A CCP should be subject to transparent and effective regulation and oversight. In both a domestic and an international context, central banks and securities regulators should cooperate with each other and with other relevant authorities.</b> |   |
|---|---|
| Description   | <p>The corporate securities market is overseen and regulated by the SEBI. The authority to approve establishment of exchanges, depositories and clearing corporations is vested with the SEBI. The SEBI is also vested with authority to review and approve the bylaws and rules of these institutions and also approve enrollment of new participants.</p> <p>The SEBI also has powers to audit and inspect each of the institutions functioning in the corporate securities market. The SEBI regularly audits the exchanges, CCPs and participants and receives periodic reports from these institutions which is used for its regulation and oversight activities.</p> <p>The SEBI, the RBI, IRDA and PFRDA are all part of the Financial Stability and Development Council (FSDC) headed by the Finance Minister of India. This council has established a sub-committee chaired by the Governor of the RBI. The FSDC platform is intended to be used extensively by the SEBI and the RBI to collaborate on oversight of aspects relating to securities settlement systems. The SEBI and the RBI have collaborated closely on various aspects through establishment of specific technical committees and working groups – for (e.g.) for the settlement of corporate bonds in the RTGS and arrangements for interest rate futures. No explicit agreements are in place with regard to information sharing or coordination of policy implementation. The overall quality of the oversight and supervision on payment and securities clearing and settlement systems will improve if the RBI and SEBI regularly meet on a technical and higher level, according to formal arrangements that handle information sharing and the coordination of policy implementation. In addition, the RBI and SEBI are strongly encouraged to include the FMC in the regular meetings, since many of the above mentioned issues are of relevance to the supervisor of the commodities market as well.</p> <p>The SEBI has MoUs with regulators of 17 international securities regulators and is also a member of IOSCO and a signatory of the MMOU.</p> |
| Assessment  | Broadly Observed  |
| Comments  | In order to observe this recommendation, the SEBI should establish a framework for cooperation with the SEBI and the FMC to exchange information and coordinate on policy implementation. One option is to use the FSDC structure to realize this cooperation, but other ways may be chosen.  |

**Table 9. India: Summary of RSSS Implementation—PDO System**

| Assessment Grade | Principles Grouped by Assessment Grade |   |
|------------------|--|---|
|                  | Count                                  | List  |
| Observed         | 14                                     | 1, 2, 3, 4, 5, 6, 7, 8, 10, 11,12,13,14,15,16 |
| Broadly observed | 2                                      | 17, 18  |
| Partly observed  | 1                                      |   |
| Non-observed     |  |   |
| Not applicable   | 2                                      | 9, 19   |

**Table 10. India: Summary of RSSS Implementation—NSDL and CDSL**

| Assessment Grade | Principles Grouped by Assessment Grade |   |
|------------------|--|---|
|                  | Count                                  | List  |
| Observed         | 14                                     | 2, 3, 4, 5, 6, 7, 8, 11, 12, 13, 14, 15, 16, 17 |
| Broadly observed | 2                                      | 1, 18   |
| Partly observed  |  |   |
| Non-observed     |  |   |
| Not applicable   | 3                                      | 9, 10, 19                                       |

**Table 11. India: Summary of RCCP Implementation—CCIL**

| Assessment Grade | Principles Grouped by Assessment Grade |                            |
|------------------|--|----------------------------|
|                  | Count                                  | List                       |
| Observed         | 8                                      | 1, 2, 4, 6, 8, 12, 13, 14, |
| Broadly observed | 4                                      | 3, 7, 9, 15                |
| Partly observed  | 1                                      | 5                          |
| Non-observed     |  |                            |
| Not applicable   | 2                                      | 10, 11                     |

**Table 12. India: Summary of RCCP Implementation—NSCCL, BSE, and ICCL**

| Assessment Grade | Principles Grouped by Assessment Grade |                           |
|------------------|--|---------------------------|
|                  | Count                                  | List                      |
| Observed         | 8                                      | 2, 3, 4, 7, 8, 12, 13, 14 |
| Broadly observed | 3                                      | 1, 9, 15                  |
| Partly observed  | 2                                      | 5, 6                      |
| Non-observed     |  |                           |
| Not applicable   | 2                                      | 10, 11                    |

**Table 13. India: Recommended Actions to Improve RSSS Implementation—  
PDO System**

| <b>Reference Recommendation</b>    | <b>Recommended Action</b>   |
|------------------------------------|---|
| RSSS 1 – Legal Framework           | The protection of customers' assets in the PDO from any third-party claims on the participant should be explicitly mentioned in the legal framework.<br><br>The Government Securities Regulations and the PDO manual could be made available online.  |
| RSSS 17 - Transparency             | The responses to the relevant CPSS-IOSCO disclosure framework need to be updated periodically, presented in a more detailed form, and reviewed by RBI more frequently. RBI could also consider developing a dedicated section in its website and publish information on the legal framework, compliance to the standards, results of risk assessments, etc. |
| RSSS 18 – Regulation and Oversight | The RBI should establish a framework for cooperation with SEBI and FMC to exchange information and coordinate on policy implementation. One option is to use the FSDC structure to realize this cooperation, but other ways may be chosen as well.  |

**Table 14. India: Recommended Actions to Improve RSSS Implementation—  
NSDL and CDSL**

| <b>Reference Recommendation</b>    | <b>Recommended Action</b>  |
|------------------------------------|--|
| RSSS 1 – Legal Framework           | Topics related to finality, netting, and protection of funds held with custodians should be dealt with at the level of a law or an implementing regulation.  |
| RSSS 18 – Regulation and Oversight | RBI should establish a framework for cooperation with SEBI and FMC to exchange information and coordinate on policy implementation. One option is to use the FSDC structure to realize this cooperation, but other ways may be chosen as well. |

**Table 15. India: Recommended Actions to Improve RCCP Implementation—  
CCIL**

| Reference Recommendation                               | Recommended Action   |
|--|--|
| RCCP 3 – Measurement and management of credit exposure | The CCIL needs to progress its plans to have an ability to measure its exposure intraday based on up-to-date prices and position in all the segments and also have the ability to manage these exposures.  |
| RCCP 5 – Financial Resources                           | The liquidity risk management framework needs to be enhanced to enable the CCIL to withstand settlement default of at least the largest participant. The CCIL should perform comprehensive tests at least annually.  |
| RCCP 7 – Custody and Investment Risks                  | <p>The CCIL should reduce its concentration risk in the foreign exchange segment by opening a U.S. dollar account in at least one other bank in and to select another custodian.</p> <p>The CCIL should institute mechanisms to assess on an ongoing basis the financial soundness of all the banks with which it has exposures, in particular with the domestic and foreign settlement banks.</p> |
| RCCP 9 - Money Settlements                             | The CCIL should monitor the concentration of settlement flows for Rs settlement, and establish thresholds beyond which it would take measures to reduce the concentration. In the U.S. dollar segment, the CCIL should diversify both for settlement and for custody services and credit lines.  |
| RCCP 15 – Regulation and Oversight                     | RBI should establish a framework for cooperation with SEBI and FMC to exchange information and coordinate on policy implementation. One option is to use the FSDC structure to realize this cooperation, but other ways may be chosen as well.   |

**Table 16. India: Recommended Actions to Improve RCCP Implementation—  
NSCCL, BSE, and ICCL**

| Reference Recommendation     | Recommended Action  |
|------------------------------|---|
| RCCP 1 - Legal risk          | It is recommended that the legal backing of the clearing and settlement process be improved by addressing the issues of finality and netting at the level of law. In addition, the assessors support SEBI's review of the legal and regulatory framework to streamline the different laws, bylaws, rules, and regulations, which may improve the clarity of the legal system.   |
| RCCP 5 – Financial Resources | <p>In order to comply with this recommendation, the stress testing procedures of the CCPs should be strengthened. It is recommended that:</p> <ol style="list-style-type: none"> <li data-bbox="743 743 1425 940">1. The robustness of the CCPs be increased by improving the liquidity risk management in addition to the management of credit risk. The CCPs should include liquidity aspects in their periodic stress testing and also ensure that their credit lines cannot be revoked.</li> <li data-bbox="743 961 1425 1226">2. Stress tests should be conducted on a more frequent basis. BSE/ICCL conducts stress only on a yearly basis, whereas the assessment of the adequacy of resources in extreme situations should be conducted at least monthly. On a yearly basis comprehensive tests should be performed, which include full model and parameter validation and consideration of scenario choices.</li> <li data-bbox="743 1247 1425 1478">3. The current stress scenarios should include not only the most extreme circumstances during the last year, but also the most volatile periods of the cash and derivative markets during the few years, preferably the last one or two decades. Stress scenarios should include some appropriate theoretical scenarios as well.</li> </ol> |
| RCCP 6 – Default procedures  | In order to comply with this recommendation the CCPs should draft a detailed action plan, with the objective to be able to implement its default procedures in a timely and flexible manner. The action plan may contain the definition of a crisis manager and crisis team, the range of decisions such a crisis manager and crisis team may consider under what conditions and according to what timelines, and the reporting of information to different stakeholders, being regulators, clearing participants, the stock exchanges, CSDs, and clearing banks. This action plan needs to be reviewed every year.   |



| Reference Recommendation           | Recommended Action  |
|------------------------------------|---|
| RCCP 9 - Money Settlements         | In order to comply with this recommendation the CCPs should take measures to reduce its dependence on few, large clearing banks that settle the majority of the cash flows. The CCPs should more actively monitor the financial condition of these banks and develop plans to cope with the failure of one or more of the banks. For the medium term it is recommended to replace the commercial bank settlement model with the central bank settlement model. This will significantly reduce the systemically important role of these banks as well as the settlement bank risk to which the market is exposed. Instead the central bank settlement model should be used, with cash settlement in the RTGS system of RBI for all securities and derivatives. |
| RCCP 15 – Regulation and Oversight | RBI should establish a framework for cooperation with SEBI and FMC to exchange information and coordinate on policy implementation. One option is to use the FSDC structure to realize this cooperation, but other ways may be chosen as well.  |

#### A. Authorities' Response

27. **SEBI would like to appreciate the effort and time that has been put in by IMF and World Bank team to assess the securities settlement systems and central counterparties in the Indian securities markets.** It is felt that the FSAP assessment has taken place at a most opportune time as it has provided us with an opportunity to showcase the architecture of our securities system to the world, especially in the context of the global financial meltdown. In the same breath, we candidly admit that third party assessments and suggestions like the ones provided by the FSAP in this report are also very important to us as it highlights areas that may contribute toward further improvement of the system.

28. **Since the last FSAP assessment in 2001, Indian securities market has undergone a sea-change with major improvements in areas of regulatory framework, range of products, growth and reach of market, technology, investor participation, etc.** The current FSAP assessment recognizes the significant progress made by SEBI, stock exchanges, clearing corporations, and depositories in the implementation of the IOSCO Principles since the 2001 assessment.

29. **SEBI welcomes the recommendations that the legal backing of the clearing and settlement process be improved by addressing the issues of finality and netting at the level of law.** SEBI has already taken action to recommend amendments to the Securities Laws to provide for finality of settlement obligations and netting. New laws are also in the process of being issued in order to provide for formal recognition of clearing corporations.

Meanwhile the bylaws of the exchange/clearing corporations deem all settlements completed by them as final and irrevocable and support netting. They specify default procedures and provide the clearing corporation full powers over the collateral placed with the clearing corporation to provide for orderly conduct of the securities settlement process. The applicability of these bylaws have also been upheld by a few Supreme Court rulings—Vinay Bubna Vs. Bombay Stock Exchange, Supreme Court, 1999; and, Bombay Stock Exchange vs. Jaya I. Shah and another, Supreme court, 2004. Novation is supported by the Contract Act. Thus the existing legal framework is time tested and has proven to be robust.

30. **The assessment has acknowledged the comprehensive risk management framework prescribed by SEBI as one of the pillars of the Indian securities settlement system.** The system of online real-time margining, requirement for participants to deposit liquid collateral with the CCPs, real-time disablement of trading facility of the participants on exhaustion of the collateral, default management procedures including segment-wise settlement guarantee fund to cover the residual risk associated with defaults, inter-linkages between depositories, market-wide circuit filters and security specific price bands, etc, have prevented occurrence of any major defaults in the last decade.

31. **SEBI has also taken note of the suggestion of the FSAP mission to “replace the commercial bank settlement model with the central bank settlement model.”** The same was also highlighted in the recent FSDC meeting. Suitable market-wide consultation viz. consultation with stock exchanges/clearing corporations, stock brokers/trading members, clearing members and RBI will be undertaken in future to examine the issue.

32. **While SEBI agrees with most of the recommendations/suggestions highlighted by the FSAP team in this report, it is felt that the following points will provide better perspective of assessment:**

- The assessment has suggested CSDs to maintain the fee schedule in an easily comparable format. It may be noted that SEBI has prescribed requirement to make available details of fees/charges of various services of depositories/depositories participants on the website of depositories for over five years as on date.
- While assessing the observance of RCCP 4 by NSCCL, BSE, and ICCL, the FSAP team has highlighted in the report that *the participants have to pay on a daily basis (T+1) the sum of initial, extreme loss and mark-to-market margin*. It may be noted that the aforementioned description provided by FSAP team does not accurately reflect the strength of the margining system in Indian securities market. Initial and extreme loss margins are adjusted upfront, post-trade, from the collateral deposited by the participants with the CCP. Mark-to-market losses are collected in cash on the same day or latest before trading starts on the next day.

- It is felt that the rating attributed to observance of RCCP 5 by NSCCL, BSE, and ICCL does not adequately reflect their level of observance of the CPSS-IOSCO recommendation. The recent tests undertaken by the CCPs to ascertain the adequacy of the liquid funds available with the CCPs have highlighted that the amount assured by the credit lines and the cash margins are sufficient to ensure timely settlement. Further, irrevocable credit lines with the major clearing banks of the CCPs (BSE and NSCCL) have been established with the objective to manage liquidity risk. With regard to the observation of FSAP team on revocability of credit lines established by CCPs, it may be noted that BSE and NSCCL have informed that their credit lines are irrevocable in nature and the same was informed to the FSAP team *vide* our earlier comments on the report.

Further, the assessment report also suggests strengthening of the stress testing procedures of the CCPs and to improve the liquidity risk management. It may be noted that SEBI has initiated the process to strengthen the stress testing procedures of CCPs.

- SEBI has also suggested upgrading the rating attributed to observance of RCCP 6 by NSCCL, BSE, and ICCL for the following reasons:
  - The bylaws of NSCCL and BSE provide details on situations when a member may be declared as a defaulter, utilization of funds including margins and the settlement guarantee fund in the event of default, etc.<sup>20</sup>
  - CCPs have further detailed the above guidelines through rules, regulations, and circulars.
  - It is observed that the aforementioned suggestion to upgrade the rating has not been considered.

33. **In addition to the above, SEBI has recently constituted a committee to review the extant risk management framework in the cash market segment and derivatives segment.** The concerns, suggestions, and recommendations of the FSAP team with regard to the risk management framework will be forwarded to the committee for their inputs. The committee is expected to *inter alia* review the guidelines on risk management, settlement guarantee fund, segregation of client assets, exposure of CCPs to the few large clearing banks, etc.

---

<sup>20</sup> Chapters XI and XII of the NSCCL Bylaws may be referred at <http://www.nseindia.com/content/press/NSCCLCMbyelaws.pdf>.

## ANNEX I. THE RTGS SYSTEM IN INDIA

### A. RTGS – An Overview<sup>21</sup>

34. **The RBI owns and operates the RTGS system.** The RTGS system went into operation in March 2004, and has grown both in scale and scope over the years. It started with only four banks and now has 125 members. Initially, it only supported inter-bank transactions and now it supports customer-initiated transactions and multilateral net settlement batches as well.

35. **The participants connect to the RTGS system through a proprietary communication infrastructure ‘INFINET.’** Public key infrastructure is used to ensure data security and authentication of payment instructions and messages exchanged. The membership of RTGS is open to all scheduled commercial banks (SCBs), primary dealers, clearing houses and others, as may be decided by the RBI. Only the SCBs are allowed to submit customer-initiated transactions, other institutions can only submit transactions pertaining to them. Clearing houses are only permitted to submit multilateral net settlement batches. Banks and financial institutions can participate as customers of the direct members. The RTGS operations are governed by the RTGS Membership Regulations, 2004 and RTGS (Membership) Business Operating Guidelines, 2004.

36. **The settlement of RTGS transactions takes place in the books of the RBI. For this purpose, members have to open an ‘RTGS Settlement Account’ with the RBI at Mumbai.** This account is to be funded at the beginning of each RTGS processing day from the member’s current account with the RBI, and at the end of the day the balance in the settlement account is transferred back to the current account of the member.

37. **The members submit their transactions into a centralized queue and they can assign priorities for transactions.** Unsettled transactions remain in the queue until the end of the day, when such transactions are dropped. The members can also modify priorities of unsettled transactions during the day. Transactions are settled on a prioritized First-In-First-Out basis. The RBI provides collateralized intraday liquidity to SCBs and primary dealers. The intraday liquidity needs to be squared off by the end of the day. The collateral provided can comprise of the existing reserves—both cash and securities that the institution maintains with the RBI and also additional that the institution can bring in. In addition, the RTGS provides manually triggered multilateral offsetting and gridlock resolution mechanisms.

---

<sup>21</sup> Compiled from RBI Annual report 2010–2011; “India Financial Sector an Assessment,” March 2009, by the Committee on Financial Sector Assessment; RBI responses to the World Bank Global Payment Systems Survey 2010; and, RBI responses to questions from the mission team.

38. **There has been a substantial increase in the volume of transactions settled through RTGS.** In the financial year 2010–2011, the volume and value of the transactions processed through the RTGS were Rs 49.3 million and Rs 484.87 trillion respectively, representing around 25 percent increase in volume and 17 percent increase in value over the previous financial year. The floor for an individual transaction was recently revised to Rs 200,000 from Rs 100,000; i.e., only transactions above this amount can be introduced into the RTGS. The inter-bank clearing at all the RBI centers have been migrated to the RTGS system. Further, multilateral net settlements from CCIL, viz. rupee leg of U.S. dollar-Rs settlement, funds leg of government securities settlement and funds leg of CBLO, and the retail net settlement systems operated by National Clearing Cell, Mumbai, viz., MICR cheque clearing, High Value clearing, NEFT and ECS are settled in RTGS as multilateral net settlement batch files. The liquidity management operations of the RBI are also settled through the RTGS system.

39. **Since its inception until October 2011, the RTGS services were offered free of charge.** From October 2011, the RBI has adopted a full operational costs recovery pricing model comprising of membership fees and per transaction fee with an additional mark-up based on time of transaction initiation. The per-transaction mark-up fee has four tiers with beginning of day being Rs 0 and closer to the business day end being Rs 10 per transaction.

40. **The RTGS system is operated out of a primary datacenter in Mumbai with an in-city disaster recovery datacenter and an off-city datacenter at a different seismic zone.** The replication of data between the primary site and on-city data centre is done on a real time basis. Replication between the primary data centre and the off-city data centre takes place with a small-time lag. The RTGS operations can be switched over to the on-city datacenter and off-site datacenter from the primary data center within 30 minutes and two hours respectively. Periodical disaster recovery drills are conducted as per the policy of the RBI.

## **B. Summary of Past Assessments of the RTGS System<sup>22</sup>**

41. **The RTGS system has been assessed against the CP SIPS by the Committee for Financial Sector Assessment (CFSA) constituted by the government of India, the results were published post peer review in March 2009.** The government of India in consultation with the RBI constituted the CFSA in September 2006, with a mandate to undertake a comprehensive assessment of the Indian financial sector focusing upon stability and development. The RTGS system was also peer-reviewed again by payment systems experts from the Swiss National Bank in April 2009.

---

<sup>22</sup> Compiled from “India Financial Sector an Assessment,” March 2009, by Committee on Financial Sector Assessment; RBI responses to the World Bank Global Payment systems Survey 2010; and, RBI responses to questions from the mission team.

42. **The CFSA assessed 7 of the 10 principles as fully observed and the remaining three as broadly observed.** In addition, three of the four central bank responsibilities were assessed as fully observed and one responsibility was assessed as broadly observed. The three principles and central bank responsibilities assessed as broadly observed were risk management (CP III); security and operational reliability (CP VII); efficiency (CP IX); and compliance with core principles (responsibility B).
43. **The CFSA assessment team noted unmitigated liquidity risk arising from the CBLO settlement files of the CCIL as a reason for assessing the CP III as broadly observed.** The RBI has since then instituted combined settlement of the CBLO and government securities settlement files of CCIL thus reducing the liquidity risk substantially and also has required the CCIL to have higher lines of credit. The subsequent assessment by Swiss National Bank in April 2009 assessed the system as fully compliant on this principle.
44. **The CFSA team cited absence of a remote back-up site and inadequate business continuity procedures for assessing the CP VII as broadly observed.** The CFSA team also noted that the corrective measures were already being planned. These corrective measures have since then been implemented. The subsequent Swiss National Bank assessment recorded this principle also as being fully observed.
45. **The CFSA team noted that while the RBI offered the RTGS free-of-cost to its members the members, however, charged their customers for RTGS transactions, and further that there has been no formal cost-benefit assessment of the RTGS.** The team also cited queuing as the only viable liquidity optimization mechanism for some members due to the lack of right collateral for availing the intra-day liquidity facility provided by the RBI. The subsequent peer-review assessment by the Swiss National Bank acknowledged the positive benefits from the implementation of the RTGS and recommended developing a medium- and long-term strategy for pricing, and also for future developments. The RBI has, as described earlier, implemented pricing changes with effect from October 2011 and also has announced plans to introduce a next-generation RTGS. One of the key features of the proposed new system is the availability of a wide range of liquidity optimization mechanisms. The RBI also noted that SCBs maintain cash and securities to meet their statutory requirements and which can also be used for availing intra-day liquidity.
46. **The CFSA team cited the assessment for CP VII for assessing the central bank responsibility B as broadly observed.**
47. **The recent changes and the two assessments summarized above put together indicate that the RTGS system in general observes all the CP SIPS and the associated central bank responsibilities are being adhered to.**