Chapter 7

RECOMMENDATIONS
AND
SUGGESTIONS

This chapter is divided into two sections. In Section A, recommendations are made to streamline appraisal and rating processes in banks through a proposed framework, and, in Section B, generic suggestions are given to increase bank finance to the infrastructure sector.

Section A

7.1 Introduction

It can be inferred from the results obtained in the previous chapter that for project appraisal the issues involved in each sector are significantly different, and, the existing rating models used by banks to measure various elements of risk are not able to capture the sector-specific issues and the effect of legal and contractual framework. Some factors in rating model are qualitative and leave scope for managerial discretion, and, therefore, a unique loan pricing cannot be arrived at. Therefore, it is suggested that for infrastructure project appraisal, as each project and each sector are unique for rating, probability distribution method for measurement of risk may be used. Accordingly, critical risk factors for each sector may be identified. This will lead to a unique rating for the project, and, if this is higher than hurdle-risk rating, the project may be financed by the bank. A project appraisal framework is also suggested which will directly correspond to risk measurement. In this section a heuristic or judgmental rating framework is suggested for measurement of risk which corresponds to project appraisal as well.

7.2. Rationale for Proposed Rating Framework

If credit can be defined as “nothing but the expectation of a sum of money within some limited time”, then credit risk is “the chance that expectation will not be met”.

The definition of default employed in Basel II, is based on two sets of conditions: first that “the bank must consider that the obligor is unlikely to pay in full” and second that “the obligor’s past due is more than 90 days (730 days in the case of infrastructure loans) on any
material credit obligation." The former is a subjective condition and the latter is an objective condition where the number of days past due that triggers default is 90 days and the minimum past due threshold amount is the level of materiality fixed by the bank. In the case of infrastructure projects, number of days past due that triggers a default is two years.

Depending on the credit risk that a particular project faces, the bank has to make provision for capital against it. Expected Credit Risk Loss (EL) is intended to make provision for reserve requirements against doubtful accounts, calculation of PLR (default premium), pricing credit-risky instruments (bonds and exotic options), and for calculation of risk adjusted profitability (e.g. RAROC). The bank can also suffer far more than the expected losses, say, during economic downturns. These losses are called Unexpected Losses (UL) or uncertain losses. Strong capital base is required to absorb the unexpected losses (UL) as and when they arise.

Figure 7.1 indicates that capital base should keep on increasing in tandem with the increase in the amount of risk.

### Figure 7.1: Risk Return Framework for Bank Capital

![Risk Return Framework for Bank Capital](image)
Credit ratings represent a ‘considered opinion’ of the inherent credit quality of a company and/or credit instrument and act as a summary of diverse risk factors to indicate the default probability of the borrower. The capital provisioning has to be done in direct relation to the overall risk rating of the credit portfolio. With the advent of Basel II, the capital requirements have increased manifold as shown in the Table 7.1.

**Table 7.1 : Impact of Basel II on Banking Industry Capital**

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Percentage of total capital under capital requirements</th>
<th>Percentage change in required capital by asset class</th>
<th>Change in capital as percentage of current total capital required for all assets.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corporate</td>
<td>61</td>
<td>22</td>
<td>14</td>
</tr>
<tr>
<td>Sovereign</td>
<td>1</td>
<td>238</td>
<td>3</td>
</tr>
<tr>
<td>Inter bank</td>
<td>8</td>
<td>49</td>
<td>4</td>
</tr>
<tr>
<td>Retail</td>
<td>24</td>
<td>(28)</td>
<td>(7)</td>
</tr>
<tr>
<td>Securitization</td>
<td>1</td>
<td>108</td>
<td>1</td>
</tr>
<tr>
<td>Equity</td>
<td>3</td>
<td>(17)</td>
<td>0</td>
</tr>
<tr>
<td>Project Finance</td>
<td>2</td>
<td>22</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td></td>
<td>14%</td>
</tr>
</tbody>
</table>

Source: “Results of the Second Quantitative study”, Basel Committee on Banking Supervision, November 5, 2001, p.5.

The percentage change in capital requirements is the maximum in the case of project loans. Moreover, bankers being conditioned by decades of security-backed lending practices, the rates applied by them to infrastructure loans would be higher on account of their incomplete understanding of legal and contractual structure of project financing. This would in turn require higher capital provisioning (for these loans) which would increase the pricing, thereby making it costly for project developers. In the final analysis it will have a direct impact on the viability of many of the projects.

As Indian commercial banks start appreciating the need for a structured credit risk management framework, it is imperative for them to incorporate some mechanism that will comprehensively and objectively capture and evaluate realistically the credit worthiness of infrastructure project developers in the perspective of changing scenario.
7.3. Conceptual background for proposed rating framework

7.3.1 Heuristic Models: Heuristic models being judgmental, these help in problem solving, which in turn lead to learning and discovery. These methods in most cases employ experimentation and trial and error techniques. A heuristic method is especially used to rapidly come to a solution that is reasonably close to the best possible answer, or ‘optimal solution’. Heuristics are "rules of thumb", educated guesses, intuitive judgments or simply common sense. In more precise terms, heuristics stand for strategies using readily accessible, though loosely applicable, information to control problem solving in human beings and machines. There are four essential categories for heuristic models:

1. Classic rating questionnaire
2. Qualitative systems
3. Expert systems
4. Fuzzy Logic systems

While heuristic or judgmental credit assessment models rely on subjective experience of credit experts, statistical models attempt to verify hypothesis using statistical procedures on an empirical database.

7.3.2 Statistical Models: For credit assessment procedures, this involves formulating hypothesis concerning potential credit worthiness criteria. The hypothesis may consist of statements as to whether higher or lower values can be expected on an average for solvent borrowers compared to insolvent borrowers. As the solvency status of each borrower is known from the empirical data set, this hypothesis can be verified or rejected. The categories of statistical models which were identified in literature review are: Discriminant Analysis, Regression Analysis, Artificial Neural Network, Causal Model, Option Pricing Model and Cash Flow Simulation Model.

The goodness of fit of any statistical model thus depends heavily on the quality of empirical data set used in its development. The first data set should be large and relevant. As data is limited in case of infrastructure projects, as most of the projects have not reached the termination or completion date for concession agreement, statistical models were not used.
7.3.3 Minimum Qualifying Criteria for a Rating System: A rating system must meet the following criteria:

- **Target value PD**: It must be possible to represent the rating result as a default probability.

- **Completeness**: The rating result should take into account all available information relevant to credit worthiness.

- **Less subjectivity**: The rating results should be reproduced by various subjects, i.e. using the same information; different analysts should come to the same rating scale.

- **Acceptance**: In the eyes of the user the rating model should assess the borrower’s credit worthiness accurately.

- **Consistency**: The rating model must not contradict the accepted theories and models.

7.4. Suggested Rating Framework: It is suggested that the credit rating officer at the branch/corporate credit department initiate the rating exercise. It is imperative that the industry rating be obtained from the economic cell, which should also specify critical contracts and regulations for a particular sector as well as sector-specific benchmarks so as to avoid perpetuating the errors. The credit officer must then input the data on company’s financial, management, business and payment records in the rating model. The rating should then be forwarded to the risk management department.

The suggested framework can be used for this purpose. The process of credit risk measurement of this model can be explained by breaking down the process into the following four steps:

- **Rate Credit Risk**
- **Aggregate Effects of Risk Drivers**
- **Model Uncertainty**
- **Identify Sources of Credit Risk**
7.4.1 Identifying Sources of Risk: When a loan proposal is analysed for profitability, the risk factors are identified as above. The above-mentioned factors are the sources of uncertainty and they are termed as "Risk Drivers".

For the purpose of systematic analysis, all the possible risk factors have been identified for the two sectors, that is road and power, in this research.

This identification, definition and classification of the risk drivers are termed as Formation of the Risk Matrix. This is explained in detail in Figure 7.2.

Figure 7.2 Formation of Risk Matrix—identification and Classification of Risk Drivers

7.4.2 Modeling for Uncertainty: Credit Risk Modeling is the process of representing the effect of various risk drivers, which give rise to uncertainty in the credit worthiness of a loan proposal. Uncertainty lies in the borrower's cash flow that could be used for servicing the loan but could undergo deviations from the expected or projected cash flows due to the effect of risk drivers.

The effect of risk drivers can be represented using Probability Distributions. These are useful tools in depicting how the risk drivers cause the projected cash flows that have to be used for servicing the loan to deviate from projections. Let us consider a risk driver like demand for toll-road or traffic. In this example, due to competition, the demand for the toll-road is not up to the projected level. Say, the projected toll revenue is Rs.10 lakhs for the first year. Due to the element of uncertainty caused by competition, there is a 25 per cent possibility that revenue will be only 90 per cent of the projection, i.e. Rs.9 lakhs; there is a
15 per cent possibility that sales will be only Rs.8.5 million (85%) and so on. Now with the help of above data, we plot the deviation from expectation (Impact of Risk Driver) along the X-axis and the likelihood of the deviation along the Y-axis to get a smooth continuous curve that is the Probability Distribution. This Probability Distribution is the model for uncertainty caused by this risk driver.

7.4.3 Aggregating the Effect of Risk Drivers: This credit risk measurement framework proposes the measurement of risk factors contributing to credit risk by analyzing them along three dimensions (Dailami, Mansoor et al, 1999):

- **Dimension 1**: The Effect Dimension (impact of a risk factor)
- **Dimension 2**: The Uncertainty Dimension (likelihood of the risk factor happening)
- **Dimension 3**: The Risk Concentration Dimension

Credit risk will be calculated as the products of Effect, Uncertainty and Risk Concentration.

- **Dimension 1**: The Effect Dimension (Impact of Risk Driver): The impact of the risk driver is the extent of the deviation that the risk driver can cause on the cash flows, for instance, market risk, where the toll collections by the borrower are not upto expectations. Now, the extent of deviations in projected cash flows due to the happening of the risk driver has to be determined. For this purpose deviations can be classified as follows:
  
  (a) Unacceptable level of Deviation (above 75% deviation)
  
  (b) Very High level of Deviation (50% - 75% deviation)
  
  (c) High level of Deviation (25% - 50% deviation)
  
  (d) Marginal level of Deviation (10% - 25% deviation)
  
  (e) Low level of Deviation (less than 10% deviation)

Historical precedents, if not available, experts’ opinions, are used for determining the most likely extent of deviation possible.
Now, using the estimates of the most likely extent of deviation and percentage chance that the deviation will not cross the most likely deviation, a probability distribution is plotted.

Figure 7.3: Probability Distribution Curve

![Figure 7.3: Probability Distribution Curve](image)

The mean of the probability distribution gives the effect of dimension or impact of the risk driver. Thus, for each of the risk factors, the corresponding probability distribution and the impact are identified. This dimension is considered as fixed for all loans given to a particular sector, since within the same sector the impact of risk drivers is almost similar. So, for instance all the infrastructure loans in the road sector will be assessed using the same set of values for this dimension effect.

- **Dimension 2: Uncertainty Dimension (Likelihood of Risk Driver Happening)**

  The likelihood of a particular risk factor happening varies for each of the loan proposals according to its inherent characteristics. The banker, based on the Risk Defining Score card given in the Table 7.2, can assign the likelihood score.

  **Table 7.2: Defining Risk Score**

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almost Certain Risk Factor</td>
<td>5, 4.5 or 4</td>
</tr>
<tr>
<td>Quite Likely risk Factor</td>
<td>3.5, 3, or 2.5</td>
</tr>
<tr>
<td>Possible Risk Factor</td>
<td>2, 1.5 or 1</td>
</tr>
<tr>
<td>Highly unlikely Risk Factor</td>
<td>0.5 or 0</td>
</tr>
</tbody>
</table>

**Importance of Risk Mitigants:** The Risk Mitigants which are used for reducing the risk level due to each of the risk drivers are taken care of as follows:
Table 7.3: Risk Mitigation Score

<table>
<thead>
<tr>
<th>Risk Mitigation</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Level of Mitigation</td>
<td>-5, -4.5 OR -4</td>
</tr>
<tr>
<td>Medium Level Mitigation</td>
<td>-4, -3.5, -2.5 OR -2</td>
</tr>
<tr>
<td>Low Level of Mitigation</td>
<td>-1.5, -1, -0.5 or 0</td>
</tr>
</tbody>
</table>

Net Likelihood Score = Risk Level Score + Risk Mitigation Score

- **Dimension 3**: **Risk Concentration Dimension**: Dimensions 1 and 2 can help to prioritize identified risks by estimating probability and impacts, exposing the most significant risks; but this deals with risks one at a time and does not consider possible patterns of risk exposure, and also does not provide an overall understanding of the risk faced by the loan proposal as a whole. This task of aggregating the effects of all risk drivers is performed by the third dimension. The measure of this dimension is the relative importance or concentration of each risk driver among all possible risk drivers.

The process of finding the magnitude of this dimension is similar to the methodology followed in the case of Dimension 1. The difference is, Dimension 3 is found out only at an **Aggregate level** for the risk drivers. Probability distributions can be used to model the effect of the risk driver (This process is similar to that followed for measuring Dimension 1). While the mean of the probability distribution gives the impact of the risk driver, the risk concentration is obtained in two steps.

**Step 1**: Area of the probability distribution under high level of deviation to unacceptable level of deviation (above 25 per cent deviation level) gives the importance of the risk driver. For example, for a risk driver like traffic (Risk Driver 1), the following steps are taken as explained.

This probability distribution represents Risk Driver 1 in two dimensions (likelihood-impact).

For determining Dimension 3 (risk concentration) the area under the distribution for unacceptable levels of impact is found out. In this case, the unacceptable levels of impact is considered as any deviation above 25 per cent.
For Risk Driver 1, the area falling under unacceptable levels of impact which is represented by dotted lines is 100 per cent of the total area.

**Figure 7.4: Area of distribution**

![Area of distribution](image)

**Step 2: Relative Weights:** After finding the area under the unacceptable region of impact for all possible Risk Drivers, the researcher will sum the values of area for all risk drivers to get the total area. Then, it is proposed to find the percentage area of unacceptable impact out of the total area for each risk driver. This will give the Relative weights. This percentage value gives the risk concentration of each risk driver. An example of risk concentration derived for a loan product is given in the pie chart below.

**Figure 7.5: Risk Concentration**

![Risk Concentration](image)
**Aggregating the effect of risk drivers to get a risk score** The Credit Risk Score for each Risk Driver is obtained using the following formula

**Credit Risk Score = Impact * Likelihood**

Then for obtaining the aggregate credit risk score due to all risk drivers, the credit risk scores for each risk driver should be multiplied by the corresponding Dimension 3 value and all the resultant scores are then added together to get the **Aggregate Credit Risk Score**.

### 7.4.4 Credit Risk Rating:

The Credit Risk score obtained in the previous step is put into one of the rating classes for the purpose of decision making and pricing. The rating classification is given in Table 7.4.

**Table 7.4: Credit Risk Rating**

<table>
<thead>
<tr>
<th>RR-9</th>
<th>RR-8</th>
<th>RR-7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unacceptably High Risk</td>
<td>Extremely High Risk</td>
<td>Very Very High Risk</td>
</tr>
<tr>
<td>Risk Score (\geq XX%)</td>
<td>Risk Score (\geq XX%) and below XX%</td>
<td>Risk Score (\geq XX%) and below XX%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RR-6</th>
<th>RR-5</th>
<th>RR-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very High Risk</td>
<td>Very High Risk</td>
<td>High Risk</td>
</tr>
<tr>
<td>Risk Score (\geq XX%) and below XX%</td>
<td>Risk Score (\geq XX%) and below XX%</td>
<td>Risk Score (\geq XX%) and below XX%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RR-3</th>
<th>RR-2</th>
<th>RR-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate Risk</td>
<td>Low Risk</td>
<td>Very Low Risk</td>
</tr>
<tr>
<td>Risk Score (\geq XX%) and below XX%</td>
<td>Risk Score (\geq XX%) and below XX%</td>
<td>Risk Score (\geq XX%) and below XX%</td>
</tr>
</tbody>
</table>

Here, RR stands for Risk Rating

Higher the Credit Risk Score, greater is the risk involved. While assessing a loan proposal, it should be ensured that the risk rating for each of the individual risk drivers is below the **Hurdle Risk Rating**.

For this model to function well, a proposed appraisal sheet for infrastructure is also suggested.
It is evident from the research that stand-alone models of assessment and risk measurement may lead to a faulty pricing decision, as poor rating attracts a higher default premium. The rating exercise may not be comprehensive on account of variables, which are unique to the sector concerned. It is evident from the conceptual framework discussed above that, if the appraising officer can give the likelihood and impact scores along with risk mitigants score, a better rating exercise can be undertaken for the project which will keep its dynamic nature intact. Raw scores can then be modeled by the credit (risk) department to arrive at the risk rating of the project.

Corresponding to this an appraisal format is suggested. This appraisal format uses all the eight factors used in the survey and the most important sub-variables as identified in statistical research. It is suggested, however, that benchmarks need to be changed from sector to sector so as to retain the dynamic content of the model and advice should be given to the appraising officer simultaneously. It is expected that this model will straightway lead to calculation or measurement of the risk since credit officers can simultaneously give scores on likelihood, impact and mitigants as suggested in the risk model above. The format is given in Table 7.5.
### Table 7.5: Suggested Appraisal Format

<table>
<thead>
<tr>
<th>Risks</th>
<th>Risk Factors</th>
<th>Likelihood</th>
<th>Impact</th>
<th>Possible Mitigants</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Construction Risk</strong></td>
<td>Project Completion Risk: Completion within Schedule &amp; Budgeted Cost</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strength of EPC Contractor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Land Acquisition and Required Regulatory Clearances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lenders Independent Engineer’s Reports</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quality of Workmanship</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Environmental Compliance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Technology Risks</strong></td>
<td>LIE Report on Technology</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Risks with New / Unproven Technology</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Technology Support for Construction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Testing and Commissioning Risks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Availability of Utilities – Power, Water, etc.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Market Risks</strong></td>
<td>Market Capacity and Long Term Demand Supply</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cyclicality / Recessionary Trends in Demand</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Competition from New Entrants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contractual Agreement with Buyer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Price Risk: Volatility, Product Price Depreciation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Charges Economical for Off-taker</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bids Servicing Costs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Legal Risks</strong></td>
<td>Collateral &amp; Security Strongly Enforceable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Structure of Arbitration Mechanism, Dispute Redressal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trustee and Intercreditor Issues</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Financial Strength</strong></td>
<td>Project Debt: Equity</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Project DSCR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reasonableness of Capital Costs</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>TOL / TNW</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stability of Cash Flows</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Foreign Exchange Risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Internal Rate of Return</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MANAGEMENT QUALITY</td>
<td>Transparency in Shareholders Agreement</td>
<td>Management: Track Record &amp; Competence, Succession Issues</td>
<td>Financial Prudence: Strict Control on Cash Flows</td>
<td>Strict Control on More Borrowings, Equity Infusion</td>
</tr>
<tr>
<td>-------------------</td>
<td>--------------------------------------</td>
<td>------------------------------------------------------</td>
<td>---------------------------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>FORCE MAJEURE RISKS</td>
<td>Risks Due to Acts/Policies of the Government</td>
<td>Insurance Coverage</td>
<td>Risks Arising Due to External Factors Like WTO, Global Economic Changes, etc.</td>
<td>Claims Arising Due to Operating Accidents</td>
</tr>
</tbody>
</table>

This assessment model directly corresponds to credit rating mechanism discussed above. It is suggested that this model should retain its dynamic nature with respect to sectoral issues and banks may be advised to choose benchmarks carefully for each sector. However measurement of risk becomes fairly easy with this model.

7.5.1 Validation of Suggested Appraisal Format: The term validation is defined in the minimum requirements of the IRB approach of Basel II as under:

"The institution shall have a regular cycle of model validation that includes monitoring of model performance and stability; review of model relationships and testing of model outputs against outcomes" (Basle II, 2001).
There are two methods of validation - Qualitative and Quantitative. These two methods of validation complement each other. A rating procedure should only be applied in practice if it receives a positive assessment in the qualitative area. A positive assessment only in the quantitative validation is not sufficient. In this study on account of lack of quality of data, quantitative validation was not undertaken.

However before adoption by Scheduled Commercial banks, the model needs further validation on a larger number of accounts and over a greater time period. This will lead to refinement of the proposed model.

However, it is expected that the research and its findings particularly with reference to qualitative and critical risk factors will help the bankers when they move to Foundation IRB and Advanced IRB approaches.

In the next section, based on the current study, generic suggestions to increase the flow of credit to infrastructure sector are discussed.

Section B

Suggestions and Strategies for

Improving Bank Financing of Infrastructure Sector

7.6. Suggestion and Strategies for Improving Bank Finance to Infrastructure Sector

A deeper and more diversified financial sector could certainly help increase private participation in infrastructure. Developing local capital markets can play a critical role in facilitating private investment in infrastructure. Key priorities include are discussed in the following paragraphs.

7.6.1. Facilitating Equity Financing: Raising adequate equity finance tends to be the most challenging aspect of infrastructure project financing, as equity typically shoulders the greatest level of operational, financial and market risk. Equity can be provided by project sponsors (those who have an operational interest in the contract) or financial investors (those who have only an investment interest). In India, as in many other countries, the early phase of private financing of infrastructure has shown a predominance of sponsor equity. But the
ability of sponsors to raise equity from the primary market remains limited. First, infrastructure companies or project sponsors typically have much higher gearing than other corporates, which fact makes them unattractive candidates in the securities market. Second, not only are the projects operationally complex but they also involve complexities in terms of contracts, legal structures, right of first charge on assets, etc. Consequently, retail investors especially find it difficult to understand the true risks involved, and are wary of investing in such issues. In the longer-term, equity finance from financial investors – including private equity funds – such as venture capital funds and other institutional investors, such as dedicated infrastructure funds – sponsored by a consortium of insurance companies, pension funds, government sponsored funds, commercial banks, development banks, private fund managers and other privately-held companies – can prove to be critical. This is particularly true in situations where the sponsor’s equity is consumed at the early stages of the projects, and not recycled quickly enough due to lack of refinancing options. However, at present, equity financing by financial investors is constrained by several other factors described below.

7.6.1.1 Limited exit options constrain equity participation: Financial investors have a clearly defined investment horizon and usually divest in a pre-determined span of time. The exit policies can be improved to make it easier for investors to exit. In this context, a key priority is for the Reserve Bank of India (RBI) to introduce enabling regulations for the use of put options as an exit mechanism for investors in unlisted (privately held) companies that prefer to determine the terms of the exit on an up-front basis. The best route for financial investors to exit from an infrastructure project is to sell their stake to the sponsors, through a 'put option', which involves an up-front agreement between the financial investor and the sponsor, including agreement on the minimum price at which the financial investor could sell the equity stake to the sponsor at a future date. However, in India, the regulations do not allow such agreements to be reached up-front between financial investors and sponsors of an unlisted company. For one thing, the approval to exercise the 'put option' has to be obtained from the Reserve Bank of India (RBI) at the time of the exercise, and cannot be obtained up-front. For another, put option agreements with sponsors of unlisted companies cannot guarantee a minimum price on the sale of shares to the sponsors. The sale price in such transactions is subject to pricing requirements of the RBI, which requires an independent valuation to determine a "fair" price for the shares at the time the option is exercised. This leaves a lot of uncertainty in the minds of investors and prevents them from negotiating a floor to their return and ensuring a suitable exit prior to investing. Currently, capital gains on
the sale of unlisted equity shares attract a much higher tax rate than listed equity shares. However, it is understood that unlisted equity would be the dominant source of equity capital in infrastructure, at least in the medium term. Similar tax treatment will make providers of risk capital indifferent between the two.

7.6.1.2 Adequate recording of ownership rights: Mandatory disclosure on shareholder ownership is limited to only the shareholder’s name which usually is not sufficiently unique; transparency in disclosures are related to capital structures and arrangements: Such transparency would enable certain shareholders to obtain a degree of control disproportionate to their equity ownership. While there is a trend towards more transparent share of ownership, the classification does not give a fully transparent picture of control due to the prevalence of complex cross-holdings across family or business groups; and Misuse of corporate assets and abuse in related party transactions are a source of problems. It is not always easy to identify “related parties” or assess the fairness of a transfer price.

7.6.1.3 Corporate governance issues: More specifically, there are typical corporate governance issues with respect to protection of minority shareholders’ rights in infrastructure projects. Often infrastructure project developers are construction companies, equipment suppliers or infrastructure services companies. For example: Road projects are being developed by construction companies; Ports and airports are being developed by equipment suppliers, user companies and port management companies; Power projects are developed by construction companies and equipment suppliers.

Return on equity for these companies is generated not only from the investments in the infrastructure projects per se, but also from the additional business generated from the project, for example a construction company undertaking an Engineering-Procurement-Construction (EPC) contract benefits also from the construction of road, port, airport, and power projects, or an equipment supplier supplying equipment to the port, airport, power project, and a management company by managing the port or airport operations. For these companies, revenues from these activities exceed the returns provided by equity.

Often this is their primary motivation for venturing into infrastructure projects, rather than the returns provided by the project itself. For a financial investor, the only return on equity is provided by the revenues generated by the project. Therefore, there is a severe conflict of interest between the project developer and the financial investor. A project developer may act in a way which maximizes his return from the secondary activities, at the
cost of project revenues. The financial investor, who is in a minority position in such projects, loses out in such situations. In order to improve corporate governance, and to protect minority shareholders’ rights, infrastructure projects must go for competitive bidding for the EPC contracts, equipment supply contract, management contract and user contracts. The project promoters may participate in such bidding processes, but must emerge a winner from such a process to obtain the contract for providing such services.

7.6.2. Limited Mezzanine Financing: In the developed world, many infrastructure projects are part-funded through ‘mezzanine finance’, which is a hybrid of debt and equity. Mezzanine finance is debt capital with fixed payment or repayment requirements, but with the right to convert it into an equity interest in a company. An example of this type of financing is the convertible unsecured loan that pays fixed interest but gives its holder the right to convert it into equity sometime in the future. Mezzanine is generally a subordinated debt. It carries two advantages: first, it attracts investors by offering a rate of return which is higher than that of senior debt, and second, on the balance sheet of a company, it is treated like quasi-equity, which makes it easier to increase the component of the usual bank or finance institution loans. Also, since subordinated debt is not a loan, FIs do not insist on escrow backing for such funding. Mezzanine finance is typically found with venture capital companies and/or alternate lending institutions seeking a higher rate of return. Unfortunately, there is no infrastructure funding entity that has actively explored mezzanine financing in India in any sizeable amount. The reasons for this include the following:

- **First**, an impediment to the use of mezzanine financing is the lack of a sufficiently large and varied pool of infrastructure projects. When projects and financiers are few and far between, and when modern infrastructure financing is in its nascent stages, there is a preference for funding institutions to opt for more straightforward loans than hybrids.

- **Second**, interest rate caps on external commercial borrowing (ECBs) constrain the use of mezzanine financing by foreign investors. The interest rate caps make no provision for pricing different debt or quasi-equity instruments commensurate with the risks associated with them.

- **Third**, regulatory norms and premium pricing are also factors that weigh against mezzanine financing. The norms for provisioning against Non-Performing Assets (NPA) do not make a distinction between senior debt and subordinated debt; the latter
deserves more liberal treatment given its quasi-equity nature. Also, sponsors with projects that are at the margin in terms of profitability find the 'premium' demanded for subordinated debt over senior debt by a host of risk-averse lenders far too excessive – enough to turn a potentially profitable venture into an unviable one.

As the situation stands today, most domestic lenders (banks and FIs) prefer to provide senior debt to 'bankable' projects with a lower return rather than risk large quantities of funds to get a few basis points more.

7.6.3 Removing Interest Rate Caps on ECBs: This could encourage foreign investors to use instruments like mezzanine and finance infrastructure ventures. The RBI has announced that henceforth ECBs up to US $500 million per borrower per financial year would be permitted for rupee and/or foreign currency expenditure for permissible end-uses under the automatic route. Accordingly, the requirement of minimum average maturity period of seven years for ECB of more than US $100 million for rupee capital expenditure by the borrowers in the infrastructure sector has been dispensed with. It has also allowed companies to bring ECB funds to India instead of parking it abroad. The RBI has announced that in order to further develop the telecom sector in India, payment for obtaining license for 3G Spectrum will be considered an eligible end-use for the purpose of ECB.

Though the RBI has relaxed the 350 basis point interest rate cap above the six-month LIBOR on infrastructure loans above 7 years to 450 bps, the industry feels the need to at least increase the cap to 700 basis points above LIBOR. In addition, tools for mitigating the risks for international lenders should be developed, for example, Partial Risk Guarantees (PRGs) to hedge against political risk, and developing the swap market to mitigate foreign exchange risk.

ECB's in India have sought to be restricted in recent months. The first ECB for rupee expenditure has been cut down to a paltry $ 20 million per company per financial year, compelling companies to use ECBs to mainly to import. The restriction is aimed at reducing their impact on domestic liquidity as well as curbing opportunities for arbitrage. Infrastructure which has lower import intensity than non-infrastructure will be a bigger loser. Credit spreads for overseas borrowings have been reduced making it more difficult to raise senior debt, subordinated debt, mezzanine financing or quasi-equity for some issuers, particularly infrastructure developers, many of whom are new and not well established.
7.6.4. Limited Use of Take-out Financing: Commercial bank funding of infrastructure projects runs the risk of asset-liability mismatch. An innovative method is to encourage the use of ‘take-out’ finance. Here, a bank which is funding an infrastructure project gets into an arrangement with a financial institution, where the institution commits to buying the bank’s loans after a certain period. There are two versions to this arrangement: unconditional and conditional take-out finance. The unconditional version involves full or partial credit risk with the institution agreeing to take over the finance from the original lender. Under conditional take-out finance, the institution commits to taking over the finance from the lending institution only if it is satisfied with certain stipulated conditions. Hence, it is only unconditional take-out financing that helps bank resolve the asset-liability mismatch since under the conditional take-out financing model, the long-term risk still remains in the books of the banks until the take-out actually happens. Take-out financing is ideally suited for annuity and BOT type road and housing projects. While there are some recent examples of institutions like IDFC, IIFCL and Housing and Urban Development Corporation (HUDCO) trying take-out financing as a method, this has not found much favor in India. While unconditional take-out financing is not very common, it can give a fillip to infrastructure financing by addressing both the unwillingness and the lack of experience of institutional investors to participate in infrastructure financing.

High stamp duties reduce the attractiveness of take-out financing and securitization. Being a state government subject, stamp duties vary considerably across the country. Excessive rates of stamp duties in some states have stymied the growth in innovative financial instruments such as take-out financing and also securitization. In the light of the differential duties across the states in India, the infrastructure SPV for securitization could be registered in the state with the lowest stamp duty. However, the fact remains that it results in higher transaction costs and inconvenience in domiciling the entity based on this criteria, despite having all business interests elsewhere. Furthermore, since these duties are charged *ad valorem*, they inflict a high cost on the projects that involve high value securities or large asset transactions.

In the Union Budget 2009-10, the Government of India has decided that IIFCL will refinance 60 per cent of the commercial bank loans for PPP projects in critical sectors over the next 15 to 18 months. The IIFCL and banks are now in a position to support projects involving a total investment of Rs.1,00,000 crore in infrastructure. Combined with the steps
taken to increase public investments in infrastructure, this will provide a big boost to such
investments. However, the take-out financing scheme will be only incremental in nature.

7.6.5 Developing a Long-term Corporate Bond Market: A well developed government
bond market is a critical pre-requisite to the development of the corporate bond market.
Hence, there is an urgent need to increase the depth and the breadth of the government bond
market. For this the government should consider recalling the existing illiquid, infrequently
traded bonds and re-issue liquid bonds.

In order to bring in more retail investors to the government bond market, there is a need
to introduce an element of marketability and price discovery, which can only be brought in by
making securities trading screen-based and more transparent. According to a Finance
Ministry Notification, dated October 7, 2008, foreign institutional investors (FIIs) would also
be permitted to invest up to US $5 billion in government securities and up to $3 billion in
corporate bonds as compared to the existing ceilings of US $3.2 billion and $1.5 billion,
respectively. The twin measures are expected to boost the country's corporate bond market
while enabling the government to mop up funds at competitive rates. There is also a need for
increasing the appetite of long-term investors.

Given the current stage of market development, where long-term institutional investors
are yet to develop, the banking system could play an important role in the development of the
corporate debt market. Regulatory caps on banks' investments in corporate bonds could be
relaxed (limited to 10 per cent of their total non-SLR investments) as could the minimum
rating requirement (minimum investment grade, i.e. AA and above). While not an immediate
constraint, over the medium term, the debenture trustee system needs to be strengthened to
courage retail investment in infrastructure by providing protection from default by the
company in making timely payment of interest. Other measures also need to be taken to
courage insurance companies and pension funds to step-up their investments in
infrastructure projects. investment policies and regulatory guidelines for insurance
companies, pension funds, mutual funds, banks and other FIIs need to be sufficiently flexible
for these entities to choose an appropriate risk-return profile within the fiduciary constraints.
This will also help professionalize fund management. The authorities should look at the
existing investment norms prescribed for insurance, Employees Provident Fund (EPF) and
Public Provident Fund (PPF) with a view to relaxing them so that these institutions can
commit significantly larger amounts of long-term funds to infrastructure. In particular,
investment guidelines for insurance companies need to be modified to allow investment in instruments with a rating of less than AA. At present these investments are counted towards ‘unapproved’ investments. This, in conjunction with development of credit enhancement products should enable insurance companies to invest in infrastructure projects. Pension funds should be modified to allow them to invest in infrastructure projects, which have a guarantee from the central government or multilateral agencies. The cost of such funding will also be lower since these will not carry any currency risk.

**7.6.6 Creation of Debt Recovery Tribunal:**

There is a need to create a debt recovery mechanism for pension and provident funds on the lines of the Debt Recovery Tribunal (DRT). While the need for such a tribunal is not felt at present due to the restricted investment profile, it will be critical if pension and provident funds are to have any significant exposure in the infrastructure sector.

**7.6.7 Fiscal Measures**

While it should be noted that fiscal concessions are not necessarily desirable, *per se*, they might help increase returns, and, hence, the investment. In this context, the Ministry of Finance (MoF) could consider reducing the customs duty on capital goods and machinery that are critical for roads, ports, airports, power, railways, telecommunication, oil and gas pipelines and supply and distribution of water. This incentive would significantly reduce the cost of many infrastructure projects.

Exempting foreign borrowings by infrastructure companies or SPVs from withholding tax requirements will reduce borrowing cost as the current market practice is to gross up the withholding tax. Most developers park their infrastructure investments in a holding company as a separate business from that of the parent company, and these holding companies get classified as NBFCs under the RBI guidelines. This puts several restrictions, like limits on bank borrowing, ECBs not allowed under the automatic route, FDI investment not allowed in these companies without RBI approval, etc. Treating these firms as a separate class of NBFCs will help getting exemptions from such restrictions.

With respect to the fiscal concessions under Section 80(1A) and 80(1B), the government could consider extending the time horizon from the present 10 + 5 years (0 per cent tax on the first, and 50 per cent tax liabilities during the second period) to a 2-year time horizon where
the project would be tax free for the first 10 years, thereafter pay a third of the tax liabilities in the next five and 50 per cent of it in the final five years.

In addition, the government could also consider removing the provisions of Minimum Alternate Tax (MAT) for those infrastructure companies which are availing the benefits under Section 80(IA) and 80(1B). Another alternative would be to remove Section 80(IA) and 80(1B) altogether and, instead, allow for unlimited carry-forward of losses. This would enable all infrastructure companies to set off the large losses in the initial years of operations against the profits of the later period, and, in effect, create a more transparent fiscal incentive than Section 80(IA) or 801B. The benefits of Section 80(IA) are only available during the operations period of a project. The interpretation of this leads to the conclusion that such benefits are not available to BOT toll project SPVs during the construction period. This reduces the financial viability of some projects such as select NHDP Phase V BOT toll projects that give the right to concessionaires to collect and appropriate toll from the start of the concession period, that is even during the construction period. A suitable amendment of Section 80(IA) in this regard could increase the interest level of developers in undertaking infrastructure projects by making these projects more financially attractive.

The fiscal benefits given under Section 10(23G) should be approved at one time for the stipulated 10-year period, instead of the present practice of the companies or SPVs getting annual approval from the Central Board of Direct Taxes (CBDT). Moreover, the government should seriously consider eliminating the word “wholly” – which prevents any infrastructure SPV from redeploying its investible surplus in another group infrastructure SPV – and substituting it by “substantially”. The tax implications of this is minuscule compared to the operational flexibility that it will give to companies which have more than one infrastructure SPV. The concept of escalating Section 10(23G) benefits to umbrella infrastructure companies should be investigated – something that could be possible if the word “wholly” is replaced by “substantially”. This will allow sponsors to consolidate their infrastructure SPVs under a single holding company, which will allow the critical threshold to carry out a successful public offering. Such a mechanism will give sponsors and FIs an exit option from equity participation, which could be recycled for new projects. Also, the government ought to consider making the benefits of 10(23G) available to retail investors, who could then invest in dedicated infrastructure mutual funds which would use the finances so obtained to offer longer-term credit facilities to infrastructure projects.
7.6.8 Streamlining Infrastructure Regulation

The government needs to assure potential investors that there is an intention to lay out clear policy frameworks for each sector and reduce the uncertainties arising out of policy implementations and arbitrary actions in contractual commitments.

All infrastructure projects involve multiple clearances from different ministries and departments. This arduous process contributes to significant delays. In order to mitigate this problem, the Government of India needs to adopt the practice introduced by the Ministry of Power by setting up Inter-Institutional Groups (IIG). These would consist of the infrastructure developers and senior representatives from banks and FIs. Under the leadership of the secretary of the concerned ministry, the IIGs would meet once a month to discuss the progress of specific infrastructure projects, locate the roadblocks and resolve outstanding issues or disputes between the developers and various funding agencies. This experiment has been very successfully in the case of power sector and should be replicated in other key ministries.

7.6.8.1 Other Regulatory Issues: It is widely accepted that insurance companies and pension funds are ideal candidates for supplying long-tenor financing, given the long-tenor nature (15 years or more) of their liabilities. But with a few notable exceptions, in recent times, most insurance companies and pension funds have not focused on funding infrastructure. Commercial banks have also had little appetite for infrastructure financing, although recent years have witnessed an increase in their lending to infrastructure. The Industrial Development Bank of India (IDBI)'s report on the sanctions and disbursements of FIs reveals that the total loans sanctioned by these institutions towards infrastructure in the first three years of the period 2001-02 to 2010-11 has been Rs.460.6 billion, or a mere 8.3 percent of our estimated aggregate financing gap of Rs.5,542 billion. At this rate, the total sanctions for the infrastructure projected forward for the decade 2001-02 to 2010-11 turns out to be a little more than Rs.1,500 billion, or 28 per cent of the aggregate finance gap. Clearly, these FIs have a long way to go. Moreover, while sanctions have been low compared to the financing gaps in infrastructure, disbursements have been lower still. For the three years ending 2003-04, total disbursement of the FIs has been Rs.287.6 billion, which translates to 5.2 per cent of the finance gap for 2001-02 to 2010-11 period. Among the various term-lending institutions, LIC (the largest insurance company in India that is also state-owned) has emerged as the biggest player, with its disbursements for infrastructure projects exceeding the
combined disbursements of IDBI, IFCI, IDFC, IIBI and SIDBI. However, most of the involvement of the state-owned insurance companies, including LIC, is in infrastructure projects of the central and state governments' state-owned enterprises (SOEs) backed by government guarantees. These are often not based on credibility or the detailed economics of the project. In fact, in the past, state governments have raised funds from the insurance SOEs ostensibly for financing infrastructure, which have then been diverted to the state’s consolidated finances.

7.6.9 Improving Credit Flow from Commercial Banks to Infrastructure

Commercial banks have only been marginal players in terms of their share of infrastructure financing in the recent past, though this segment has registered strong growth in the last two years. Within the sectors, FIs have a much higher appetite to lend to power projects than others. Power generation accounts for 62 per cent of the value of infrastructure loans sanctioned and 55 per cent of disbursals. Road projects come second, accounting for 20 per cent of the total infrastructure sanctions, and 24 per cent of disbursals.

A fundamental factor limiting the participation of all types of banks in infrastructure financing relates to regulatory skull-drudgery, which raises the risk-profile of infrastructure sectors, and increases the risk-aversion of banks towards infrastructure financing. Even in cases where projects are being ‘regulated through contracts’, the inability to enforce the contract conditions and threat (and actual experience) of reopening of these contracts by government, greatly increases the risk profile of the projects.

The risk-aversion of banks in financing infrastructure projects further manifests itself in their reluctance to enter projects at the early stages wherein project risks are concentrated. One of the main reasons cited for viable projects not reaching the financial closure quickly enough has been the lack of financial support at the initial stage of a project’s life cycle. Commercial banks, of course, rarely take equity positions in infrastructure projects. Unfortunately, even the specialized infrastructure financing companies, such as Infrastructure Leasing and Financial Services Ltd. (IL&FS) and Infrastructure Development Finance Company (IDFC), have preferred to enter projects only after the Commercial Operations Date (COD) phase. Critics point out that the rationale for setting up these specialized institutions was precisely to take initial equity positions in these ventures, and provide the confidence necessary to attract further capital into the project.
Restrictive government policies and regulatory guidelines have further constrained the ability of insurance companies and pension funds to participate in infrastructure financing.

For commercial banks, while RBI regulations do not prohibit banks from increasing their exposure to infrastructure sectors, the flexibility of banks to become more active in this segment is constrained by some of RBI's regulations that will likely have to play a significant financing role in the foreseeable future. Second, while the primary concern of this note is to examine finance-related factors that may constrain private investment in infrastructure, as noted, funding issues are closely linked to sector policy and regulatory framework. Third, the demand side also matters. Indeed, many financiers argue that, while they do have the resources, appetite and instruments to fund infrastructure, the problem lies in the absence of financially viable 'bankable' projects with acceptable risk profiles. They argue that, if bankable projects existed, the funding could be made available. This goes back again to the issues related to the policy and regulatory environment in which infrastructure project developers and financiers in India have to operate.

In order to provide an active incentive for banks to scale-up infrastructure financing, the RBI could consider classifying infrastructure as one of the priority sectors. Exposure to step down SPV's must be brought out of the group exposure norms. Moreover, as far as banks are concerned, liabilities created by the sale of long-term infrastructure bonds may be kept outside the purview of Statutory Liquidity Ratio (SLR) and Cash Reserve Ratio (CRR). Banks may also be encouraged to set up Project Finance Strategic Business Units where analysts are trained in sector specific areas for appraisal. Training of analysts for appraising infrastructure projects and identifying sector specific issues for them is also necessary. Sector-wise internal rating formats also needs to be developed as banks move from standardized approach to IRB approach.

7.7. Limitations of the study

The need, objectives, methodology and constraints of the methodology used for the study have been discussed in the chapter on methodology. The other limitations for the study can be acknowledged as follows:

1. The study on project appraisal techniques and risk measurement tools used in Indian banks is essentially multidisciplinary involving banking, corporate financing, engineering, social and behavioral sciences, organizational theory, etc. Although an
attempt has been made to study the relevant aspects in as much detail as possible, there may be other factors which are not covered in the study.

2. The study used sample surveys and structured questionnaires for gathering relevant information on organizational processes in banks. However, as the study was a private initiative for academic purpose, responses based on official bank documents prepared from time to time could not be obtained. Therefore the possibility of missing important points and details could not be ruled out.

3. The study is confined to the views and suggestions of the bank officials. Keeping in view the sensibilities of banks to such studies, the views of bank customers on their projects for improvement of bank products and service qualities were ascertained through informal discussions. Views of other stakeholders in infrastructure projects like the concerned ministries, finance ministry, the Reserve Bank were also obtained through informal discussions. It may be desirable to codify their responses for a larger research study.

4. The study was based on sample survey and descriptive research carried out on loan documents and case studies of selected banks. Although, the sample included bank officers from different types of banks, it was mainly drawn from bank officers from the public sector and old private sector banks. Therefore, the sample size suffers from two constraints, first it may considered as small, but then infrastructure finance being new area, not many appraising officers have experience and satisfy the strict control characteristics used for sampling, and second it may not exactly represent the entire Indian Banking Industry.

5. Though project appraisal and risk measurement has been discussed in general for the infrastructure sector, for the purpose of detailed discussion and hypothesis testing, the study narrowed down to two sectors, that is road and power. As per statistics, 86.5 percent of the disbursement of bank funds to infrastructure is made in these two sectors, hence, the study of these may be most relevant to the bankers. However, it is not possible to include detailed discussions on all sectors of infrastructure in a single research. Thus there is a possibility that the conclusions may not be exactly be generalized for infrastructure sector as a whole.

6. The responses to the issues sought to be analysed and organizational practices sought to be understood were given by concerned officials as their personal experience or
perception. There is a possibility of divergence from processes/practices actually prevailing in the banks.

7. The study used the RBI reports along with reports from Ministry of Power and Road and Surface Transport as secondary sources of data. However these reports have themselves indicated certain difficulties regarding the responses received. The RBI officials expressed the need for validation of some of these reports.

8. The survey on practices in infrastructure finance was conducted in the years 2007-09 for the period covering seven years for projects sanctioned from the financial year 2002 onwards, with monitoring reports till 2009. The data however may be indicative and not reflective of the current situation.

9. The sample for creation of transition matrix is small on account of lack of quality data available at banks. It is also observed that rating migrations are steep depending on completion of construction period and commencement of operation date. On account of lack of data, the research has not been able to isolate this effect.

7.8. Directions for Further Research

Keeping in mind the limitations of methodology discussed in Chapter 2 as well as the constraints mentioned above, there is a need and scope for further inter-disciplinary research in this area. Some of the suggestions are:

- Quantitative validation (statistical) of risk measurement and project appraisal framework given in suggestions with bank data.
- Study other sectors of infrastructure, most importantly telecom and ports on similar parameters and broaden the scope of the present research.
- Study the correlation of infrastructure development to economic expansion/growth rate.
- Study the impact of infrastructure financing on capital adequacy requirements of scheduled commercial banks in the light of Basel II implementation.
- Study the impact on socio-cultural environment by the increased spending on infrastructure development.
7.9. Conclusions

The suggested formats for various organizational processes and procedures are written in this report. A list of books, reports and articles referred to for the research as also academic resources are given in the Bibliography.

That the role of social sciences is also to study the future developments in banking, and infrastructure finance in particular has been acknowledged by senior bankers. Infrastructure development will set India on its path to become a superpower. Especially post-financial meltdown, there is 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, has been mandated to fuel this growth, therefore the study was undertaken keeping in view the larger cause. Towards this, the present study attempts to strengthen efforts of banks to step up credit flow to infrastructure sector.