

ECONOMIC ANALYSIS

A. Introduction and Infrastructure Investment Requirements

1. India has an investment requirement of around ₹50 trillion (\$777.7 billion) in infrastructure during 2017–2022 to sustain a growth rate of between 7%–7.5% and reinstate India as the world's fastest growing major economy.¹ As reflected in the Economic Survey, 2016–2017 (Volume II, Chapter 8), while India is ahead of many emerging economies in providing qualitative transportation related infrastructure, the Global Infrastructure Outlook reflects that rising income levels and economic prosperity is likely to further drive demand for infrastructure investment in India over the next 25 years.

2. There has been a massive under-investment in infrastructure as witnessed during the Twelfth Five-Year Plan, 2012–2017, whose investments of ₹38 trillion (\$577.5 billion) fell well below the original target.² While slippages were seen across all 12 infrastructure sectors, investments in telecommunications and electricity were significantly below target.³ While the public sector contributed two-thirds of the amount, the shortfall in investments is estimated at around 15%, the shortfall in private investments is estimated at around 53%. The reasons behind the investment shortfall included the collapse of the public-private partnership (PPP) modality especially in power and telecommunications, stressed balance sheets of private companies, and issues related to land and forest clearances.

3. The benefits of projects to the economy accrue from the financial and economic returns. For example, road projects—which are expected to be the most common subproject financed under the tranche—have generally been developed or are under development on a PPP basis through build, operate, and transfer (BOT)-annuity and BOT-toll mode. Typically, in an annuity project, the project internal rate of return (IRR) is expected to be 12%–14% and equity IRR would be 14%–16%. For toll projects, where the concessionaire assumes the traffic risk, the project IRR is expected to be around 14%–16% and equity IRR around 18%–20%.⁴ Additional analysis of a typical toll road for widening and strengthening of existing road demonstrates an economic internal rate of return of 29% and a financial internal rate of return of 21%.⁵

4. Economic benefits arise from the extent to which access to services is improved and employment opportunities created by improved infrastructure. In particular, (i) the potential labor market to which the poor have access may be enlarged by improved transport and communications, (ii) indirect impacts of improved infrastructure on the poor accrue through complementary markets, and (iii) improved road transport may lead to price reduction in food and consumer goods. Reduced energy costs may lead to price reduction of locally manufactured goods. The willingness of service suppliers such as doctors and teachers to locate in an area may also be positively affected by improved infrastructure.⁶ Academic literature such as Estache and

¹ Government of India. Ministry of Finance. 2018. *Economic Survey, 2017-2018*. New Delhi.

² P. Sahu. 2017. Infrastructure: Telecom, Power, Ports and Road Sector Hit by Tepid Private Investments. *Financial Express*. 20 April. <http://www.financialexpress.com/industry/infrastructure-telecom-power-ports-and-road-sector-hit-by-tepid-private-investments/634800/>.

³ The sectors included power, roads and bridges, telecommunications, railways, irrigation, water supply and sanitation, renewable energy, mass rapid transport, ports, and airports.

⁴ Government of India. Ministry of Shipping, Road Transport, and Highways. 2013. *Guidelines for Investment in Road Sector*. New Delhi.

⁵ V. Vanarase. 2016. Economic and Financial Analysis for Feasibility Study of Public Private Partnership Road Project. *International Journal on Recent and Innovation Trends in Computing and Communication*. 4 (4). pp. 182–185.

⁶ Indirect impacts (even more than direct impacts) depend on the complementarity of infrastructure investments. An improved road without power and communications may have little effect in improving the productivity of investment in a remote location.

Fay (1995) shows that enhanced access to roads and sanitation has been an important determinant of economic convergence for the poorest regions in Argentina and Brazil.⁷ Studies of rural roads have shown how they raise the productivity and value of land for poor farmers.⁸ There is also evidence that a better transportation and safer roads increase school attendance and electricity allows more study time, while water and sanitation access reduce child mortality.⁹ These findings are consistent with an ADB validation report on a project loan to India for rural roads where the economic internal rate of return of 131 appraised road subprojects was 26.6%.¹⁰

B. Sources of Financing and Investment

5. The critical element in achieving economic and financial benefits is the appropriate mix of financial products to ensure project viability and bankability. While India's financial sector is dominated by banks that play a major role in financing infrastructure, non-bank financial intermediaries also play a role in infrastructure finance. The flow of bank finance to infrastructure sector has registered high growth. The outstanding bank credit to the infrastructure sector, which stood at ₹95 billion in March 2001, increased to ₹9,853 billion in March 2016, demonstrating a compound annual growth rate of 39.31%. This includes the period of excessive exuberance when banks lent to projects without the requisite due diligence.

6. There is limited participation of bond markets in financing infrastructure in India. Pension and insurance funds, which are considered to be sources of long-term finance, contribute to only 3% of infrastructure investments.¹¹ Out of total financial sector exposure of around ₹15 trillion to the infrastructure sector, the contribution of commercial banks stood at around ₹9.9 trillion which is around 15% of total bank credit (Table 1) (footnote 10).

Sources of Infrastructure Finance in India (2016)

Source	Total Assets (₹ Trillion)	% share of Infrastructure in Total Assets	% Share in Total Infrastructure Exposure
Banks	65.8	9.9	50
NBFIs	7.6	7.0	35
Pension funds	3.2	0	0
Insurance funds	24.1	2	10
ECBs	2	1	5
Corporate debt	19	0	0
Infrastructure debt funds	0.04	0.04	0
Provident funds	9.2	19.9	100

ECBs = external commercial borrowing, NBFIs = non-bank financial intermediaries.

Sources: Reserve Bank of India, Securities and Exchange Board of India, and infrastructure finance companies.

C. Issues with Expanding Project Lending

7. **Asset and liability mismatch.** Banks face rollover risks with respect to their short-term liabilities and consequent liquidity stress. However, during 2016–2017, the share of short-term liabilities came down driven by a sharp decline in short-term borrowings attributed to withdrawal

⁷ A. Estache and M. Fay. 1995. *Regional Growth in Argentina and Brazil: Determinants and Policy Options*. Washington, DC: The World Bank, Mimeo.

⁸ H. Jacoby. 2000. Access to Markets and the Benefits of Rural Roads. *The Economic Journal*. 110 (465). pp. 713–737.

⁹ M. Fay et al. Achieving the Millennium Development Goals: The Role of Infrastructure. *World Bank Research Working Paper Series*. No. 3163. Washington, DC: World Bank.

¹⁰ ADB. 2014. *Validation Report: Rural Roads Sector I Project in India*. Manila.

¹¹ S. Sinha. 2014. Long-Term Financing of Infrastructure. *Indian Institute of Management Working Paper Series*. No. 2014-03-23. Ahmedabad: Indian Institute of Management.

of specified bank notes from circulation (and depositing in banks) resulting in larger cash reserves with banks (demonetization of November 2016). However, there was an increase in loans and advances of more than 5 years which pulled up the share of long-term assets and accordingly, the proportion of long-term assets financed by short-term liabilities increased over the previous year. For banks as a whole, the percentage of total deposits with maturity of 5 years and above was 21.0%, while for investments it was over 44.5% in 2017 (compared with 19.6% and 42.5% in 2016).¹²

8. **Non-performing assets.** The gross non-performing advances ratio of scheduled commercial banks (SCBs) increased from 9.6% to 10.2% between March–September 2017, whereas, the restructured standard advances ratio declined from 2.5% to 2.0%. The stressed advances ratio rose marginally from 12.1% to 12.2% during the same period. As on September 2017, out of the 1,263 total ongoing monitored projects across sectors, there are 482 projects in road transport and highways, of which 43 projects face cost overruns and 74 projects time overruns. Several projects under the National Highway Development Program are delayed due to issues in land acquisition, utility shifting, poor performance of contractors, environment and forest clearances, road over bridge and, road under bridge issues with the railways, public agitations for additional facilities, and arbitration and contractual disputes with contractors, etc. (footnote 1). During 2012–2013, total credit to roads was ₹1,274.30 billion (\$19.6 billion), which increased to ₹1,802.77 billion (\$27.7 billion) as of September 2017–2018. Owing to the delays on account of issues highlighted, the non-performing assets (NPAs) out of total advances to roads increased from 1.9% in 2012–2013 to 20.3% in September 2017–2018 (footnote 1).

9. **Capital adequacy.** Capital to risk-weighted asset ratio of SCBs increased from 13.6% to 13.9% between March–September 2017 largely due to an improvement for private sector banks. For SCBs' return on assets remained unchanged at 0.4% during the same period. Return on equity declined from 4.3% to 4.2%. Many public sector banks have continued to record negative profitability ratios since March 2016.

10. **Twin balance sheet problem.** The strong increase in problem loans reflects not only the deterioration in the quality of bank balance sheets, but also the reclassification of “restructured loans” as NPAs following a vast program to recognize stressed loans, set up by the Reserve Bank of India (RBI) in late 2015 to compel banks to make bigger provisions for stressed assets.¹³

11. These classification changes contributed to NPAs and restructured loans continuing to swell. The gross domestic product (GDP) growth that touched 9% in the early 2000s, led to a rise in demand in infrastructure. Firms investing in power, steel, telecommunications, and roads borrowed heavily from banks which spurred the credit boom. Firms which borrowed domestically had to face the increased interest rate resulting from RBI's anti-inflationary stance. Companies which invested in infrastructure projects faced delays in obtaining land, environment, and forest clearances amongst others, which combined with a slowdown in GDP growth to around 4.5% by 2013, leading to stressed firm balance sheets and an increase in bank NPAs.

12. Taken as a whole, banks are ill equipped to provide the long-term financing required for infrastructure projects as demonstrated by the asset liability mismatch in their balance sheets and the increase of stressed assets. To ensure the most efficient allocation of capital, there is a need to make infrastructure projects commercially viable and to strengthen the corporate bond market to reduce dependence on banks for finance.¹⁴ The Government of India is committed to develop

¹² Reserve Bank of India. [Report on Trend and Progress of Banking in India.](#)

¹³ The asset quality review completed by March 2017.

¹⁴ P. B. Rakhe. 2012. Asset Liability Mismatches (ALMi) in the Indian Banking Sector—The Extent, Persistence, and Reasons. *Reserve Bank of India Working Paper Series*. No. 17/2012. Mumbai: Reserve Bank of India.

the corporate bond market and to support specialized financial intermediary such as the India Infrastructure Finance Company Limited (IIFCL) in playing a key role in infrastructure financing.

D. Role of India Infrastructure Finance Company Limited

13. In the context of the need for financing PPP projects and the inherent risks, IIFCL plays a unique risk mitigation role in the market by providing a suit of financial products designed to improve project financials. As a result of the IIFCL scheme and its suit of financing products, IIFCL can complement bank lending and mobilize private capital for infrastructure.

14. **Subordinate debt.** In the context of the twin-balance sheet problem, the subordinate debt product provides an additional degree of flexibility to infrastructure companies, especially for overleveraged project sponsors allowing them to raise additional debt without additional equity. Sector specific issues including unmitigated risk factors, such as regulatory and other risks, make equity investors hesitant, and projects have reached financial close with lower than optimal equity. These overleveraged project companies benefit from the subordinate debt product in case of additional financing needs arising from cost escalations resulting from project delays (para. 11).

15. **Take-out finance.** IIFCL offers takeout financing to sustain longer tenor bank debt, address sector or group or entity exposure issues and asset–liability mismatch concerns of existing banks and facilitate participation of new banks.

16. **Direct lending.** Financing only 20% of the capital costs, IIFCL functions as part of a lending consortium and supports commercially viable projects. The limited financing provided by IIFCL ensures that it builds a diversified portfolio and does not suffer from a lumpy investment profile that has caused distress to development finance institutions. In this respect, IIFCL will benefit from the PPP development initiatives currently underway. IIFCL does not undertake subproject origination and/or have directed lending requirements. The presence of IIFCL results in efficient capital allocation in financial institutions engaged in infrastructure. While the combined exposures of financiers may be insufficient to meet project needs, an additional source of funding through IIFCL can fill the financing gap.

E. Conclusion

17. The role of IIFCL in the infrastructure financing landscape is unique in that it is the only state-owned financial institution that is mandated to play a nodal role in providing appropriate and innovative financial solutions to the market. The role is underscored by the fact that IIFCL only finances commercially viable projects that are subject to project appraisal within and outside IIFCL by lead banks. Accordingly, IIFCL is strategically positioned to promote the role of the PPP modality in India and its expanding suit of financial products are critical to promoting project viability and bankability in light of the constraints being faced by existing lenders.