

The current liquidity crunch in India: Diagnosis and policy response

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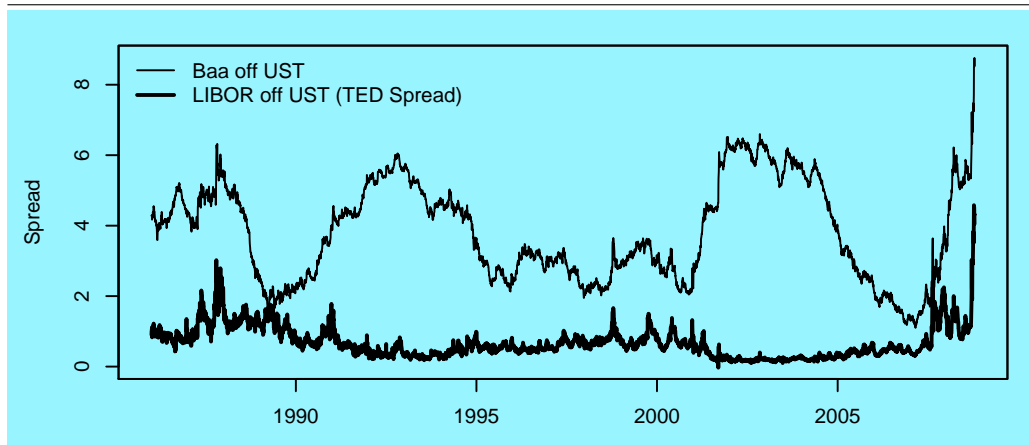
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Figure 1 The two spreads (a long view)



1 The Tightening

1.1 Global events

The two most interesting measures in the global financial crisis are:

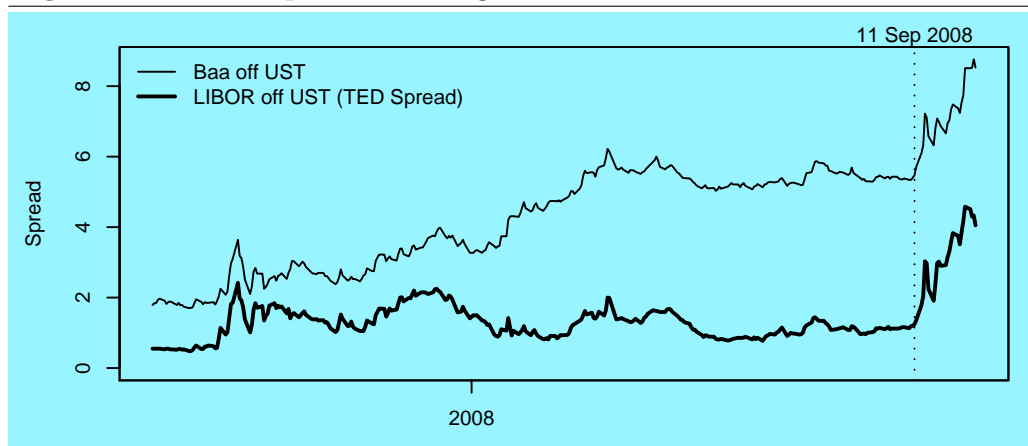
1. The spread between three-month LIBOR and the 90 day US treasury bill (UST). This measures the extent to which financial firms mistrust each other. Under normal circumstances, this is near zero.
2. The spread between the Moody's Baa bond and the 90 day US treasury bill. This measures the credit risk of bonds that are roughly comparable to the best Indian firms. This spread is also known to influence capital flows to emerging markets. As an example, it is a statistically significant predictor of FII flows into India.

Figure 1 juxtaposes these two spreads using long time series. Two facts stand out. First, in the recent crisis, both spreads have attained unprecedented values. Second, the pace at which the spreads enlarged in the recent crisis was unprecedented.

Figure 2 looks at the two spreads from July 2007 onwards. At the outset, in July 2007, the two spreads were at low levels. The TED Spread was slightly above zero and the Baa spread was roughly 200 basis points.

In August 2007, with the Northern Rock crisis, both spreads enlarged somewhat. The TED spread rose to roughly 100 bps and the Baa spread rose

Figure 2 The two spreads in the global financial crisis



gradually to levels like 600 basis points as the crisis deepened.

On roughly 9/11/2008, the last stage of the crisis unfolded with the failure of Lehman Brothers. The TED spread rose sharply from 1.24 percentage points on 9/11/2008 to a peak of 4.58 percentage points on 10 October. This has since eased slightly to 4.05 percentage points on 16 October. While this is an improvement compared with the peak value of 4.58 percentage points, it still shows unprecedented mistrust of financial firms of each other.

The Baa spread rose from 5.47 percentage points on 9/11/2008 to a peak of 8.76 percentage points on 15 October. It has dropped slightly to 8.53 percentage points on 16 October. This still shows unprecedented difficulties for Baa corporations in obtaining bond financing.

1.2 Events in India

11 September 2008 was a Thursday. By Monday the 15th, money market conditions in India were remarkably tight. Table 1 shows how quickly tight money market conditions jumped from London to India.

Some of the Indian money market tightening was caused by the advance tax payment of 15 September and the unfortunate timing of the settlement of a government bond auction. However, tightness in liquidity owing to such events typically subsides rapidly. Yet, on 7 October, the call rate closed at over 16 percent. In a similar vein, the Reserve Bank of India (RBI) repo operations surged from Rs.1,000 crore on 8 September to Rs.57,565 crore on

Table 1 Turmoil in the money market: from London to India

Date	TED Spread	Call money rate	RBI repo (Rs. crore)
(Monday) 8 Sep	1.13	8.83	1,025
9 Sep	1.19	8.30	3,025
10 Sep	1.20	8.94	12,985
11 Sep	1.24	8.88	15,195
12 Sep	1.36	6.15	14,400
(Monday) 15 Sep	1.79	9.84	51,815
16 Sep	2.04	10.59	57,565
17 Sep	3.03	13.07	59,480

16 September and then to an astounding Rs.90,000 crore on 29 September.

Figure 3 shows the status of RBI's LAF operations. In recent days, a sharp shift to liquidity injection has come about. The numerical values seen here are an inadequate depiction of the liquidity squeeze, since access to borrowing from RBI is restricted to a few financial firms and requires certain kinds of collateral. A lot more borrowing would have taken place if the rules would have permitted it. A better picture of liquidity conditions is obtained from observing interest rates.

Figure 4 shows the time-series of the call money rate juxtaposed against the "corridor" defined by RBI's repo and reverse repo rates. For a while, the call money rate has been closer to the top of the corridor. In recent weeks, the call money rate has consistently breached the ceiling of 9%, often attaining values of above 15%.

When the global financial crisis dried up global money market liquidity, at first it appeared that India would be spared from a liquidity crunch given its relatively closed economy and domestic financial system, but this was not to be:

1. Prior to the financial crisis, it was cheaper for Indian multinationals (both financial and non-financial) to establish global treasury operations in London primarily for fund raising. As part of these arrangements, Indian nonfinancial firms often borrowed in London through Indian financial firms who had better knowledge about these borrowers. Financial and nonfinancial Indian firms generally borrowed at floating LIBOR-linked rates.

When the LIBOR rose sharply – reflecting the rise in credit risk in London – the rates at which the Indian firms had borrowed went up. Beyond the rise in debt servicing, Indian firms and banks also saw the cost of rolling over their maturing debt rise sharply as the money market in London dried up.

Figure 3 Outstanding position of RBI LAF operations (Rs. crore)

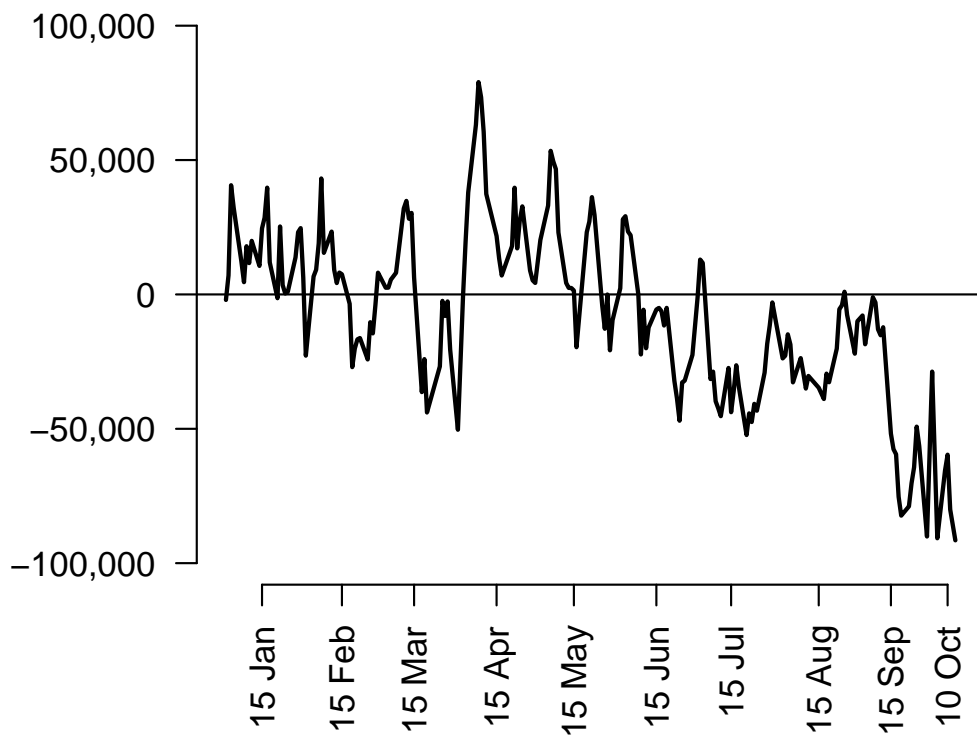
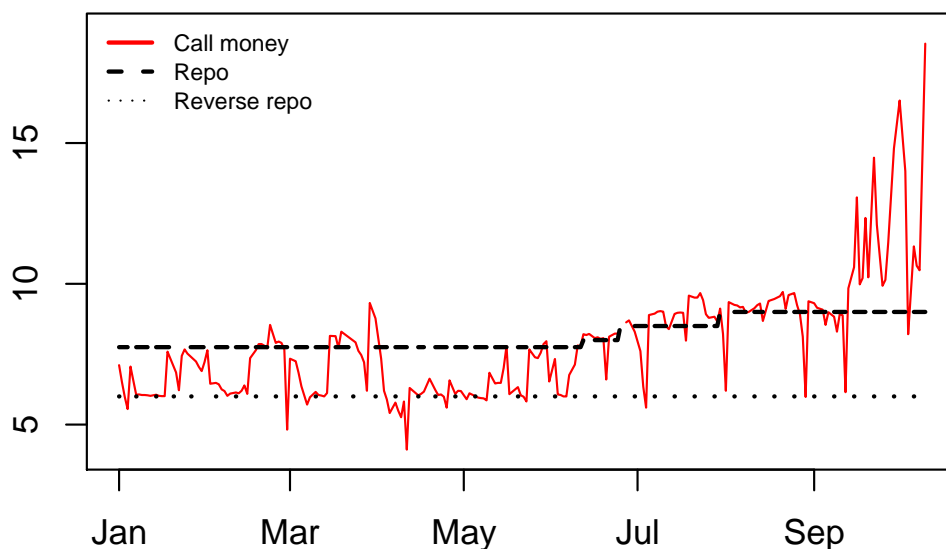


Figure 4 The call money rate vs. the RBI's "corridor"



Consequently, Indian firms (financial and non-financial) who were borrowing in London found themselves structurally short of dollars. They responded by borrowing in the Indian short-term money market, converting the funds into dollars, using the proceeds to meet external debt obligations.

Consequence: This increased both the demand for domestic liquidity (exerting upward pressure on local interest rates) and that for foreign exchange (exerting downward pressure on the rupee exchange rate) as the funds borrowed needed to be converted into dollar payments. The overall rise in debt service lowered profitability and reduced stock prices.

2. Traditionally, local firms placed a significant amount of short-term funds with mutual funds (both debt and equity) because these are tax-advantaged. When the Indian money market became tight, these firms redeemed their investments in mutual funds to finance their own funding needs. This set off a wave of redemptions for mutual funds.

The sell-off was particularly damaging for NBFCs and real estate companies, for whom mutual funds are the only source of debt financing. With no other counterparty willing to hold the bonds, these instruments were severely marked down, severely lowering the asset value of mutual funds, which, in turn, sparked off further redemptions.

Consequence: Mutual funds made claims on money market liquidity by selling holdings of bonds and shares, lowering both bond and stock prices. Some

of the worst liquidity conditions are being experienced by NBFCs and real estate companies.

3. To stem the sharp depreciation of the rupee, the RBI has intervened quite regularly, although in modest amounts, in the spot exchange market. Over this period, early-September-early October, reportedly the RBI sold around \$10 billion, which would have reduced reserve money by Rs.45,000 crore.

Consequence: Sale of dollars by RBI further reduced short-term liquidity.

An element of corroborating evidence on these events is found in the rupee-dollar forward market. Firms (particularly banks) who were taking capital out of the country were buying dollars today and selling dollars forward to lock in the prices at which they would bring capital back into the country. This selling pressure on forwards yielded an unprecedented crash in the forward premium. The one-month forward premium crashed sharply from 5.32% on 10th September to an unprecedented -0.19% on 29 September. When the forward premium is negative, it means that a dollar at a future date is traded at a lower price than the spot price: this almost never happens on the forward market. In the period from 29 September to 8 October, negative forward premia were repeatedly seen on the one month, three month and six month forward markets. The most extreme value seen was a premium of -4.5% for the one-month forward premium on 7 October. These events are consistent with our arguments about the global treasuries of Indian multinationals as the mechanism through which money market difficulties in London were transferred to India. If the problem was merely one of tax payments or government expenditures, these dramatic changes in forward premia would not have taken place.

These insights into recent events are consistent with the idea that India has made considerable progress towards *de facto* convertibility of the capital account. Even though we often think that India is closed through the world, the existence of 400 large multinationals¹ in India who increasingly operate global treasuries implied that with a delay of a day, the difficulties of the money market in London were visible in the Indian money market.²

This shortage of liquidity was exacerbated by the operating framework of monetary policy. While the repo and reverse repo rate have established a

¹For a treatment of Indian multinationals, see <http://tinyurl.com/IndiaOFDI> on the web.

²For a further treatment of India's movement towards *de facto* convertibility, see *New Issues in Indian Macro Policy* by Ajay Shah, May 2008, available at <http://tinyurl.com/NewIndianMacro> on the web.

corridor of policy rates between 6 to 9 percent, to keep the call money rate close to the repo rate for anti-inflationary reasons, the RBI has kept the system chronically short of liquidity, which it had done through a series of hikes in banks' cash reserve ratio. The RBI has also restricted the class of financial institutions that is permitted to borrow from the repo facility, and the class of securities that is eligible collateral for such operations. These made the liquidity shortage more acute.

2 Consequences of liquidity tightness

In the best of times, banks are highly leveraged and thus highly fragile. Relatively small shocks can drive a bank into bankruptcy. Banking systems are inherently unable to absorb such stress on liquidity for an extended period. For this reason, the liquidity crisis needs to be resolved in days and not weeks. In particular, banks who were using money market financing either in rupees or in dollars have faced increased costs and quantity risk in achieving this financing. This has led to acute stress for some banks. Under these conditions, some depositors might have fears about the soundness of a bank and exit, thus exacerbating the problem.

A worrisome scenario is one where under the acute pressure of a liquidity crisis, technical failures in settlement take place at one or two banks. Given the prevalence of OTC transacting by banks, and given the low quality of IT systems at most banks, such a scenario cannot be ruled out. If the newspapers carry stories about settlement failure by one or more banks, it would send out a very bad image to the domestic and international community, of an India engulfed in a banking crisis, even though the failure in settlement might only be a small technical problem involving a few crore rupees.

When external shocks interacted with the existing operating procedures for monetary policy, this gave acute instability in the money market, the bond market, the equity market, corporate treasuries of Indian multinationals, and banks. This upsurge of financial instability reflects deeper structural problems of monetary policy and the bond market, and needs to be comprehensively addressed.

3 What next?

The immediate task is, of course, to modify the configuration of monetary policy and operating procedures of monetary policy, to end this period of financial instability. This is important in its own right. However, there is a deeper issue of great importance, which is looming large which requires immediately putting the financial sector in sound shape.

The global economy has taken an abrupt downturn. This will impinge upon a variety of Indian firms:

- Firms that export goods or services will experience negative shocks to prices or revenues or both.
- The global reduction in demand will yield lower prices, and thus lowered revenues, for Indian firms who produce globally traded products. To some extent, these adverse shocks will be counteracted by rupee depreciation.
- Firms producing commodities will be adversely affected by the sharp decline in global commodity prices.
- Firms who felt there was a one-way bet on the rupee, and were betting on a rupee appreciation will be adversely affected. A substantial fraction of Indian firms fall into this category. An examination of the 2004-2008 period³ shows that 96 out of 124 industry indexes exhibit signs of a bet on rupee appreciation.
- Firms who have done overseas acquisitions assuming a buoyant world economy will be facing difficulties, particularly if substantial leveraging has been done.

When news breaks, financial prices react rapidly and the real economy reacts slowly. The events of September 2008 gave a sharp downturn in asset prices within days. The impact of the global downturn will be visible in the real economy in the period from October 2008 to October 2009. Firms will feel this in their revenues and orders from October 2008 onwards and it will be seen in data releases that come out from November 2008 onwards. At present, however, we can say with a fair degree of confidence that many firms will experience negative shocks from October 2008 onwards. The firms that will

³*One way bets on pegged exchange rates* by Ila Patnaik and Ajay Shah, September 2008, http://www.nipfp.org.in/nipfp-dea-program/PDF/SP2008_onewaybets.pdf on the web.

be adversely affected probably add up to half of the firms of India either by number or by output.

When these shocks materialise, in the short term, firms lack the flexibility to lay off workers, modify raw material contracts, or otherwise adapt their production processes. In the short term, firms must have access to equity and/or debt capital in order to cope with such a downturn, or they will immediately go bankrupt. For this reason, a financial system that is able to deliver equity and debt capital to firms with good prospects is of extreme importance in the period from October 2008 to October 2009.

It is in times like this that a sophisticated and well functioning financial sector is very important. Finance has to engage in a forward-looking judgement of evaluating the outlook for each firm, and determine the quantity, contractual structure and risk premium associated with financing going into each firm. This is an irreplaceable role, and has heightened importance in such times.

This is not to say that all firms must be rescued by the financial sector. Some firms will inevitably falter in this episode of Schumpeterian creative destruction. However, most Indian firms are fundamentally sound and should receive the infusion of external financing that will make it possible to absorb these shocks. This would benefit the economy by reducing bankruptcy costs, and the time and cost associated with the process of the labour and capital that has exited dead firms regrouping into new firms.

For this reason, it is essential to restore normalcy in the money market within a matter of days and not weeks. Financial firms must quickly put this episode of liquidity malfunction behind them, and gear up for the really important question: of analysing the prospects of the non-financial firms who will be hit by the real shocks from October 2008 onwards, and of structuring a variety of corporate financial transactions for these customers featuring equity, debt, corporate restructuring, M&A, etc.

If finance functions well, a certain number of firms will go bankrupt in the coming year. If finance malfunctions, a larger number of firms will go bankrupt in the coming year. In either event, from April 2009 onwards, a surge in NPAs will take place. That will be a challenge for banks.

Turning from threats to opportunities, a fire sale in assets (both physical and financial) is taking place worldwide. Many Indian firms might find attractive opportunities to buy global assets at these low prices, particularly in the light of the new management capabilities of Indian firms who have transformed themselves into multinational corporations. As an example, this is an ideal time to buy a bank in the US with 1,000 branches, which is primarily engaged

in traditional commercial banking business where the management team of an Indian bank has adequate competence in terms of processes and risk management. However, doing so requires (a) A top management team of an Indian firm that is not caught up in crisis management at home and (b) Access to equity and debt financing through a discriminating but not crisis-ridden financial system at home.

More generally, the CMIE Capex database⁴ shows a massive investment effort that is underway by thousands of Indian firms. If these investment plans continue to be implemented, this investment spending will buoy GDP growth, and the commissioning of projects will directly generate enhanced GDP (and jobs). Financial instability in this juncture will have an adverse effect on both the ability of firms to implement this investment pipeline, and on their confidence in wanting to do so.

4 What needs to be done

4.1 Increase rupee liquidity

The demand for base money has increased. In order to hold interest rates at targeted levels, the supply of base money needs to be increased. While there is a concern that a massive injection of liquidity could find its way into runaway credit growth fuelling inflation (which has declined only somewhat to below 12 percent on a year-on-year basis in recent weeks) and sowing the seeds of the next asset price bubble, the central bank has instruments within its existing framework (including tighter regulatory requirements) to absorb liquidity if a particularly sharp acceleration in credit growth is seen. In a financial crisis, other sources of financing have decreased. Thus a certain robust credit growth is a goal of monetary policy. These are extraordinary circumstances and it is preferable to err on the side of too much liquidity rather than too little.

There are several measures that the government and the RBI can implement quickly to help restore liquidity in the system.

1. A reduction of CRR to 5 percent.
2. A reduction of SLR to 20 percent. This should release substantial liquidity in the system. To ensure that bond prices do not fall precipitously, this

⁴See <http://tinyurl.com/CMIECapex> on the web.

can be combined with liberalisation of foreign holding of G-sec bonds (this should be undertaken by itself to open up avenues for capital inflows).

The last round of increase of the limit on FII holdings of rupee government bonds in June was not fully taken up because the limit is too low for Indian bonds to be included in global bond indices as a result of the low liquidity. Unless Indian bonds are included in such indices, in the present global financial conditions it is unlikely that foreign investors will invest in G-sec bonds. In addition, with heightened concerns about liquidity risk, foreign investors are uncomfortable with the poor liquidity of the spot market. Liberalisation needs to be done on a sufficiently large scale to overcome these constraints. One natural choice, which has been recommended by both the Percy Mistry and Raghuram Rajan reports, is to place rupee denominated bonds (both government and corporate) on the identical footing as equities in the FII framework.

3. Reclassification of oil bonds and fertilizer bonds as being SLR and repo-eligible. This will increase the availability of repo-eligible instruments. Other avenues for enlarging the range of assets that are repo-eligible should also be explored. With appropriate haircuts, bank equity should also be repo-eligible.
4. Given that the liquidity shortage could continue for sometime, the RBI may also consider longer maturity repos of 1-3 months. At present, repos are 1-3 days. On 14 October, RBI announced a 14-day term repo facility. The maturity here needs to be extended further to three months.
5. While all financial institutions can be counterparties to the RBI repo transactions, it might be important to extend this to NBFCs.
6. Easing the barriers faced by banks and insurance companies from buying the bonds of NBFCs and real estate companies.
7. Narrowing the width of the LAF to 100 basis points.

If the LAF is 300 bps wide, and if liquidity is pumped into the system, there is a possibility of the call rate crashing all the way to 6 percent. There would be tremendous uncertainty about the short-term interest rate owing to fluctuations within a wide corridor: this impedes the maturity transformation of firms who borrow short on the wholesale money market and lend long. To end these problems, the width of the LAF needs to be narrowed to 100 bps.

8. As the cost of interbank lending to some banks has risen sharply based on fears that counterparty risk is difficult to gauge in the present circumstances, the MoF/RBI could provide counterparty-risk insurance in interbank transactions. This could be done at a market-discovered price as a percentage

(50-100 basis points) of interbank lending, such that it is not seen as a blanket government guarantee. In other words, the RBI will need to become a seller of credit derivatives, at least for a short period of time. This would help increase participation in the interbank market, and thus increase liquidity in it. Even if the immediate need for this is not visible right now, setting up such a useful mechanism now induces a reduction in the perception of liquidity risk in the money market.

9. Dislocations in the operating procedures for monetary policy when tax payments take place need to be avoided. The short term response would be to cut CRR for the fortnight of the tax payments. The long term solution lies in shifting the work of collecting taxes and transferring these to the government from RBI to commercial banks.

These actions are required to solve the liquidity crunch which is of essence in getting the Indian financial system to perform its vitally important role. One way to visualise the rationale of cutting CRR and SLR, at a time like this, is that it consists of engaging in counter-cyclical prudential regulation. Ordinarily, it is very difficult for prudential regulation to make the correct decisions and deliver counter-cyclicality. However, we are presented with a rare situation where there is little doubt that we are in a downturn, and there is an opportunity to engage in counter-cyclical prudential regulation.

Roughly Rs.100,000 crore of MSS bonds will mature over the coming year. Some MSS bonds are used in repo, but for the others, their expiration will yield an increase in liquidity. However, this process is not an important part of the here-and-now problem of augmenting rupee liquidity.

4.2 Increase dollar liquidity

In addition to the crisis of rupee liquidity, Indian firms are faced with a crisis of inadequate dollar liquidity, given the collapse of the London money market. Given that a large number of Indian firms are now multinationals with a variety of international activities, improving the safety of the Indian economy requires improving their dollar liquidity also. This requires:

1. Increase the avenues for capital inflows by raising the FII limit on G-sec and corporate bonds (discussed earlier). In addition, the interest rate ceiling on NRI deposits needs to be raised.
2. Raising ECB limits (quantity and price) while ensuring that there is no currency mismatch by seeking evidence of hedging before approval. Quasi-sovereign firms such as SBI now have spreads like 450 basis points: the

rules which limit the interest rates for ECBs are effectively implying that only a handful of PSUs can borrow abroad. These rules need to be urgently changed. The broad policy framework should be one where there is a quantitative control of roughly 2% of GDP coming in every year as fresh foreign-currency denominated ECB issuance, without price controls on the interest rates for these, and no quantitative restrictions for FII investment in rupee-denominated debt (either corporate or government).

3. Remove restrictions on capital account transactions for NRIs.
4. Embark on implementing the sequencing for capital account liberalisation in the macroeconomics chapter of the Raghuram Rajan report.⁵
5. The RBI could hold regular auctions to swap dollars with the market. This has been the common crisis response of dollar-strapped advanced countries, including Australia, Denmark, the Euro area, England, and Japan. If the dollar shortage is concentrated in a few known banks, the central bank could enter into bilateral swap arrangements in what resembles more a lender-of-last-resort operation. Chile has combined both approaches: the government auctions dollars to domestic banks and has also deposited \$1 billion offshore deposits into four local banks.
6. The recent removal of capital controls against PNs was on the right track. However, the PN market has collapsed owing to the heightened risk perception of counterparties such as the large investment banks who were the main producers of PNs. As a consequence, the unbanning of PNs will have no impact on dollar flows into India. The customers of PNs are now using the Nifty futures in SGX. Now the challenge lies in undertaking deeper reform of the FII framework to make it easier for qualified market participants to directly access the Indian market, and choose to do so instead of going to global venues such as SGX, NYSE, LSE, NASDAQ, etc.
7. In this regard, given the pressure on deposits in foreign branches of domestic banks, the RBI could convert part of its reserves holdings into CDs in these banks. This is a better option than using RBI reserves to directly inject capital into domestic banks through a *de facto* SWF.
8. Ideally, the RBI dollar lending should be collateralised, but requirements can be relaxed as circumstances require. The simplest arrangement is to accept rupees deposited in India with RBI as collateral, but given tight domestic liquidity, the RBI needs to accept rupee-denominated assets as well. To keep things simple, the same list of eligible (and expanded as discussed previously) collateral as in rupee repos should be eligible for dollar lending. The RBI could require excess collateral (say an additional 5-10 percent)

⁵See <http://tinyurl.com/rrajan> on the web.

to compensate for currency risk. This would allow banks to reduce their short-term foreign exchange liabilities and replace these with a potentially longer-term liability to the RBI. The RBI has sufficient reserves to lend significant foreign exchange at long maturities. Lending foreign exchange at longer maturities – for example, 3 months – is key to restore confidence to the market.

9. The pricing of dollar swaps or repos could be adjusted to market circumstances. Ideally, the interest rate used should reflect the level of domestic funding distress and not represent a subsidy to borrowing banks. One could, for example, use the interest rate implied by domestic interest rates and spot and forward exchange rates (which is currently much higher than corresponding LIBOR rate).
10. The five restrictions that RBI has placed on the currency futures market should be amended. Exchanges should be free to launch contracts on currency pairs other than the INR/USD, and to launch products other than futures (e.g. options and swaps). FIIs and NRIs should be permitted into the market. The position limit on an individual client needs to be raised from 6 percent of the open interest on an exchange to 15 percent of the open interest on the exchange.
11. Simultaneously, structural reforms of the OTC market are required emphasising the use of transparency on the exchange for all vanilla products, including forwards, options and swaps. Currency forwards, swaps or options which are contracted OTC must be required to go through a clearing corporation for obtaining the counterparty guarantee.
12. Banks could be required to hold extra equity capital for currency derivatives, which are not contracted through a clearing corporation guarantee.

4.3 Exchange rate policy

Almost all economists now agree that when conditions change, the central bank must not stand in the way of adjustment by the exchange rate. Sustained exchange-rate misalignment is extremely damaging for the economy, either in terms of undervaluation or in terms of overvaluation. Adjustment by the currency is a shock absorber. When times are good, an INR appreciation is a stabilising influence, and when times are bad, an INR depreciation is a stabilising influence. By allowing the exchange rate to fluctuate, we reduce the fluctuations of the economy. Conversely, exchange rate rigidity forces the real economy to adjust since the currency market was prevented from adjusted by the central bank.

There is, however, a great temptation today in favour of ‘reducing volatility’ or ‘smoothing the change’. If the rupee-dollar rate has to go from Rs.45 per dollar to Rs.50 per dollar, it is argued that instead of letting the market do this within a few days, the central bank must steadily trade on the market to spread this change over a period of three months.

The consequences of such a policy can be worked out in a few steps:

1. The market would see sustained selling of reserves by the central bank.
2. They would understand that the visible price of the rupee-dollar rate is artificial.
3. They would perceive a one-way bet where the rupee is likely to only depreciate in coming weeks, as RBI slowly allows the fundamental news to trickle into the exchange rate.
4. It would then be efficient for domestic and foreign economic agents to sell domestic assets and take money out of the country to benefit from the superior exchange rate that is being given to them by the central bank. Once the full depreciation is complete, they would bring money back into the country.

This is an example of the general principle that exchange rate management generates instability of capital flows. In particular, in the present situation, preventing rupee depreciation would set off a financial crisis at home, for domestic and foreign economic agents would be selling shares, companies, bonds, and real estate, trying to realise US dollars which would be pulled out of the country and placed into US Treasury bills. All this would be driven by the desire to profit from a coming depreciation of the rupee. If, in contrast, when bad news strikes, it immediately generates an exchange rate depreciation after which both appreciation or depreciation are equally likely, then it would not set off the process of selling off assets in India in order to profit from a coming depreciation.

There is thus a strong case for RBI avoiding any sort of management of the exchange rate (in the sense of the rupee-dollar rate). At the same time, one element of the financial crisis is that Indian firms are structurally short of dollars. Thus, at present the RBI needs to infuse dollar liquidity in a predictable manner as described in the steps above. These rules-based mechanisms will be more effective in instilling confidence in the rupee, rather than irregular uncertain interventions that also tightens the rupee money market.

4.4 Removing currency mismatches

With this policy package in place, the first challenge would be solved: the system would not be short of rupees in the short-term money market. Financial and non-financial firms would be able to easily obtain rupees. Many of them would like to convert these rupees into dollars and use these to meet obligations abroad. In doing this, they would suffer a currency mismatch: they would have borrowed in rupees today and would plan to (say) bring dollars back into the country after six months so as to close out the transaction. Hedging currency risk on their part requires purchasing dollars at future dates.

By and large, this is the job of the currency derivatives market. In the long term, India needs to press forward on the establishment of transparent and liquid currency and interest rate derivatives markets as part of what has been termed ‘the Bond-Currency-Derivatives Nexus’. In the short term, we have to accept that fact that these markets are missing or inadequate, and design government interventions as a consequence of these inadequacies.

RBI needs to hence support this process by standing ready in the currency derivatives market, offering to buy dollars in large quantities on the INR/USD swap, forward, and futures markets. The idea here should not be to distort the price of the derivatives, but to stand ready on the trading screen with large quantities at prices consistent with covered interest parity, so as to avoid incomplete markets.

This combination of interventions – ample liquidity in local currency which enables dollar liquidity for Indian firms today, plus a willingness of the central bank to buy dollars at future dates when Indian firms are reversing those transfers – is being used by many Asian central banks who are facing similar situations with local financial and non-financial firms.

4.5 The short term agenda: these four groups of actions

These four groups of actions:

- Increase rupee liquidity
- Increase dollar liquidity
- Exchange rate flexibility

- Removing currency mismatches

would stabilise the financial system, end this distraction of the liquidity crunch, and put the financial system on course for the really important task of analysing the prospects of a large number of financial and non-financial firms in the turbulent weeks ahead.

It is possible to put the bulk of these actions within a few days.

4.6 Watching out for weak banks

Once these short-term actions have been undertaken, the focus of RBI must shift to carefully analysing the main important Indian banks, focusing on both illiquidity and insolvency. Over the coming six months, NPAs might go up and in addition to questions about liquidity, questions about insolvency will also become important.

A special task force of people with expertise in finance needs to be deployed into urgently strengthening regulation and supervision and running a ‘war room’ on the soundness of banks for the coming one year.

Sample audits of portfolios should be undertaken to detect weaknesses that have been hidden away. Offsite data analysis should be used to create metrics of liquidity and solvency. In particular, the Merton/KMV models should be used for listed banks to obtain evidence of distance-from-default on a daily basis using information from the stock market.⁶ CDS spreads from international markets should be utilised to supplement this information, given the lack of credit derivatives trading in India. A key indicator of distress is when the financial system is both borrowing from and lending to RBI in the LAF operations. This took place on all days from 6 October to 16 October other than 14th and 15th. This shows that some banks are not comfortable lending to others, either because of fears about default, or at least because certain banks have exhausted their counterparty limits designed to control credit risk in OTC transactions.

All banks should be asked to make a liquidity plan and a solvency plan. RBI should review these plans and insist that each of these plans have quantitative monitorable actions and targets. As an example, the solvency plan

⁶See *Systemic fragility in Indian banking: Harnessing information from the equity market* by Ajay Shah and Susan Thomas, December 2000, at <http://tinyurl.com/indiaDI> on the web.

should include suspension of payment of dividends; this is the sort of measure which shareholders are unlikely to take on their own without a push from the regulator. These plans should be triggered when measures of illiquidity or insolvency are hit.

Careful analysis and contingency planning should be undertaken about OTC exposures of large banks in India, with an eye to preparing the system for one or more large bank failures. All vanilla products should be pushed into exchange-traded settings, to ensure transparency of price, soundness of marking to market and risk management at the clearing corporation. The two biggest problems here are the interest rate swap and the currency swap markets.

4.7 Should the policy rate be cut?

Does easing liquidity conflict with the goal of sound monetary policy? There are two perspectives on this.

First, when faced with financial instability and conditions where financial firms are unable to perform their function, this is a first priority that the central bank must solve. It does not make sense for the policy rate to be 6 – 9 percent and for the call rate to be 15 percent. That is tantamount to allowing external factors to force a monetary policy tightening where the ‘policy’ rate has effectively driven up to 15 percent.

The second perspective is that of fighting inflationary pressures when year-on-year inflation is just under 12 percent. As monetary policy is forward looking and impacts on the real economy with long lags, one has to assess how the economy and inflationary pressures might behave 6-12 months from now.

The recent history of inflation in India is encouraging. As Table 2 shows, the correct indicator to watch – point-on-point annualised seasonally adjusted inflation – has yielded values like 5.92% in July and 7.61% in August.⁷ This shows a sharp deceleration when compared with the large values seen from December 2007 till June 2008.

There are a number of other indicators showing that inflation is on its way down. If we look at the global commodity futures markets we find that

⁷For the rationale and methodology of these calculations, see *Early warnings of inflation in India* by Rudrani Bhattacharya, Ila Patnaik and Ajay Shah, August 2008, available at <http://tinyurl.com/bps2008ew> on the web.

Table 2 Point-on-point, seasonally adjusted (annualised) WPI inflation

	Overall	Manufacturing	Primary	Fuel
2006-09	9.92	7.432	33.60	6.90
2006-10	9.36	9.064	13.44	-2.55
2006-11	4.75	8.623	9.05	-4.95
2006-12	5.21	7.026	14.71	-10.01
2007-01	5.86	2.885	11.20	-1.51
2007-02	3.77	4.635	5.00	-6.64
2007-03	3.65	7.813	6.02	-1.56
2007-04	1.30	0.261	6.23	1.10
2007-05	0.48	-0.019	-0.31	5.11
2007-06	-3.05	1.895	-8.84	-7.50
2007-07	4.08	2.310	17.12	-2.14
2007-08	2.41	2.929	-1.74	0.64
2007-09	3.72	7.837	6.83	0.21
2007-10	4.94	4.399	-5.86	9.40
2007-11	7.10	4.782	6.68	15.15
2007-12	11.77	6.313	10.88	22.67
2008-01	13.35	9.720	15.65	8.65
2008-02	12.32	6.170	31.34	5.76
2008-03	28.28	33.517	34.02	19.15
2008-04	7.00	13.240	-5.36	3.41
2008-05	9.30	10.752	7.75	12.07
2008-06	29.36	18.737	3.38	85.46
2008-07	5.92	4.533	13.46	5.37
2008-08	7.61	6.644	10.67	4.10

the price of wheat, corn, oil and copper have all declined. The US PPI for all commodities, which is a reasonable indicator of the US dollar prices of many tradeable goods, shows inflation of -2.8% in August and -1.36% in September. More importantly, the inflationary expectations visible in the market for inflation indexed bonds in the US has shown a sharp deceleration from 3.4% in July to 0.95% on 15 October.

Further, it is clear now that the global economy is going to see a significant slowdown. Forecasts for GDP growth in most economies in 2009 have been lowered sharply. Even the fastest growing economies are likely to see a decline in growth. For example, the forecast for GDP growth in China has been lowered by UBS to 8 percent. High growth in China was seen to be one of the reasons for the sharp increase in commodity prices. With a slowdown in demand it is inevitable that there will be a downward pressure on prices. Prices of steel, iron ore and other metals that are determined in international markets and feed into the WPI are on their way down.

Last year when we witnessed high inflation in India we saw that it was caused by two factors. One was the increase in global prices, which are now on their way down. The other was the increase in liquidity caused by RBI's massive dollar purchases that were called for in doing exchange rate pegging. Today the situation is exactly the opposite. There is no dollar purchase, and indeed the RBI may be selling dollars thus putting the system into a huge liquidity shortage. This will result in putting a downward pressure on prices.

What about the rupee depreciation? In the past we have seen that a depreciation of the rupee has put an upward pressure on price, so will that not happen again? In the current situation of turmoil, as there is a flight to safety and investors all over the world are buying US treasury bills even at near zero interest rates, there is a huge demand for the US dollar and it is appreciating against all floating currencies. Of the 17% appreciation in the rupee-dollar rate seen in recent weeks, 10% is accounted for by the strengthening of the US dollar against floating exchange rates. Once the panic in financial markets eases, this flight to the dollar is likely to end and the dollar is likely to depreciate. The sharp rupee depreciation that we have seen should thus be a temporary phenomenon. When this reverses, the upward pressure on prices due to the depreciation will end.

In other words, all factors indicate that in the next few weeks and months we are likely to see lower inflation.

Thus, in recent weeks, there has been a sharp decline in both expected inflation and expected growth. Both these factors should feed into the RBI's

decision to set the policy rate corridor. In the present environment, there is thus a strong case for cutting the repo rate to 8.5 percent from 9 percent, and raising the reverse repo rate to 7.5 percent, such that the policy corridor is 7.5-8.5 percent. However, all of this is irrelevant if the other liquidity enhancing measures are not undertaken and money market rates remain in the 12-15 percent range.

5 Is this over-reacting?

There are two classes of criticisms of the main ideas of this paper:

1. On one hand, it is argued that with an unprecedented 250 bps reduction in CRR, with the restoration of the call rate to within the corridor, the problem has been solved.
2. On the other hand, it is argued that it is not, as yet, clear that important negative real shocks are in flight. It is hence not important to particularly worry about whether a strong financial sector will be able to assist the economy when these shocks arrive.

5.1 Is the problem solved?

It is indeed true that by 17 October the first order crisis on the money market had been addressed. However, much more sustained effort needs to be done on putting finance back on its feet. The problems of some elements of the money market (mutual funds, NBFCs, real estate companies, some banks) have not abated. Within a few weeks, some of these firms will face pressure for making certain kinds of payments, and excruciating stress could arise.

When RBI sells dollars – either as part of exchange rate management (which we do not advise) or as part of alleviating inadequate dollar liquidity of Indian firms – this would diminish reserve money. Each \$10 billion of sale of reserves reduces reserve money by Rs.47,000 crore. Indian multinationals will require atleast \$50 billion of dollar liquidity in the coming year – and unless the global dollar shortage is alleviated, this is going to be financed by borrowing in India. Thus liquidity conditions could change dramatically unless deeper changes are made to the structural liquidity conditions, and to the operating procedures of monetary policy.

A key issue that we now face is not just liquidity of the money market but *liquidity risk*. When economic agents see that the money market is fragile, they would be unlikely to embark on business plans that envisage continued access to the money market. In other words, even if a money market is apparently functioning, it would not be used if it is seen as being untrustworthy. The economic impact of this would be as bad as having a disruption on the money market. For economic agents to obtain *confidence*, they need to see sustained success in achieving a liquid money market, and they need to see fundamental economic reform that solves the structural problems of the operating procedures of monetary policy.

5.2 Are negative shocks in flight?

Some argue that there is no important economic downturn impending. It is argued that India is insulated from the world, and that the negative impact of these global events on India would only be mild.

On one hand, it is worth pointing out that India's economic integration with the world is now at unprecedented levels. While GDP is roughly \$1 trillion, cross-border flows on the balance of payments are now \$1.3 trillion a year. India is much more integrated with the world economy through both the current and the capital accounts as compared with the situation in 2001, when the short US downturn did adversely affect India. The downturn that appears to have begun in the US in September 2008 is much sharper than the events of 2001, and India is now more tightly bound to the world economy. Hence, the negative impact on India is likely to be larger than that seen in 2001.

These projections are, however, necessarily an area of disagreement, for the future can never be accurately computed. The right approach is one of analysing the costs and benefits of four scenarios:

	Sharp downturn		Mild downturn
Action	Large benefit	Small benefit / perhaps a small cost	
Inaction	Large cost		None

If inaction is chosen, the outcome could be one of no cost or a large cost.

If action is chosen, the outcome could be one of a large benefit or a small benefit (or, at worst, a small cost).

This payoff diagram suggests that while a downturn is likely, there is an irreducible uncertainty about the outlook for Indian business cycle conditions. Yet, there is much to be gained by action.

6 Conclusion and summary

We are in a story that is being played out in two parts.

The first phase is the financial crisis. We are halfway through that. This must be urgently resolved; finance must be back on its feet. In the history of financial crises, we see that government engagement generally arrives very late, by which time many financial firms are near insolvency. This generates larger costs for the economy and the exchequer. Our key goal today should be to avoid the costs of inertia and inaction through *rapid* action, which would decisively put Indian finance back on its feet.

The second phase is where distress starts hitting non-financial firms. The most important tool for addressing that phase, for the economy, is a sophisticated forward-looking financial sector, which is able to analyse the prospects of firms, and buoy sound firms with equity and debt capital. Finance has to also play a key role in restructuring, M&A, and other actions taken as a response to these shocks. If finance is malfunctioning when non-financial firms are in distress, the impact of the macroeconomic shocks will be magnified.

In a few months, NPAs faced by banks will likely go up. If the liquidity crisis today is rapidly resolved, and finance has played a good role in buoying firms in the downturn, then the NPAs will be smaller. If the liquidity crisis today is not resolved, and finance is not back on its feet, then the NPAs will be larger and a more significant banking crisis will materialise.

In either event, a special effort needs to be undertaken to put banking regulation and supervision on a sound footing, bringing in high quality finance expertise to bear on the problem. All banks must make a liquidity plan and a solvency plan, with specific actions and monitorable targets. RBI must have off-site supervision using high frequency data that yields numerical metrics that trigger off the liquidity plan or the solvency plan.