Financing Infrastructure

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Abstract

The rapid growth of private investment in India's infrastructure over the past few years has been possible largely because of commercial bank funding. But this is resulting in a growing concentration of risks in banks in terms of sector exposure and asset-liability maturity (ALM) mismatch. A deep, liquid bond market with a wide array of sophisticated investors and fine products is needed to provide long-term finance and to distribute risks more widely. Given that this process will take a long time, there is a strong case in the interim for the government to act as a catalyst to help finance the development of infrastructure which has huge externalities and public goods characteristics. In this context, the authors make two suggestions. First, a refinancing facility to mitigate ALM mismatches. This facility would use its sovereign rating to borrow long term funds and refinance infrastructure loans of banks and specialized non-bank finance companies (NBFCs). A second proposal is to have a government-supported intermediary play a catalytic role as credit enhancer, purchasing loans from banks and NBFCs and making large volumes of infrastructure paper of a minimum acceptable credit quality available to cautious investors such as insurance companies and pension funds.
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I. Introduction

It was not so long ago that infrastructure investment in India was financed almost entirely by the public sector – from government budgetary allocations and internal resources of public sector infrastructure companies. In the span of 10 years, and particularly in the past four, the private sector has emerged as a significant player in bringing in investment (see Figure 1) and building and operating infrastructure assets from roads to ports and airports and to network industries such as telecom and power. Private investment now constitutes almost 20 per cent of infrastructure investment\(^1\). Yet, total infrastructure investment remains low, at around 5 per cent of GDP. In contrast, China spent an estimated 14.4 per cent of GDP on infrastructure investment in 2006 and, contrary to popular perception, with little dependence on the state budget. The Government of India aims to raise infrastructure investment to over 9 per cent of GDP by the end of the 11th Five-Year Plan (2007-12), or an average of 7.4 per cent of GDP a year during the plan, and projects a rise in the share of the private sector to 30 per cent.

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<tbody>
<tr>
<td>Value (US$ million)</td>
<td>0</td>
<td>5,000</td>
<td>10,000</td>
<td>15,000</td>
<td>20,000</td>
<td>25,000</td>
<td></td>
<td></td>
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</table>

Figure 1: Investment by Private Sector in Infrastructure

Source: World Bank PPIAF Database

It is conceivable that the public sector can develop world-class infrastructure of the magnitude envisaged – as China and other countries have shown. But India has embarked on a model that includes private participation in infrastructure. The government recognises that public savings are not sufficient and also that the public sector, given its limited implementation capacity, cannot meet the huge infrastructure requirements to underpin economic growth of 9 per cent per annum. Moreover, the private sector brings greater efficiency in service delivery. To attract the private sector, the government has been putting in place the appropriate regulatory and institutional frameworks. At present, private investment in infrastructure is barely 1 per cent of GDP and most of the investments are in greenfield projects in telecom and energy, with concessions mainly in transport (Figure 2). Clearly, there is considerable scope to increase this. Countries which had impressive private investment in infrastructure in the 1990s had levels ranging from 4 to 6 per cent of GDP. Besides purely private projects, the government aims to catalyse private investment through public-private partnerships (PPP); the 11th Plan envisages private infrastructure investment to rise to 2.8 per cent of GDP by 2012. Private investment is expected to constitute more than 65 per cent of investment in

\(^1\) While infrastructure definitions vary across agencies, the attempt here is to use, as far as possible, the Planning Commission definition which includes the following 10 sectors: electricity, gas, telecoms, roads, rail, airports, ports, storage, irrigation and water supply and sewerage.
telecom, ports and airports, 26 per cent in power and 36 per cent in roads. Is this do-able or are these ambitious targets simply unrealistic? What is holding back a real take-off? What is required to make it happen?

<table>
<thead>
<tr>
<th>Sector</th>
<th>Investment (US$ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telecom</td>
<td>43,045</td>
</tr>
<tr>
<td>Energy</td>
<td>33,909</td>
</tr>
<tr>
<td>Transport</td>
<td>18,922</td>
</tr>
<tr>
<td>Roads</td>
<td>9,862</td>
</tr>
<tr>
<td>Airports</td>
<td>4,514</td>
</tr>
<tr>
<td>Seaports</td>
<td>4,327</td>
</tr>
<tr>
<td>Railroads</td>
<td>218</td>
</tr>
<tr>
<td>Water &amp; Sewerage</td>
<td>255</td>
</tr>
</tbody>
</table>

Source: World Bank PPIAF Database

If we set aside institutional and governance issues and focus on financial aspects, the problem may not seem insurmountable – abstracting from the current financial turmoil, which is temporary. After all, India has a high domestic savings rate which, at almost 35 per cent of GDP (in 2006-07), compares well with that of East Asian countries. Savings of the corporate sector have been rising steadily and were almost 8 per cent of GDP in 2006-07, while public savings also contributed, rising to over 3 per cent of GDP (from negative savings until 2002-03). What is of relevance, though, is that of the total household sector savings of around 23-24 per cent of GDP, less than half are in financial assets and more than half of the financial savings are in bank deposits, leaving a limited portion in other financial instruments. Contractual savings – those that are in long-term financial instruments – are just around 4 per cent of GDP (Table 1). Thus, the issue is not the lack of domestic savings or even of foreign capital, but that of financial intermediation, that is, how to channel long-term savings into infrastructure.

II. What is special about infrastructure financing?

Building infrastructure is a capital-intensive process, with large initial costs and low operating costs. It requires long-term finance as the gestation period for such projects is often much longer than, say, for a manufacturing plant. Infrastructure projects are characterised by non-recourse or limited recourse financing, that is, lenders can only be repaid from the revenues generated by the project. Thus, the market and commercial risks, including uncertainty of (traffic) demand forecasts, assume greater significance for lenders. Besides the usual project risks, infrastructure development has other unique risks because of the public interest nature of most projects and the interface with regulators and government agencies. These risks could include tariff increase reversals due to public unacceptability of the tariffs determined, challenging of environmental clearances, arbitrary reneging of contracts and non-payment by (financially weak) monopoly public utilities. As a result, complex risk mitigation and allocation arrangements are embedded in the financial and contractual agreements amongst multiple parties—project sponsors, commercial banks, domestic and international financial institutions, and government agencies. And infrastructure projects have significant
Table 1: Household Saving in Financial Assets
(Per cent of GDP)

<table>
<thead>
<tr>
<th></th>
<th>2005-06*</th>
<th>2006-07*</th>
<th>2007-08**</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Financial Assets (Gross)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Currency</td>
<td>16.7</td>
<td>18.6</td>
<td>15.5</td>
</tr>
<tr>
<td>2. Deposits</td>
<td>1.5</td>
<td>1.6</td>
<td>1.7</td>
</tr>
<tr>
<td>3. Claims on government</td>
<td>7.8</td>
<td>10.3</td>
<td>8.8</td>
</tr>
<tr>
<td>4. Investment in shares, debentures &amp; mutual funds</td>
<td>2.4</td>
<td>1.0</td>
<td>-0.6</td>
</tr>
<tr>
<td>5. Contractual Savings†</td>
<td>0.9</td>
<td>1.2</td>
<td>1.6</td>
</tr>
<tr>
<td>B. Financial Liabilities</td>
<td>4.1</td>
<td>4.5</td>
<td>4.0</td>
</tr>
<tr>
<td>C. Saving in Financial Assets (Net) (A-B)</td>
<td>5.1</td>
<td>6.8</td>
<td>4.4</td>
</tr>
</tbody>
</table>

11.6 11.8 11.1

Notes: *: Provisional; **: Preliminary; †: comprise life insurance funds and provident and pension funds.
Source: RBI Annual Report 2007-08

externalities—where the social returns exceed the private returns—which call for some form of subsidisation, such as government guarantees or viability gap funding to make them attractive for private sector involvement.

Infrastructure projects are generally executed through individual project companies called special purpose vehicles (SPV). The main reason for this is to better protect the parent company from possible adverse impact in the concession business. Separate SPV projects are then held by the parent company or its subsidiary in a holding company structure. SPVs typically do not have recourse to their parent companies after the initial capitalisation, nor do they have a credit history and strong balance sheets. This naturally affects their ability to secure financing from outside.

Thus, infrastructure financing presents a number of challenges. The scale of investment is large and investors have to be prepared for a long horizon for debt repayment and return on equity. Many financial institutions are limited in their ability to invest in very long-term illiquid assets. The non-recourse nature, the unique risks of infrastructure development as well as the complexity of the arrangements also call for special appraisal skills. Since the output is non-tradable (with revenues accruing in domestic currency), infrastructure projects should generally be domestically financed to avoid high foreign exchange risk, although there are financial instruments to mitigate such risks in well-developed financial markets..

As a country’s financial system matures and becomes more sophisticated it is able to respond to these challenges in flexible, innovative ways. It can bring a range of investors at various stages of the project. Investors with the requisite skills and risk appetite are needed to provide the initial financing, but should then be able to offload the assets to other investors when the projects start yielding revenues, thus moving on to invest in new projects. By this time, the major risks (especially construction risks) have already been borne by the initial investors and the projects have a prospective stable revenue stream. A different type of investor may come in at this stage, thus widening the pool of investors that can be tapped and lowering the overall financing cost of the project.

III. Limits to existing financing sources

a. Debt financing

Notwithstanding the difficulties, infrastructure financing has grown rapidly over the past few years in tandem with the increase in private investment in infrastructure. This is because of the pivotal role played by commercial banks, primarily a few key public sector banks that have been willing to provide the project finance. Table 2 provides indicative estimates of debt financing. Commercial bank lending to infrastructure took off four years ago, in 2004-05, followed by specialised non-bank finance companies (NBFCs), which
are largely dependent on bank funding, in 2005-06. The insurance sector, dominated by the Life Insurance Corporation of India (LIC), has also steadily increased its financing of infrastructure. Data on foreign borrowing are hard to come by but a (gross) disbursement estimate for 2006-07 indicates that external commercial borrowings (ECB) account for less than 20 per cent of the total debt finance to infrastructure.

These are positive trends, no doubt. But the Planning Commission’s estimate of total debt needs for infrastructure investment during the 11th Plan—Rs. 984,500 crore (at 2006-07 constant prices) implies, on average, 2.5 times increase in the annual amount from Rs. 80,000-plus crore in 2006-07 (see Table 2). After projecting that the traditional sources of finance can expand to Rs. 825,500 crore, the Planning Commission estimates a gap of Rs. 159,000 crore. Realising the overall debt target is a huge challenge given the constraints to growth in each of the sources of debt finance.

<table>
<thead>
<tr>
<th>Table 2: Debt Financing of Infrastructure (Rs. Crore)</th>
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<tr>
<td>Commercial banks</td>
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<tr>
<td>NBFCs</td>
</tr>
<tr>
<td>Insurance companies</td>
</tr>
<tr>
<td>ECBs</td>
</tr>
<tr>
<td>Total</td>
</tr>
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Notes: *: by Planning Commission
1. Financing refers to net flows, except for ECBs which are gross flows.
2. NBFCs included are IFCl, IFICI, REC, HUDCO, IHFC, PFC, IDFC, IL&FS, SREI and L&T Infra Finance.
3. For insurance companies, outstanding in March 2008 are projected at the average growth of the previous three years, in absence of actual data.
4. ECBs for 2007-08 are projections of the Planning Commission.
5. For the 11th Plan, the Planning Commission projects likely debt resources of Rs.825,539 crore as against its estimated debt requirement of Rs.984,472 crore leaving a gap of Rs.158,933 crore.

Source: RBI, Capitaline, company websites/annual reports, LIC & IRDA annual reports and Planning Commission.

Commercial banks have driven the increase in infrastructure finance, both direct and indirect. The first year of the plan (2007-08) recorded high growth but a continued rapid expansion of such finance may not be sustainable as it is leading to a growing concentration of risks on banks’ balance sheets. These risks arise from the maturity mismatch created by financing long duration infrastructure projects from the essentially short-term nature of banks’ liabilities. Within six years, between March 2002 and March 2008, total bank lending to infrastructure trebled from 3.1 per cent of total non-food gross bank credit outstanding to 9.2 per cent. The growing asset-liability maturity mismatch on account of infrastructure has been exacerbated by a concurrent rise in other long-term assets, in particular housing loans. Together, these long-term assets now account for 21 per cent of total non-food bank credit (see Figure 3). In fact, the exposure of banks to infrastructure and housing is actually higher as banks lend to NBFCs who on-lend to these sectors.

If we assume that non-food bank credit will grow at 20 per cent a year for the rest of the Plan period, the Planning Commission’s projections imply that bank lending to infrastructure will account for about 13 per cent of total non-food bank credit by 2011-12. These are overall numbers; individual bank exposure would be significantly higher for some, since many banks do not have the skills-set or balance-sheet size to engage in infrastructure lending. Moreover, the share of housing loans in bank portfolios is also likely to increase given the thrust on financing affordable housing. Thus, the share of total long-term assets could very easily rise to above 30 per cent of banks’ non-food credit. The risks are higher on banks than evident in these numbers as specialised NBFCs also rely on bank funding.

The increasing share of long-term assets comes at a time when the maturity of deposits has been shortening, thus exacerbating the liquidity risk of financing long-term assets with short-term liabilities.
Term deposits with maturity of three years and above have declined from 32.9 per cent of total term deposits in March 2000 to 22.7 per cent by March 2007 (and only 7 per cent are at five years or more). Banks have been dealing with this situation by relying on annual interest resets and put/call options on the loans, thereby passing the market risks to the projects. However, if projects are unable to bear all the risks, they could become a credit risk to banks. It should be noted, though, that savings account deposits have been in the region of 24-28 per cent of aggregate deposits for several years. Therefore, if we assume that 80 per cent of savings deposits are fairly stable and consider them along with term deposits of maturity of three years and over, about 35 per cent of aggregate bank deposits may be viewed as stable as of March 2007 (down from 40 per cent in March 2000). So, 35 per cent of total deposits (assuming that the share of long maturity term deposits does not decline any further) would cover the projected 30 per cent of long-term loans by 2011-12. However, it should be noted that the maturity period of the loans is typically over 10 years and the bulk of the long-term deposits is in the three-year original maturity period. In fact, only about 3 per cent of deposits have a five-year or greater residual maturity as of March 2007.

![Figure 3: Share of Banks’ Long-term Loans and Deposits (Per cent)](image)

On its own, the maturity mismatch may not seem severe, but combined with other vulnerabilities in the balance sheets of banks, it could lead to problems. Take, for instance, the current situation. Banks had been lending at breakneck pace over the past few years, with incremental credit-deposit ratios often of 90 per cent and over. As a result, they had to borrow from non-bank sources. When the global credit crisis broke out and domestic liquidity tightened due to capital outflows, the over-extended banks had difficulties meeting their liabilities as short-term borrowing from the non-bank sources dried up. And, as happens in times of crisis, the maturity structure of bank liabilities shortens quickly—so if banks are vulnerable due to other factors, it could lead to further stress in the banking system.

In addition, many banks are reaching exposure limits to infrastructure-related borrowers (because of large project size relative to bank capital). Indian banks are relatively small. Only 11 banks had equity above $1 billion in March 2007, of which two were private sector banks. The largest bank, the State Bank of India, had just over $7 billion of capital in March 2007. The next three public sector banks together would be equivalent in capital strength to SBI. The total equity of the 82 scheduled commercial banks (including 29 foreign banks) was $49.8 billion. Thus, there are many small banks, most of which do not engage in infrastructure lending and the handful of banks that are actively lending to infrastructure are likely to reach exposure limits if they continue lending at this pace.
Specialised NBFCs have become a significant source of infrastructure finance but their growth is constrained by their access to bank finance, in the absence of alternate wholesale funding sources. Tighter prudential limits on bank lending to NBFCs in 2007 have effectively capped the latter's access to commercial bank funds\(^2\). Even if there is some headroom on bank exposure limits to NBFCs and bank resources are forthcoming, these would be at significantly higher costs due to the incidence of a higher capital charge and provisioning requirement on standard assets for bank lending to NBFCs. Moreover, banks are increasingly providing shorter tenor finance and have an annual reset in interest rates, thereby passing the interest rate risk to NBFCs.

Another funding source for NBFCs is insurance companies. Pension funds and insurance companies are well suited to fund infrastructure because of their long-term liabilities but, in India, they are still a small source of finance for infrastructure despite the rapid growth in insurance penetration. Why is this? First, while insurance penetration has grown from 1.9 per cent in 2000 to around 4 per cent of GDP, it still remains low compared to the figure of about 9 per cent of GDP in USA and Europe and 10.7 per cent of GDP in Japan and newly-industrialised Asian economies in 2006. Second, statutory preemptions by the government and other restrictions essentially limit investments in infrastructure. Some key restrictions include minimum credit rating for debt instruments and minimum dividend payment record of seven years for equity. These are difficult conditions for private infrastructure projects to meet as they have been set up recently and do not enjoy high credit rating in the initial years. Accordingly, the Parekh Committee recommended a relaxation of these guidelines for infrastructure projects and companies. Third, irrespective of these regulatory guidelines, public insurance companies are inherently very risk averse. This is clear from the fact that they invest more than required in government securities (between 51-52 per cent of the life insurance investments, dominated by LIC, were in central government securities in FY06 and FY07 as against the minimum required of 25 per cent)\(^3\) and they invest mostly in the paper of publicly-listed infrastructure companies towards meeting their mandated minimum infrastructure and social sector requirements (15 per cent of Life Fund for life insurance companies and 10 per cent for general insurance companies) rather than funding infrastructure projects. Fourth, the rapid growth in private insurance is not reflected in greater investments in infrastructure because 85 per cent of the policies sold by private insurance players are unit linked. In fact, even LIC expanded unit-linked policies with the result that, overall, ULIP funds in the insurance sector have grown forty-fold between FY04 and FY07, rising from less than 0.5 per cent to 11 per cent of total investments of life insurers. Finally, with the exception of LIC, insurance companies, pension and provident funds rarely invest in paper with a maturity longer than five to seven years.

It was hoped that some of these constraints would be eased by modifying the investment regulations governing insurance companies. In August 2008, new investment guidelines were issued by the Insurance Regulatory and Development Authority (IRDA). While these guidelines have broadened the definition of infrastructure and aligned it with RBI’s definition (as proposed in the Parekh Committee), they have not relaxed the conditions sufficiently to permit insurers to potentially hold a wide range of infrastructure projects in their investment portfolio. Although the approved category of investments includes more instruments, such as asset-backed securities with underlying infrastructure assets, and corporate debt based on a minimum rating criteria, the rating quality is not less than AA whereas a typical non-recourse infrastructure

\(^2\) RBI guidelines limit bank exposure to an infrastructure-oriented NBFC at 15 per cent of the bank’s capital funds. The risk weight for bank exposure was prescribed at 125 per cent regardless of the credit rating of the borrowing NBFC. Provisioning for standard assets for bank exposure to NBFCs was increased from 0.4 per cent to 2.0 per cent. These measures significantly affected access to bank funds and also increased NBFCs’ cost of funds. In November 2008, the risk weight was reduced to 100 per cent and the required provisions for standard assets were reduced to 0.4 per cent in response to the tight liquidity.

\(^3\) The funds of general insurance companies are much smaller and 26-28 per cent of their investments were in central government securities in the same period as against the required 20 per cent.
project is rated BBB. Moreover, 75 per cent of all debt investments in an insurance company's portfolio (excluding government and other approved securities) must now have AAA rating. In effect, therefore, the modifications of August 2008 have made investment criteria even more stringent by raising the bar on rating requirements. This will not facilitate direct investments in many private infrastructure companies, let alone infrastructure project SPVs.

ECBs, another option, were also constrained by limits placed in 2007. For some time, ECBs were cheaper than domestic term loans even after taking into account the hedging cost, but they were discouraged. The restrictions, which were aimed at curbing the monetary expansion effects of capital inflows, affected the infrastructure sector as it has a high domestic expenditure component. There was also a restrictive cap on interest rates which affected infrastructure project financing since the inherently riskier nature of infrastructure development calls for a higher risk premium. In particular, interest rate caps prevent access to different debt or quasi-equity instruments (like mezzanine financing), the pricing of which needs to be commensurate with the associated risks. Recently, after credit market conditions tightened, the ECB policy was relaxed in October 2008 to enable up to $500 million per borrower per year for rupee or foreign currency expenditure without prior approval and the all-in-cost ceilings were raised (to 300 bps above LIBOR for three to five year ECB maturity and to 500 bps for over five years). However, the more liberal policy does not apply to financial intermediaries who still need to get prior approval. Thus, even if international financing were to become available, at those rates it would only be the large well-established firms that could have access to it. Infrastructure projects under SPVs would be unlikely to gain access either directly or through financial intermediaries.

**b. Equity financing**

Supporting higher levels of debt requires more equity, with the amount varying with the level of project risk. Equity is mainly provided by the project sponsor who, in turn, may tap the primary market for capital. Substantial resources were raised by infrastructure companies from IPO with the secondary market boom in recent years, peaking in 2007-08 before drying up more recently due to the financial turmoil (see Table 3). Clearly, developers have a limited amount of capital and have to tie it up for a significant length of time for each project. It is therefore important to bring in financial investors so that the promoters' risk capital can be recycled into other projects. In recent years, financial investors have shown keen interest in India: witness the number of private equity (PE) infrastructure funds formed. However, rules for sell-down of equity can be quite stringent and act as a deterrent to the entry of more financial investors who would like greater flexibility in exit options. Moreover, sales of unlisted projects, unlike listed investments, are subject to the full weight of the capital gains tax. Since most infrastructure projects are unlisted, this acts as a disincentive to equity investors in infrastructure. Also, equity investors perceive termination payments for government agency defaults (for example, not providing the right of way in road projects) to be inadequate in many concession agreements. In some cases, the lenders are repaid whereas the equity holders suffer. This encourages a greater use of debt.

The biggest constraint to the development of a strong domestic PE industry is the very narrow base of domestic investors. Globally, PE firms rely on a mix of institutional investors such as pension funds and

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4 It may, however, allow insurance companies to increase their indirect investment in infrastructure by allowing them to hold more paper issued by highly rated financial intermediaries that specialise in infrastructure lending. Infrastructure-focused NBFCs can now be considered approved investments as the new guidelines have eliminated the earlier condition of secured bonds of corporates in this category, and introduced a minimum rating criteria (for example, AA or its equivalent).

5 RBI approval was required for external borrowing for any domestic expenditure and, in any case, a maximum domestic expenditure of $20 million was set.

6 A survey of 104 PPP projects shows that about 80 per cent of the equity in a project SPV is promoter contribution (with less than 8 per cent from strategic investors and financial institutions, and another 10 per cent from the government).
insurance companies and contributions from high net-worth investors (HNIs). In India, the ability of insurance companies and pension funds to invest in alternative asset classes is still quite restricted and HNIs will take some time to take up this asset class.

<table>
<thead>
<tr>
<th>Year</th>
<th>IPO/FPO</th>
<th>PE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Issues</td>
<td>Rs. crore</td>
</tr>
<tr>
<td>2004-05</td>
<td>4</td>
<td>6,221</td>
</tr>
<tr>
<td>2005-06</td>
<td>9</td>
<td>4,649</td>
</tr>
<tr>
<td>2006-07</td>
<td>12</td>
<td>6,646</td>
</tr>
<tr>
<td>2007-08</td>
<td>21</td>
<td>20,647</td>
</tr>
<tr>
<td>2008-09</td>
<td>3</td>
<td>987</td>
</tr>
</tbody>
</table>

**Notes:**
2. Reliance Power Ltd. issue alone has raised half the funds (Rs.10,260 cr) in IPO for 2007-08.

**Sources:** NSE, IDFC-SSKI database, Dealtracker by Grant Thornton & India Infrastructure Research 2008.

### IV. What can be done?

As far as equity capital is concerned, various measures can be taken to facilitate the entry of financial investors in infrastructure. Some things can be done easily and have an effect relatively quickly, such as removing or loosening of restrictions on financial investors as owners of concessions, including improving exit and tax policies to make it easier for them to exit from unlisted infrastructure projects. Over the longer term, pension reform should also bring in other investors such as privately managed pension funds into domestic private equity.

Relying on domestic banks to meet the bulk of the future requirements of infrastructure debt finance is resulting in a growing concentration of risks in banks. Can banks continue to play an important role – at least until other sources of finance are developed – while mitigating their balance sheet risks?

To do so will require decisive changes, some of which are difficult in the current scenario. First, banks will need to raise additional capital in order to avoid sector concentration risk. However, until the government is willing to relax its majority ownership of public sector banks or to provide commensurate capital increases, the public sector banks may have to rely more on tier II capital such as perpetual debt and other capital structure devices. Second, to make the syndication of loans more effective, appraisal capacity needs to be strengthened in more banks. Third, bank consolidation could also ease the exposure constraint somewhat for individual banks (as many small banks do not have any infrastructure exposure), although consolidation has not taken off so far despite much talk and a few attempts at merging public sector banks. Fourth, swap market development is required to facilitate term transformation and hedge interest rate risk. Finally, securitisation of the loan portfolio’s of banks is necessary to spread risks more widely and to enable banks to invest in new projects. Needless to say, proper regulation and supervision needs to be in place to avoid perverse incentives kicking in with the transfer of risks, as witnessed in the recent subprime mortgage crisis in the US.

Is there a role for specialised NBFCs going forward? The main advantage of NBFCs is their deep knowledge of the sector and its complexities as well as their risk appetite for such long gestation projects. In an environment where appraisal skills for infrastructure projects are scarce and there is limited experience with PPP arrangements, specialised NBFCs can play a crucial role in originating loans. Insurance companies

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7 The anticipated roll-out of the new pension scheme of the government on April 1, 2009 will be a start. There is also a proposal to extend a pension scheme to the private sector. While this will expand the potential base of investors, pension fund managers are likely to be cautious in investment for some time at least, as in the insurance sector.
may also be more comfortable lending to highly rated NBFCs to on-lend to infrastructure projects, given the conservative investment policies of such institutional investors. But NBFCs need access to low cost wholesale funding sources, which a developed debt market with multiple institutional players provides. Besides their lack of access to low cost funding sources, they face—perhaps even more severely than banks—exposure norm constraints. Thus, for NBFCs to continue playing an important role, they need to be able to manage risks and optimally utilise their capital and balance sheets by being able to churn their assets through various mechanisms including securitisation.

Thus, whatever other measures are taken, securitisation is particularly important for allowing banks and NBFCs to distribute their risk more widely. But securitisation itself cannot take off without access to deep and liquid debt capital markets, whether domestic or foreign. Greater access to foreign debt capital markets entails further movement towards capital account convertibility which does not seem imminent. Hence, the urgent need to develop domestic debt capital markets, the single most important catalyst for which is expanding and diversifying the base of institutional investors. A large, diversified investor base with differing perceptions is essential for developing a liquid market.

Whilst private placement of debt can work in a limited way, as is currently the case in India, a bond market is necessary to provide the mechanisms for greater liquidity and risk minimisation. In India, the bond market is small (compared to the size of the financial sector and to GDP) and undeveloped. In fact, the corporate bond market is the least developed and totally illiquid segment of the financial market. Trading in the Indian corporate debt market is insignificant, and most of the issuance is currently on a private placement basis. Indeed, it has been called ‘a privately placed loan market in the guise of a bond market’. With the development of an active and liquid market for securitised corporate debt, commercial banks, mutual funds, and financial institutions could also emerge as potentially large investors. About three years ago, the Patil Committee came out with a series of detailed recommendations but there has been very little progress since then in developing the market. In Box 1 we summarise what, in our view, are the priorities to jumpstart an active bond market.

If our financial system is unable to quickly gear up to intermediating huge flows for infrastructure, one option is to consider relying more on international funding until the domestic financial sector matures in terms of investors, markets and instruments. Although currently foreign investors may not be forthcoming, once the financial turmoil settles they would be attracted with the infrastructure growth opportunities. Admittedly though, the international banking system is likely to be more cautious of high leverage after the crisis than has been customary. And if they have to play a much bigger role than in the past, they would expect assurances through various risk mitigation measures (of political risk, regulatory risk and so on, as they typically perceive risks to be higher than domestic investors) which would raise project costs. However, there are limits to foreign borrowing for infrastructure financing. It entails a potentially risky currency mismatch which is not easy to hedge given the long tenor of the borrowings involved. Even if it were possible to hedge this risk effectively, it would be costly given the volatile exchange rate movements faced by developing countries. Moreover, domestic infrastructure companies’ access to international bond markets is likely to remain limited unless they have an established track record—getting projects rated internationally on a non-recourse basis is very difficult even for the most experienced of development companies let alone the large number of newcomers into the space.

While a mix of international and local funding is desirable, excessive dependence on foreign financing is clearly too risky. It is widely acknowledged that balance sheet weaknesses due to currency mismatches

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*A survey of 104 PPP projects shows that about 80 per cent of the equity in a project SPV is promoter contribution (with less than 8 per cent from strategic investors and financial institutions, and another 10 per cent from the government).*
Box 1: Priorities for Developing an Active Bond Market

- Diversified, large investor base with differing perceptions
  - permit greater foreign investment in rupee debt with suitable qualifications – such as investment in long-term instruments issued by infrastructure companies
  - remove asymmetry between bonds and bank loans by allowing banks to invest in unrated and unlisted bonds of infrastructure companies (Basle II will remove mark-to-market asymmetry)

- Simplify all primary market regulations
  - private placement should be confined only to qualified institutional buyers and the number restrictions should be removed
  - all regulations pertaining to the issuance of corporate debt securities should be consolidated under aegis of Sebi (Sebi, Company Law Board, stock exchanges, etc., issue guidelines relating to issue of debt securities)
  - reduction and uniformity in stamp duty on issuance of debt instruments

- Put in place market infrastructure for exchange trading
  - clearing and settlement mechanism is a prerequisite for participants to move to an exchange trading platform

- Introduce instruments that will improve liquidity and hedge risks
  - short-selling of demat bonds
  - repo transactions on corporate bonds through a specialised clearing and settlement platform
  - hedging instruments – interest rate futures, credit derivatives

- Develop benchmark government bond yield curve

- Bring in lower rated credit in the next phase through credit enhancement

have played a key role in virtually every major financial crisis affecting emerging market economies since the early 1980s. Accumulating foreign currency debt against local currency revenues (as in many infrastructure projects) was the main cause, or at least a major aggravating factor, as it made countries more vulnerable to large currency depreciation. It was exacerbated by a maturity mismatch with excessive reliance on short-term debt to finance long-term projects, thereby leading to the ‘double mismatch’ problem. One way to address this problem is to allow foreign investment in local currency so that foreign investors bear the exchange rate risk. As a result, many emerging markets have started developing local currency bond markets and opened them up to cross-border flows. Currently, we have limited the amount of such investment to a paltry $6 billion. To start with, we could liberalise investment in local debt of long-term maturity.

But all these measures by themselves are unlikely to suffice. For risks to be distributed more widely across the financial landscape, what is needed is the development of a wide array of sophisticated investors and financial products, a process that will take too long to incubate in the Indian context. In the interim, there is a strong case for the government to act as a catalyst. In this context we make two suggestions.

First, the government could create a refinancing facility intended to mitigate the asset-liability mismatches of banks and specialised NBFCs engaged in infrastructure lending. This facility would use its sovereign rating to borrow long-term funds (minimum five years) in domestic and international markets through the issuance of bonds (similar to National Bank for Agriculture and Rural Development [NABARD] bonds). The resources so raised would go towards refinancing infrastructure loans of banks and specialised NBFCs. The facility would charge a spread sufficient to cover all its operating expenses as well as the credit risk of lending to the particular bank or NBFC. The virtue of this mechanism is that the risk of lending would continue to be borne by the originating banks/NBFCs who would therefore have to remain disciplined about how they originate infrastructure risk. The facility would take on, and would be appropriately compensated for, only the credit risk of the banks/NBFCs seeking refinancing. Created in 2005 to help with
long-term funding for infrastructure development, the India Infrastructure Finance Company Limited (IIFCL), a fully government-owned company, could be modified to function effectively as this facility. Though this mechanism would take care of the maturity mismatches in the balance sheet of banks and NBFCs, it would not address the problem of concentration of risk. To confront that, banks and NBFCs will have to find a way of shedding the risk from their respective balance sheets. Hence, our second proposal.

In this option, a government-supported intermediary (such as IIFCL) would purchase infrastructure loans from loan originators such as banks and NBFCs and repackage them into long-term securities backed by cash flows for sale to other investors. Unlike in the US where there is a large array of sophisticated investors, including hedge funds ready to purchase such securities, the only potential investors in India, at least for the foreseeable future, are insurance companies and pension funds though even their demand for infrastructure paper is likely to be tempered by their own risk aversion as well as the stringent investment guidelines imposed by a cautious regulator. In this environment, a credible specialised government agency, as in our proposal, could play a significant catalytic role as credit enhancer, making large volumes of infrastructure paper of a minimum acceptable credit quality available to cautious investors. This mechanism would meet the twin goals of mitigating liquidity risk to banks/NBFCs originating infrastructure loans, and spreading the credit risk of infrastructure projects more evenly across the financial system.

There is no doubt that our second proposal is a difficult one to implement. It requires assembling a talent pool that may be hard to attract on public sector salaries. The proposed government agency could also be vulnerable to political interference in the Indian context – something that could lead to a disastrous socialisation of losses from reckless and politically-directed underwriting. Moreover, to the extent that the role envisaged for this agency as aggregator and credit enhancer is similar to that played by the now-discredited Fannie Mae and Freddie Mac for housing loans in the US, the timing of our proposal is not propitious.

We must nevertheless be careful not to throw the baby out with the bathwater in learning from the experience of the credit crisis. The fact is that Fannie Mae and Freddie Mac played a most valuable role in expanding home ownership in the US at a time when the eco-system of sophisticated investors and financial products did not exist. We should try to learn from the mistakes of the Fannie and Freddie experience (and from our own experience with politically-directed support for agricultural lending) to create an effective mechanism that serves the need of the hour.

Whether or not either or both of our proposals are pursued, the key points to be understood are: (a) that at a time when the institutional structure of our financial markets is such that these markets are not capable of autonomously intermediating domestic savings into infrastructure, the government has a legitimate and constructive role to play as a catalyst to help finance the development of a sector that has huge externalities and public good characteristics; (b) this role need not involve any financial subsidy – whether the proposed government agency merely provides refinancing or acts as an aggregator and credit enhancer, it could and should charge market rates for the services it provides to bank and NBFC originators of infrastructure loans; and (c) even though our proposals would involve an addition to the government’s contingent liabilities because of the implicit guarantee that the government-owned agency’s borrowings would enjoy, in a macroeconomic sense this would not add to the fiscal deficit in the same way if the government were to develop infrastructure projects on its own account.

Ultimately, the stark reality is that we do not have too many options. If we continue trying to finance private infrastructure as we have, we will be putting our banking system at risk. If we eschew the type of

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9 While infrastructure definitions vary across agencies, the attempt here is to use, as far as possible, the Planning Commission definition which includes the following 10 sectors: electricity, gas, telecoms, roads, rail, airports, ports, storage, irrigation and water supply and sewerage
government initiatives proposed here, we would most likely have to reconcile ourselves to a much slower pace of infrastructure build-out than we need because, given its abysmal implementation record and the attendant fiscal implications, relying on the government and its enterprises to take on the full burden of infrastructure development would seem unrealistic.

V. Conclusion

The bank-dominated financial system has been able to step up and meet the needs of the first wave of private investment in infrastructure in a fast-growing credit environment. Going forward, the magnitude of the infrastructure funding requirement is huge. The limits of traditional sources have more or less been reached and certainly cannot be stretched to meet the projected quadrupling of real private infrastructure investment in five years. The problem is not lack of domestic savings, but rather the lack of a sufficiently sophisticated system of financial intermediation capable of channelling domestic savings into infrastructure in a way that does not create unmanageable risk. Reliance on foreign capital is no solution — foreign borrowing for the scale of infrastructure investment we need is not feasible and, even if feasible, would be quite imprudent.

There is no substitute to improving the functioning of our domestic financial system. And, it is important to create mechanisms to address (a) the problem of mismatched assets and liabilities in banks and NBFCs lending to infrastructure; and (b) the challenge of distributing risks more widely across the domestic financial system so that they do not accumulate in a handful of banks and specialised NBFCs.

To make this work, at least two building blocks must be in place: (a) securitisation to allow originators to lay off the risk to other investors; and (b) a deep and liquid domestic bond market with a wide variety of participants willing and able to invest in infrastructure paper. This is a tall order, especially in the current scenario. The global credit crisis has undermined the credibility of securitisation mechanisms. Efforts to breathe life in domestic debt capital markets have been frustrated by turf battles between our regulators. The truth is even worse — even if all the now-familiar recommendations of the Patil and Parekh committees are diligently and expeditiously implemented, building a deep eco-system of sufficiently sophisticated investors and financial products to allow proper intermediation of infrastructure risk will still take a long time, time that we cannot afford. This makes a strong case for the government to play a catalytic role in the business of infrastructure financing by putting in place a third building block: empowering a government-sponsored agency to refinance, purchase, and repackaged infrastructure loans originated by banks/NBFCs for sale with suitable credit enhancement to domestic insurance companies and pension funds that otherwise would not be easily persuaded to purchase these securities on a large enough scale.

With this in mind we offer the following salient recommendations:

- Let us start with learning the right lessons from the credit crisis. We must nurture the growth of securitisation mechanisms, albeit subject to balanced regulatory scrutiny.
- Second, we must work urgently to deepen the corporate debt market by attracting new participants. Specifically, measures must be taken to make it easier for domestic insurance and pension funds as well as foreign institutional investors to invest in a wider range of long-term corporate debt and simplify procedures for primary issuance of debt securities. Measures to launch a transparent trading platform for corporate debt linked to appropriate payment and settlement systems must be accelerated as also measures to improve liquidity, such as the introduction of repo transactions on corporate bonds and the launch of a wider array of hedging instruments (interest rate futures and credit derivatives).
- Third, the government should act as a catalyst by transforming IIFCL into a specialised government-supported institution that would at the very least refinance infrastructure loans from banks and NBFCs
or, if we are to be more ambitious, which would purchase infrastructure loans, re-package them as credit-enhanced securities and sell them to other investors, notably insurance companies and pension funds.

Failing these measures, the alternative is to leave the government to build the country’s infrastructure or just be reconciled to not building as much infrastructure as we need.

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