Chapter 6

RISK MANAGEMENT IN PAYMENT SYSTEMS AND THE REGULATORY FRAMEWORK

6.1 Introduction

In information technology, 'change' is the name of the game and change is constant. Payment systems are also subject to change as systems develop from cash transactions to complex electronic systems by incorporating new technologies and new ideas. As payment system develops through various stages, the associated risks and the degree of risk exposure in payment and settlement transactions also tend to increase. There is therefore a corresponding need for changes in the regulatory framework governing the payment system in the country.

6.2 Risk in Payment and Settlement Systems

6.2.1 Stages

During the cash stage, the main risk was that of security as the risk of theft of bearer instruments (bank notes) and the risk of counterfeit currency was rampant. During the second stage, cash and non-cash instruments are used for payment without formalized clearing or netting arrangements. Clearing and settlement of these instruments take place on a bilateral basis between the banks or via the central bank on a deferred gross basis. During this stage, credit risks tend to emerge, if banks provide value against debit instruments before the instruments are settled.

During the second stage, there is also the possibility that the central bank may incur risks, if commercial banks face shortage of required funds, to cover their gross obligations. As documents are processed manually and are transported physically, possibilities of human errors tend to increase; operational risks, therefore, tend to dominate along with the security risk.

Risk refers to the uncertainty that surrounds future events and outcomes. It is the expression of the likelihood and impact of an event with the potential to influence the achievement of organizational objectives.

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During the third stage, which is characterized by non-automated and unprotected Deferred Net Settlement (DNS), credit risks and liquidity risks become common, and, multilateral net settlement has introduced new systemic risks as well. Even legal complications tend to arise on account of netting arrangements and also their relationship with legal provisions for insolvency. During this stage, the system may be operating with a few computers, as it is not fully automated. Operational risks are likely to increase during this stage.

At the fourth stage, DNS system is fully automated; but as there is unprotected DNS system and an unprotected RTGS system provided by the central bank, so economic risk tends to reach the maximum level. If the legal bases of the payment system are not clarified, then even the legal risk tends to arise. Automation should improve the security aspect and reduce clerical errors. The severity of operational risk during this stage depends on contingency and back-up facilities included in the automated system.

During the final stage, DNS and RTGS systems tend to be fully protected or the hybrid of both these systems may come into existence; hence the relative importance of various sources of risk tend to equalize. Overall, per unit payment risk declines significantly, and, intensity of other risks also decline substantially.

It may thus be concluded that “legal risk increases monotonically as does operational risk except perhaps at Stage 4. Security risk tends to decline throughout the development process, at least until Stage 5 when efforts have been taken to protect payment systems against operational, and, particularly, economic risk. Economic risk rises dramatically until Stage 5 when this risk is addressed most effectively in terms of caps, limits and collateral requirements” (Maxwell et alia, 1999).

6.2.2 Types of Risks
Any transaction leading to a payment is similar to a contract calling for some form of exchange between two parties. One leg of the exchange is the payment, called the ‘payment leg’ and the other can be the provision of goods or services or even the transfer of ownership of a financial asset, called the ‘delivery leg’. In the case of foreign exchange or loan transaction, two streams of funds are exchanged. Each exchange involves risks for the counterparties and for intermediaries involved in the process. The risks faced by the counterparties are of two types: ‘credit risk’ and ‘timing risk’. Credit
risk is the possible loss of outstanding claims on participants in the transaction. The counterparties involved are the issuers of settlement medium or payment intermediaries and the delivery intermediaries, if any. In other words, credit risk in a payment system occurs because of the time lag between the payment and delivery conducted between two parties. If payment is against goods, i.e. cash on delivery, then there is no credit risk. But if the purchased item is delivered before the payment is received or payment is made in advance of the delivery, there must be provision of security between the two parties. Such risk is called the “forward risk”. Timing risk is the unavailability of either of the items exchanged at the due time. When the item in question is the settlement medium, this risk is known as the “liquidity risk”.

In the case of large value inter-bank funds transfer systems, the risk of settlement failure may take place, which is called the “Settlement Risk”. A settlement failure implies a shortfall of liquidity for other participants (liquidity risk). It involves a loss on outstanding contracts (credit risk), whose size and distribution depend on the structure of underlying obligations, the methods of dealing with the liquidity shortfall and the legal arrangements.

Management of Payment System Risks

Borio and Van den Bergh (1993) argued that “As systemic risk is the fundamental policy concern in connection with payment arrangements, the rationale for the prudential supervision and regulation of payment systems is essentially the same as that for the financial markets in general and of institutions providing liquidity services in particular.”

The basic principle underlying any intervention in the payment arrangements is that its benefits in terms of lower systemic risk has to be higher than the costs in terms of increase in resources needed to provide payment services. The degree of intervention by the supervisory/ regulatory authorities, i.e. the central bank, depends on perception of costs and benefits, which vary according to the structural factors and historical experience (Summers, 1991). Significant changes that have been taking place in the financial markets during the last three decades have increased the importance of risk reduction policies in many economies. This trend can be explained with the help of three key structural developments:
(a) Rapid increase in the volume of transactions has intensified the stress and strain on the existing payment arrangements, which have increased the risks for payment system participants and have reduced the time span in which risks tend to incur. This exposes the inadequacy of the existing monitoring and risk control systems.

(b) The rapid growth of foreign exchange transactions has highlighted the importance of the problems arising from the coexistence of separate sets of arrangements for the settlement of the two legs of the transactions, as each leg is governed by its own rules and legal framework. Arrangements, which appear to be adequate for purely domestic transactions, tend to be inadequate for export transactions.

(c) Increase in competition in the financial industry and in the provision of payment services, both at the national and international levels, coupled with more sophisticated cash management by customers, has increased the pressure on the banks to accept risks. For example, banks are ready to increasingly provide credit facilities as a part of their payment services, while customers expect to have funds readily available during the working hours of the banks, regardless of whether the inter-bank settlement of the related transfers has been completed or not.

Several financial distresses in the world economy over the years have highlighted the crucial linkage and the importance of payment arrangements in the propagation of financial crisis. The policy responses to this are:

- Raising the private agent’s awareness of the risks of the payment system,
- Encouraging private sector arrangements designed to contain risks and reducing those forms of interventions providing perverse incentives for risk taking.
- Adapting the legal framework to the new payment practices.
- Strengthening international coordination with a view to dealing with the increasing internationalization of financial markets.

6.2.3 Risk Reduction Mechanisms in Systemically Important Payment Systems

Modern economies are characterized by the increasing complexity of payment arrangements; hence, they need to develop and adopt suitable approach to risk reduction. The focus of attention is more on the areas where the risks tend to concentrate and where the potential systems of payment disruptions have become quite apparent. There are three
such areas viz. (a) large value inter-bank funds transfer systems, (b) settlement of securities transactions, and (c) settlement of foreign exchange transactions.

6.2.3.1 Large Value Inter-bank Funds Transfer Systems

The main problem of large value inter-bank funds transfer system is the risk of settlement failure or settlement risk. As mentioned earlier, settlement risk arises when there is liquidity shortfall for other participants, i.e. liquidity risk. It also involves a loss on outstanding contracts or credit risk, whose size and distribution depends on the structure of obligation, the method of dealing with the liquidity shortfall and the legal framework applicable to it. The form of settlement risk and methods used to prevent and manage it depends on the systems that settle at discrete times and on a continuous basis.

(i) Discrete – Time Settlement on a Multilateral Net Basis – Under systems settling at discrete intervals of fund transfer, orders accumulate until they are executed at a particular point of time, and, then the settlement takes place on a multilateral basis. Thus, for each participant’s incoming funds transfer is treated as cover for outgoing funds. The system relieves banks of the need to have intra-settlement cover for their current transfer orders and enables them to concentrate on liquidity pressures at the end of the cycle.

Credit risk involved in these systems originates from the existence of settlement lags. Intra-settlement borrowing and lending takes place between the participating banks, their customers and the central bank. The distribution of the resulting credit risk depends on the timing and other terms of the funds transfers and on their relationship to the underlying contracts giving rise to economic exchanges. Thus, the credit risk tends to concentrate on participating banks.

In order to control settlement risk, leading banks adopt the following methods:

- In the first method, settlement risk is limited through appropriate membership criteria and effective supervisory arrangements. For example, in G10 countries membership is limited to credit institutions. In some cases, additional criteria such as specific capital and technical requirements are imposed. In the case of CHIPS, discretion is retained for ensuring that access is restricted to participants who are regarded as financially sound. In the UK, restricted membership and regular supervision are considered as safeguards against settlement risk.
• In the second method, monitoring facilities on real-time basis is put in place to identify potential problems and to facilitate liquidity management, especially when they permit the centralized monitoring of the positions of all participants.

• In the third method, bilateral and multilateral caps are put in place on the net positions of the participants, which automatically limit the inter-bank settlement exposures incurred within the systems. CHIPS and CHAPS use such caps.

The best safeguard against settlement risk is to use the mechanisms aimed at ensuring that the systems can settle even in the face of failure to do so by individual participants. These types of arrangements pool the liquidity risk, allocating the unsettled balances according to pre-established rules like “loss sharing arrangements” and usually involve the pre-posting of collateral and a central bank liquidity guarantee (Borio and Van den Bergh, 1993).

(ii) Continuous Gross-Settlement System – According to this system, funds transfers can be completed at any time during the working hours. They can be settled individually and sequentially on a gross basis. Thus, the settlement continues throughout the working day and incoming payments are not treated as cover for outgoing payments. As a result, settlement lags can be shortened at the cost of greater intra-day pressures on the liquidity position of participants.

The problem of the higher intra-day pressure can be solved in four ways:

• Reducing the traffic of transactions executed through the system.

• Increasing the amount of explicit borrowing from the central bank, which helps in raising the value of available settlement balances in the system.

• Slowing down the inter-bank settlement by delaying the entry of the transfer orders.

• Reducing the lag between availability of advancing fund to customers and inter-bank settlement.

Continuous gross-settlement system leads to a reduction in the concentration of credit risk on participating banks. Part of the intra-day credit risk is transferred to the central bank as the participants increase their holdings of settlement balances, and a part is shifted to customers as the transmission of customer transfers is delayed during the day until sufficient funds are available for the transfer execution.
As a result of the shortening of the settlement lag and the sequential completion of transfers, the main benefit in this system is that it helps in making part of the credit exposures more transparent and reducing volume of transactions; this leads to better risk management.

The shortening of the settlement lag, however, calls for intra-day cover for funds transfers. As unlimited credit is not available, it necessitates the installation of appropriate monitoring facilities. However, banks should be able to track their credit facilities from the central or other banks in order to ensure that sufficient funds can be raised to effect the transfer. Thus, real time monitoring becomes essential, which can contribute to a better awareness and identification of intra-day credit risks by all the parties involved in the system.

As a result of shortening of the settlement lag, implicit lending can now be substituted by explicit lending (Borio and Van den Bergh, 1993) by the central bank. Continuous systems can easily use ‘Delivery Versus Payment’ (DVP) mechanisms, which eliminate the lag between settlement legs of trades. They can also limit the availability of advance funds to customers by speeding up inter-bank settlement. This substitution tends to shift credit risk to those parties that are in a better position to manage it. On account of these benefits, the membership in continuous gross systems tends to be wider than in discrete-time-systems.

Since transaction settlement is on an individual basis and sequential in nature, continuous systems make it easier to ensure un-conditionality and irrevocability, i.e. finality of the settlement during the process cycle.

In spite of all these measures, settlement risk tends to remain, as unsettled balances may tend to accumulate during the day, if banks delay the entry of transfers or are unable to execute them as expected. Sufficient settlement balances, well developed intra-day borrowing facilities and procedures for the management of the traffic orders are the sine qua non for the smooth running of the systems and for avoiding bottlenecks. Otherwise, failure by a large participant to carry out his/her payments on account of lack of funds could have severe effects on other participants, leading to a generalized payment gridlock with systemic consequences.
In order to overcome such a potential settlement risk, 'queuing mechanism' is used where payment orders which cannot be settled immediately, when entered, are not rejected but are held pending in a queue file until sufficient funds are accumulated in the remitting bank’s account. Although there is no queue management facility, because all transactions are processed on a first-in first-out basis, banks can manage their queue of outgoing payments by canceling queued orders and resubmitting them. The main advantage in terms of control of liquidity risk arises from the fact that each participant has real time access to all data relating to its account, including settled and queued incoming and outgoing funds transfers. However, the disadvantage is that, the receiving bank pays out funds to its customers assuming that pending orders of the initiating bank will indeed be executed based on the knowledge of queued messages. But in reality the initiating bank may cancel its pending outgoing payments later leading to inter-bank exposures.

Continuous settlement systems do not have any arrangements for liquidity pooling and loss-sharing schemes to insulate the whole system from the settlement failure of individual participants. Such schemes can be designed for the payment orders queued in the system, where queuing facilities are present; otherwise these would not be feasible.

As reported in the literature, central banks have now realized that it becomes much more easier to manage risks in a continuous gross settlement systems. These systems are making inter-bank exposures more transparent and controllable. But additionally it also calls for lending by the central bank to be sufficiently prudent (Borio and Van den Bergh, 1993).

6.2.3.2 The Settlement of Securities Transactions

On account of the significant increase in the value of securities transactions, episodes of major price instability, such as the October 1987 global stock market crash, increasing attention is being received for the adequacy of existing settlement arrangements for securities trades, both within and across national borders.

The main objective of the recent policy measures is to eliminate the principal risk incurred by the counter parties to the transactions by introducing DVP* mechanisms.

* DVP mechanisms are designed to ensure that final delivery occurs only if final payment takes place.
The insulation of the counter parties tends to shift credit risk elsewhere. For example, in order to facilitate the settlement, some systems may include cash and securities borrowing facilities, or rely on central bank credit. However, the shift from implicit to explicit lending should allow better distribution and management of risk.

Settling irrevocably and simultaneously both legs of transactions on gross basis can achieve DVP. The settlement can take place either continuously during the day or in batch mode at a particular time. An alternative common procedure is to attempt to achieve DVP while relying on netting arrangements to economize on liquid balances or securities inventories under this procedure. The value of all in-coming and out-going payments is offset for each of the participants, whereas the deliveries and receipts of securities may be netted per type of security or all may be processed jointly in a batch mode. Final settlement then takes place only once the system has been verified to ensure that all the net debit positions for the securities and funds have been covered. Generally, the payment leg is settled through a large value funds transfer system, which also handles other transfers.

An intermediate mechanism is that of assured payment, where the delivery of securities automatically generates an irrevocable commitment from the buyer’s bank to make payment to the seller’s bank at the end of the settlement cycle of the funds transfers. This procedure is used when the securities transfers are executed on a continuous gross basis while funds transfers are completed at the end of the day on a net basis through a large value system. The buyer’s bank assumes the principal risk, and manages it by taking a lien on the underlying securities (Borio and Van den Bergh, 1993).

It may be noted that even if the final settlement of the two legs of a trade takes place simultaneously, the settlement lag exposes counter parties to the forward replacement cost and liquidity risks. Forward replacement cost risk tends to be important when prices indicate high volatility during episodes of market stress.

Settlement lags are generally long in securities markets, which involve calling for trades to be matched and confirmed, paper certificates to be exchanged and payments to be collected. When the settlement takes place at fixed dates (only once a month), i.e. account settlement procedures, settlement lags are dependent on the date on which the
trades are struck. The practice of settling on a 'rolling-cycle' basis reduces the average settlement lag, although the standard lags remain at a considerably low level. The speeding up of the delivery lag, through the setting up of central securities depositories and booking entry systems along with improved technology for trade matching and confirmation, is the main way of shortening the settlement cycle (Borio and Van den Bergh, 1993).

The settlement lag gives rise to the risk of a settlement failure. In systems, which settle trades on a gross basis, the rejection rate of uncovered trades may be significant, and, in extreme cases gridlocks could take place. In systems, which use netting of funds and securities, a settlement failure results in unwinding some of the transfers of the defaulting participants and in postponing of the whole settlement until the following day. However, the application of ‘unwind clauses’ leads to uncertainty and might result in considerable disruption: the failure may originate within the system for the settlement of securities, when a participant is unable to honor the commitments. It may also lie outside, if there is a failure to settle other transactions in a large value system through which the funds transfers are executed. Such external shock can be avoided by way of 'intra-day finality' of the payment leg of the trade.

Since the global market crash, several policy initiatives have been developed for ensuring that transactions in securities markets can be completed without any disruption. Even under very extreme circumstances, various international bodies have issued recommendations to improve the settlement procedures. The primary objective of the recommendations is to promote the shortening of the settlement lags and the introduction of the DVP mechanism.

6.2.3.3 The Settlement of Foreign Exchange Transactions

Foreign exchange transactions need two days after the trade date to settle the account. This settlement lag may expose the counterparties to considerable forward replacement cost risk due to the volatility of exchange rates. The main concern relates to the principal and liquidity risks incurred by the counterparties when they fail to receive final funds in terms of the respective currencies at the same time, called cross-currency settlement risk or 'Herstatt Risk'. This risk can have serious systemic implications because foreign exchange transactions account for a large share of all payments in the major financial centres, and, because most of them are transacted through banks. The BIS survey (BIS,
1990) has concluded that such interbank trading accounts for about 85 per cent of the net market turnover. The main constraint that gives rise to Herstatt risk is the difference in time zones and the working hours of the banking system across countries.

There are several ways in which the risks of settlement of foreign exchange transactions can be reduced: (i) By improving the safety of each of the payment legs; (ii) By reducing the size of the settlement flows across currencies through netting schemes applied to the underlying contracts and to the payment flows across contracts and counterparties; (iii) By limiting the size of the settlement flows across borders through the development of payment arrangements outside the country of issue of a currency (off shore); (iv) By introducing the DVP mechanisms, which would need the up-gradation of the central bank’s services for encouraging and facilitating private sector initiatives. Adoption of DVP tends to shift the credit risk among participants: in the case of foreign exchange transactions it shifts from counterparties in the transaction to the banks with which corresponding balances are held.

The netting of the foreign exchange contracts can reduce Herstatt risk by operating at the source of the funds transfers. “Contract netting offsets the current value of credit exposures between parties and reduces the settlement payments due at each point in time to net amount” (Borio and Van den Bergh, 1993). The main scheme of this type of operation is known as FXNET, a system used by several large banks for bilateral netting by novation of spot and forward foreign exchange contracts.

Multilateral payment schemes outside the country of issue of a currency may further lead to a major reduction in cross-border inter-bank funds transfers. Although any payment-netting scheme can reduce the credit and liquidity risks faced by the participants, the full benefits can only be realized through properly designed systems. The minimum standards for the design and operation of cross-border and multi-currency netting and settlement schemes are:

- Netting schemes should have a well-founded legal basis under all relevant jurisdictions.
- Netting scheme participants should have a clear understanding of the impact of the particular scheme on each of the financial risks affected by the netting process.
- Multilateral netting schemes should have clearly-defined procedures for the
management of credit and liquidity risks, which specify the respective responsibilities of the netting provider and the participants.

- Multilateral netting systems should be capable of ensuring the timely completion of daily settlements in the event of the inability of the participants to settle the largest single net debit position.
- Multilateral netting systems should have the clear objective and publicly disclosed criteria for admission, which permit fair and open access.
- All netting schemes should ensure the operational reliability of technical systems and the availability of back-up facilities capable of completing daily processing requirements (Borio and Van den Bergh, 1993).

6.2.4 Risk Mitigation Mechanisms in India

Several steps initiated by the RBI for risk mitigation in the payment and settlement systems, may be summarized as follows:

Retail payment systems were functioning on the basis of Deferred Net Settlement (DNS); but for this, no risk mitigation mechanism existed except resorting to unwinding in case of failure of any bank not fulfilling its obligation. The risks in retail payments arise on account of the customer’s transactions because banks cannot predict with certainty the value and volume of cheques, drawn on other banks, that their customers will deposit with them for collection in clearing. Hence, tracking such risks tends to be difficult as they depend on the changing patterns of customer behavior in respect of transactions.

In order to counter such risks, the RBI constituted a Working Group on Risk Mitigation Mechanism for Retail Payment System, under the Chairmanship of Shri R Gandhi (RBI, 2004). The group’s recommendation were: (i) to limit the number of banks participating in the clearing system to a few, and, to low risk banks only and let others participate as sub-members; (ii) in the short to medium term, risk mitigation measures may be introduced in stages; (iii) all high-value clearings should be presented in high-value clearings two times or more daily, or, expand the geographical jurisdiction of high-value clearings to make them co-terminus with the full or major part of the clearinghouse.
The group was of the opinion that high-value clearing needs to be made more secure on a priority basis. For this the group recommended the introduction of a “guarantee fund” at a centralized location. The contribution to the guarantee fund would be based on the risk profile of each member bank. In case of a settlement failure in the high value clearing system, recourse to the guarantee fund would be made on the principle of “Defaulter’s Pay’ system, where the contribution of the defaulter would primarily be taken up for settlement of claims and then the residual amount would be neutralized through ‘unwinding’. The RBI was to decide about the mode and the amount of contribution to the guarantee fund, in consultation with the banks in India (RBI, Annual Report 2004-05).

6.3 Regulatory Framework for Payment Systems

6.3.1 Payment and Settlement Act, 2007

It is internationally accepted that payment and settlement systems should function on well-founded legal basis. It includes proper authorization for the setting up payment systems, legal recognition of netting, settlement finality, providing for regulation and oversight of the payment and settlement systems. India being a developing and rapidly growing economy, transactions are of large volumes and values, which are being handled by payment systems. Non-bank units that are not covered by the regulatory system of the Central Bank continue to run important payment systems, for which they have developed innovative payment instruments or systems. “While large payment systems which are unregulated present risks to the stability of the financial systems, unauthorized retail payment systems without proper management and operational structures can undermine public confidence in the efficacy of the payment systems as a whole” (Leeladhar, 2008). Hence, the RBI and the Government of India felt that there should be an explicit law to regulate the payment and settlement system. Thus the Payment and Settlement Act, 2007, was passed, which empowers the RBI to regulate and supervise the payment and settlement systems and provide a legal basis for multilateral netting and settlement finality.

The Act empowers the RBI to: (i) lay down policies for regulation and supervision of the payment and settlement systems; (ii) authorize the setting up and continuance of issuing directions; (iii) lay down standards; (iv) call for information/data; (v) initiate prosecution/levy penalties for violation of the provisions of the Act; and (vi) formulate regulations and directions.
6.3.2 The Board of Regulations and Supervision of Payment and Settlement System (BPSS)

This has been constituted as a committee of the Central Board of the RBI since March 2005. “The Board lays down policies relating to the regulation and supervision of all types of payment and settlement systems, sets standards of existing and future systems, authorizes the payment and settlement systems, determines criteria for membership to these systems, including continuation, termination and rejection of membership” (RBI, Annual Report 2005-06). The BPSS provides policy inputs and direction relating to:

- Vision document on payment and settlement system for the period 2005-08
- Draft bill relating to payment and settlement systems/Drafting EFT regulations
- Standards of operational efficiency for MICR cheque processing centres.
- Best practices in payment systems based on comparison with a few developed countries
- Carrying out comparative study of the Indian RTGS system with other countries to find out the feasibility of implementing the best features of the RTGS system.
- Adopting step-by-step electronic payment systems to replace cash/paper-based payment systems.

While permitting new payment initiatives like internet banking, mobile banking, etc., by banks, RBI prescribes the minimum safeguards, which the banks have to put in place before implementing such channels of payment.

During 2006-07, the main emphasis of the BPSS directions was on electronification of the payment systems and building of appropriate legal, procedural and technological infrastructure, especially for migration from paper-based funds transfer to electronic payment systems, bringing RTGS enabled branches under national electronic funds transfer (NEFT), setting up of a low-cost cross-border remittance system especially with Nepal, promoting credit/debit/prepaid cards for increasing the use of e-payments, etc.

The Payment and Settlement Systems Act, 2007, provides a well-founded legal basis for payment systems, which was an important element of compliance with the core principles of Systemically Important Payment Systems (SIPS). The BPSS and the
Payment and Settlement Systems Regulations, 2008, were notified in August 2008. The BPSS regulations covered the composition of the board, functions and powers of the board, powers to be exercised on behalf of the board, constitution of sub-committees, etc. The payment and settlement systems regulations included, authorization of payment systems, payment instructions and determination of standards, furnishing of returns, documentation and other related information, furnishing of audited balance sheets, etc. The BPSS issued directions relating to legal, risk mitigation and customer service in payment and settlement systems. “Following the directions of the board, the consolidated information on service charges was made available on the RBI’s website with links provided to the websites of the respective banks. Draft guidelines on mobile payments were also placed on the website” (RBI, Annual Report 2007-08).

According to the directions of the BPSS, the operative guidelines on mobile banking for banks were issued in October 2008, and, the guidelines for prepaid payment instruments in India were issued on April 27, 2009. The use of other banks’ ATMs for cash withdrawal was made free of charge from April 1, 2009. The RBI also rationalized the service charges for electronic payment products, and outstation cheque collection. Steps were taken to increase the threshold limits of cheques on high value clearing from Rs.1 lakh to Rs.10 lakh and to discontinue this service as alternate channels were already available to clear high value transactions.

The Department of Payment and Settlement Systems (DPSS) of the RBI assists the BPSS in administering the various provisions of the Payment and Settlement Act, 2007. By the end of June 2010, authorization had been granted to 37 payment system operators of prepaid payment instruments, card schemes, cross-border inward money transfers, ATM networks and centralized clearing arrangements. “The details of authorized entities are available on the RBI’s website www.rbi.org.in. All payment system operators are advised to comply with the relevant Anti Money Laundering (AML) standards and Combat Financing of Terrorism (CFT) guidelines issued by the Bank” (RBI, Annual Report 2009-10).

6.3.3 Organizations for Retail Payments

The retail paper-based and e-clearings are carried out by the network of clearinghouses throughout India, run by RBI, State Bank of India, its associate banks and other public sector banks. The large number of local operators and widely varying local practices,
which determine the process of clearing, often compromise safety and efficiency of the clearing operations and in the process they tend to neglect the importance of customer service. This situation tends to limit the scope of product innovation and expand the scope of payment systems.

The RBI owns and operates the major inter-bank funds transfer systems like RTGS, NEFT & NECS, etc., in the country. The said approach, termed as public service approach to payment systems development (Khiaonarong, 2004), is not considered very efficient since a large share of fixed costs is absorbed by the Central Bank and the cost recovery is based on subsidization. The RBI also, in agreement to the above line of thinking, has indicated its intention to move away from the operation of the retail payment systems and concentrate on operating the RTGS, regulating and supervising and providing for the settlement accounts for important payment systems (RBI, 2005-08). It has also decided to set up a national organization to own and operate all retail payment systems in India, so that it will be possible to achieve greater efficiency through uniformity and standardization in retail payments, expand its reach and develop innovative payment products to increase customers’ confidence. A working group set up by the Indian Banks’ Association in 2005 had suggested the setting up of the National Payments Corporation of India (NPCI) to be registered under the Companies Act, which will be owned by banks and financial institutions. “NPCI was finally incorporated in December 2008 and the Certificate of Commencement of Business was issued in April 2009. It has been incorporated as a company under Section 25 of the Companies Act and is aimed to operate for the benefit of all the member banks and their customers” (www.npci.org.in).

6.3.4 Guidelines on Mobile Banking

The rapid growth in the number of mobile phone subscribers in India (about 261 million at the end of March 2008 and still growing at about 8 million a month), as a mode of communication has opened up new opportunities for banks to use this medium for banking transactions (RBI, 2008). Many countries have adopted this delivery channel as a means of financial inclusion as it facilitates small value payments at a very low cost. There are two types of models in operation in countries where mobile banking has been developed: (i) Bank-led model, and (ii) Telecom company-led model.
The telecom-company led model is preferred in countries having less coverage of formal banking facilities, e.g. Kenya. After taking into account the various issues involved, India has adopted the bank-led model. The operative guidelines for mobile banking transactions in India were notified on October 8, 2008, and its main features are:

- Only those banks that have received one-time approval from the RBI are permitted to provide this facility to their customers.
- Banks can extend this facility only to their customers who hold their debit/credit cards issued as per the guidelines of the RBI.
- Banks can only extend Indian rupee-based domestic services.
- Banks can extend this facility through their business correspondents also to promote financial inclusion.
- Minimum “Technology and Security Standards” have to be in place.
- A limit of Rs. 5,000 per transaction for funds transfer, and for m-commerce transaction a limit of Rs.10,000 have been prescribed to ensure the safety of transactions through this channel.
- Interoperability among service providers is a must to ensure prevention of monopoly by one or a few mobile operators (RBI, Annual Report 2008-09).

Based on the suggestions and requests received from the banks for better facilitation of mobile banking transactions, the above guidelines were modified on December 24, 2009, as follows:

(a) The Transaction Limit – Banks are now permitted to offer this service to their customers, subject to a daily cap of Rs. 50,000 per customer, for both funds transfer and transactions that involve purchase of goods and services.

(b) Technology and Security Standard – Banks can facilitate transactions up to Rs.1000 without end-to-end encryption. Banks may address the risk aspects involved in such transactions through adequate security measures.

(c) Remittance of Funds for Disbursement in Cash – For facilitating the use of mobile phones for remittance of cash, banks are permitted to provide fund transfer services from the accounts of their customers for delivery in cash to the recipients. Disbursal of funds can be facilitated at ATMs or through any agent appointed by
the bank. Such fund transfer service shall be provided subject to the following conditions:

(a) The maximum value of such transfers shall be Rs. 5,000 per transaction.

(b) Banks may place suitable cap on the velocity of such transactions, subject to a maximum value of Rs. 25,000 per month, per customer.

(c) The disbursal of funds by the agent/ at the ATM shall be permitted only after identification of the recipient.

(d) Banks may carry out proper due diligence of the persons before appointing them as authorized agents for such services.

(e) Banks shall be responsible as principals for all the acts of omission or commission of their agents.

(f) The directive is issued under Section 18 of the Payment and Settlement Systems Act, 2007 (Rashid, 2010).

6.3.5 Electronic Benefit Transfer

The central and several state governments have launched social welfare programs that involve payment to a large number of beneficiaries. These payments are made either through government offices or through banks or other means like money orders. The RBI has also undertaken certain initiatives to expand the scope of banking facilities to the neglected sectors “through its financial inclusion initiatives in the form of permitting banks to engage business correspondents” (RBI, Annual Report, 2007-08). It was thought desirable to channelize through the banking system the financial benefits extended by both the central and the state governments to the weaker and needy sections of the society. This requires the identification of the ultimate (genuine) beneficiaries. In this context, a committee under the Chairmanship of Shri R B Barman was appointed for analyzing the related issues and to suggest the appropriate framework for Electronic Benefit Transfer. The main focus of the recommendations was to have a broader methodology “to ensure that government payments reach the ultimate beneficiaries using the banking channels, adopting the plan of financial inclusion using business correspondents and biometric-based smart card technology” (RBI, Annual Report 2007-08). The Committee studied in depth the advantages and disadvantages of the three models of EBT, i.e. bank-branch model, bank-led model, and non-bank model. The
Committee came to the conclusion that the EBT system was suitable for adoption by all the state governments and suggested a framework for monitoring the progress of its implementation. The main observations and recommendations are:

1. The bank-led model was preferred over the other two for disbursement of government benefits. Such a model can operate with the strategy of 100 per cent financial inclusion.

2. “The Committee felt that, although the service area approach has well laid-down systems for monitoring and review, and, the banks and the state governments are familiar with the modalities of implementation, in view of easier implementation and monitoring feasibility of technology-based EBT systems, one-district one-bank approach may be adopted. The places where ‘one district and multiple banks’ model was already working satisfactorily, the same may continue. The government needs to identify the bank in consultation with the RBI to operationalize one-district one-bank approach” (RBI, Annual Report 2007-08).

3. The ultimate goals should be the delivery of government benefits at the place of habitation of the beneficiary. A two-stage approach may be adopted, to start with, and, disbursements can be made at grampanchayat level through the bank or its business correspondents, so that disbursement can reach the individual villages.

4. Feasibility of e-governance kiosks operating as business correspondents under the existing guidelines may be considered after they are well spread out and become viable entities in rural areas and offer payment services as extended arms of banks under the provisions of the extant guidelines of the RBI.

5. It is necessary to employ means of de-duplication system in order to ensure that beneficiaries are uniquely identified and any attempt to impersonate or to receive multiple benefits under the same scheme is prevented.

6. Payment information should flow electronically from end to end, so that a database is created for generating various types of reports as required by the state government.
6.3.6 Systemically Important Payment Systems (SIPS)

Payment and settlement systems play a key role in financial stability, because any failure of this vital infrastructure could lead to wider financial and economic instability due to the large values that are transacted by the Systemically Important Payment Systems (SIPS) and the erosion of public confidence, in the event of failures in the retail payment segment.

With the ever-increasing growth in cross-border financial transactions, having implications for financial stability issues, a consensus has emerged among international central banking community on the need to ensure the financial and technical integrity of the payment system, its robustness against shocks and its overall efficiency through rules, standards, monitoring and enforcement.

In this context, the Committee on Payment and Settlement Systems (CPSS) of the Bank for International Settlements recommended, and the RBI has adopted the Core Principles of Systemically Important Payment Systems (CPSIPS), which are adopted and accepted as international standards.

The Core Principles are a common set of universal international standards and best practices. These principles aim at reducing risks, achieving safety, measuring the efficiency of the financial systems, and encouraging the development of appropriate strategies for operation of safer and more efficient systemically important payment systems worldwide. They also include the responsibilities of the central bank in applying these principles. The Core Principles are based on the Lamfalussy Report on Interbank Netting Schemes published in 1990. The Core Principles may be summarized as follows:

- The system should be based on well-founded legal statutes under all relevant jurisdictions.
- The system’s rules and procedures should enable participants to have a clear understanding of the system’s impact on each of the financial risks they incur through participation on it.
- The system should have clearly-defined procedures for the management of credit risks and liquidity risks, which specify the respective responsibilities of the system operators and the participants and which provide appropriate incentives to manage and contain those risks.
• The system should provide prompt and final settlement of value, preferably during the day and at a minimum at the end of the day.

• A system in which multilateral netting takes place should, at the minimum, be capable of ensuring the timely completion of daily settlements in the event of an inability to settle by the participant with the largest single settlement exposure.

• Assets used for settlement should preferably be a claim on the central bank; where other assets are used, they should carry little or no credit risk.

• The system should ensure a high degree of security and operational reliability and should have contingency arrangements for timely completion of daily processing.

• The system should provide a means of making payments, which is practical for its users and efficient for the economy.

• The system should have objective and publicly disclosed criteria for participation, which permit fair and open access.

• The system’s governance arrangements should be effective, accountable and transparent (RBI, Annual Report 2001-02).

Responsibilities of the Central Bank in applying the Core Principles:

1. “The central bank should define clearly its payment system objectives and should disclose publicly its role and major policies with respect to systemically important payment systems.”

   The objective and role of the Reserve Bank of India in the systemically important payment systems have been published and are available in the public domain. The RTGS regulations and rules giving details of the responsibility of the participants in the RTGS systems are made available on the RBI website.

   The other SIPS systems, viz. G-secs and Forex Clearing operated by the CCIL are governed by the Byelaws which are made available to the participants when they become members, and these are also available on the CCIL website. The RBI periodically assesses the CCIL operations.

2. “The Central Bank should ensure that the systems it operates comply with the Core Principles.”
The RTGS operated by the RBI are compliant with the core principles. The RBI at its 14 centres operates the high value cheque clearing facility. The settlement for High Value Clearing at Mumbai is now in RTGS.

3. “The Central Bank should oversee compliance with the Core Principles by systems it does not operate and it should have the ability to carry out this oversight.”

The RBI at present does not have the power to perform oversight of the payment systems it does not operate. However, the RBI uses its regulatory and supervisory power over the banks to perform this task. In the case of the systems operated by CCIL, the RBI conducts periodic assessment.

4. “The Central Bank in promoting payment system safety and efficiency through the Core Principles, should cooperate with other Central Banks and with any other relevant domestic or foreign authorities.”

At the international level, the RBI has been continually in touch with the appropriate multilateral institutions, e.g. BIS, IMF and World Bank, regarding issues like financial stability, banking sector reforms and so on (RBI, 2006-07).

The RBI had constituted an Advisory Group under the Chairmanship of Shri M G Bhide to examine the applicability of these international standards and codes in respect of the Indian Payment and Settlement Systems. The Group, while assessing the compliance to the core principles, made some recommendations as follows:

- There is a need for a well-founded legal framework, especially to make netting systems legally valid.
- Introduction of Lamfalussy standards to address risks but subject to review.
- To post rules and regulations on clearing on the website.
- To draw up proper framework for counter-party risk.
- A common fund contributed by users of the system should be put in place, if existing arrangements are not satisfactory.
- There is need to introduce limits for all participants according to a fully centralized accounting structure.
• System should provide for same-day or intra-day settlement.
• RBI should undertake periodic costing of various payment instruments to facilitate effective pricing.
• There is need to popularize electronic funds transfer (EFT) through a scheme of incentives and disincentives (RBI, Annual Report 2001-02).

6.3.7 Payment Systems in India: Vision 2009-12

A Vision Document was prepared by the RBI with directions from the BPSS to provide guidance to the payments-system related activities of the Bank and give directions to achieve the components of the Mission Statement.

The Mission Statement formulated by RBI to achieve its Payments System objectives is: **To ensure that all the payment and settlement systems operating in the country are safe, secure, sound, efficient, accessible and authorized.**

The Committee on Payment and Settlement Systems (CPSS) of the Bank of International Settlements (BIS) in 2008 observed that the smooth functioning of an individual system often depends on the efficient operation of other related modules. The RBI will continue to discharge its responsibilities of oversight, regulatory and developmental role along with raising the efficiency standards and improve performance benchmarks.

“The Mission Statement articulated for payments system objectives of the Bank has six distinct and succinct components that would be integrated to form the universe of scope and premise of action” (RBI, 2009-12). These components are as follows:

- **Safety** – Keep the risks in various payment system products to the minimum and within manageable limits, if they are unavoidable, but necessary.
- **Security** – Give confidence to the stakeholders that the payment systems are trustworthy and properly protect them from threats and vulnerabilities.
- **Soundness** – Demonstrate the capability and ensure the payment systems function in a non-disruptive manner.
- **Efficiency** – Provide measures to assure that the payment systems are cost-effective, reliable and promote financial and economic stability.
• **Accessibility** – Ensure the reach of various payment systems at reasonable cost to various segments of the population.

• **Authorization** – Give permission to the entities to operate payment systems according to the provisions of the Payment and Settlement Systems Act and the regulations framed there under.

The Board for Regulation and Supervision of Payment Systems (BPSS) is the authority entrusted with the responsibility of regulating and overseeing the smooth functioning of the payment systems in the country. “The ‘Vision’ will be achieved under the overall guidance, direction and supervision of the BPSS” (RBI, 2009-12).

1. Payment System Oversight

The guiding principles, while pursuing the oversight (supervisory) goal, will be objectivity, simplicity and transparency. “Streamlining operating instructions, prescribing uniform practices, laying down minimum benchmarks, insisting on adequate redundancies and requiring effective business continuity plans will be vigorously pursued” (RBI, 2009-12) with emphasis on monitoring implementation of guidelines effectively.

Since it is necessary that payment systems should operate in a safe and efficient manner and in the best interest of the public, the RBI will take steps to:

(a) Increase the security, integrity and resilience of the payment system infrastructure in the country by taking new initiatives; providing standards through consultative process; and taking into consideration the suggestions of the various stakeholders. Thus, “the approach will be need-based and appropriately calibrated to reflect rational expectations” (RBI, 2009-12).

(b) Make public the requirements and the criteria for the various payment systems. The general principles of oversight are: transparency, international standards, effective powers and capacity, consistency and cooperation with other authorities.

(c) “The Bank will also adopt the recommendations and principles enunciated by international institutions like BIS, FATF, etc” (RBI, 2009-12), while developing systems, and, issue operational guidelines for the new and the existing payment systems.
(d) The Bank, for the purpose of wider dissemination and transparency, will place on its website the names of entities to whom authorization to operate payment system has been granted. Off-site monitoring/surveillance and on-site audits/inspections/scrutiny will be conducted properly in order to ensure compliance according to the principles laid down.

These measures are expected to stimulate an orderly growth and functioning of the payment systems, which will increase the confidence among the stakeholders.

2. Risk Mitigation

As the RBI is committed to assuring and ensuring the safe and efficient functioning of payment systems, it will identify various risks involved, and adopt risk mitigating measures and mandate appropriate risk management practices. Various risks associated with the payment system are: concentration risk, counterparty risk, credit risk, legal risk, liquidity risk, operational risk, regulatory risk, settlement risk and systemic risks. The RBI will effectively manage these risks.

In order to mitigate concentration risk in large value and retail payment systems, operations of multiple payment systems by a single entity and also one bank acting as the settlement bank for multiple payment systems will be limited. In addition, risk mitigation measures will be put in place, whenever required.

Reliance only on a single or few service providers also generates concentration risk. Risk mitigation measures, in this respect, will be pursued in consultation and coordination with all the regulatory authorities and departments.

In the context of operational risk, the following measures will be adopted: (i) Employing the latest and relevant technology; (ii) Developing straight-through processing interfaces, (iii) Placing controls in the form of maker-checker practices and building proper audit trails; (iv) encouraging vendor-neutral platforms and products; and (v) Addressing scalability issues by monitoring adequacy of infrastructure and performance.

Regarding other risks, the steps taken will include: (i) Regulated access to participants by way of limit-setting, net debit caps and access criteria; (ii) Guaranteed settlements through line of credit, financial guarantees, settlement guarantee fund, central
counterparties; (iii) Collateral systems like margining, hair cuts, requiring securities; and
(iv) Netting exposures by way of multilateral net settlements, and netting-net settlements.

“With the move towards consolidation of infrastructure and integration of various
payment systems, isolating and mitigating operational risk assumes importance. Risk
containment is a plan and as a part of this exercise, exacerbation and transmission to
other systems will be analyzed and prevented both in Bank-operated and others-operated
systems. The participants in such systems will also be expected to institutionalize similar
practices” (RBI, 2009-12). The RBI thus has a very clear-cut vision for mitigating risks in
payment systems.

*Hence, the hypothesis entitled: “The efficiency of the payment systems in the
country depend on the role played by the regulator to ensure safety in the payment
systems and prevention of any occurrence of systemic risk” holds good.*

3. Other Initiatives

Other initiatives in respect of making payment systems more efficient include:
information dissemination, policy and product expansion, coordination with other
regulators/international/regional bodies, both within the country like SEBI, IRDA, and
abroad like Central Banks, CPSS, SAARC Payments Council.

The Bank will also contribute to international oversight and cooperation
initiatives as a member of the CPSS and the SAARC Payment Council, and, encourage
and support partnership programs with neighboring countries and regional institutions for
reforms in payment systems in the region. “The RBI will repeat a review of
categorization of SIPS and System Wide Important Payment Systems (SWIPS), and bring
out a Review of Large Value Payment Systems in India” (RBI, 2009-12).

Various initiatives would be reviewed periodically by RBI to ascertain the impact
on smooth functioning of the system, and, if necessary, take corrective steps.

“As a part of the information system policy framework, the prerequisites of a
policy for preservation and storage of data/information generated and maintained, both in
respect of the paper and electronic clearing modes is being finalized in consultation with
the Bank’s Legal Department” (RBI, 2009-12). This will ensure uniform practices at different clearing locations in terms of preservation of records and their ready availability.

4. Action Plan

The following action plans will be implemented to achieve the agenda stated above, within the next one to three year time. The RBI will play a proactive role and take initiatives with the cooperation from and support of various stakeholders, expectations of the system, capabilities and preparedness of the participants and the developments taking place from time to time.

(a) **Authorization of payment systems** – “The existing and proposed payment systems will need to obtain authorization from the RBI to continue/commence operations” (RBI, 2009-12). The RBI will lay down operational and technical standards for the operation of these systems, issue directions, call for information/returns, revoke authorization, impose penalties or initiate prosecution proceedings for violations of the Act, the Regulations, the directions issued and the terms and conditions of authorization.

(b) **Smooth functioning of the existing systems** – The RBI will ensure that the systems it has authorized to operate will continue to function smoothly. Settlement Finality Directive will be put in place to provide finality of settlement for transactions originated in the retail payment systems. The existing unwinding mechanism will be suitably modified to satisfy the present expectations in terms of complete unwinding of both the *dues of* and *dues to* the defaulting institution. The main focus areas will be to ensure optimal operations of clearing entities.

(c) **Infrastructure building and improvement** – Back-up arrangements will be made by way of selecting alternative banks to look after processing and settlement operations, in the event of non-availability of the main bank. Single Window Facility will be extended to all the member banks, which are part of clearinghouses managed by the major banks. This will enable member banks to come to know about the balances maintained by them with these banks at different clearinghouses and also initiate funds’ transfer requests from/to their own accounts.
(d) To reduce risks in paper-based clearing, the following steps will be taken:

- Increase the efficiency of the paper-based mode of clearing by introducing MICR processing, computerized settlement, truncating the movement of physical cheques, etc.

- Operations across all clearinghouses in India will be fully computerized. Magnetic Media Based Clearing System (MMBCS) software will be used to computerize processing and settlement operations at all clearinghouses, and, new clearinghouses will function only on MMBCS mode.

- Cheque Processing Centres (MICR-CPCs) will be operationalized at all locations that are viable and have a daily volume of 10,000 or more instruments. Such CPCs will be made part of the grid-based CTS, and, cheques processed by MICR-CPCs will cover over 95 per cent of the volume and value of cheque processed in the country.

- To overcome the risks inherent in paper-based clearing, especially large-value transactions, electronic products like NEFT/RTGS, will be used.

- Speed clearing of outstation cheques at the centre of presentment will be extended to cover 100 major centres in the country.

- The RBI-run inter-city clearing will be discontinued at all locations.

- CTS will be rolled out initially at Chennai, and then National rollout of CTS will be considered.

- Grid-based cheque clearing system to cover nearby MICR-CPCs and clearinghouses under Chennai grid, covering the southern states will be implemented. By extending its jurisdiction the New Delhi-grid will go into operation.

- Standardization of the cheque will be attempted, which will introduce more security features into the cheques and thus reduce frauds.

- All cheques will be completely migrated to the MICR mode. Non-MICR clearing will be discontinued.

- As clearing infrastructure develops, bilateral clearing arrangements between banks shall be reviewed and allowed to continue only where necessary.
(e) **New frontiers** – There has been an increase in the new payment systems initiatives/products and introduction, usage and acceptability of the new on-site and off-site delivery channels, such as Core Banking Solutions (Branch Banking), Computers (Net Banking), Cards (Prepaid Payment Instruments), Mobiles (Mobile Banking), Automated Teller Machines, Points-of-Sale Terminals, Hand-held Devices, Interactive Voice Response Modes, etc. All these will be carefully monitored and actively pursued: “Effectiveness and reach of Business Correspondents (BCs) and various modalities including eligibility criteria, area of operations, appointment of sub-agents, etc., will be periodically reviewed and streamlined, if necessary, in the interest of increased outreach and expansion of banking services to the rural populace” (RBI, 2009-12).

5. **New Projects**

The proposed new projects to be undertaken by RBI in co-ordination with NPCI are:

(a) **Implementing a new and feature rich RTGS system** – There is a need to migrate to a new version of RTGS that could take advantage of the advancements in new technology, provide scalability in volumes, “parameterize more features in line with similar facilities available in other countries” (RBI, 2009-12), which will provide more flexibility in operations and better saving of liquidity.

(b) **India Moneyline – A 24x7 system for One-to-One funds transfers** – The present NEFT system operates during the office hours only. However, it requires to be extended on a 24x7 basis or to develop a new or similar system like the Faster Payment Service in the UK, which operates on a 24x7 basis.

(c) **India Card – A domestic card initiative** – There is a need to provide a domestic payment card (India Card) and a POS Switch Network for issuance and acceptance of payment cards, on account of two main reasons: (i) Indian banks have to bear high costs for affiliation with international card associations due to the absence of a domestic price setter, and (ii) “the connection with international card associations resulting in the need for routing even domestic transactions, which account for more than 90 per cent of the total, through a switch located outside the country” (RBI, 2009-12).

(d) **Redesigning ECS to function as a true Automated Clearing House (ACH) for bulk transactions** – At present Local ECS, used to facilitate bulk electronic
transactions with one-to-many and many-to-one variants, is in operation at 76 centres. The centralization of this process has already started with the launch of credit variant of NECS at Mumbai and RECS on a pilot basis. There is a plan for implementation of its debit variant. The ECS/NECS solution has been internally developed and has been in use since long, and, the “need for building a technology and feature-rich ACH network by totally redesigning the existing ECS to provide end-to-end processing in a straight-through manner would be examined” (RBI, 2009-12).

(e) Mobile Payment Settlement Network – Mobile phones are de facto emerging as an important channel for transmission of payment instructions. However, efficient mobile payments require real time transfer of funds with adequate security. At present all inter-bank mobile transfers are in the form of payment instructions for settling funds through the existing payment systems. This calls for building a national infrastructure for facilitating real time mobile payments.

6.4 Conclusion

As seen from the above initiatives taken and proposed in the near future by RBI, it is attempted to make payment and settlement systems strong, safe and convenient. Besides RBI, banks and other institutions associated with the payment systems have to assume more responsibilities. In this regard, findings based on the analysis of payment business in select banks in India are discussed in the next chapter.