

# GRID LINES

Sharing knowledge, experiences, and innovations in public-private partnerships in infrastructure

## Financing the boom in public-private partnerships in Indian infrastructure

### Trends and policy implications

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**I**ndia has seen rapid growth in recent years in its program of infrastructure public-private partnerships (PPPs). Despite the surge in demand for finance, local financial markets coped well over the period to 2007—and even offered better terms as they became more used to the PPP model. But areas of possible concern have developed. Gearing has increased significantly, and financing terms mean that PPPs are more exposed to interest rate volatility—causes for concern in a period of rising rates and reduced liquidity. Further growth in PPPs will likely require a broadening of the sources of financing once the present financial market turmoil has lessened. Addressing these concerns will call for policy reforms to capital markets and concession frameworks.

India has seen a rapid increase in private investment in infrastructure since 2003 (Harris 2008). Its PPP program has grown rapidly in the past five to six years; in 2002–06 more than 150 PPP deals closed, compared with 66 in the previous seven years (figure 1). This growth was mainly in the transport and urban infrastructure sectors, with road projects accounting for a large share of the increase, particularly in the number of projects.<sup>1</sup>

India's government had been concerned that local financial markets would be unable to support continued large growth in investment in PPPs. The World Bank, with financial support from PPIAF, undertook a detailed review of financing patterns and trends and the constraints to expanding PPP financing as perceived by market participants. This exercise collected information on more than 200 PPP projects, most of them in the transport and urban sectors, key areas for expanding PPPs. The analysis here covers a sample of 104 proj-

ects for which detailed financial information was collected. These account for 73 percent (\$11.5 billion) of the total project value.

### How were PPPs financed?

In 1995–2007 senior debt accounted for 68 percent of project financing on average. The rest took the form of equity (25 percent), subordinated debt (3 percent), and government grants (4 percent), typically “viability gap” grants provided during construction to PPPs deemed economically desirable but not financially viable.

Of the senior debt, about 70 percent was provided by commercial banks, four-fifths of this by public sector banks. The rest of the total debt financing came from institutional lenders (around 23 percent), with 5 percent provided by the International Finance Corporation. Bond markets were used sparingly. The use of subordinated debt also remains limited. Its use has become more common, however, particularly in the road sector, which has the largest number of projects and the greatest acceptance by financial markets. But most of the subordinated debt has been provided by the senior lenders themselves.<sup>2</sup>

On the equity side, more than 80 percent came from project developers, with the next largest contributor being the public sector. Strategic investors made direct equity investments in the

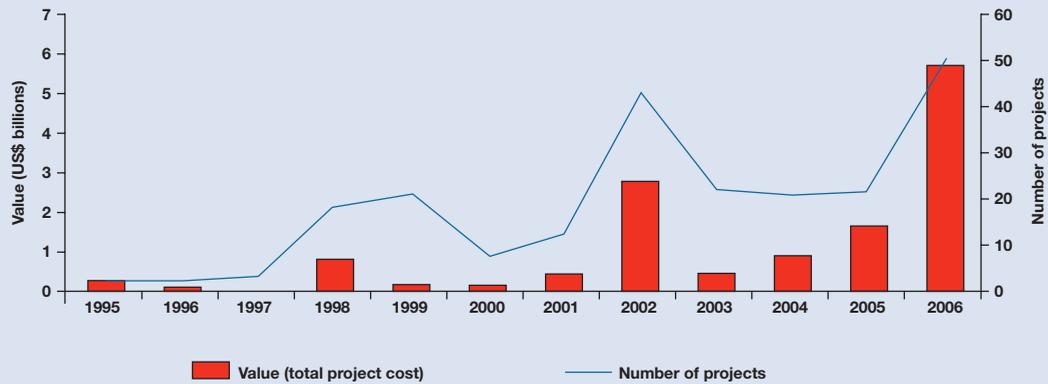
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**FIGURE 1**

**India has seen PPP projects climb in number and value**

PPP projects by year of financial closure, 1995–2006



Source: PricewaterhouseCoopers 2007.

special-purpose vehicles established to implement the PPPs for only nine projects in the sample. These investments totaled almost \$167 million (6 percent of the total equity), most of it in the airport sector. Equity investments by financial institutions provided the rest.

### Evolving financial structures

In recent years the role of senior debt has grown while the share of equity has declined, leading to rising debt-equity ratios (figure 2). One explanation for this trend is that commercial banks have become more comfortable with PPPs, particularly in the road sector, and are therefore willing to have senior debt make up a larger share of project financing.

There is also evidence suggesting that projects with viability gap grants have higher gearing than those without them. While the evidence is inconclusive, there are some indications that lenders and developers view grants as substituting for the equity infusion needed during construction. The few projects involving a negative grant—a payment by the PPP to the government—also have a higher ratio of senior debt to equity, suggesting that these payments are being financed by debt borrowed by the PPP project.

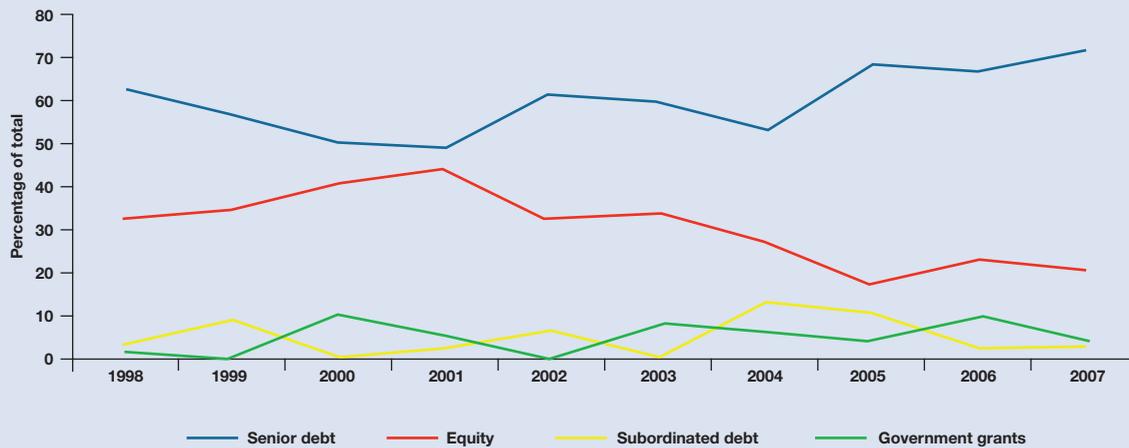
Should high gearing and the replacement of equity by grants be a concern? Some observers (such as Ehrhardt and Irwin 2004) have argued that greater leverage means a higher likelihood of bankruptcy—

and thus a higher likelihood of government bailout to avoid the adverse consequences of bankruptcy, both actual and perceived. In addition, low equity contributions make it easier for developers to achieve a target return from the margin on construction and reduce their long-term interest in the project.

In India the typical concession terms encourage the use of debt over equity. In the highway sector, for example, the contracting agency must compensate the contractor if the contract ends early, even if the termination is due to a breach of the contractor's own obligations or an event of force majeure. In these cases the compensation is partial, with lenders typically being repaid in full or in large part while shareholders get nothing. Linking termination payments to debt, while common around the world, can encourage higher gearing, which in turn may increase projects' financial vulnerability.

Some countries put limits on the ratio of debt to equity. But restricting an investor's ability to choose its capital structure can increase the cost of capital, prevent companies from reaping tax advantages associated with particular types of financing, and impose a monitoring burden on the government. Alternatively, India could consider a different basis for termination payments, reducing the incentive to use debt embedded in the termination clauses of its model concessions. In the United Kingdom's PPP program the government pays the market value of the asset (see U.K. Treasury 2007, section 21.2.5).

## Debt-equity ratios for Indian PPP projects have been rising

**FIGURE 2****Debt-equity ratios rising for India's PPP projects**  
Financing by type for selected PPP projects, 1998–2007

Source: PricewaterhouseCoopers 2007.

**Indian PPP projects have been assuming more interest rate risk**

### Debt financing became more competitive

Despite some volatility, average spreads on debt to PPP projects have declined significantly in recent years (figure 3).<sup>3</sup> This does not reflect trends in Indian corporate bond spreads, which increased in 2006 and 2007. While many factors may be involved, the decline in spreads is probably due to the financial markets' growing acceptance and understanding of PPPs as more have come on line and provided an operational track record, particularly in the road sector.

On the negative side, the tenor of debt has increased little, averaging around 14–15 years in the past few years. In addition, loans in India have shown a trend toward shorter reset periods. Although the loans are long term, rates are reset at predefined intervals. PPP projects generally do not have revenues that are linked to interest rates. There are concerns that higher rates could affect some projects, particularly those with higher gearing.

### High equity returns expected

Developers stated their expected equity returns in only 22 cases. But among these, more than 70 percent sought returns exceeding 16 percent. Analysis suggests, as would be predicted, that projects with higher gearing had higher expected rates of return. Calculations indicate that the asset beta

for these projects was around 0.6–0.75, depending on the assumed equity risk premium. This is somewhat higher than other estimates; for example, Alexander, Estache, and Oliveri (1999) estimated asset betas for road projects in Latin America and the Caribbean to be 0.31–0.48.

The difference could reflect the high-powered regulatory regime for Indian road projects—but it is also consistent with the aggressive bidding for road projects in 2006–07. Negative grant bids were seen for some projects, driven by huge developer interest in road PPPs.

### Lessons for going forward

The trends in PPP financing highlight several issues with implications for financing the large-scale PPP program envisaged by India's government. PPPs have relied heavily on commercial banks for their debt financing, and it is unclear how sustainable—or how desirable—this dependence will be. Long-term financing exposes the banks to the risk of asset-liability mismatch: the main source of funds for Indian banks is savings deposits and term deposits, whose maturity profile ranges from less than six months to five years. Over much of the period developers were comfortable with shorter reset periods, perhaps because this had been a period of declining or low rates. But as interest rates began to increase, concerns arose about the impact on PPPs, because the concession

contracts have no provisions for passing on higher interest charges. Continued increases in rates as well as a tightening of credit could have adverse effects on some projects.

An active bond market can increase the flow of long-term funds and reduce reliance on banks. The Indian corporate bond market, though one of the largest in Asia, is still at an early stage of development, and its growth is hampered by institutional, legal, and regulatory constraints that make bonds a more expensive way of financing debt. These problems, as well as potential solutions, are highlighted by the Patil Committee (2005), established by the government. Following the suggestions of the committee, the government has set up reporting and trading platforms for corporate bonds. Many other important suggestions still await implementation. But implementing bond market reforms is a difficult challenge in the best of times, and in the light of the current global financial crisis the government would have to explore other innovative ways to ensure adequate flows of (private) financing to infrastructure PPPs.

On the equity side, participation by foreign players, particularly strategic investors, has been low even though PPP projects in the sectors studied are allowed to have 100 percent foreign direct investment. Foreign direct investment accounted for only 11 percent (\$322 million) of the total investment. The port sector had the largest share (51 percent) of this foreign investment, followed by airports (32 percent) and roads (16 percent). Only nine projects were reported to have strategic investor participation: four in ports, three in airports, and one each in water supply and railways. Few pure equity providers are willing to invest directly in special-purpose vehicles because many concession agreements put restrictions on the sale of developers' equity. Encouraging pure equity providers to do so will require more liberal norms allowing them to participate at the time of bidding or to enter later with a majority stake.



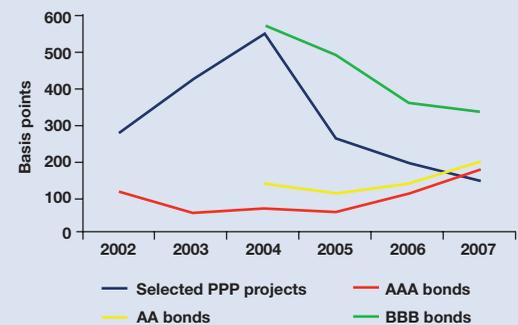
## GRIDLINES

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**FIGURE 3**

**PPP spreads fell sharply over the period 2004–07**

Average spread over government borrowing, 2002–07



Source: Bloomberg; PricewaterhouseCoopers 2007.

### Notes

This note draws on PricewaterhouseCoopers (2007) and work by Ian Alexander.

1. These figures are based on data from PricewaterhouseCoopers (2007), which may differ from data from the World Bank and PPIAF's Private Participation in Infrastructure (PPI) Project Database.
2. Discussions with financial investors suggested that subordinated debt is a way to help developers put less equity into the projects. In return for "conserving" the developers' equity, the banks charge a higher rate of interest on the subordinated debt, improving the overall yield on the project debt.
3. The spread is measured by comparing the interest rate on the loan against the average yield to maturity on Indian government borrowing during the year in which the loan was taken and is measured in basis points.

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