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The Art of Living for ATMs in India

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Banks have been lobbying for a cap on free usage and an increase in the fee that they pay each other for their customers using other banks' ATMs.
(Image: courtesy Times of India)

Executive Summary

Background and Objective:

1. Automated Teller Machine (ATM) is an electronic banking outlet, which allows customers to carry out basic transactions without the aid of a branch representative or teller. The basic transactions at an ATM include financial transactions (cash withdrawal) and non-financial transactions (balance inquiry, mini-statement, pin change, etc.). The more complex ATM hybrids will additionally accept deposits, facilitate mobile and pre-paid card top-ups and other value added services.

2. In order to access an ATM, banks issue debit cards to their acount holders. An ATM of a bank can serve debit cards of their own bank as well as other banks. Transactions done at a bank's ATM by their own cards are refered to as On-Us transactions while those done by other bank's cards are Off-Us (or cross ATM or third-party ATM) transactions. Today there are more than 170 thousand ATMs in India and the interoperable feature of these ATMs allow debit card holders to access their bank accounts through any of the ATMs in the country.

3. In April 2009, RBI introduced one of the most effective regulatory measure in expanding the ATM network in India- it made all transacations on third-party ATMs free. Later, RBI allowed banks to limit the number of free cross ATM cash withdrawals to five a month (and later to five free ATM transactions). RBI's subsequent moves were primarily to address some business model issues of the banks. However, the March 2008 regulation of unlimited free access to own ATMs continued. Such a policy shift on own and cross ATM usage changed the ATM market altogether and led to the current boom in the ATMs in India. Today we see a trend among banks to capitalise more from serving other bank's customers at their ATMs than to solely serve their own customers. Such a trend is very good for the development of ATM network across India. Furthermore, with the freedom given to choose any bank's ATM to withdraw cash and to additionally carry out non-financial transactions, the system has currently converged where the probability of a debit card being used at a cross ATM instead of own bank's ATM is one in three.

4. Let us consider a practical situation where a bank A does not have an ATM located where it should have one (assuming a number of their own customers would have used it, had there been one). Customers of bank A, in that location, may then look for a location where their bank has an ATM or a branch. In other words, bank A induces inconvenience to its customers and also carries a risk of incurring more expenditure (through a customer's branch visit) because of its inability to place an ATM at the location. To enhance quality of customer service in banks, RBI enhanced interoperable ATM usage through five free cross ATM cash withdrawals. This made cross ATM usage similar to customer's own bank ATM usage. The impact of such a strategy had been an overall reduction (through increased usage of existing ATMs) in the cash withdrawal cost to the banking industry, apart from improved customer service. The need for ATM installation at a location, where there already

exists an ATM, then became dependent on the extent of ATM usage at that location. This way, while increasing efficiency and better utilization of resources, bank A customers can use bank B ATM and bank B customers can use bank A ATM with cost saving and convenience to banks and customers alike. The expenditure and income (in form of reverse-interchange) by each of banks A and B is expected to balance out since the net cost difference in cross ATM and own ATM usage is at most Re 1 per transaction (due to additional expenditure incurred on Bank's switch and NPCI's switch).

5. Corresponding to every cross ATM transaction, the bank whose ATM is used takes some revenue money, called reverse-interchange, from the card holder's bank. In 2009 this reverse-interchange had been fixed at Rs 18 for financial transactions and Rs 8 for non-financial transactions. Later, effective August 1, 2012, the reverse-interchange was revised downwards to Rs 15 for financial and Rs 5 for non-financial transactions. Mandating rates of reverse-interchange along with freeing cross ATM transactions led to extensive expansion and increased usage of the ATM network in the country.

6. RBI has now, based on its analysis, come up with new directions on ATM usage (to be effective November 1, 2014) rationalising number of free transactions. The guidelines, in effect, tries to rationalise the unlimited free access to own ATMs. Though the move is in the right direction, it needs some fine-tuning for optimal utilisation of the ATMs. As it stands, banks would have the freedom to set a monthly package like a total of 8 to 10 free ATM usage out of which a maximum of 3 to 5 cross ATM usage are free. Though it appears simple to read, apparently, implementing the same and additionally implementing the other new mandates in this connection is much intricate for banks to handle. To correctly implement the changes at CBS and ATM systems, it may involve substantial cost to banks defeating the purpose of the regulation. Though RBI has tried to correctly rationalise the overall free cap for ATM usage, it lacks proper insight on capacity utilisation of ATMs. Furthermore, RBI's regulation lacks substantiated data support on ATM usage while arriving at the mandated figures like atleast 5 and atleast 3 free ATM transactions.

Insights on ATM Transactions:

7. Significant insights based on NPCI data of 6- to 9-months of 2010, and the NFS and RBI's ATM usage data (April 2011 – March 2014) are:

- 38% of the cash withdrawal transactions are each below Rs 1000 and consume only 6% of the overall cash dispensed.
- 26% of the cash withdrawal transactions are each of Rs 5000 and above but consume 71% of the overall cash dispensed.
- The number of Off-Us cash withdrawal per ATM had a tremendous impact (about 70% increase) during the first nine months of 2010 before stabilising at around 1300 cash withdrawals per ATM per month. However, lately we see some downward trend with convergence at around 1150 cash withdrawals per ATM per month.
- There had been slight change in Off-Us non-financial transactions after banks were allowed to charge. The Off-Us non-financial transactions as a percentage of the total transactions reduced

from 28% to 23%. As of March 2014, the financial transaction component of the total number of transactions is about 77%.

- The number of Off-Us financial transactions has increased by about 94% (i.e., from 99.3 million to 192.7 million). Also, the share of Off-Us cash withdrawal (of all the ATM cash withdrawal transactions) has increased from 25% to 34%. Today, about 33% of the financial (Off-Us and On-Us combine) transactions are Off-Us for which banks are allowed to charge the customers (beyond 5 free transactions).
- While the number of ATMs grew at a sharp rate of 112%, there has been a 35% reduction in the average number of financial transactions per ATM (from 176 to 115 cash withdrawal transactions per ATM per day). This fact, when seen in conjunction with the 19% decline in number of debit cards per ATM, makes the decline in the average number of financial transactions per ATM more striking (see Chart). This picture appears more alarming if one takes into account the volley of new ATMs under the brown label and white label system coming up in the country. This highlights the need for appropriate policy measures to (i) facilitate more debit card issuances and to (ii) devise means to create an environment for optimal utilization of the ATMs through increased usage.
- **RBI publishes bank-wise ATM data monthly. To value add any future ATM study on the bank-wise ATM usage, it may be worthwhile for NPCI or RBI to additionally publish bank-wise cross ATM data (which is readily available with NPCI) on:**
  (a) Total number and amount of withdrawals done by bank's card holders.
  (b) Total number and amount of withdrawals done at bank's ATMs.
  (c) Total number of non-financial transactions separately for the above two situations.

Based on the RBI data (April 2011 – May 2014) on ATMs we show (see Chart) how a policy stance on ATM is leading to growing ATMs and growing underutilization of ATMs in India.

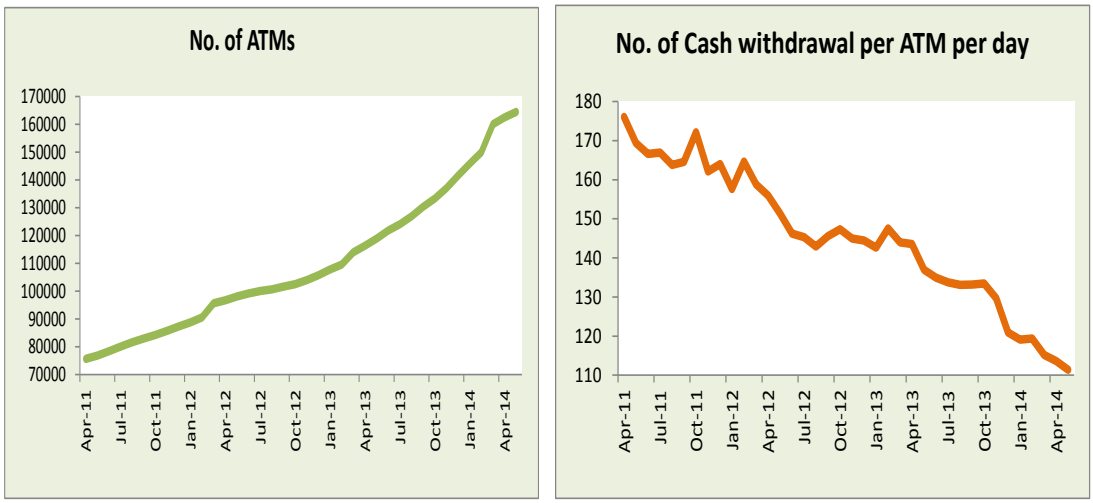

Chart : *Lines show how with increase in ATM numbers, there is a decrease in their per ATM cash withdrawal volumes.*

8. Through a cost-benefit analysis to run an ATM, we see that there is as such no scope to reduce the reverse-interchange when one tries to discover its value based on average cost to run an ATM and its

usage through transactions. In view of the decreasing trend in the number of transactions per ATM per day, the country level average cost per transaction could reasonably be fixed at a value below Rs 15. Given the scenario that banks now have to secure ATMs in isolated locations with a security guard there would be additional cost for guard to the tune of Rs 1.2 lakh per year per Off-Site ATM (bringing the monthly cost for Off-Site ATM to Rs 76,250). Thus, even if we add an additional Re 2 per transaction towards new risk/crime mitigation measures and insurance on ATM fraud, the country level average cost per transaction could reasonably be fixed at a value below Rs 17.

9. The correct discovery of reverse-interchange is crucial for an efficient ATM network in the country. While arriving at the reverse-interchange, two factors play a major role. These factors are X: monthly cost to run an ATM and Y: number of monthly transactions on the ATM. If X increases while Y decreases, it would be unsustainable for the banks leading to further demand for increase of reverse-interchange. Thus, a viable model should envisage either an increase in Y or a decrease in the number of ATMs since X is bound to increase due to inflation. In order that the system decreases ATM concentration at locations which has high ATM density but low Y values, an appropriate discovery of reverse-interchange is required.

10. Ideally, banks' use of each other's ATM is expected to more or less nullify the net reverse-interchange revenue. However, there are cases where banks have disproportionately large number of debit card users not commensurate with the number of their ATMs. Such an imbalance in the system prompts such banks to set means and mechanisms to direct their customers to their own ATMs.

11. SBI is a major contributor to this imbalance due to a disproportionately large number of their debit card users. SBI contributes to about 31% of debit cards issued by scheduled commercial banks in India with these debit cards contributing to about 41% of overall financial transactions at ATMs in India. On the other hand, SBI owns less than 27% of all ATMs in India. This results in SBI paying off a relatively higher net reverse-interchange fee to other banks. In other words, such a high fee being paid by SBI is attributable to SBI having relatively less ATMs than what its card base (and card usage) demands. SBI on an average has 2809 debit cards per SBI ATMs as against country average (excluding SBI) of 2336 debit cards per ATM. In terms of SBI's card usage, on an average SBI has a demand for 5355 cash withdrawals per SBI ATMs against rest of the banks averaging a demand for only 2904 cash withdrawals per ATM. This has inherently led to net high volumes of cross ATM usage by SBI debit cards vis-à-vis other banks' debit cards. Interestingly, the average ticket size based on all transactions of all banks (excluding SBI) is of the order of Rs 3600 while average ticket size of SBI cards alone is Rs 2500.

12. It is inherently clear that with the current tendency among cardholders to use a cross ATM, the card masses of SBI impacts SBI's net reverse-interchange revenue losses due to (a) prevailing fixed (per transaction based) reverse-interchange regime, (b) RBI's policy to provide reasonable number of free cross ATM usage and (c) SBI having significantly more debit cards relative to their number of ATMs than the country average. Ideally, the banks install ATMs for serving their own customers. However, banks may provide their ATM for use by other bank's card holders keeping in mind (i) the

(spare) capacity utilisation of ATMs and (ii) potential to gain some revenue. Thus, when a cross ATM is used, it leads to help in form of optimum resource utilisation from other banks' customers (revenue gain) and inherently helping (serving) them in return. Such bonus revenue is to be seen just as a bonus derived out of a regulatory prescription (regulating free cross ATM usage and fixing reverse-interchange rate) and not as a right since withdrawal (or dilution) of the policy stance would most likely deprive the banks even of the bonus revenue, apart from a setback in customer service.

Reforms in ATM Usage:

13. With RBI's recognition of the cost to handle cash[1], and getting a cue from debit card transactions at merchant establishments, where interchange[2] is worked out as a percentage of the transaction amount, in case of ATM transactions, involving cash handling, the reverse-interchange makes more sense to be a function of the transaction amount. Accordingly, a pricing model is proposed that also attempts to minimise the current imbalance in cross ATM usage. **The model suggests a per transaction reverse-interchange of Rs 5 plus 0.2% of cash withdrawn as an alternative. This amounts to a maximum of Rs 25 that a bank can receive under reverse-interchange and a minimum of Rs 5 for a non-financial transaction.**

14. The reverse-interchange revision is simple to implement since NPCI just needs to change the reverse-interchange netting and settlement formula as a function of the number of transactions and total amount of transactions for each bank. Banks do not have to implement anything new in their CBS. The proposed reverse-interchange revision would impact the system by

- protecting small banks by letting them pay to acquirer bank as per amount of cash withdrawn. This would encourage banks to use other bank's ATM at a price which is reasonable. This would thus incentivize such banks to issue more debit cards. It is observed that some Regional Rural Banks prefer to issue only ATM cards which works only on the sponsor bank's ATM so as not to incur excessive expenditure on reverse-interchange.
- ensuring that there is minimal difference in terms of cost to a bank when a customer uses his own ATM vis-à-vis a different bank's ATM.
- ensuring that there is less overcrowding of ATMs at close proximity and thereby allow healthy, cost efficient business model for banks.

[1] RBI through its July 1, 2013 notification prompted banks to charge for handling cash, even for small amounts, when customers deposit cash into or withdraw cash out of their bank accounts. Such a move has prompted banks, for example SBI, to charge their customers Rs 50 for every cash deposit at a non-home branch, even when the deposit amount is small (say, in the range of Rs 50 to Rs 1000). **There appears to be a serious disconnect leading to RBI's unintended and induced discrimination in form of charges (not constituting Intersol charges) that are levied by the bank to cover the cost of extending services to customers which is not branch agnostic in-principle (apparently in violation to RBI's Monetary Policy Statement 2013-14).** Though there is nothing wrong with the concept of cash handing charges, such a notion exists for bulk cash handling and not for small amount cash. In other words, **RBI needs to appreciate that imposition of cash handling charges makes sense so long as the charges are reasonable and that such a charge is made uniform across home and non-home branches.**

[2] Corresponding to every merchant transaction, the bank whose POS or Internet Payment Gateway is used gives some revenue money, called interchange, to the card holder's bank.

- eliminating imbalances of the type where ICICI Bank customers are withdrawing on an average Rs 5000 per transaction from SBI ATM while SBI customers are withdrawing on an average Rs 2000 per transaction from ICICI Bank ATM; and both banks (currently) paying Rs 15 to each other for cross ATM usage.

15. In order to keep ATM network alive in India, the model should be supported by appropriate regulations (for savings bank account) like,

- **Banks should allow atleast 12 free transactions (financial and non-financial combine) per month across all ATMs (own and cross ATMs combine). However RBI, for the present, need not allow banks to charge a fee for non-financial transaction on own bank's ATM.**
- **In order to give more rigour while arriving at the number 12 (in case one considers it reasonable to mandate atleast 8 or 9 or 10 or 20) for free ATM transactions per month, the workout should be based on the frequency distribution of number of transactions (excluding non-financial transactions on own ATM) in a month, with frequency being the number of distinct debit cards. A key criteria should be to ensure that at least 90% (or 95%) of the common users are unaffected while taking such a policy stance. Here, a user is said to be a common user if (s)he has carried out atleast one ATM transaction during the month.**
- **Banks should bring in parity on the fee imposed for cash withdrawals at ATM with that at branch counters.**
- **Banks should also impose an additional fee on cash withdrawal in excess of Rs 1 lakh a month so as to facilitate the economy and thus the masses in general (through moving towards a less-cash environment). Individuals requiring more than Rs 1 lakh cash per month may pay the fee (say, at the rate of 0.2% of the amount withdrawn in excess of Rs 1 lakh a month). We discuss more on this later.**
- **Banks should strive to have at least one ATM at a region (Metro/Urban/Semi-Urban/Rural) for every 5000 transactions (cash withdrawal) per month done by their debit card holders in the region. To encourage ATM usage, banks should also ensure that with every savings bank account opened, a debit card is issued.**

Impact of Reforms in ATM Usage:

16. It is pertinent to mention here that there are occasions when the ATM is unable to dispense more than Rs 4000 in one transaction since ATMs generally have the capacity to dispense a maximum of 40 notes (and it has run out of higher denomination notes). This leads to requiring three transactions on the ATM to withdraw Rs 10,000. Since this event has a non-zero probability, it causes inconvenience to card issuer bank as well as to the card holder. The proposed reverse-interchange model to some extent overcomes this problem for the card issuer bank. Also, while arriving at the figure 12 of free ATM transactions, this aspect should be borne in mind.

17. Under the current model of reverse-interchange of Rs 15, the impact of making customers move to their own bank's ATM (and thereby reducing the current 33% footfalls at cross ATM to say 20%) is expected to reduce the variation in the banks' net reverse-interchange payoffs. It is seen through a simulation study that a similar reduction in the variation is achieved (without disturbing the ATM usage behaviour) by adopting the proposed reverse-interchange Rs 5 + 0.2% of cash withdrawn. A bank-wise comparison of net payoffs under the two approaches should show minimal difference (except for the outlier banks).

18. The impact of bringing in behavioural changes in ATM usage through reducing cross ATM usage (by imposing a fee) is not to the gain of banks and customers alike. It would invariably reduce the number of overall usage per ATM and thereby increase inefficiency and cost to banks to run ATMs even for their own customers. Furthermore, such a change will force an increase in cash-in-hand with bank customers as they will lean towards withdrawing more cash than required to avoid frequent ATM use and consequential fees. Customers of a bank would also stand to effectively have lesser number of ATMs for their free use. However, there is another (though lower) possibility that people do not change their habit since they are habituated to excessive ATM usage. In balance, **RBI should avoid taking a retrograde step by inducing a change in reasonable customer behaviour.**

19. It is pertinent to mention here that apart from high cost to serve bank customers at branches, many banks do not even have the capacity to serve the large customer base at branches. In other words, for banks, ATM is a substitute of branch service not by choice but by need to remain in business. Overemphasising that it costs to run an ATM is not an option since it also costs (and much more) to run a branch for providing such basic banking service. International experience indicates that in countries such as UK, Germany and France, bank customers have access to all ATMs in the country free of charge, except when cash is withdrawn from white label ATMs or from ATMs managed by non-bank entities. There is also a move, internationally, to regulate the fee structure by the regulator from the public policy angle. The ideal situation is that a customer should be able to access any ATM installed in the country free of charge through an equitable cooperative initiative by banks.

Elimination of Disincentives in Non-Cash Payment Modes:

20. **In the retail sector, there still exist disincentives in non-cash modes of payment while using debit cards in the country. There are instances where merchant establishments levy fee as a percentage of the transaction value as charges on customers who are making payments for purchase of goods and services through debit cards. However, currently there exists no system in place to check such disincentives in non-cash payments. Debit card issuing banks have made themselves free of any liability on this aspect. In other words there is no structured mechanism in place for the debit card holders to correct such irregularity. Furthermore, there is currently no good reason for petrol pumps in India (and the banks and switch providers) to disincentive use of debit cards for purchase of petrol. Usually, debit card issuing bank imposes a fee on such transactions. This invariably creates a tendency for people to withdraw cash and then pay**

through cash. A correction in this direction should be initiated by RBI to remove such disincentives for non-cash use and thus minimize use of cash in the system.

21. Then there is also the issue of POS transaction reversal policy, i.e., the policy of refunding money on the card while products are returned or excess advances returned. Unlike corresponding policy/practice in the other developed or developing countries, India appears not to be having a seamless (no cost to customer) process of refunding money on to the same card which was used at the time of the purchase. **In order to bring in parity between cash and POS pay-outs at retail outlets, RBI needs to work towards correcting the POS transaction reversal policy/practice.**

22. For savings bank account holders, use of excessive cash withdrawals should be discouraged. There is no good reason why such a move would not help the country's majority in achieving our prime objective of making the cash based payment instruments expensive (within reasonable limits) and thus facilitate migration to free non-cash payments like cheque/RTGS/NEFT/IMPS and debit/pre-paid cards at POS. RBI should also work with the government, to see the pros and cons of disincentivising excessive cash-outs when contemplating imposition of fees for cash withdrawal (from savings bank account) in excess of Rs 1 lakh per month, given that there exist other robust non-cash payment modes. In case pros dominate the cons, a political will in addition to RBI's will be required to achieve this. The revenue generated through such means should be channelized for subsidising existing merchant fees at POS for debit card use.

23. **In case RBI plans to truly move in the direction of less-cash economy, for savings bank account, RBI may consider ways to discourage account debits which are excessively in form of cash-outs. For this, RBI should first (i) remove disincentives in non-cash payment modes and then (ii) work towards disincentivising cash withdrawals beyond a monthly maximum of say, Rs 1 lakh through reasonable floor and ceiling on fees. It is pertinent to mention here that RBI and the government should not only promote systems and procedures that facilitate the migration away from cash, but also bring in explicit awareness among people, highlighting advantages to the country and its people, to such a migration.**

24. To summarise, RBI has been yielding to banking industry's demand for raising revenue from payment services. The question remains as to what will be gains and losses of other stake holders e.g. retail customers, traders, government, etc. and what will be the real net gain (loss) to the banks and the society at large. In this connection, a fundamental question that RBI needs to consider is whether the 5+3 ATM transactions that are being called "free of charge facility" (from a layman's point of view) really free? We need to go deep into what customer pays implicitly, what they get in return, and who are the net gainers; customers or banks, and by how much. Are there externalities out of payment services and how pricing affects these externalities? As payment service is of the nature of public good, a socio-economic cost benefit study will be very useful for informed decisions on pricing of payment products as part of public policy. On the basis of the insights and recommendations in this report (and the data that would get generated in the coming months), one could see the way forward for the ATMs in India.

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The Art of Living for ATMs in India*

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Abstract

To move away from cash, the payment system models should ideally incentivize use of debit card / pre-paid card / NEFT / IMPS and equivalents in day to day cashless payment transactions. The incentives for cashless use of debit card / pre-paid card have to be provided at both ends, i.e., the card-holder and the card-acceptor ends. Simultaneously, disincentives have to be built at both cash-in and cash-out ends. But before designing such a model, one needs to be completely thorough with existing infrastructure and customer comfort in using debit cards /pre-paid card for cashless transactions and the corresponding business model for existing cash based payment system.

As a pre-requisite for disincentivising cash in India and to bring in more incentivized business model for electronic payments, this note focuses on the ATM setup in the country and develops insights on (i) ATM usage, (ii) cost to run ATMs (iii) reverse-interchange discovery and (iv) fee structure for ATM use. While keeping in mind the electronic payment facilities available today and possible discomforts to transact (non-cash) through debit card / pre-paid card, the study focuses on means to discourage excessive cash-outs by savings bank account holders.

It is observed that over the past 3 years per ATM usage has only fallen leading to suboptimal use of existing ATMs. Any further reduction in cross ATM or own ATM usage would invariably reduce the number of overall usage per ATM leading to increase in inefficiency (underutilisation) and cost to banks to run ATMs even for their own customers. Also, customers of a bank would effectively have lesser number of ATMs for their free use. This note proposes measures in the ATM system not by bringing in behavioural changes in ATM usage through reducing cross ATM usage but by an effective reverse-interchange policy to the overall gain of banks and customers alike. The study is expected to show some direction for optimal, effective and balanced use of the ATM network leading to betterment of the payment system in India.

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* The views expressed are those of the author and not necessarily of the institution to which he belongs.

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The work is dedicated to my sons Amogh and Apratim.

Author's note

1. In order to stimulate discussions and receive valued comments, the Report is being put in the public domain in form of a Technical Report.
2. In the beginning of September 2014, a draft of this Report was circulated among heads of select banks/institutions/organizations and select researchers/academicians/media people with whom the author interacted during the study. Valued comments were sought for taking a little step towards the betterment of the payment system in India. For this, readers were requested to provide their suggestions/comments/views that they want to portray and point out factual inaccuracy, if any. Some responses were received and the author thanks the respondents for their formal and informal comments, few of which have been incorporated in the final Report.

I. Introduction

I.1 The ATM brief

1.1 The banks are obliged to provide free service to their customers for withdrawing cash, making balance enquiries, etc., over the counter at branches. The cost of providing such services over branch counter works out to be three to four times higher than that through ATM (whether their own ATM or other bank's ATM). Thus, effectively with such savings in cost (by use of ATMs), the banks should ideally pass on this gain to their customers. Furthermore, such free ATM usages give people the freedom of small ticket withdrawals on multiple occasions, and thus facilitate controlling (reducing) cash with the public. In other words, easy availability of ATM, free or at low cost, will reduce the demand for cash-in-hand, thereby enabling the economy to save some resources.

1.2 The above arguments hold irrespective of the type of ATM used (own or other bank's ATM). Thus, the above reasoning became the basis for the initial decision of Reserve Bank of India (RBI) to make all ATM usage free (see, reference [3]).

I.2 The ATM history

1.3 Ideally and historically, banks install ATMs so as to reduce their own cost to serve their customers and to improve customer service using technology. The service provided to their customers (in form of providing cash withdrawal facility) through ATMs costs much less than providing the same service over the branch counters. Banks never imposed fee for such services on their customers. Despite the free service at ATM, the machines remained underutilized because the serving capacity of the machines was much more than user demand. The number of ATM cards was also small.

1.4 Later, with the incorporation of the interoperability facility at ATMs, the banks had a revenue earning model is place where a bank's ATM, in addition to serving their own customers, were made available for usage by other banks' customers (called cross ATM usage or third-party ATM usage) at a fee. This was seen as an excellent way to harness the potential and improve the utility of ATMs to its capacity. However, with the increase of debit card issuance, the expected cross ATM usage did not increase and the ATMs still remained underutilized. The sole reason for this scenario was the exorbitant fee imposed for cross ATM usage.

1.5 To correct the situation RBI played a master stroke and made all cross ATM usage free (effective April 2009) and all own ATM usage free (effective March 2008). Corresponding to every cross ATM transaction, the bank whose ATM is used takes some revenue from the card

holder's bank called reverse-interchange. RBI also mandated reasonable per transaction reverse-interchange fee for banks. During 2009-12 the reverse-interchange was fixed at Rs 18 for cash withdrawal (Rs 8 for non-financial transactions) while during 2012-14 it had been Rs 15 (Rs 5 for non-financial transactions).

1.6 National Financial Switch (NFS) of the National Payment Corporation of India (NPCI) facilitates cross ATM transactions in the country. Today practically all cross ATM transactions (payment and settlement) are routed through NFS of NPCI. In addition to the reverse-interchange revenue earned by acquirer bank (bank whose ATM is used), NPCI receives switching fee of Rs 0.50 for every financial or non-financial transaction from the card issuer bank. Furthermore, it is NPCI which decides on the uniform reverse-interchange tariff structure for banks.

1.7 Subsequent to the RBI's game changer initiative, around September 2009, based on an Indian Banks' Association (IBA) study it was shown that post-April 2009 the intended purpose to serve the common man was achieved through making cross ATM usage free since a majority of the ATM transactions were in the range of average withdrawals of Rs 3,500-4,000, and 90% of all transactions were below Rs 10,000. On the other hand, there was a small minority of users who withdrew very large sums on account of high card limits given by some banks to privileged customers, which created logistic problems for banks at the cost of the common user. RBI's solution in form of (i) putting a cap of Rs 10,000 for a cross ATM cash withdrawal and (ii) limiting the number of free cross ATM cash withdrawals to five a month, was primarily to control such large withdrawals and to address some business model issues of the banks.

I.3 The ATM today

1.8 Such a policy shift on own and cross ATM usage changed the ATM market altogether and led to the current boom in the ATMs in India. During the period 2009-14 we saw more than 4-fold increase in ATMs and about 3-fold increase in debit cards. As a consequence today at least one third of cash withdrawals at ATM (i.e., monthly about 200 million of the 600 million) are through cross ATM usage.

1.9 Today we see a trend among banks to capitalise more from serving other bank's customers at their ATMs (through reverse-interchange earnings which is currently fixed at Rs 15 per financial and Rs 5 per non-financial transaction) than to solely serve their own customers. Such a trend is very good for the development of ATM network across India. Furthermore, with the freedom given to choose any bank's ATM to withdraw cash and to additionally carry out non-financial transactions, the system has currently converged where the probability of a debit card being used at a cross ATM instead of own bank's ATM is one in three.

1.10 However, the above has led to some imbalance in the system because there is *one bank* in the system having disproportionately large number of debit card users. State Bank of India (SBI)

contributes to about 31% of debit cards issued by scheduled commercial banks in India and furthermore these debit cards contribute to about 41% of overall financial transactions at ATMs in India[2] (see Table 8). Even though SBI has about 27% share of ATMs of in India, the excessive number of debit card users of SBI has resulted in SBI paying off a relatively higher net reverse-interchange fee to other banks. Such a high fee being paid by SBI is attributable to SBI having relatively less ATMs than what its card base demands (more so at prominent locations which has several other banks' ATM). It may be noted that it is SBI (with its large card base and usage) who is contributing significantly, through reverse-interchange payoffs, in the business sustainability of the other bank's ATMs.

I.4 The convenience of ATM usage and its appropriate pricing for banks

1.11 Let us consider a practical situation where a bank A does not have an ATM located where it should have one (assuming a number of their own customers would have used it, had there been one). Customers of bank A, in that location, may then look for a location where their bank has an ATM or a branch. In other words, bank A induces inconvenience (in terms of time and money) to its customers and also carries a risk of incurring more expenditure (through a customer's branch visit) because of its inability to place an ATM at the location. To enhance quality of customer service in banks, RBI enhanced interoperable ATM usage through five free cross ATM cash withdrawals. This made cross ATM usage similar to customer's own bank ATM usage. The impact of such a strategy had been an overall reduction (through increased usage of existing ATMs) in the cash withdrawal cost to the banking industry, apart from improved customer service. The need for ATM installation at a location, where there already exists an ATM, then became dependent on the extent of ATM usage at that location. This way, while increasing efficiency and better utilization of resources, bank A customers can use bank B ATM and bank B customers can use bank A ATM with cost saving and convenience to banks and customers alike. The expenditure and income (in form of reverse-interchange) by each of banks A and B is expected to balance out since the net cost difference in cross ATM and own ATM usage is at most Re 1 per transaction (due to additional expenditure incurred on Bank's switch and NPCI's switch). Even if we add an additional Re 1 as incentive to the bank whose ATM is being used, the net cost difference in cross ATM and own ATM usage would be less than Rs 2 per transaction.

1.12 Ideally, banks' use of each other's ATM is expected to more or less nullify the net reverse-interchange revenue. However, there are cases where banks have disproportionately large number of debit card users not commensurate with the number of their ATMs. Such an imbalance in the system prompts such banks to set means and mechanisms to direct their customers to their own ATMs. This is not easy unless the bank imposes a fee for cross ATM usage on its own card holders (which the present regulation does not allow). Alternatively, apart from such banks

[2] These figures would be slightly less if one includes the UCBs and RRBs data.

increasing its ATM base, one could possibly think of a rational way to modify the current method of computing per transaction reverse-interchange, to the benefit of banks and customers alike.

1.13 Excessive pricing of the reverse-interchange acts as a deterrent for the ATM system as a whole. It prompts one to run after installing new ATMs at locations where ATMs already exists, even when the ATM usage is below its optimal capacity. This increases the overall cost of running ATMs in the country. It is observed that some Regional Rural Banks (RRBs) prefer to issue ATM cards which works only on the sponsor bank's ATM so as not to incur excessive fee in form of reverse-interchange. Thus, excessive pricing of the reverse-interchange acts as a deterrent for smaller banks to issue debit cards. The objective of reverse-interchange revision is to protect small banks and let them pay to acquirer banks as per actual cost of service at the ATM. This would encourage banks to effectively use other bank's ATM where they exist and deploy their own where there are none. Appropriate reverse-interchange discovery would incentivize banks to issue more debit cards.

1.14 Unlike debit cards used at merchant establishments, where interchange[3] is worked out as a percentage of the transaction amount, in case of ATM transactions the reverse-interchange is a fixed amount of Rs 15 irrespective of the cash withdrawal amount. In case of ATM transactions involving cash handling, the reverse-interchange makes more sense to be a function of the transaction amount. There is therefore a need to rationalise the current reverse-interchange scenario to a possibly revised per transaction reverse-interchange based on transaction amount.

I.5 The impact of RBI's new move on fee imposition for ATM usage

1.15 RBI has recently come up with a mandate which relaxes earlier restrictions imposed on banks of provided free ATM usage to savings bank account customers. RBI has now said that banks may limit free own ATM usage (financial and non-financial combine) at all locations to 5 a month. It has also revised limits of atleast 5 free cross ATM usage to atleast 3 a month in six major cities (see Appendix I). A cap on customer charges of Rs 20 per ATM transaction has been fixed by RBI. What does it mean to the banking system? We analyse the same below.

The general scenario

1. Banks are given the freedom to limit, free own ATM transactions to five a month.

2a. Banks are given the freedom to limit, free cross ATM transactions to five a month.
2b. In case of select metro centres, banks can charge from 4th cross ATM usage.

[3] Corresponding to every merchant transaction, the bank whose POS or Internet Payment Gateway is used gives some revenue money, called interchange, to the card holder's bank.

3. Keeping aside (2b), technically, the above ought to mean that banks are given the freedom to limit, free ATM transactions to 10 a month subject to banks given freedom to impose a fee, if the bank so desires, beyond five free cross ATM transactions per month. Also, banks should desirably impose a lesser fee for own ATM than cross ATM beyond the free limits.

Illustrating two Schemes under the RBI directed regulation

*A) Upto **10** overall ATM transactions free subject to upto **5** cross ATM transactions free.*
7 own + 3 cross ⇒ No fee
9 own + 4 cross ⇒ fee for 3 own
6 own + 6 cross ⇒ fee for 1 own and 1 cross.

*B) Upto **5** own ATM transactions free and upto **5** cross ATM transactions free.*
7 own + 3 cross ⇒ fee for 2 own
9 own + 4 cross ⇒ fee for 4 own
6 own + 6 cross ⇒ fee for 1 own and 1 cross.

*(In the illustration we could also take figures larger than **10** and/or **5**)*

In case a bank opts for Scheme (B), the scheme is defective since it defeats the purpose of the regulation which is to reduce cost to banks and give convenience to customers. As against Scheme (A), the Scheme (B) increases not only cost to bank but also increases cost (or inconvenience) for customers. Thus, a bank has to necessarily opt for Scheme (A) or else, RBI has to intervene in the interest of banking policy and/or public policy and refine its directive. (RBI should not allow mismanagement of bank's activity due to bank's carelessness which is detrimental to public interest)

Implication of Scheme (A)

1. Banks have to make algorithmic changes in its CBS while computing the correct number of transactions for which it should charge and this can happen not as and when a transaction takes place in a month (as is the case currently with cross ATM fee beyond 5 free transactions when there is unlimited free own ATM usage) but (i) only at the end of the month or (ii) only when own plus cross transactions exceeds 10 or cross transactions exceeds 5.

2. Banks have to now put in place suitable mechanism to not only keep a continuous count on cross ATM (and own ATM) usage but also broadcast the same (through some means e.g., ATM/mobile) to the customer before the bank can charge for the next ATM transaction done by the customer.

3. For a Basic Savings Bank Deposit Account (BSBDA), banks are required not to charge for any number of withdrawals that the customer is able to undertake (Own or Cross ATM/branch counter/internet/POS). Banks need to understand this unless RBI changes the definition of BSBDA.

4. BSBDA gives a right of only 4 free withdrawal transactions per month. However, if the bank allows (complete discretion lies with the bank) more than 4 debit transactions per month all those additional debit transactions necessarily have to be provided free of charge. Thus there is no question of banks providing or required to provide any type of subsidy or free ATM service beyond a total of 4 free cash withdrawal (whether from ATM or otherwise) for such account holders. RBI's notification says "This reduction will, however, not apply to small / no frills / Basic Savings Bank Deposit account holders who will continue to enjoy five free transactions, as hitherto.". RBI's impression of the change (i.e., limiting to 3 free cross ATM transactions from 5) not applying to BSBDA is inconsistent since any withdrawals in a BSBDA, after the mandated first 4 free withdrawals, is not considered a withdrawal from BSBDA unless ***all*** *such withdrawals, that the bank allows, are also provided free. There is hardly any bank today which allows more than 4 withdrawals under a BSBDA. Furthermore, small account does not allow total withdrawal to exceed Rs 10,000 a month. Finally, no-frill accounts do not exist since they have already been renamed as BSBDA. As a result, there appears to be some sort of a disconnect in RBI's recent notification regarding caps on free ATM usage for such accounts.*

Differentiating ATMs for cross ATM fees

RBI has directed that ATMs need to be differentiated in select metro centres from rest of the ATMs in the country. Now suppose we see that there are some banks which announce that at metro centres 4th withdrawal onwards, transactions at cross ATMs would be subjected to a fee. For this, banks (as per RBI) have to ensure the following:

1. Banks have to put in place a robust means to indicate clearly at every metro centre ATM that it is a metro centre ATM (for which card issuing bank can charge a fee beyond 3 free cross ATM transactions). Display on the ATM screen appears to be the only robust means since any other means like putting stickers / banners is an unnecessary burden to ATM acquiring Bank not only in terms of cost but also in terms of potential decrease in Off-Us transactions on their ATM. (Moreover, in case of a sticker getting mutilated/removed/etc. on an ATM, would it lead to issuing bank losing the capacity to charge the customer on a 4th cross ATM usage on that ATM?). Banks have to make software changes and maintain the same to ensure that ATMs show appropriate screen display at only metro centre ATMs.

2. Issuing bank has to ensure that it additionally receives (through NFS of NPCI) in the transaction message whether the cross ATM transaction was at a metro centre ATM or not.

3. Banks have to now put in place suitable mechanism to not only keep a continuous count on cross ATM (and own ATM) usage but also broadcast the same (through some means e.g., ATM/mobile) to the customer before the bank can charge for the next ATM transaction done by the customer. In here, bank would now have to keep track of cross ATM usage count in metro and non-metro centres separately and broadcast accordingly to comply with RBI instructions.

4. Banks have to make algorithmic changes in its CBS while computing the correct number of transactions for which it should charge and this can happen not as and when a transaction takes place in a month but (i) only at the end of the month or (ii) only when own plus cross transactions exceeds 10 or cross transactions suitably exceeds 3, 4 or 5.

1.16 Does all this intricate mess serve the banks well? To correctly implement the changes at CBS and ATM systems, it may involve substantial cost to banks defeating the purpose of the regulation. Is there no better strategy that RBI could have adopted (or IBA could have suggested) for the good of the banks and the ATM users at large?

1.17 The impact of minimizing transactions (than a reasonable minimum) through fee imposition on cross ATM usage and own ATM usage would be retrograde to the ATM developments that took place in the past five years. This would lead to underutilization of ATMs with more cash-in-hand with the public and foremost, inconvenience to public at large. Any trigger which has a psychological impact on the common ATM users, discouraging them to venture for cross ATM transactions, would drastically bring down cross ATM usage and may thus force banks to withdraw many existing ATMs. People would alter their ATM behaviour and ensure that cash is withdrawn in advance and in excess from one's own bank ATM. International experience indicates that in countries such as UK, Germany and France, bank customers have access to all ATMs in the country free of charge, except when cash is withdrawn from white label ATMs or from ATMs managed by non-bank entities. There is also a move, internationally, to regulate the fee structure by the regulator from the public policy angle. The ideal situation is that a customer should be able to access any ATM installed in the country free of charge through an equitable cooperative initiative by banks.

I.6 RBI's viewpoints and questions on its rationality

1.18 With RBI's move on rationalisation of number of free transactions, there have been varied opinions on the subject. We highlight a few.

1.19 In response to the question "When you talk about customer service, the recent changes to charges on ATM transactions come to mind. Is that being fair to consumers?", RBI deputy governor S S Mundra states[4]

> "*This decision came soon after I joined. I'm sure that as per RBI tradition, the pros and cons would have been weighed and there would be valid reasons for this. There is differentiation across geographies and even within our own ATM and other ATMs. Some things should be the remit of the state, such as providing security in and around ATMs. Now if banks are sharing or are expected to share (in the effort), it can be questioned just as much as banks charging for ATM transactions.*
> *Besides, the ATM should not be used as a play thing. As we reach that maturity, there will be room to review the entire thing."*

1.20 There is no doubt that fixed cost to run ATMs can only increase over time due to inflation and improvements incorporated. However, the effective cost can only be reduced by economics of scale. A thorough study is required towards ATM usage and the related cost analysis to review and substantiate any reverse-interchange revision or passing ATM expenses to customers in form of ATM usage fee. The correct discovery of reverse-interchange is crucial for an efficient ATM network in the country. While arriving at the reverse-interchange, two factors play a major role. These factors are X: monthly cost to run an ATM and Y: number of monthly transactions on the ATM. If X increases while Y decreases, it would be unsustainable for the banks leading to further demand for increase of reverse-interchange. Thus, a viable model should envisage either an increase in Y or a decrease in the number of ATMs since X is bound to increase due to inflation. In order that the system decreases ATM concentration at locations which has high ATM density but low Y values, an appropriate discovery of reverse-interchange is required.

1.21 RBI's present approach to charge customers to withdraw cash from ATMs or create barriers, in monetary terms, to use ATMs freely lacks RBI's vision of less-cash economy. It is the total quantum of cash withdrawn (from savings bank account) which hurts the system more and not the number of withdrawals (as long as it is within reasonable limits).

1.22 Again, in response to the question "The RBI has been moving towards reducing charges for consumers. But recently, there was a reversal with a reduction in number of free ATM transactions ...", RBI governor Raghuram Rajan states[5]

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[4] Read more at:
http://economictimes.indiatimes.com/articleshow/40439364.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

[5] Read more at:
http://timesofindia.indiatimes.com/business/india-business/Raghuram-Rajan-interview-Im-no-Bond-Im-a-banker-on-the-move/articleshow/41296212.cms

"We haven't increased ATM charges in any way. What was happening was that we were forcing banks to offer a number of free ATM transactions for withdrawals done at other bank ATMs. In other words, your bank had to pay the other bank for the transactions you did for free. We were forcing banks to pay for those transactions, which meant that some people were being cross-subsidized from elsewhere.

So why should we be determining cross-subsidies for the system? Yes, there are basic accounts for which cross-subsidy is required. We are protecting those. But for normal accounts, let the customer go to those banks which are offering more free transactions either because they have better technology or because they have more ATMs in their network. So, what we are doing is allowing more choices on both sides without forcing down banks' throats a system of cross-subsidy.

We have tried to protect the weaker sections as well as those in rural areas. But for people in cities with large accounts, let there be a free decision between the bank and those people."

Again, RBI governor Raghuram Rajan's speech (see, reference [13]) mentions[6]

- *ATM fees:*
  - *RBI mandated 5 transactions per month free at any ATM.*
  - *Cost your bank – approx Rs.75 – because it had to pay the bank where you did the transaction.*
  - *No such thing as a free transaction.*
  - *Since this increases your bank's costs, it is passed back to the customer in some form.*
  - *Ultimately, those who transact more are subsidized by those who transact less.*
- *Should RBI mandate such cross-subsidy?*
- *Are we also not subsidizing the use of cash?*
- *Partial and very measured withdrawal of mandate in areas that are likely to be well-served by banks.*
- *No compulsion on banks to charge.*

1.23 There is no doubt we should move towards minimizing cross-subsidization. However, one needs to appreciate that while Bank A's customer uses Bank B's ATM for free (and Bank A pays Rs 15 to Bank B), Bank B's customer also uses Bank A's ATM for free (and this time Bank B pays Rs 15 to Bank A). Thus, there is no cross subsidization of the two customers in the ATM system of the country since banks not only pay but also receive and thereby reverse-interchange netting nullifies the outflow. Such a mechanism in place, which nullifies potential subsidization with no additional cost to banks (except for the Re 1 differential due to switching process), has led to significant advancement of the payment system of the country with respect to ATMs. Yes, we

[6] Read more at:
http://rbidocs.rbi.org.in/rdocs/Speeches/PDFs/REFICSPF150914.pdf

have a SBI ATM Syndrome- SBI being too big to game, which needs to be addressed. The RBI regulation prompting banks and their customers to take a retrograde step discouraging use of cross ATMs, in the name of cost, does not hold ground. However, putting an overall cap on free ATM usage (On-Us and Off-Us combine), in the name of cost to serve and to control unlimited cross subsidization, does make great sense so long as the cap is reasonable. Thus, whether that cap should be 8, 10, 12, 20 or some other number (based on a well-defined criteria) is something that RBI should concentrate upon keeping in mind the following fact (see, reference [10] for more details):

a) During 2012-13, the country's banking sector had an average of about Rs 15.5 lakh crore[7] *parked under savings bank deposits and about Rs 6 lakh crore held under current account deposits. The 1-year Term deposit rates, on an average, hover above the repo rate (the rate at which RBI lends to the banks). Thus considering an average repo rate of 7.5%, the Rs 15.5 lakh crore parked under savings bank deposits had a potential to fetch interest to the depositors to the tune of Rs 1,07,000 crore in a year. This is so since as per RBI , on an average, 92% of the total amount of savings bank deposits held by banks always remains with the bank throughout the year. However, at 4.1% average savings bank interest rate (with some small banks offering more than 4% interest), what is received by the depositors is only Rs 63,500 crore in a year. The prime reason why depositors' money is not receiving more interest is the banking industry's choice to retain a major chunk of the balance Rs 43,500 crore for their profitability and to cross subsidise their expenditures. Banking sector has the freedom to pass any excess cost of funds to their base rate (the minimum lending interest rate decided by banks). RBI's move on deregulation of savings bank rates is an attempt to let individual banks decide how best they can let go some component of this Rs 43,500 crore to the benefit of the savings bank depositors (based on their efficient use of cost effective technology to manage such savings bank deposit accounts). Again, RBI has regulated the interest rate on current account at 0%. RBI may be aware that a very conservative estimate of the time component of current account deposits is 50%. This guides us to the fact that about Rs 3 lakh crore held in the current accounts saves banks' interest liability to the tune of Rs 22,500 crore (at repo rate of 7.5%) or about Rs 12,300 crore (at SB rate of 4.1%) as the system currently provides nothing to the time component of the current account deposits.*

b) Over time, with the advent of information and communications technology and with the core banking system in place, the banking system has evolved where the actual cost to manage 1-year Term deposits vis-à-vis current account and savings account (CASA) deposits for one year, has a difference which is far less than Rs 66,000 crore. Thus, saying that the banking sector does not have the freedom to set reasonable service charges for cross ATM usage due to certain good and well thought after policy on cross ATM usage set by RBI (which is the main reason for the present ATM boom) appears to be incorrect. Thus, it appears unjustified to attribute a reasonable number of free cross ATM usages as subsidization when there exist a

[7] 1 crore = 100 lakh = 10 million

disproportionately high figure of Rs 66,000 crore to manage the minimal free services of CASA deposit accounts. Furthermore, the figure of Rs 66,000 crore is based on 2012-13 deposit structure and thus is an underestimate for the financial year 2014-15.

1.24 Ideally what should happen among banks is that they should install ATMs for their own customers and expect that other banks install in a similar fashion. However, only with optimal (spare) capacity utilisation in mind and a potential to gain some revenue, banks may provide their ATM for use by other bank's card holders. Just as an incentive, through an appropriate regulatory policy, banks should get some bonus revenue and see furthering of their ATM usage. Such a move means that when a cross ATM is used, it leads to help in form of optimum resource utilisation from other banks' customers (revenue gain) and inherently helping (serving) them in return. Such bonus revenue is to be seen just as a bonus derived out of a regulatory prescription (regulating free cross ATM usage and fixing reverse-interchange rate) and not as a right since withdrawal (or dilution) of the policy stance would most likely deprive the banks even of the bonus revenue, apart from a setback in customer service.

1.25 If the regulation on ATMs is improper, it would create more imbalances detrimental to the interest of the banking system. For example, we may land into a situation where
(i) ATMs' capacity is underutilized.
(ii) Big banks (such as SBI) may discourage, and rightly so, their cardholders to use cross ATM and that forces other banks (against their wishes) to follow suit in an attempt to cover for the shortfall in revenue.
(iii) SBI may have a good reason for its action but that along with its second round impact on other banks will be detrimental to the overall ATM system in India.

I.7 The expensive cash

1.26 Today, in a cash transaction at a bank, it appears as if receiving and giving cash is free for a customer. However, expenditures towards such transactions in a bank, to a great extent, are borne by the bank which in turn passes it to their customers in form of lower returns on the deposits held by the bank (0% rate of interest offered for current accounts and about 4% rate of interest offered for savings accounts).

1.27 On the other hand, the RBI, which has the mandate of currency management, spends considerable amount of its revenue in managing cash in the country (printing, distribution, storage, management, accounting, weeding of soiled notes, managing fake notes, etc.). The expenditure towards this cash management reduces the balances that are transferred by the RBI to the government's kitty. Similarly, the government also spends money (out of its revenues) to make and manage cash payments/receipts through its various departments, social programs, etc.

1.28 Cash also have other drawbacks, such as: (i) Cash economy reduces credit base of the banking system. Stock of currency held outside of the banking system constitutes a potential

source of unproductive economic resources because these cash stores are not available for credit expansion— thereby impeding monetary growth. (ii) Cash use reduces accountability. Predominance of cash in retail sales leads to deterioration in business accountability as transaction tracking is not possible; it enables tax leakage, diminishes financial inclusion and enables existence of a parallel economy.

1.29 If we look deeply, the whole gambit of the expenditures involved in a cash-based economy is actually being funded by the citizens of India either through taxes or built-in operating expenses. As per the February 2012 Report[8] of the Nandan Nilekani task force, it is estimated that the cost of cash to an economy is 5-7% of GDP, which for India (at current level of GDP) amounts to more than Rs 6 lakh crore. This can be reduced considerably through the use of existing electronic payments. With the abundance of technological solutions available, it is prudent that in the public interest, the government and RBI devise means to move to a less-cash economy. This will not only be less expensive for the country but will also increase the traceability and accountability of payments, thereby reducing the problems of bribery, corruption, and black money. *The government and RBI, thus, should not only promote systems and procedures that facilitate the migration away from cash, but also bring in explicit awareness among people, highlighting advantages to the country and its people, to such a migration.* This migration will save considerable revenue of the government that can be channelized in other developmental programs.

1.30 While keeping in mind the electronic payment facilities available today and possible discomforts to transact (non-cash) through debit card / pre-paid card, the present ATM study also keeps in focus means to discourage excessive cash-outs by savings bank account holders.

1.31 To address the issues at hand, we first study India's ATM usage and the related cost analysis in order to review and substantiate any reverse-interchange revision. The correct discovery of reverse-interchange is crucial for an efficient ATM network in the country. In what follows, we study the ATM setup in the country and develop insights on (i) ATM usage, (ii) cost to run ATMs, (iii) reverse-interchange discovery, (iv) fee structure for ATM use, and (v) means to discourage excessive cash-outs by savings bank account holders. Based on the data gathered, certain inferences are drawn and recommendations made.

[8] Report of the Task Force on an Aadhaar-Enabled Unified Payment Infrastructure. http://finmin.nic.in/reports/Report_Task_Force_Aadhaar_PaymentInfra.pdf

II. ATM Transaction Data and Analysis

II.1 Transaction distribution based on ticket size

2.1 Transactions done on a bank's ATM by their own cards are refered to as On-Us transactions while those done by other bank's cards are Off-Us transactions. When the ATM transactions are Off-Us, the transactions are routed through the NFS of NPCI. Table 1 provide NPCI's NFS data of 6 months on Off-Us ATM cash withdrawal and its distribution for the period March-August 2010. NPCI has since discontinuted publishing the ticket size distribution of cash withdrawals.

Table - 1

Number of Transactions for Various Size of Cash Withdrawal and Total Cash Withdrawn Amount

Transaction Amount Interval	(Below Rs. 499)	(Rs. 500 to Rs. 999)	(Rs. 1000 to Rs. 1999)	(Rs. 2000 to Rs. 2999)	(Rs. 3000 to Rs.3999)	(Rs. 4000 to Rs. 4999)	(Rs. 5000 to Rs. 7999)	(Rs. 8000 to Rs. 9999)	(Rs. 10000 and above)	Cash withdrawn amount (Rs)
Mar-10	10251961	7332173	7363921	4308989	2543589	1670025	4853785	850990	5144512	1,25,30,55,26,700
Apr-10	9881778	7312303	7420310	4411614	2625644	1720840	5076184	886455	5292483	1,28,97,74,25,028
May-10	10165013	7812658	8092053	4869070	2889737	1873764	5704048	969977	6093417	1,44,51,81,48,918
Jun-10	9497014	7414206	7749033	4683196	2782607	1810604	5595070	959356	6041620	1,41,06,11,63,068
Jul-10	10895866	8476460	8745174	5215676	3095177	2006867	6210086	1093339	6734426	1,56,92,80,61,389
Aug-10	15218177	12144227	12550473	7416134	4327239	2713433	8477600	1478080	9398483	2,17,99,26,43,140
Total (Mar-Aug)	65909809	50492027	51920964	30904679	18263993	11795533	35916773	6238197	38704941	9,14,78,29,68,243

2.2 Based on Tables 1 we now work out the distributional impact of ticket size and present it in Table 2.

Table - 2

Transaction Data for Four Cash Withdrawal Amount Intervals

Transaction Amount Interval		**Below Rs 1000**	**Rs 1000 to Below Rs 3000**	**Rs 3000 to Below Rs 5000**	**Rs 5000 to Rs 10000**	Total
Assumed Mean Amount per Transaction (Rs)		440	1440	3300	8000	
No. of Transactions	Mar-10	17584134	11672910	4213614	10849287	44319945
	Apr-10	17194081	11831924	4346484	11255122	44627611
	May-10	17977671	12961123	4763501	12767442	48469737
	Jun-10	16911220	12432229	4593211	12596046	46532706
	Jul-10	19372326	13960850	5102044	14037851	52473071
	Aug-10	27362404	19966607	7040672	19354163	73723846
	Mar-Aug	116401836	82825643	30059526	80859911	310146916
% No. of Transactions	Mar-10	40	26	10	24	100
	Apr-10	39	27	10	25	100
	May-10	37	27	10	26	100
	Jun-10	36	27	10	27	100
	Jul-10	37	27	10	27	100
	Aug-10	37	27	10	26	100
	Mar-Aug	38	27	10	26	100
Amount Rs (Based on assumed mean amount per transaction)	Mar-10	7737018960	16808990400	13904926200	86794296000	125245231560
	Apr-10	7565395640	17037970560	14343397200	90040976000	128987739400
	May-10	7910175240	18664017120	15719553300	102139536000	144433281660
	Jun-10	7440936800	17902409760	15157596300	100768368000	141269310860
	Jul-10	8523823440	20103624000	16836745200	112302808000	157767000640
	Aug-10	12039457760	28751914080	23234217600	154833304000	218858893440
	Mar-Aug	51216807840	119268925920	99196435800	646879288000	916561457560
% Amount	Mar-10	6	13	11	69	100
	Apr-10	6	13	11	70	100
	May-10	5	13	11	71	100
	Jun-10	5	13	11	71	100
	Jul-10	5	13	11	71	100
	Aug-10	6	13	11	71	100
	Mar-Aug	6	13	11	71	100

Note: *The monthly Total Amount based on assumed mean amount per transactions tallies well with the actual, as per the NFS data of Table-1.*

2.3 In what follows, we summarize the information extracted out of Table 2.

Table - 3

For the 6-month period March-August, 2010

Transaction Amount Interval	% No. of Transactions (A)	% Total Amount (B)	Ratio (B)/(A)
Below Rs 1000	38	6	0.15
Rs 1000 to Below Rs 3000	27	13	0.49
Rs 3000 to Below Rs 5000	10	11	1.12
Rs 5000 to Rs 10000	26	71	2.71
Total	100	100	1.00

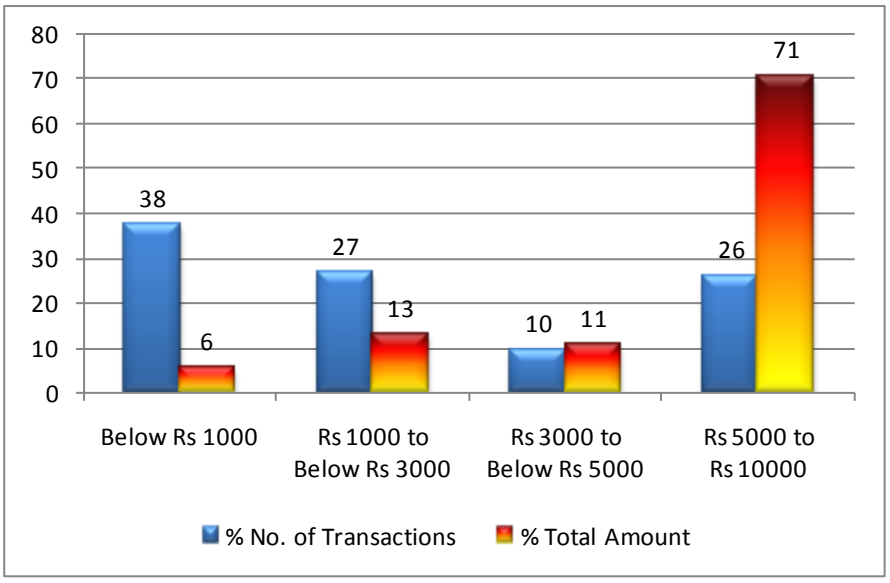

Chart 1: *Large volume of cash money in the ATM system is taken by a small group of users*

2.4 We now povide the significant highlights of Chart 1 for the ATM transactions (cash withdrawal) and the corresponding cash dispensation.

38% of the transactions are below Rs 1000 which consumes 6% of the overall cash dispensed
65% of the transactions are below Rs 3000 which consumes 19% of the overall cash dispensed
74% of the transactions are below Rs 5000 which consumes 29% of the overall cash dispensed
26% of the transactions are Rs 5000 and above which consumes 71% of the overall cash dispensed
36% of the transactions are Rs 3000 and above which consumes 82% of the overall cash dispensed
62% of the transactions are Rs 1000 and above which consumes 94% of the overall cash dispensed

II.2 RBI vis-à-vis NPCI data on ATMs and their usage

2.5 In what follows, we provide data (Tables 4 and 5) on ATM transactions from two sources (NPCI and RBI), for the 36 month period April 2011 through March 2014. RBI has collected data on ATM transactions from the banks which provide consolidated data on combined On-Us and Off-Us transactions. The NPCI's Off-Us data on the other hand is directly obtained from their NFS. To see the an extended trend in number of cash withdrawal per cross ATM usage, we also present Table 4* showing ATM transaction statistics from the NFS for the first nine months of 2010.

Table - 4

Month-wise data of ATM from NFS for the period April 2011 through March 2014

Month/Year	Number of Participant Banks	Number of ATMs	Cash Withdrawn (Rs Crore)	Number of Cash Withdrawal	Number of Balance Enquiry	Pin Change	Mini Statement	Total TXn	Number of Cash Withdrawal as % of Total TXn	Number of Cash Withdrawal per ATM
				Financial TXn	Non-Financial TXn					
11-Apr	55	76001	31248	99338836	38505471	8428	114412	137967147	72	1307
11-May	55	77390	34448	106484905	38277409	21716	312531	145096561	73	1376
11-Jun	57	78959	33088	102724571	36853213	27081	379595	139984460	73	1301
11-Jul	59	80610	34025	107182057	39111419	34140	501215	146828831	73	1330
11-Aug	59	81825	34883	109806831	39713317	56313	693626	150270087	73	1342
11-Sep	61	83648	34393	109905662	39449302	73538	864430	150292932	73	1314
11-Oct	62	84956	39673	120264212	43894126	81749	980854	165220941	73	1416
11-Nov	64	86793	35889	111447593	38599991	76775	899381	151023740	74	1284
11-Dec	70	88235	38660	120745296	40311354	100708	1468162	162625520	74	1368
12-Jan	70	89667	38177	119343172	39355285	98302	1694659	160491418	74	1331
12-Feb	77	91324	37562	116276170	38286174	114260	2045364	156721968	74	1273
12-Mar	91	96743	40984	126348872	41477785	136386	2608745	170571788	74	1306
12-Apr	93	98025	41360	125408277	40977284	132495	2746105	169264161	74	1279
12-May	94	99242	42833	130145888	40052021	143268	2905492	173246669	75	1311
12-Jun	103	100404	43861	129855673	38136225	145375	2936063	171073336	76	1293
12-Jul	106	101400	43867	133501599	39836631	188150	3748201	177274581	75	1317
12-Aug	107	102051	44342	136049904	40227316	196270	3844822	180318312	75	1333
12-Sep	111	103357	44181	137424652	38843206	197992	3866997	180332847	76	1330
12-Oct	115	104126	48395	146451090	41910752	200781	4252730	192815353	76	1406
12-Nov	118	105642	50151	145328734	39453693	191849	4146326	189120602	77	1376
12-Dec	121	105642	49697	149561327	39971914	215777	4231288	193980306	77	1416
13-Jan	129	109664	49470	147562566	39661110	221014	4437657	191882347	77	1346
13-Feb	143	111493	46067	138220349	37257214	216506	4250210	179944279	77	1240
13-Mar	150	116025	52085	158238934	41220908	285276	5231088	204976206	77	1364
13-Apr	150	118660	53892	156716840	41680350	307855	6444567	205149612	76	1321
13-May	176	120828	56525	162514775	40494563	307934	6557104	209874376	77	1345
13-Jun	185	124078	54107	156923710	38897846	323634	6372028	202517218	77	1265
13-Jul	194	126612	55644	163708983	42518702	349932	6973798	213551415	77	1293
13-Aug	203	129671	56691	170356595	43996054	365464	7148001	221866114	77	1314
13-Sep	221	133180	55552	169580559	43269700	358001	7174122	220382382	77	1273
13-Oct	226	137070	63248	184976581	48285804	364303	8099215	241725903	77	1350
13-Nov	235	140666	60305	175150088	42625716	341157	7214037	225330998	78	1245
13-Dec	246	145270	61203	182941848	45606731	392233	7657763	236598575	77	1259
14-Jan	260	152072	60504	179826050	45610137	376699	7847988	233660874	77	1183
14-Feb	277	155297	58103	170227104	43158430	345214	7396503	221127251	77	1096
14-Mar	283	163694	65483	192682090	48054668	376248	8240651	249353688	77	1177

Table - 4*

Month-wise data of ATM from NFS for the period January 2010 through September 2010

Month/Year	No. of Participant Banks	No. of ATM	No. of Cash Withdrawal	Cash Withdrawn (Rs)	No. of Cash Withdrawal per ATM	Amount of Cash Withdrawal per ATM (Rs)	Average Withdrawal Amount (Rs)
Jan-10	37	53906	40475127	114,287,003,600	750.8	2120117	2824
Feb-10	37	54603	39835343	112,480,987,202	729.5	2059978	2824
Mar-10	38	56711	44319945	125,305,526,700	781.5	2209545	2827
Apr-10	39	57371	44627611	128,977,425,028	777.9	2248129	2890
May-10	39	59471	48469737	144,518,148,918	815.0	2430061	2982
Jun-10	41	60672	46532706	141,061,163,068	767.0	2324980	3031
Jul-10	42	61091	52473071	156,928,061,389	858.9	2568759	2991
Aug-10	44	61702	73723846	217,992,643,140	1194.8	3532992	2957
Sep-10	47	62863	80038548	237,812,906,700	1273.2	3783035	2971

2.6 It is observed from Table 4 and Table 4* that the number of Off-Us cash withdrawal per ATM had a tremendous impact (about 70% increase) during the first nine months of 2010 before stabilising at around 1300 cash withdrawals per ATM per month. However, lately we see some downward trend with convergence at around 1150 cash withdrawals per ATM per month.

2.7 Effective July 1, 2011, the permitted five free transactions per month at other Bank's ATMs includes financial as well as non-financial transactions (see, reference [6]). Here cash withdrawal comes under the financial transaction while Balance Enquiry, Pin Change & Mini-Statement come under the non-financial transactions. There had been slight change in Off-Us non-financial transactions after banks were allowed to charge. From the NFS data it follows that during the 36 month period, the Off-Us non-financial transactions as a percentage of the total transactions reduced from 28% to 23%. As of March 2014, the financial transaction component of the total number of transactions is about 77%. Since this percentage of the non-financial transactions is directly captured from a single source (i.e. the NFS server), it is expected to be a more reliable measure of the component of non-financial transactions.

2.8 In Table 5, we provide the ATM data on debit card usage that RBI publishes every month.

2.9 Though not presented in Table 5, about 52% of the ATMs are On-Site. Over the 36 month period there had been about 3% positive swing in the number of Off-Site ATM over On-Site ATM.

2.10 As mentioned earlier, Off-Us transactions in the country are routed through the NPCI's NFS. The NPCI data captures such Off-Us transactions. The RBI data, on the other hand covers all ATM transactions (Off-Us as well as On-Us). Thus, the RBI data covers almost all transactions covered by NPCI data. Some transactions which are covered in the NPCI data but not in the RBI data are debit card transactions of few urban co-operative banks (UCBs) and RRBs. In Table 5, we see the

total number of ATMs in RBI data lesser than that in NPCI data. This is because NPCI data includes an additional 4000 odd ATMs comprising white label ATMs and ATMs of UCBs and RRBs. Notwithstanding the difference, the NFS and RBI datasets are comparable as 98% of the ATMs that communicate with NFS are covered in the RBI data and furthermore, RBI data constitutes more than 99% of the total card transactions (because debit card base of UCBs and RRBs is likely to be less than 1%).

2.11 During the 36 month period under consideration, the number of Off-Us financial transactions has increased by about 94% (i.e., from 99.3 million to 192.7 million). Ignoring RBI's non-listing of debit card transactions done by card holders of UCBs and RRBs, Table 5 brings to light that during the 36 months under study, the share of Off-Us cash withdrawal (of all the ATM cash withdrawal transactions) has increased from 25% to 34%. As of March 2014, about 34% of the total number of cash withdrawals was through cross ATM usage. Adjusting for the transactions done by debit card holders of UCBs and RRBs, the share of Off-Us cash withdrawals can be reasonably taken 1% below what has been obtained here. Thus, for March 2014 an adjusted estimate of the number of cash withdrawals through cross ATM usage is about 33%. Such a feature could be achieved only because banks are required to provide their customers with 5 free cross ATM transactions per month.

2.12 Taking number of ATMs as the monthly numbers provided by RBI, Table 5 clearly highlights the trend during the 36 month period. The trend indicates that while the number of ATMs grew at a sharp compound annual growth rate[9] (CAGR) of 28.4%, the growth of the debit cards was relatively lower, at CAGR of 19.7%. Resultantly, we observe that the number of debit cards per ATM declined from 3044 to 2464, i.e., at CAGR of 7.3%. However, when we look at the number of cash withdrawal per ATM per month it declined at double the rate from 5282 to 3571, i.e., at CAGR of 13.9%. This highlights the need for appropriate policy measures to (i) facilitate more debit card issuances and (ii) devising means to create an environment for optimal utilization of the ATMs through increased usage.

2.13 Taking number of ATMs as the numbers provided by RBI, Table 5 clearly highlights the trends during the 36 month period. The number of cash withdrawal transactions per ATM per day declined from 176 to 115. For March 2014 the country average for the number of transactions[10] per ATM per day is about 149 out of which about 34 are non-financial transactions and the remaining 115 are financial transactions. In case we take the monthly number of ATMs as the numbers provided by NPCI these figures would further go down.

[9] Compound annual growth rate (CAGR) is given by the following formula:
$CAGR = \{(\text{Current value} / \text{Base value})^{1/\text{number of years}} - 1\} \times 100$

[10] Adding non-financial TXn component by using percentage non-financials of NFS data.

Table - 5

ATM data as per RBI and Percentage Off-Us transactions and ATM usage

Month/Year	Number of Outstanding Debit Cards (Million)	Total Number of ATMs	Total TXn*	Cash Withdrawn (Rs Crore)	% share of ATM in RBI data vis-à-vis NFS ATMs	% Off-Us TXn to Total TXn**	Number of Cash Withdrawal per ATM per day (RBI data**)	Number of Debit Cards per ATM (RBI data)	Number of Cash Withdrawal per ATM (RBI data**)
Apr-11	230.26	75645	399553342	106165	99.5	25	176	3044	5282
May-11	234.98	76836	403465526	112631	99.3	26	169	3058	5251
Jun-11	239.52	78386	391737317	109854	99.3	26	167	3056	4998
Jul-11	243.34	80117	414648767	112744	99.4	26	167	3037	5176
Aug-11	251.48	81634	414472319	112274	99.8	26	164	3081	5077
Sep-11	251.97	82989	409673081	109257	99.2	27	165	3036	4936
Oct-11	255.56	84309	449866388	123410	99.2	27	172	3031	5336
Nov-11	259.83	85728	417004503	114381	98.8	27	162	3031	4864
Dec-11	263.80	87355	444161114	124237	99.0	27	164	3020	5085
Jan-12	268.00	88838	434051835	120981	99.1	27	158	3017	4886
Feb-12	273.65	90524	432250953	120984	99.1	27	165	3023	4775
Mar-12	278.28	95686	471031623	131717	98.9	27	159	2908	4923
Apr-12	281.90	96742	452614082	128033	98.7	28	156	2914	4679
May-12	286.32	98074	460263881	132793	98.8	28	151	2919	4693
Jun-12	290.59	99218	435302487	134412	98.8	30	146	2929	4387
Jul-12	291.46	100042	450575234	135523	98.7	30	145	2913	4504
Aug-12	298.57	100620	445887954	132573	98.6	31	143	2967	4431
Sep-12	302.48	101646	443969310	130675	98.3	31	146	2976	4368
Oct-12	306.83	102542	468230840	141636	98.5	31	147	2992	4566
Nov-12	309.48	103968	452153825	145207	98.4	32	145	2977	4349
Dec-12	314.44	105784	473754492	146125	100.1	32	144	2972	4479
Jan-13	319.97	107813	476637271	149184	98.3	31	143	2968	4421
Feb-13	325.65	109629	452830692	136767	98.3	31	148	2970	4131
Mar-13	331.20	114014	508849611	155615	98.3	31	144	2905	4463
Apr-13	336.87	116378	501070235	156387	98.1	31	144	2895	4306
May-13	342.25	118867	504688192	161416	98.4	32	137	2879	4246
Jun-13	349.51	121847	493152328	157266	98.2	32	135	2868	4047
Jul-13	355.42	124072	514355273	157734	98.0	32	134	2865	4146
Aug-13	362.34	126950	523784109	156879	97.9	33	133	2854	4126
Sep-13	367.79	130333	520699366	154318	97.9	33	133	2822	3995
Oct-13	374.19	133313	551656714	171308	97.3	34	133	2807	4138
Nov-13	381.46	137080	533386147	165503	97.5	33	130	2783	3891
Dec-13	372.51	141516	530351893	169902	97.4	34	121	2632	3748
Jan-14	380.33	145858	538387754	172232	95.9	33	119	2608	3691
Feb-14	386.58	150008	501526642	157579	96.6	34	119	2577	3343
Mar-14	394.42	160055	571497661	179610	97.8	**34**	115	2464	3571
Average	308.70	107067	469098410	139647	98.5	30	147	2911	4481

*As per RBI, the data reflects the cash withdrawals done at ATMs
**Assuming RBI Data on Total TXn reflecting cash withdrawals at ATMs

2.14 While there has been a sharp increase in the number of ATMs, there has been a noteworthy reduction in the average number of transactions per ATM per day. Over the 36 month period this reduction had been near 35% for financial transactions. This fact, when seen in conjunction with the 19% decline in number of debit cards per ATM, makes the decline in the average number of financial transactions per ATM more striking. One needs to carefully scrutinize this scenario as this amounts to sub-optimal use of the ATMs and possible inefficient sharing of the ATM loads among ATMs at close proximities. This picture appears more alarming if one takes into account

the volley of new ATMs, under the brown label system, coming up for the public sector banks (after a period of freeze to set-up new ATMs). Furthermore, we have also started seeing quite a few white label ATMs (about 1% of the country's ATM base) coming into operation. Thus, going forward, one may expect further reduction in the average number of transactions per ATM. This highlights the viability risks of setting up ATMs at close proximity to existing ATMs. Chart 2 shows how with increase in ATM numbers, there is a decrease in their per ATM cash withdrawal volumes.

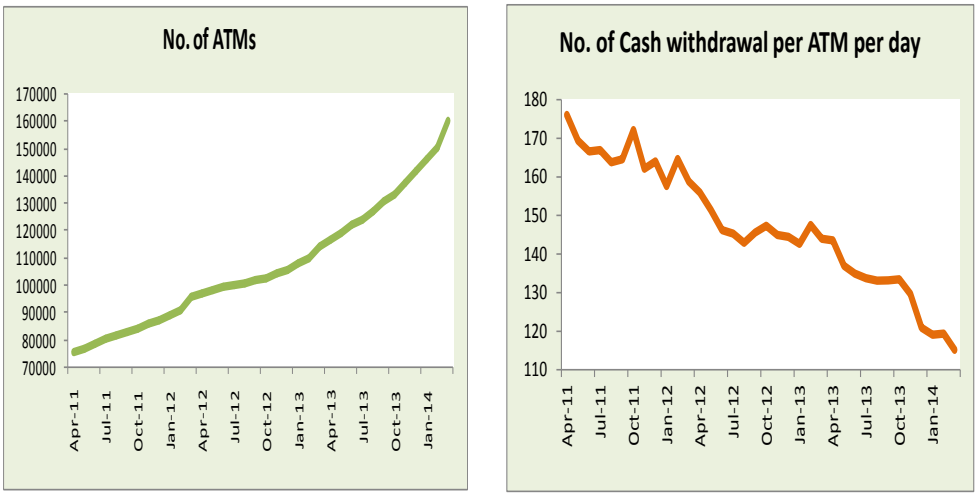

Chart 2: *Lines show how with increase in ATM numbers, there is a decrease in their per ATM cash withdrawal volumes.*

2.15 The interpretation of RBI's data (Table 5) on total transaction was sought. RBI has now indicated that they capture monthly bank-wise transaction data which refers to the total number of cash withdrawal by respective banks' debit card holders at any ATM. The RBI data on total transaction appears to be consistent but is not in line with the subset data reported by NPCI. This is so since if one considers the total transaction of the RBI data as Cash Withdrawal then it turns out that the Average Amount per Cash Withdrawal (henceforth called Average ticket size) based on the 36 month averages is around Rs 2964. However, the corresponding NFS data shows that the Average ticket size is around Rs 3306. In other words, based on 36 month data, the Average ticket size for Off-Us transactions has been a high of Rs 3306 while the Average ticket size for On-Us transactions is a relative low of Rs 2822. For March 2014, Average ticket size for Off-Us has been Rs 3399 as against Rs 3013 for On-Us.

2.16 An argument to substantiate these figures is the built-in psychological restriction of only five free cross ATM withdrawals. This leads to a tendency to withdraw more cash, than what is required, in every Off-Us withdrawal since it may be inconvenient to approach an ATM of the card holder's bank. We call such reasoning as Type I reasoning. The scenario arising out of Type I reasoning is not good for the economy since it amounts to wasteful more cash-in-hand with the public than what is really required in the near future.

2.17 As an alternative to justifying the contrast in the Average ticket size is to attribute such a difference to incorrectness in RBI data. This is so since On-Us transactions (unlike Off-Us transactions) allow cash withdrawal having ticket size of more than Rs 10,000 and furthermore under uniformity of cash withdrawal behaviour, the Average ticket size should be nearly close. We call such reasoning as Type II reasoning. Accordingly, under Type II reasoning, it is inferred that there is *some component* (not all) of non-financial transactions in the RBI's total transaction data. This got recently corrected (though partially) when RBI called for the correct data from few banks including a big bank like Punjab National Bank. Overall there is some improvement in the data reconciliation but there is still some scope for improvement. In Appendix II we provide estimation of correct number of financial transactions under Type II reasoning.

2.18 To value add any future ATM study on the bank-wise status, data is desirable on cross ATM usage on lines similar to bank-wise data that is being disseminated by RBI on a monthly basis. Since the cross ATM transaction data is readily available with NPCI, it may be worthwhile for NPCI or RBI to additionally publish bank-wise cross ATM data on:
(a) Total number and amount of withdrawals done by bank's card holders.
(b) Total number and amount of withdrawals done at bank's ATMs.
(c) Total number of non-financial transactions separately for the above two situations.

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III. The Cost of ATM Business and Reverse-Interchange

III.1 The cost to run an ATM

3.1 The following data provide information on cost to run an ATM.

Onetime cost for setting up an ATM (during 2011-2014)
1. Cost of a standard ATM instrument ranges Rs 2.5 to Rs 4 lakh.
2. For setting up the ATM location, it costs Rs 1.5 to Rs 4 lakh.

An indicative average per ATM cost data, from few public/private sector banks, on ATM operations (urban and rural ATM combine) follows:

Table - 6
Indicative Average Per ATM Cost (during 2011-2014)

1. Rs 1,40,000 per year for loading cash etc.
2. Rs 75,000 for its annual maintenance and management.
3. Rs 50,000 per site per year on electricity.
4. Rs 1,80,000 per site per year on guard.
5. Rs 2,00,000 per site per year as rent.
6. The interest cost of idle funds to be maintained is Rs 60,000.
7. Depreciation (7 year life) on the onetime cost is Rs 85,000.

In Table 7 we give an item wise breakup of the cost of running an ATM. The Table also provides the various scenarios of the per transaction cost. It turns out that taking a crude estimate of the average cost to run an ATM as Rs 50,000 per month, the current annual expenditure on ATM in the country is of the order of Rs 10,000 crore.

Table - 7

Cost of Running an ATM - Itemwise Breakup			
Cost per year	Off-Site Cost (Rs)	On-Site Cost (Rs)	Remarks
Cash loading	140000	140000	On-site cash loadings could be cheaper
Maintainance	80000	70000	Overall, maintance costs Rs 75000
Electricity	50000	50000	Country average
Guard	180000	-	Off-site guard may not always apply
Rent	200000	-	Country average
Idle Funds	60000	60000	On Rs 7.5 lakh at repo rate
Depreciation	85000	85000	On Rs 6 lakh over 7 years
Total Annual cost	795000	405000	See Note 2
Monthly Cost	66250	33750	
Scenarios of Per Transaction Cost of Each Withdrawal			
Number of Cash Withdrawal TXn per day	Off-Site cost (Rs) per cash withdrawal	On-Site cost (Rs) per cash withdrawal	Average Cost (Rs)
100	22.08	11.25	**16.67**
107	20.64	10.51	**15.58**
110	20.08	10.23	**15.15**
115	19.20	9.78	**14.49**
120	18.40	9.38	**13.89**
130	16.99	8.65	**12.82**
140	15.77	8.04	**11.90**
150	14.72	7.50	**11.11**

***Note 1**: In Tier I and II centers there are many locations which deploy more than one ATM at the same location. Also, in general, not all Off-Site ATMs have a guard. Additionally, there are many situations where there are two or more ATMs having a single guard or a guard may not be required (ATM being inside secured premises). There are situations where rent is as high as Rs 800000, but then the number of transactions per day also is of the order of 1000.*

***Note 2**: The cost per year arrived at in the above table refers to the country average and should be read in conjunction with Note 1 above. Furthermore, one can argue that the costing is an underestimate since cost of rent and guard has been taken as zero for On-Site locations.*

***Note 3**: A month is taken as 30 days in the cost computations.*

3.2 The cost-benefit analysis to run an ATM shows that there is as such no scope to reduce the reverse-interchange when one tries to discover its value based on average cost to run an ATM and its usage through transactions. As per Table A of Appendix II, for March 2014 the country average for the number of transactions per ATM per day is 138 out of which about 31 are non-financial transactions and the remaining 107 are financial transactions. Similarly, as per Table 5, for March 2014 the country average for the number of transactions per ATM per day is 149 out of which about 34 are non-financial transactions and the remaining 115 are financial transactions. Considering 50% of the ATMs are Off-Site, the average cost per cash withdrawal is Rs 15.58 when there are about 107 cash withdrawal transactions daily and is Rs 14.49 when there are about 115 cash withdrawal transactions daily.

3.3 The estimation in Table 7 is done on the basis of cash withdrawal transaction only and not including non-financial transactions like balance enquiry, etc. Adjusting for the additional non-financial transactions per ATM per day and keeping in view the decreasing trend in the number of transactions per ATM per day, the country level average cost per transaction could reasonably be fixed at a value below Rs 15. Given the scenario that banks now have to secure ATMs in isolated locations with a security guard there would be additional cost for guard to the tune of Rs 1.2 lakh per year per Off-Site ATM (bringing the monthly cost for Off-Site ATM to Rs 76,250). Thus, even if we add an additional Re 2 per transaction towards new risk/crime mitigation measures and insurance on ATM fraud, the country level average cost per transaction could reasonably be fixed at a value below Rs 17.

3.4 Since the per transaction cost arrived at here is very much dependent on the ATM usage, it is worthwhile to ensure that the burden of increased per transaction cost does not fall on banks, and thus bank customers, due to inefficient use and uneven distribution of totality of ATMs in India. IBA has a vision being "to work proactively for the growth of a healthy, professional and forward looking, banking and financial services industry, in a manner consistent with public good". Thus, IBA (rather than advocating avenues which could only lead to further reduction in ATM usage) could desirably monitor and help towards correcting this through advocating lower reverse-interchange in select six metro centres.

3.5 In other words, given the decreasing trend in the average number of transactions per ATM, one needs to monitor concentration of ATMs with average hits of less than 100 financial transactions per ATM per day and then either redeploy them to other locations or find ways to cut on its operational cost in order to optimize ATM usage. There is a need to relook at ways for cutting costs while setting up new ATMs. The upcoming brown label ATMs and white label ATMs could show some direction on how to cut costs in the overall expenditures and still have an ATM set-up running efficiently. One of the lessons that come out prominently of this is that a pricing policy shift which leads to less ATM usage can only amount to a higher per transaction cost to the ATM network in the country. However, it is also correct to argue that banks need to recover the huge costs they incur on ATMs atleast from those users who are heavy users of cash when non-cash payment alternatives are available. Thus beyond a certain point it does not make sense to subsidise ATM usage even if it is a basic banking service. Thus curtailing unlimited free cash withdrawal is always a welcome move in the direction of less-cash economy.

III.2 ATM data and impact of reverse-interchange for banks

3.6 This Section studies ATM usage and the related cost analysis to review and substantiate any reverse-interchange revision. The correct discovery of reverse-interchange is crucial for an efficient ATM network in the country. While arriving at the reverse-interchange, two factors play a major role. These factors are X: monthly cost to run an ATM and Y: number of monthly transactions on the ATM. If X increases while Y decreases, it would be unsustainable for the banks

leading to further demand for increase of reverse-interchange. Thus, a viable model should envisage either an increase in Y or a decrease in the number of ATMs since X is bound to increase due to inflation. In order that the system decreases ATM concentration at locations which has high ATM density but low Y values, an appropriate discovery of reverse-interchange is required.

3.7 Ideally, banks' use of each other's ATM is expected to more or less nullify the net reverse-interchange revenue. However, there are cases where banks have disproportionately large number of debit card users not commensurate with the number of their ATMs. Such an imbalance in the system prompts such banks to set means and mechanisms to direct their customers to their own ATMs. This is not easy unless the bank imposes a fee for cross ATM usage on its own card holders (which the present regulation does not allow). Alternatively, apart from such banks' increasing its ATM base, one could possibly think of a rational way to modify the current method of computing per transaction reverse-interchange, to the benefit of banks and customers alike.

3.8 Presently RBI has mandated five free cross ATM transactions. The impact of minimizing transactions (than a reasonable minimum) through fee imposition on cross ATM usage would be retrograde to the ATM developments that took place in the past five years. This would lead to underutilization of ATMs with more cash-in-hand with the public and foremost, inconvenience to public at large. Any trigger which has a psychological impact on the common ATM users, discouraging them to venture for cross ATM transactions, would drastically bring down cross ATM usage and may thus force banks to withdraw many existing ATMs. People would alter their ATM behaviour and ensure that cash is withdrawn in advance and in excess from one's own bank ATM.

3.9 The vital question thus is how do we balance the situation? To illustrate the current imbalance we consider the major players in the ATM usage who may contribute significantly to this imbalance. SBI is a major contributor to this imbalance due to a disproportionately large number of their debit card users (see Appendix V for a rough idea on the extent of this imbalance). SBI contributes to about 31% of debit cards issued by scheduled commercial banks in India with these debit cards contributing to about 41% of overall financial transactions at ATMs in India. On the other hand, SBI owns less than 27% of all ATMs in India. This results in SBI paying off a relatively higher net reverse-interchange fee to other banks. In other words, such a high fee being paid by SBI is attributable to SBI having relatively less ATMs than what its card base (and card usage) demands. SBI on an average has 2809 debit cards per SBI ATMs as against country average of 2464 debit cards per ATM (see, column [13] of Table 8). More strikingly, the country average (excluding SBI) is 2336 debit cards per ATM. In terms of card usage, for SBI, on an average there are 5355 cash withdrawals per SBI ATMs as against country average of 3571 cash withdrawals per ATM (see, column [16] of Table 8). For this parameter too the country average (excluding SBI) is a low of 2904 cash withdrawals per ATM. In other words, SBI has a demand for 5355 cash withdrawals per SBI ATMs against rest of the banks averaging a demand for only 2904 cash withdrawals per ATM. This has inherently led to net high volumes of cross ATM usage by SBI debit cards vis-à-vis other banks' debit cards.

3.10 In what follows, we try to address such imbalances. It is inherently clear that with the current tendency among cardholders to use a cross ATM, the card masses of SBI impacts SBI's net reverse-interchange revenue losses due to (a) prevailing fixed (per transaction based) reverse-interchange regime, (b) RBI's policy to provide reasonable number of free cross ATM usage and (c) SBI having significantly more debit cards relative to their number of ATMs than the country average. Ideally, the banks install ATMs for serving their own customers. However, banks may provide their ATM for use by other bank's card holders keeping in mind (i) the (spare) capacity utilisation of ATMs and (ii) potential to gain some revenue. Thus, when a cross ATM is used, it leads to help in form of optimum resource utilisation from other banks' customers (revenue gain) and inherently helping (serving) them in return. Such bonus revenue is to be seen just as a bonus derived out of a regulatory prescription (regulating free cross ATM usage and fixing reverse-interchange rate) and not as a right since withdrawal (or dilution) of the policy stance would most likely deprive the banks even of the bonus revenue, apart from a setback in customer service.

3.11 Based on RBI's recognition of the cost to handle cash (see Section IV.1), and getting a cue from debit card transactions at merchant establishments, where interchange is worked out as a percentage of the transaction amount, in case of ATM transactions, involving cash handling, the reverse-interchange makes more sense to be a function of the transaction amount. Accordingly, a pricing model is proposed that also attempts to minimise the current imbalance in cross ATM usage. The model suggests a per transaction reverse-interchange of Rs 5 plus 0.2% of cash withdrawn as an alternative. This amounts to a maximum of Rs 25 that a bank can receive under reverse-interchange and a minimum of Rs 5 for a non-financial transaction. The reverse-interchange revision is simple to implement since NPCI just needs to change the reverse-interchange netting and settlement formula as a function of number of transaction and amount of transaction for each bank. Banks do not have to implement anything new in their CBS.

3.12 In Table 8 we provide the bank-wise card and ATM data for the month of March 2014 (Source: RBI). We would like to point out here that for NPCI's switching consideration, ATM transactions of SBI and its Associate Banks[11] (comprising of State Bank of Hyderabad, State Bank of Patiala, State Bank of Bikaner and Jaipur, State Bank of Mysore, State Bank of Travancore) form a single entity. Accordingly column [16] of Table 8 which provides other Banks' Ticket size ensures that Group Banks of SBI do not consider themselves as other banks. Furthermore, the 33% country average for cross ATM usage is also based on the fact that card holders of SBI and its Associate Banks while using each other's ATM (within the Group) are **not** considered Off-Us transactions. Columns [15] and [16] of Table 8 shows respectively each bank's average ticket size of their own debit cards and other banks average ticket size (i.e., ticket size based on all banks data except the bank under study) on their ATM. The average ticket size based on all transactions of all

[11] The customers of SBI and its Associate Banks contribute to 50% of cash withdrawal transactions in the country. SBI and its Associate Banks also contribute to 45% of the debit card issued and 35% of the ATMs installed in the country.

banks (excluding SBI) is of the order of Rs 3600 while average ticket size of SBI cards alone is Rs 2500.

Table - 8

RBI Data on Debit Cards and ATM

	Regionwise deployment of ATMs at the end of March, 2014						Debit card and ATM data for March, 2014									
Bank Name	Metro Centres	Urban Centers	Semi - Urban Centres	Rural Centres	All India	% share of ATMs	Cards	% share of debit cards	Avg. no. of times cash withdrawn per Card	No. debit cards per Bank's ATM	No. of Cash Withdrawal by Cards on any ATM	Amount of Cash withdrawn (Rs Millions)	% share of cash withdrawal Transactions	No. Cash Withdrawal per Bank's ATM	Own Ticket size	Other Banks' Ticket size
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]
Allahabad Bank	210	350	190	144	894	0.6	2797428	0.7	1.4	3129	3835862	10522.00	0.7	4291	2743	3145
Andhra Bank	420	551	543	336	1850	1.2	9810217	2.5	1.1	5303	11129447	32626.70	1.9	6016	2932	3147
Bank of Baroda	1720	1450	1404	1680	6254	3.9	14544809	3.7	0.8	2326	11957979	49558.60	2.1	1912	4144	3121
Bank of India	811	1213	1232	969	4225	2.6	16923918	4.3	1.0	4006	16507202	41197.16	2.9	3907	2496	3162
Bank of Maharashtra	452	371	415	589	1827	1.1	4521222	1.1	0.9	2475	4182923	10980.67	0.7	2290	2625	3147
Canara Bank	1847	1553	1462	1450	6312	3.9	15129787	3.8	1.0	2397	15357170	43496.42	2.7	2433	2832	3151
Central Bank of India	994	973	943	718	3628	2.3	7212820	1.8	0.9	1988	6524731	24364.51	1.1	1798	3734	3136
Corporation Bank	653	683	662	266	2264	1.4	5928982	1.5	0.8	2619	4581254	16567.84	0.8	2024	3616	3139
Dena Bank	326	279	329	487	1421	0.9	2470064	0.6	1.1	1738	2626523	9139.21	0.5	1848	3480	3141
Indian Bank	422	588	568	543	2121	1.3	11391049	2.9	1.1	5371	12693002	28927.50	2.2	5984	2279	3162
Indian Overseas Bank	625	692	730	486	2533	1.6	5263270	1.3	1.6	2078	8632471	23102.11	1.5	3408	2676	3150
Oriental Bank of Commerce	503	604	571	450	2128	1.3	4971892	1.3	0.9	2336	4605999	17865.31	0.8	2164	3879	3137
Punjab and Sind Bank	141	271	180	416	1008	0.6	483847	0.1	0.8	480	380086	1530.48	0.1	377	4027	3142
Punjab National Bank	1849	1950	1577	1564	6940	4.3	24993312	6.3	0.8	3601	20040903	84041.96	3.5	2888	4194	3105
Syndicate Bank	482	567	523	374	1946	1.2	6286639	1.6	1.3	3231	8249602	21276.15	1.4	4239	2579	3151
UCO Bank	468	539	523	555	2085	1.3	4231712	1.1	0.9	2030	3686517	13810.30	0.6	1768	3746	3139
Union Bank of India	1934	1817	1542	1136	6429	4.0	12266026	3.1	1.1	1908	13139184	41361.14	2.3	2044	3148	3143
United Bank of India	245	479	408	470	1602	1.0	2743283	0.7	1.1	1712	3143292	11679.00	0.6	1962	3716	3140
Vijaya Bank	366	413	378	371	1528	1.0	2932081	0.7	1.0	1919	2832255	8930.20	0.5	1854	3153	3143
State Bank of Bikaner & Jaipur	302	433	578	241	1554	1.0	6249432	1.6	1.4	4022	9057696	24964.85	1.6	5829	2756	3707
State Bank of Hyderabad	457	685	759	420	2321	1.5	9406369	2.4	1.7	4053	16195538	40442.23	2.8	6978	2497	3707
State Bank of India	9476	15511	13672	4856	43515	27.2	122223125	31.0	1.9	2809	233020443	589200.52	40.8	5355	2529	3707
State Bank of Mysore	278	267	286	276	1107	0.7	3793157	1.0	1.7	3427	6385729	15866.01	1.1	5768	2485	3707
State Bank of Patiala	189	360	351	379	1279	0.8	4665549	1.2	1.1	3648	4948604	14149.64	0.9	3869	2859	3707
State Bank of Travancore	97	334	835	86	1352	0.8	8408383	2.1	1.1	6219	9259785	26683.10	1.6	6849	2882	3707
IDBI Bank	680	910	489	222	2301	1.4	6325935	1.6	1.2	2749	7731031	31259.53	1.4	3360	4043	3130
Catholic Syrian Bank Ltd.	39	97	82	12	230	0.1	580221	0.1	0.6	2523	330123	871.47	0.1	1435	2640	3143
City Union Bank Ltd	200	346	315	79	940	0.6	1205398	0.3	1.4	1282	1627891	5527.80	0.3	1732	3396	3142
Dhanalaxmi Bank Ltd.	143	127	108	18	396	0.2	826026	0.2	0.6	2086	480933	1756.43	0.1	1214	3652	3142
Federal Bank Limited	215	295	766	84	1360	0.8	3797673	1.0	1.0	2792	3851272	16386.62	0.7	2832	4255	3135
ING Vysya Bank	387	192	49	10	638	0.4	1326328	0.3	1.8	2079	2419961	7243.20	0.4	3793	2993	3143
Jammu & Kashmir Bank	43	343	241	173	800	0.5	1696592	0.4	1.8	2121	3138397	13204.64	0.5	3923	4207	3137
Karnataka Bank Ltd.	227	226	183	64	700	0.4	2211774	0.6	1.1	3160	2416145	7796.40	0.4	3452	3227	3142
Karur Vysya Bank Ltd	316	493	598	210	1617	1.0	2848556	0.7	1.3	1762	3819055	16007.30	0.7	2362	4191	3136
Ratnakar Bank Ltd.	117	109	91	33	350	0.2	110764	0.0	1.4	316	151911	614.17	0.0	434	4043	3143
South Indian Bank Ltd	178	262	453	107	1000	0.6	2898534	0.7	0.8	2899	2272804	7639.20	0.4	2273	3361	3142
Tamilnadu Mercantile Bank Ltd.	74	161	294	136	665	0.4	636856	0.2	3.6	958	2284702	8790.87	0.4	3436	3848	3140
Lakshmi Vilas Bank Ltd.	162	210	238	78	688	0.4	456192	0.1	1.3	663	594177	2103.40	0.1	864	3540	3142
Axis (UTI) Bank Ltd.	4249	3996	3221	1456	12922	8.1	13319675	3.4	2.0	1031	27298733	120670.08	4.8	2113	4420	3079
Development Credit Bank Ltd.	141	36	46	15	238	0.1	174749	0.0	2.1	734	359826	1601.72	0.1	1512	4451	3142
HDFC Bank Ltd.	4798	2449	3252	757	11256	7.0	17421882	4.4	1.9	1548	33109642	148512.47	5.8	2942	4485	3060
ICICI Bank Ltd.	5724	3410	1736	445	11315	7.1	22324142	5.7	1.6	1973	34739105	158901.20	6.1	3070	4574	3050
IndusInd Bank Ltd	594	300	139	77	1110	0.7	1626248	0.4	1.0	1465	1605309	6736.20	0.3	1446	4196	3140
Kotak Mahindra Bank Ltd	775	175	105	48	1103	0.7	1135841	0.3	2.4	1030	2715611	10030.59	0.5	2462	3694	3140
Yes Bank Ltd.	642	367	113	17	1139	0.7	611759	0.2	2.1	537	1277968	4658.92	0.2	1122	3646	3142
CITI Bank	435	114	20	31	600	0.4	1764922	0.4	2.1	2942	3787188	13573.53	0.7	6312	3584	3140
DBS Ltd.	35	2	0	0	37	0.0	17178	0.0	4.3	464	73846	198.57	0.0	1996	2689	3143
Deutsche Bank	30	15	0	0	45	0.0	80514	0.0	2.7	1789	213775	915.36	0.0	4751	4282	3142
HSBC	135	11	0	0	146	0.1	574154	0.1	0.9	3933	501350	2348.94	0.1	3434	4685	3141
RBS (ABN AMRO)	50	8	0	0	58	0.0	148287	0.0	1.8	2557	265850	1147.17	0.0	4584	4315	3142
Standard Chartered	224	54	0	0	278	0.2	649149	0.2	2.2	2335	1455960	5312.82	0.3	5237	3649	3141
Total or Average	**45880**	**47641**	**43200**	**23334**	**160055**	**100.0**	**394417722**	**100.0**	**1.4**	**2464**	**571496762**	**1796092.22**	**100.0**	**3571**	**3143**	

IV. Cash Handling Cost and Fee for Cash Withdrawal

IV.1 RBI's introduction of the notion of cash handling charges

4.1 RBI through its July 1, 2013 notification (see, Appendix III) prompted banks to charge for handling cash, even for small amounts, when customers deposit cash into or withdraw cash out of their bank accounts. Such a move has prompted banks, for example SBI, to charge their customers Rs 50 for every cash deposit at a non-home branch, even when the deposit amount is small (say, in the range of Rs 50 to Rs 1000). Though there is nothing wrong with the concept of cash handing charges, such a notion exists for bulk cash handling and not for small amount cash.

4.2 In order to bring in focus and articulate the issue, we first refer to the "Recommendations of Damodaran Committee on Customer Service in Banks" (see, Appendix IV), and keep in the forefront what the committee really said regarding cash handling charges, if any. In this context, it is also important to understand what the RBI's Monetary Policy Statement 2013-14 have been (see, Appendix III). With the above backdrop and RBI's guidelines that had been issued on July 1, 2013, there appears to be a serious disconnect leading to RBI's unintended and induced discrimination in form of charges (not constituting Intersol charges) that are levied by the bank to cover the cost of extending services to customers which is *not* branch agnostic in-principle. And this is solely due to RBI prompting banks to follow (in a roundabout fashion) a non-uniform, unfair and non-transparent pricing policy and thus discriminate between their customers at home branch and non-home branches with respect to any charge that the bank may impose, not in the name of CBS/internet/intranet charges, but in the name of handling charges, be it cash handling, cheque handling, passbook handling, non-home customer handling, etc. In other words, RBI is unintentionally encouraging extortion of a form which did not exist earlier (for example cash handling charges which never existed unless it involved bundles of notes). However, this does not mean banks are wrong in imposing cash handling charges, so long as the charges are reasonable and that such a charge is made uniform across home and non-home branches.

4.3 With RBI's recognition of the cost to handle cash, and rightly so, reverse-interchange makes more sense to be a function of the transaction amount. Based on per transaction reverse-interchange of Rs 5 plus 0.2% of cash withdrawn, an alternative per transaction reverse-interchange model is achieved. This amounts to a maximum of Rs 25 that a bank can receive under reverse-interchange and a minimum of Rs 5 for a non-financial transaction. For details see the Box 1 below.

Box 1: Reverse-interchange discovery

For reverse-interchange discovery, NPCI should formulate a methodology (and RBI should provide necessary guidance and support for the same) to arrive at the correct figures of Rs 5 and 0.2% such that banks which have more Off-Us transactions on their cards do not stand to lose significantly while banks which have more Off-Us transactions on their ATMs also do not lose significantly in revenue terms, rather make some handsome bonus revenue.

4.4 In order to keep ATM network alive in India, the proposed reverse-interchange model should be supported by appropriate regulations (for savings bank account) like,

(i) Banks should allow atleast 12 free transactions (financial and non-financial combine) per month across all ATMs (own and cross ATMs combine). However RBI, for the present, need not allow banks to charge a fee for non-financial transaction on own bank's ATM.

(ii) In order to give more rigour while arriving at the number 12 (in case one considers it reasonable to mandate atleast 8 or 9 or 10 or 20) for free ATM transactions per month, the workout should be based on the frequency distribution of number of transactions (excluding non-financial transactions on own ATM) in a month, with frequency being the number of distinct debit cards. A key criteria should be to ensure that at least 90% (or 95%) of the common users are unaffected while taking such a policy stance. Here, a user is said to be a common user if (s)he has carried out atleast one ATM transaction during the month. For details see the Box 2 below.

(iii) Banks should bring in parity on the fee imposed for cash withdrawals at ATM with that at branch counters.

(iv) Banks should also impose an additional fee on cash withdrawal in excess of Rs 1 lakh a month so as to facilitate the economy and thus the masses in general (through moving towards a less-cash environment). Individuals requiring more than Rs 1 lakh cash per month may either resort to more than one bank account or be happy to pay the fee (say, at the rate of 0.2% of the amount withdrawn in excess of Rs 1 lakh a month). We discuss more on this later.

(v) Banks should strive to have at least one ATM at a region (Metro/Urban/Semi-Urban/Rural) for every 5000 transactions (cash withdrawal) per month done by their debit card holders in the region. To encourage ATM usage, banks should also ensure that with every savings bank account opened, a debit card is issued.

Box 2: Computing threshold value through 90 percentile criteria

Let m (≥ 1) be the variable representing number of ATM transactions per month, done on a debit card. Here ATM transaction means (i) financial and non-financial transactions on cross ATM, and (ii) financial transactions on own ATM. The frequency table with y_m representing the count of debit cards doing m ATM transactions in a month is

m	:	1	2	3	...	M
y_m	:	y_1	y_2	y_3	...	y_M

Here M is the maximum of the number of ATM transactions done by a debit card.

Using the 90 percentile criteria, we obtain minimum m, say m_0, such that

$$\frac{\sum_{m=1}^{m_0} y_m}{\sum_{m=1}^{M} y_m} \geq 0.90 .$$

Then, m_0 is the required threshold value such that at least 90% of the common users are unaffected while taking a policy stance on capping free ATM transactions.

4.5 It is pertinent to mention here that there are occasions when the ATM exhausts all the Rs 1000 and Rs 500 notes while the Rs 100 notes still remain. When this happens, the ATM can serve in dispensing a maximum of Rs 4000 in one transaction since ATMs generally have the capacity to dispense a maximum of 40 notes. This leads to requiring three transactions on the ATM to withdraw Rs 10,000. Since this event has a non-zero probability, it causes inconvenience to card issuer bank as well as to the card holder. The card issuer bank pays reverse-interchange which is three times more than what it ideally should be and the card holder loses two of his free transactions. The proposed reverse-interchange model to some extent overcomes this problem for the card issuer bank. Also, while arriving at the figure 12 of free ATM transactions, this aspect should be borne in mind.

4.6 Finally, one should always bear in mind that banks already have some control on their overall net revenue in form of the freedom given to banks through deregulation of interest rate for savings bank deposit account. Thus minimum basic services (which include reasonable number of cash withdrawal facility) are expected to be without any fee.

IV.2 Impact of giving more freedom for cross ATM usage and imposition of fees

4.7 In case of white label ATMs, the proposed model should take care of the possible reduction in their per transaction reverse-interchange revenue through enhanced ATM activity (due to atleast 12 free transactions per month). Moreover, white label ATMs are expected to have operational costs much lower since the space, cash, electricity and security are all provided by the deployer and they leverage on their existing infrastructure.

4.8 Under the current model of reverse-interchange of Rs 15, the impact of making customers move to their own bank's ATM (and thereby reducing the current 33% footfalls at cross ATM to say 20%) is expected to reduce the variation in the banks' net reverse-interchange payoffs. It is seen through a simulation study that a similar reduction in the variation is achieved (without disturbing the ATM usage behaviour) by adopting the proposed reverse-interchange Rs 5 + 0.2% of cash withdrawn. A bank-wise comparison of net payoffs under the two approaches should show minimal difference (except for the outlier banks). For more details on the simulation result, see Appendix V.

4.9 The impact of bringing in behavioural changes in ATM usage through reducing cross ATM usage (by imposing a fee) is not to the gain of banks and customers alike. It would invariably reduce the number of overall usage per ATM and thereby increase inefficiency and cost to banks to run ATMs even for their own customers. Furthermore, such a change will force an increase in cash-in-hand with bank customers as they will lean towards withdrawing more cash than required to avoid frequent ATM use and consequential fees. Customers of a bank would also stand to effectively have lesser number of ATMs for their free use. However, there is another (though lower) possibility that people do not change their habit since they are habituated to excessive ATM usage. In balance, RBI should avoid taking a retrograde step by inducing a change in reasonable customer behaviour.

4.10 It is pertinent to mention here that apart from high cost to serve bank customers at branches, many banks do not even have the capacity to serve the large customer base at branches. In other words, for banks, ATM is a substitute of branch service not by choice but by need to remain in business. Overemphasising that it costs to run an ATM is not an option since it also costs (and much more) to run a branch for providing such basic banking service. However, this does not mean banks should not strive for incorporating revenue earning models for savings bank account, so long as it is reasonable and is for the good for the overall system.

IV.3 Eliminating disincentives and incentivising non-cash modes

4.11 Finally a note of caution on the existence of possible disincentives in non-cash modes of payment while using debit cards in the country. In this matter, attention is drawn to RBI's directive on payment surcharge while paying at merchant locations through debit cards (see, reference [11]).

There are instances where merchant establishments levy fee as a percentage of the transaction value as charges on customers who are making payments for purchase of goods and services through debit cards. Such fee are not justifiable and are not permissible as per the bilateral agreement between the acquiring bank and the merchants and therefore, as per RBI, calls for termination of the relationship of the bank with such establishments. For more details one may refer to a draft report on the subject (see, reference [4]). However, currently there exists no system in place to check such disincentives in non-cash payments. Debit card issuing banks have made themselves free of any liability on this aspect. In other words there is no structured mechanism in place for the debit card holders to correct such irregularity.

4.12 Furthermore, there is currently no good reason for petrol pumps in India (and the banks and switch providers) to disincentive use of debit cards for purchase of petrol. Usually, debit card issuing bank imposes a fee on such transactions. This invariably creates a tendency for people to withdraw cash and then pay through cash. A correction in this direction should be initiated by RBI to remove such disincentives for non-cash use and thus minimize use of cash in the system.

4.13 Again, RBI has mandated merchant acquirer banks (in the POS business) to ensure that on debit card swipes, merchants are not charged more than (a net of) 1% of the transaction amount on amounts exceeding Rs 2000 and 0.75% on amounts upto Rs 2000. However, we see sporadic cases where merchants are left with no options but to either absorb or charge 2% of the transaction amount from their customers in case of return of any merchandise bought using a debit card. However, the same does not apply when the merchandise/service is purchased using cash.

4.14 This raises concerns and questions…

i.) Does it mean that frictions in use of debit cards at POS calls for behavioral education in the country for the depositors (through use of the DEAF[12] or otherwise) to use debit cards more at ATM and less at POS because debit card use at POS may turn out to be more expensive than to use it for the same amount at ATM?

ii.) For the acquirer banks, what is the reversal policy or in other words the policy of refunding money on the card? What is the corresponding policy and practice in the other developed or developing countries where they have a seamless (no cost to customer) and relatively quick process of refunding money on to the same card which was used at the time of the purchase?

iii.) One of the arguments given by RBI to justify limiting the free use of ATMs for cash withdrawal is the spread of POS at metros. To quote, RBI reasons "...availability of alternate means of electronic payment infrastructure and access thereto..." in order to facilitate a less-cash economy (at least in the retail sector) through POS. But there appears to be some sort of disincentives created to use POS vis-a-vis ATM. Why does this scenario exist unless the debit card

[12] Depositor Education and Awareness Fund

as a product is defective while using at POS? RBI should strive towards correcting this POS issue first.

iv.) Again, non-acceptance of debit card at POS if the transaction amount is less than Rs 100 is another friction created for small customers. In other words, it creates a requirement to go more to ATM as and when required with a higher chance to come across only a cross ATM than an own bank's ATM. So again RBI's justification does not stand. In other words, to bring in more clarity, RBI, Banks and Switch providers should look into this POS issue too.

4.15 The above does not mean that we encourage unlimited free cash through ATM. However, it does mean RBI has to set in better rationale to discriminate between Off-Us and On-Us transactions at ATM when setting a cap of atleast 8 or 10 free transactions (Off-Us, On-Us combine) at ATMs.

4.16 RBI should also work with the government, to see the pros and cons of disincentivising excessive cash-outs when contemplating imposition of fees for cash withdrawal (from savings bank account) in excess of Rs 1 lakh per month given that there exist other robust non-cash payment modes[13]. In case pros dominate the cons, a political will in addition to RBI's will may be required to achieve this. The revenue generated through such means should be channelized for subsidising existing merchant fees at POS for debit card use.

4.17 In case RBI plans to truly move in the direction of less-cash economy, for savings bank account, RBI may consider ways to discourage account debits which are excessively in form of cash-outs. For this, RBI should first (i) remove disincentives in non-cash payment modes and then (ii) work towards disincentivising cash withdrawals beyond a monthly maximum of say, Rs 1 lakh through reasonable floor and ceiling on fees. It is pertinent to mention here that RBI and the government should not only promote systems and procedures that facilitate the migration away from cash, but also bring in explicit awareness among people, highlighting advantages to the country and its people, to such a migration.

[13] Non-cash modes include cheque, RTGS, NEFT, IMPS, POS and now an aggressive National Unified USSD Platform (NUUP) based mobile banking.

V. Observations and Way Forward- A Summary

V.1 Data highlights

5.1 The analysis presented in our study is based on NPCI data of 6- to 9-months of 2010, and the NFS and RBI's 36 month (April 2011 – March 2014) ATM usage data.

5.2 Based on 2010 NFS data on Off-Us transactions, 38% of the cash withdrawals have ticket size of less than Rs 1000, which consumes 6% of the total cash. On the contrary, only 26% of the cash withdrawals have ticket size of Rs 5000 or more, but it consumes 71% of the total cash.

5.3 The number of Off-Us cash withdrawal per ATM had a tremendous impact (about 70% increase) during the first nine months of 2010 before stabilising at around 1300 cash withdrawals per ATM per month. However, lately we see some downward trend with convergence at around 1150 cash withdrawals per ATM per month.

5.4 There had been slight change in Off-Us non-financial transactions after banks were allowed to charge. From the NFS data it follows that during the 36 month period, the Off-Us non-financial transactions as a percentage of the total transactions reduced from 28% to 23%. As of March 2014, the financial transaction component of the total number of transactions is about 77%. Today, about 33% of the financial (Off-Us and On-Us combine) transactions are Off-Us for which banks are allowed to charge the customers (beyond 5 free transactions).

5.6 The 36 month period under study shows that while the number of ATMs grew at a sharp rate of 112%, there has been a 35% reduction in the average number of financial transactions per ATM (from 176 to 115 cash withdrawal transactions per ATM per day). This fact, when seen in conjunction with the 19% decline in number of debit cards per ATM, makes the decline in the average number of financial transactions per ATM more striking. This picture appears more alarming if one takes into account the volley of new ATMs under the brown label and white label system coming up in the country. This highlights the need for appropriate policy measures to (i) facilitate more debit card issuances and (ii) devising means to create an environment for optimal utilization of the ATMs through increased usage.

5.7 To value add any future ATM study on the bank-wise status, data is desirable on cross ATM usage on lines similar to bank-wise data that is being disseminated by RBI on a monthly basis. Since the cross ATM transaction data is readily available with NPCI, it may be worthwhile for NPCI or RBI to additionally publish bank-wise cross ATM data on:
(a) Total number and amount of withdrawals done by bank's card holders.
(b) Total number and amount of withdrawals done at bank's ATMs.
(c) Total number of non-financial transactions separately for the above two situations.

V.2 ATM cost and reverse-interchange for banks

5.8 The cost-benefit analysis to run an ATM shows that there is as such no scope to reduce the reverse-interchange when one tries to discover its value based on average cost to run an ATM and its usage through transactions. In view of the decreasing trend in the number of transactions per ATM per day, the country level average cost per transaction could reasonably be fixed at a value below Rs 15. Given the scenario that banks now have to secure ATMs in isolated locations with a security guard there would be additional cost for guard to the tune of Rs 1.2 lakh per year per Off-Site ATM (bringing the monthly cost for Off-Site ATM to Rs 76,250). Thus, even if we add an additional Re 2 per transaction towards new risk/crime mitigation measures and insurance on ATM fraud, the country level average cost per transaction could reasonably be fixed at a value below Rs 17.

5.9 The correct discovery of reverse-interchange is crucial for an efficient ATM network in the country. While arriving at the reverse-interchange, two factors play a major role. These factors are X: monthly cost to run an ATM and Y: number of monthly transactions on the ATM. If X increases while Y decreases, it would be unsustainable for the banks leading to further demand for increase of reverse-interchange. Thus, a viable model should envisage either an increase in Y or a decrease in the number of ATMs since X is bound to increase due to inflation. In order that the system decreases ATM concentration at locations which has high ATM density but low Y values, an appropriate discovery of reverse-interchange is required.

5.10 Ideally, banks' use of each other's ATM is expected to more or less nullify the net reverse-interchange revenue. However, there are cases where banks have disproportionately large number of debit card users not commensurate with the number of their ATMs. Such an imbalance in the system prompts such banks to set means and mechanisms to direct their customers to their own ATMs.

5.11 SBI is a major contributor to this imbalance due to a disproportionately large number of their debit card users. SBI contributes to about 31% of debit cards issued by scheduled commercial banks in India with these debit cards contributing to about 41% of overall financial transactions at ATMs in India. On the other hand, SBI owns less than 27% of all ATMs in India. This results in SBI paying off a relatively higher net reverse-interchange fee to other banks. In other words, such a high fee being paid by SBI is attributable to SBI having relatively less ATMs than what its card base (and card usage) demands. SBI on an average has 2809 debit cards per SBI ATMs as against country average (excluding SBI) of 2336 debit cards per ATM. In terms of SBI's card usage, on an average SBI has a demand for 5355 cash withdrawals per SBI ATMs against rest of the banks averaging a demand for only 2904 cash withdrawals per ATM. This has inherently led to net high volumes of cross ATM usage by SBI debit cards vis-à-vis other banks' debit cards. Interestingly,

the average ticket size based on all transactions of all banks (excluding SBI) is of the order of Rs 3600 while average ticket size of SBI cards alone is Rs 2500.

5.12 It is inherently clear that with the current tendency among cardholders to use a cross ATM, the card masses of SBI impacts SBI's net reverse-interchange revenue losses due to (a) prevailing fixed (per transaction based) reverse-interchange regime, (b) RBI's policy to provide reasonable number of free cross ATM usage and (c) SBI having significantly more debit cards relative to their number of ATMs than the country average. Ideally, the banks install ATMs for serving their own customers. However, banks may provide their ATM for use by other bank's card holders keeping in mind (i) the (spare) capacity utilisation of ATMs and (ii) potential to gain some revenue. Thus, when a cross ATM is used, it leads to help in form of optimum resource utilisation from other banks' customers (revenue gain) and inherently helping (serving) them in return. Such bonus revenue is to be seen just as a bonus derived out of a regulatory prescription (regulating free cross ATM usage and fixing reverse-interchange rate) and not as a right since withdrawal (or dilution) of the policy stance would most likely deprive the banks even of the bonus revenue, apart from a setback in customer service.

5.13 Presently RBI has mandated five free cross ATM transactions. The impact of minimizing transactions (than a reasonable minimum) through fee imposition on cross ATM usage would be retrograde to the ATM developments that took place in the past five years. This would lead to underutilization of ATMs with more cash-in-hand with the public and foremost, inconvenience to public at large. Any trigger which has a psychological impact on the common ATM users, discouraging them to venture for cross ATM transactions, would drastically bring down cross ATM usage and may thus force banks to withdraw many existing ATMs. People would alter their ATM behaviour and ensure that cash is withdrawn in advance and in excess from one's own bank ATM.

V.3 Cash handling cost and fee

5.14 RBI through its July 1, 2013 notification prompted banks to charge for handling cash, even for small amounts, when customers deposit cash into or withdraw cash out of their bank accounts. Such a move has prompted banks, for example SBI, to charge their customers Rs 50 for every cash deposit at a non-home branch, even when the deposit amount is small (say, in the range of Rs 50 to Rs 1000). There appears to be a serious disconnect leading to RBI's unintended and induced discrimination in form of charges (not constituting Intersol charges) that are levied by the bank to cover the cost of extending services to customers which is not branch agnostic in-principle (apparently in violation to RBI's Monetary Policy Statement 2013-14). Though there is nothing wrong with the concept of cash handing charges, such a notion exists for bulk cash handling and not for small amount cash. In other words, RBI needs to appreciate that imposition of cash handling charges makes sense so long as the charges are reasonable and that such a charge is made uniform across home and non-home branches.

5.15 With RBI's recognition of the cost to handle cash, and getting a cue from debit card transactions at merchant establishments, where interchange is worked out as a percentage of the transaction amount, in case of ATM transactions, involving cash handling, the reverse-interchange makes more sense to be a function of the transaction amount. Accordingly, a pricing model is proposed that also attempts to minimise the current imbalance in cross ATM usage. The model suggests a per transaction reverse-interchange of Rs 5 plus 0.2% of cash withdrawn as an alternative. This amounts to a maximum of Rs 25 that a bank can receive under reverse-interchange and a minimum of Rs 5 for a non-financial transaction. The reverse-interchange revision is simple to implement since NPCI just needs to change the reverse-interchange netting and settlement formula as a function of number of transaction and amount of transaction for each bank. Banks do not have to implement anything new in their CBS.

5.16 In order to keep ATM network alive in India, the model should be supported by appropriate regulations (for savings bank account) like,
(i) Banks should allow atleast 12 free transactions (financial and non-financial combine) per month across all ATMs (own and cross ATMs combine). However RBI, for the present, need not allow banks to charge a fee for non-financial transaction on own bank's ATM.
(ii) In order to give more rigour while arriving at the number 12 (in case one considers it reasonable to mandate atleast 8 or 9 or 10 or 20) for free ATM transactions per month, the workout should be based on the frequency distribution of number of transactions (excluding non-financial transactions on own ATM) in a month, with frequency being the number of distinct debit cards. A key criteria should be to ensure that at least 90% (or 95%) of the common users are unaffected while taking such a policy stance. Here, a user is said to be a common user if (s)he has carried out atleast one ATM transaction during the month.
(iii) Banks should bring in parity on the fee imposed for cash withdrawals at ATM with that at branch counters.
(iv) Banks should also impose an additional fee on cash withdrawal in excess of Rs 1 lakh a month so as to facilitate the economy and thus the masses in general (through moving towards a less-cash environment). Individuals requiring more than Rs 1 lakh cash per month may either resort to more than one bank account or be happy to pay the fee (say, at the rate of 0.2% of the amount withdrawn in excess of Rs 1 lakh a month).
(v) Banks should strive to have at least one ATM at a region (Metro/Urban/Semi-Urban/Rural) for every 5000 transactions (cash withdrawal) per month done by their debit card holders in the region. To encourage ATM usage, banks should also ensure that with every savings bank account opened, a debit card is issued.

5.17 It is pertinent to mention here that there are occasions when the ATM is unable to dispense more than Rs 4000 in one transaction since ATMs generally have the capacity to dispense a maximum of 40 notes. This leads to requiring three transactions on the ATM to withdraw Rs 10,000. Since this event has a non-zero probability, it causes inconvenience to card issuer bank as well as to the card holder. The proposed reverse-interchange model to some extent overcomes this

problem for the card issuer bank. Also, while arriving at the figure 12 of free ATM transactions, this aspect should be borne in mind.

5.18 Under the current model of reverse-interchange of Rs 15, the impact of making customers move to their own bank's ATM (and thereby reducing the current 33% footfalls at cross ATM to say 20%) is expected to reduce the variation in the banks' net reverse-interchange payoffs. It is seen through a simulation study that a similar reduction in the variation is achieved (without disturbing the ATM usage behaviour) by adopting the proposed reverse-interchange Rs 5 + 0.2% of cash withdrawn. A bank-wise comparison of net payoffs under the two approaches should show minimal difference (except for the outlier banks). For more details on the simulation result, see Appendix V.

5.19 The impact of bringing in behavioural changes in ATM usage through reducing cross ATM usage (by imposing a fee) is not to the gain of banks and customers alike. It would invariably reduce the number of overall usage per ATM and thereby increase inefficiency and cost to banks to run ATMs even for their own customers. Furthermore, such a change will force an increase in cash-in-hand with bank customers as they will lean towards withdrawing more cash than required to avoid frequent ATM use and consequential fees. Customers of a bank would also stand to effectively have lesser number of ATMs for their free use. However, there is another (though lower) possibility that people do not change their habit since they are habituated to excessive ATM usage. In balance, RBI should avoid taking a retrograde step by inducing a change in reasonable customer behaviour.

5.20 It is pertinent to mention here that apart from high cost to serve bank customers at branches, many banks do not even have the capacity to serve the large customer base at branches. In other words, for banks, ATM is a substitute of branch service not by choice but by need to remain in business. Overemphasising that it costs to run an ATM is not an option since it also costs (and much more) to run a branch for providing such basic banking service. However, this does not mean banks should not strive for incorporating revenue earning models for savings bank account, so long as it is reasonable and is for the good for the overall system.

5.21 In the retail sector, there still exist disincentives in non-cash modes of payment while using debit cards in the country. There are instances where merchant establishments levy fee as a percentage of the transaction value as charges on customers who are making payments for purchase of goods and services through debit cards. However, currently there exists no system in place to check such disincentives in non-cash payments. Debit card issuing banks have made themselves free of any liability on this aspect. In other words there is no structured mechanism in place for the debit card holders to correct such irregularity. Furthermore, there is currently no good reason for petrol pumps in India (and the banks and switch providers) to disincentive use of debit cards for purchase of petrol. Usually, debit card issuing bank imposes a fee on such transactions. This invariably creates a tendency for people to withdraw cash and then pay through cash. A

correction in this direction should be initiated by RBI to remove such disincentives for non-cash use and thus minimize use of cash in the system.

5.22 Then there is also the issue of POS transaction reversal policy. In other words the policy of refunding money on the card while products are returned or excess advances returned. Unlike corresponding policy and practice in the other developed or developing countries, India appears not to be having a seamless (no cost to customer) and relatively quick process of refunding money on to the same card which was used at the time of the purchase. In order to bring in parity between cash and POS pay-outs at retail outlets, RBI needs to work towards correcting the POS transaction reversal policy/practice.

5.23 RBI should also work with the government, to see the pros and cons of disincentivising excessive cash-outs when contemplating imposition of fees for cash withdrawal (from savings bank account) in excess of Rs 1 lakh per month given that there exist other robust non-cash payment modes. In case pros dominate the cons, a political will in addition to RBI's will may be required to achieve this. The revenue generated through such means should be channelized for subsidising existing merchant fees at POS for debit card use.

5.24 In case RBI plans to truly move in the direction of less-cash economy, for savings bank account, RBI may consider ways to discourage account debits which are excessively in form of cash-outs. For this, RBI should first (i) remove disincentives in non-cash payment modes and then (ii) work towards disincentivising cash withdrawals beyond a monthly maximum of say, Rs 1 lakh through reasonable floor and ceiling on fees. It is pertinent to mention here that RBI and the government should not only promote systems and procedures that facilitate the migration away from cash, but also bring in explicit awareness among people, highlighting advantages to the country and its people, to such a migration.

VI. Recommendations and Conclusion

VI.1 ATM measures for savings bank account

6.1 With about 33% of ATM transactions being Off-Us, a more balanced freedom for cash withdrawal is desirable to move towards a less-cash economy. Accordingly, for savings bank account holders, ATM transactions only beyond 12 free in a month may be charged. This should apply to totality of all On- and Off-Us transactions. In other words, *allow atleast 12 free ATM transactions (financial and non-financial combine) per month across any ATM*. However RBI, for the present, need not allow banks to charge a fee for non-financial transaction on own bank's ATM. Now, in order to give more rigour while arriving at the number 12 (in case one considers it reasonable to mandate atleast 8 or 9 or 10 or 20) for free ATM transactions per month, the workout should be based on the frequency distribution of number of transactions (excluding non-financial transactions on own ATM) in a month, with frequency being the number of distinct debit cards. A key criteria should be to ensure that at least 90% (or 95%) of the common users are unaffected while taking such a policy stance. Here, a user is said to be a common user if (s)he has carried out atleast one ATM transaction during the month.

6.2 In order to encourage use of electronic payments in form of RTGS/NEFT/IMPS and debit/pre-paid cards at POS, banks should remove any disincentives on such electronic payments and allow free ATM cash withdrawal only up to a maximum of Rs 1 lakh per month.

6.3 In case RBI plans to truly move in the direction of less-cash economy, for savings bank account, RBI may consider ways to discourage account debits which are excessively in form of cash-outs. For this, RBI should first (i) remove disincentives in non-cash payment modes and then (ii) work towards disincentivising cash withdrawals beyond a monthly maximum of say, Rs 1 lakh through reasonable floor and ceiling on fees.

6.4 To maintain parity, cash withdrawal at branches (over the counter) should be priced in conformity to the fee structure for ATM withdrawals. The suggested total free cash withdrawals at ATMs should be extended and include the cash withdrawals at branches. Beyond atleast 12 free overall cash withdrawals (ATM and branch counter), over the counter branch transactions should be priced at par with ATM fees.

6.5 Given the current downward trend for the quantum of average number of transactions per ATM, the present reverse-interchange of Rs 15 for financial and Rs 5 for non-financial transactions should be reviewed. A more meaningful model could be envisaged which is based on per transaction reverse-interchange of Rs 5 plus 0.2% of cash withdrawn. This amounts to a maximum of Rs 25 that a bank can receive under reverse-interchange and a minimum of Rs 5 for a

non-financial transaction. In order to keep ATM network alive in India, the model should be supported by appropriate regulations (for savings bank account) like,
(i) Banks should allow atleast 12 free transactions (financial and non-financial combine) per month across all ATMs (own and cross ATMs combine). However RBI, for the present, need not allow banks to charge a non-financial transaction fee on own bank's ATM.
(ii) Banks should also impose a fee on cash withdrawal in excess of Rs 1 lakh a month so as to facilitate the majority masses.
(iii) Banks should have at least one ATM at a region (Metro/Urban/Semi-Urban/Rural) for every 5000 transactions (cash withdrawal) per month done by their debit card holders in the region.

VI.2 A note of caution

6.6 While there has been a sharp increase in the number of ATMs, over the 36 month period April 2011 through March 2014, there has been a 35% reduction in the average number of financial transactions per ATM. This fact, when seen in conjunction with the 19% decline in number of debit cards per ATM, makes the decline in the average number of financial transactions per ATM more striking. One needs to carefully scrutinize this scenario as this amounts to sub-optimal use of the ATMs and possible inefficient sharing of the ATM loads among ATMs at close proximities. This picture appears more alarming if one takes into account the volley of new ATMs under the brown label and white label system coming up in the country. One may expect further reduction in the average number of transactions per ATM. This highlights the viability risks of setting up ATMs at close proximity to existing ATMs. Banks would take corrective stance, once the imbalance in the existing reverse-interchange is rectified, by not overcrowding ATMs at close proximity.

6.7 Given the decreasing trend in the average number of transactions per ATM, one need to relook at ways for cutting costs while setting up new ATMs. The upcoming brown label ATMs and white label ATMs could show some direction on how to cut costs in the overall expenditures and still have an ATM set-up running efficiently. Furthermore, this indicates how setting up of appropriate reverse-interchange would serve the additional objective of encouraging more of low cost rural and semi-urban ATMs. With growth in the number of ATMs being predominantly in Tier I and II centers, there is a need to expand the reach of ATMs in Tier III to VI centers.

VI.3 Rationale for ATM reforms

6.8 Apart from high cost to serve bank customers at branches, many banks do not even have the capacity to serve the large customer base at branches. In other words, for banks, ATM is a substitute of branch service not by choice but by need to remain in business. Overemphasising that it costs to run an ATM is not an option since it also costs (and much more) to run a branch for providing such basic banking service. However, this does not mean banks should not strive for

incorporating revenue earning models for savings bank account, so long as it is reasonable and is for the good for the overall system.

6.9 Along with reduction in the reverse-interchange, one could build measures for incentivising banks having ATMs located in strategic areas (where people have better reach). One such measure could be to remove any artificially created distinction in using own bank's ATM and cross ATM (and thereby eliminate any psychological barriers among users on the use of cross ATMs). Such a move is expected to increase number of Off-Us transactions and simultaneously provide more convenience to users.

6.10 The reverse-interchange revision is simple to implement since NPCI just needs to change the reverse-interchange netting and settlement formula as a function of the number of transactions and total amount of transactions for each bank. Banks do not have to implement anything new in their CBS. The proposed reverse-interchange revision would impact the system by

- protecting small banks by letting them pay to acquirer bank as per amount of cash withdrawn. This would encourage banks to use other bank's ATM at a price which is reasonable. This would thus incentivize such banks to issue more debit cards. It is observed that some RRBs prefer to issue only ATM cards which works only on the sponsor bank's ATM so as not to incur excessive expenditure on reverse-interchange.
- ensuring that there is minimal difference in terms of cost to a bank when a customer uses his own ATM vis-à-vis a different bank's ATM.
- ensuring that there is less overcrowding of ATMs at close proximity and thereby allow healthy, cost efficient business model for banks.
- eliminating imbalances of the type where ICICI Bank customers are withdrawing on an average Rs 5000 per transaction from SBI ATM while SBI customers are withdrawing on an average Rs 2000 per transaction from ICICI Bank ATM; and both banks (currently) paying Rs 15 to each other for cross ATM usage.

6.11 While, banks are definitely saving through ATM operations compared to branch banking, thus enabling the banks to pass on the benefit to the customers, banks may utilize the ATM channel to garner more business and generate revenue by introducing attractive value added services. Just to illustrate, automated cash deposit machines (ACDM) are coming up fast and these would, in due course of time, also come as hybrids which would do multiple functions, including cash dispensation (akin to our existing ATM). Such interoperable hybrids machines would go a long way in addressing the economies of scale for the country's ATMs. Initially such hybrid machines should be at the branch site[14].

6.12 The limit of Rs 10,000 per cash withdrawal (for Off-Us) should be based on ATM's actual capacity to disburse cash quantum and other risk mitigating measures, rather than anything else.

[14] For more details, see IIT Bombay Technical Report "Including the Poor– Need for Reforms in Remittances". http://www.math.iitb.ac.in/~ashish/workshop/NEFT-Report_2012.pdf

Since there would be no distinction between On- and Off-Us withdrawals with respect to customer fees, this limit could possibly be made same for a withdrawal— whether On- or Off-Us.

6.13 In the retail sector, there still exist disincentives in non-cash modes of payment while using debit cards in the country. There are instances where merchant establishments levy fee as a percentage of the transaction value as charges on customers who are making payments for purchase of goods and services through debit cards. However, currently there exists no system in place to check such disincentives in non-cash payments. Debit card issuing banks have made themselves free of any liability on this aspect. In other words there is no structured mechanism in place for the debit card holders to correct such irregularity. Furthermore, there is currently no good reason for petrol pumps in India (and the banks and switch providers) to disincentive use of debit cards for purchase of petrol. Usually, debit card issuing bank imposes a fee on such transactions. This invariably creates a tendency for people to withdraw cash and then pay through cash. A correction in this direction should be initiated by RBI to remove such disincentives for non-cash use and thus minimize use of cash in the system. The policy of refunding money on the card, at POS, while products are returned or excess advances returned is also an area where India appears not to be having a seamless (no cost to customer) and relatively quick process of refunding money on to the same card which was used at the time of the purchase. In order to bring in parity between cash and POS pay-outs at retail outlets, RBI needs to work towards correcting the POS transaction reversal policy/practice.

6.14 For savings bank account holders, use of excessive cash withdrawals should be discouraged. There is no good reason why such a move would not help the country's majority in achieving our prime objective of making the cash based payment instruments expensive (within reasonable limits) and thus facilitate migration to free non-cash payments like cheque/RTGS/NEFT/IMPS and debit/pre-paid cards at POS. RBI should work with the government, to see the pros and cons of disincentivising excessive cash-outs when contemplating imposition of fees for cash withdrawal (from savings bank account) in excess of Rs 1 lakh per month given that there exist other robust non-cash payment modes. In case pros dominate the cons, a political will in addition to RBI's will may be required to achieve this. The revenue generated through such means should be channelized for subsidising existing merchant fees at POS for debit card use.

6.15 A fundamental question that RBI needs to consider is whether the 5+3 ATM transactions that are being called "free of charge facility" really free? We need to go deep into what customer pays implicitly, what they get in return, and who are the net gainers; customers or banks, and by how much. As payment service is of the nature of public good, a socio-economic cost benefit study will be very useful for informed decisions on pricing of payment products as part of public policy.

6.16 Finally, the RBI and the government should not only promote systems and procedures that facilitate the migration away from cash, but also bring in explicit awareness among people, highlighting advantages to the country and its people, to such a migration.

Addendum

1. Number of free cash withdrawal could be set in conjunction with the total amount of free cash withdrawal per month. It is pertinent to mention that a person withdrawing 7 times in a month from ATM, each time withdrawing Rs 10,000 is different from one withdrawing 7 times, each time withdrawing Rs 600. This difference must be appropriately captured and the poor thus should not be pained because of excessive restrictions on ATM. One has to balance and devise ways to discourage excessive cash, than what is required within a reasonable time frame of 3 to 5 days by an individual, coming into circulation (cash-in-hand).

2. For savings bank account (which is not meant for business activities), a limit of Rs 1 lakh cash-out per month, free of charge, should be able address the needs of the majority. Also, a combined (On- and Off-Us) minimum of 12 free cash withdrawals per month should take care of the poor (who may need small amounts of money to withdraw) and the common man, in general. (Impact: More cross ATM usage; more convenience for people of India; good for cross ATM reverse-interchange earnings; discourages those who withdraw too much cash from savings bank account)

3. Now, the question arises as to whether these figures of Rs 1 lakh and 12, the right choice? Or should they be further fine-tuned? There has to be some sort of a reasonable cap on free ATM transactions. Such a cap should be such that it does not hurt the common man but hurts (and thus prompts against infusing too much cash in the system) those who encourages excessive cash usage in their living.

4. More cash has to be managed for big ticket size cash withdrawals. Also, a significant component (i.e., on an average more than 30%) of the cost to run an ATM is the cost associated to cash loading and idle funds. It is observed that banks often offer everything free if the client is big. No charge on unlimited cross ATM withdrawal, no charge on bulk cash deposits, etc. One needs to disincentivise such practice where cash transactions are involved. Banks should exercise freedom given and necessarily impose reasonable/penal fee with the objective of discouraging too much cash in the system.

5. While arriving at the revised reverse-interchange, the proposed model ensures that banks with more cards (or card usage) are incentivized. This is so since they are the ones who help in more usage of the ATMs in India and thus scale up the ATM business in the country. Such a model ensures banks with relatively larger cards and larger ATM base get due benefits from the system. Today the benefit is being enjoyed through only one aspect, i.e., larger ATM base. Banks with large card base should benefit so long as they have relatively reasonable number of ATMs. Banks with relatively more customers who are poor (having low net worth) would also benefit.

6. Banks should strive to have at least one ATM at a region for every 5000 cash withdrawal transactions per month done by their debit card holders in the region (or for every 5000 savings/current account in existence). This would ensure that the ATM network in the country retains reasonable health as per demand. This, in combination with atleast 12 free any ATM cash withdrawal per month (along with a reasonable cap on the total amount of free cash withdrawal a month) and the proposed reverse-interchange fee should make the ATMs alive in India.

7. RBI has since published ATM and debit cards data for April-May, 2014.

Table - 5*

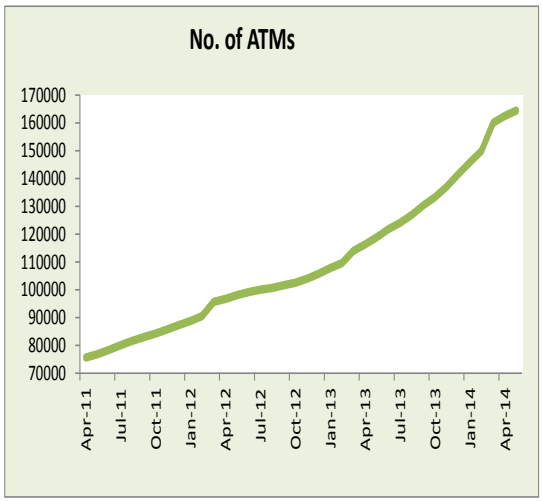
Month-wise data of ATM usage for the period April-May 2014

Month/Year	Number of Outstanding Debit Cards (Million)	Total Number of ATMs	Total TXn*	Cash Withdrawn (Rs Crore)	Number of Cash Withdrawal per ATM per day (RBI data**)	Number of Debit Cards per ATM (RBI data)
Apr-14	399.65	162543	554034275	174346	114	**2459**
May-14	401.72	164491	568127694	187375	111	**2442**

*As per RBI, the data reflects the cash withdrawals done at ATMs

**Assuming RBI Data on Total TXn reflecting cash withdrawals at ATMs

Based on the RBI data for the 38 month period April 2011 through May 2014 (Tables 5 and 5*), we show through the Chart, as below, how a policy stance on ATM is leading to growing ATMs and growing underutilization of ATMs in India.



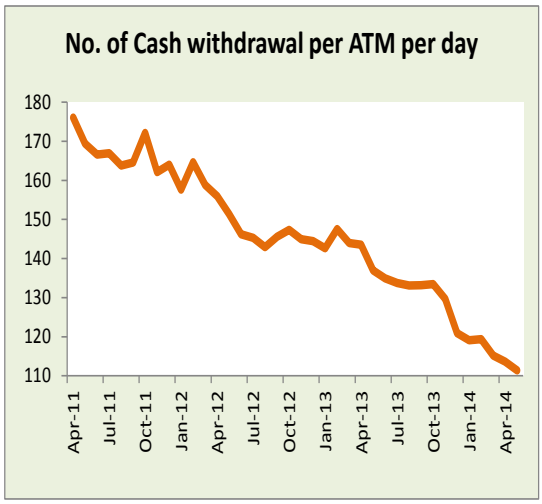


Chart : *Lines show how with increase in ATM numbers, there is a decrease in their per ATM cash withdrawal volumes.*

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Appendix I

भारतीय रिज़र्व बैंक
RESERVE BANK OF INDIA
www.rbi.org.in

RBI/2014-15/179
DPSS.CO.PD.No. 316/02.10.002/2014-2015 August 14, 2014

The Chairman and Managing Director / Chief Executive Officers
All Scheduled Commercial Banks including RRBs /
Urban Co-operative Banks / State Co-operative Banks /
District Central Co-operative Banks

Madam / Dear Sir

Usage of ATMs – Rationalisation of number of free transactions

The number of Automated Teller Machines (ATMs), which stood at a little over 27,000 as at end-March 2007, has increased to over 1.6 lakh across the country by end-March 2014. During the same period, the Point-of-Sale (POS) infrastructure has increased from 3.2 lakh to 10.65 lakh terminals. The ATMs are being gradually leveraged by banks to deliver other financial and non-financial products to their customers. Meanwhile, White Label ATMs (WLAs) have also been introduced in the country with the objective of increasing the ATM density and also building the rural and semi-urban ATM infrastructure. However, despite this growth, the deployment of both ATMs as well as POS infrastructure in the country is lop-sided with a significantly large presence in metropolitan and urban areas as compared to rural and semi-urban areas.

2. Recently, a few banks and the Indian Banks' Association (IBA) had approached the Reserve Bank seeking changes in the extant instructions regarding free transactions at other banks' ATMs. Referring to the growing cost of ATM deployment and maintenance incurred by banks on the one hand as well as the rising interchange out-go due to these free transactions, the IBA had sought the removal of free transactions at other banks' ATMs at metro centres and other large townships in the country.

3. In this regard, we draw attention to our circular DPSS No. 1405/02.10.02/2007-2008 dated March 10, 2008 as well as IBA circular No. CE.RB-1/atm/1284 dated August 31, 2009 on levy of service charges for use of ATMs. Reference is also invited to our circular DPSS.PD.No. 2632/02.10.002/2010-2011 dated May 27, 2011 which, inter alia, state that five free transactions

per month (inclusive of financial and non-financial transactions) is permitted at other bank ATMs.

4. After an analysis of the ATM deployment in the country as well as availability of alternate means of electronic payment infrastructure and access thereto, it has been decided to revise the existing directions as under:

a) Taking into account the high density of ATMs, bank branches and alternate modes of payment available to the customers, the number of mandatory free ATM transactions for savings bank account customers at other banks' ATMs is reduced from the present five to three transactions per month (inclusive of both financial and non-financial transactions) for transactions done at the ATMs located in the six metro centres, viz. Mumbai, New Delhi, Chennai, Kolkata, Bengaluru and Hyderabad. Nothing, however, precludes a bank from offering more than three free transactions at other bank ATMs to its account holders if it so desires.

b) This reduction will, however, not apply to small / no frills / Basic Savings Bank Deposit account holders who will continue to enjoy five free transactions, as hitherto.

c) At other locations i.e. other than the six metro centres mentioned above, the present facility of five free transactions for savings bank account customers shall remain unchanged.

d) ATM installing banks are advised to indicate clearly at each ATM location that the ATM is situated in a 'metro' or 'non-metro' location using appropriate means (message displayed on the ATM / sticker / poster, etc.) to enable the customer to identify the status of the ATM in relation to availability of number of free transactions. Further, banks are advised to ensure the "ATM location identifiers" in their ATM database is accurate and kept up-to-date at all times so as to minimise disputes, if any, in the matter.

e) The issuing banks are also advised to put in place proper mechanisms to track such transactions and ensure that no customer inconvenience or complaints arise on this account.

f) The provisions related to levy of charges for use of own-bank ATMs, vide our circular dated March 10, 2008, has also been reviewed. Accordingly, banks are advised that at least five free transactions (inclusive of financial and non financial transactions) per month should be permitted to the savings bank account customers for use of own bank ATMs at all locations. Beyond this, banks may put in place appropriate Board approved policy relating to charges for customers for use of own bank ATMs.

g) The ceiling / cap on customer charges of **Rs.20/- per transaction (plus service tax, if any) will be applicable**.

h) Banks are advised to ensure that the charges structure on ATM transactions, as per their Board approved policy, is informed to the customer in a fair and transparent manner.

i) Further, banks are advised to put in place suitable mechanism for cautioning / advising / alerting the customers about the number of free transactions (OFF-US as well as ON-US) already utilised during the month by the customer and the possibility that charges may be levied as per the banks' policy on charges.

5. The directive is issued under Section 10(2) read with Section 18 of Payment and Settlement Systems Act 2007, (Act 51 of 2007).

6. This directive shall come into effect from November 01, 2014.

7. Please acknowledge receipt.

Yours faithfully

(Vijay Chugh)
Principal Chief General Manager

3

Appendix II

Estimation of correct number of financial transactions under Type II reasoning

1. If one considers RBI data to be representing the totality of financial and non-financial transactions and juxtapose the information from the NFS data on proportion of financial transactions (Table 4), the Average ticket size (based on the RBI data) works out to be much higher at Rs 3922. Table A provides the details.

2. Unlike RBI data on debit card transactions at ATM, NPCI data is more reliable since it is the data gathered from a single source, the NFS server. An estimate of non-financial Component in RBI's total transaction is obtained using the NFS's Average ticket size and is given by 100{1 – [Cash Withdrawn (RBI) × Total Financial TXn (NFS)]/[Total TXn (RBI) × Cash Withdrawn (NFS)]} and can also be written as

$$100\left\{1-\frac{\text{RBI's Average ticket size}}{\text{NFS's Average ticket size}}\right\}$$

3. Using the April-11 through March-14 transaction data of NFS and RBI, and taking the Average ticket size (of NFS data) as the base, it is observed (Table A) that the estimate of the non-financial component in RBI's total transaction during the 36 month period ranged between 16.8% and 4.2%. Incidentally, for the month of June 2012, we see a significant reduction in the estimated value of the non-financial component in RBI's total transaction. RBI's recent release of statistics has much cleaner data with banks predominantly reporting only financial transactions.

4. Taking number of ATMs as the numbers provided by RBI, Table A clearly highlights the trend during the 36 month period indicating that there were on an average 174 transactions per day on an ATM of which about 131 were cash withdrawal. In March 2014, on an average there had been 138 transactions per day of which 107 were cash withdrawal. In case we take the monthly number of ATMs as the numbers provided by NPCI these figures would further go down.

5. Furthermore, ignoring RBI's non-listing of debit card transactions done by card holders of UCBs and RRBs, Table A brings to light that during the 36 months under study, the share of Off-Us cash withdrawal has increased from 29% to 36%. As of March 2014, about 36% of the number of cash withdrawals was through cross ATM usage. Adjusting for the transactions done by debit card holders of UCBs and RRBs, the share of Off-Us cash withdrawals can be reasonably taken 1% below what has been obtained here. Thus, for March 2014 an adjusted estimate of the number of cash withdrawals through cross ATM usage is about 35%. Such a feature could be achieved only because banks are required to provide their customers with 5 free cross ATM transactions per month.

Table - A

Average ticket size and estimation of correct number of transactions

Month/Year	RBI's Average Amount per Cash Withdrawal (Rs)	NFS's Average Amount per Cash Withdrawal (Rs)	RBI's Average Amount per Cash Withdrawal* (Rs)	Estimated Non-financial Component in RBI's Total TXn Volume (%)	Estimate of Number of Cash Withdrawal per ATM per day	Estimate** of Number of Transactions per ATM per day	Estimate of Off-Us Transactions (%)
Apr-11	2657	3146	3690	15.53	149	207	29
May-11	2792	3235	3804	13.71	146	199	31
Jun-11	2804	3221	3821	12.94	145	198	30
Jul-11	2719	3175	3725	14.35	143	196	30
Aug-11	2709	3177	3707	14.73	140	191	31
Sep-11	2667	3129	3647	14.78	140	192	31
Oct-11	2743	3299	3769	16.84	143	197	32
Nov-11	2743	3220	3717	14.82	138	187	31
Dec-11	2797	3202	3767	12.64	143	193	31
Jan-12	2787	3199	3748	12.87	137	185	32
Feb-12	2799	3230	3773	13.36	143	192	31
Mar-12	2796	3244	3775	13.79	137	185	31
Apr-12	2829	3298	3818	14.23	134	181	32
May-12	2885	3291	3841	12.34	133	177	32
Jun-12	3088	3378	4068	8.58	134	176	33
Jul-12	3008	3286	3994	8.46	133	177	32
Aug-12	2973	3259	3941	8.78	130	173	33
Sep-12	2943	3215	3862	8.45	133	175	34
Oct-12	3025	3304	3983	8.46	135	178	34
Nov-12	3211	3451	4179	6.94	135	176	35
Dec-12	3084	3323	4000	7.18	134	174	34
Jan-13	3130	3352	4070	6.64	133	173	33
Feb-13	3020	3333	3932	9.38	134	174	34
Mar-13	3058	3292	3961	7.09	134	173	33
Apr-13	3121	3439	4086	9.24	130	171	34
May-13	3198	3478	4130	8.04	126	163	35
Jun-13	3189	3448	4116	7.51	125	161	34
Jul-13	3067	3399	4000	9.78	121	157	35
Aug-13	2995	3328	3901	10.00	120	156	36
Sep-13	2964	3276	3852	9.53	120	157	36
Oct-13	3105	3419	4058	9.18	121	158	37
Nov-13	3103	3443	3992	9.88	117	150	36
Dec-13	3204	3345	4143	4.24	116	150	36
Jan-14	3199	3365	4157	4.92	113	147	35
Feb-14	3142	3413	4081	7.95	110	143	37
Mar-14	3143	3399	4067	7.52	107	138	**36**
Average	**2964**	**3306**	**3922**	**10.41**	**131**	**174**	**33**

*Considering RBI data representing financial and non-financial TXns (percentage financial TXns is obtained using NFS data)

**Adding non-financial TXn component by using percentage non-financials of NFS data

6. While there has been a sharp increase in the number of ATMs, there has been a noteworthy reduction in the average number of financial and non-financial transactions per ATM per day (Chart A). Over the 36 month period this reduction had been more than 28% for financial transactions and more than 33% for financial and non-financial combine. This fact, when seen in conjunction with the 19% decline in number of debit cards per ATM, makes the decline in the

average number of cash withdrawal transactions per ATM more striking. One needs to carefully scrutinize this scenario as this amounts to sub-optimal use of the ATMs and possible inefficient sharing of the ATM loads among ATMs at close proximities. This picture appears more alarming if one takes into account the volley of new ATMs, under the brown label system, coming up for the public sector banks (after a period of freeze to set-up new ATMs). Furthermore, we have also started seeing quite a few white label ATMs (about 1% of the country's ATM base) coming into operation. Thus, going forward, one may expect further reduction in the average number of transactions per ATM. This highlights the viability risks of setting up ATMs at close proximity to existing ATMs.

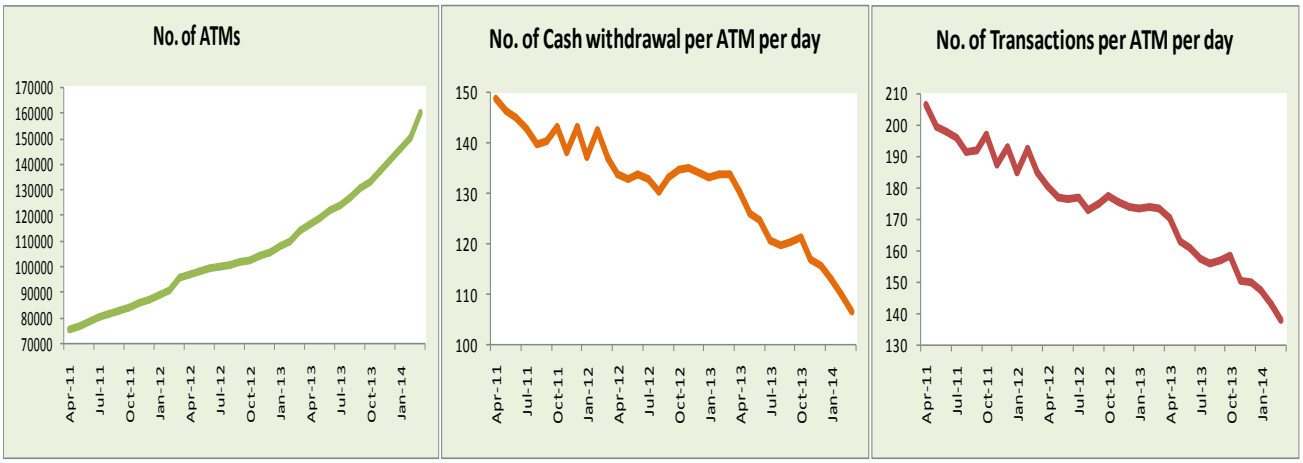

Chart A: Lines *show how with increase in ATM numbers, there is a decrease in their per ATM transaction volumes.*

Appendix III

भारतीय रिज़र्व बैंक

RESERVE BANK OF INDIA

www.rbi.org.in

RBI/ 2013-14/110

DBOD. No. Dir. BC. 26/13.03.00/ 2013-14 July 1, 2013

All Scheduled Commercial Banks
(Excluding RRBs)

Dear Sir/ Madam

Recommendations of Damodaran Committee on Customer Service in Banks- Uniformity in Intersol Charges

Please refer to paragraph 74 of the Monetary Policy Statement 2013-14 announced on May 3, 2013 (extract enclosed) on 'Recommendations of Damodaran Committee- Uniformity in Intersol Charges'.

2. In this connection, a reference is also invited to our circular DBOD. No. Dir. BC. 56/ 13.03.00/ 2006-2007 dated February 2, 2007 on 'Report of the Working Group to Formulate a Scheme for Ensuring Reasonableness of Bank Charges' whereby banks were advised to identify basic services on the basis of broad parameters indicated by the Working Group constituted by Reserve Bank of India for the purpose and the principles to be adopted/ followed by them for ensuring reasonableness in fixing and communicating the service charges for the basic banking services.

3. With the introduction of Core Banking Solution (CBS), it is expected that customers of banks would be treated uniformly at any sales or service delivery point. It is, however, observed that some banks are discriminating against their own customers on the basis of one branch being designated as the 'home' or 'base' branch where charges are not levied for products/ services and other branches of the same bank being referred to as 'non-home' branches where charges are levied for the same products/ services. The charges generally referred to as 'Intersol' charges, are also not uniform across home/

non-home branches. This practice followed by some banks is contrary to the spirit of the Reserve Bank's guidelines on reasonableness of bank charges. As 'Intersol' charges are charges levied by the bank to cover the cost of extending services to customers by using the CBS/Internet/Intranet platform, the cost should be branch/customer agnostic in- principle. It is clarified that cash handling charges may not be included under intersol charges.

4. In order to ensure that bank customers are treated fairly and reasonably without any discrimination and in a transparent manner at all branches of banks/service delivery locations under CBS environment, banks are advised to follow a uniform, fair and transparent pricing policy and not discriminate between their customers at home branch and non-home branches. Accordingly, if a particular service is provided free at home branch the same should be available free at non home branches also. There should be no discrimination as regards intersol charges between similar transactions done by customers at home branch and those done at non-home branches.

Yours faithfully,

(Prakash Chandra Sahoo)
Chief General Manager

Encl: As above

बैंकिंग परिचालन और विकास विभाग, केंद्रीय कार्यालय, 13 माला, शहीद भगतसिंह मार्ग, मुम्बई 400001

Department of Banking Operations and Development, Central Office, 13th floor ,NCOB,Shahid Bhagat Singh Marg, Mumbai - 400001
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हिंदी आसान है, इसका प्रयोग बढ़ाइए

Extract of Monetary Policy Statement 2013-14

74. With the introduction of Core Banking Solution (CBS), it is expected that customers of banks would be treated uniformly at any sales or service delivery point. It is observed, however, that some banks are discriminating against their own customers on the basis of one branch being designated as the 'home branch' where charges are not levied for products/services and other branches being referred to as 'non-home' branches where charges are levied for the same products/services. This practice is contrary to the spirit of the Reserve Bank's guidelines on reasonableness of bank charges. With a view to ensuring that bank customers are treated fairly and reasonably without any discrimination and in a transparent manner at all branches of banks/service delivery locations, banks are advised to:

• follow a uniform, fair and transparent pricing policy and not discriminate between their customers at home branch and non-home branches.

Detailed guidelines will be issued by end-June 2013.

Appendix IV

From the Report of the Committee on Customer Service in Banks
http://www.rbi.org.in/scripts/PublicationReportDetails.aspx?ID=645

Recommendations of Damodaran Committee on Customer Service in Banks

page 22 Customer Service Aspects

Charges on Non-Home Branch Transactions - The Committee has observed a general discontent among all the strata of customers about charges levied by banks for getting certain services at non-home branches like pass-book updation, cash deposits etc. Customers feel that under CBS environment, these charges are not justified.

page 49 Recommendations

Charges on Non-Home Branch Transactions: Such charges are not justified under CBS environment. Further, routine services like pass book updation which are of informative nature may be made available to the customers at no cost. Banks can rope in services of BCs for delivery of such services through Information Kiosks in off-branch locations.

Intersol Charges: There is a practice of levying intersol charges on third party banking transactions at non-home branches. In CBS environment, banks should not levy Intersol charges on self/ local cheques. Further, for intercity transactions, the Intersol charges should not exceed intercity collection charges.

page 112 Summary of Recommendations

Charges on Non-Home Branch Transactions - Such charges are not justified under CBS environment. Further, routine services like pass book updation which are of informative nature should be made available to the customers free of charge. Banks can rope in services of BCs for delivery of such services through Information Kiosks in off-branch locations.

Intersol Charges - There is a practice of levying intersol charges on third party banking transactions at non-home branches. In CBS environment, banks should not levy Intersol charges on self / local cheques. Further, for intercity transactions, the Intersol charges should not exceed intercity collection charges.

Appendix V

Estimation of bank-wise reverse-interchange payoffs

1. While working out the cross ATM transactions by the debit cards of a bank (where card issuing bank has to pay the ATM acquiring bank) and the cross ATM transactions by debit cards of other banks on the bank's ATM (where ATM acquiring bank gets paid by the card issuing bank), we make the following assumptions:
i) The ATMs of banks are uniformity distributed.
ii) ATM users do not discriminate between own and cross ATM subject to a sociological barrier of only 5 cross ATM being free (leading to the ATM system showing a convergence of one in three ATM transactions being cross ATM transactions).
Additionally, derived from NPCI and RBI data, we use the following fact:
iii) Of the total ATM transactions done by debit card holders of a bank, 33% are cross ATM transactions.
iv) For NPCI's switching consideration, ATM transactions of SBI and its Associate Banks (comprising of State Bank of Hyderabad, State Bank of Patiala, State Bank of Bikaner and Jaipur, State Bank of Mysore, State Bank of Travancore) form a single entity. Accordingly column [16] of Table 8 which provides other Banks' Ticket size ensures that Group Banks of SBI do not consider themselves as other banks. Furthermore, the 33% country average for cross ATM usage is also based on the fact that card holders of SBI and its Associate Banks while using each other's ATM (within the Group) are **not** considered Off-Us transactions.

2. **It may be noted that though the above assumptions may hold in totality, it is expected not to hold specifically for every bank. There would be variations. Thus, the estimation of the bank-wise reverse-interchange payoff that follows is likely to be in deviance (in the range of ±50%) to the actual figures though in totality it is a zero-sum game.** The inference derived through Table A is based on ATM and debit card (cash withdrawal) transactions, during March 2014, for 51 major scheduled commercial banks in India.

3. Column (A) of Table A provides the number of cash withdrawal transactions carried out by the card holders of a bank. For Bank *i* we denote this number by A_i .

4. Under uniform distribution of ATMs of every bank, Column (B) of Table A provides the number of other banks' ATM available to the bank's card holders. This follows as the difference between total number of ATMs and the number of bank's ATM. Let the number of ATMs for Bank *i* be denoted by T_i. Then, the total of all ATMs is given by $T = \sum_i T_i$, and the number of other banks' ATM available to the card holders of Bank *i* is $T - T_i$. Here, and in what follows, while computing $T - T_i$ if *i* is a Bank under SBI and its Associate Banks, T_i constitutes sum of the number of ATMs for SBI and its Associate Banks.

5. Column (C) provides the Expected number of cross ATM transactions under uniformity and non-discrimination assumption. This for Bank *i* is obtained as $\frac{T-T_i}{T} \times A_i$.

6. Let *W* denote the total number of cross ATM transaction. Then based on the observed behaviour of ATM usage, *W = 0.33 T*. With the number of card transactions of Bank *i* in cross ATMs being denoted by B_i, it then follows that

$$B_i = \frac{\left(\frac{(T-T_i)A_i}{T}\right)W}{\sum_i \frac{(T-T_i)A_i}{T}} .$$

This B_i, the number of cash withdrawals in cross ATMs, corresponds to Column (D) of Table A.

7. Column (E) of Table A provides the average number of card transactions of a bank per cross ATM. The average number of card transactions of Bank *i* per cross ATM is given by $\frac{B_i}{T-T_i}$.

8. Finally the other banks' card transactions in the bank's ATM is provided in Column (F) of Table A. This is worked out for a Bank *k* through the relation

$$T_k \sum_{i \neq k} \frac{B_i}{T-T_i},$$

and is denoted by D_k. Here, if *k* is a Bank under SBI and its Associate Banks, the summation in the above relation is over all banks except SBI and its Associate Banks.

9. The difference between Columns (D) and (F) gives the net excess cross ATM transactions and is shown in Column (G), while the net reverse-interchange payoff in Rs crore is worked out based on per transaction reverse-interchange of Rs 15 and is given in Column (H) of Table A.

10. In Table A, Columns (I) and (J) are derived from Columns (D) and (F) respectively using columns [15] and [16] of Table 8. More specifically, with $(I)_i$ = Cross ATM transaction cost for Bank *i*, and $[15]_i$ = Ticket size of Bank *i*, the column formula translates into,

$$(I)_i = B_i \times (5 + [15]_i \times 0.002).$$

Similarly, with $(J)_i$ = Revenue from other Banks' Transactions in ATM of Bank *i*, and $[16]_i$ = Ticket size based on all banks data except Bank *i*, the column formula translates into,

$$(J)_i = D_i \times (5 + [16]_i \times 0.002).$$

Finally, the net reverse-interchange payoff in Rs crore is worked out based on the difference $(I)_i - (J)_i$ and is given in Column (K) of Table A.

Table - A

Comparing Net Payoff of the Reverse-Interchange for ATM usage

March, 2014	All India										
Bank Name	Total No. of Transactions	No. of Other Banks' ATM	Expected No. of Cross ATM Transactions under Uniformity	No. of Transactions in Cross ATMs*	Avg. no. of Transactions per cross ATM	No. of other Banks' Card Transactions in Bank's ATM	Net excess Cross ATM Transactions	Net Payoff^ Rs. (Crore)	Cross ATM Transaction cost^^	Revenue^^ from other Banks' Transactions in Bank's ATM	Net Payoff^^ Rs. (Crore)
	(A)	(B)	(C)	(D)	(E)	(F)	(G)=(D)-(F)	(H)	(I)	(J)	(K)
Allahabad Bank	3835862	159161	3814436	1526699	10	1269054	257644	0.4	16009146	14328860	0.2
Andhra Bank	11129447	158205	11000807	4402988	28	2592377	1810611	2.7	47830233	29278214	1.9
Bank of Baroda	11957979	153801	11490732	4599077	30	8750679	-4151603	-6.2	61116173	98381803	-3.7
Bank of India	16507202	155830	16071458	6432477	41	5863612	568865	0.9	64269555	66399925	-0.2
Bank of Maharashtra	4182923	158228	4135176	1655072	10	2591884	-936812	-1.4	16964884	29270686	-1.2
Canara Bank	15357170	153743	14751538	5904189	38	8778181	-2873992	-4.3	62966053	99217308	-3.6
Central Bank of India	6524731	156427	6376834	2552278	16	5125638	-2573360	-3.9	31822714	57775746	-2.6
Corporation Bank	4581254	157791	4516452	1807675	11	3209582	-1401907	-2.1	22113078	36197400	-1.4
Dena Bank	2626523	158634	2603204	1041912	7	2021441	-979528	-1.5	12460407	22806829	-1.0
Indian Bank	12693002	157934	12524798	5012954	32	2963833	2049121	3.1	47913928	33564853	1.4
Indian Overseas Bank	8632471	157522	8495855	3400400	22	3565271	-164871	-0.2	35202216	40287156	-0.5
Oriental Bank of Commerce	4605999	157927	4544760	1819005	12	3016649	-1197643	-1.8	23205796	34008531	-1.1
Punjab and Sind Bank	380086	159047	377692	151168	1	1439591	-1288422	-1.9	1973249	16244914	-1.4
Punjab National Bank	20040903	153115	19171928	7673416	50	9570264	-1896849	-2.8	102724352	107275020	-0.5
Syndicate Bank	8249602	158109	8149301	3261695	21	2740915	520780	0.8	33132630	30978056	0.2
UCO Bank	3686517	157970	3638494	1456279	9	2960486	-1504207	-2.3	18192316	33387583	-1.5
Union Bank of India	13139184	153626	12611417	5047622	33	8976552	-3928930	-5.9	57017163	101303359	-4.4
United Bank of India	3143292	158453	3111831	1245486	8	2276852	-1031366	-1.5	15482717	25681150	-1.0
Vijaya Bank	2832255	158527	2805216	1122766	7	2172867	-1050101	-1.6	12694075	24521829	-1.2
State Bank of Bikaner & Jaipur	9057696	108927	6164304	2467215	23	1137161	1330054	2.0	25936368	14116799	1.2
State Bank of Hyderabad	16195538	108927	11022032	4411483	40	1698424	2713059	4.1	44089437	21084357	2.3
State Bank of India	233020443	108927	158584348	63472159	583	31842709	31629450	47.4	638344041	395297627	24.3
State Bank of Mysore	6385729	108927	4345870	1739401	16	810063	929338	1.4	17340455	10056175	0.7
State Bank of Patiala	4948604	108927	3367821	1347944	12	935926	412018	0.6	14448127	11618653	0.3
State Bank of Travancore	9259785	108927	6301837	2522262	23	989345	1532917	2.3	27147664	12281797	1.5
IDBI Bank	7731031	157754	7619887	3049801	19	3243912	-194111	-0.3	39912040	36529274	0.3
Catholic Syrian Bank Ltd.	330123	159825	329649	131939	1	328507	-196568	-0.3	1356294	3707578	-0.2
City Union Bank Ltd	1627891	159115	1618330	647724	4	1339542	-691818	-1.0	7637552	15115569	-0.7
Dhanalaxmi Bank Ltd.	480933	159659	479743	192013	1	565454	-373440	-0.6	2362588	6380984	-0.4
Federal Bank Limited	3851272	158695	3818547	1528344	10	1930500	-402156	-0.6	20647497	21757667	-0.1
ING Vysya Bank	2419961	159417	2410315	964710	6	907915	56795	0.1	10598508	10247498	0.0
Jammu & Kashmir Bank	3138397	159255	3122710	1249841	8	1137014	112826	0.2	16766480	12818489	0.4
Karnataka Bank Ltd.	2416145	159355	2405578	962814	6	996152	-33338	-0.1	11027673	11241433	0.0
Karur Vysya Bank Ltd	3819055	158438	3780472	1513105	10	2295438	-782333	-1.2	20249667	25872945	-0.6
Ratnakar Bank Ltd.	151911	159705	151579	60668	0	500058	-439389	-0.7	793901	5643197	-0.5
South Indian Bank Ltd	2272804	159055	2258604	903989	6	1423432	-519444	-0.8	10596799	16061769	-0.5
Tamilnadu Mercantile Bank Ltd.	2284702	159390	2275209	910635	6	946563	-35928	-0.1	11560893	10677147	0.1
Lakshmi Vilas Bank Ltd.	594177	159367	591623	236792	1	982210	-745417	-1.1	2860464	11083985	-0.8
Axis (UTI) Bank Ltd.	27298733	147133	25094777	10043990	68	17584920	-7540930	-11.3	139015951	196201969	-5.7
Development Credit Bank Ltd.	359826	159817	359291	143803	1	339915	-196112	-0.3	1999264	3835580	-0.2
HDFC Bank Ltd.	33109642	148799	30781179	12319929	83	15154180	-2834251	-4.3	172121109	168520969	0.4
ICICI Bank Ltd.	34739105	148740	32283243	12921118	87	15187508	-2266389	-3.4	182811357	168585872	1.4
IndusInd Bank Ltd	1605309	158945	1594176	638057	4	1581863	-943806	-1.4	8545111	17842840	-0.9
Kotak Mahindra Bank Ltd	2715611	158952	2696897	1079412	7	1568825	-489413	-0.7	13371056	17696832	-0.4
Yes Bank Ltd.	1277968	158916	1268874	507857	3	1624123	-1116266	-1.7	6242135	18325500	-1.2
CITI Bank	3787188	159455	3772991	1510110	9	851787	658323	1.0	18375223	9607893	0.9
DBS Ltd.	73846	160018	73829	29549	0	52870	-23321	0.0	306659	596680	0.0
Deutsche Bank	213775	160010	213715	85538	1	64286	21252	0.0	1160212	725451	0.0
HSBC	501350	159909	500893	200478	1	208468	-7989	0.0	2880964	2352115	0.1
RBS (ABN AMRO)	265850	159997	265754	106366	1	82850	23516	0.0	1449792	934921	0.1
Standard Chartered	1455960	159777	1453431	581725	4	396282	185442	0.3	7154065	4471246	0.3
Grand Total	**571496762**		**471199436**	**188593931**	**1429**	**188593931**	**0**	**0**	**2162200034**	**2162200034**	**0**

*Based on overall 33% of the transactions being through cross ATM usage.

^Based on per transaction Reverse-Interchange of Rs 15

^^Based on per transaction Reverse-Interchange of Rs 5 plus 0.2% of cash withdrawn

Reflection of net reverse-interchange through simulation

11. We also carry out a simulation for a situation where there is reduction in cross ATM usage from the current 33% to say, 20% or 15%. The net reverse-interchange estimates under the current model for the scenario when the reduced cross ATM usage is 20% or 15% is shown in Table B.

12. Under the current model of reverse-interchange of Rs 15, the impact of inducing customers to move to their own bank's ATM and thereby reducing the current 33% footfalls at cross ATM to say 20% footfalls at cross ATM is that the standard deviation of the net payoffs reduces from the excessive Rs 7.2 crore to about Rs 4.4 crore. It is seen that a similar reduction in the standard deviation of the net payoffs can be achieved (without disturbing the ATM usage behaviour of bank customers) by the adopting the proposed model (of reverse-interchange Rs 5 + 0.2% of cash withdrawn). **A bank-wise comparison of net payoffs under the two approaches shows minimal difference.** Table B provides the standard deviation values and bank-wise net payoffs under various scenarios (33%, 20%, 15% cross ATM foot falls under current model and 33% cross ATM foot falls under proposed model).

13. The impact of bringing in behavioural changes in ATM usage through levying of fees for cross ATM usage, not because the zero-sum game envisaged through free cross ATM usage (which is of mutual benefit to banks and customers alike) is unfair, but because of an imbalance created by a single big bank, is not to the gain of banks and customers alike. RBI's proposed changes on ATM fees would invariably reduce the number of overall usage per ATM and thereby increase inefficiency and cost to banks to run ATMs even for their own customers. Customers of a bank would also stand to effectively have lesser number of ATMs for their free use.

Table - B

Net Payoff of the Reverse-Interchange under current and proposed model and simulated outputs

Bank Name	Net Payoff (Rs Crore) based on per transaction Reverse-Interchange of Rs 15			Net Payoff (Rs Crore) based on per transaction Reverse-Interchange of Rs 5 plus 0.2% of cash withdrawn
	All India (33% cross ATM usage)	All India (20% cross ATM usage)	All India (15% cross ATM usage)	All India (33% cross ATM usage)
Allahabad Bank	0.4	0.2	0.2	0.2
Andhra Bank	2.7	1.6	1.2	1.9
Bank of Baroda	-6.2	-3.8	-2.8	-3.7
Bank of India	0.9	0.5	0.4	-0.2
Bank of Maharashtra	-1.4	-0.9	-0.6	-1.2
Canara Bank	-4.3	-2.6	-2.0	-3.6
Central Bank of India	-3.9	-2.3	-1.8	-2.6
Corporation Bank	-2.1	-1.3	-1.0	-1.4
Dena Bank	-1.5	-0.9	-0.7	-1.0
Indian Bank	3.1	1.9	1.4	1.4
Indian Overseas Bank	-0.2	-0.1	-0.1	-0.5
Oriental Bank of Commerce	-1.8	-1.1	-0.8	-1.1
Punjab and Sind Bank	-1.9	-1.2	-0.9	-1.4
Punjab National Bank	-2.8	-1.7	-1.3	-0.5
Syndicate Bank	0.8	0.5	0.4	0.2
UCO Bank	-2.3	-1.4	-1.0	-1.5
Union Bank of India	-5.9	-3.6	-2.7	-4.4
United Bank of India	-1.5	-0.9	-0.7	-1.0
Vijaya Bank	-1.6	-1.0	-0.7	-1.2
State Bank of Bikaner & Jaipur	2.0	1.2	0.9	1.2
State Bank of Hyderabad	4.1	2.5	1.8	2.3
State Bank of India	47.4	28.8	21.6	24.3
State Bank of Mysore	1.4	0.8	0.6	0.7
State Bank of Patiala	0.6	0.4	0.3	0.3
State Bank of Travancore	2.3	1.4	1.0	1.5
IDBI Bank	-0.3	-0.2	-0.1	0.3
Catholic Syrian Bank Ltd.	-0.3	-0.2	-0.1	-0.2
City Union Bank Ltd	-1.0	-0.6	-0.5	-0.7
Dhanalaxmi Bank Ltd.	-0.6	-0.3	-0.3	-0.4
Federal Bank Limited	-0.6	-0.4	-0.3	-0.1
ING Vysya Bank	0.1	0.1	0.0	0.0
Jammu & Kashmir Bank	0.2	0.1	0.1	0.4
Karnataka Bank Ltd.	-0.1	0.0	0.0	0.0
Karur Vysya Bank Ltd	-1.2	-0.7	-0.5	-0.6
Ratnakar Bank Ltd.	-0.7	-0.4	-0.3	-0.5
South Indian Bank Ltd	-0.8	-0.5	-0.4	-0.5
Tamilnadu Mercantile Bank Ltd.	-0.1	0.0	0.0	0.1
Lakshmi Vilas Bank Ltd.	-1.1	-0.7	-0.5	-0.8
Axis (UTI) Bank Ltd.	-11.3	-6.9	-5.1	-5.7
Development Credit Bank Ltd.	-0.3	-0.2	-0.1	-0.2
HDFC Bank Ltd.	-4.3	-2.6	-1.9	0.4
ICICI Bank Ltd.	-3.4	-2.1	-1.5	1.4
IndusInd Bank Ltd	-1.4	-0.9	-0.6	-0.9
Kotak Mahindra Bank Ltd	-0.7	-0.4	-0.3	-0.4
Yes Bank Ltd.	-1.7	-1.0	-0.8	-1.2
CITI Bank	1.0	0.6	0.4	0.9
DBS Ltd.	0.0	0.0	0.0	0.0
Deutsche Bank	0.0	0.0	0.0	0.0
HSBC	0.0	0.0	0.0	0.1
RBS (ABN AMRO)	0.0	0.0	0.0	0.1
Standard Chartered	0.3	0.2	0.1	0.3
Mean	0.0	0.0	0.0	0.0
Standard Deviation	7.2	4.4	3.3	3.8