Preface

Infrastructure is an umbrella term for the manifold activities referred to as "social overhead capital" by economists like Paul Rosenstein-Rodan, Ragan Nurkse and Albert Hirschman. As per the "India Infrastructure Report, 1996", infrastructure is generally defined as "the physical framework of facilities through which goods and services are provided to the public." Its linkage to the economy is multiple and complex because infrastructure affects production and consumption directly, creates negative and positive spill-over effects (externalities) and involves large outlay of expenditure.

The Reserve Bank of India (RBI) has defined infrastructure as "Developing or developing and operating or developing, operating and maintaining an infrastructure facility in Energy, Logistics and Transportation, Telecom, Urban and Industrial Infrastructure, Agro Processing, Construction for storage of Agro Products, Schools and Hospitals, Pipelines for Oil, Petroleum and Gas, Water and Sanitation." This definition includes both physical and social infrastructure services. But, this research focuses only on the issues of financing of the key physical infrastructure services by commercial banks.

The eleventh five year plan envisages stepping up of the gross capital formation in infrastructure from 5% of GDP in 2006-07 to 9% of GDP by end of the plan period in 2011-12, which could be critical for achieving 9% growth. It has estimated an investment requirement of USD 502.88 billion (Rs 20,11,521 crores) in infrastructure, around 30% of which is expected to be financed by the private sector. There is consensus among government policy makers and a growing realization by the public that there is a need of increased Public-Private Partnership (PPP) in infrastructure projects and of the necessity of commercialization of infrastructure services. During the last ten years, infrastructure was being developed through increasing investments by the private sector on a commercial basis under the "private ownership and operation" approach. Under this option, the private entity not only operates the infrastructure, but also owns the allied assets. The various approaches can assume any of the following arrangements, the most important among them being: Build Operate Transfer (BOT);
Build Own Operate (BOO); Build Own Operate Transfer (BOOT); Build Operate Lease Transfer (BOLT), Management Contract (MC) and Service Contract (MC).

Due to the necessity of private sector participation and the need for incurring heavy institutional debt, since December 1992 the Reserve Bank of India (RBI) has been encouraging banks to have more exposure to financing infrastructure projects. The RBI has also relaxed individual and group exposure norms from 5 to 10 per cent of banks' capital funds in the case of lending to infrastructure sector for single and group borrowers respectively. It has also relaxed norms for classification of infrastructure assets as Non Performing Assets (NPA's). RBI has allowed the banks to use the take out financing mechanism to bridge the asset liability mismatches, issue long term bonds to fund infrastructure, invest in bonds issued by unrated Special Purpose Vehicles (SPV's) of infrastructure companies, subject to a maximum ceiling of 10% of non SLR investments, keeping the promoters shares in infrastructure SPV's out of capital market exposure norms and allowing banks to fund promoters equity. Lately, RBI has also demarcated commercial real estate from non commercial real estate based on the source of repayment rather than collaterals. The RBI wants banks to step in to fill up the position vacated by the Development Financial Institutions (DFIs). This makes sense as the DFIs as a class has become extinct, except for a few remaining ones. The RBI’s move is to garner the surplus in the banking sector and utilize it for building infrastructure assets. However, apart from asset liability mismatch problems that banks face, a combination of high capital costs and low operating costs of infrastructure projects implies that initial financing costs are a very large proportion of the total costs. Also, infrastructure project financing calls for a complex and varied mix of financial and contractual arrangements amongst multiple parties. Apart from this, regulatory uncertainty increases the risk profile of infrastructure projects.

Against the above backdrop, a few pertinent questions need to be answered.

- Do Indian banks’ credit officers have the adequate expertise to evaluate and finance infrastructure projects ensuring safety of funds?
- Does the infrastructure appraisal process provide the mechanism to identify and measure the inherent risks with due diligence?
The absence of straightforward answers to these questions is itself quite disconcerting. Obviously, Indian bankers are still on a learning curve in understanding the mechanics of infrastructure financing. For that matter, the project promoters, policy makers and regulators are in the same boat. Evidently, the lack of expertise exhibits evaluator's poor confidence level, and in the process bankers may actually be impeding infrastructure growth. The dearth of mechanism to measure risk and technical expertise to evaluate infrastructure calls for a fresh look at the way projects are being appraised by the bankers. Most of the investments in infrastructure are structured as project financing, which is distinctly different from traditional corporate financing both in terms of its structure and risk sharing aspects. Apparently, the process of corporate appraisal, which is primarily based on the strength of the promoter, financial viability of the project and the security safeguard, is not sufficient to capture the entire intricacies involved in evaluating financing infrastructure.

The present research focuses on elaborating and describing the contractual, legal and structural issues in the appraisal of infrastructure projects particularly in the road and the power sectors, from the perspective of Indian banks. Thereafter, the researcher examines the credit rating mechanism that banks use for assessment of risk and statistically analyses the attitude of credit officers towards relative importance of risk variables under each factor used in credit scoring. This is done by testing two hypotheses, one on appraisal criteria and the other on structure. The rating mechanism of banks is further evaluated by studying rating migration over a five-year period by the creation of a Transition Matrix. The research finally lays down a framework for project appraisal and risk measurement, which the Indian banks can use while determining the viability and bankability of projects. The focus on rating mechanism will be critical as Indian banks move from Standardized approach to Foundation Internal Rating based approach as required by Basle II implementation.

The study includes collection of data from 26 public sector banks, 6 other scheduled commercial banks including private banks and 5 financial institutions and central banking institutions like the Reserve Bank of India and the National Bank for Agriculture and Rural Development (NABARD). Further, a sample of 70 credit officers was drawn from the above sample for the attitude survey.
For the purpose of creating a transition matrix, 48 projects which had achieved financial closure and where banks in the sample had rated and financed using CRISIL RAM model were selected. The rating migration was noted from 2004 to 2008 for each year. Some of the projects had reached the stage of commencement of operations during this period.

Two case studies are discussed in the report, which adequately capture the procedure and critical issues for appraising projects in road and power sectors. One case is on Road project (Bharatpur-Mahua Toll Road) and the other is on power sector (Southern Energy Limited). It was observed that there are significant differences in critical issues across both the sectors. However, the dilemma is that when risk assessment is done through a credit scoring model, it is done on the same factors and the sub-variables across both the sectors. Many a time managers tend to give scores based on their individual perceptions rather than on objective assessment. Therefore, using the same factors and dividing them into sub-variables, based on descriptive research, an attitude survey was conducted on the appraising officers with the help of a structured questionnaire.

As both the null hypotheses are rejected in the research, it can be inferred that for appraisal and risk identification, the issues involved in each of the sectors are significantly different, except for promoter’s evaluation. It is obvious that each project and each sector is unique in itself. Each sub-sector of the infrastructure is inherently unique in terms of its administrative and organizational structures, the regulatory framework governing their operations, the level of technologies used, and the degree of commercialization. This being the reality, then it can naturally be inferred that if banks are using the same credit scoring model across all sectors, it will lead to inappropriate assessment of risk rating which will result in inappropriate pricing decision, because the attitude of credit officers towards factors of appraisal is (statistically) significantly different from sector to sector. Therefore, in infrastructure projects, where it is inferred that each project in each sector is unique, bankers need a unique credit rating mechanism, based on specific guidelines for each sector. In the transition matrix, the rating grades show enough granularity and stability in the investment grades whereas the probability of default increases in the sub-investment grades. The high percentage of upward migration in ‘BBB’ rating grades suggest that banks are conservative in rating infrastructure loans till the time the project starts earning revenues. However, if a
sector specific rating mechanism, along with the effect of risk mitigants, is used, it may have an effect on rating of loans and subsequently pricing. Therefore, the researcher suggests a unique appraisal format for infrastructure projects. This appraisal format, as it takes the score of risk mitigants and their appropriate hair cuts into account, the selected sub-variables being based on primary data, is expected to improve on the existing risk assessment model. However quantitative validation on bank’s data needs to be carried out.

The report is organized into seven chapters. The need for developing infrastructure for an emerging economy like India, the challenges before it and the need for bank finance have been examined in the first chapter. The second chapter defines the key concepts, reviews the research literature and identifies the gaps in research. The third chapter studies the banks’ project appraisal practices and risk measurement tools. Concepts and Research methodology are discussed in Chapter Four. The fifth chapter shows the application of these practices in the road and power sectors. This chapter also discusses the two case studies developed for crystallizing these practices in the road and power sectors. Results of the survey, statistical analysis and interpretations are discussed in chapter six. Based on descriptive and statistical research, recommendations and suggestions are given in chapter seven. Suggestions are also offered on the generic issues and organizational preparedness to improve bank financing of the infrastructure.

The role of social sciences to study the future developments in banking, and, infrastructure finance in particular, has been well acknowledged by senior bankers. Infrastructure development will launch India on an ascending trajectory to become a superpower. Post-financial meltdown, there is bound to be a tremendous thrust for infrastructure development as investment in infrastructure may be counter cyclical and recession proof. The research on project appraisal and risk measurement in infrastructure financing by the Indian banks was therefore undertaken keeping in view the larger cause, and the bankers as catalyst agents have been given a clear mandate to fuel this growth. Towards this end, the present study attempts to strengthen the efforts of banks to step up the credit flow to the ever-expanding infrastructure sector.

Is the mechanism to identify and measure risks with due diligence in the appraisal process in place?
Acknowledgements

"Research is the process of going up alleys to see if they are blind."

- Marston Bates

As I complete an enriching voyage which is of course life changing, the above words by Marston Bates truly describes my feelings. The last 42 months has been sometimes forward and sometimes backward kind of a journey, but nevertheless extremely rewarding as I started enjoying the habit of taking up and doing work on a certain new dimension (alley) and then restarting all over again, if I found it to be a blind one.

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As I dedicate this research report to the Indian banking industry, I would be happy if my research, in a small little measure helps the banks to strengthen financing to infrastructure sector, thereby helping India to take its rightful place in the world economic order.

(Vikas Srivastava)

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