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Infrastructure Financing : An Alternative Approach

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Abstract

Infrastructure projects are characterized by complexities and risks. The complexities emanate from the size of the project, technical and execution parameters, the long period of implementation, the long gestation period, the long life-cycle of the project and complexities of financing. For a lender to the infrastructure project, the long repayment period is a matter of serious concern. The delays and defaults of the initial period tend to cascade into significant amounts over the long repayment period. This makes funding of infrastructure very risk to the lender. Banks, with sources of funds that are medium to long term, tend to shy away from participating in the extra-long-term needs of infrastructure projects. This paper is an exploration whether the long repayment period of the infrastructure loans can be broken into smaller durations with sufficient safeguards to protect the interests of the lender and the borrower. The paper concludes that it is possible to design funding structures that would enable participation of banks to periods shorter than the life-cycle of the projects with fair amount of safeguards thereby enhancing wider and better financial closure of infrastructure projects.

Key words: *Infrastructure Financing. Risk Minimization. Financial Closure.*

Introduction

Infrastructure projects in the developing countries are generally found to be complex and risky; a set of elements make them so. Most of these elements emanate from few basic factors: the huge quantum of resources consumed by the project, the environmental impacts, the complexity and long duration of execution, the long life-cycle of the project and the consequent uncertainty about cash-flows. The long life-cycle of the project has significant implications to the lenders. Infrastructure lending is provided by specialized infrastructure financers and to some extent banks. Since the number of infrastructure financing agencies is relatively small, especially in emerging economics, it is desirable to attract more banks into the arena of infrastructure to improve the supply situation of finance for infrastructure projects.

Banks are less inclined to participating in infrastructure financing for a variety of reasons. First, banks find it difficult to match the extra-long-term fund deployment with the medium-to-long-term sources that they are endowed with. Second, banks are not comfortable with their funds and interest-rates getting locked in for the extra-long-horizons. Third, delays or defaults of the infra-projects get cascaded over the extra-long horizon; this only adds to the woes of the banks. This paper explores how the situation could be made attractive to

banks without jeopardizing the interests of the stake-holders of the projects.

Review of Literature

Mattar has described the various risks inherent in infrastructure financing (Mattar, 1998). He groups the risks in three clusters: Political, Financial and Performance risks. He goes on to explore the incidence of these risks in a global context and examines the risk mitigation opportunities. In a paper more relevant to Indian situation Lall and Anand have stated that significant private financing of the infrastructure has happened in recent years due to the active participation of banks. They also point out that banks are constrained by the ALM mis-match in funding infrastructure. The paper argues that in the absence of a vibrant bond market catering to the extra-long-term funding, government or its agencies need to play the role of a catalyst to ensure continued funding support to infrastructure projects (Lall & Anand, 2009). Michael Grant (Grant, 1997)has made a very critical analysis of the Eurotunnel experience in project financing. He argues that Eurotunnel has been an engineering marvel in design and construction while it has been a financial nightmare both for investors and lenders alike. Costs were underestimated, the construction work never kept the estimated time-schedules resulting in delays and overruns. There was enormous delay in financial closure of the second round of financing. The project was very ambitious in terms of its complexity and size; it offers critical lessons in financial structuring and closure. Almost identical views are expressed by Andreas Schueler also (Schueler, 2007). In a masterly work Matsukawa and Habeck have examined the various risk mitigation instruments engaged, primarily by multi-lateral agencies, in managing the risks inherent in infrastructure projects at all stages (Matsukawa & Habeck, 2007). However, none of these papers have listed any attempt in slicing down the term-structure of the debt-instruments into smaller segments.

Critical Concerns

The major concerns of the extra-long-term lender to an infrastructure project can be summarized as below:

- *Duration mismatch:* The sources of funds for the lender are predominantly of medium to long term duration. When such funds are used to fund extra-long-term projects obviously there would be mismatch and consequent problems. This would mean that the lender has to source extra-long-term funds just to finance the infrastructure projects. This makes it difficult for many lenders to participate in infrastructure financing.
- *Locking in of funds for extra-long periods and the consequent inflexibility:* The funds given out as loans to infrastructure projects would take a long time to come back; the lender has no option but to wait till the end of the repayment period to recover the advances in full. Since the quanta of funds given as loans to infrastructure projects are generally large, the risks associated with such loans are compounded. This places severe constraints on the operational flexibility of the lender.
- *Inability to predict the future benefit stream and the resulting cash*-flows: The long duration of the project cycle makes it difficult to predict the future benefit streams accurately. This makes the cash-flows very uncertain resulting in the high risk levels of the project.
- *Defaults and their consequences:* Generally defaults are more likely to happen in the earlier part of the project either due to delay in implementation of the project or because the benefit streams are slower in reaching the expected levels. The lender would have to carry such defaults till the end of the repayment period. Even when the default amount is small percentage of the total project cost, it would be significant in terms of absolute value. This would place extra financial burden and risk on the lender.
- *Interest-rates get frozen for long period:* When an extra-long-term loan is given the interest rate would be – even in variable interest-rate

structure – frozen within certain limits or bands. When the repayment period is 30 or 40 years this places severe restrictions on the profitability of the lender.

- *Changing economic and market scenarios over a long horizon:* The lender is subject to the vagaries of the changes happening in the economic environment. Even small impacts when cascaded over a long horizon would have significant and perhaps crippling impacts on the lender.

Table-1: Challenges of Infrastructure financing

- Long period of project execution arising out of
  - Prolonged process of land acquisition
  - Process of getting clearances
  - Financial closure
  - Award of contracts through global bidding
- Relatively low rate of return and long life of the project.
- High risk arising out of
  - Socio-economic factors impacting the revenue-streams
  - Unanticipated delays in executions
  - Interest rate variation over the long horizon
  - Relatively larger amounts as investment and loans
  - Managerial challenges are compounded with longer horizon
  - Political factors

Lender specific issues

- Amount of loans are large; any negative impact like delay, slow take-off, default, or failure will have significant impact on the lender
- Long horizon increases the uncertainty
  - Interest rate variation over the horizon
  - Higher interest rates are warranted for longer period loans

If we are able to address these concerns of the lender, more banks would be willing to come forward and participate in the financing of infrastructure projects. This could bring vibrancy to the market for financing of infrastructure projects.

The Stage-Coach Model

The suggestion would consist of the following:

a. break the total duration of the infrastructure project into a number of smaller but manageable stages with each stage having duration of not more than 8 to 10 years.

b. prepare a separate consortium of lenders to finance each stage.

c. enter into iron-clad agreements, as part of the financial closure of the project , among the consortium of lenders and their respective lead managers to ensure commitment and seamless transition from one consortium to another.

Since each consortium of lenders have to be concerned about only the one stage where it is participating as a financier, most of the concerns listed above gets taken care of automatically. However there will be new concerns: How do we ensure smooth transition from one consortium of lenders to the next consortium of lenders as the project enters the next stage? How do we handle the defaults and overruns? How do we ensure that the interest-rate structure remains tuned to the prevailing market interest-rate-structure from time to time? How do we incentives the management of the project for better financial (and debt-serving) performance during a stage?

- Before the financial closure of the project
  - A consortium of lenders and a lead manager should be identified for each stage. It is desirable to have an overall lead manager for the project as a whole also.
  - The schedule of repayment is worked out specifying the quanta of repayment taking place in each of the stages. This

would spell out the quantum of loan each consortium would take up at the beginning of the stage as also the quantum of loan the consortium would pass on to the consortium of the next stage.

- It is not possible to pre-decide interest rate of each stage. It is desirable to specify the interest-rate-structure linked to certain market indicators like LIBOR etc. For instance interest-rate for the nth-stage may be defined as "LIBOR + x_n" where x_n is the premium for the nth stage. At the financial closure of the project, 'x_n'should reflect the future premium of interest-rate for the stage n, if such a forecast of the future rate is possible; however the precise value of 'x_n' shall be decided, just before the commencement of the nth stage, through an assessment of the risk profile of the project carried out by one or more rating agencies and considering the prevailing interest-rate-structure.
- There has to be an iron-clad agreement covering all the participating institutions, the management of the company and government to ensure that all the commitments of the financial package are honored with severe penalties for failure. This should ensure smooth transition from one stage to another.
- Sovereign guarantee for the overall financial package is highly desirable; more so in the initial stages such packages are worked out. Once the market and the participants are used to such packages and their successful completion, the need for sovereign guarantee may come down.

- Overrun is likely to happen in the first stage due to delay in the execution of the project. Default can happen in any stage. Overrun or default happening in any stage would be funded out of a fresh loan which would attract higher rates of interest than the one committed in the original agreement. Before the financial closure, as part of the financial package, a separate consortium of lenders is identified to underwrite[1] the excess loans arising out of overrun and/or defaults, for each stage. The financial package would specify the guidelines for fixing a higher premium on the interest-rates for such excess loans. The package would also specify nature of charge[2] to be shared among the existing consortium and the consortium taking up the excess loans as also the repayment schedule of the excess loans.
- At the end of each stage
  - A rating agency (or more than one) would assess the risk profile of the project and the outstanding loans; this together with the prevailing interest-rate-structure shall be the basis for deciding the interest-rate structure of the ensuing stage.
  - If the repayment record of the previous stage has been good, the confidence of the lenders is bound to increase and this should be translated into lower rates of interest to the loans of the ensuing stage. The premium 'x_n' should be lowered; similarly if the repayment record has not been good, it will result in lowering the confidence level of the lenders resulting in suitable increase in the premium 'x_n'. These would be taken care through the risk profile assessment by the rating agencies.
  - The ground rules for such variations in the value of 'x_n' should be spelt out in the iron-clad agreement entered into at the beginning of the project.
  - When the repayment record is good, the management of the company should have an option to bring in a new consortium with lower interest-rate-structure than the one forecasted/suggested as per the original agreement.
  - At the end of the last stage, the defaults, if any, should be absorbed by the government who has participated in the package as a guarantor. This would ensure that the consortium of the last stage also makes full recovery of its loans. Government may resort to debt-restructuring in a manner appropriate to the situation.

Analysis and Discussion

The Stage-Coach Model addresses the concerns of the lenders and offers solution to most of them. Most of the concerns had emanated from the extra-long-duration of the loans. By splitting the horizon into manageable stages the concerns have been successfully tackled.

- The duration of each stage is decided looking into duration of the fund-sources of the participating banks. Hence there is no scope of duration mis-match at any stage. Each bank has its funds blocked only to the extent of the duration of the stage and hence there is no question of funds being blocked for long durations.
- Defaults are tackled separately and no participating bank has to wait till the end of the horizon to get back its dues.
- Interest-rates are fairly linked to the market and the risk-profile of the project.
- An element of competition is brought into the system.
    - Any bank can enter the consortium at any stage by acquiring the loans from any participating bank. Similarly any participating bank can exit the system by selling its loans to any other bank. Trading of the loans becomes a vibrant possibility.
    - Interest-rate tends to reflect the asset quality as it is based on the ratings at regular intervals and the market reality.
- With government taking over the outstanding loans, if any, of the last stage, all participating institutions recover their financial dues fully and finally. The maximum burden that the government is called upon to bear is equivalent to the outstanding loan of the last stage plus the carried forward defaults. In all probability the residual loans at the end of the last stage will be a small fraction of the quantum of original loans with which the projected commenced operation. In the conventional system of infrastructure financing situations of defaults have to be absorbed by the participating banks and institutions, resulting in crippling impacts on them. In the stage-coach model the burden is systematically reduced through the stages like a filtering mechanism and the residue is absorbed the government as the lender of the last resort. Government has the option to recover it, at least some part of it, over a period through restructuring the residual assets of the project.

In the final analysis the stage-coach model brings in the following features:

- Market forces are brought into the process of the loan amortization program.
- The management of the company will be under pressure to ensure that the debt-servicing takes place as planned; otherwise the penalties could be severe.
- Each lender is assured that its loans are serviced in full at the end of the stage in which its participation is stipulated.
- When the project performs well its riskiness comes down and this gets translated into reduction in interest-rate structure. When the project performs poorly, its riskiness goes up and this results in proportionate increase in the interest- rate-structure.
- When the project performs well, it could attract more financiers and consequent reduction in the interest-rates through a competitive process.
- The infrastructure loans become tradable financial products in the bond market. The market for infrastructure bonds becomes live and vibrant.
- Table-2 is a summary of how each of the concerns of the stake-holders is addressed in the Stage-Coach Model

Table-2: Stake-holders concerns and how they are addressed by the stage-coach Model

Players	Concern/s	How the concerns are addressed
1. All Participating banks	• Would prefer lending for duration of 8-10 years.	• The total duration of the infra-project is broken into a number of stages, none of them exceeding 10 years.
2. Owners and Management of the project	• Want to ensure funding of the project though its life	• Each phase to have a Consortium of leaders. Each Consortium to have a Lead Manager. • Iron-clad agreement among Lead managers, Consortium members and the Project to ensure seamless transition of funding responsibilities.

3. Consortium responsible for Phase-1	• At the end of phase-1, it should get back all the loans it had advanced irrespective of the performance of the project not.	• Iron-clad agreement • Govt. guarantee
4. Consortium responsible for Phase-2 and subsequent phases	• The quantum of debts that it would be acquiring at the beginning of phase-2 is pre-fixed. It is not responsible for the overrun / default if any. • Same rule applies in subsequent stages also.	• The schedule of repayment shall be prefixed so that the debt ut-standing at the beginning of each phase is pre-fixed. • Overrun, default, delay etc would be converted into additional loan. This additional loan shall be taken up a separate consortium who would have underwritten such an act as per the iron-clad agreement signed before the financial closure of the project. • Such additional loan requirements are most likely to happen at the end of phase-1. • The interest rate for the additional loan will be negotiated at market rates. • The Lead Managers, company and Govt would pre-decide on the nature of charge to be ceded. This would be part of the iron-clad agreement.

	• The consortium members should mot lose on interest-rate in case the market interest-rate has gone up.	• The interest-rate shall be prefixed at the beginning of the project as LIBOR + x_n% for each phase-n
		• The variable interest-rate-structure takes care of the variations in the interest-rate.
		• There would be pre-decided terms to alter the interest-rate vis-a-vis the performance of the project.
		  ○ Decline in the interest-rate for better performance of the project
		  ○ Increase in the interest-rate for poorer performance of the project
		• If the performance of the project is better than projected, the management of the project / company has the option to bring in a new consortium with lower interest rates or re-negotiate the interest rate with the existing consortium.

The successful practice of this model demands the following pre-conditions:

- *A stable and mature political system* is a pre-condition for successful management of infrastructure project through and through. The political system and the bureaucracy should inculcate the maturity to manage the administrative processes associated with the financing of infrastructure projects with certain level of equanimity beyond the shades of the changing political regimes. Experience of Dabhol Power Company in Maharashtra, in the early years of liberalization has proved this point beyond doubts[3] (Allison, 2001; Inkpen, 2008). This is essential in the conventional method of infrastructure financing also. In the stage-coach model, such mature handling of administrative matters would facilitate the high level of discipline required among the participants in the infrastructure project.
- *A vibrant and matured market with high level of self-discipline* among the players is a key

ingredient to ensure (a) there are sufficient players to participate in the various aspects of infrastructure financing with competitive spirit (b) the tight discipline envisaged in the stage-coach-model is adhered to and (c) there is a competitive market for financial products created out of the financial package.

- *Proactive regulators; competent institutions and independent judiciary:* These facilitate the evolution of an environment conducive for cooperation, collaboration and sharing of risks. The unique ability of the stage-coach model in minimizing the risks lies in this collaborative process.

Conclusion

This conceptual model – Stage-Coach approach to Infrastructure financing – is an attempt to take away the apprehensions of the participating financial institution by splitting the horizon into manageable ranges, bringing safeguards to ensure smooth transition and to link the entire process to the market. It offers the participating banks a definite and manageable horizon, definiteness of the quantum of commitment, market-linkage of the interest-rate, definiteness of closure and perhaps an option to participate at later stages. To the infrastructure company (the SPV) the model offers a vibrant market for finance, more number banks ready to participate, market-linkage of the interest-rate and incentives for better debt-servicing. The net impact is in substantial reduction of the risks exposure of the participants. On the down side the model expects a mature financial market, proactive players and robust regulatory system. This is a desirable stage towards which developing countries can move in gradually.

End Notes

1.Underwriting of Excess Loans: Since the participating institutions need to be immunized from the burden of defaults it is essential to identify a consortium of lenders, for each stage, ab initio to take the contingent liability of the excess loans of that stage. For undertaking such an eventuality the consortium and its participants would enter into underwriting agreements, as part of the iron-clad agreement, before the financial closure; the consortium would be allowed to charge an underwriting commission.

2. Charge on the assets: In any lending the lenders would take first charge on the primary assets of the project through the mechanism of mortgage and/or hypothecation. Legally this entitles them to claim first right on the proceeds of the assets in the eventuality of failure of the project and consequent liquidation. When more than one lender is involved their rights shall be in proportion to the initial lending (legally known as sharing the charge on pari passu basis). At the end of Stage-1, if excess loans are present and the consortium that had undertaken the excess loans begins to carry the loan, the consortium also would expect some charge on the assets of the project. One option is to ensure pari passu charge to this consortium also. In that case the rights of the consortium carrying the primary loans get diluted marginally since the quantum of assets have not increased; hence they may be reluctant to cede pari passu charge. The second option is to offer second charge on the assets to the new consortium taking up the excess loans. This aspect needs to be decided right in the beginning before the financial closure of the project. Similarly repayment schedule of the excess loans, transfer of such loans to the subsequent stage etc also need to be spelt out in the underwriting agreement and the iron-clad agreement.

3.Dabhol Power Company and its power project near Ratnagiri, Maharashtra, India suffered due to political instability, lack of maturity in handling the project at political and bureaucratic levels and also the less-than-professional manner of handling by the institutions (Allison, 2001), (Inkpen, 2008).

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Annexure-1: Stage-Coach Model, An Illustration:

Golden Gate Bridge across a major river, with 4 lanes of traffic to each side, is planned to be constructed. The estimated cost is US$ 100 million. The project will be handled by an SPV created exclusively from among a group of national and international investors and construction companies. The execution of the project is awarded to an international construction company selected through global bidding. The time of construction is estimated to be 3 years.

The funding will be provided by national and international funding agencies and banks. They have decided that the group of construction companies promoting the project would take equity to the extent of US$25 million and the balance US$ 75 million will be raised as long term loans from the funding agencies and banks. They have also decided that the SPV will be given a moratorium of 2 years after the construction period. This would mean that the repayment of the loans would commence 5 years from the commencement of the project. The loan of US$ 75 million would be recovered in 50 equal half yearly installments (25 years).

Interest for the loans has been worked out at LIBOR + 4 % per annum. The interest of the construction period of 3 years is already built into the project cost and hence it would be recovered from the loan-disbursals. Hence there should be no uncertainty of the recovery of interest during the construction period. The interest payment by the SPV during the next 2 years of moratorium will depend on the successful operation of the project. In case the project is delayed, then the interest payment may be adversely affected. To this extent there is an element of uncertainty (and hence risk) to the lenders.

The funding agencies and the promoters have clarified that escalation in the project cost to the extent of 10 % is already built into the cost. In case of any further delay and/or overrun, the additional cost will be raised through a mix of equity from the promoters and loan from a new consortium of lenders on terms more stringent than those entered already.

Separate consortium of financiers has been identified to finance each stage of the project (C1, C2 and C3). An iron-clad agreement has been concluded among the Golden Gate Bridge Company Ltd (the Special Purpose Vehicle – SPV) each of the banks participating in each of the consortia and the Government. This agreement covered the roles, responsibilities, obligations and rights of every member in as much detail as possible to ensure smooth progress, transition and completion of the project. The Government has also agreed to cover the entire funding through a Sovereign Guarantee.

Stage-Coach approach

- The horizon of 30 years [3 + 2 + 25] is split into 3 stages of 10 years each (S1, S2 and S3).
- Stage-1
    - Consortium-1(C-1) would provide US$ 75 million for Stage-1 of 10 years. At the end of Stage-1 the loan outstanding would have come down to US$ 60 million assuming all payments are paid regularly.
- Stage-2
    - Consortium-2 (C-2) would take over the outstanding loan of US$ 60 million at this stage by paying out US$ 60 million to C-1.
    - Any overrun or default would be treated as a separate loan; this would be assigned to a new consortium (C-21) on terms prevailing in the market for the risk class the project finds itself in at that point of time.
    - C-21 would take-over the additional loan by paying out the amount to C-1. With this C-1 would have received all its dues and C-1 goes out of the system.
    - In case of default and/or overrun, the risk profile of the project would increase and hence C-2 will have the right to increase the interest-rate. A general rule mentioned in the original agreement is: For every 1 % increase in the loan outstanding the rate of interest shall be increased by 10 basis points.
    - In case of prompt or faster repayment of the loan during stage-1, the risk profile of the project/SPV would be lower and hence, the SPV can claim lower rate of interest with C-2.
        - General rule mentioned in the original agreement is reduction of 10 basis points in the interest-rate for every 1 % extra-reduction in the quantum of loan.
        - SPV can also explore the market to find an alternate consortium that can offer competitively better rate of interest than C-2.
- Stage-3:
    - The events of the first transition should not affect the commitment of C-3 for funding Stage-3. C-3 would take-over the loans by paying out US$ 30 million to C-2.
    - The rate of interest shall be governed by the original agreement and the risk-profile of the project/SPV as assessed by rating agencies.

- Other terms of transition shall be same as in previous stage.
- At the end of Stage-3,
  - if everything had gone well, C-3 would have received all its dues and it can go out of the system fully relieved and satisfied.
  - If the dues are not paid in full, Govt, by virtue of the sovereign guarantee would absorb the residual dues and pay the outstanding amount to C-3 so that C-3 can go out of the system fully relieved and satisfied. Govt. may use the residual assets of the project in appropriate manner and minimize its losses.

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