Chapter III

Financial Sector Regulation and Infrastructure

The progress in the implementation of various reforms in different countries is likely to be guided as much by legacy issues as by a mix of factors such as the stage of financial sector development on the one hand and relative significance and priorities of various reforms for the respective economic systems on the other. In the interim, there is a risk that emerging inconsistencies in regulatory approach in some of the major jurisdictions may create hurdles to the smooth functioning of international financial markets and institutions. In any case, regulatory dialectics are expected to continue as new regulatory gaps emerge.

India has made steady progress in implementation of the G20/ Financial Stability Board (FSB) led global reforms, in various areas viz. Basel – III, OTC derivatives, regulation of systemically important financial institutions, shadow banking sector etc. While staying committed to the reforms agenda, India is conscious of the pitfalls of the 'one size fits all' approach to regulation. Furthermore, it is important to take cognizance of the historical evolution and unique characterisitics of the financial system, while reviewing the legal-regulatory framework for the Indian financial sector.

The recent episodes of some unhealthy practices in the shadow banking sector have underlined the importance of extending the regulatory perimeter and strengthening the supervisory functions. That brings forth the need for enhancing the effectiveness of coordination mechanism with law enforcement agencies to ensure a higher degree of consumer protection in financial sector.

At a time when efforts are on to augment the household financial savings, it is important to enhance the credibility of the financial system by addressing the risks posed by mis-selling of financial products, perverse incentive practices, risks from the technology issues such as erroneous trades, high frequency trading, card / electronic payment transactions etc.

Implementation of Global Regulatory Reforms

Regulatory Dialectics

3.1 Implementation of agreed global reforms is underway in various jurisdictions even as there is a parallel process of rethinking on the architecture of financial regulation. Excessive deregulation and soft touch regulations were among the main factors that contributed to the financial crisis which the reforms intended to address. However, as memories of the crisis are fading, questions are being raised over the proposed measures for reregulation. The rethinking on the reforms veers around the relative benefits of increased capital levels (especially of 'too big to fail' entities) versus the development of the financial markets and the costs of banking business. While the regulatory dialectics will continue, regulators may find it difficult to steer their reforms through such trade-offs (Box 3.1).

Signs of Home-bias in Regulation

3.2 While considerable progress has been achieved in building global consensus on reforms, regulatory chauvinism has been raising its head in certain jurisdictions. The divergent approaches to additional regulatory measures in many advanced jurisdictions might lead to slowdown in financial globalisation. For example, the main proposals under the Volker rules in the US, Vickers report in the UK and Liikanen report in the EU, are essentially based on ring-fencing models. However, there are some important differences in terms of the range of activities that can be undertaken by and between the ring-fenced entities. While the relative merits and de-merits of a home-bias to regulation might be difficult to gauge at this juncture, there are some immediate possible effects of such regulations, such as the Volcker Rule prescriptions affecting the operations of the US banks

Box 3.1: Regulation, Innovation and Regulatory Dialectics

More than three decades ago Edward J. Kane put forth the idea of a dynamic model depicting the interaction between the regulated and the regulators and called it "regulatory dialectics". Under this model, financial market regulation is an endless process with both the regulator and the regulated making alternative moves. Interestingly, way back in the eighties Kane has suggested the following order in which the financial market players in the dialectics model exhibit their average adaptive efficiencies, and concluded that the lag between regulation and avoidance is shorter than the lag between avoidance and regulation.

- Less regulated players move faster and more freely than the more regulated ones
- Private players move faster and more freely than governmental ones
- Regulated players move faster than the regulators
- International regulatory bodies move more slowly and less freely than all other players

In a recent paper[1] Kane opined that "In the US, strategies for dealing with regulation-induced innovation and for disciplining the institutions that recklessly spawned these plagues have been assigned to teams of incentive conflicted and understaffed regulators to work out" and that "Bankers understand the financial safety net as a politically enforceable implicit contract that they have negotiated with their national governments" and "not as something external to their balance sheets". He further feels that "lobbyists create a taxpayer put by creating an excessive fear in the minds of regulators of letting banks' accounting decisions or health be called into question"[2]

in India as they are major players in domestic foreign exchange, government securities and interest rate swap markets.

Indian Approach to Implementation of Reforms

3.3 Domestic factors and policy priorities have continued to guide the Indian approach to financial sector regulation, while adhering to the commitment to implement the agreed global reforms and international standards. The Financial Stability and Development Council (FSDC), through its Sub Committee is coordinating and monitoring the implementation of various reforms, starting with an assessment of extant regulatory framework in the country *vis-à-vis* the proposed reforms. The reforms directly related to and contained within the regulatory purview of the individual sectoral regulators are being handled independently by them; reform areas which need active inter-regulatory/inter agency coordination are being spearheaded by the inter-agency implementation groups focussing on specific areas, *viz.* resolution regime, shadow banking, financial market infrastructure, legal entity identifier, and credit rating agencies. A roadmap indicating the timelines for implementation of these reforms is proposed to be set out by the respective groups.

Basel – III

Effect of Risk Weight Based Approach

3.4 Basel III aims to address the shortcomings in the Basel-II framework, which surfaced during the global financial crisis. One of the main factors for the crisis was the build-up of excessive leverage while maintaining the risk based capital ratio above the regulatory requirement, as some of the banks' internal models facilitated mathematical maneuvering of risk weights. The inherent complexity and opacity involved in the modelling exercise, notwithstanding

[1] Kane, E (2012) "Bankers and Brokers First: Loose Ends in the Theory of Central-Bank Policymaking", accessed from https://www2.bc.edu/edward-kane/Bankers%20and%20Brokers%20First.pdf

[2] Kane, E (2011), "Loose Ends in Capital Regulation: Facing Up to the Regulatory Dialectic", *presentation at International Banking Conference Federal Reserve Bank of Chicago,* November 11, 2011, Chicago

the scrutiny and supervisory validation process, allowed the banks to indulge in aggressive application of risk weights, driven mainly by their business considerations.

3.5 A recent paper[3] has found that the risk-weight density defined as ratio of risk-weighted assets (RWAs) to total assets, of banks is observed to be lower once regulatory approval is granted for the internal ratings-based (IRB) approaches of Basel II. It is further noted that the effect persists for different loan categories, which cannot be explained by flawed modelling or improved risk-measurement alone. These observations have resulted in the additional regulatory prescriptions under Basel III, wherein common equity requirements have not only been more than doubled but also are required to be topped up with capital conservation buffer[4].

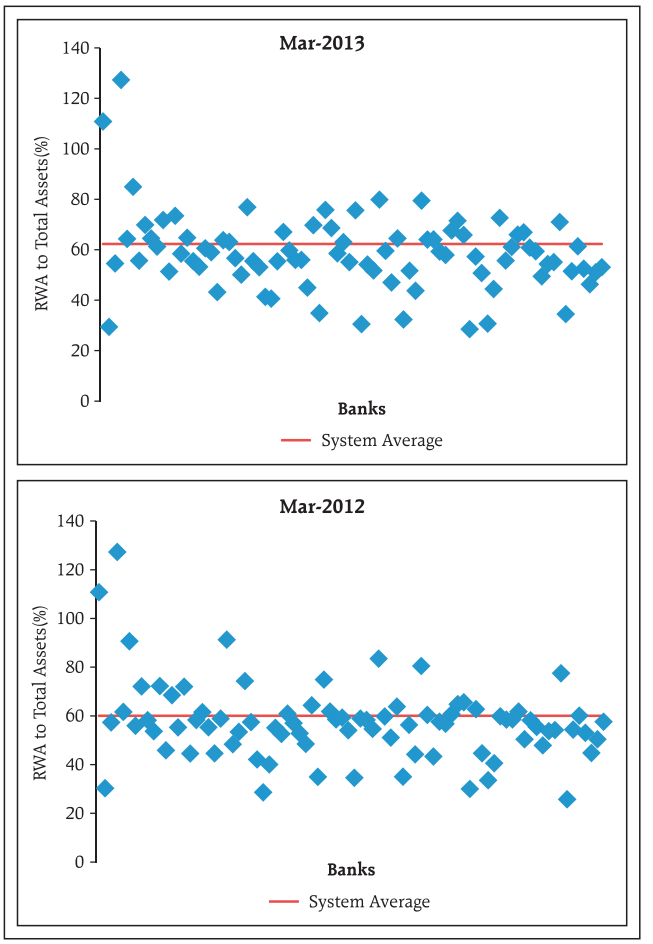
Marginal Increase in RWAs for Indian Banks

3.6 The scatter diagrams of ratio of RWA to total assets[5] of Indian banks show that the average value of the ratio has increased from 60 per cent as at end March 2012 to 62 per cent as at end March 2013 (Chart 3.1). The dispersion in ratio values has also decreased marginally between these two dates. The trends and outliers need to be monitored as more and more banks adopt the internal model based approaches under Basel II and Basel III[6].

Leverage Ratio – 'Back to Basics'

3.7 In order to arrest the tendency to build up excessive leverage, a simple non-risk based leverage ratio has been prescribed under Basel II, which will act as a complementary 'backstop' measure to the risk-based capital requirements. The leverage ratio can be easily understood by all the stakeholders of a

Chart 3.1: RWA Density



Source: RBI Supervisory returns and staff calculations

[3] Maristhasan, M and O, Merrouche (2013), "The Manipulation of Basel Risk-Weights", *CEPR Discussion Paper* -9494, CEPR

[4] Additional capital in the form of a buffer, equivalent to 2.5 per cent of the risk weighted assets, to be drawn down in periods of stress

[5] On-balance sheet assets as well as off-balance sheet assets have been used for calculation.

[6] Section 2.29 of Chapter II of this Report may also be seen.

bank, *viz.*, shareholders, creditors, depositors and regulators and facilitates easier assessment of the capital adequacy of the institution. The Basel Committee is testing the Tier I leverage ratio during the parallel run period from January 1, 2013 to January 1, 2017.

Revised Basel III Guidelines on Short Term Liquidity

3.8 In January 2013, the Basel Committee on Banking Supervision (BCBS) issued the revised guidelines[7] on Liquidity Coverage Ratio (LCR)[8] after incorporating a number of changes in the original version published in December 2010 (Box 3.2). The changes were necessitated to minimise the potential impact of the LCR standard on the financial markets, extension of credit and economic growth. Also, the BCBS has considered a broader timeframe for the introduction of the LCR standard, in view of the significant financial strains persisting in some banking systems.

Reserve Bank's Guidelines on Liquidity Norms

3.9 The Reserve Bank indicated in the guidelines on liquidity risk management issued in November 2012, that the final guidelines on Basel III liquidity standards will be issued once the Basel Committee finalises the relevant framework. The Basel Committee has since issued the guidelines (Basel III: The Liquidity Coverage Ratio and Liquidity Risk Monitoring Tools) in January 2013 and is in the process of finalising the LCR disclosure requirements and the Net Stable Funding Ratio (NSFR)[9]. The Reserve Bank will issue the final guidelines on Basel III liquidity standards and liquidity risk monitoring tools, taking into account the revisions by the Basel Committee. While the enhanced liquidity risk management measures are expected to be implemented by banks immediately, the Basel III liquidity standards, *viz.*, LCR and NSFR, will be binding on banks from January 1, 2015 and January 1, 2018, respectively.

Box 3.2: Major Changes Announced in the LCR Guidelines

Expansion of the range of eligible assets as part of high-quality liquid assets (HQLA) - through the addition of a new category of Level 2B assets which national supervisors may choose to recognise as HQLA in their local LCR regulations.

Recalibration of the stress assumptions for some cash-flow items (including in respect of retail and non-financial corporate deposits and undrawn committed facilities), taking into account industry feedback and actual experience in times of stress.

Affirmation of the usability of the stock of HQLA by banks in times of stress, allowing the LCR to fall below the minimum requirement. Supervisors will need to establish guidance to specify the circumstances for usage of the HQLA, and to ensure appropriate supervisory action in response to such circumstances; and

Adoption of a phase-in arrangement that introduces the LCR as planned on January 1, 2015, but with the minimum requirement set at 60 per cent. This will then rise by 10 percentage points per annum to reach 100 per cent on January 1, 2019. This graduated approach is to ensure that the standard can be implemented without material disruption to the ongoing strengthening of banking systems and financing of economic activity.

[7] Basel III: The Liquidity Coverage Ratio and liquidity risk monitoring tools, January 2013, http://www.bis.org/publ/bcbs238.pdf

[8] The LCR, expressed as a ratio of "Stock of high-quality liquid assets" to "Total net cash outflows over the next 30 calendar days", is one of the two global liquidity standards which form an essential component of the Basel III guidelines. The objective of LCR is to ensure the short-term resilience of banks through an adequate stock of unencumbered high-quality liquid assets to meet contingent liquidity needs for 30 calendar days under an acute liquidity stress scenario.

[9] The NSFR standard is structured to ensure that long term assets are funded with at least a minimum amount of stable liabilities in relation to their liquidity risk profiles.

More Stringent Capital Requirements and Timelines

3.10 The Reserve Bank of India has already introduced Basel III capital regulations, effective April 1, 2013, to be implemented in a phased manner over a period of time ending March 31, 2018. Thus India's schedule for full implementation is nine months ahead of Basel committee's deadline. As a matter of prudence and also to preempt the possibility of the judgemental errors in computing capital adequacy, the Reserve Bank has prescribed a higher minimum Tier I capital, which is one full percentage point above the Basel III requirements (Table 3.1). Pending finalisation of leverage ratio by the BCBS, the Reserve Bank has introduced a minimum Tier I leverage ratio of 4.5 per cent (Tier I capital to total assets ratio), which will be reviewed later based on the final recommendations by the BCBS.

Table 3.1: Capital requirements for Indian banks under Basel III

(as percent of RWAs)

	Basel III standards	RBI prescriptions
Minimum common equity (MCE)	4.5	5.5
Capital conservation buffer (CCB)	2.5	2.5
Total (MCE+CCB)	7.0	8.0
Minimum Tier I Capital	6.0	7.0
Minimum Tier I Capital + CCB	8.5	9.5
Minimum Total Capital	8.0	9.0
Minimum Total Capital + CCB	10.5	11.5

Additional Capital Requirements

3.11 Analytical studies[10] have indicated the likely adverse impact on lending (and growth) due to the higher capital requirements for banks, at the global level. However, the burden from the increase in cost of lending is expected to be offset by the benefits accruing from a more robust banking system. The improved capital ratios of banks are expected to instill more trust among the stakeholders, thereby reducing their cost of capital over a period of time.

3.12 It is expected that the long timeframe to phase in Basel III capital requirements will allow Indian banks to make a smooth and non-disruptive transition. Initial estimates indicate that the additional capital requirements of Indian banks would be to the order of ₹5 trillion, of which non-equity capital will be to the tune of ₹3.25 trillion with the rest to come from equity.[11]

[10] Macroeconomic Assessment Group (2010), "Assessing the Macroeconomic Impact of the Transition to Stronger Capital and Liquidity Requirements", *Final Report of the Group established by the Financial Stability Board and the Basel Committee on Banking Supervision*, Bank of International Settlements.

[11] Subbarao, D (2013), "The Global Financial Crisis and the Indian Financial Sector What Have We Learnt and How Have We Responded?", *Address at the 7th International Banking & Finance Conference 2013 organised by the Indian Merchants' Chamber*, Mumbai, June 5, 2013

Foreign Banks' Presence in India - Subsidiary Structure

3.13 Traditionally Indian approach to financial regulation has been on combining global experience and local circumstances. As regards the global mega banking institutions, 'too complex to regulate' had been a concern for Indian regulators in respect of their Indian operations. The road map laid down by the Reserve Bank in 2005 allowed foreign banks the choice of entering India either as a branch or a subsidiary. Reflecting the post crisis shift in global policy thinking, the current stance of the Reserve Bank is in favour of subsidiarisation model. While some tax related issues such as exemption from stamp duty and capital gains tax-subsequent to the conversion of branches into subsidiaries, have been addressed; certain legal issues are still being resolved.

Operational Risk under Advanced Measurement Approach

3.14 The previous FSR had raised concerns about the difficulties in measuring operational risks and limitations of the standardised approaches. The Advanced Measurement Approach (AMA) for computing capital charge for operational risks is the most risk-sensitive and sophisticated among the three approaches prescribed under the Basel II.

3.15 The Reserve Bank had issued guidelines on AMA in April 2011 and Indian banks could apply for migration to AMA with effect from April 1, 2012. Four banks have, since, approached the Reserve Bank for permission for migration to AMA. Some major challenges being faced by banks in implementation of AMA approaches relate to issues of internal governance, difficulties in determining the relevant business environment and internal control factors (BEICFs), constraints on availability of historical loss data, including both internal and external data, scenario data, and modeling and quantification of operational loss data. Regulatory permissions for use of AMA for operational risk capital computation would be considered based on the assessment of the preparedness of banks in this regard.

Over The Counter Derivatives

3.16 The thrust of the post crisis reforms on Over The Counter (OTC) derivatives is towards standardisation of products, central counter party (CCP) based electronic trading platform and reporting of trades through trade repositories (TRs). Opacity of products, excessive bilateral exposures coupled with insufficient collateral and the interconnectedness amongst market participants are the main risks in the OTC derivatives markets, globally. FSB is currently monitoring the progress of implementation of these reforms within the G20 nations.

Status of Implementation in India

3.17 In India, the small size of the OTC derivatives market, low level of complexity in products, orderly development and regulation of market have ensured that there are no major concerns with regard to systemic risks from OTC markets. The OTC derivative products were introduced in a phased manner keeping in view the hedging needs of the real sector. The current regulations mandate that validity of any OTC derivative contract is contingent on one of the parties to the transaction being a regulated entity. The Clearing Corporation of India Limited (CCIL) provides the clearing and settlement of transactions in government securities, money market instruments and foreign exchange products. Reserve Bank, as the regulator of the OTC derivative markets, has focussed on improving transparency and reducing counterparty risk in the OTC derivatives markets and has fostered development of robust market infrastructure for trading, settlement and reporting of transactions. As India is committed to implementation of the G20 / FSB reforms, reasonable progress has been made in implementing the OTC derivative reform measures.

Standardisation of Products

3.18 The process of standardisation of OTC derivative products is planned to be undertaken gradually. Credit Default Swaps (CDS) transactions are standardised in terms of documentation, coupon, coupon payment date *etc.* The standardisation of Interest Rate Swap (IRS) contracts is aimed to be achieved in terms of minimum notional principal amount, tenors, trading hours, settlement calculations etc., in consultation with the market participants. As the first step, standardisation has been made mandatory for INR Mumbai Inter Bank Offer Rate (MIBOR)-Overnight Index Swap (OIS) contracts, from April 1, 2013. Other benchmarks in IRS are proposed to be standardised in subsequent phases. Foreign exchange derivatives are 'plain vanilla' and structures go by market convention.

Centralised Clearing of Foreign Exchange and Interest Rate Forward Trades

3.19 There is a guaranteed centralised clearing arrangement for settlement of USD-INR forward transactions. Mandatory central clearing of foreign exchange forwards is proposed to be introduced shortly. The IRS and Forward Rate Agreements (FRA) in the Indian rupee, which form the bulk of interest rate derivative transactions in the market, are currently being centrally cleared in a non-guaranteed mode. Although it is not mandatory for market participants to clear their trades through CCP, more than 97 per cent of fund flows in IRS/FRA are being settled through CCIL. The CDS market in India is still developing and it may take more time to achieve the necessary market activity to support central clearing of CDS transactions. The risk management framework and procedural aspects proposed by the CCP and the issues relating to exposure norms for derivative transactions are being examined.

3.20 Electronic platforms are available for transactions involving repos in government securities, IRS, FRA and foreign exchange forwards. The report[12] of a Working Group set up by the Reserve Bank has recommended, among other things, introduction of an electronic swap execution facility for the IRS market under a CCP, which may provide guaranteed settlement of trades executed through the electronic platform. The modalities involved in introducing these features are presently under examination.

3.21 As per existing regulatory guidelines, banks and primary dealers report IRS/FRA and foreign exchange derivative transactions on CCIL reporting platform. All CDS trades (including client trades), by market makers are required to be reported on CCIL's reporting platform. Reporting of all major OTC foreign exchange derivatives to the TR has commenced since July 2012. Also, the reporting of client trades in foreign exchange derivatives, under suitable confidentiality protocols, has commenced from April 2013. Presently, client trades in IRS are being reported by banks to the Reserve Bank and steps are being taken to institute the reporting framework for the client trades in respect of interest rate derivatives.

Risks from Extra Territorial Regulatory Jurisdiction of Regulation

3.22 The US and European laws dealing with OTC derivatives reform have raised concerns over possibilities of extra territorial regulatory jurisdiction leading to regulatory clashes and disruptions for market activity. For instance, European Market Infrastructure Regulation (EMIR) and the Commodity Exchange Act (CEA)-as modified by the Dodd-Frank Act, contain prescriptive rules that may prevent European/US banks from participating in third-country clearing houses that have not applied for recognition by the European Securities and Markets Authority (ESMA) or that are not registered as a derivatives clearing organisation (DCO) as per Commodity Futures Trading Commission (CFTC) regulations. While the discussions are still on, the uncertainty over the inconsistencies between EU and US rules, the process and timeline for equivalence assessments may affect the functioning of international financial markets and

[12] Working Group on Enhancing Liquidity in Government Securities and Interest Rate Derivatives Markets

may have an impact on progress of implementation of G20 reform agenda.

Margins for Non-Centrally Cleared OTC Derivatives

3.23 The international standards on margining for non-centrally cleared OTC derivatives are in the process of being finalised. A Working Group set up by the BCBS and International Organisation of Securities Commission (IOSCO) to develop consistent global standards for margin requirements has submitted its draft report for consultation. One of the key principles being proposed for all covered entities (*i.e.* financial firms and systemically-important non-financial entities) that engage in non-centrally-cleared derivatives is that they must exchange initial and variation margin as appropriate to the counterparty risks posed by such transactions. However, the actual quantum of the margin threshold may have to be left to national discretion to suit the domestic financial markets.

Demand for Collateral

3.24 The improved standards for margin requirements and the shift towards central clearing of standardised OTC derivatives contracts may contribute to a structural increase in the demand for collateral assets. At present there is no evidence or expectation of widespread scarcity of safe assets in global financial markets. However, the temporary supply-demand imbalances and associated price changes are expected to generate powerful incentives for endogenous private sector responses such as broader eligibility criteria for collateral assets in private transactions, increased collateral re-use, collateral transformation *etc.* While such responses may help mitigate any shortage of collateral assets, they could also result in increase in interconnectedness, pro-cyclicality and financial system opacity as well as higher operational, funding and rollover risks. These risks can be addressed by measures such as increased transparency through market disclosure and better regulatory reporting, stress-testing, risk-adjusted deposit insurance, prudential limits on asset encumbrance *etc.*

3.25 Asset encumbrance is very low in Indian banking system due to the fact that the funding of commercial banks in India is largely from unsecured and stable public deposits. Banks are required to maintain a portion of their assets in liquid unencumbered assets including sovereign securities to comply with the Statutory Liquidity Ratio[13] (SLR). A relatively lower use of securitisation also limits the extent of encumbrance.

Legal Entity Identifier System

3.26 The global financial crisis, among other things, underscored the need for establishing a uniform global system for legal entity identification to support aggregation of risk positions and financial data. FSB took up the project on a global Legal Entity Identifier (LEI) system to provide support to the objectives of efficient assessment of micro-prudential and macro-prudential risks. LEI is a form of legal entity aggregation that allows authorities to view and analyse the potential systemic risk arising from OTC derivatives transactions or positions, in one or more products, attributable to a group of legal entities sharing common affiliation. The data attributed to such an LEI group can assist authorities in assessing concentration and contagion risk associated with a group and its counterparties. The LEI system is expected to help facilitation of orderly resolution, containing market abuse and curbing financial fraud, and enabling higher quality and accuracy of financial data overall.

3.27 In January 2013, the global LEI system was formally launched with the establishment of the Regulatory Oversight Committee (ROC). The Reserve Bank has joined the ROC of the global LEI system and has set up a Steering Committee, to carry out a detailed study of the requirements of the project for

[13] Banks in India are required to maintain, at the close of business every day, a prescribed minimum SLR, the ratio of liquid assets (in the form of cash, gold and un-encumbered approved securities) to the Net Demand and Time Liabilities.

India. Apart from the OTC derivatives markets, the LEI system may also help in achieving a more robust credit information system in India.

Systemically Important Financial Institutions

3.28 Regulation and supervision of large and diversified financial institutions referred to as Systemically Important Financial Institutions (SIFIs) have assumed significance considering the system wide damage that their failure could potentially cause. India does not, at present, have any Globally Systemically Important Banks (G-SIBs) figuring in the list of 28 G-SIBs[14]. However, there are banks and other types of financial intermediaries which may not be significant from an international perspective, but could still have an important impact on India's domestic financial system and economy, as compared to non-systemic institutions.

3.29 Recognising the importance of such entities, the FSB and the standard setting bodies are extending the SIFI framework to other systemically important financial institutions, in respective areas. For the banking system, the FSB and BCBS have finalised a principles-based, minimum framework for addressing domestic systemically important banks (D-SIBs) (Box 3.3). According to FSB's proposed timelines, the national authorities should begin to apply requirements to banks identified as D-SIBs in line with the phase-in arrangements for the G-SIB framework, *i.e.* from January 2016.

Consolidated Supervision of Financial Conglomerates in India

3.30 In India such big financial groups are identified as Financial Conglomerates (FCs), on the basis of their significant presence in two or more market segments (Banking, Insurance, Securities, Non-Banking Finance and Pension). In an important step towards a more effective consolidated supervision of the FCs, the four financial sector regulators in India, *viz.* Reserve Bank of India (RBI), Securities and Exchange Board of India (SEBI), Insurance Regulatory and Development Authority (IRDA) and Pension Fund Regulatory and Development Authority (PFRDA), have signed a Memorandum of Understanding (MoU) for co-operation in the field of consolidated supervision and monitoring of FCs.

3.31 An Inter-Regulatory Forum (IRF) has been constituted by the Sub Committee of the FSDC to strengthen the monitoring of FCs. The IRF is structured as a college of domestic supervisors by adopting the lead/principal regulator model, with a mandate to carry out two major functions *viz.* developing supervisory cooperation for effective consolidated supervision of FCs and assessing the risk to systemic stability due to activities of the FCs. The IRF, on a special case basis, may identify one or more 'systemically important financial groups' having 'significant/dominant' presence in one financial market segment and a 'major/substantial' presence in one more market segment for the purpose of inclusion in the FC Monitoring framework. The respective regulators are in the process of devising the criteria for entities under their jurisdictions, considering various indicators.

Cross Border Co-operation in Supervision

3.32 The arrangements for sharing of information for improved cross border banking supervision and cooperation, in respect of internationally active banks, are being formalised through the signing of bilateral Memoranda of Understanding (MoU) by the Reserve bank with overseas supervisory counterparts (as "Home" and "Host" supervisors). This channel assumes greater importance as the cross border operations of Indian banks are expanding. The MoU provides a formal, yet legally non-binding gateway of information between the supervisors on the health of the supervised entities, coordination during on-site examinations and times of crises, while preserving the confidentiality of information shared. The MoU does not override the laws of the land of either supervisor but only tries to build an environment of supervisory cooperation and coordination in complete adherence to such laws. Reserve Bank has executed such MoU with 16 overseas supervisors and proposals

[14] Annex 1 to FSB's Update of group of global systemically important banks (G-SIBs) November 2012

Box 3.3: Extension of SIFI framework to D-SIBs

The principles proposed for D-SIBs[15] focus on the higher loss absorbency (HLA) requirement for D-SIBs.

The 12 principles for D-SIB framework are set out below:

Assessment methodology

Principle 1: National authorities should establish a methodology for assessing the degree to which banks are systemically important in a domestic context.

Principle 2: The assessment methodology for a D-SIB should reflect the potential impact of, or externality imposed by, a bank's failure.

Principle 3: The reference system for assessing the impact of failure of a D-SIB should be the domestic economy.

Principle 4: Home authorities should assess banks for their degree of systemic importance at the consolidated group level, while host authorities should assess subsidiaries in their jurisdictions, consolidated to include any of their own downstream subsidiaries, for their degree of systemic importance.

Principle 5: The impact of a D-SIB's failure on the domestic economy should, in principle, be assessed having regard to bank-specific factors: (a) Size; (b) Interconnectedness; (c) Substitutability/financial institution infrastructure (including considerations related to the concentrated nature of the banking sector); and (d) Complexity (including the additional complexities from cross-border activity). In addition, national authorities can consider other measures/data that would inform these bank-specific indicators within each of the above factors, such as size of the domestic economy.

Principle 6: National authorities should undertake regular assessments of the systemic importance of the banks in their jurisdictions to ensure that their assessment reflects the current state of the relevant financial systems and that the interval between D-SIB assessments not be significantly longer than the G-SIB assessment frequency.

Principle 7: National authorities should publicly disclose information that provides an outline of the methodology employed to assess the systemic importance of banks in their domestic economy.

Higher loss absorbency

Principle 8: National authorities should document the methodologies and considerations used to calibrate the level of HLA that the framework would require for D-SIBs in their jurisdiction. The level of HLA calibrated for D-SIBs should be informed by quantitative methodologies (where available) and country-specific factors without prejudice to the use of supervisory judgment.

Principle 9: The HLA requirement imposed on a bank should be commensurate with the degree of systemic importance, as identified under Principle 5. In the case where there are multiple D-SIB buckets in a jurisdiction, this could imply differentiated levels of HLA between D-SIB buckets.

Principle 10: National authorities should ensure that the application of the G-SIB and D-SIB frameworks is compatible within their jurisdictions. Home authorities should impose HLA framework for dealing with D-SIBs requirements that they c alibrate at the parent and/or consolidated level, and host authorities should impose HLA requirements that they calibrate at the sub-consolidated/subsidiary level. The home authority should test that the parent bank is adequately capitalised on a standalone basis, including cases in which a D-SIB HLA requirement is applied at the subsidiary level. Home authorities should impose the higher of either the D-SIB or G-SIB HLA requirements in the case where the banking group has been identified as a D-SIB in the home jurisdiction as well as a G-SIB.

Principle 11: In cases where the subsidiary of a bank is considered to be a D-SIB by a host authority, home and host authorities should make arrangements to coordinate and cooperate on the appropriate HLA requirement, within the constraints imposed by relevant laws in the host jurisdiction.

Principle 12: The HLA requirement should be met fully by Common Equity Tier 1 (CET1). In addition, national authorities should put in place any additional requirements and other policy measures they consider to be appropriate to address the risks posed by a D-SIB.

[15] A framework for dealing with domestic systemically important banks by BCBS – October 2012

in respect of 28 other overseas supervisors are under discussion.

3.33 There is a need for supervisory emphasis on domestically significant institutions, including banks, especially those having substantial cross-border operations. Supervisory Colleges have been established for two big Indian banks, as part of the efforts to increase the supervisory intensity for such institutions.

Resolution Regime

3.34 The previous FSRs have mentioned about the absence of comprehensive/separate legal-institutional arrangement for resolution of different types of financial sector entities in India. Currently, the resolution of banks is facilitated under the Banking Regulation (BR) Act, 1949 which has provisions for compulsory or voluntary mergers. The work on implementation of reforms on resolution regime has started with an examination of existing legislative arrangements for resolution of various types of financial sector entities (including commercial banks, cooperative banks, insurance companies *etc.*). A Working Group was set up under the direction of the FSDC Sub Committee on a comprehensive resolution regime for all types of financial institutions in India.

Shadow Banking

3.35 Shadow banking entities played a significant role during the global financial crisis, due to their interconnectedness with the rest of the financial system. It is, therefore, imperative to identify and manage any risks that the shadow banking may pose to the rest of the financial system. The FSB led reforms are mainly focused on risks from banks' interactions with other financial institutions, risk from money market mutual funds (MMMFs), securitisation, and securities lending and repos.

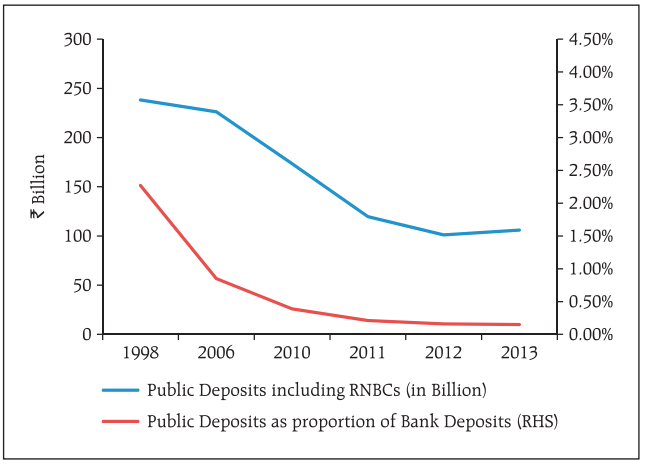
Role of shadow banking in India

3.36 The reach of the banking sector to efficiently cater to all segments of population in far flung areas is limited and to some extent entities in non-bank sector have been filling this gap. Some parts of this non-bank sector [such as the Non-Banking Finance Companies (NBFCs) under the regulation of the Reserve Bank] are regulated in India, although less tightly than the banking system. However, a large part of the non-bank sector exists in the form of unincorporated entities which may be considered as part of shadow banking system, going by the spirit of FSB definition. In the light of their useful economic function, especially in countries like India where financial inclusion is a national priority, there is need for a different approach to regulation of such non-bank entities, while pursuing the objective of consumer protection alongside that of financial stability.

Deposit Taking and Other Systemically Important NBFCs

3.37 The regulatory focus of RBI has primarily been on protection of depositors' interest, and hence on deposit taking NBFCs (referred as NBFC-D). The regulatory measures over time, especially since 1997-98 have resulted in consolidation of the NBFC sector reflecting in a reduction in the number of deposit taking NBFCs. The quantum of the public deposits of NBFCs absolute terms as well as in terms of proportion of the bank deposits has also decreased substantially (Chart 3.2). As many NBFCs stopped their deposit taking activities, the scale of operations of non-deposit

Chart 3.2: Public Deposits of NBFCs[16]

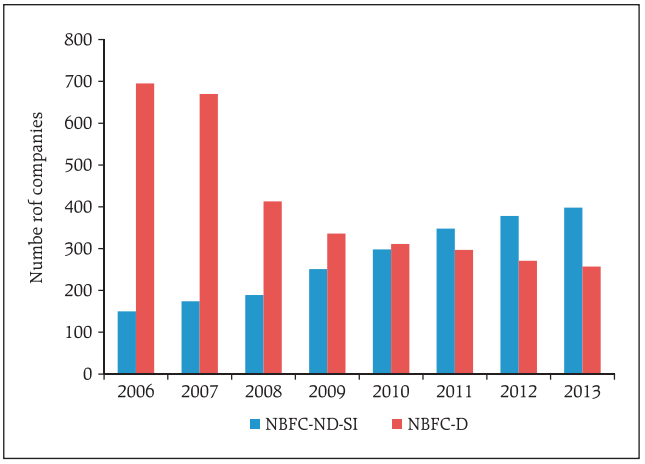


Source: RBI Supervisory Returns

[16] Public deposits of NBFC-D and Residuary Non-Banking Companies (RNBCs) are included. RNBCs belong to a separate class of NBFCs, and have as their principal business, the receiving of deposits, under any scheme or arrangement or in any other manner *and not* being Investment, Asset Financing, Loan Company.

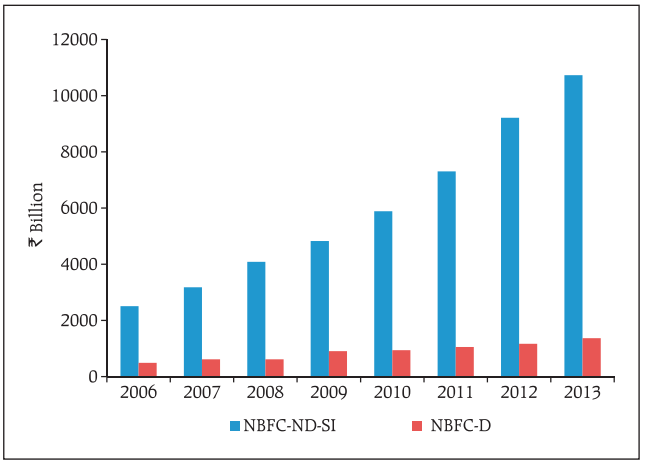
taking companies increased during this period. In view of these trends and the changing profile of the NBFC sector, the Reserve Bank has subsequently extended the regulatory requirements applicable to NBFC-D category (in respect of capital adequacy and credit concentration norms) to the non-deposit taking but systemically important NBFCs (NBFC-ND-SI) also. Charts 3.3 and 3.4 give the trends in number of companies and total assets of NBFCs in the categories of NBFC-D and NBFC-ND-SI.

Chart 3.3: Number of Companies- NBFC-D and NBFC-ND-SI



Source: RBI Supervisory Returns

Chart 3.4: Total Assets of NBFC-D and NBFC-ND-SI



Source: RBI Supervisory Returns

Proposed Regulatory Changes for NBFC Sector

3.38 The NBFC sector is presently in the process of a regulatory overhaul. The Working Group on NBFCs in its report submitted in August 2011 has made far reaching recommendations; both to ensure the resilience of the NBFC sector and to contain risks emanating from the sector in the context of overall financial stability. The draft guidelines based on recommendations of the Working Group have been placed in public domain for comments in December 2012 and the final guidelines are expected shortly. The major recommendations can broadly be divided into four categories, namely (i) Entry Point norms, Principal Business Criteria, Multiple and Captive NBFCs; (ii) Corporate Governance including Disclosures, (iii) Liquidity management and (iv) Prudential regulation including capital adequacy, asset provisioning, risk weights for certain sensitive exposures, and restrictions on deposit acceptance.

Money Market Mutual Funds

Low Retail Participation

3.39 In India, MMMFs and liquid fund schemes are regulated within the ambit of SEBI (Mutual Funds) Regulations 1996. The MMMFs are those mutual funds which are set up with the objective of investing exclusively in money market instruments. The Liquid mutual fund schemes can make investment in / purchase debt and money market securities with residual maturity of up to 91 days. Presently, the MMMFs and liquid funds are mainly used by the

institutional investors as an investment vehicle which is accessible, convenient and cost-effective with protection of the principal and liquidity. At the end of March, 2013, the net assets under management (AUM) of MMMFs/Liquid funds in India was around ₹934 billion, with 98 per cent of the contributions coming from non-retail investors. The MMMFs account for 19 per cent of the total AUM of the debt mutual funds which, in turn, form 71 per cent of the whole mutual fund sector.

Absence of Constant Net Asset Value Feature

3.40 As constant Net Asset Value (NAV) MMMFs do not exist in India, the risks observed in some advanced jurisdictions, especially the US, are not relevant. The valuation norms have been reviewed by SEBI and accordingly the overarching and overriding principles of fair valuation were outlined in a notification issued in February 2012. This included valuation of securities of all maturities reflective of the realisable value/ fair value. All debt and money market securities across maturities are to be valued at the weighted average price at which they are traded on the particular valuation day and in case such securities are not traded on a particular valuation day then the securities with residual maturity up to 60 days are to be valued on amortisation basis and securities with residual maturity over 60 days have to be valued at benchmark yield/ matrix of spread over risk free benchmark yield obtained from agencies entrusted for the said purpose, provided such valuation is be reflective of the realisable value/ fair value of the securities/assets.

Liquidity Risks of Short Term Debt Funds - Regulatory Measures

3.41 The liquid funds and other short term debt funds in India had faced severe liquidity strain from redemption pressures, as an impact of the global financial crisis during 2008-09. The Reserve Bank had facilitated a short term liquidity window to mutual funds to help ease liquidity pressures. Subsequently, a number of prudential measures were put in place to help the mutual funds withstand the impact of such events of liquidity stress in future.

3.42 These regulatory measures included the restriction on investments of Liquid funds to instruments of up to 91 day residual maturity (as against 182 days permitted earlier), with a view to addressing the asset liability mismatches in open ended schemes. The listing of close ended mutual fund schemes has been made mandatory to provide investors with an exit option. Also, the close ended schemes are allowed to invest in securities of residual maturities not exceeding the maturity of the scheme itself, for a better asset liability management. The provisions regarding uniform cut-off timings for applicability of NAV of mutual fund schemes/plans were modified. The application for investment has to be recognised only after the funds are available for utilisation before the cut-off time without availing any credit facility. Further, to address the credit and concentration risks, no mutual fund scheme is allowed to invest more than thirty percent of its net assets in money market instruments of an issuer, except for investments in Government securities, treasury bills and collateralised borrowing and lending obligation (CBLO).

Circular Flow of Funds between Banks and Liquid Mutual Funds

3.43 In recent years, banks' investments in liquid schemes of mutual funds have grown manifold[17]. The liquid schemes continue to rely heavily on institutional investors such as commercial banks whose redemption requirements are likely to be large and simultaneous. On the other hand, these mutual funds are large lenders in the over-night money market instruments such as CBLO and market repo, where banks are large borrowers. The various schemes of mutual funds also invest heavily in certificates of deposit (CDs) of banks.

[17] Section 2.12 of Chapter II of this Report may also be seen.

Such circular flow of funds between banks and mutual funds could lead to systemic risk in times of liquidity stress. With a view to address these risks, the Reserve Bank has stipulated that the total investment by banks in liquid/short term debt schemes of mutual funds with weighted average maturity of portfolio of not more than 1 year will be subject to a prudential cap of 10 per cent of their net worth as on March 31 of the previous year.

Regulatory Gaps in Collective Investment Schemes

3.44 Some instances have come to light of certain individuals / companies raising money from public by taking advantage of the lack of clarity about in the legal provisions and roles of different agencies like Ministry of Corporate Affairs (MCA), SEBI, RBI, State Governments, and Registrar of Co-operative Societies *etc.* This highlights the need for extending the regulatory perimeter and also plugging the regulatory gaps in the existing framework.

Role of State Governments and Law Enforcement Agencies

3.45 As an immediate interim measure to address the regulatory gap, there is greater focus on information sharing and increased co-ordination among the existing regulators, with an active role for the State Governments. There is also a need for a greater involvement of and coordination with the law enforcement agencies, through the platforms like State level Coordination Committees (SLCC). However, despite all efforts to fill regulatory gaps, the risk appetite and vulnerability of the individual investors to succumb to promises of high returns are difficult to curb. The regulators have taken measures, from time to time, to caution the public and investors to avoid getting lured by various schemes promising fast and high rates of return.

Market conduct and Consumer protection

3.46 Intense competition and perverse incentive structures have frequently led to widespread mis-selling of products and misdirection of clients to inappropriate and risky investments by financial service providers. The instances of mis-selling of products have been observed across customer groups, such as faulty derivatives to corporates (for hedging their exposures) or inappropriate insurance products to individuals. The reputation risk for individual institutions indulging in such activities for short term gains is high. Against this backdrop, regulation is increasingly tilting towards strengthening the aspects of consumer protection and market conduct in the financial sector.

Bancassurance

Mis-selling

3.47 Under, 'bancassurance' model, banks in India have been permitted to undertake insurance business as agents of insurance companies subject to certain conditions and without any risk participation since August 2000. As announced in the Union Budget 2013-14, it is proposed to permit banks to act as insurance brokers so that the entire network of bank branches will be utilised to increase the penetration of insurance services in the country. As insurance brokers the banks will be able to sell insurance products of any company, as against the restriction of only one company applicable under the agent-principal model.

Use of unfair and restrictive practices

3.48 While banks are well suited to distribute insurance products because of their wide network, several issues have arisen regarding their conduct in the process, generally pertaining to mis-selling and certain restrictive / unfair practices (such as linking provision of locker facilities to purchase of insurance products, selling of unsuitable and/or multiple policies *etc.*).

3.49 It was observed that in some cases, banks did not have clear segregation of duties of marketing personnel from other branch functions and bank employees were directly receiving incentives from

third parties such as insurance companies, mutual funds and other entities for selling their products. In some cases direct incentives to the bank staff have created distortions in the sales structure.

3.50 According to IRDA's Annual Report 2011-12 the maximum complaints in life insurance related to mis-selling. They also mainly pertained to the private sector, though LIC leads the business with over 70 per cent share. The type of complaints were mainly in the nature of unfair trade practices and mis-selling of products (*e.g.* malpractices, actual product sold being different from what was proposed, single premium policy being issued as annual premium policy, surrender value being different from projected, free look refund not paid, misappropriation of premiums *etc*). As a significant portion of private life insurance companies use banks as their corporate agents, there seems to be an urgent need to revisit the marketing and sales strategies used by the banks in pushing insurance products, especially since insurance is among the more complex of financial products for the common man to fully comprehend. Recently, banks in the UK have also been penalised for mis-selling of payment protection insurance to their lending/ credit card customers.

3.51 The limits on commission structure and the operating expenses of insurance companies are laid down in the Insurance Act, 1938 and the Rules framed there under. The compliance with these limits is being monitored by IRDA on an annual basis, and instances of breach are dealt with through penal action. In recent past, there have been instances of both insurance companies as also the corporate agents (banks) being penalised.

3.52 Banks have been advised to disclose to the customers, details of all the commissions / other fees (in any form) received, if any, from the various companies for marketing / referring their products, even in cases where the bank is marketing/ distributing/ referring products of only one company. As a further step in enhancing transparency, banks have also been advised to disclose details of fees / remuneration received in respect of the bancassurance business undertaken by them in the 'Notes to Accounts', from the year ending March 31, 2010. Similar disclosures and codes of conduct for insurance companies have been prescribed by IRDA also. The IRDA is working with the RBI to ensure that the disclosure made by the banks acting as corporate agents, in the Notes to Accounts are enhanced to bring about transparency in the nature of payments received by them.

Mis-selling in Wealth Management and Other Related Activities

3.53 Wealth Management Services (WMS) generally include referral services, Investment Advisory Services (IAS) and Portfolio Management Services (PMS). In India, banks are permitted to offer very limited services, mainly advisory and referral services.

3.54 Grievances relating to mis-selling, whereby products that are unsuitable for a particular customer, either for commission-linked reasons or lack of knowledge, clarity regarding accountability between the product issuer and the advisor/portfolio manager, need to be addressed by improving consumer protection measures. The issues have been widely debated in the inter-regulatory technical group of the FSDC Sub Committee and a review of the extant guidelines on wealth management services offered by banks is being carried out. The aspects on marketing and distribution of third party financial products by banks also need to be factored in while issuing comprehensive guidelines on Wealth Management Services by banks.

3.55 The recently notified SEBI (Investment Advisers) Regulations, 2013, contain detailed norms for risk profiling and suitability, creation of a Separately Identifiable Department or Division (SIDD) for IAS, detailed disclosure to the clients including any conflicts of interest, redressal of investor grievances, *etc.* Such norms are expected to address mis-selling risks to a certain extent.

Need for Stronger Operational Procedures

3.56 All financial sector entities need to comply with the extant KYC, which are meant for safeguarding the financial system against the possibility of its use for money laundering. There is a move for simplifying the KYC guidelines and also towards achieving a uniform basic KYC structure for various segments of the financial system.

3.57 In the wake of recent episodes reported in the media, the Reserve Bank undertook investigations to examine the practices at certain banks involving structuring of transactions to aid tax evasion and fraudulent transfer of funds. Some of these practices related to sale of third party products such as insurance and wealth management services which have been discussed in previous sections. The main findings point towards laxity in adherence to the Know Your Customer / Anti Money Laundering (KYC/AML) guidelines by banks.

3.58 The areas where banks are required to adopt more focussed strategies to ensure adherence to KYC/AML measures include, among other things, monitoring large value transactions in newly opened accounts, operational control over multiple customer identities for the same customer, enhanced skill sets in dealing with money laundering alerts, quicker follow-up and escalation of suspicious transactions. Such measures also relate to accelerated review of risk categorisation at prescribed intervals, need for review of alert thresholds in AML monitoring systems in tune with changing dimensions of transactions in various accounts. Further, the banks need to address the concerns on tackling technological issues involved in updating changes in customers' details over phone lines or through internet banking leading to frauds, diligent adoption of single and enhanced due diligence (SDD/EDD) measures for ascertaining and updating KYC details of customers, dealing with issues relating to splitting of transactions with a view to avoid anti-money laundering checks *etc.*

3.59 The supervisory efforts of the Reserve Bank have been combined with 'guidance' in the form of specific circulars and the broad regulatory guidelines issued to the banks on the subject. Such guidance has covered aspects relating to (i) IT initiatives to be taken by banks for enabling appropriate risk based transaction monitoring mechanism, (ii) dedicated KYC Audits, (ii) recommending operational aspects relating to risk profiling, (iv) fictitious offers of funds/fake lottery rackets/phishing *etc.*

Technology Risks[18] in the Changing Business Environment

3.60 Alongside the rapidly increasing use of technology in banking and finance in recent years, the risks emanating from abuse and failure of technology have also risen. The recent cases of cyber frauds at some banks have highlighted the increasing complexity, sophistication and diversity in the risks to the security and integrity of technology based banking and finance. Globally, the use of online and mobile technologies is driving the proliferation of virtual banks, virtual currencies (Box 3.4) and provision of banking and payment services by un-licensed entities. While leveraging on technology has resulted in many benefits, especially, in extending the reach of the financial services, these developments pose challenges in the form of regulatory, legal and operational risks.

3.61 One of the main risks related to the information technology (IT) systems in banks relates to the obsolescence of the technology and processes built according to the needs of the then prevailing regulatory-cum-business environment. Therefore, a

[18] Technology risks relate to any adverse outcome, damage, loss, disruption, violation, irregularity or failure arising from the use of or reliance on computer hardware, software, electronic devices, online networks and telecommunications systems. These risks can also be associated with systems failures, processing errors, software defects, operating mistakes, hardware breakdowns, capacity deficiencies, network vulnerabilities, control weaknesses, security shortcomings, internal sabotage, espionage, malicious attacks, hacking incidents, fraudulent conduct and defective recovery capabilities.

Box 3.4: Virtual Currency Schemes

A virtual currency can be defined as a type of unregulated, digital money, which is issued and usually controlled by its developers, and used and accepted among the members of a specific virtual community[19]. The virtual currency schemes provide a financial incentive for virtual community users to continue to participate and are able to generate 'float' revenue for their owners. They also provide a high level of flexibility regarding the business model and business strategy for the virtual community.

There are different kinds of virtual currency schemes in vogue at present. While for some kinds of virtual currencies there is no interaction or exchangeability with the 'real' currency, for others the relationship with the real money, goods and services is more active and direct. The 'closed' virtual currency schemes, which are mostly used in online games, have no connection with the real money. Some virtual currency schemes offer the facility of a (mostly unidirectional) conversion rate for purchasing the virtual currency, which can subsequently be used to buy virtual goods and services. Under another category of virtual currency schemes which provide for bidirectional flows, the virtual currency acts like any other convertible currency, with two exchange rates (buy and sell). In such schemes, the virtual currency can be used to buy not only the virtual goods and services, but also to purchase real goods and services. Virtual currency schemes are different from electronic money schemes as the virtual currency being used as the unit of account has no physical counterpart with legal tender status.

A virtual currency scheme may also be designed to compete with traditional currencies used for international trade. The absence of a distinct legal framework implies that the traditional rules under financial sector regulation and supervision, including the institution of central banks, are not involved in the case of virtual currency. Also, the unregulated link between virtual currency (if permitted), and traditional currency with a legal tender status poses challenges as the complete control over the differently denominated virtual currency is given to its issuer, who governs the scheme and manages the supply of money at will.

The regulators are studying the impact of online payment options and virtual currencies to determine potential risks associated with them.

review of suitability of the existing IT infrastructure is required to be carried out to assess the capability of the IT systems to handle the changing demands of business and compliance functions in the evolving environment.

Need for Review of IT Risk Management Framework

3.62 Globally, the management of IT systems is being increasingly outsourced. There is a wide spread trend of further sub-contracting of some of the sub-processes by the primary outsourcer to third parties, which exposes the clients to transfer risks. The legal issues, pricing and service level agreement (SLA) terms with the outsourced vendor play an important role in case of a dispute with the outsourced vendor who has the responsibility of completing the assigned responsibility. With this, risks relating to security and reputation come to the fore, which need to be dealt with carefully.

3.63 In view of the risks arising out increased use of technology, there is a need for banks to implement systems and processes to establish a robust technology risk management framework. There is a need for these institutions to put in place adequate risk mitigation techniques and security controls to ensure business continuity. Further, banks and regulators have to play a proactive role in increasing the financial awareness of their customers, especially under the IT environment. The regulators have taken various measures to address the emerging technology risks in their respective areas, *e.g.* the Reserve Bank has issued additional guidelines[20] to the banks on securing card transactions and electronic payment transactions.

[19] ECB (2010), "Virtual Currency Schemes", *Report by the European Central Bank*, October

[20] http://rbi.org.in/scripts/NotificationUser.aspx?Id=7874&Mode=0

Financial Market Infrastructure

Compliance with International Standards in Financial Market Infrastructure

3.64 India is committed to the adoption and implementation of the international standards and best practices in payment systems including, the new Committee on Payment and Settlement Systems (CPSS)-IOSCO standards Principles of Financial Market Infrastructures (PFMIs). The oversight framework for CCIL is proposed to be drawn up based the PFMIs and CCIL was assessed using the assessment methodology of the PFMIs. As found from this exercise, CCIL has implemented several measures to strengthen its risk management framework which include complete revamp of the margining system in Securities Segment, implementation of changes to forex forwards regulations pertaining to exit option for members, limited liability for members and computation of default fund *etc.*

3.65 The Securities and Exchange Board of India (SEBI) has also examined the policies related to technology risk management being followed by the Financial Market Infrastructures (FMIs) under its regulatory jurisdiction, *viz.* exchanges, clearing corporations and depositories. It has been found that while there were no major technology risks to the functioning of FMIs at present, the technology infrastructure needed to be geared to meet the newer challenges.

Payment and Settlement Systems

3.66 The payment and settlement systems (PSS) forming the major part of the FMI play a vital role in ensuring financial stability. The PSS infrastructure in India continued to perform without any major disruptions. The broad policy direction of the Reserve Bank, which has the legislative authority to regulate and supervise PSS in the country, is inclined to migrating an increasing proportion of all payment transactions, especially the large value / wholesale transactions, to the electronic payment products.

Risks from High Frequency Trading

3.67 The previous FSRs had covered the potential risks from high-frequency trading (HFT) in equity markets. Even as the risks from HFT specific to the segments of the market are being addressed, the nature of the HFT and the associated risks are undergoing a transformation due to innovations like 'big data[21]'. The 'new HFT'[22] using analytics and algorithms based on 'big data' attempt to develop trading strategies by extracting information on market sentiments from the enormous amount of information available on internet including the social media. As the use of big data is transforming the financial markets, the regulations also need to keep pace.

Regulation of Algorithmic Trading in Indian Equity Markets

3.68 At present, Algorithmic trading (Algo) and HFT account for only about 14 per cent of the cash market turnover in the Indian exchanges as against 80 per cent in developed markets like US and Europe. A proper regulatory structure and continuous monitoring of regulatory systems would avert, *inter alia*, operational risks and other risks posed by Algo and HFT. As algorithmic trading is an evolving field, SEBI and stock exchanges are continuously studying the practice and taking steps as deemed necessary to minimise the associated risks and to better regulate the same.

3.69 India is one of the few securities markets in the world to implement a framework regulating the practice of algorithmic trading. SEBI has issued instructions in March 2012 which *inter alia* included a list of minimum order-level checks to be performed

[21] The term 'big data' refers to large or /and complex data sets which cannot be efficiently managed with the standard software tools.

[22] Shah S, A. Horne and J. Copella (2012), ''Good Data Won't Guarantee Good Decisions'', *Harvard Business Review*, April

on algorithmic orders, framework for penalising cases of high order-to-trade ratios and framework of conformance testing of new algorithms. Other risk management measures that have also been mandated include increase in the Base Minimum Capital (BMC) of the trading members that undertake algorithmic trading and changes to the practice of enablement of the trading terminals of the trading members that were disabled upon exhaustion of the collateral. In continuum to the earlier instructions, SEBI has laid down further guidelines by specifying that the stock brokers / trading members that provide the facility of algorithmic trading shall subject their algorithmic trading system to a system audit every six months in order to ensure that the requirements prescribed by SEBI / stock exchanges with regard to algorithmic trading are effectively implemented.

Need for ensuring fairness in order management under co-location facility

3.70 SEBI is presently examining various issues, as part of proposed measures to better regulate the facility of co-location. SEBI's proposals seek to provide greater equality and fairness in order handling to the participants that do not use co-location services *vis-à-vis* participants that place orders using automated trading system and are co-located at the stock exchange.

Erroneous Trades on the Stock Exchanges – Measures Taken

3.71 "Error Trades" are transactions that result from system or human error in entering the order parameters such as name of the security, volume to be traded, price for trade, *etc.* Such unintended trades usually have an adverse effect on the price formation and impact orderly trading. While incidents of erroneous orders are few as compared to the total number of orders handled by the exchanges in a year, measures implemented by the stock exchanges such as 'upfront real-time risk management system', 'scrip-level price bands' and 'market-wide index circuit breakers', are expected to limit the damage that may result from erroneous orders. SEBI has also taken measures to strengthen the pre-trade risk management framework by introducing Value per order Limit, Cumulative limit on value of unexecuted orders of a stock broker, Dummy price bands and Risk Reduction Mode *etc.*

Exposure of Settlement Guarantee Funds of Clearing Houses to banks

3.72 In the screen-based trading environment where counterparties to trade are anonymous, Clearing Corporation/ Clearing House of a Stock Exchange acts as a CCP and guarantees settlement of net obligations arising out of trades executed on the stock exchange. Under this arrangement, the CCP assumes the risks of unsettled transactions on behalf of the brokers and their ultimate clients. In order to mitigate these risks, the CCP maintains a Settlement Guarantee Fund (SGF) and collects margins which comprise of contributions from brokers/clients in the form of Bank Guarantees and securities (which may in turn be issued by banks) amongst others. The CCP is thus exposed to the banks both directly and indirectly and therefore CCPs are interconnected to Banks they are exposed to. This interconnectedness of CCPs to banks can be a potential source of systemic contagion, in case of failure of a bank.

Concentration of Exposure of CCPs to Banks

3.73 SEBI, in its guidelines issued in February 2005, had specified that the stock exchanges shall lay down exposure limits either in absolute terms or as percentage of the Trade Guarantee Fund (TGF) / SGF that can be exposed to a single bank directly or indirectly. The total exposure includes 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 towards total liquid assets.

3.74 Accordingly, National Securities Clearing Corporation Limited (NSCCL), the clearing house of the National Stock Exchange (NSE) has specified a maximum exposure limit of 15 per cent of SGF for a single bank in respect of bank guarantee and bank securities that can be accepted as collaterals. These norms are periodically monitored for adherence to specified limits. NSCCL accepts collaterals issued by empanelled banks in the specified forms namely bank guarantees and fixed deposit receipts. Currently there are 58 empanelled banks with NSCCL for the purpose, while Indian Clearing Corporation Limited (ICCL) of the Bombay Stock Exchange (BSE) accepts Bank Guarantees issued by Schedule Commercial Banks only. SEBI also has specified that not more than 5 per cent of the TGF/SGF or 1 per cent of the total liquid assets (TLA) deposited with the exchange, whichever is lower, shall be exposed to any single bank which has a net worth of less than ₹5 Biliion and is not rated P1 (or P1+) or equivalent, by a RBI recognised credit rating agency or by a reputed foreign credit rating agency, and not more than 50 per cent of the TGF/SGF or 10 per cent of the total liquid assets deposited with the exchanges, whichever is lower, shall be exposed to all such banks put together.

Possible Concentration Risks Due to Common Set of Banks

3.75 The exposures of SGFs of NSCCL and ICCL, to the top five banks (Table 3.2) are adequately diversified. As per the exposure limits specified by NSCCL, SGF can have the highest exposure of 75 per cent to top five banks put together. While the exposure of the SGF of NSCCL and the exposure of the SGF of ICCL are individually less than the upper limit, the fact that four banks are common in the list of top five banks, makes it even more important that the exposures limits are monitored on an ongoing basis.

Table 3.2: Exposure of NSCCL and ICCL to top five banks (as on March 31, 2013)

NSCCL			ICCL		
Sl. No.	**Bank Name**	**Exposure as a % of SGF**	**Sl. No.**	**Bank Name**	**Exposure as a % of SGF**
1.	Bank 1	8.09	1.	Bank 1	7.63
2.	Bank 2	4.85	2.	Bank 2	6.13
3.	Bank 3	4.65	3.	Bank 3	3.38
4.	Bank 4	2.92	4.	Bank 4	1.78
5.	Bank 5	1.85	5.	Bank 5	1.42
Total Exposure to Top 5 Banks		**22.76**	Total Exposure to Top 5 Banks		**20.34**

Note: In case of BSE exposure is a % of SGF+Total Liquid Assets
Source: NSE & BSE