



# Credit Rating Model for Project Finance in Indian PSBs: A Case

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## ABSTRACT:

*This paper presents an analysis pattern of the current practice of project appraisal system in Indian Public Sector Banks. The discussion reveals that the components of internal rating systems, their architecture, and operation pattern. The credit grading system and risk associated with each grade in the selected bank is emphasized. The study uses live case of the one public sector bank of India appraised the project in the real estate segment (commercial project). In this study we found that, financial indicators are the most significant factor that can be used to identify the project's vulnerable to default in power projects but in the case of real estate (commercial) projects- construction risk can be considered as the most significant risk factor following the financial risk factor.*

*This can help to bankers to strengthen the credit culture and risk management of the project portfolio, it also reduces training time for new credit officers and to improve analytical skills which can lead to improved decision making in project lending. Even borrowers can observe key areas the bankers look for in granting loans can improve and make their loan approval easy and less interest by getting more credit score/high credit grades.*

**Key Words:** Credit Grading, Credit Scoring, Internal Credit Risk Rating, Project Finance.

## I. INTRODUCCION

Banks are firms balancing risk and return characteristics among alternative opportunities; they cannot avoid risks<sup>1</sup>. In the process of credit decisions human judgment plays central role. Internal credit grading/rating system promotes banks credit culture. It is expected to operate dynamically. For the success of the internal rating system support and oversight of the board is crucial<sup>2</sup>.

Project finance is limited resource funding used to finance infrastructure projects which are high capital intensive in nature. India spends almost 6 per cent of GDP on infrastructure projects such as, electricity, roads and bridges, telecom infrastructure, railways, chemical processing plants, mines, irrigation and water supply,



and sanitation. Such projects repay through their income generated by the assets. Basel II Internal Rating Based (IRB) approach set clear distinction between project and corporate loans. Project performance is the core of project finance. The debt terms are not based primarily on the sponsor's credit support.

The future cash flows of project is considered as the principle lender security in project financing. It is also called as cash-flow lending. Project assets are considered as security for the exposure. Green Field projects are considered as new projects in project financing. Understanding of the structure and implementation of the project is crucial in assessing the risks involved in project finance. Nature of the project, its technical characteristics, project financials, credit-worthiness of promoters, location, infrastructure requirements for operations, fuel/input requirements, project implementation schedule, selling and distribution arrangements, experience of the management team, political or regulatory risk, operations and maintenance risk, security package and cash-flow coverage are the key risk areas for project evaluation<sup>3</sup>. For project finance exposures RBI specified four supervisory standard rating grades under Basel II IRB approach such as, strong, good, satisfactory and weak.

### **1.1 Project Finance under IRB Approach:**

Project finance falls under corporate loss but in a specialized lending sub-class. Banks conduct risk grading of the projects; Banks has to consider the following criteria into account as per supervisory guidelines of the regulatory body. Banks has to consider financial strength, political and legal risk environment, transaction characteristics, strength of the sponsor and the security package criteria into account as per supervisory guidelines of the regulatory body. Credit risk is the most prominent risk for which the bank has to maintain a huge proportion of capital against unexpected losses. <sup>2</sup>In estimating capital requirements banks suffered due to several limitations. Hence, banks moved to the internal rating based approach for the estimation of the same.

### **1.2 Project identification and project cycle:**

Capital expenditure in the angle of development of any industrial unit defined as Present outlay of funds in return for an expected flow of benefits in future". Hence, it is a link between the unit's present scale of operations and anticipated future benefits. The promotion phase/stage is very crucial part in the entire life cycle of a project<sup>4</sup>.

**1.3 Key promotion functions comprises of:** Identification of a project, feasibility investigation, assembling the proposition, and financing the proposition. Banks were concerned with the identification of a project at large. Feasibility of the product in an observed potential market for goods/products is essential. Cost advantage factors, in terms of cheaper raw materials and skills to promote the industry too vital. A project is a planned deployment of available resources to derive benefits which can be measurable in terms of the costs to be incurred and the benefits to be desired<sup>4</sup>.



The objective of this paper is to analyse the current project appraisal practices, internal credit rating/scoring and grading system in Indian public sector banks (PSBs). Section II focuses on architecture, design, and components of internal rating models in appraising the project finance is presented. Section III discusses with the empirical model practically used in the bank and the advantages of such internal rating based project appraisal system to the banks and to the borrowers.

This paper is based on information gathered through discussion from one public sector bank in India of which head office located in Bengaluru (Karnatak) and credit rating documents of the one live commercial real estate firm's project appraisal. The discussion made on various dimensions of the project appraisal's architecture and design of credit rating system of the selected bank. As the data was collected from the banks assuming confidentiality, the identities of the bank and firm are not disclosed in the study.

## II. Internal Credit Rating Practice for Project Financing:

Banks tries to capture all the risks faced by the borrowing entity and to quantify such risks associated with the project and the entity through its internal credit model of a bank. Both the facility and the borrower's capacity are considered in appraising the project financing. Bank's rating dimension reflects its quality of credit decisions<sup>2</sup>.

### 2.1 Problems Faced in New Projects Appraisal by the Appraisers:

Problems faced in new project appraisal by the appraisers are, analysis of market research and forecasting data submitted by the potential borrower; Market research reports from the published sources been used in estimating the demand-supply gap of the product as the most crucial part of the project report. Estimation of demand is difficult when a product is not available in the domestic market previously.

### 2.3 Credit Grading System:

Grading system is the way of expressing differentiation of risk categorisation effectively. It also helps to formulate exposure norms for each type of product<sup>2</sup>. In the investigated bank have five grades for projects which are come under commercial real estate (see Table No.1).

<b>Overall Weightage Risk Score Range</b>	<b>Risk Grade</b>	<b>Grade Description</b>	<b>Degree of Safety W.R.T. Debt Servicing Capacity</b>
4.50-5.00	P1	Normal Risk	The degree of safety with respect to (w.r.t) Debt Servicing Capacity is satisfactory.
3.50-4.50	P2	Moderate Risk	The degree of safety w.r.t Debt Servicing Capacity is



			just adequate & therefore needs close monitoring satisfactory.
2.50-3.50	P3	High Risk-HR1	The degree of safety with respect to Debt Servicing Capacity is Inadequate. The account needs very close watch & monitoring to effect up-gradation.
1.50-2.50	P4	High Risk-HR2	The degree of safety with respect to Debt Servicing Capacity is poor. The account needs very close watch & monitoring to effect up-gradation.
1.00-1.50	P5	High Risk-HR3	The degree of safety w.r.t Debt Servicing Capacity is very poor. The account needs vary close watch & monitoring to effect up-gradation.

**Source:** Credit rating document of surveyed bank.

**2.4 Ratings assigned by:** In this bank rating is being assigned at the central office level by the credit officers and sanctioning authorities. It is a centralised function.

**2.5 Weights assigned for various risks:** In the investigated bank considers construction risk- project implementation risk as the prime risk factor; and pre project implementation risk- financial risk as next significant risk factor following the funding risk and business risk (see Table 2).

Risk Head	Weights (%)
Industry Risk	15
Business Risk	30
Construction Risk- PIR	67
Funding Risk-PIR	33
PPIR Financial Risk	40
Management Risk – Project	15
Overall Risk Score	200

**Source:** Credit rating document of surveyed bank.

#### **2.6 Risk factors considered:**

In the live case under the key risk factors considered with sub-parameters used in assessing the risk of project finance (construction) in the one of the reputed globally and domestically-systematically important PSB Bank are as follows:



**2.6.1 Industry Risk:** Industry characteristics, demand- supply gap, government policies, input related risks, extent of competition, and industry financials.

**2.6.2 Business Risk:** Operating efficiency, management of skilled labour, selling cost, market position, project management skills, proximity to market, financial ability to withstand price competition, and consistency of quality.

**2.6.3 Construction Risk- Project Implementation Risk:** Expected balance project duration, expected time overrun, stabilisation, project complexity, and clearances.

**2.6.4 Funding Risk-Project Implementation Risk:** Financial flexibility (project), financial closure.

**2.6.5 Pre Project Implementation Risk:** Internal rate of return-project, debt service coverage ratio (DSCR)-project, gearing ratio, cash breakeven (% of sales of the optimum year of sales), and sensitivity of average DSCR to 10 % change in sales (Ratio).

**2.6.6 Management Risk- Project:** Management track record (MTR)- project report, experience in the industry- MTR, managerial competence- MTR, business & financial policy- MTR, integrity- PR, credibility- PR, credibility of promoter/ management assumptions/projections, payment record-PR, and payment record.

Various risk factors weighted in assessing the risk in the case of thermal power project finance are shown in Table 3. Financial risk (under building phase) and the Business risk factors are equally considered as most significant factors in analysing the project by following other key risks and industry risk as a least significant factor in the case of power projects in Indian commercial banks as per Bandyopadhaya's study<sup>3</sup>. Key financial ratios and the benchmarks followed are also mentioned in the study under the scoring guide head.

<b>Risk head</b>	<b>Weight (%)</b>
Industry Risk	15
Business Risk	30
Other Key Risks- Build phase	20
Financial Risk- Build phase	30
Overall risk score	100%
Key Financials: IRR, DSCR, DER	

*Source:* Bandyopadhaya A (2016)<sup>3</sup>

## **2.7 Scoring Guide:**



Strong = Scores above 6; Weak = Scores below 4; DSCR threshold = Not less than 1.5; IRR threshold= 4 % & above; DER range = from 2.5:1 to 4:1<sup>3</sup>.

Project evaluation and financing decisions begins with establishment evaluating the viability of the product, technical and end with the financial viability determination. A project may be financially viable but not always lendable. Reengineering of capital/ financial structure of the project is necessary in order to make financially viable project lendable. The entrepreneur had to strike balance between high profitability and high risk in selecting a project. Quick return of shareholders' funds at a minimum of risk is recommended in selecting a proposal. A credit-appraiser has to assess the credibility and bankability of the project of the loan proposal. A credit-appraiser gives much importance to net working capital because it reduces the rate of return per share. Hence a project may be financially viable but not creditworthy. Project appraisal takes a total view. For the existing projects, find out the current demand scenario of the product of the both borrower's and the relative competitors position is recommended to credit appraiser before sanctioning and implementing the expansion project<sup>4</sup>.

### III. Empirical Case Result:

Table No.4 INTERNAL CREDIT RATING SUMMARY SHEET					
Type: <b>PROJECT</b>	Weights (%)	Score	Weighted Score	Final Score	Overall Risk Score
<b>Industry Risk (15)</b>				<b>3.13</b>	<b>0.47</b>
Industry characteristics	85	3.00	2.55		
Demand-Supply gap	35	3.00	1.05		
Government policies	20	3.00	0.60		
Input related risks	30	3.00	0.90		
Extent of competition	15	3.00	0.45		
Industry Financials	15	3.90	0.59		
<b>Business Risk (30)</b>				<b>4.76</b>	<b>1.43</b>
Operating efficiency	60	4.60	2.76		
Management of price volatility	40	5.00	2.00		
Availability of skilled labour	20	5.00	1.00		
Selling cost	40	4.00	1.60		
Market position	40	5.00	2.00		
Project management skills	30	5.00	1.50		
Proximity to market	20	5.00	1.00		
Financial ability to withstand price competition	30	5.00	1.50		





Consistency of quality	20	5.00	1.00		
<b>Construction Risk- PIR (67)</b>				<b>3.6</b>	<b>2.41</b>
Expected balance project duration	20	2.00	0.40		
Expected time overrun	20	5.00	1.00		
Stabilisation	20	3.00	0.60		
Project complexity	20	4.00	0.80		
Clearances	20	4.00	0.80		
<b>Funding Risk- PIR (33)</b>				<b>3.50</b>	<b>1.16</b>
Financial flexibility- Project	50	3.00	1.50		
Financial Closure	50	4.00	2.00		
<b>PPIR Financial Risk (40)</b>				<b>5.40</b>	<b>2.16</b>
Internal rate of return- project	20	1.00	0.20		
Debt Service Coverage Ratio- project	20	7.00	1.40		
Gearing Ratio	20	5.00	1.00		
Cash break even ( % of sales of the optimum year of sales)	20	8.00	1.60		
Sensitivity of average DSCR to 10% change in sales	20	6.00	1.20		
<b>Management Risk- Project (15)</b>				<b>5.00</b>	<b>0.75</b>
Management track record-PR	33.33	5.00	1.67		
Experience in the industry- MTR	25	5.00	1.25		
Managerial Competence-MTR	25	5.00	1.25		
Business & Financial policy- MTR	25	5.00	1.25		
Integrity- PR	25	5.00	1.25		
Credibility-PR	33.33	5.00	1.67		
Credibility of promoter/management assumptions/projections	100	5.00	5.00		
Payment record-PR	33.33	5.00	1.67		
Payment record	100	5.00	5.00		
<b>Overall Risk Score</b>					<b>4.00</b>
<b>Rating Grade</b>					<b>P2</b>

Table 4 reports the output of selected bank's internal credit rating for new project that we have discussed with the appraisers in the same bank. The Thirty Six independent variables with Six Key risk factors used in the bank in their appraisal system. The selected case got P2 rating grade which indicates the project falls under **Moderate**



**Risk** profile of which *the degree of safety with respect to debt servicing capacity is just adequate and therefore needs close monitoring satisfactory.*

### **3.2 Advantages of Internal Credit Rating/Scoring Model:**

According to Bandyopadhyay<sup>1</sup>, it strengthens banker-borrower relationship through its transparency in loan decision making process, improves credit officers' analytical skills, reduces training time for new credit staff, improves approval rates by holding loss rates constantly and enhances cost efficiency, aids to risk based pricing, improves customer service, saves loan processing time and improves speed of evaluation of the loan application, it help to objective and quantitative assessment, and improves decision making. It also strengthens the credit culture of explicit and conscious risk management.

Borrowers can observe key areas the bankers look for in granting loans can improve and make their loan approval easy and less interest by getting more credit score/high credit grades with less time, which also can build good impression to bankers in granting loans.

### **3.3 Project Profile in the Bank under Study:**

Table 5 portray the risk profile of the project of the bank in Real Estate segment. It is evidenced that all risk factors may not be equally important for various types of projects by referring Table 3 and Table 5.

## **CONCLUSIONS**

Banks are firms balancing risk and return characteristics among alternative opportunities; they cannot avoid risks<sup>1</sup>. In the process of credit decisions human judgment plays central role. Internal credit grading/rating system promotes banks credit culture. It is expected to operate dynamically. For the success of the internal rating system support and oversight of the board is crucial<sup>2</sup>.

Theoretical analysis has been showed that there are many risk factors, which are associated with usage of internal credit rating model in banks. The results also indicate that there is significant difference between the various types of loans or projects and the significance given to risk factors between projects to projects also varies.

In this study we found that, financial indicators are the most significant factor that can be used to identify the project's vulnerable to default in power projects but in the case of real estate (commercial) projects- construction risk can be considered as the most significant risk factor following the financial risk factor. Amongst the financial indicators in power projects- DSCR, DER, and IRR; and in real estate segment projects- IRR, DSCR, Gearing Ratio, Cash Break Even and Sensitivity of average DSCR to 10% change in sales are considered as the key financial ratios. The credit rating/grading approach in project appraisal also benefits to bankers in various ways such as reduction of training costs and time, avoids losses by improving credit





decisions and enhances the analytical skills and efficiency in serving their customers finally which leads to improvement of the bank's credit culture constantly. Borrowers can observe key areas the bankers look for in granting loans can improve and make their loan approval easy and less interest by getting more credit score/high credit grades with less time, which also can build good impression to bankers in granting loans.

However, there are some limitations: the study is limited to one live case and one PSB's project appraisal model; as the study is live case, it may vary from bank to bank. However, as case study, we have tried to demonstrate how project appraisal can be done and its utility to explore and expand the scope for further research.

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### Annexure

	Audited	Projected	Projected	Projected	Projected	Projected	Projected
Financial Indicators (Rs In Crores)	2013	2014	2015	2016	2017	2018	2019
Capital	13.25	11.55	11.55	11.55	11.55	11.55	11.55
Reserves and Surplus	0.00	30.37	83.93	150.11	156.19	160.80	163.87
Intangible assets/ accumulated losses	0.00	0.00	0.00	0.00	32.31	40.91	46.1
TNW	13.25	41.92	95.48	161.66	135.43	131.5	129.32
Long Term	0.00	34.00	87.15	152.93	0.00	0.00	0.00

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Loan from Banks/ Financial Institutions							
Debentures/ Bonds/ FCCB	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unsecured Loans	0.00	2.35	2.35	2.35	0.00	0.00	0.00
Total Capital Funds	0.00	78.27	184.98	316.94	353.09	335.09	317.02
Current Assets	13.25	10.47	10.87	11.27	102.62	103.03	103.42
Current Liabilities	0.00	0.00	0.00	0.00	31.43	31.43	31.43
NWC	13.25	10.47	10.87	11.27	71.19	71.59	71.99
Gross Block	0.00	0.00	0.00	0.00	286.79	268.42	249.96
Net Block	0.00	0.00	0.00	0.00	281.90	263.50	245.03
Non-Current Assets	0.00	67.80	174.11	305.67	0.00	0.00	0.00
Net Sales	0.00	0.00	0.00	0.00	0.00	10.24	10.29

**Source:** From Bank's document.