# *Indian Payment and Settlement: Systems Responsible Innovation and Regulation**

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First of all, my thanks to the management of IDRBT for inviting me to this eighth edition of the IDRBT Banking Technology Awards function.

## Financial Innovation in the Context of the Crisis

2. We are gathered here today to recognise and celebrate financial innovation. If we take a long sweep of history, there is no doubt that innovation has contributed to enhancing the quantum, quality and reach of financial intermediation. In recent years though, financial innovation has become a contentious issue. Unbridled financial innovation and the failure of regulators to check that are also being cited as among the culprits for the global financial crisis.

3. Quite understandably, the crisis has triggered a number of questions about financial innovation. Is all financial innovation for the good? Are there good and bad innovations? What determines if an innovation is good or bad – the innovation itself or the way it is used? Who is to determine if an innovation is good or bad? Do regulators have the wisdom and competence to regulate without stifling value adding innovation?

4. These questions are subject matter of a vigorous debate among financial markets and financial sector regulators. Even as this is largely work in progress, the objective of all this effort is clear – to make both innovators and regulators more responsible.

5. Is this talk about responsibility just a homily? I believe it is more than that. Let me explain. Innovations, we know, are not driven by altruism; they are motivated by private profit. If there is no private profit, there will be no innovation. In theory, as Adam Smith had propounded over two centuries ago, this is no bad thing. Individual pursuit of profit, driven by selfishness, can indeed lead to collectively optimal outcomes. The important condition for this to happen though is that markets must be competitive and efficient. But markets fail, and financial markets fail more notoriously than other markets for a variety of reasons – information asymmetry, moral hazard, adverse selection, externalities *etc.*

6. Possibly the only way to mitigate the risks of market failure in respect of financial innovation is regulation. And herein comes responsibility. Innovators must be responsible for the way they use their innovations. Regulators must be responsible for ensuring that financial stability and consumer interest are not compromised by the innovations. This sort of responsibility demands competence, foresight and wisdom on both sides.

## Payment and Settlement Systems

7. Responsible innovation and regulation is the topic I want to address today. 'Responsibility' should be the thrust of innovation in all segments of financial markets and responsibility should be the credo governing regulation across all dimensions of financial regulation. Today, though, I will focus on a narrower segment – responsible innovation and regulation in payment and settlement systems.

8. This choice of payment and settlement systems is informed by three motivations. First, payment and settlement systems have witnessed by far the most game changing innovations, especially in the matter of furthering financial inclusion. Second, innovations in payment and settlement systems have been both market based and technology based, and illustrate how technology based innovations can be mainstreamed.

* Keynote address by Dr. D. Subbarao, Governor, Reserve Bank of India at the IDRBT Banking Technology Awards Function on August 3, 2012 at Hyderabad.

Mainstreaming technology based innovation is particularly relevant at this platform because that is the mandate of IDRBT.

9. Third, and most remarkably, during the depth of the financial crisis in 2008/09, when virtually all financial systems and all financial markets went into near collapse, the payment and settlement systems worldwide remained stable. What would have happened if the payment and settlement systems too had seized up? Even to imagine that is frightening.

## RBI as a Responsible Regulator

10. The Reserve Bank is deeply conscious of being a responsible regulator. We interpret this responsibility as follows. We must encourage financial innovation but only such innovation that improves the efficiency of financial intermediation and therefore contributes to the real sector. We must ensure that as innovations are rolled out into actual financial transactions, they do not erode financial stability. We must be especially sensitive to consumer protection. And uniquely, because of our developmental role, we must ensure that financial innovation furthers financial inclusion.

11. Responsible regulation here means providing a stable, predictable and contestable regulatory framework that encourages innovation, emphasises safety, security, efficiency and accessibility, and aids the orderly growth of the payment and settlement systems. As you are aware, the Payment and Settlement System (PSS) Act, 2007 designates the Reserve Bank as the statutory regulator of the payment and settlement systems in the country. But even before becoming the statutory regulator, the Reserve Bank has been engaged in modernising the payment and settlement systems; and even as we are the statutory regulator today, we continue to take the lead in facilitating innovation.

12. Having set that context, I now want to address three specific sub-topics in the area of payment and settlement systems:

i. RBI's role in modernising payment systems

ii. RBI's approach to responsible regulation

iii. RBI's role as facilitator of innovation

## RBIs Role in Modernising Payment Systems

13. So, let me turn to the first sub-topic – the role played by the Reserve Bank in the modernisation of the payment and settlement infrastructure of the country.

### *Paper Based Clearing*

14. The Reserve Bank kickstarted the modernisation of the paper based system in the mid-80s with the introduction of MICR technology in the four metros. Today MICR technology is used at 66 centres across the country. Besides, more than 1100 smaller centres have been brought under a uniform computerised clearing package -the 'Express Cheque Clearing System' – to enable the required level of interoperability across all the clearing houses. Leveraging on the core-banking infrastructure of banks, we introduced 'Speed Clearing' in 2008 to facilitate collection of outstation cheques on a local basis.

15. Another major initiative has been the Cheque Truncation System (CTS) which was operationalised in the National Capital Region of Delhi in 2008. CTS, as many of you know, is an image based cheque clearing system obviating the need for physical movement of cheques. A further technological improvement of the regular CTS environment is the grid based CTS. The grid based CTS encompasses multiple clearing locations spread across several states facilitating the processing and clearing of cheques of all the banks under that particular grid. The National Payments Corporation of India (NPCI), the umbrella retail payments organisation set up by banks, has since operationalised a grid based CTS in Chennai in 2011.

### *Electronic Payment Systems*

16. Even as it was modernising paper based transactions, the Reserve Bank was also simultaneously working on retail electronic payment systems such as Electronic Clearing Service (ECS) for bulk payment transactions (credit as well as debit) and an Electronic Funds Transfer (EFT) system. The localised ECS has today metamorphosed into an ECS suite of products: (i) a localised ECS catering to the bank branches of a local clearing house; (ii) a Regional ECS covering all the

bank branches of a state or several states as in the North-east; and (iii) a national ECS covering the entire country. Alongside, the EFT has evolved into the pan-India NEFT. Together, these two products have revolutionised the electronic retail payments market landscape in the country.

### *Real Time Gross Settlement (RTGS)*

17. The paper based and electronic systems that I just talked about were both retail payment systems. As an economy grows, the volume of large value payment transactions increases. For complementarity across the system, it then becomes important to extend modernisation to the large value payment systems as well. Towards this endeavour, the Reserve Bank introduced the RTGS system in March 2004 for settling gross inter-bank and customer transactions of values over `200,000. When we started off the RTGS in 2004, the gross daily turnover was just about `5 billion. Today, the average gross daily turnover is nearly `2.5 trillion, an expansion by a factor of 500. Similarly, the volume of transactions that stood at just a few thousand on average per day when we started the RTGS has today increased to well over 200,000 per day. We are now focusing on graduating to the Next-Gen RTGS system with enhanced liquidity saving features and faster and higher processing capabilities.

## RBI's Approach to Responsible Regulation

18. Having indicated what the Reserve Bank has done to modernise the payment and settlement systems, let me now move on to RBI's approach towards being a 'Responsible Regulator' in this area. As I said earlier, the Payment and Settlement Systems Act, 2007 accorded statutory regulatory powers to the Reserve Bank. Even as we are the regulator, we continue to be the large value payments system operator given the systemic and financial stability issues involved. But our effort is now focused more towards encouraging banks and authorised private entities to increasingly take over the retail payment space. I will tell you about a few important things we have done in that direction.

### *Think Global, Act Local*

19. The Reserve Bank's strategy has been quintessentially 'think global, act local'. For example, in the roll out of the retail payment systems – both paper based and electronic – we followed a decentralised approach. As technology improved and as banks moved on to core banking platforms, we shifted to aggregation and consolidation of the decentralised systems to exploit economies of scale. The shift to grid based CTS, and in the case of retail electronic payments, the NECS and the NEFT systems are illustrative of this.

### *Recognising the Role of Non-Banks*

20. Recognising that non-banks can provide innovative payment products and foster competitiveness in the market, the Reserve Bank authorised non-banks to enter the retail payment space. At the same time, we took care to ensure that the non-banks which come in adhere to KYC/AML guidelines and follow the prescribed guidelines for customer protection and customer service. For example, even as non-banks specialise in payment services and products, the settlement domain remains with the banks, and the outstanding balances are required to be kept in an escrow (trust) account so as to insure against bankruptcy.

21. Recently, the Reserve Bank has allowed entry for non-banks into another payment space – ATMs. Although there has been a steady year-on-year 25 per cent growth in the number of ATMs in the country, their penetration as measured by the number of ATMs per million population is still very low when compared to other emerging markets. To increase the deployment of ATMs, especially in the smaller centres, non-bank entities are now permitted to set up, own and operate ATMs, styled as 'White Label ATMs' (WLA). Accordingly, the regulatory guidelines prescribe a proportion of ATMs to be necessarily installed in Tier III to Tier VI centres (towns/villages with population of less than 50000), thereby extending anytime, anywhere banking facility to a wider segment of population. Since this initiative will bring in less literate and less empowered population into the ambit of ATMs, we have expressly stipulated that, even as the WLA is set up by an NBFC, the primary responsibility for redressing the grievances of customers relating to failed transactions and for cash management remains with the sponsoring bank.

## Promoting Safety and Security of Payment Instruments

22. We have implemented several measures to improve 'hygiene factors' such as safety and security of payment transactions. The security of online card transactions has been strengthened with the implementation of additional factor of authentication. With effect from July, 2011, an online alert for all card transactions has become mandatory. Similarly, to protect card present transactions, we issued directions to banks and other stakeholders to initiate measures to strengthen the security and fraud risk management practices, merchant sourcing, and to issue EMV (Europay-MasterCard-VISA) chip card and PIN to customers who have evidenced at least one purchase using their debit/credit card in a foreign location.

23. The Reserve Bank will soon need to take a decision on the choice between migrating to EVM cards with chip and pin and an Aadhaar based biometric authentication. The chip and pin is an established and tested technology, but is relatively expensive. The Aadhaar based option is cheaper, but the robustness of this technology is as yet unproven. If indeed we are finally able to marry Aadhaar into the cards, we would be achieving the same level of security available in chip and PIN model at a much lower cost. Our other initiatives include implementing CTS2010 standards to promote safety in paper clearing and to immobilise the cash retraction facility in ATMs to prevent frauds.

## Customer Centric Regulation

24. By far the largest number of complaints we receive in the Central Office of the Reserve Bank as well as at our ombudsman offices across the country are about failed ATM transactions. RBI has mandated that in case of a dispute, the disputed amount should be credited to the customer's account within seven days, failing which the customer's bank is liable to pay compensation to her at the rate of `100 per day from the date of the complaint, provided the complaint is filed within 30 days from the date of the failed transaction.

25. Debit cards can potentially be a win-win option by enhancing convenience for the customer and improving business for the merchant. Disappointingly, the penetration of debit cards has been shallow. One disincentive is the business cost to merchants. So far, the Merchant Discount Rate (MDR) for debit and credit cards has been uniform in India. Given that a debit card is a secured product while a credit card is part of the unsecured credit product portfolio, the Reserve Bank decided to introduce a differential MDR for debit card transactions. Under this recently announced policy, the MDR for usage of debit cards should not exceed 0.75 per cent of the transaction value for transactions upto `2000, and not exceed 1 per cent for transactions above`2000.

26. Why is this regulatory intervention to reduce the MDR important? For an emerging market with limited payment system acceptance infrastructure like PoS machines, a lower MDR would encourage even smaller merchants to accept card payments since the outgo in terms of the fee payable by them to the acquiring bank (the bank which has installed the PoS machine) would be relatively small. In the case of developed countries where the acceptance ecosystem is already in place, MDR is not an issue and only the interchange fee as determined by the network operator has come under regulatory purview.

27. In an effort to facilitate domestic person-to-person fund transfer for migrant population who do not have access to banking facilities because of inability to meet the KYC requirements, three schemes have been rolled out: (i) cash pay out scheme; (ii) cash pay-in scheme; and (iii) card to card transfers. The first two schemes facilitate fund transfers with a bank account either at the remitting end or at the beneficiary end. These guidelines aid the underprivileged who do not have a bank account for whatever reason, to get an access nevertheless, to the formal banking channel to send and receive remittances safely and inexpensively. There are no reliable estimates of what it costs to remit money through informal channels, especially to and from remote locations; however, anecdotal evidence suggests that informal channel remittances can cost several multiples of costs through the banking system.

## RBI as Facilitator of Innovation in Payment Systems

28. Let me now move on to our third role – as facilitator of innovation in payment systems. Responsible regulation must also involve facilitating value adding innovation. Let me give an account of what we have done towards this endeavour.

### *Calibrated Approach Towards Introduction of New Payment Products*

29. The last few years have witnessed a remarkable growth in new payment products and access channels *viz.* debit cards and credit cards issued by banks, and prepaid cards that can be issued by both banks and non-banks. The safety and efficiency of the access channels *viz.* ATMs, PoS, E-commerce and M-commerce have been instrumental in the popularisation of these alternate payment products.

30. RBI recognises the potency of prepaid payment instruments to be cash substitutes. This was an area where regulation followed innovation. Since the guidelines were issued in 2009, prepaid payment instruments have been gaining popularity. Noticing their growing popularity, we tweaked the policy on a dynamic basis to further facilitate the issuance and acceptance of these alternate payment products. Under the recently introduced Domestic Money Transfer guidelines, while no cash-out is still permitted in respect of semi-closed pre-paid payment instruments issued by non-banks, they can now be utilised for transferring money to other semi closed cards or into bank accounts.

31. In October 2008, the Reserve Bank put out operating guidelines on mobile banking for banks. Only banks which are licensed and supervised in India and have a physical presence in India, are permitted to offer mobile banking, after obtaining the necessary permission from the Reserve Bank. The guidelines focus on systems for security and inter-bank transfer arrangements through Reserve Bank's authorised systems. On the technology front, the objective is to promote inter-operable standards so as to facilitate fund transfers from one account to another in the same bank or in another bank on a real time basis irrespective of the mobile network of the customer.

### *Aadhaar Initiative in Payment Systems*

32. Aadhaar has been recognised as an alternate authentication mechanism in the payment systems. Aadhaar based payment products have already been designed and introduced.

33. Aadhaar Enabled Payment Systems (AEPS) is a payment system aligned with UIDAI's plan to utilise the UID number for routing all government benefit transfer payments to beneficiaries. AEPS is a bank led model which allows online financial inclusion transaction at a PoS (MicroATM) through the Business Correspondent of a bank using the Aadhaar authentication.

34. Aadhaar Payment Bridge System (APBS) is a centralised electronic benefit transfer system which will facilitate disbursement of government benefits to the bank accounts of the beneficiaries linked to their Aadhaar numbers. Such electronic transfers will enable efficient and secure disbursement of benefits to the intended beneficiaries and will help the Government in reducing the administrative costs of the various schemes as well as the leakages in the transfers. This will also further financial inclusion by bringing the beneficiary households into the banking fold.

### *Mobile Financial Services*

35. Around the world, the delivery of payment services through the mobile has followed two models *viz.* bank-led model as in India, South Africa and the Philippines, or non-bank led as in Kenya and again in the Philippines. Why did we opt for a bank-led mobile banking model? For several reasons. First, mobile payment systems can provide only a remittance facility; they cannot provide other benefits under financial inclusion such as overdrafts, credit and micro-insurance. Also, banks are heavily regulated and this allows us to address concerns about KYC/AML as also customer service. With mobile payment companies, we have neither similar regulatory authority nor comfort. Third, entry into the banking space has to be on open, transparent and contestable criteria. We cannot allow privileged access to mobile operators into commercial banking through the mobile route. Accordingly, we have consciously pursued the bank led mobile banking model.

36. As of June, 2012, 50 banks were providing mobile banking services with an aggregate customer base of 14.75 million. Both the volume and value of mobile banking transactions are witnessing a remarkable growth. As of June 2012, a year-on-year growth in terms of volume was 143 percent while that in terms of value was 213 percent.

37. The Interbank Mobile Payment Service (IMPS) launched by the NPCI in November 2010 is expected to give a further boost to the growth of mobile payments. The IMPS is a unique 24x7 inter-bank electronic funds transfer system which provides instantaneous credit to the beneficiaries which, I am told, is the first of its kind in the world. Currently, the IMPS is at a nascent stage with limited volume of transactions and settlement values, but several enhancements currently under way, are expected to increase the volume and value substantially.

### *Focus on Central Clearing*

38. India has preferred a central clearing arrangement for large value interbank transactions wherever feasible. The Reserve Bank's tryst with central clearing started with the setting up of the Clearing Corporation of India Limited (CCIL) in 2001. CCIL offers central counterparty clearing and settlement arrangements for transactions in government securities, forex segment and CBLO. Settlement through the CCP arrangement has reduced the associated risk, cost and time in the completion of the settlement. Quite early on, the CCP arrangement instituted netting in forex transactions. This proved to be particularly valuable in the depth of the crisis when, even as liquidity lines had virtually dried up, banks in India did not face any liquidity and funding shortages.

### *Institution Building*

39. The Reserve Bank is proud of its record as an institution builder. This has been the case in the area of payment and settlement systems too where we built robust institutional structure as part of responsible financial regulation. We promoted the CCIL for central clearing and trade warehousing in large value payment systems, the IDRBT for promoting development and research in banking technology and NPCI to act as an umbrella organisation for retail payment systems. We all know, of course, that the opacity around the volumes, value and counterparties to the OTC contracts was one of the main causes of the global financial crisis. To mitigate this, in India, we prescribed, as early as 2007, that OTC derivative trades (IRS trades) should be reported to the data warehouse, the CCIL. India was possibly the first country to do this, and notably we did this even before the crisis. We have now permitted CCIL to act as a trade repository for CDS and foreign currency derivatives. The INFINET network and the Structured Financial Messaging Solution have been rolled out by IDRBT at the behest of the Reserve Bank. These were pioneering efforts at networking the industry and providing an alternate domestic solution for the transmission and exchange of domestic financial messages.

## Taking Stock

40. I have so far discussed the Reserve Bank's role in payment and settlement systems in three modes – in modernising them, as the regulator and as a facilitator. What has been the result of all this effort?

41. The large value payment systems have mostly shifted to the electronic mode, possibly because of the regulatory fiat. Disappointingly, retail payment systems continue to be paper centric and electronic systems have not penetrated deep enough. When compared with other emerging markets like Brazil, Mexico and Russia, the value of banknotes and coins in circulation in India, at 12 per cent of GDP, is high. The number of non-cash transactions per person in India stands at just 6 per year, which again is very low in comparison with other emerging economies.

42. Why is this so? Let us look at some important reasons.

### *Slow Pace of Infrastructure Building*

43. In proportional terms, India has one of the lowest numbers of ATMs and PoS terminals – just 63 ATMs and 497 PoS per million population. Only a small fraction of the 10 million plus retailers in India have card payment acceptance infrastructure. Though the usage of mobile banking and internet banking is growing, a significant percentage of customer base is not covered.

44. Expanding the acceptance infrastructure such as ATMs, PoS terminals, micro-ATMs, handheld devices *etc.* into smaller towns and villages is very much required to give an impetus to electronic payments. The recent policy initiative on white labeled ATMs is expected to go a long way in increasing the acceptance network.

45. Developing and expanding payment infrastructure, as we all know, has associated upfront costs. A question in this context is whether each institution should set up its own dedicated infrastructure or whether there are economies of scale in setting up shared infrastructure and competing for business based on that shared infrastructure. A good example of sharing infrastructure while competing for market share is the mobile industry. While infrastructure in the form of towers is shared, the mobile network operators (MNOs) compete aggressively for protecting and increasing their market share. Innovation is, of course, a splendid competitive weapon, but it is sometimes best fostered by collaboration.

### *Limited Product Innovation*

46. Limited product innovation is another factor behind the tepid growth of retail payment systems. While the private non-bank entities including MNOs have been in the forefront of introducing pre-paid payment instruments including mobile wallets, the market is yet to deepen. For example, there are innovative products like paypal Virtual Account and Google Wallets *etc.* which are becoming popular in e-commerce because they are convenient, safe and efficient. Why has something similar not developed in India?

47. The question in this context is whether RBI's regulation of payment systems is acting as an entry barrier. Are RBI's regulations governing payment systems too complex and demanding? Experience shows that that is not the case. Since the PSS Act came into operation 2007, RBI has granted authorisation to 41 entities to operate payment systems. In framing and operating the guidelines, we have been guided by the need to develop payment systems in the country while safeguarding safety and security. In introducing new products, we have adopted a consultative approach and routinely seek feedback from the stakeholders before taking a regulatory decision. We are open minded and receptive to new ideas. What all this means is that we need to probe further to understand what is inhibiting innovation in the Indian payment systems – is it that the regulatory environment is still not conducive enough, or is the market not able to appreciate the future business promise?

### *Lack of Initiative By Banks?*

48. A related question is: are banks taking the easy way out by being content with the measures initiated by the regulator, and following, rather than leading the effort towards electronification of payments? A typical illustration of this is that while all banks are active card issuers, very few are card acquirers. Is this because card issuance is a lot easier than enrolling merchants and putting in place the PoS infrastructure? How should RBI, as the regulator, respond to this? Should we mandate that for a certain number of cards issued, the issuing bank should have a prescribed proportion of PoS terminals as well? If the cost of a PoS terminal is an impediment, should the banks not think of alternatives? There are alternatives such as a mobile PoS which could be cheaper to deploy and easier to service.

## Conclusion

49. Let me now conclude. I started with the broader debate on financial innovation and regulation, on how the crisis has renewed that debate, and how the response to that debate is crystallising in the form of greater sensitivity to responsibility on the part of both innovators and regulators. I then moved on to the narrow area of payment and settlement systems and spoke on the role played by RBI in modernising payment systems and in facilitating innovation. I spoke about how we try to be a responsible regulator, encouraging innovation, but at the same time ensuring that innovations add real value and do not compromise financial stability or customer interest.

50. Payment and settlement systems is a fast growing area, witnessing rapid innovations, spurred by market forces as well as technology. We need to bring in the

best practices and products of the world to India but we should adapt them to our environment and conditions. In particular, we should focus on reducing costs and improving 'literacy' about payment products and systems. And as we shift from a largely cash based economy to a less cash based economy, we need to grapple with the monetary policy implications of this transition.

51. As a professional, forward looking institution, the Reserve Bank has put out in the public domain a vision document on the road map for the evolution of payment and settlement systems in India for the period 2012-15. The document reinforces the commitment of the Reserve Bank to continue to ensure that all payment and settlement systems in the country are safe, efficient, interoperable, authorised and accessible, while also furthering financial inclusion and compliance with international standards. The goal is to proactively shift from cash to electronic payment systems.

52. I have spoken today about RBI as a responsible regulator in the narrow area of payment and settlement systems. You all know that the Reserve Bank's regulatory mandate is wide, extending to banks, non-banks and significant segments of the financial markets. This consciousness about responsibility straddles our entire regulatory mandate.

53. The financial sector is forever in a flux, and the challenge for regulators is to keep pace with those rapid changes. Regulators should be knowledgeable, and this means they should realise that they are always on a learning curve. Regulators should encourage innovators to push the envelope, but should always ensure that the envelope remains sturdy and strong.

## Glossary of Acronyms

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| AEPS | Aadhaar Enabled Payment System |
| APBS | Aadhaar Payment Bridge System |
| AML | Anti Money Laundering |
| ATM | Automated Teller Machine |
| CBLO | Collaterlised Borrowing and Lending Obligation |
| CCIL | Clearing Corporation of India Ltd. |
| CCP | Central Counterparty |
| CDS | Credit Default Swap |
| CTS | Cheque Truncation System |
| ECS | Electronic Clearing Services |
| EFT | Electronic Funds Transfer |
| EMV | Europay-MasterCard-VISA |
| GDP | Gross Domestic Product |
| IDRBT | Institute for Development and Research in Banking Technology |
| IMPS | Interbank Mobile Payment System |
| INFINET | Indian Financial Network |
| IRS | Interest Rate Swaps |
| KYC | Know Your Customer |
| MDR | Merchant Discount Rate |
| MICR | Magnetic Ink Character Recognition |
| MNO | Mobile Network Operator |
| NECS | National Electronic Clearing Services |
| NEFT | National Electronic Funds Transfer System |
| NPCI | National Payments Corporation of India Ltd. |
| OTC | Over the Counter |
| PIN | Personal Identification Number |
| PoS | Point of Sale |
| PSS Act | Payment and Settlement Systems Act |
| RTGS | Real Time Gross Settlement System |
| UID | Unique Identification |
| UIDAI | Unique Identification Authority of India |
| WLA | White Label ATM |