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Review Paper on Risk Assessment of BOT Project

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ABSTRACT

Infrastructure investments are important in developing countries, it will not only help to provide the economic growth of a nation, but it will also act as a platform in which new forms of partnership and collaboration can be developed mainly in East Asian countries. Since the last two decades, many infrastructure projects had been completed through build-operate-transfer (BOT) type of procurement. The developments of BOT have attracted participation of local and foreign private sector investor to secure funding and to deliver projects on time, within the budget and to the required criteria. Private sectors are preferred by the government in East Asia to participate in BOT projects due to lack of public funding. The finding has resulted that the private sector or funding of the BOT projects is exposed to multiple risks which have been discussed in this paper. Effective risk management methods and good managerial skills are required in ensuring the fame of the project. The review indicated that mitigation measures should be employed by the promoter throughout the concession period and support from the presenter government is also required in ensuring the success of the BOT project.

Keywords: BOT project, risks management, concessionaire, consortium.

I. INTRODUCTION

There has been a growing trend in recent years for governments in many countries to place major public investments, particularly for infrastructure projects, into the private sector. Many have acquire the Build-Operate and Transfer or BOT approach so that the private sector has to finance, construct and operate the project facility and the transfer the ownership to the government after specified concession period. Therefore the BOT scheme is limited resource project financing method for implementing infrastructure projects by using private funding. The development of BOT has attracted participation of local and foreign private sector investor to secure funding and to deliver project on time, within budget and to the required enumeration. The financial success of a BOT project relies on the ability of project to service the debt and generate the expected fair play rate of return.

BOT projects in India involve many risks and problem that are due to differences in legal systems, market conditions and discernment. It is crucial for investors to identify and manage the critical risks associated with investment in India's BOT projects. Main purpose of this project is to investigate the financial risks related with BOT projects by using risk measurement techniques.

The study involves combination of methods for an unified qualitative and quantitative research method. The first stage contains comprehensive literature review with lessons learn from the practice of BOT projects in developing countries, especially in India. The second stage contains the introduction, nature, structure of BOT project and different parties involved in BOT project. The third stage contains BOT project financing and list of different financial risks related with BOT project. The fourth stage contained methods of risk measurements. Then, in the case study part, the details of the project have been noted and financial risk analysis by sensitivity and scenario analysis. Last part of this study is conclusion and references.

OBJECTIVES OF RISK ASSESMENT

The experience of private investment in infrastructure in India over past years reflects that risks and peril go together with opportunities. Proper identification, therefore, of the risks associated with investment in infrastructure in India and planning for effective responses thereto are necessary for the private investors to be successful. In general, in order to be successful all capital projects shall meet the criteria and have the characteristics as listed below. The growth of the infrastructure sector in India has been relatively slow compared with the industrial and manufacturing sectors. The

energy shortage, an inadequate transportation network, and an insufficient water supply system have caused a bottleneck in the country's economic growth. The Build-Operate-Transfer (BOT) scheme is now becoming one of the prevailing ways for infrastructure development in India to meet the needs of India's future economic growth and development. There are many opportunities for foreign investors. However, undertaking infrastructure business in India involves many risks and problems that are due mainly to differences in legal systems, market conditions and culture. It is critical for foreign investors to identify and manage the critical risks associated with investments in India's BOT infrastructure projects .Based on the survey, the following critical risks are identified: delay in approval, change in law, cost overrun, dispatch limitation, land acquisition and compensation, enforceability of contracts, construction plan, financial closing, tariff adjustment, and environmental risk. The measures for diminish each of these risks are also discussed. Finally a risk management framework for India's BOT infrastructure projects is developed. Main purpose of this paper is to investigate critical risks associated with Build Operate Transfer projects in India. KEYWORDS: Risk management, BOT, Infrastructure projects, Mitigating measures, equity risks Risk Assessment Of Bot Projects.

- A credit risk is involved.
- A satisfactory feasibility study and financial plan have been prepared.
- The cost of product or raw material to be used by the project is confident.
- A supply of energy at normal cost has been given.
- A market exists for the service to be produced.
- The best way to respect the concerns of investors in infrastructure in India is to review and consider some of the common causes for their failures as shown below :

i. Delay in the contemplated revenue flow.
ii. Capital cost overrun.
iii. Technical miscarriage.
iv. Financial failure of contractor.
v. Government interference, etc.
vi. Uninsured casualty losses.
vii. Increased price or shortage of raw materials at site.
viii. Technical annihilation of the plant.
ix. Loss of competitive position in the market place.
x. Sequestrate.
xi. Poor management
xii. Financial insolvency of the host government.

In particular, for private investors to be successful in their infrastructure projects, these risks must be properly considered, monitored and avoided throughout the life of the projects.

SCOPE OF THE STUDY

The future of BOT projects is unresolved. The concessionaire may like to know the financial feasible of a project when some variables like construction cost, operating & maintenance cost or revenues digress from the expected values. The objective of the present work is to carry out financial analysis to determine the range of various financial parameters TPC (Total Project Cost), DSCR (Debt Service Coverage Ratio). In other words the concessionaire may want to conduct "sensitivity and scenario" analysis. This study can be further extended to prepare ideal financial model for bringing these different framework on the same platform so that the financial model is applicable for any project.

DEFINITION OF RISK

According to Merna and Thani, risk is characterized as the potential for undesirable negative consequences of an event or a measure of the probability and the extremity of adverse effects . Generally, numerous decisions would be made in BOT project based on assumptions and expectations that might be encountered during the project. Whilst, definition of risk and uncertainty by Raftery is given below:

"Risk and uncertainty characterize situations where actual outcome for a particular event or activity is likely to deviate from the estimate or forecast value."

The given definition does not consider other important key elements that could impact the project's activities. Definitions for risk and uncertainty in BOT project could be extended by including; uncertainties in financial markets, construction problems, demand forecasts, instability in a country's economic condition, uncertainties in host

government organizations, stakeholders' expectation and other external aspects of the projects. Chapman has defined risk as exposure to the possibility of economic and financial loss or gain, physical damage or injury, or delay as a consequence of the uncertainty associated with pursuing a particular course of action.
Further to that, Seyan has provided several absolute definitions for risks for construction projects from several references as follows :

1) Association of Project Management (2002): 'a combination or frequency of occurrence of a defined threat or opportunity and the enormity of that occurance'.

2) HM Treasury (2001): 'the uncertainty of outcome, within a range of possible exposures, arising from a combination of the impact and probability of occurence'.

3) BS 6079 (British Standard Institutions, 1996): 'is the uncertainty inherent in plans and the possibility of something happening that can affect the prospects of achieving business or project goals'.

4) Smith (2002): 'risk is adverse but and unknown by its nature can have both positive and negative effects'. Primarily, the outcome of the project implementation could be affected directly by the risks in the BOT projects.

RISK MANAGEMENT TECHNIQUE

Identification and suitable allocation of risks to the parties that have the greatest control over those risks are the process to the success of a BOT project. A number of studies had disclose many suggestions on classifying all risk that could be met in a concession contract [11,19,20]. From the studies, it has been proven that the existence of different types of risks in a concession contract. The most meaningful ingredient is to tackle and allocate the risks effectively to assure smooth project implementation. Previous study has indicated that lenders or investors are exposed to higher risk for the BOT project due to high front end development costs, lengthy negotiation process and multiparty involvement [9]. Similarly, the promoter is also facing equal significant weight risk over the concession period.

This has not being shown in the study and in spite of that how those risks are being resolved. An allocation has been given in the concession contract which needs the promoter to allocate risk to the party who is best able to tackle it. Four basic steps have been proposed to manage the risks systematically [6]: 1) Identify the risk sources 2) Quantify their effect (risk analysis) 3) Develop management responses to risk 4) Provide for remaining risk in the project estimates Overall risk reduction depends on the capability of the concessionaire to find and formulate mitigation measures in risk management. This capability will acquire confidence among the lenders and government to the concessionaire. Tiong argues that the promoter gained high profits when the host government reluctant to provide any financial guarantee [21].

The promoter realized that they need to manage the risk by taking all mitigation measure to prevent any impact to the project. Even though the profits of BOT project are controlled by the host government, but there are some BOT projects make good returns to the stakeholders. This is not limited to the entrepreneurial capability of the concessionaire but also their capacity to install early warning system through mitigation measures in the system. The success of the BOT project depends on the concessionaire's policy. The adopted policy are using an advanced well proven technology and contracting out the responsibilities, that enabled them to understand the nature of the risks and how to response to it in an effective way. In addition to that, the success of employed risk management system which could reduce the risks to an acceptable level to all stakeholders is deniable. Successful risk management's key principles have been identified [22]: 1) Clearly identified and visible senior management support for the project 2) Clear policies which are clearly communicated to all 3)

The adoption of a transparent and repeatable framework of activities 4) The existence of a culture that supports and understands the idea of controlling risk. 5) Fully fix management process which are consistently and carefully applied and are clearly linked to the achievement of the objectives 6) Implementation of effective plans and regular reviews to safe guard the benefits of the processes are realized and lessons are learned for future projects A well structured risk management framework within the promoter's organization is fundamentally important to support the entire process of risk management during the project beginning and implementation. Employed comprehensive risk management system in the concessionaire will be the guideline for any decision making to all initiated action plan during the life cycle development of the project.

METHODOLOGY OF STUDY

Approach: This research study employed a combination of methods for an unified qualitative and quantitative research methodology. The first stage was a comprehensive literature review together with lessons learned from the practice of BOT projects in developing countries, especially in India, to develop a initial list of risks associated with India's BOT

infrastructure projects .In the second stage of instrument development, only the critical risks associated with India's BOT Infrastructure projects were chosen for study. RISK MANAGEMENT FRAMEWORK FOR BOT INFRASTRUCTURE PROJECT Based on the survey results and analysis as well as case studies, a risk management framework for investing in India's future BOT infrastructure projects can be proposed as follows. Step 1: List all risks related with the proposed BOT infrastructure project and then analyze these risks in order of importance. The more critical the risk, the more attention should be paid to it. Step 2: For each risk, list corresponding mitigation measures as more as possible, and then inspect the availability of mitigating measures in sequence based on their effectiveness. The more effective the measure, the higher the right of way for adoption. Sometimes, a combination of several mitigating measures is needed to be embrace. Step 3: For each risk and its mitigating measures, negotiate with Indian government and related entities to incorporate the risk mitigation measures, and fine tune the concession agreement and other agreements as much as possible to ensure that all of these risks are sufficient covered. Step 4: Allocate risks to related parties according to the principle that risk should be borne by the party most able of controlling it. An optimal allocation of risks depends on the relative haggle power of the parties and the potentiality of reward for taking the risks Step 5: Adopt the risk allocation and security structure and enter into financing process for the project.

CONCLUSION

Every BOT project is subjected to multiple risks. Finally all risk converted into financial risk. Lender and investor always examine financial risk associated with project before financing it. The investors of the project are more keen in knowing the DSCR and financial feasible of the project. It is only the DSCR which indicates the soundness of the project with regards to its debt repaying capacity of traffic projections for the purpose of profitability of project are based on the traffic study of State Highway. The projected financials are durable to service the debt repayment and interest repayment. On the basis of above analysis and subject to the risks, debt servicing capability of the Project is considered satisfactory and sufficient. Based on the various operating, financing and regulatory assumptions, the Project State Highway is expected to attain the projected profitability.

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