

# A Note on the Financing of Infrastructure Projects

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Infrastructure is a broad term covering a wide range of diverse projects. The World Bank classification of infrastructure covers Power, Telecommunication, Water Supply, Sewerage, Sanitation, Road Transport, Railways, Ports and Airports. The social and physical infrastructure of any country has a major impact on the rate of its economic development and the well being of millions of people. Hence, all countries are keen on infrastructure development projects. These projects are all the more important for developing countries. Infrastructure projects usually involve high upfront costs and long payback periods, and the investments are typically bulky. These projects are also characterized by the existence of externalities, which make it difficult for infrastructure entities to recoup investment costs and operational expenses through the levy of user charges. Generally, the Government/Public Sector provide the funding because of the economic and social impact of these projects. However, many state or provincial governments in developing countries are strapped for cash and are unable to muster the funds needed for financing infrastructure projects. Given the nature of infrastructure investments i.e. the long gestation period and lumpy investments, even positive net present value (NPV) investments in developing countries may not materialize due to paucity of funds. Positive NPV investments are those projects whose present value of cash inflows exceeds the cost of the project. This can have serious repercussions with respect to development plans. Therefore, mobilization of private investment to supplement public sector effort is essential. Public sector investments in such projects will have to

be supplemented by efforts to attract private investment wherever necessary.

This note discusses the possibility of capital market funding for infrastructure projects in developing countries such as India and the steps required to make infrastructure projects attractive for investment. The note analyzes the dynamics of an international bond issue and the various means through which credit enhancement could be done for the project. In particular, this note introduces the concept of a dual-currency bond and discusses why it may be a suitable instrument for the financing of infrastructure projects in developing countries that have large expatriate populations.

This note will be of value to policy makers not only in India, but in other developing countries as well.

## Financial Structuring

A project will attract investors only if it covers its costs and provides a return that exceeds its cost of capital. Hence, financial viability is a critical factor in any investment decision. However, financial viability should not be the sole basis for project selection.

The impact of the infrastructure project on the economic development of the region and the country should also be taken into consideration. Port projects, for example, play a particularly important role in economic development because they facilitate international commerce and provide a link to the global market. They earn valuable foreign exchange for the country. They also foster the growth of ancillary industries. This raises the level of employment in the region and enables its economic development.

An infrastructure project generates positive externalities. Hence, if a positive NPV infrastructure project is not undertaken, it might lead to the dropping of other positive NPV business projects in that area. This would result in to an overall low level of economic development. Hence, even in the scenario that the required private sector investment is forthcoming, there is a need for Government participation in some form (even if participation is restricted to being a catalyst) in order to make these infrastructure projects see the light of the day.

Almost all possible funding options require some sort of government support. Governments can provide financial support to infrastructure projects via (a) direct financial support through subsidized loans, equity contributions, or grants, (b) provision of contingent supports such as political risk, minimum revenue, construction cost overrun or debt refinancing guarantees, and (c) government sponsored infrastructure financing facilities. Whichever route they choose, they need to provide credible assurances to investors that sensible binding obligations will be honored. It must also be kept in mind that all forms of government support ultimately amount to cash flow support to a project and have a significant fiscal impact. In the long run, governments can attract private investment in infrastructure without providing guarantees if they have good policies in place. Governments should also ensure the availability of the quantity and quality of information required by investors to conduct due diligence undertakings. In short, governments should provide a conducive environment for private sector participation in infrastructure.

### Role of the Public Sector

During the past two decades, the role of the public sector in the financing of infrastructure projects has changed radically, both in developed and in emerging economies. On the one hand, budgetary constraints are now more restrictive. On the other hand, it is also widely accepted that the private management of public projects generates efficiency gains. As a result, the role of the public sector is shifting from financier/owner/manager of infrastructure

projects to regulator/facilitator/guarantor, and its involvement in the productive economy is shrinking. Simultaneously, private sector initiative is invading areas that were previously considered the exclusive domain of the public sector. Such a situation has required a new dimension for public-private arrangements to allocate responsibilities, risks and profits. These are known as public-private-partnerships (PPP) and are becoming increasingly popular all over the world. For example, South Korea is pushing forward its Private Participation in Infrastructure (PPI) initiative with vigor. The year 2001 saw closure of a financing that marked two firsts. The Daejeon Riverside Expressway is the first PPI project to attract foreign equity and the first Samurai bond issue in Korea. Daejeon Expressway Riverside Funding, plc is a special purpose vehicle (SPV) equally sponsored by Egis Projects Spa, Doosan Construction and Engineering Company and Singapore Piling & Civil Engineering Pte Ltd. Portuguese group Cintra's Eu. 281 million refinancing of the Algarve toll road in July 2001 by tapping the capital markets with a 26-year bond, was the first ever use of a project bond in Europe.

Many developing countries are actively encouraging private sector participation in infrastructure. However, effective private sector involvement is still stymied to a varying degree by the following factors: an inadequate legal and regulatory framework, poorly structured concession and contractual arrangements, high transaction costs, political risk, and a lack of an established reputation and track record of the host government. In many developing countries, a weak domestic capital market, an unstable macroeconomic framework that increases interest rate risk, and a below investment-grade sovereign credit rating have been some of the main reasons why private sector investors have been hesitant to invest in infrastructure projects. However, these challenges can be overcome.

Although this paper focuses on projects in India, the evaluation of the funding choices will be applicable to major infrastructure projects in other developing countries as well and will provide some guidance to policy makers.

### The Indian Context

In the Indian context, it has been recognized that the state-owned physical infrastructure is the weakest link in the economy. The World Economic Forum's 1998 *Global Competitiveness Report*, a business survey of international investors, ranked India last among 53 countries in the quality of overall infrastructure. According to a World Bank report published in 2000, the lack of adequate good quality infrastructure services could impede economic growth in India. A special study commissioned by the Government of India (*The Rakesh Mohan Committee Report*) revealed a huge investment backlog, which could only be bridged by inviting private investment into infrastructure to supplement the state effort. Private sector participation in infrastructure was an important focus of India's Ninth Five-Year Plan for 1997-2001. In India, the infrastructure sector is being gradually privatized, on one hand, while private (including foreign) participation is being actively solicited in new projects. The resource crunch faced by many states in India has resulted in an acceleration of this trend. State governments in India have realized that they cannot afford to fund infrastructure projects like they used to do before. They will have to resort to PPP and a few other practical funding possibilities to get these projects off the ground without much delay. These options are discussed in the next section of this paper.

### Private sector Participation in Infrastructure Projects

The three forms that this could take are:

- (a) *Build-Own-Operate ("BOO") model*  
Many states in India have used this model to attract private participation in infrastructure projects. The state government could auction the entire project to the highest bidder. The ownership of the project would remain throughout its life with the project company formed by the private sector bidding party. The project company would get the benefit of any residual value in the project.

(b) *Build-Own-Operate-Transfer (“BOOT”) model*

The private sector bidding party that is awarded the project by the government sets up a project company that undertakes the construction, owns, and operates the project for a specified period of time. It is entitled to the revenues during this time. At the end of the ownership period, the ownership reverts back to the public sector.

(c) *Build-Operate-Transfer (“BOT”) model*

In this type of a project, the private sector project company undertakes the construction and operates it for a specified period of time. It does not have ownership rights. However, it is entitled to earn revenues from its operations of the project. At the end of the specified term, the public sector assumes full control of the project.

Regardless of the type of private sector participation mentioned above, capital market funding is a financing option that must be seriously explored.

## Raising of Funds Through Capital Markets

Apart from government funding, other avenues for financing these projects are export credits, the medium-term syndicated loan market and the international development financial institutions.

The export credit agencies that traditionally provided long-term credits, which were guaranteed by their governments, have been reluctant to become involved in this type of project financing. The medium-term syndicated loan market is a very flexible source of short-term financing, but is highly susceptible to political risks and perceptions of political risks.

International development financial institutions such as the IFC (International Finance Corporation), The World Bank, and MIGA (Multilateral Investment Guarantee Agency) make a powerful and effective group. They have useful and powerful complimentary roles. The IFC can play the role of the direct lender to the project, while The World Bank can be involved in the

creation of policy and financial frameworks and as an expert advisor to the government, as well as providing of all or part of the government’s equity and assisting in risk mitigation.

Capital market funding for infrastructure projects (especially a project bond issue) is an option that should be seriously considered by policy makers, given the size of the projects

However, such precedents are absent in the Indian scenario. Some of the reasons for this include the underdeveloped capital markets, lack of investor awareness, poor track record in execution of such projects, the enforceability of user charges in infrastructure etc.

## Creation of an SPV for Raising Equity and Debt Finance

As mentioned earlier, public-private-partnerships (PPP) are becoming increasingly popular all over the world. One of the first steps in this process involves creation of an SPV (Special Purpose Vehicle) that is usually a company. This company cannot carry out any business that is not part of the project (since project finance depends on the lenders’ ability to evaluate the project on a stand-alone basis). Hence, this company is referred to as the “Project Company.” This is a common legal technique that enables the isolation of the project as a legal entity.

The project company would raise debt and equity funds in the capital markets. The government agency overseeing infrastructure projects such as ports would enter into a contract with the project company that will enable the latter to receive the net revenues from the project until its liabilities are canceled. “Net revenues” refer to the cash flows that are left over after payment of ongoing commitments with respect to operating and maintenance contracts. These net revenues are pledged to the SPV to secure its liabilities. As there is a possibility that the future revenue flows from the project could be insufficient, it becomes imperative for the state government to enhance the project by offering subsidies or by mitigating risks in order to attract investors.

The project company can raise funds through equity, debt and other hybrid

financial instruments. There have been instances of equity issues by port projects, like the case of Pusan port project in South Korea. In many cases, the state or provincial government takes an equity stake in the project company in exchange for providing land at no charge. Government equity participation has the advantage of ensuring the government’s involvement in the project’s success. However, a majority government equity stake could result in bureaucratic interference in the running of the company and political pressure. This could inhibit the freedom of the private sector project company’s management and prevent them from functioning effectively.

The other option is to raise money through debt. This project finance debt has first call on the project’s net operating cash flow. The equity investors’ return is thus more dependent on the success of the project. The contracts entered into by the project company provide support for the project finance, and form part of the lenders’ security package.

The level of debt that can be raised for a project is based primarily on its projected ability to meet its interest payment and its principal repayment obligations, with a comfortable margin of safety.

## Financing Through Bonds

Project bonds usually provide funding with a term greater than that available from other sources. While the project bond market is typically constrained by the concession period or contracts driving the project revenues, issues to date have extended for over 20 years. Project bonds provide fixed rate funding based upon competitive benchmarks.

For infrastructure projects in India, the bonds can be rupee denominated, dollar denominated (interest bearing or zero-coupon) or a hybrid (a dual currency bond) specifically targeted at the NRIs (Non-Resident Indians). However, given the current depressed conditions in the Indian capital markets and the high cost of borrowing in India, the rupee denominated bond issue is not considered the best option at this time.

## Credit Rating for the Project Bonds

Unless the project bonds get an investment grade rating, the debt cost is likely to be very high. Given the current risk-averse trends for emerging market bonds, any issue below the Investment Grade is unlikely to get the required investor response. Therefore, it is very critical to structure the sources of funds such that an investment grade rating is obtained. Gradations of credit ratings by Standard & Poor's and Moody's range from the prime credit level of AAA/Aaa down to the minimum "investment grade" rating of BBB-/Baa3 (below which most bond investors will not usually purchase a bond issue).

### Key Ratings Factors

In evaluating project-financed transactions, some of the key ratings factors that Standard & Poor's has focused on are:

**Revenue Contracts:** Crucial to the overall project-credit strength is revenue stream stability. For most projects, this depends on how firmly the contracts are structured and how the project is protected in changing market conditions.

**Project Economics:** The cost of the service being provided is not only the key to the user's commitment to the project, but also to the regulatory and political support for the project.

**Structure:** To be rated as a project, Standard & Poor's requires that an entity be structured as a single purpose entity (SPE). This requires that the project's activities be limited to the project itself, and that the project be limited in its ability to issue additional debt. Generally, projects should have six months of debt service reserve and an operations and maintenance reserve.

**Technology Risk:** Technology risk is assessed in terms of both pre- and post-construction risk.

**Projected Financial Results:** A project's debt rating ultimately rests on the project's forecast ability to generate sufficient cash to service debt obligations with a sufficient safety margin to cover unexpected project stresses. Standard & Poor's does not specify exact coverage levels since high levels of debt service coverage from relatively uncertain sources of net available cash provide

less credit strength than lower levels of coverage from more secure sources of revenues. In addition to the quality of the debt service coverage, stability of debt service coverage is important.

### Government Support

Some form of government support would also help the bond issue get an investment grade rating. However, the following issues pertaining to government support are likely to be examined by the rating agency before the rating decision is made:

- What is the government's track record?
- How much financial flexibility does the government enjoy?
- Would a government with a different political orientation jeopardize support?
- Could government responsibilities change?
- To what degree is the project of strategic importance to the state and the country?
- By what conduit can state support be brought to bear?

Ideally, the rating agency would like the government to provide a guarantee that would ensure the seamless transfer of debt service from the port to the government, leaving no opportunity for a late payment, which, for the rating agency, would constitute a condition of default.

However, it is unlikely that any state government in India or the Government of India would grant the kind of financial support that would constitute a contingent liability and be reflected in the government's budget. In fact, several countries, including India and China are trying to reduce reliance on sovereign support for new infrastructure projects. Columbia has been able to move away from sovereign guarantees and several Columbian entities have recently issued investment-grade paper (for the El Dorado airport expansion and the city of Bogota). Petropower, a Chilean co-generation project, was able to issue bonds in the U.S. capital markets without the help of the government or supranational agencies. Although Argentina is not an investment-grade country,

Transportadora de Gas del Norte in Argentina was able to issue investment-grade paper with the help of IFC participation. Therefore, if sovereign support is not forthcoming, other options, such as the ones outlined below, must be explored in order to obtain an investment grade rating for the bond issue.

### Credit Enhancement

Credit enhancement is an option that should be explored in order to ensure that the project bond issue gets an investment grade rating. Credit enhancement is a general term for the various techniques (credit wrap, credit insurance, financial insurance, financial guarantee, and letter of credit) employed to provide protection against certain levels of losses that might arise from specific project risks. Depending on market conditions, having the credit enhanced may even mean the difference between having financing for the project or no financing at all.

The following forms of credit enhancement could be used:

- *Cash Collateral*—A specified amount of cash collateral is kept reserved with the sole purpose of meeting shortfalls in making contractual payouts to investors if and when the need arises.
- *Guarantee by a highly rated insurance company*—The rating assigned to the securitized instrument cannot be higher than that of the guarantor in this form of credit enhancement. Where there is concern that the rating will be insufficient to meet investors' requirements, the credit can be enhanced by financial guarantees provided by monoline insurers who will charge a guarantee premium in exchange for supporting the bond with an 'AAA' credit rating. A bond with such a guarantee is known as a "wrapped bond." The guarantee will ensure greater demand and hence more liquidity for the bonds. A significant portion of project bond financing in the United Kingdom has been on a wrapped basis.

- *Guarantee by the government and a monoline insurance company*—A “double wrap” bond is one where the government sponsoring a PPP (Public-Private-Partnership) counter-guarantees the obligations of the monoline insurer. This will further reduce the cost of finance and enhance the credit rating of the project bond.
- *The issue of subordinate securities*— The sponsor of the project, namely the state government, could take a share of subordinate debt issued by the project company. The payouts on these securities are subordinate to the meeting of all obligations on the senior class of securities, which are rated. The subscription of subordinated debt by the sponsor is a form of subsidy to the project and is recommended due to its role in the enhancement of senior debt and for risk mitigation purposes.
- *Guarantee by the project sponsor* — The project sponsor (the state government) may also subsidize the project by means of a wide variety of guarantees granted to the SPV/ Project Company. A possibility is a guarantee of the minimum level of revenue received by the SPV. Alternatively, the guarantee could be designed to assure that the SPV is able to service its debt. A guarantee to limit the maturity of the project bond (and refinance it by means of a new vehicle) is also a form of subsidy. In those cases in which the SPV incurs currency exchange risk, the subsidy could be the total or partial mitigation of that risk.
- *Using Put Options* — As a form of subsidy, senior debt may be issued with an attached put option that, under predetermined circumstances, allows the investors to put their bonds to the project sponsor or an alternate guarantor. The circumstances under which the option may be exercised may refer to the evolution of project revenues or to precise events that may endanger SPV cash flows.
- *Locking in into revenue arrangement with credit worthy parties*— The private sector project company could enter into long term contract i.e. right-of-way contracts, take or pay contract, with credit worthy importers/corporates. Depending upon the credibility (how water tight it is, etc.) of the contract, one could obtain a rating for the project depending upon the rating of the counter parties. This mechanism essentially mitigates the uncertainties of an infrastructure project and makes possible a debt issue.

## Bond Issue

### The Sovereign Ratings Barrier

While considering an international bond issue, the possibility of “piercing the sovereign debt ratings” must be considered. This can be possible in case the port project can have dollar denominated cash flows and the revenues streams are sufficient to provide it investment grade rating financial ratios. The Orensa oil pipeline in Columbia is an example of a project that was initially rated at the sovereign ceiling of Columbia, and has been able to maintain an investment grade rating following a downgrade in the sovereign rating of Columbia to non-investment grade status. Hence, it must be kept in mind that while sovereign ratings are an important reference point for project ratings, they do not represent a ceiling. The rating agencies would evaluate whether the project has been properly structured and whether it is capable of withstanding cyclical swings in demand, price, and exchange rates.

Forms of International Bond Issues  
Once an investment grade rating has been obtained, three forms of international bond issues can be considered:

1. Dollar Denominated Bonds
2. Zero Coupon Bonds
3. Dual Currency Bonds

### Dollar denominated bonds

The Indian government has had a successful record of overseas bond issues. Even some of the Indian corporations have been able to raise long-term bonds up to 100 years (Reliance Yankee bonds). Thus, a significant appetite seems to exist for investment grade

Indian bonds. A long-term investment grade bond issue would be an ideal choice. Apart from institutional clients, the bond issue can also be targeted to a large section of Non-Resident Indians (NRI's) settled abroad. In case the debt instrument is able to pierce the country's sovereign ratings, the issue would make economic sense both from the investor and issuer's point of view. For example, if the project gets an AAA rating (similar to that in the case of PSA, Singapore) it would be able to raise long term loans at the rate of 8.5% (PSA was able to arrange long term funding at LIBOR plus 7%), adding another 4% for foreign exchange cover, the 12.5% interest cost would make it viable to consider an overseas bond issue from an investors perspective. Also, if it would be possible to get a letter of comfort from international institutions such as the FSA etc., the bond issue is likely to get a much better response. These institutions charge a premium for providing a letter of comfort. The Multilateral Investment Guarantee Agency (MIGA), a World Bank affiliate, could also guarantee the issue. MIGA covers 95% of the scheduled payments of loan interest and principal, or of equity risk. Up to \$200 million can be insured in any one project, and up to \$240 million per host country. MIGA can normally provide coverage for 15 years, and for 20 years where justified. MIGA operates a Co-operative Underwriting Program (CUP) with private sector insurers. The premiums charged by MIGA are in the range 0.50-1.75% of the amounts insured and the beneficiary has the option to cancel the coverage after 3 years. A guarantee from the state government is also likely to make the issue stronger.

### Zero Coupon Bonds

Another option would be dollar denominated zero coupon bonds that would be sold at a deep discount from the face value. The Reserve Bank of India (India's central bank) may prefer this to a bond in which both interest and principal are denominated in dollars because this bond would involve only a one-time redemption. The Reserve Bank of India would not have to be concerned about dollar outflows in case the domestic currency comes under pressure.

One shot redemptions would also be better from the point of view of the infrastructure projects which a long gestation period. However, a zero coupon bond issue is necessarily going to be of higher cost than periodic interest bearing bonds.

### Dual Currency Bonds

There are more than 1 million Non Resident Indians (NRIs) living in the United States alone. They have the highest income level among all the immigrants in the U.S. According to a study by Mihir Desai and two of his colleagues at Harvard University, the 1 million Indians in the United States comprise a mere 0.1% of India's population but earned the equivalent of a staggering 10% of India's national income. A significant number of NRIs have strong emotional ties to the State of their origin. They make sizable remittances to their relatives back in India. Hence, a special type of bond could be designed and targeted towards them in which the principal is denominated in dollars while the interest is denominated in Indian rupees. This bond would attempt to capitalize on the remittances made by NRIs to their relatives in India. At the time of acquiring the bond, the NRI would designate a beneficiary in India. The interest accruing on the bond would be sent to the designated beneficiary in India on a regular basis. This would save the NRI the hassle of making regular remittances through the banking channels to their relatives in India. Also, it would give the NRI the satisfaction of contributing to the economic development of the state by investing in this bond. Upon maturity, the principle would be repatriated to the NRI in dollars. The interest rate that would be offered on this bond would be higher than what the NRI can get in the country of residence for a similar bond. But it will be still cheaper for the SPV to raise money outside the country than domestically assuming that the bond gets an investment-grade rating. Since infrastructure projects have a long gestation period, it may not be possible to make dollar remittances to the investor especially in the early years of the bond issue. The dual-currency structure of the proposed bond will relieve the SPV of having to make dollar remittances until

the maturity of the bond. The long-term nature of the instrument will enable the SPV to generate sufficient resources to pay back the principal to the investors in dollars upon maturity of the bonds. The Reserve Bank of India would thus have less concern about the outflow of foreign exchange from the country and would hence be willing to support this bond issue. Therefore, this dual-currency bond would be a win-win situation for all parties concerned. Coverage by MIGA (outlined earlier) will further enhance the attractiveness of these bonds.

This unique instrument is particularly suited for those projects, such as ports, that have the potential to generate dollar cash flows. It can be used in countries such as India, Greece, Poland, Italy, etc., as a large number of people from these national origins live in countries such as the United States. These affluent expatriate communities represent a huge potential market for this instrument. With careful planning and marketing, this potential market can be tapped. For example, the dollar-denominated Resurgent India Bond issue that was sold by the Government of India to NRIs in 1998 was an overwhelming success.

Other financial instruments that could be considered include Floating Rate Bonds, Income Share Notes, Commercial Paper, Convertible Bonds, Clip and Strip Bonds, and Bonds with Warrants attached.

Ultimately, the instrument selected for financing will depend on the country in which the project is located. Many projects which have taken place in one part of the world could not take place in another because of differences in the political, economic, and financial environments.

Apart from taking into consideration the characteristics of the country, the process of selecting the financial instrument will involve reconciling the cash flow requirements of the project, the catalytic role of development finance institutions, the financing availability, the lender's requirements, and the NPV of the project.

Hence, while the financing options are many, a final decision must be taken only after careful deliberation of all relevant factors.

### Conclusion

Adequate physical infrastructure is essential for accelerating economic development. However, given the nature of infrastructure investments i.e., the long gestation period and lumpy investments, even positive NPV investments may not be undertaken due to the financial crunch faced by governments. The poor fiscal situation faced by many state and provincial governments in developing countries has sparked an interest in innovative methods of financing such projects and to look for new financial instruments.

Many states in India have been plagued by a financial crunch. This has stymied their efforts to fund infrastructure projects from their coffers. But at the same time, the State and Provincial Government's recognize the importance of infrastructure in promoting the overall economic development of their States. This has made them consider Public-Private Partnerships (PPP) with regard to infrastructure projects.

A good option would be to obtain funds from the capital markets. However, in order to do that, it is essential that the project debt get an investment grade rating. This note discussed the importance of getting an investment grade rating and the ways in which an investment grade rating could be obtained. This note also examined various credit enhancement options that would enable the project debt to get an investment grade rating. Then, three forms of international bond issues were discussed in detail. One of them is a unique hybrid bond, a "dual currency" bond, in which the interest is payable in rupees to the designated beneficiary of the bond investor in India, while the principal will be paid back in dollars to the investor upon the maturity of the instrument. This unique debt instrument will satisfy the needs of all stakeholders. This financing option should be seriously consider this financing option for infrastructure projects in developing countries.

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