

# Leveraging Private Capital for Infrastructure under Fiscal Constraints: A Macroeconomic Perspective

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## **Abstract:**

Developing countries face large infrastructure deficits alongside constrained fiscal space arising from elevated public debt, competing social expenditures, and limited domestic resource mobilisation. This article examines the macroeconomic rationale, opportunities, and risks of mobilising private capital for infrastructure under such constraints, with particular attention to India. Drawing on growth models with public capital, theories of crowding effects, and the economics of public-private partnerships (PPPs), the analysis evaluates conditions under which private financing can expand investment without compromising debt sustainability or inclusive growth.

**Keywords:** infrastructure finance, public debt, private capital, public-private partnerships, fiscal constraints, India, developing countries

## **Introduction:**

Infrastructure gaps in developing countries constrain productivity, connectivity, and human development. Closing these gaps requires sustained high levels of investment at a time when many governments face elevated public debt, high interest burdens, and competing claims on limited fiscal resources. Traditional public financing through taxes or additional borrowing is often insufficient or macroeconomically costly. Consequently, policymakers have increasingly sought to leverage private capital through PPPs, blended finance, project bonds, Infrastructure Investment Trusts, and asset monetisation.

India illustrates both the potential and the difficulties of this approach. The country has launched ambitious programmes such as the National Infrastructure Pipeline (NIP) and has experimented with multiple contractual models to attract private investment. At the same time, central government debt remains significant, and the share of private capital in total infrastructure investment has varied across periods and sectors. This article analyses the macroeconomic implications of relying on private capital for infrastructure under fiscal constraints, with a primary focus on the Indian experience within the broader context of developing economies.

In a world of tightening fiscal belts, private capital is not a panacea but a powerful complement. When deployed under the right institutional and risk-sharing conditions, it can relax government intertemporal budget constraints, improve efficiency, and help close infrastructure gaps without undermining long-

term debt sustainability or inclusive growth. The Indian case, in particular, offers rich lessons for other developing economies navigating similar trade-offs.

**Methodology:**

The analysis synthesises neoclassical growth models with public capital, empirical private participation in infrastructure (PPI) databases from the World Bank, and India-specific fiscal and project data. It employs a qualitative policy evaluation framework augmented by descriptive econometric trends (e.g., time-series patterns in PPI commitments and debt indicators) and cross-country comparisons. No primary new regression analysis is undertaken; instead, the study relies on publicly available official and international datasets for robustness.

**Theoretical Framework:**

In a neoclassical growth framework augmented with public capital, productive infrastructure raises the marginal product of private inputs and can increase steady-state output. Classic contributions such as Aschauer (1989) and Barro (1990) demonstrated that public investment in core infrastructure (roads, ports, power grids, digital networks) acts as a complement to private capital rather than a substitute. The presence of a public capital stock raises the productivity of private inputs, shifting the production function upward and expanding the feasible set of output.

When public investment is constrained by high debt or limited tax capacity, private financing can relax the government's intertemporal budget constraint. Instead of bearing the entire upfront capital outlay, the government can convert large one-time expenditures into streams of future payments or transfer certain risks and financing responsibilities to private parties. This "off-balance-sheet" approach does not eliminate resource costs; it merely reallocates them over time and across agents. Availability-payment or annuity models create long-term fiscal commitments that are economically similar to debt. Pure user-fee models transfer costs to consumers and may raise equity concerns. Crowding-in of private investment is more likely when infrastructure relieves binding bottlenecks and when financing does not exert strong upward pressure on domestic interest rates.

Crowding-out or inefficient outcomes can arise from poorly allocated risks, optimistic demand forecasts, weak contract enforcement, or soft budget constraints that ultimately socialise losses. Contract theory highlights that efficiency gains from private participation depend on appropriate risk allocation, competitive procurement, and credible regulation. In developing-country settings characterised by incomplete markets, political risk, and limited institutional capacity, these conditions are often only partially met, affecting both the volume of private capital mobilised and its developmental impact.

The economics of PPPs therefore hinges on aligning incentives: private operators bring efficiency in construction and operations, while governments retain oversight of public-interest outcomes. When these alignments are imperfect, private participation may generate contingent liabilities, higher costs, or limited developmental impact. Yet, in sectors with identifiable revenue streams and stronger regulatory frameworks, the macroeconomic case for private capital is compelling.

**Empirical Evidence: Developing Countries and the Indian Experience**

According to the World Bank Private Participation in Infrastructure (PPI) database, private investment commitments in infrastructure in low- and middle-income countries have fluctuated but remain an important complement to public resources. India has consistently ranked among the top destinations for

such investment. The PPI data show that Brazil, China, and India together accounted for 59 percent of total PPI commitments over the past five years (2020–2024) and captured 71 percent of global PPI investment in 2024. In 2024 specifically, China recorded US\$40.8 billion (69 projects), Brazil US\$12.7 billion (64 projects), and India US\$5.7 billion (26 projects), with energy, transport, and ICT sectors dominating India's commitments.

In India, the National Infrastructure Pipeline was launched to provide multi-year visibility for large infrastructure projects. Subsequent updates and related initiatives have expanded the pipeline significantly, with cumulative project values reaching approximately Rs 213 trillion by March 2026 (up ~92% since inception, driven by ~14,563 projects). Sectoral concentration has typically been high in roads, railways, power, and urban infrastructure. While public capital expenditure by the Centre and states has played a dominant role in recent years—accounting for the large majority of infrastructure capex in some periods—policy has explicitly aimed to raise the private share through improved contractual models and capital recycling.

Central government debt-to-GDP has moderated from pandemic peaks but remains elevated. Provisional figures indicate a ratio of 58.2 percent in FY26, with continued efforts at fiscal consolidation. Interest payments continue to absorb a significant portion of revenue receipts, underscoring the constraint on further debt-financed public investment.

India has employed several instruments to mobilise private capital. The Hybrid Annuity Model (HAM) in the roads sector shares construction and financing risks more evenly than pure Build-Operate-Transfer (BOT) toll models. Infrastructure Investment Trusts (InvITs) and the National Monetisation Pipeline (updated to NMP 2.0) have enabled the recycling of capital from operational assets, freeing public resources for new investment. World Bank PPI data and domestic assessments confirm periods of recovery in private commitments following earlier slowdowns, although execution challenges—particularly land acquisition and right-of-way delays—have affected project timelines. Analyses of HAM highway projects have documented that a substantial share of under-construction projects experience delays, often linked to land-related issues; recent assessments show nearly 65 percent of such projects delayed as of 2025–2026, with cumulative values in the hundreds of thousands of crores.

Cross-country evidence from other developing economies similarly shows that private participation expands the resource envelope most effectively in sectors with identifiable revenue streams (power generation, ports, airports, telecommunications) and in countries with relatively stronger regulatory and contractual frameworks. In weaker institutional environments, private investment tends to be more limited, more expensive, or accompanied by frequent renegotiations and contingent liabilities.

### **Policy Discussion:**

For developing countries operating under fiscal constraints, several principles emerge.

First, private capital should complement rather than fully substitute public investment. Core network infrastructure with strong public-good characteristics will often require continued public leadership, while private participation is better suited to commercially viable or partially commercial projects.

Second, institutional and regulatory strengthening is foundational. Transparent procurement, competitive bidding, independent regulation, timely land acquisition and clearances, and robust contract management reduce risk premia and improve project outcomes. India's experience with successive refinements of PPP frameworks, including the shift toward HAM and greater use of InvITs, illustrates adaptive learning, yet persistent execution bottlenecks indicate that further institutional investment is required.

Third, risk allocation must reflect comparative advantage. Transferring demand or land-acquisition risk entirely to private parties has often led to financial stress and renegotiations. Models that retain certain public responsibilities while leveraging private efficiency in construction and operations have proven more durable in the Indian context.

Fourth, fiscal transparency is essential. Long-term payment obligations and contingent liabilities arising from PPPs should be systematically quantified, disclosed, and incorporated into debt-sustainability analyses. Off-balance-sheet treatment can create fiscal illusions that encourage over-commitment.

Fifth, blended finance and credit-enhancement instruments can help bridge viability gaps for socially desirable but commercially marginal projects, particularly in lagging regions or sectors such as water and sanitation. Public resources used catalytically—through viability-gap funding, guarantees, or first-loss tranches—can crowd in larger volumes of private capital.

Sixth, distributional considerations cannot be ignored. User charges improve cost recovery but may require targeted subsidies or lifeline provisions to protect access for low-income households. Availability-payment models socialise costs more broadly and may be preferable where equity concerns are paramount and fiscal capacity permits.

Finally, multi-year project pipelines with clear visibility, as attempted through the NIP and subsequent PPP pipelines in India, help reduce uncertainty for private investors and improve planning coherence across levels of government.

## Conclusion:

In developing countries facing simultaneous infrastructure deficits and fiscal constraints, private capital offers a necessary but not sufficient solution. Macroeconomic theory and empirical evidence, including India's substantial experience with PPPs, InvITs, and asset monetisation, indicate that private participation can expand investment, improve efficiency, and support debt sustainability when embedded in strong institutions, appropriate risk-sharing arrangements, and transparent fiscal accounting. Where these conditions are weak, private financing may generate contingent liabilities, higher costs, or limited developmental impact.

For India and similar economies, the priority is to continue refining contractual models, accelerate resolution of execution bottlenecks (especially land and clearances), deepen domestic long-term capital markets, and maintain rigorous value-for-money and debt-sustainability assessments. Private capital can then serve as an effective complement to public investment in closing infrastructure gaps while preserving macroeconomic stability and promoting inclusive growth.

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