

Infrastructure Financing in the Indian Context

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Abstract

Infrastructure development is one of the pre-requisites for economic development of any nation. Quite often it is considered as an index of economic development of a country. Conceptually, infrastructure development should precede or at least be parallel to pave way for economic development. Finance occupies a significant role in infrastructure development. India, being a democratic country and a mixed economy, the responsibility for infrastructure building primarily rests with the Central Government, State Governments and local bodies. As tax payers' money in the exchequer is quite insufficient to provide for developmental activities, infrastructure financing in developing nations like India is a crucial problem demanding alternative sources of capital and efforts. In addition to taxes, there are several other sources for infrastructure financing like issue of bonds, finance from institutions like Housing and Urban Development Corporation, Infrastructure Development Finance Company Ltd., Financial Infrastructure Leasing and Financial Services, Public Private Partnership (PPP) etc. But, severe scarcity of finance for the development of infrastructure in the country is quite evident. The different States in India with multifarious social, geographical and demographic characteristics have their own different requirements in creating and developing infrastructure. This paper examines the different aspects of infrastructure financing in the Indian context.

Key Words: Infrastructure financing; Infrastructure development; Infrastructure finance sources; Indian infrastructure financing; Indian infrastructure growth.

Introduction

Historically, governments have played the predominant role in owning and operating infrastructure facilities such as schools, hospitals, roads, bridges, railways, ports, telecommunications networks, and water and electricity supply facilities. Government investment in infrastructure has been justified as a response to natural monopolies where the infrastructure services are seen as essential. Difficulty in charging users also provided a justification for public provision of infrastructure (Chan and others, 2009). But, the ever growing requirements of building and

maintaining quality infrastructure has been constrained by the lack of finance to be made good from alternative sources. Growing acceptance of the 'user pays principle', along with recognition that there are generally greater incentives for efficiency in the private sector, has been soaring private involvement in the provision of both economic and social infrastructure. Here lies the significance of private sector as an important source in infrastructure financing.

Infrastructure investment in India was financed almost entirely by the public sector – from government budgetary allocations and internal resources of public sector infrastructure companies. It is all about nearly less than fifteen years that private sector has been emerged as an important source of infrastructure finance in India. More specifically the recent seven years from 2003 has recorded a tremendous increase in private sector investment in country's infrastructure (Lall and Anand, 2008). The ratio of investment in infrastructure to GDP of the

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country over years is an index of infrastructural development happening in real terms in the country. Infrastructure development in the country has been constrained by inadequacy of financial resources posing challenges to innovative and sustained remedies. According to the Government of India, the country would need about 14, 50,000 crore (\$ 320 billion) investment (at 2005-06 prices) in various infrastructure sectors during the Eleventh Five Year Plan period covering 2007-12 (Government of India, 2007). But the Deepak Parekh Committee¹ on Infrastructure Financing believes the estimate of the Government is gross underestimate and a sum of Rs. 17,40,000 crore (\$ 380 billion) would be required to finance investments in infrastructure² up to 2007 - 2012. Against this, the most optimistic estimate of government financing is Rs. 13, 60,100 crore. Thus there is minimum financing gap of Rs. 5, 50,000 crore which has to be met through private sector and other non-governmental financing (Dhingra, 2009). Fundamentally, the requirement of finance is positively correlated to the requirement of infrastructure the country planned to build. The question of sourcing finance for funding infrastructure is supplementary to the requirement of infrastructure. If that is the working concept, all developing nations like ours have to find ways and means to fund the never ending gap in infrastructure financing.

Scope and Objectives of the Paper

The present paper is a descriptive one looking into the trend in infrastructure investment over the last one and half decade in India, the present financing pattern of infrastructure investments and the various points to ponder connected to financing of infrastructure in India. More specifically the paper pursues the following objectives.

1. Review the growth trend in creation of physical infrastructural facilities in India.

2. Examine the sector-wise infrastructural investment and its financing pattern over Five Year Plans in India.
3. Observe the issues connected to infrastructure financing in India primarily based on the actual financing of infrastructure during the first three years of the 11th Five Year Plan.

Observations and Discussion

Physical Infrastructure Growth in India

Physical infrastructure growth in India when viewed in terms of growth of physical facilities over number of years and growth in total investment in comparison to GDP of the country are shown in Table 1 and Table 2. The performance of physical infrastructure in the economy during the last one and half decades had been mixed and uneven. Over years, India's telecom and container traffic grew much faster than road, rail and power. For example, India's rising trade has been reflected in growing container port traffic, which increased from less than a million in 1991 to about 5 million in 2005 with an annual growth rate of about 266 per cent since 1991 (Table 1). In contrast infrastructure in railways, roadways and airways witnessed little expansion in last one and half decades. In general, performances of these sectors (railways, roadways and airways) are nevertheless poor, when counted their densities in terms of country's surface area or population. Logically, in order to unleash India's full potentials, development of railways, roadways and airways of India's physical infrastructure perhaps deserves utmost attention. This also indirectly indicates high investment potentials in roadways, railways, power and the associated components in India.

An examination of the practices in infrastructure investment in some select countries throws light on the means adopted

Table 1: Growth of Physical Infrastructure in India

Particulars	1991	2000	2005	AAGR % (1991-2005)
Railways length (1000 Km)	62.46	62.76	63.47	0.13
Road Length (Million km)	2.35	3.32	3.85	5.32
Fixed line and Mobile Phone subscribers (per 1000 people)	7	36	128	150.35
Air Freight (million tonnes per km)	493.10	547.65	773.22	4.73
Air Passengers carried (million)	10.72	17.30	27.53	13.07
Container port traffic (million TEUs)	0.15	2.45	4.94	266.01
Electric power consumption (KW per capita)	295.02	402.02	457.32	4.58
Electric power consumption (KWh)	255.65	408.42	493.78	7.76

Note: AAGR (Annual Average Growth Rate) for the period 1991 -2005.

Source: World Development Indicators, World Bank

by these nations to address gap in infrastructure availability. The ratio of investment in infrastructure to GDP of different countries can offer a comparative picture of infrastructural investment thrust for development among countries (Table 3). China, for instance, annually spends as much as 20 per cent of its GDP on infrastructure development, and this is substantially higher in comparison with India which spends just about 6 per cent of its GDP on provision of physical infrastructure. Malaysia and East Asia spend 5.4 per cent and 6.2 per cent of GDP respectively on infrastructure. Increase in infrastructure investment to GDP ratio, therefore, is an index of infrastructure development.

Sector-wise Infrastructure Investment and its Financing pattern over Five Year Plans

The urgency with which a nation views its infrastructural development can be judged from their long-term plan blueprints for

different time periods. The direction, thrust and means for infrastructure development are guided by these basic documents. Examination of the Five Year Plans in India could reveal sector-wise infrastructure planning in the country over years and its means of finance. The 11th Five Year Plan of India aims at sustaining the real GDP growth rate at 9 per cent. Being a country marching towards double digit growth rate would improve the quality of life and reduce disparities across regions and communities. To achieve this, a structured infrastructure investment programme, involving both public and private sector, has been sketched out for the Plan period. A comparison of the 10th Five Year Plan and the 11th Five Year Plan reveals that altogether an increase of 126.93 per cent in investment of infrastructure have been planned during the 11th Plan (Table 4). Sector-wise, the 11th Plan has scheduled an increase in infrastructure investment of around three times or more for the sectors comprising ports, airports and storage. The 11th Plan projected

Table 2: Ratio of Investment in Infrastructure to Indian GDP

Year	Investment in Infrastructure	GDP	Ratio (%)
2006-07	2,44,495	4283979	5.7
2007-08	3,03,807	4947857	6.1
2008-09	321579	5574449	5.8

Source:

1. Planning Commission, Investment in Infrastructure during the 11th Five Year Plan
2. Government of India. 2010. *Economic Survey 2009-10*

Table 3: Infrastructure Investment of Country-wise Comparison

Sl. No.	Country/Region	Investment in Infrastructure As a % of GDP
1	India	6
2	East Asia	6.2
3	China	20
4	Malaysia	5.4

Source: RBI Staff Studies, Infrastructural Financing – Global Pattern and the Indian Experience, 2010

relative shares of public and private investment to be about 70 per cent and 30 per cent respectively as compared with 80 per cent and 20 per cent respectively during the 10th plan (Figure 3).

Financing of infrastructure by central government, state governments and private sector during the 10th Plan period (actual) and the 11th Plan period (projected) shows that towards a planned private sector share of 20 per cent during the 10th Plan period, the actual private investment rose to 24.86 per cent (Table 6). Similarly, a higher share of the private sector in infrastructure investment during the 11th Plan period is expected towards the projected share of 30.2 per cent. The growing involvement of private sector finance in infrastructure investment plans over years is quite evident here.

Table 4: Infrastructure Investment 10th Plan – Sectoral Analysis (Rs. in Crore)

Sector	10 th Plan (Actual)		11 th Plan		% Change over Plans
	Total	%	Total	%	
Electricity	340237	37.55	666525	32.4	95.90
Roads and Bridges	127107	14.03	314152	15.3	147.16
Telecom	101889	11.25	258439	12.6	153.65
Railways	102091	11.27	261808	12.7	156.45
Irrigation	106743	11.78	253301	12.3	137.30
Water Supply and Sanitation	60108	6.63	143730	7.0	139.12
Ports	22997	2.54	87995	4.3	282.64
Airports	6893	0.76	30968	1.5	349.27
Storage	5643	0.62	22378	1.1	296.56
Gas	32367	3.57	16855	0.8	-47.93
Total	906075	100	2056150	100	126.93

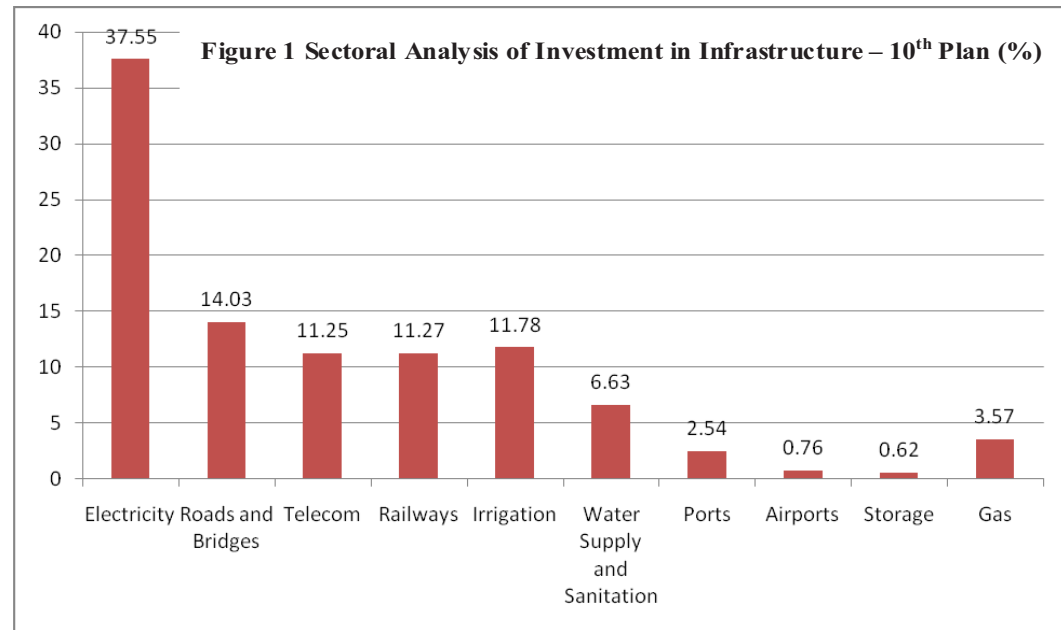
Source:

1. RBI Staff Studies, Infrastructural Financing – Global Pattern and the Indian Experience, 2010
2. Planning Commission, Investment in Infrastructure during the 11th Five Year Plan

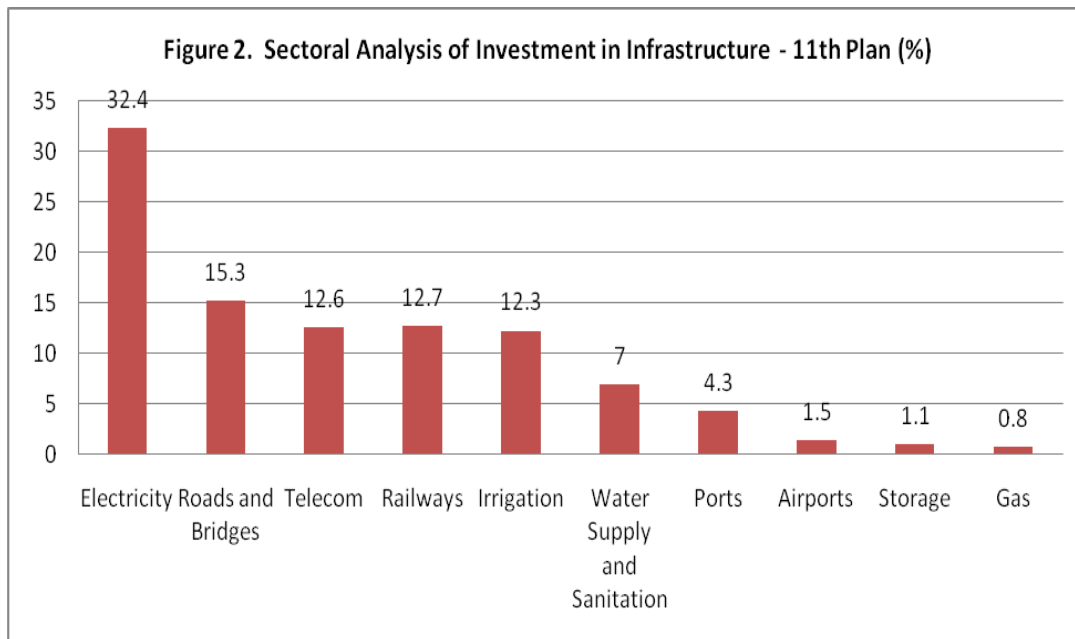
Infrastructure Financing in India – Points to Ponder

Developing countries including India need about 7 – 9 per cent (\$900 billion) of GDP to maintain existing infrastructure and to build new infrastructure, but only half of that amount is available (World Bank, 2010). The World Development Indicators 2010 states that Governments can leverage the benefits of private investment in infrastructure by introducing competition. Private companies can better manage infrastructure services by operating efficiently. The requirement and importance of building and maintaining infrastructure by private sector are increasingly acquiring momentum throughout the world irrespective of the nature of governments in power.

The alarming point in the 11th Plan has been the estimated gap in infrastructural financing during the plan period to the extent of Rs.



Source: Drawn from data given in tables of the text



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5,50,000 crore which has to be met through private sector and other non-governmental financing (Dhingra, 2009). As stated earlier, during the 10th Plan about 25 per cent of the total investment in infrastructure came from private sector against the Plan estimate of 20 per cent. The private sector share is expected

to rise to 36 per cent during 11th Plan against the estimate share of 30 per cent. The shortfall of 8.7 per cent (Rs. 125,266 crore) in public investment as compared to the initial target for the 11th Plan is likely to be made good by an increase of 20 per cent in private investment. This is a solid evidence for the

Table 5: Infrastructure Investment Projection for XI Plan (Rs. in Crore)

Sector	2007-08	2008-09	2009-10	2010-11	2011-12	Total
Electricity	81954	101553	126380	158027	198611	666525
	12.30	15.24	18.96	23.71	29.80	100
Roads and Bridges	51822	54789	59200	68370	79971	314152
	16.50	17.44	18.84	21.76	25.46	100
Telecom	31375	38134	48593	61646	78690	258439
	12.14	14.76	18.80	23.85	30.45	100
Railways	34225	40964	49525	60393	76701	261808
	13.07	15.65	18.92	23.07	29.30	100
Irrigation	27497	35916	47189	62266	80433	253301
	10.86	14.18	18.63	24.58	31.75	100
Water Supply and Sanitation	19298	22781	27323	33266	41063	143730
	13.43	15.85	19.01	23.14	28.57	100
Ports	12409	14822	17374	19980	23410	87995
	14.10	16.84	19.74	22.71	26.60	100
Airports	5208	5520	5904	6646	7690	30968
	16.82	17.82	19.06	21.46	24.83	100
Storage	3777	4098	4446	4824	5234	22378
	16.88	18.31	19.87	21.56	23.39	100
Gas	2708	3003	3332	3700	4111	16855
	16.07	17.82	19.77	21.95	24.39	100
Total	270273	321579	389266	479117	595913	2056151

Source: RBI Staff Studies, Infrastructural Financing – Global Pattern and the Indian Experience, 2010

increasing requirement of private sector participation in infrastructure building in the present day country's environment. However, the actual figures on sources of finance of infrastructure during the first three years of 11th Plan period indicate the lowering proportion of debt finance which is the major source of private investment (Table 7 and Figure 4). In this context, the various important points to ponder in connection with infrastructural financing in the country have been discussed below.

Lack of Participation from Insurance Companies

The insurance companies which have more access to long-term funds in the country are averse to taking on project risk. The share of finance of the insurance sector towards infrastructure investment in the country was only 4 per cent during the first three years of the 11th Plan (Figure 4). Their investment fell

from Rs. 28900 crores in 2006-07 to 10400 crore in 2007-08. Insurance companies prefer the safer route of subscribing to debt paper avoiding commitment in infrastructure.

Reduced Overseas Funding Due to Financial Crisis

The average FDI inflows per year towards infrastructure during the 10th Plan increased manifold compared to the flow in the 9th Plan. However, during the 11th Plan infrastructure financing from overseas declined as a result of the global financial crisis. The overseas funding comprising foreign direct investment (FDI) and external commercial borrowings (ECBs) towards infrastructure investment during the first three years of the 11th Five Year Plan was 14 per cent. The Reserve Bank of India (RBI) data shows that ECBs raised by infrastructure companies declined by 41 per

Table 6: Infrastructure Investment Financing for 10th and 11th Five Year Plan (Rs. in Crore)

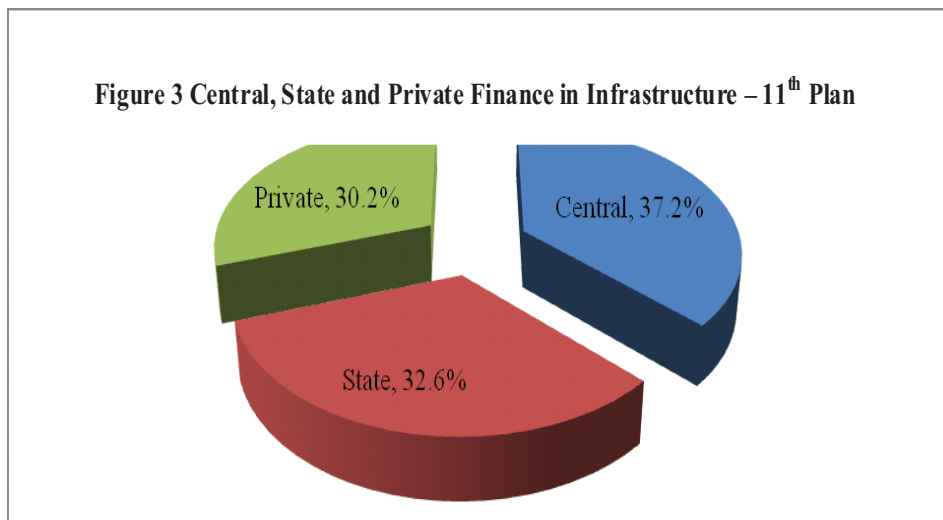
Public/Private	10 th Plan (Actual)		11 th Plan	
	Amount	%	Amount	%
Central	370381	40.88	765622	37.2
State	310473	34.27	670937	32.6
Private	225221	24.86	619591	30.2
Total	906075	100	2056150	100

Source: RBI Staff Studies, Infrastructural Financing – Global Pattern and the Indian Experience, 2010

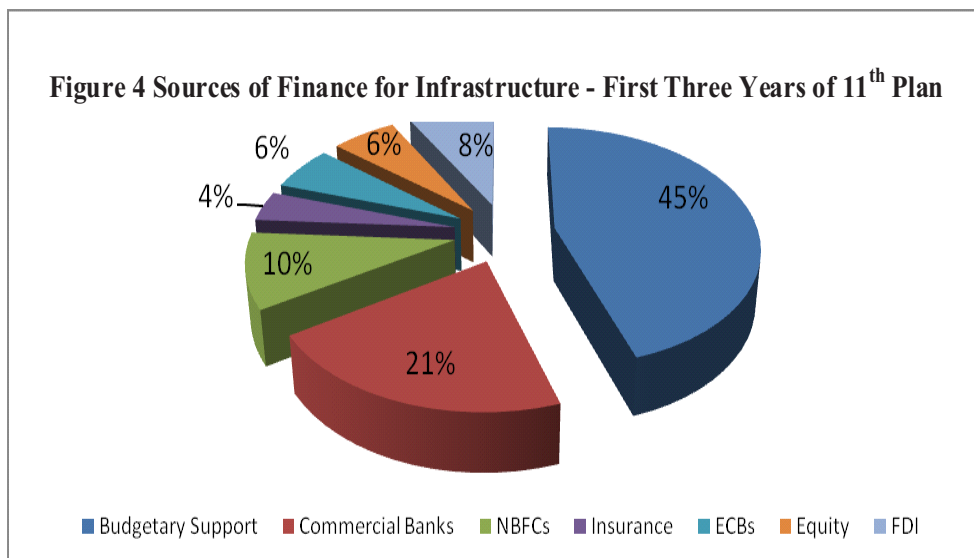
cent between August 2008 and March 2009. However, signs of improvement are visible in this regard.

Over Dependence on Bank Lending

The bank lending toward infrastructure investment during the first three years of the 11th Five Year Plan was 21 per cent. Lack of funding from other avenues coupled with banks being flush with money in 2009-10 resulted in banks becoming the biggest lenders



Source: Drawn from data given in tables of the text



Source: RBI Staff Studies, Infrastructural Financing – Global Pattern and the Indian Experience, 2010

Table 7: Sources of Finance for Infrastructure First Three Years of XIth Plan

Sl. No.	Sources of Finance	Actual First 3 years of 11 th Plan	Budgeted % in 11 th Plan
1	Budgetary Support	45	51.9
2	Equity Financing (including FDI)	14	
3	Debt Financing	41	48.1
	Total	100	100

Source: RBI Staff Studies, Infrastructural Financing – Global Pattern and the Indian Experience, 2010

to infrastructure projects. However, infrastructure projects require debt for 15-20 years of maturity and deposits raised by commercial banks are of much shorter duration leading to an asset liability mismatch. The maturity mismatch poses both liquidity risk and interest rate risk for the banks. Moreover, banks and financial institutions have limited appraisal skills necessary for credit appraisal of infrastructure projects.

Lack of Refinancing through ECBs

The existing guidelines of the RBI do not permit domestic financial intermediaries to refinance existing rupee loans from external sources, although a potential market for the same exists. If such refinancing is permitted, there is scope for foreign financiers to show interest in financing projects in the post construction period when the risk subsides. Moreover, Indian lenders to infrastructure projects could refinance some of their loans refinanced in order to enhance their asset portfolio and to limit their risk.

Limits on FDI Investment

Even though FDI policy of India has been liberalised since the economic reforms in the country, 100 per cent FDI is not permitted all new infrastructure projects. Telecommunication services attract 74 per cent FDI ceiling subject certain conditions. In the case of air transport services, FDI is allowed only up to 49 per cent.

Utilisation of Foreign Exchange Reserves

There has been a considerable debate about the use of foreign exchange reserves for infrastructure development, but the idea has not made any headway. These reserves, while providing a buffer against adverse external developments, do not contribute directly to the real sector, as they are invested in foreign currency assets such as government bonds. The financial return on these reserves is small. It may be pointed out that rapid accumulation of reserves in recent years has happened not only in India, but also in emerging Asian economies such as China, Korea, Singapore, Thailand and Philippines. Recognizing that the reserves are in excess of what is needed for 'liquidity purposes and cushions against external shocks' some of these countries (China and Korea) have been allocating to infrastructure projects along the lines adopted by Singapore.

Gap in Earlier Plans and Actual

Investment in infrastructure over the past decade has not lived up to expectations. The 1996 India Infrastructure Report projected the need for an increase in investment in infrastructure to 8 per cent of GDP by 2005-06 from the current level of less than 5 per cent. However, the infrastructure investment of India still revolves around only 6 per cent GDP (Table 2 and 3). The same report targeted significant increases in both public and private spending on infrastructure – including a doubling of private infrastructure spending to

over 2 percent of GDP by the late 1990s. At the end of the 1990s, however, actual investment (public and private) in infrastructure remained at under 4 percent of GDP per annum. In 1999, public investment in infrastructure stood at 2.8 percent of GDP while private investment was just 0.9 percent of GDP. Indeed, throughout the past decade, private investment in infrastructure has remained at well below the targeted 2 percent of GDP. These are lessons before us to initiate more measures to reduce the gap between plan and actual.

Constraints in Equity Financing

Equity finance towards infrastructure investment during the first three years of the 11th Five Year Plan was only 6 per cent. Raising adequate equity finance tends to be the most challenging aspect of infrastructure project financing, as equity typically shoulders the greatest level of operational, financial and market risk. However, at present, limited exit options for investors limits equity financing.

Underdeveloped Debt Market

Underdeveloped debt markets are yet another key constraint to infrastructure financing. Most infrastructure projects require longer term debt. The lack of size and depth in India's corporate bond market is associated partly with the lack of depth in the government bond market. Beyond that, corporate debt markets are constrained by cumbersome primary issuance guidelines; inadequate credit information; inefficient clearing and settlement mechanisms; poor and lengthy enforcement laws relating to default proceedings; inefficiencies arising from weaknesses in regulation, including poor coordination among the various agencies involved in corporate debt market regulation; and the absence of long term investors (World Bank, 2006).

Regulatory Issues

Investment policies and regulatory guidelines for insurance companies, pension funds, mutual funds, banks and other FIs need to be sufficiently flexible for these entities to choose an appropriate risk-return profile within the fiduciary constraints. This will also help professionalise fund management. It would be appropriate or practical to introduce radical changes in investment guidelines to sufficiently deregulate these sources of long-term finance for infrastructure related projects. The authorities should look at the existing investment norms prescribed for insurance, Employees Provident Fund (EPF) and Public Provident Fund (PPF) with a view to relaxing them so that these institutions can commit significantly larger amounts of long-term funds for infrastructure.

Public Private Partnerships (PPPs) Not a Panacea

There is increasing need to encourage entry of the private sector in infrastructure development through viable PPP projects. Both the central government and the states are aiming to use PPPs more intensively to help meet gaps in the provision of basic services in the country. Developing domestic capabilities to manage, participate and finance private infrastructure projects is important to broaden the constituency of PPPs, enlarge the pool of funding, and mitigate foreign exchange risk. It is important to note that PPPs can help meet the infrastructure gap in India, but are not a panacea.

Conclusion

India on its march towards double digit growth rate in the nearby future has unprecedentedly been faced with the requirement of building quality infrastructure. As budgetary supports and available debt finance for financing infrastructure are in

short to finance the requirement, bridging the gap in infrastructure financing has become a strenuous job before the government and planners. Varied measures, involving innovative sources of finance and streamlining available sources, are of urgent need to bridge the present and expected gap in financing. Even though the earlier Five Year Plans had made increased expectation on private sector to finance infrastructure, the actual results were disappointing. Moreover, the proportion of debt finance during the first three years of the 11th Five year Plan was alarming as debt proportion declined considerably. Fixing up the blame on global financial crisis (started in 2007) or on some other phenomenon would not help bite remedy. Real measures taking into consideration the strength and weakness of the present sources of finance and exploring new sources along with improved policy regulations can bring results. The setting up of an India Infrastructure Debt Fund for \$ 2 billion as planned in the Union Budget 2011-12 to meet the needs of long-term debt for infrastructure projects that are set up through Public Private Partnerships (PPP) and the Twelfth Plan period proposal for infrastructure investment of Rs. 50 lakh crore, and to raise about half of this from the private sector are welcome moves. Moreover, widening of the Viability Gap Funding (VGF) under the Scheme for Support to PPP in infrastructure in the Union Budget 2012-13 is a very significant step in attracting private investment into the sector.

Footnotes

Deepak Parekh Committee was constituted in 2006 by Ministry of Finance, Department of Economic Affairs (Infrastructure Division) under the chairmanship of Shri. Deepak Parekh, Chairman, HDFC, to make recommendations on Infrastructure Financing in India.

Definition of infrastructure varies across agencies. Here attempt is made to use, as far as possible, the Planning Commission of India's definition, which includes the following 10 sectors: electricity, gas, telecoms, roads, rail, airports, ports, storage, irrigation and water supply and sewerage.

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