

South Asia  
Operational Knowledge Working Paper Series



Credit Rating Methods for Public–Private Partnership  
Infrastructure Projects and Small and Medium-Sized  
Enterprises in South Asia

---

Jiro Tsunoda, Ramraj Pai, and Pawan Agrawal

No. 3 | February 2014



ADB South Asia Operational Knowledge Working Paper Series

# Credit Rating Methods for Public–Private Partnership Infrastructure Projects and Small and Medium-Sized Enterprises in South Asia

Jiro Tsunoda, Ramraj Pai, and Pawan Agrawal

No. 3 | February 2014

Jiro Tsunoda is principal portfolio management specialist, Asian Development Bank. Ramraj Pai is president, CRISIL, India. Pawan Agrawal is senior director, CRISIL, India.

Asian Development Bank

Asian Development Bank  
6 ADB Avenue, Mandaluyong City  
1550 Metro Manila, Philippines  
www.adb.org

© 2014 by Asian Development Bank  
February 2014  
Publication Stock No. WPS146310

The views expressed in this paper are those of the authors and do not necessarily reflect the views and policies of the Asian Development Bank (ADB) or its Board of Governors or the governments they represent.

ADB does not guarantee the accuracy of the data included in this publication and accepts no responsibility for any consequence of their use.

By making any designation of or reference to a particular territory or geographic area, or by using the term “country” in this document, ADB does not intend to make any judgments as to the legal or other status of any territory or area.

Note: In this publication, “\$” refers to US dollars.

The ADB *South Asia Operational Knowledge Working Paper Series* is an avenue for sharing operational knowledge on policies and processes relevant to the implementation of ADB technical assistance, programs and projects. This series is a new knowledge product that consolidates knowledge of operational rules, guidelines, conventions, and experiences with a view to inform and improve the preparation, implementation, management, and delivery of development assistance, programs, and projects.

Titles under this series could subsequently be revised for publication as articles in professional journals or chapters in books. The series is maintained by the South Asia Department. The series is made available on the ADB website and on hard copy.

## CONTENTS

I.	CREDIT RATING METHODS FOR PUBLIC–PRIVATE PARTNERSHIP-BASED INFRASTRUCTURE PROJECTS	1
A.	Introduction	1
B.	Ways in Which Public–Private Partnership-Based Projects and Financing Models are Unique	1
C.	Constraints Faced by Public–Private Partnership Projects	2
1.	Uncertain Operating Environments	3
2.	Funding Constraints	3
3.	Institutional Capacity Issues	4
D.	Interventions Required to Spur Growth of Public–Private Partnership Projects	4
1.	Enabling Environment	4
2.	Adequate Funding Support	5
3.	Institutional Capacity Development	5
4.	The Role of Rating Agencies in Stimulating Growth in Public–Private Partnership Projects	6
E.	A Broad Rating Methodology for Infrastructure Projects and Financing Models Based on Public–Private Partnerships	6
1.	Public–Private Partnership Projects with Revenue Risk Borne by Private Entity or Concessionaire	7
2.	Public–Private Partnership Projects with an Availability-Based Payment Structure	21
3.	Assessment of the Credit Enhancement Structure	22
F.	Rating Definition and Scale	23
1.	Case Studies and Illustrative Scorecards for Rating Public–Private Partnership Projects	25
2.	Default Rates—An Indicator of the Robustness of the Rating Methodology	30
G.	Factors Influencing the Rating Approach	31
1.	Stage of the Project	31
2.	Stage of Financing	32
3.	Type of Financing	32
4.	Nature of the Infrastructure Project	32
5.	Nature of Entity/Business	33
H.	How Rating Agencies Can Benefit Public–Private Partnership Projects	33
1.	Public–Private Partnership Projects—Experience in the Indian Context	33
2.	How Rating Agencies Can Benefit Public–Private Partnership Projects	34
II.	CREDIT RATING METHODS FOR SMALL AND MEDIUM-SIZED ENTERPRISES	37
A.	Introduction	37
B.	Addressing the Challenges Faced by Small and Medium-Sized Enterprises	37
1.	Absence of an Enabling Environment	37

2.	Inadequate Funding—A Key Constraint	38
3.	Inadequate Institutional Capacity	40
C.	Typical Hurdles That Evaluators of Small and Medium-Sized Enterprises Face	41
D.	Suitable Credit Rating Methodology for Small and Medium-Sized Enterprises	42
1.	Understanding Risk in the SME Sectors	42
2.	Credit Rating Methodology	44
3.	Risk Assessment	45
E.	Illustrative Scorecard for Rating Small and Medium-Sized Enterprises	54
1.	Industry Risk	57
2.	Operations and Business Risk	57
3.	Financial Risk	59
4.	Other Comments	60
F.	Rating Definition and Scale	60
1.	Definitions of Entities	61
2.	Rating Scales in India	61
G.	Relevance of Credit Ratings for Small and Medium-Sized Enterprises	62
1.	Rating of Small and Medium-Sized Enterprises and the Basel II Framework	62
2.	Entity and Exposure Ratings	63
H.	Default Statistics	63
1.	Different Approaches to Default	63
2.	Indian Study on Default Statistics	63
I.	Application of Credit Ratings for Small and Medium-Sized Enterprises	64
1.	The Rating Process	64
2.	360-Degree Feedback	67
3.	Proxy Documents	67
4.	Audited Financials	68
5.	Group Performance	68
J.	Credit Rating of a Small/Medium-Sized Enterprise: A Case Study	68
K.	Suggested Report Content	72
1.	Fact Sheet	72
2.	Business Profile	72
L.	Other Ways in Which Rating Agencies Services Can Be Relevant for Small and Medium-Sized Enterprises	73
1.	Supplier/Dealer Evaluations	73
2.	Information Exchange for Small and Medium-Sized Enterprises	73
3.	Portfolio Credit Evaluation	74
4.	Assessment of Collateral Mitigants	74
5.	Benchmarking Services	75
6.	Providing Services Across the Life Cycle of a Small/Medium-Sized Enterprise	75
M.	Enabling Domestic Credit Rating Agencies to Play the Benefactor's Role	76

## TABLES AND FIGURES

### Tables

1	Private Investment in Infrastructure (2003–2012) and National Infrastructure Investment Needs (2010–2020)	2
2	Rating Scale	23
3	Credit Risk Parameters and Sub-parameters for Various Types of Public–Private Partnership Projects	24
4	Rating Scorecard	26
5	Rating Scorecard for an Illustration	26
6	Rating Parameters and Key Factors	27
7	An Illustrative Rating Scorecard for Case Study 1	29
8	An Illustrative Rating Scorecard for Case Study 2	30
9	Illustrative Benchmarking for Operational Public–Private Partnership Projects in the Road Sector	36
10	Rating Parameters for a Rating Model for Small and Medium-Sized Enterprises	54
11	Rating Symbols and Definition	55
12	Rating Symbols and Scores	55
13	Rating Scorecard	56
14	Rating Definition and Scale of the Program of the National Small Industries Corporation	61
15	Rating Symbols and Definitions of the Program of the National Small Industries Corporation	62
16	An Example of Default Statistics	64
17	ABC Limited Rating Scorecard	70
18	Rationale for Rating Scores	71

### Figures

1	Rating Process for Public–Private Partnership Projects	7
2	Sensitivity of Risks Faced by Small and Medium-Sized Enterprises	43
3	Methodology for Small and Medium-Sized Credit Rating Enterprises	44
4	Rating Process	64
5	Workflow of the Rating Process—Initial Stage	65
6	Workflow of the Rating Process—Preparing the Report	66
7	Workflow of Rating Process—Client Feedback and Final Report	66

## ABBREVIATIONS

ADB	–	Asian Development Bank
CGF	–	credit guarantee fund
DCRA	–	domestic credit rating agency
DSCR	–	debt service coverage ratio
EPC	–	engineering, procurement, and construction
MGF	–	mutual guarantee fund
MSMEs	–	micro, small and medium-sized enterprises
O&M	–	operations and maintenance
OPBDIT	–	operating profit before depreciation, interest, and taxes
PAT	–	profit after tax
PPP	–	public–private partnership
PSE	–	public sector entity
RBI	–	Reserve Bank of India
Rs	–	Indian rupees
SMEs	–	small and medium-sized enterprises
SPV	–	special purpose vehicle
SSI	–	small-scale industries

## **I. CREDIT RATING METHODS FOR PUBLIC–PRIVATE PARTNERSHIP-BASED INFRASTRUCTURE PROJECTS**

### **A. Introduction**

1. Public–private partnerships (PPP) are emerging as the preferred mode of infrastructure financing to enable the channeling of private sector investments into infrastructure, traditionally funded almost entirely by the government, thus ensuring the use of its more substantial capacity for project execution.

2. The term PPP here refers to a long-term, contractual partnership between public and private sector agencies specifically targeted to finance, design, implement, and/or operate traditionally public sector infrastructure facilities and services.

3. In a PPP, each partner, usually through a legally binding contract or some other mechanism, agrees to share responsibilities related to the implementation, operation, and/or management of a project. This collaboration is built on the expertise of each partner, and meets clearly defined public needs through the appropriate allocation of

- resources,
- risks,
- rewards, and
- responsibilities.

4. The allocation of resources, risks, rewards and responsibilities and other terms of implementation, termination, obligations, dispute resolution, and payment arrangements are negotiated and documented in the contract(s).

5. An assessment by a domestic credit rating agency (DCRA) of PPP infrastructure projects and financing requires a deep understanding of the unique characteristics of PPP projects across roads, power, ports, urban infrastructure, telecommunications, and railways. These characteristics need to be assessed within the regulatory framework and policy environment to determine how risk and reward are best shared between the implementing public body and the private entity in the PPP structure. Additional structuring elements that can enhance the credit quality of the PPP infrastructure project also need to be evaluated.

### **B. Ways in Which Public–Private Partnership-Based Projects and Financing Models are Unique**

6. Public–private partnership models are a useful route to expanding the number of projects across roads, power, telecommunications, mining, and transport as well as health, education, and sanitation infrastructure. National bodies, state government agencies, and local urban government bodies forge partnerships with private entities in order to create financing structures and project plans that are viable, executable, sustainable, and replicable.

7. Lending to the infrastructure sector is a fairly complex business given the large project sizes, high capital intensity, long gestation periods, and strict regulatory frameworks within which infrastructure projects are usually rolled out. For instance, it is not uncommon for tariffs charged on services provided to be fixed, not by market conditions, but by regulatory bodies. While power, telecommunications, and urban infrastructure projects usually face fewer

demand-related risks, they all require large up-front investments and therefore face substantial initial risks.

8. Furthermore, most PPP infrastructure projects are set up through special purpose vehicles (SPVs), which are incorporated primarily for implementing specific projects. This structure is created to enable non-recourse financing for the project and insulates the sponsor's balance sheet from project risk.<sup>1</sup> But this also exposes the lenders or investors to project-specific risks that they need to carefully evaluate before deciding to lend.

9. These unique aspects of PPP infrastructure financing warrant a suitable framework for evaluating infrastructure sector companies, especially those with a substantial PPP financing component. This paper examines the key factors affecting the credit quality of PPP entities in the infrastructure sector.

### C. Constraints Faced by Public–Private Partnership Projects

10. Although governments across the South Asian region (Bangladesh, Bhutan, India, the Maldives, Nepal, and Sri Lanka) have tried to encourage private investments in infrastructure, participation has been limited (Table 1). In India, for instance, the accumulated private investment amount for 2003–2012 was \$275 billion while the Planning Commission of India estimates that total infrastructure investment of \$1 trillion will be required in 2012–2017 to meet the country's needs, with at least 50% originating from private players. Estimates for national infrastructure investment needs (2010–2020) in Table 1 also indicate the requirement for the private sector investment in infrastructure in other South Asia countries.

**Table 1: Private Investment in Infrastructure (2003–2012) and National Infrastructure Investment Needs (2010–2020)**

Country	Private Investment in Infrastructure (2003–2012)	National Infrastructure Investment Needs (2010–2020)
	\$ billion (%)	\$ billion
Bangladesh	8.48 (2.9)	144.90
Bhutan	0.22 (0.1)	0.87
India	275.35 (95.3)	2,172.47
Maldives	0.55 (0.2)	4.51
Nepal	0.78 (0.3)	14.33
Sri Lanka	3.6 (1.3)	37.91
<b>Total</b>	<b>289.07 (100)</b>	<b>2,375.00</b>

Sources: World Bank PPI Database covering energy, telecom, transport, water, and sewerage. <http://ppi.worldbank.org/> and Bhattacharyay, B. N. 2010b. Estimating Demand for Infrastructure in Energy, Transport, Telecommunications, Water and Sanitation in Asia and the Pacific; 2010–2020. *ADB Institute Working Paper Series*. No. 248. Tokyo: Asian Development Bank Institute; ADB estimates.

11. Overall, South Asia needs around \$2.38 trillion in infrastructure investment by 2020, again, with the private sector expected to fund a significant portion. It is therefore imperative to identify the factors constraining PPP growth in the region, which may be broadly categorized as (i) uncertain operating environments, (ii) funding constraints, and (iii) institutional capacity issues.

<sup>1</sup> Non-recourse financing refers to project lending wherein the lenders only have access to the project's cash flow without any recourse to sponsors in case the project faces difficulty.

## 1. Uncertain Operating Environments

12. The lack of well-defined legislation and political support compound the risk faced by PPP projects, impeding their growth and marketability:

- **Absence of clear policy/legislative support.** State support plays a key role in promoting PPPs. In situations where the PPP policy framework is either absent or inadequate, ministries and government sponsors do not show sufficient interest and involvement. In the model, this in turn increases the risk perception of PPP projects, constraining access to funding and increasing funding costs.
- **Absence of a defined institutional framework.** A well-defined institutional framework is very important for PPPs to succeed. Institutions that can competently manage the bidding and approval processes and ensure transparency go a long way in eliciting private sector confidence. However, in many countries of South Asia uncertainties in the institutional framework prevail and consequently, private players perceive PPP projects as risky propositions.
- **Cumbersome approval process.** Typically, PPP projects involve liaising with multiple government entities with varied jurisdictions to complete a lengthy approvals process. This is a dampener for private interest; it delays project execution and affects the financing plan adversely.
- **Absence of political support.** The lack of high-level political support for PPPs and, more specifically, the lack of political champions for large critical projects increases project risk. Capacity building of local government administrators in PPP projects (referred to in India as a PPP cell) is important to ensure support, involvement, and competence of the public partner in the successful implementation of these infrastructure projects.
- **Need for market attractiveness evaluation.** The South Asian region has not been able to develop robust measures to assess the market attractiveness of PPPs. This in turn affects risk assessment and decision making by the private players and hence their large-scale participation in infrastructure projects.

## 2. Funding Constraints

13. Limited long-term funding avenues and the inadequate risk assessment for PPP projects result in suboptimal funding availability and hence higher funding costs.

- **Inadequate long-term funding sources.** Although some governments provide viability-gap funding support, the absence of long-term finance constrains PPP project development. Banks provide only limited financing to infrastructure projects because of asset–liability mismatch issues. Furthermore, the region’s underdeveloped corporate bond market compounds the funding problem.
- **Stringent banking regulations.** No specific banking regulation encourages lending to infrastructure projects on a priority basis. Hence, banks follow the same stringent set of banking regulations that is applicable to all types of lending, thus imposing single-borrower and sector-exposure caps in infrastructure lending, too. This limits participation of banks in infrastructure financing.
- **Perceived risk in infrastructure debt.** Lending agencies and investors are often faced with a dearth of requisite skills and experience in appraising PPP projects. This leads to a perception that these projects are excessively risky and hence yield expectations in

debt financing and lending are also correspondingly high, often unrealistically so. Where such expectations cannot be met, investor and lender interest tapers off.

- **Credit information gap.** The lack of a clear mechanism for effectively assessing credit risk in such projects dampens lenders' interest, making it difficult for the project organizers to access banks and capital markets for funding, thereby increasing funding costs.

### 3. Institutional Capacity Issues

14. Inadequate institutional capacity both in the public and private domains backed by poor project appraisal skills is unable to create an ecosystem within which PPP projects may thrive.

- **Inadequate experience within governments.** Governments in the region have limited understanding of PPP as a concept. Expertise to judge whether projects should be prepared on a PPP-basis or public-only basis, and, if on PPP basis, the type and extent of private partnership needed, is also limited. There is little clarity on risk allocation modalities and the roles and responsibilities to be allocated between the public and private players. Consequently, government intervention in PPP projects becomes excessive as it starts taking its role as a regulator more seriously than as a partner or facilitator. These factors contribute to the making of weak projects, which are also more risky.
- **Inadequate technical and financial capacity among private players.** Selected private entities often have limited experience as developers or investors, inadequate access to technical staff, and a capabilities constraint when it comes to structuring, planning, and executing a PPP project. A weak private partner increases the risk of abandoning of the project mid-way or provision of poor-quality infrastructure and services.
- **Inadequate appraisal skills for infrastructure financing.** Where banks and lending agencies lack the expertise and experience in examining, evaluating, and appraising project risk and returns in large and complex PPPs, risks in these projects tend to be overestimated, increasing funding costs. In some cases, banks even choose to limit their exposure to infrastructure projects because of inadequate appraisal skills.

### D. Interventions Required to Spur Growth of Public–Private Partnership Projects

15. A number of interventions are needed for the region to harness the full potential of PPPs in infrastructure projects, including a better enabling environment, adequate funding support, and greater institutional capacity.

#### 1. Enabling Environment

16. A well-defined institutional framework and appropriate and comprehensive process outlines need to be documented to improve the external environment for PPP development. This can include measures to do the following:

- **Provide policy/legislative support.** While a national PPP policy or framework is not a must to facilitate PPP projects, it does provide an enabling environment, especially in smaller nations. It indicates an inclination of the government and political parties to support PPP projects, boosting private sector confidence.

- **Set up an institutional framework.** A well-defined institutional framework can also instill confidence in private players. A bidding process that standardizes policy and implementation documents related to concession agreements, technical specifications, and feasibility studies will reduce processing time and ensure transparency in the selection process.
- **Create a single window for approvals.** Given the large number of stakeholders in infrastructure projects, there is a need to improve coordination across various government departments for project approval. State sponsors should aim to provide a single window for all clearances and approvals to encourage time bound, hassle-free project execution.
- **Develop a PPP index.** Governments should develop an information tool to help private players make the best assessment of project risks and take informed decisions based on their risk–return strategy. This will enhance the attractiveness of PPPs.

## 2. Adequate Funding Support

17. Adequate funding is critical to the success of infrastructure projects, especially given the long gestation periods. Measures can include the following:

- **Creation of long-term funding options.** Options such as viability-gap funding schemes, take-out financing, and infrastructure bonds are needed to meet the long-term funding needs of infrastructure projects.
- **Modification of banking guidelines on lending to infrastructure.** Bank lending guidelines need to be aligned with infrastructure investment requirements, with provisions to relax single-borrower lending limits and the inclusion of infrastructure under priority sector lending.
- **Improvements in risk assessment to optimize financing cost.** Various independent measures to assess risk in the sector need to be developed and provided to the investor community. These assessments could include PPP project grading and public sponsor rating.

## 3. Institutional Capacity Development

18. Public–private partnership in infrastructure projects often involves complex operations and documentation requirements, which demand adequate institutional management capacity. Initiatives that could be undertaken in this area include the following:

- **Capacity building for government employees.** It is important to adopt multiple capacity building initiatives for government personnel to enhance their understanding of PPPs. Areas could include PPP-related training, PPP toolkits, standard templates and concession agreements, and PPP workshops for knowledge sharing.
- **Assessment of developer capability.** Independent grading of developers and contractors can give public sponsors a quicker and more reliable assessment of developer capabilities and capacity to undertake a project.
- **Training bank employees to conduct appraisals of public–private partnership projects.** Because the risk profiles of PPP projects are significantly different from the conventional projects that banks encounter, staff at banks and other lending institutions could be trained in the nuances of PPP projects and their risk implications.

#### **4. The Role of Rating Agencies in Stimulating Growth in Public–Private Partnership Projects**

19. The governments of countries in the South Asian region are increasingly focusing on infrastructure development and providing strong policy thrust to PPP projects in order to stimulate the flow of large investments under PPP into infrastructure. Traditionally in South Asia, however, infrastructure in general and PPPs in particular have been characterized by scant availability of information and absence of agreed standards. This, in turn, has restricted the flow of investments, particularly of private institutional funds, into large infrastructure. As infrastructure projects are highly capital intensive, with long gestation periods, sound assessment of project quality and robustness of financial structuring is of critical importance. An informed, accurate, and objective assessment not only facilitates decisions, but may even prevent expenditures that cause avoidable strain on the economy. Moreover, mandatory rating and grading of PPP projects by DCRA creates incentive to conform to fair trade practices.

20. Rating of a project under PPP does not predict the impact that every unexpected event might have on a project's performance, but it is designed to provide comprehensive guidance to "systematic" risk factors as well as project-specific or "idiosyncratic" risk factors that drive the vast majority of credit problems. Ratings provide for meaningful differentiation of risk and accurate and consistent quantitative estimates of risk. Ratings perform consistently and transparently, which helps support efforts by different stakeholders to reliably apply risk assessments across their organizations.

21. Rating agencies express independent opinions on the relative performance capability of the project concerned. A rating report can serve as a reliable tool for identifying and managing risks associated with projects. Besides benefiting the project participants and end users (investors and customers), the rating can also serve as an input in pricing and credit decisions of investors as confidence of market participants is enhanced. In addition to PPP project rating, DCRA could also play a role at the pre-bid stage by way of PPP project grading, which will provide an independent opinion at the pre-bid stage on the relative expected performance of a project and could be used as a tool for identifying and managing risks associated with a project. Thus, DCRA can bridge critical gaps in credit information and spur the growth of PPP-based infrastructure projects in countries in South Asia.

#### **E. A Broad Rating Methodology for Infrastructure Projects and Financing Models Based on Public–Private Partnerships**

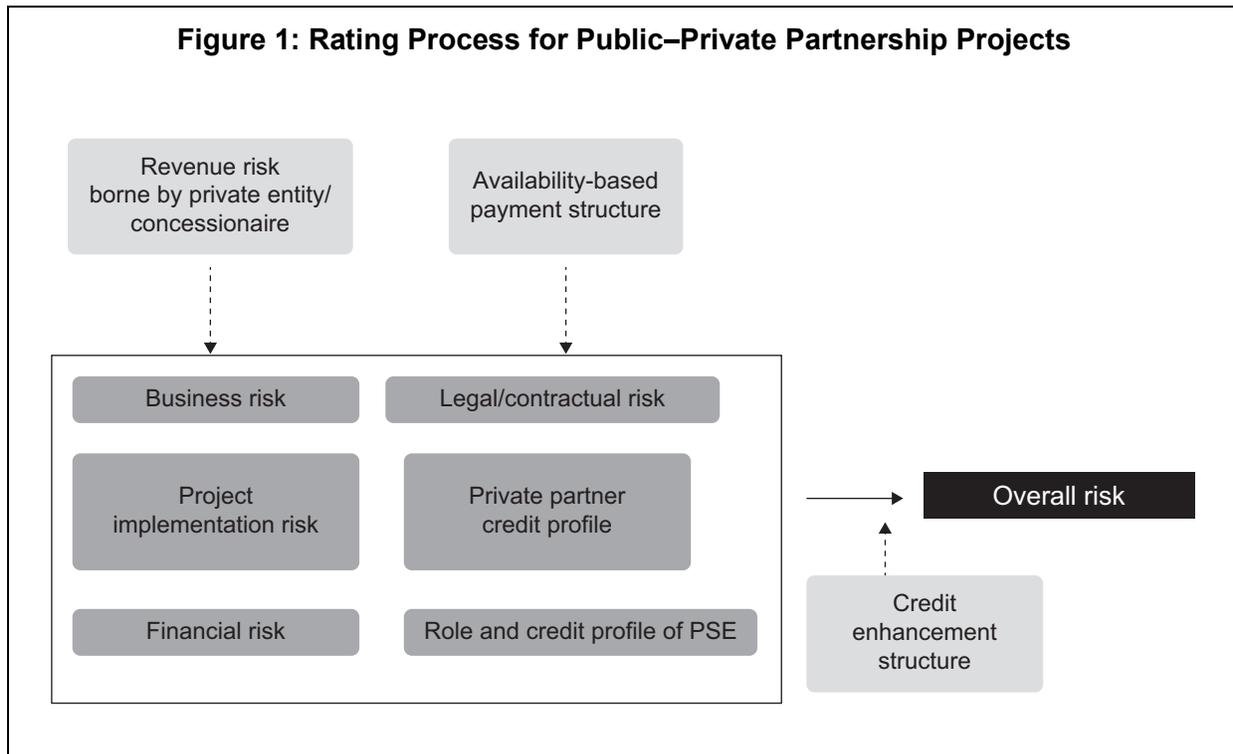
22. Infrastructure projects based on PPP are usually set up in special purpose vehicles (SPVs), which are incorporated primarily for implementing specific projects. This structure is created to enable non-recourse financing of the project and insulates the private sponsor's balance sheet from project risk. However, this structure exposes the lenders to project-specific risks that they need to carefully evaluate before taking their lending decision.

23. In India, PPP infrastructure projects are usually set up under a non-recourse financing structure. However, in some instances, the private sponsor provides explicit need-based support to cover a portion of cost overrun in the construction stage. Further, some private sponsors also provide support to cover cash flow mismatches in the initial period. These in turn serve as mitigants against certain credit risk factors for PPP projects.

24. This section elaborates on appropriate rating approaches to three variants of PPP-based infrastructure projects with

- the revenue risk borne by the private entity or concessionaire,
- availability-based payment structure, and
- external credit enhancement.

25. Figure 1 provides a diagrammatic representation of the rating methodology for PPP projects. The various risks in the different variants of PPP projects as well as their importance are elaborated upon subsequently.



## 1. Public–Private Partnership Projects with Revenue Risk Borne by Private Entity or Concessionaire

### a. Business Risk Assessment

26. Business risk assessment primarily covers the overall operating environment of the project. It examines the key characteristics of the project, the suitability of a PPP-based model, demand scenario, scale of competition, technological intensity, and the regulatory environment.

#### i. Nature of the Project

27. The first step to evaluating business risk lies in assessing the project from two perspectives:

- **Suitability to a PPP model.** Different infrastructure subsectors may vary in their ability to adapt to the discipline required under a PPP financing structure. Sectors that can originate commercially viable projects on their own, that include experienced private sector players, and that will not have issues with stakeholder approval are most suitable for PPP financing. Sectors that fulfill a social objective and are largely dependent on government support are unlikely to attract private sector participation under PPP unless the government provides appropriate incentives. For such projects, either the government or the public sector entity usually guarantees availability-based payment streams or other forms of support.
- **Sector characteristics.** A project's business risk is invariably linked to the key characteristics of the sector to which it belongs. Gestation periods, investment intensity, and expected returns vary across power, roads, ports, railways, and urban infrastructure. Risk varies with competition, demand–supply scenario, policy focus, regulations, and technical complexity.

ii. Demand Risk in the Specific Infrastructure Sector or Service Area

28. Assessment of demand and growth potential helps ascertain the likely revenue and cash flows under various economic scenarios. A project with a favorable demand–supply balance has more certain prospective cash flows and is thus more viable under PPP. Some useful indicators of the demand outlook are

- existing demand–supply scenario in the sector or service area and the potential for the project under consideration,
- future demand growth vis-à-vis likely capacity additions, and
- extent of competition in the service or catchment area.

29. A country deficient in infrastructure but economically buoyant is likely to have strong demand prospects for most infrastructure.

iii. Government Policy and Regulatory Stance

30. Credit assessment of PPP infrastructure projects is critically dependent on government policies where the government is either an operator (through one of its arms) or exerts intense regulatory control. The extent of this influence and regulatory control does vary by country, but it is unlikely to be completely absent in infrastructure because of its strategic importance. The following can help in understanding the government and regulatory policy stance:

- existence of sector-specific laws or regulations;
- presence of a dedicated sector regulator;
- legal and regulatory policies on returns on investment, licensing needs, extent of private sector participation, and pricing or cost structure;
- track record of the government or regulatory body in maintaining stability and certainty of regulation; and
- process adopted for regulatory changes so that participants and other stakeholders can predict their extent and timing.

31. A strong understanding of relevant policies and their possible future direction is required to assess an infrastructure project.

#### iv. Degree of Competition and Pricing Flexibility

32. A project exposed to less competition with better pricing flexibility will have a better credit risk profile. Pricing flexibility protects the entity against the risk of adverse movements in input and other cost components. Further, appropriate forward and backward linkages may also assist it.

33. However, infrastructure services are usually strictly regulated and pricing flexibility is not always a function of demand–supply dynamics only. It could be governed by government policies or regulation. For instance, in most countries, toll rates for road projects are regulated—even if an operator has the sole toll rights on a stretch of road, it does not have the flexibility to adjust rates according to traffic flow (demand).

34. In certain instances, even though there is no direct regulatory provision, indirect regulation may also act as a constraint. In India, for instance, the Tariff Authority of Major Ports fixes tariffs of said ports. Therefore, even though it does not do so directly, this regulation constrains the pricing ability of minor ports (which are otherwise free to fix their tariff) in the vicinity of major ports because they compete for the same cargo.

35. A deep understanding of the competitive dynamics and the prevailing pricing structure therefore becomes important in assessing the commercial viability of PPP projects as well as future cash flow of such projects.

#### v. Technology Risk

36. Credit assessment for PPP-based infrastructure projects must also include an evaluation of the degree of technology risk, which is greater in some subsectors than in others.

37. For core infrastructure sectors such as power, roads, ports, and railways, the basic technology has evolved to a high degree of efficiency. There is, therefore, limited expectation of further technological advancement that can significantly alter the demand or cost profile. Thus, technology obsolescence risk is low. Here, the focus of new technologies is mainly on reducing carbon footprint and onslaught on the environment. For instance, companies are adopting the more efficient and environmentally friendly “supercritical” technology for thermal power plants.

38. However, the telecom sector is exposed to high technological obsolescence risk given rapid advancements and a consumer tendency to quickly upgrade to latest technologies. Therefore, the investment requirements for a telecom service provider are higher and continuous.

39. While assessing the credit quality of a PPP-based infrastructure project highly dependent on technology, the following points should be considered:

- **Prior use of the technology.** An established track record provides significant comfort in technology-intensive projects, as opposed to an untested technology that may create unforeseen problems, wasting time and money.
- **Suitability of technology.** An internationally successful technology may need to be adapted to particular local conditions, such as quality of raw material and weather in the project country. For instance, supercritical technology in thermal power projects in India needs to be modified because Indian coal has a higher ash content compared with, say, Australian coal.

- **Average life cycle of a technology in the sector.** Before a new technology is introduced, there must be an examination of whether, how soon, how much, and for how long it is likely to generate acceptable returns on investment.
- **Stage of technological evolution.** It is important to answer these questions:
  - How long has the technology been in use?
  - Has a superior version of the implemented technology been introduced?
- **Cost competitiveness of the technology relative to substitutes.** This refers to
  - the easy availability of service and spare parts, and
  - international acceptance of the technology—if the technology is banned by governments elsewhere, the reasons must be investigated.

40. In addition, technical know-how and experience of the public and private entities in the relevant technology need to be evaluated. Prior experience with similar technology helps in timely project execution within the budgeted cost. It also facilitates proper operations and maintenance (O&M) once the project starts rolling.

*b. Project Implementation Risk*

41. Project implementation risk captures the risks a project is exposed to at the construction stage. Key risks include the availability of basic infrastructure and statutory clearances, execution risk, contractor risk, and funding tie-ups.

42. In case of PPP-based infrastructure projects, the expertise and track record of the private sponsor is a critical factor in the project implementation risk assessment. A private sponsor or an engineering, procurement, and construction (EPC) contractor that has good experience in executing similar infrastructure projects is likely to mitigate some of the risks related to project implementation. Further, the extent of support from the public sector entity in providing basic infrastructure and other approvals in a timely manner is also an important factor.

43. Given the huge investment needs for infrastructure projects, factors such as extent of funding support from the public sector vis-à-vis the project's leverage determines the commercial viability of PPP projects. Thus, the leverage level and status of funding tie-ups are other important aspects in PPP project risk assessment.

44. The degree of tightness of the EPC contract determines the extent of risk transfer from the private entity in the project implementation stage. Although most PPP projects have a non-recourse financing structure, sometimes the private sponsor provides support to cover a part of the cost overrun. Thus, the private sponsor's financial strength and extent of financial support provided are important factors in the project implementation stage.

*i. Status of Basic Infrastructure, Statutory Clearances, and Approvals*

45. The need for basic infrastructure and other clearances will differ depending on whether the project is green-field or brown-field. A green-field project, where there are no prior structures or facilities, requires certain basic infrastructure and statutory approvals before it can be implemented. For a brown-field project, the basic infrastructure is usually available, though additional statutory approvals and clearances may be required. The risks attached to this issue may vary depending on the systems and policies prevalent in a particular country. Some of the key considerations in assessing the readiness of the project entity are as follows:

- **Basic infrastructure required.** This includes land, water and fuel links, access roads, and transmission lines, depending on the type and size of the project. Large power plants may require 1,000 to 2,000 acres (1 acre = 4,047 square meters) of land located near highways, railways, ports, coal links, and water sources, with access to the grid network. Road projects require a long stretch of contiguous land. A port must be located in a coastal area that protects ships from rough weather. These features limit the land options for the developer. Furthermore, the land in question may be either populated or part of forest land. In such a situation, it becomes difficult and time-consuming to acquire the land.
- **Number of statutory approvals and clearances required.** This includes environment and forest clearances and any other requirement as per local or national laws. For instance, environment and forest preservation being sensitive issues in India, these clearances are generally the most difficult to obtain. There have been instances where approvals, once given, were withdrawn because of protests by locals or nongovernment organizations alleging harmful environmental impacts.
- **Assessing criticality.** Assessing the criticality of these requirements from the perspective of timely project implementation.
- **Status of the clearances.** Status of the clearances and assessment of the time needed and processes followed to obtain the remaining approvals are an important determinant of project implementation risk.

46. From the credit rating perspective, risks are low for a project where statutory approvals have been obtained and basic infrastructure is in place or limited difficulty is envisaged in obtaining them.

#### ii. Execution Complexity

47. Infrastructure projects are inherently complex because of their technical intensity and large size and, therefore, are relatively more difficult to implement. The degree of implementation complexity of a project is therefore an important consideration in assessing the credit quality of a project at the construction stage. The risk is particularly high for projects on difficult terrain, such as areas near the sea or hilly regions, and for hydropower projects. Road projects, on the other hand, have low execution risk as they are relatively less complicated. While assessing execution risk, consideration should be given to the quality of the EPC contractor. This is because a contractor with a strong track record is more likely to complete a complex project successfully.

48. The following are some key considerations in assessing the execution complexity of an infrastructure project:

- **Project location.** Infrastructure projects such as hydropower projects, sea links, and ports are often situated on difficult terrain (hilly areas, coastal areas, over a river or ocean), increasing execution complexity. The ease of arranging labor, equipment, and other facilities at the project site must be assessed given the difficult terrain access. These sites are also prone to other “extremes” such as snowfall, floods, heavy rains, or earthquakes, which may hamper construction.
- **Availability of experienced staff.** Given the complexity of PPP projects, experienced personnel with specific skill sets is critical to efficient project completion.
- **Experience in completing similar projects.**

iii. Sponsor's Experience and Support Expected

49. A project rating may also be influenced by the operational, technical, and financial strength of the sponsor. The evaluation of this parameter will require consideration of the following issues:

- **Experience in implementing projects of similar scale and complexity.** Most infrastructure projects are structured as SPVs that are floated by sponsors to develop and operate the particular project in question. The SPV's operational expertise is derived from the expertise of the sponsors. Sponsors' experience in a similar field adds authority to the rating, mainly because the management is aware of the issues and bottlenecks involved in developing and operating such projects and can plan new ones accordingly. Sponsors' experience is assessed by analyzing previous projects they have developed, their completion track record, and their performance to date. Market standing and reputation of the sponsors is also an important input.
- **Track record of project management.** While analyzing the sponsors' experience, attention should be paid to their track record in managing complex projects, both at the construction and operational stages.
- **Experience of the regulatory environment.** The sponsors' experience is assessed not only in terms of their technical expertise but also for awareness of the economic and regulatory environments of the host country. For instance, if a global player with expertise in developing power projects plans to set up a project in India for the first time, its technical expertise may be offset by its non-exposure to the Indian regulatory environment.

iv. Track Record of Engineering, Procurement, and Construction Contractor and Equipment Supplier

50. The experience of the EPC contractor and equipment supplier is an important variable in assessing the credit quality of a project in the construction stage. Many infrastructure projects are technically complex and relatively large. To mitigate the related execution and construction risks, most projects use the external expertise of an EPC contractor. Here, the project entity enters a contract with an EPC player with the relevant experience to design, procure, and construct the project on its behalf. This can potentially transfer the construction risk to the EPC contractor. Hence, successful completion of the project depends to a large extent on the expertise of the hired EPC contractor.

51. Similarly, equipment for infrastructure projects is technically intensive and its manufacture requires adequate know-how and expertise. As sectors such as telecommunications and power are technology-intensive, procuring equipments from a reliable source is important for smooth and efficient operation of the project.

52. Therefore, it is important to assess the following:

- **Experience of the engineering, procurement, and construction contractor or equipment supplier.** Experience in executing the projects and handling equipment of similar size and technology.

- **Financial strength of the engineering, procurement, and construction contractor or equipment supplier.** Broad financial overview is necessary to assess the ability of the contractor or supplier to arrange funds required for executing the order. This also indicates the ability of the contractor or supplier to pay a penalty or damages, if required (refer to point [v] below).
- **Performance of past projects or equipment.** The track record of previous orders executed by the contractor or supplier will give an indication of the quality and timeliness of project completion or equipment supply.
- **Market reputation of the contractor or supplier.** An experienced and established EPC contractor and equipment supplier is good for a project's rating at the construction stage.

v. Tight Contractual Agreements Regarding Delays and Cost Overruns

53. As discussed earlier, successful and timely completion of a project largely hinges on the capabilities of the EPC contractor and equipment supplier. The scope of work and any penalty or damages coverage in case of nonperformance or underperformance is governed by the respective contractual agreements entered into by each party. Hence, it becomes important to assess the following:

- **The degree of tightness of the contract.** This determines the extent of risk transfer to the EPC contractor. The tighter a contract—to cover for any adverse project eventuality—the better it is for the credit rating, in that it reduces the construction risk to that extent. For instance, if an EPC contract is based on a fixed price and all cost escalations are to be borne by the contractor, the project is protected from adverse movements in construction material prices.
- **Penalty provisions in case of delay or nonperformance.** If the contract penalizes the contractor or equipment supplier in the event of delay in completion of the project or supply of equipment, this will not only reduce the chances of delay but may also protect the project against any adverse impact of delay, such as increased interest during construction or debt repayment with the compensation that it will receive.
- **Economic stake of the engineering, procurement, and construction contractor and equipment supplier.** The EPC work in some infrastructure projects is undertaken by the sponsor itself. Such an arrangement acts as a moral binding on the contractor to complete the project within the budgeted time and cost. However, the merit of such an arrangement needs to be viewed with respect to the technical capability of the sponsor relative to the available alternatives.

54. Assessment of these provisions is more critical for an infrastructure project due to its large size, long construction period of 3 to 4 years or even higher in some cases, and high project cost. A long construction period exposes the project to fluctuations in construction material prices, while high project costs result in significant interest costs, even if the project is delayed by just 3 to 4 months because most infrastructure projects are highly leveraged.

vi. Funding Pattern and Status of Funding Tie-Up

55. The funding pattern plays an important role in defining the viability of the project. The following points need to be assessed in this regard:

- **Degree of leverage in the project.** The extent to which debt is used assumes greater importance in an infrastructure project as these are highly leveraged, with most projects funded in a debt–equity ratio of 75:25 or 80:20. The more highly leveraged a project, the higher is the debt burden it needs to service from the same cash flows. For instance, if Project A is funded with a lower debt–equity ratio than Project B, Project A will be relatively more viable and is likely to have better credit quality. Since debt has fixed principal and interest obligations, Project B will have higher fixed commitments against its cash flows than Project A, which will result in lower debt protection ratios.
- **Status of the funding tie-up.** Infrastructure projects require long-tenured debt because of the long gestation period; thus, tying up funds can be a challenging task. Therefore, a project that has its funding in place is more likely to be completed on time than a project that has still to garner funds.

c. *Financial Risk Assessment*

56. The revenue risk, operating efficiency, cash flow adequacy, and project funding mix are important aspects of financial risk assessment, which in turn will determine the timely debt servicing capacity of the project.

57. The financial risk assessment broadly covers existing and future financial position, cash flow adequacy, funding pattern, and financial flexibility.

i. Existing Financial Position

58. The existing financial position of a project is analyzed to assess its financial strength, which indicates how well the project is positioned to withstand adverse business situations. Key parameters considered to assess the financial profile are

- revenue growth,
- operating profitability,
- net profitability,
- gearing, and
- return on capital employed.

59. The net profitability of a project in the initial stage is weak because of high interest payments to service the large debt component. Over a period of time, the financial risk profile improves, depending on the business risk profile.

ii. Future Financial Risk Profile

60. To assess the future financial stability of the entity, financial projections for the project are analyzed for the next 4 to 5 years. Furthermore, scenario analysis is generated to assess the capacity of the project to withstand tough business cycles. This analysis is done keeping the following in view:

- possible variations in technical parameters,
- possible time and cost overruns (for a project under implementation),
- variations in funding patterns and cost of funds (for a project under implementation),
- effect of market forces (such as volatility in raw material prices and expected growth in revenues) on profitability (for operational projects),

- possible variations in the interest rate (in the case of loans with variable interest rate) and tax rates, and
- currency exchange fluctuations (in the case of foreign currency loans).

61. A project better able to withstand stress is likely to have better credit quality as it provides higher certainty of timely servicing of debt.

iii. Cash Flow Adequacy

62. Credit rating is an opinion on the likelihood of timely repayment of debt by the project in the future. Hence, the adequacy of future cash flows of a project is a key input in assessing its credit quality. Analyzing cash flow adequacy involves examining the cash flow projections in relation to the debt repayment requirement. Key parameters considered to assess the adequacy of cash flows are

- debt service coverage ratio,
- net cash accruals to total debt ratio,
- interest coverage ratio, and
- loan life coverage ratio.

iv. Financial Flexibility

63. Financial flexibility refers to a project's ability to manage its cash flows or raise additional resources in an adverse situation. Key pointers that indicate a project's financial flexibility are

- flexibility to cut back capital expenditure, if required;
- option to tap equity markets;
- ability to raise additional debt or refinance existing debt;
- potential for securitization of future cash flows; and
- surplus liquidity and/or investments that can be liquidated.

v. Adequacy of Termination Payment and Insurance (If Any)

64. An infrastructure project is generally structured as a single-asset entity and thus has a single source of revenue. In case of disruption, since the assessment and release of insurance compensation may take some time, the weight given to insurance payments (even if they are adequate to cover the debt) will be limited from the perspective of timeliness. However, these are more relevant from the perspective of analyzing the ultimate recovery of losses from an infrastructure asset.

- **Insurance payment.** Implementation of a project may be disrupted because of reasons such as accidents, fire, business interruption, breakdown of construction equipment, or *force majeure* events such as earthquakes or floods. These risks are usually mitigated by an insurance agreement with an insurer. The adequacy of compensation in case of such an event needs to be considered while assessing the financial risk profile.
- **Termination payment.** Some infrastructure projects are awarded by concession. Under the concession agreement, the awarding authority gives the right to the private player to develop, operate, and maintain the asset for a specified period of time (20 to 25 years, say). However, if the agreement needs to be terminated before it matures, there are provisions for termination payment. Termination payments under various scenarios

(such as default by concessionaire, default by awarding authority, and *force majeure* events) are usually predefined in the agreement. The adequacy of the termination payment in relation to the debt obligations is an input while assessing the financial risk profile. However, release of the termination payment may be delayed because of the time required for assessing the payment amount. Thus, the analytical treatment for such potential payments will be similar to insurance payments discussed above.

*d. Legal and Contractual Risk Assessment*

65. The majority of PPP projects are based on long-term agreements between private players and public authorities, and crucial aspects of the project are driven by the terms of these agreements. A proper understanding of these is critical to analyzing the credit quality of projects.

i. Policy Framework for Public–Private Partnerships

66. It is important to understand the legislative framework of PPP policies prevalent in a country, in that the government's focus and drive is critical to the success of PPP projects. A PPP project is a partnership between the public and private sectors and as such the government needs to maintain a fine balance by ensuring adequate returns to the private investor while keeping the public interest in mind. Such a unique arrangement is bound to throw up challenging issues. A mature policy environment is needed to handle these and to provide a stable atmosphere for PPP projects to flourish. Points that need to be considered while evaluating the framework are as follows:

- **How evolved and mature the legislative framework is.**
- **Experience and coverage of PPP projects.** For every country, the diversity of its experience (number of subsectors covered), extent of exposure (only national projects or state and local ones too), and size of projects developed under PPP (small, medium, or large and complex projects) are important factors to be assessed.
- **Track record in handling policy issues.** The speed of resolution of issues, balance maintained between (usually) conflicting interests, and the pace of evolution need to be analyzed
- **Institutional readiness.** A sector-specific public sector entity (PSE) may act as a nodal agency to implement PPP programs. The PSE helps the government formulate the policy and implements it by helping the private investor to develop the asset. Since the PSE plays an important role in translating the policy into the creation of assets, the experience and readiness of the PSE in carrying out the mandate is a critical parameter to be assessed.

ii. Terms of the Concession Agreement

67. Many PPP contracts are awarded under a concession agreement. The terms of the agreement define the implementation, operation, and maintenance of the project. Specific attention needs to be paid to the following:

- tenure of the concession agreement,
- responsibilities and liabilities of the concessionaire and the awarding authority,
- scope of work of the concessionaire,

- circumstances that may attract penalties, and
- manner and reasons under which a concession agreement can be terminated.

68. This is one of the most important documents of the PPP arrangement as it critically impacts project viability.

#### iii. Mechanism and Mode of Revenue Sharing

69. Because PPP projects are developed on behalf of governments, project revenues are often either regulated or shared with the government. Thus, while assessing the contractual risk, attention should be paid to the specified source of revenue, terms governing revenue components (both volume and realization), and any provision for sharing revenue.

70. For instance, the following aspects of a road project should be considered:

- type of project—annuity or toll;
- authority granting annuity, frequency and manner of annuity payment, and conditions under which the annuity can be reduced, held back, or declined;
- manner of toll collection, provision for toll fixation and revision, any situation wherein the concessionaire's right to collect the toll is either extinguished or modified, and any class or category of traffic exempt from paying the toll; and
- any provision for sharing of toll revenue when traffic exceeds a specified threshold.

#### iv. Implications for Investment and Cost Structure

71. Besides project revenues, the investment required for the project and the cost structure are also often specified by the government to ensure proper functioning of the asset. In this context, the following points are worth noting, as they will define the capital and revenue expenditure of the project:

- initial investment amount specified;
- incremental investment advised during the operational period;
- provisions for change in scope of work during construction;
- provision for capacity augmentation during the concession period; and
- activities specified for project operation and maintenance, including meeting certain minimum parameters, ensuring a certain level of asset availability, or achieving improvements in operational efficiency on an ongoing basis.

#### v. Legal Structure of the Project

72. The legal structure of a project also plays an important role in credit assessment. The credit analysis is incomplete without assessing the project's bankruptcy risk. In most cases, a project is structured as an SPV with the sole purpose of implementing and operating the project. This minimizes the risk of bankruptcy, as the entity is generally not allowed to undertake any other business.

73. In certain jurisdictions, however, there is a risk that the assets of the project entity can be attached if the parent entity files for bankruptcy. This risk needs to be appropriately analyzed. For instance, if the parent entity of the project SPV goes bankrupt it is possible that its assets will not be sufficient to repay lenders and creditors. In such a scenario, if so permitted by the

law, the assets of the SPV may be taken over by the lenders of the parent company to satisfy their claims.

vi. Off-take Agreements

74. An off-take agreement occurs when the buyer of a resource agrees to off-take a particular quantity of goods from the producer for a specified period.

75. The following points should be considered while factoring an off-take agreement:

- **Tenure of the contract.** A long-term off-take agreement usually entails higher certainty of cash flow.
- **Terms of the contract.** Specifically with respect to determination of pricing and any “take or pay” provisions.
- **Credit quality of the off-taker.** Though the presence of an agreement provides certainty of demand, strong creditworthiness of the off-taker assures the demand conversion into cash flow. If the off-taker’s credit quality is weak, this may have a negative impact on the credit rating.

vii. Transfer Rules

76. Public–private partnership projects are required to be handed back to the government upon expiry of the concession period. The factors to be analyzed here are as follows:

- specific technical requirements, if any, to be met before handover, which may involve additional cost; and
- the quantum of retention money, if any, to be deposited at the time of handover.

e. *Concessionaire (Private Sector Sponsor) Assessment*

77. The assessment of the private sector sponsor covers technical expertise, management competencies, and financial strength of the sponsor. Since a project entity/SPV does not have much technical expertise or management capacity of its own, successful implementation of a project is critically dependent on the sponsor’s experience and financial strength.

78. Given the non-recourse financing structure of the majority of PPP-based infrastructure projects, the sponsor support plays a critical role in the overall credit risk assessment. Sponsor support could be explicit in the form of a guarantee either at the project implementation stage or the operational stage. On the other hand, sponsor support could be implicit based on the project’s critical importance to its business and its philosophy of supporting its project entities/SPV.

i. Sponsor’s Experience

79. As discussed earlier, an experienced sponsor helps mitigate the execution and construction risks inherent in project implementation, and therefore has a positive impact on the credit assessment.

## ii. Financial Strength Assessment of the Sponsor

80. Despite the non-recourse nature of debt financing in many PPP projects, the financial strength of the sponsor is an important consideration for the following reasons:

- The sponsor invests the equity portion in the project.
- Any financial trouble faced by the sponsor can jeopardize implementation of a project that it has developed and is managing.

81. The financial strength of the sponsor is assessed by evaluating its past finances focusing on capital structure and cash flows, expected financial position over the next 2 to 3 years, projects planned, effect of these projects on the finances of the sponsor, and its financial flexibility.

## iii. Ability to Provide Support to the Project

82. Infrastructure projects are prone to delays and cost overruns. Hence, they may need financial support from the sponsor to fund cost overruns or meet debt repayment liability in the initial phase of the project life cycle.

83. A sponsor will only be able to support the project if it has the requisite financial strength. Thus, it is important to evaluate the sponsor's ability to support the project given its financial position, sources of investment surplus, and other investment commitments.

## iv. Stated Posture toward Providing Financial Support

84. From the credit rating perspective, the intent of the sponsor to support the project is as important as its capacity to support. Thus, even if the sponsor has the financial ability to support the project, the articulation of its intent to support is critical.

85. This assumes even greater importance for PPP-based infrastructure projects with non-recourse financing. Strong support from the sponsor will be factored in if either the sponsor guarantees the debt, or where the sponsor has explicitly expressed support. However, despite the absence of any explicit intent, high to moderate support could be factored in depending on the criticality of the project for the sponsor's other businesses, the amount of investment made by the sponsor in the project, and the sponsor's track record or philosophy toward supporting its projects. Similarly, despite a stated posture of support, low to no support will be factored in if the sponsor has a history of not honoring its commitments.

## v. Management Capability

86. The management's capacity to run the business also plays an important role in sponsor assessment. While assessing the management quality, it is important to consider the following:

- qualification and past experience of the management team,
- integrity and reputation in the financial community,
- compliance with regulatory and legal requirements, and
- track record of honoring contracts and operational and financial commitments.

87. Besides assessing the management quality, it is also critical to understand management's risk appetite. Some pointers that can help assess risk appetite include

- any unrelated diversification,
- growth orientation, and
- comfort with usage of debt.

*f. Role and Credit Profile of the Public Partner*

88. A PPP project's cash flows can be substantially influenced by the credit profile of the PSE partnering the project. This is because under the PPP, the PSE also assumes significant commitments that are critical for ensuring timely implementation and ongoing cash flows. Key issues considered in assessing the PSE credit risk profile include the following:

i. Role of the Public Entity

89. The public sector entity plays an important role in the implementation of any infrastructure project. There are certain aspects such as land acquisition, environmental clearances, forest clearances, and regulatory approvals in the project implementation stage, wherein various public sector entities play a critical role. Once the project is operational, the public sector entity plays a supervisory role and ensures that the project performance standards are maintained.

ii. Sponsor of the Public Partner: National, State, or Local Government

90. The sponsor influences the credit risk profile of a PSE since most PSEs are created to fulfill a development objective that may not be commercially viable. Thus, the PSE may require strong sponsor support for its operations.

91. In India, a national body is likely to have better access to government funds and usually takes the lead in introducing appropriate policies. The same will be true of a state body as against a local body. Thus, the credit risk profile of the sponsor will influence the assessment of the PSE. For instance, in the Indian context, the credit risk profile of the National Highways Authority of India is far superior to any of its state-level counterparts.

iii. Legal Support Available to the Entity

92. A PSE will be able to fulfill its mandate more effectively if it has the flexibility to frame the policies and regulations to best suit the requirements of the sector. Any legal support that ensures ongoing funding support to the PSE enhances its credit risk profile.

iv. Criticality of the Entity to the Public Policy Role of the Government

93. As mentioned earlier, most PSEs are floated to fulfill development roles and are thus largely dependent on government support to fund their operations. However, given the vast demands on limited government resources, priority is usually given to PSEs that are more critical to the government's public policy role. Thus, the criticality of the mandate the PSE in fulfilling the overall agenda of the government and its positioning in the system decides the importance of the entity.

v. Extent of Government Support Available

94. The extent of government support depends on the criticality of the entity, guarantees issued, sponsor strength, and the financial position of the government. These considerations will decide the extent and promptness of support from the government.

**2. Public–Private Partnership Projects with an Availability-Based Payment Structure**

95. Public–private partnership-based infrastructure projects with an availability-based payment structure are largely insulated from revenue risks. In this case, the PSE sponsor makes predetermined periodic payments to the concessionaire or private sector entity based on certain predefined performance parameters, once the project is operational. This form of PPP is usually adopted for projects designed to meet a social objective or having low commercial viability.

96. In the Indian context, some of the road sector PPP projects are structured with an availability-based payment structure (referred to as annuity-based road projects). These projects have low commercial viability and the sponsor is usually a government-promoted entity.

97. The credit risk assessment for these projects is generically consistent with the framework defined earlier (section I.E.1), though there are some modifications in certain risk factors, which need to be then appropriately factored into the credit rating process. These modifications are as below:

*a. Business Risk*

98. There is no competition, demand, or price risk for PPP projects with an availability-based payment structure, as these projects have a fixed revenue stream from the public sponsor. However, this revenue stream is subject to the project sponsors maintaining the infrastructure facilities as per the predefined performance standards, and making the infrastructure facility available for use as per the contractual agreement. Hence, the experience of the private sector sponsor in carrying out operations and maintenance activities of the infrastructure facility is an important factor.

99. The other important parameter is the government policy and regulatory stance for a specific infrastructure sector, subject to any changes. (Refer to point iii in section I.E.1.a for details).

*b. Financial Risk*

100. Such type of PPP projects have a predetermined revenue stream and cash flow stability, subject to their adherence to the predefined performance standards throughout the concession period. Hence, such PPP projects typically have better debt servicing capacity depending on the project funding mix and debt levels.

101. Sometimes, the funding mix of these projects is superior from a credit risk perspective, as the government provides funds to the project in the form of viability gap funding in the construction stage. This in turn results in relatively lower debt levels and minimizes the pressure on the project's financial position.

*c. Legal/Contractual Risk*

102. Since the PSE makes a commitment to provide fixed payments to the project upon adherence to predefined performance standards, the following factors are critical:

- terms of the concession agreement with respect to the frequency and quantum of fixed payment from the PSE;
- penalty payable by the PSE in case of a delay in fixed payments;
- performance standards to be maintained by the private entity, so as to ensure timely receipt of payment;
- penalties payable by the private entity in case the project facilities are not available for use at the required times or to the required standards; and
- termination on account of defined events of default by either party and adequacy of termination payment.

*d. Role and Credit Profile of the Public Partner*

103. Given that payment from the PSE sponsor is the predominant, if not the only, source of revenue for the project, credit rating of the PSE sponsor is critical in the overall credit risk assessment of such types of PPP projects. In addition to the risk assessment factors related to the public partner outlined earlier (refer to I.E.1.f), the following factors are important:

- the financial capacity of the PSE to honor its contractual commitments in a timely manner, and
- the priority of availability-based payments in the overall financial obligations of PSE.

### **3. Assessment of the Credit Enhancement Structure**

104. A number of PPP-based infrastructure projects may employ credit enhancement to support the debt raised to fund them. Credit enhancements comprise external structural support that helps improve the credit quality of debt raised to fund PPP-based infrastructure projects. When credit enhancements are employed, the standalone credit quality (determined by using the approaches described earlier) may be enhanced to a higher level. Following are certain types of credit enhancements that can help raise the project ratings:

*a. External Support Available as Full or Partial Guarantees*

105. The rating of a project can be raised if there is external support from a higher-rated third party. Where support is in the form of an unconditional and irrevocable guarantee covering the entire debt obligation being rated, the rating could be equated to the rating of the third party providing the guarantee. If support is provided in the form of a partial guarantee, the standalone rating of the project can be raised to a level that depends on the extent and structure of the partial guarantee as well as the rating of the guarantor.

*b. Waterfall Structure*

106. A “waterfall” structure defines the priority in which project expenses and other obligations are serviced from cash flows. The mechanism ensures financial discipline and prioritizes debt repayment over less critical expenses, investments, and dividend payouts. The presence of a

waterfall structure protects lenders from any outflow of funds from the project entity to the sponsor until scheduled debt repayments are met.

107. Such a structure assumes importance for projects that have weak cash flow protection measures.

*c. Prioritization of Debt Payments*

108. If the structure incorporates differential payment priority for different debt instruments, the credit risk profile of the individual debt instruments may differ depending on the available cash flow coverage. Usually the subordinated debt component has a weaker credit profile than senior debt.

*d. Escrow or Cash-Prioritization Mechanisms*

109. The project's credit risk profile can also benefit from escrow or cash prioritization mechanisms. An escrow mechanism ensures that cash flows earned by the project are received directly in a predesignated account, from which all project expenses and other obligations are met. Escrow accounts are opened either with the lender itself or with an independent trustee under a tripartite agreement between the borrower, lender, and the trustee. Such an arrangement gives the lender better control over the project's cash flows.

## **F. Rating Definition and Scale**

110. A credit rating in the context of a PPP project is an opinion on the likelihood of timely debt servicing by the project in the future. Rating agencies usually have a rating scale that they use to reflect the timely debt repayment capability of debt issuers and borrowers. Such rating scales can also be used to compare the relative credit risk profiles of different projects. Small rating differences between the projects highlight fine variation in the credit risk profiles of the projects while large rating differences indicate significant variation in credit risk profiles. Such ratings can serve as inputs to prospective investors and lenders in taking a well-informed decision. Further, the rating scale also serves as a simple and efficient way of communicating opinions about the creditworthiness of a project.

111. In India, the rating scale adopted by DCRA's for rating the debt instruments of PPP-based infrastructure projects is presented in Table 2. The rating scale is relatively straightforward with "AAA" denoting the strongest creditworthiness and "D" denoting the weakest creditworthiness. In addition, the modifiers such as plus (+) and minus (–) symbols are used to indicate finer distinctions within a rating category for the ratings "AA" to "C."

**Table 2: Rating Scale**

<b>Rating</b>	<b>Rating definition</b>
AAA	Highest safety
AA	High safety
A	Adequate safety
BBB	Moderate safety
BB	Moderate risk
B	High risk
C	Very high risk
D	Default

112. As an illustration, Table 2 may be interpreted as follows (with reference to a “AA” rating): “An AA rating indicates high degree of safety with regard to timely servicing of financial obligations.”

113. In order to arrive at the overall rating for a PPP-based infrastructure project, DCRAs should evaluate individual credit risk parameters on this rating scale or one which is similar to this. For evaluating the rating for each of these credit risk parameters, various sub-parameters (as outlined earlier in Figure 1, described in detail in the rating methodology in section I.E.1 and further summarized in Table 3) are rated on the same rating scale. The weight given to these sub-parameters in the rating process would depend on its relative importance in the light of project-specific nuances, a call which may be taken by the credit risk assessor.

**Table 3: Credit Risk Parameters and Sub-parameters for Various Types of Public–Private Partnership Projects**

I.E.1	PPP projects with revenue risk borne by private entity/concessionaire
	(i) Business risk assessment
	(a) Nature of the project
	(b) Demand risk in the specific infrastructure sector/service area
	(c) Government policy and regulatory stance
	(d) Degree of competition and pricing flexibility
	(e) Technology risk
	(ii) Project implementation risk
	(a) Status of basic infrastructure, statutory clearances, and approvals
	(b) Execution complexity
	(c) Sponsor’s experience and support expected
	(d) Track record of engineering, procurement, and construction contractor and equipment supplier
	(e) Tight contractual agreements regarding delays/cost overruns
	(f) Funding pattern and status of funding tie-up
	(iii) Financial risk assessment
	(a) Existing financial position
	(b) Future financial risk profile
	(c) Cash flow adequacy
	(d) Financial flexibility
	(e) Adequacy of termination payment and insurance (if any)
	(iv) Legal and contractual risk assessment
	(a) PPP policy framework
	(b) Terms of the concession agreement
	(c) Revenue and mode of sharing mechanism
	(d) Implications for investment and cost structure
	(e) Legal structure of the project
	(f) Off-take agreements
	(g) Transfer rules
	(v) Concessionaire (Private sector sponsor) assessment
	(a) Sponsor’s experience
	(b) Financial strength assessment of the sponsor
	(c) Ability to provide support to the project
	(d) Stated posture toward providing financial support
	(e) Management capability

*continued next page*

**Table 3** *Continued*

	(vi) Role and credit profile of public sector entity partner
	(a) Role of public sector entity
	(b) Sponsor of the PSE: National, state, or local government
	(c) Legal support available to the entity
	(d) Criticality of the entity to the public policy role of the government
	(e) Extent of government support available
<b>I.E.2</b>	<b>PPP projects with an availability-based payment structure<sup>a</sup></b>
	(i) Business risk
	(ii) Financial risk
	(iii) Legal/contractual risk
	(iv) Role and credit profile of public sector entity partner
<b>I.E.3</b>	<b>Assessment of credit enhancement structure</b>
	(i) External support available as full or partial guarantees
	(ii) Waterfall structure
	(iii) Prioritization of debt payments
	(iv) Escrow or cash-prioritization mechanisms

<sup>a</sup> includes other sub-parameters covered in section I.E.1 earlier.

Note: The serial numbers in the table refer to the sections in this report where these parameters are described in detail.

114. The overall rating of the PPP project is based on the aggregate view of the rating of the individual credit risk parameters. The weights given to various credit risk parameters in the overall assessment of PPP projects would vary depending on project-specific nuances: Is the project in the construction or operational stage? What is the risk allocation between the public and private partners? Two case studies including illustrative rating scorecards assigning weights to various credit risk parameters in PPP-based operational toll road projects are presented in sections I.F.1.a and I.F.1.b.

115. Given the high project implementation risk, credit ratings of PPP-based projects at the construction stage are mostly in the moderate to very high risk category. Once the project becomes operational, the credit quality usually improves based on the operational track record, legal or contractual risk, expected financial risk profile, and extent of sponsor support. The credit ratings for the debt instruments of PPP projects could be further enhanced based on the extent of credit enhancement provided and credit rating of the guarantor.

### **1. Case Studies and Illustrative Scorecards for Rating Public–Private Partnership Projects**

116. While the parameters necessary to assess credit risk of PPP projects have already been listed, it is important to mention here that it is not easy to ascribe a standardized weight to each parameter and create a rating model because projects differ both in terms of specifications as well as complexities. Further, it is possible that in a specific project any one parameter overrides the others to such a large extent that it becomes a rating driver.

117. For illustrative purposes a rating scorecard is presented below to explain how a rating can be arrived at in a hypothetical scenario. In addition, two case studies of operational toll road projects are later presented.

118. In order to arrive at an overall rating based on the weights assigned to various credit risk parameters, equivalence between a rating and a rating score has been illustrated in Table 4. This is a hypothetical example and not based on specific default rates per se.

**Table 4: Rating Scorecard**

Rating	Rating Score	Description
AAA	8	Minimal or no risk
AA	7	Very low risk
A	6	Low risk
BBB	5	Moderate risk
BB	4	High risk
B	3	Very high risk
C	2	Maximum risk
D	1	Very weak

119. Using the above equivalence, the following rating score card has been constructed in a hypothetical scenario (Table 5).

**Table 5: Rating Scorecard for an Illustration**

Rating Parameter	Weight (A)	Rating Score (B)	Weighted Rating Score (C = A X B)
Business risk	20%	5	1.0
Project implementation risk	20%	4	0.8
Financial risk	20%	5	1.0
Legal/contractual risk	10%	4	0.4
Private partner credit profile	10%	5	0.5
Public sector entity role and credit profile	20%	7	1.4
<b>Total weighted rating score</b>			<b>5.1</b>
<b>Stand-alone rating</b>			<b>BBB</b>
<b>Credit enhancement (1 rating category)</b>			<b>1.0</b>
<b>Final rating score (rounded to the nearest integer)</b>			<b>6.0</b>
<b>Final rating</b>			<b>A</b>

Notes:

- Each rating parameter is given a weight based on the envisaged importance of that particular parameter to the project. The sum of the parametric weights should be equal to 100%. The weight given to the parameters is unique to each kind of project depending on the respective risks it is exposed to.
- Based on the credit risk assessment, each parameter is assigned an appropriate rating score using the equivalents indicated in Table 4.
- The weighted rating score for each rating parameter is then computed by multiplying its weight with its rating score.
- The total weighted rating score is then arrived at by calculating the sum of the parametric weighted rating scores and rounding it off to the nearest integer.
- Using Table 4, the rating equivalent to the total weighted rating score is arrived at. This rating can be deemed to be the stand-alone rating.
- The credit enhancement present is then analyzed and assessed to provide a rating elevation of one rating category in this illustration.
- The rating elevation (provided by the credit enhancement) is then added to the total weighted rating score and the resultant score rounded off to the nearest integer to obtain the final rating score.
- Finally using Table 4, the rating equivalent to the final rating score is arrived at, which can be deemed to be the final rating.

**Table 6: Rating Parameters and Key Factors**

<b>Rating Parameter</b>	<b>Key Factors</b>
Business risk	<ul style="list-style-type: none"> <li>• Weight could vary depending on the project-specific dynamics such as technological complexity, resource dependency at the operational stage, and the extent of demand and price risk. <ul style="list-style-type: none"> <li>○ High weight may be assigned in case of power projects, where resource availability is a critical factor at the operational stage.</li> <li>○ High weight may be assigned in case of projects based on complex technology such as thermal power projects based on supercritical technology.</li> <li>○ Low weight may be assigned in case of projects where the demand and price risk are minimal, such as projects with an availability-based payment structure.</li> </ul> </li> </ul>
Project implementation risk	<ul style="list-style-type: none"> <li>• Weight may be nil in case of operational projects, as implementation stage risk would have fallen off.</li> <li>• In case of projects under implementation, weight could vary depending on the construction stage and execution complexity of the project. <ul style="list-style-type: none"> <li>○ High weight may be assigned to projects at the nascent construction stage and/or projects with high execution complexity including technological complexity (for instance, solar power projects based on thermal technology, and thermal power projects based on super critical technology).</li> <li>○ Moderate to low weight may be assigned in case of projects that have achieved substantial construction progress and/or low execution complexity, such as road projects.</li> </ul> </li> </ul>
Financial risk	<ul style="list-style-type: none"> <li>• Weights could vary depending on the stage of the project life cycle. <ul style="list-style-type: none"> <li>○ High weight may be assigned in case of projects which are at the operational stage.</li> <li>○ Low weight may be assigned in case of projects which are at the implementation stage.</li> </ul> </li> </ul>
Legal/contractual risk	<ul style="list-style-type: none"> <li>• Weights could vary depending on the extent to which the specific infrastructure sector is regulated. <ul style="list-style-type: none"> <li>○ High weight may be assigned in case of sectors where the price risk is regulated such as airports and ports.</li> </ul> </li> </ul>
Private partner credit profile	<ul style="list-style-type: none"> <li>• Weights could vary depending on the stage of the project life cycle. <ul style="list-style-type: none"> <li>○ High weight may be assigned in case of projects at the implementation stage, as the experience and technical and financial support from the private partner are critical factors for project completion.</li> <li>○ Moderate weight may be assigned in case of projects in the initial years of operation, as the private partner's ability and willingness to provide financial support is an important consideration in case of financial stress.</li> <li>○ Low weight may be assigned in case of projects that have good track record of operations and have attained stability.</li> </ul> </li> </ul>
Role of the public partner and its credit profile	<ul style="list-style-type: none"> <li>• Weight could vary depending on the role and extent of involvement of the public partner. <ul style="list-style-type: none"> <li>○ High weight may be assigned in case of projects with an availability-based payment structure, as the public partner makes fixed periodic payments once the project is operational and maintains certain predefined performance standards.</li> <li>○ Low weight may be assigned in the case of public-private partnership projects as revenue risk is borne by the private partner, since the involvement of the public sector entity is limited once the project becomes operational.</li> </ul> </li> </ul>

120. While an illustrative rating scorecard is presented above, it is important to note that weights given to various rating parameters vary depending on the infrastructure and project-specific nuances. Table 6 highlights key determinants that can change the weight assigned to each rating parameter in the overall framework. The credit risk assessor needs to determine the weight for each rating parameter based on its relative importance for a specific project, such that the parametric weight should be equal to 100%. The credit risk assessor should refer to credit risk parameters described in detail in the rating methodology in section I.E.1 and summarized in Table 3 and to the key factors covered in Table 6.

a. *Case Study 1*

- ABC Limited is engaged in the construction and O&M of a road project that is a part of a national highway being developed on a PPP basis in India. The central government authority awarded the project on a toll basis with a concession period of 20 years. There is a well-defined framework for awarding of projects by the central government, with more than 200 projects awarded so far. ABC Limited is a subsidiary of a reputed infrastructure developer that has good experience in roads, power, airports, etc.

121. The highway stretch has a strategic location in terms of traffic potential, as it connects two metropolitan cities that are economically prosperous centers. The highway stretch also traverses through five states and connects major urban centers. The commercial traffic is the major contributor to revenues, and hence is highly correlated to the economic and industrial growth prospects.

122. The project has been operational for more than 7 years, and has witnessed good operating performance backed by compounded annual toll revenue growth of 13% in 2006–2007 and 2010–2011. The credit quality of this project is mainly driven by healthy growth in toll revenues given the track record of strong traffic performance and debt protection measures with an above-average debt service coverage ratio (DSCR) of 2.3x over the tenure of loans. However, the project is exposed to risk related to vulnerability of traffic volumes arising from economic slowdown.

123. An illustrative scorecard for this case study is presented in Table 7.

b. *Case Study 2*

124. XYZ Limited is engaged in the construction and O&M of a road project that is a part of a state highway being developed on a PPP basis in India. The state government authority awarded the project on a toll basis with a concession period of 15 years. The framework for awarding of projects by the state government authority is still evolving, with only a few projects awarded to date. Further, XYZ Limited is a new player and has limited experience in the infrastructure development space.

125. The project highway provides connectivity to tourist locations and traverses through the agricultural areas. Hence, the project has a low though diverse traffic base, including passenger traffic and long-distance commercial traffic.

126. The project has been operational for about 4 years; however it is exposed to traffic diversion from alternate routes. The credit quality of this project is mainly constrained by its weak debt protection measures with average DSCR of 1.2x over the tenure of loans. Further, the project is exposed to interest rate risk as well as vulnerability of traffic volumes on account of economic slowdown. Though the project has a diverse traffic base, there is a potential traffic diversion risk from alternate roads.

**Table 7: An Illustrative Rating Scorecard for Case Study 1**

<b>Rating Parameter</b>	<b>Weight (A)</b>	<b>Rating Score (B)</b>	<b>Rationale for Rating Score (C)</b>	<b>Weighted Rating Score (D = A X B)</b>
Business risk	20%	7	<ul style="list-style-type: none"> <li>• Good traffic potential on this road project, as it connects two metro cities with good economic prospects</li> <li>• Good operational track record with strong traffic performance</li> </ul>	1.4
Project implementation risk	0%	Not applicable	Not applicable	Not applicable
Financial risk	50%	7	<ul style="list-style-type: none"> <li>• Healthy growth in toll revenues, which is the major revenue source</li> <li>• Above-average debt protection metric with a DSCR of 2.3x</li> </ul>	3.5
Legal/contractual risk	10%	6	<ul style="list-style-type: none"> <li>• Well-defined legal framework for awarding of projects by the central government authority</li> <li>• Tight contractual agreement between the central government authority and ABC Limited, covering various aspects including operation and maintenance, termination event, etc.</li> </ul>	0.6
Private partner credit profile	10%	6	<ul style="list-style-type: none"> <li>• Subsidiary of a reputed infrastructure developer with wide experience in project implementation and operation across various sectors</li> <li>• Good financial position of the private partner and high likelihood of support from private partner in case of need, given the strategic importance of this project</li> </ul>	0.6
Role and credit profile of the public partner	10%	8	<ul style="list-style-type: none"> <li>• Good experience of the public partner in road projects</li> <li>• Strong credit profile of the public partner, as it is a central government supported entity</li> </ul>	0.8
<b>Total weighted rating score</b>				<b>6.9</b>
<b>Stand-alone rating</b>				<b>AA</b>
<b>Credit enhancement (nil)</b>				<b>0</b>
<b>Final rating score (rounded to nearest integer)</b>				<b>7.0</b>
<b>Final rating</b>				<b>AA</b>

127. An illustrative scorecard for this case study is presented in Table 8.

**Table 8: An Illustrative Rating Scorecard for Case Study 2**

<b>Rating Parameter</b>	<b>Weight (A)</b>	<b>Rating Score (B)</b>	<b>Rationale for Rating Score (C)</b>	<b>Weighted Rating Score (D = A X B)</b>
Business risk	20%	5	<ul style="list-style-type: none"> <li>• Modest traffic potential on this road project, as it connects tourist locations and passes through agricultural areas that have limited growth prospects</li> <li>• Risk of traffic diversion from alternate routes; though the project has diverse traffic base</li> </ul>	1.0
Project implementation risk	0%	Not applicable	Not applicable	Not applicable
Financial risk	50%	4	<ul style="list-style-type: none"> <li>• Modest growth in toll revenues, which is the major revenue source</li> <li>• Weak debt protection metric with a DSCR of 1.2x</li> </ul>	2.0
Legal/contractual risk	10%	4	<ul style="list-style-type: none"> <li>• Evolving legal framework for awarding of projects by the state government authority, as only a few projects have been awarded so far</li> </ul>	0.4
Private partner credit profile	10%	4	<ul style="list-style-type: none"> <li>• Subsidiary of a relatively new infrastructure developer with limited experience in the infrastructure sector</li> <li>• Moderate to low likelihood of support from the private partner in case of need, given its modest financial position</li> </ul>	0.4
Role and credit profile of the public partner	10%	5	<ul style="list-style-type: none"> <li>• Limited experience of the public partner in the road sector, as only a few projects have been awarded so far</li> <li>• Moderate credit profile of the public entity as it is a state government awarding authority and not a central government one</li> </ul>	0.5
<b>Total weighted rating score</b>				<b>4.3</b>
<b>Stand-alone rating</b>				<b>BB</b>
<b>Credit enhancement (nil)</b>				<b>0.0</b>
<b>Final rating score (rounded to nearest integer)</b>				<b>4.0</b>
<b>Final rating</b>				<b>BB</b>

## 2. Default Rates—An Indicator of the Robustness of the Rating Methodology

128. The robustness of any rating methodology is indicated by its default rates—the proportion of defaults to the total number of ratings. Default rates can be calculated at each rating level, and can be calculated over multiple periods. Wherever the ratings could not predict default, the default rates and ratings would not be correlated.

129. Default rates are the most objective measure, and the simplest and best way, to evaluate rating quality. Ideally, defaults should occur first from the lowest rating category and then move up the rating scale. The credit rating agency's default rates should, therefore, reduce as one moves up the rating scale. This implies that default rates for rating category "C" should be the highest, followed by "B" and so on. Also, for credible and meaningful comparison, default statistics should cover the entire history of the credit rating agency, reflect cyclicity in businesses, and be computed using a similar methodology.

130. For example, consider that 30 defaults occur in a year out of 1,000 ratings (i.e., default rate of 3%). For a randomly selected set of 100 companies (10% of the rated population), one would expect to have three defaulted ratings (10% of the defaulted population), since the number of defaults one would expect in a sample is proportional to the number of selected companies. If the default rate behavior of a rating system is similar to such random behavior, it is very likely that the rating system has a very poor predictive power of defaults.

131. On the other hand, if ratings are perfect predictors of default, in the aforementioned example the lowest 30 ratings should capture all the defaults. Since rating systems will typically not be perfect, the actual predictive power of any given rating system will be between these two extremes. The closer it is to the perfect scenario, the greater will be its robustness.

132. The rating methodology defined in this document adopts a parametric bottom-up approach to arrive at the overall rating of an entity. This approach entails a detailed evaluation of each parameter that is important to the rating of the entity. Then based on the weights assigned to each parameter, an integrated analysis is done combining all parameters to arrive at the overall rating. Such an approach adequately factors in the impact of all the parameters in the overall rating of an entity, which is essential to arrive at the overall evaluation of the entity regardless of the specific industry it belongs to.

133. An indication of the robustness of this parametric rating methodology is the default rate behavior displayed by the overall ratings which are assigned using the rating methodology. As explained above, if most of the defaults occur from the lowest ratings, it can be inferred that the rating methodology is reasonably robust. Hence default rates can also be used as a tool to verify the robustness of a rating methodology. If a study of the default rates indicates inappropriate results, it may be a signal to bring about changes to the rating methodology to enhance its robustness.

## **G. Factors Influencing the Rating Approach**

134. "Infrastructure" encompasses multiple domains and entities, with wide variations in the extent of public and private participation and financing. Depending on the nature and stage of the projects, financing, and entities, the relative importance of each parameter in the rating framework is to be assessed. These include the following:

### **1. Stage of the Project**

#### *a. Preconstruction*

135. At the preconstruction stage, the key rating driver is project implementation risk. Even if the project is likely to have strong postconstruction viability and credit risk profile, rating at and before the construction stage is likely to be constrained by the implementation risk attached to the construction of infrastructure projects and frequent delays in completion.

*b. Postconstruction*

136. At the postconstruction stage, the rating will be primarily driven by the business and financial risk profiles of the project. The rating, however, will also factor in legal and contractual risks and the PSE's credit profile.

**2. Stage of Financing**

*a. Preconstruction Financing*

137. At the preconstruction financing stage, consideration is given primarily to construction-related risk. As the resulting credit quality is usually weaker, projects at this stage have a limited choice of lenders. Furthermore, interest costs generally reflect such risks.

*b. Postconstruction Refinancing*

138. Given that construction risks are not present at this stage, the credit quality of the project improves in most instances. This allows the project entity to seek lower-cost debt to refinance its existing debt. This results in lower interest costs for the operational project. At the refinancing stage, the credit assessment usually focuses on project viability and the credit enhancement mechanism.

**3. Type of Financing**

*a. Non-Recourse Project-Based Financing*

139. Non-recourse financing refers to project lending wherein the lenders only have access to the project's cash flow without any recourse to sponsors in case the project faces difficulty. Thus, the credit risk profile of non-recourse-based project financing is driven primarily by the credit risk profile of the project.

*b. With Recourse Balance-Sheet Financing*

140. In this kind of financing lenders have full or partial recourse to the sponsor if the project is unable to meet debt obligations from its cash flows. The credit risk profile of the sponsor is therefore also an important consideration in assessing project credit quality.

**4. Nature of the Infrastructure Project**

*a. High Commercial Viability*

141. This refers to projects that operate in sectors where commercial viability is well-established and no subsidy or government support is needed. Here, the credit risk profile is usually assessed on a stand-alone basis.

*b. Moderately Viable*

142. In certain infrastructure sectors, one-time or limited support from the government may be needed to ensure project viability because upfront investment requirements tend to be substantial. A good example of this kind of project is an urban metro rail facility.

143. For the credit risk assessment, appropriate weight must be given to the extent and timeliness of such support (usually in the form of viability gap funding) from the PSE.

*c. Development Oriented*

144. Some infrastructure projects are not viable on their own but are being developed in order to meet a social objective. This category of projects includes water supply in low-income urban areas or provision of telecom services to rural areas. They require ongoing and committed support to meet their debt obligations. Therefore, the supporting legislative environment and the PSE's credit quality become important determinants for evaluation.

## **5. Nature of Entity or Business**

*a. Operational Utility with Multiple Operational Units*

145. When an entity with other operational units implements a PPP project, such as a port or power utility, and at the same time the entity is also setting up a new unit, the project's debt rating will be influenced by the overall credit risk of the entity, irrespective of the specific project's risk. This is because of the fungibility of cash flows, wherein a project's debt repayment obligations may be met by the cash flows of other operational units. Similarly, cash flows of that project may also be used to support other operational units.

146. However, if the project debt is ring-fenced from other operational units, the rating will be solely based on the specific project's risk.

*b. Start-Up Phase Company*

147. Say, a telecommunications service provider that has recently been awarded a fresh license and is in the process of starting its services.

148. In the start-up phase, a company's credit quality will be driven by project implementation risk. The credit quality, however, could be supported by the sponsor's credit risk profile if there is an expectation of support from the sponsor or from an external credit enhancement if one is available.

*c. Experienced Developer Working on a New Project*

149. There could be, for instance, a toll road developer, with multiple roads under operation as separate legal entities, and seeking financing for a new project on a non-recourse basis. For a PPP project with non-recourse financing, the credit quality will be driven by the project risk. However, it will be supported by the operational and managerial expertise of the developer.

## **H. How Rating Agencies Can Benefit Public–Private Partnership Projects**

### **1. Public–Private Partnership Projects—Experience in the Indian Context**

150. India is far ahead of other South Asian countries in terms of successful implementation of PPP projects, especially in roads. Such projects in other infrastructure such as airports, metro-railways and seaports are also gaining momentum in India.

151. There is a well-defined institutional mechanism in place for PPP project implementation in India. There are model concession agreements for roads and major ports that clearly define the risk allocation and rights and obligations of the various parties involved. In case of some road projects, viability gap funding is also provided by the government.

152. The credit risk in infrastructure PPP projects such as roads is usually high in the construction phase. This is different from that seen in traditional credit ratings where the key drivers of credit risk are business risk, financial risk, and management risk.

153. In the road sector, the construction phase risk is largely accentuated by the delay in land acquisition by the project awarding PSE. The key reasons for delay are procedural delays, public agitations, and delay in approvals from multiple government authorities. The extent of this risk varies across projects as well as regions in India.

154. These unique characteristics of infrastructure projects sometimes result in delays in project implementation and significant cost overruns, which could impact the project viability. Hence, the credit rating of PPP projects in the construction phase is usually in the high non-investment grade or low investment grade.

155. The credit rating in the operational phase usually improves, as the project implementation risk is not there. In the operational phase, key risks for toll road PPP projects are revenue risks associated with traffic volumes, the users' willingness to accept the toll rate hikes, and operating cost levels. Hence, the adequacy of project cash flows to meet debt servicing obligations mainly determines the credit risk in the operational phase.

156. In case of annuity-based PPP road projects (PPP projects with an availability-based payment structure) the credit rating in the operational phase improves once the project is operating as per the predefined performance norms. The key risks for annuity-based road projects are adherence to operational performance standards, operating cost levels, and credit quality of the PSE providing fixed annuity payments. Given the stable stream of cash flows, the annuity-based road projects' debt servicing capacity is usually better than that for toll road projects.

157. Recently, roads in India have witnessed an influx of private entities who have limited experience in infrastructure development. The efficient handling of the typical issues relevant to the sector requires experience working in the extant regulatory environment and meeting complex contractual requirements. In such a scenario, the limited experience of some private entities further aggravates the existing challenges and risks in PPP-based projects.

## **2. How Rating Agencies Can Benefit Public–Private Partnership Projects**

158. There are several ways (ratings and otherwise) DCRAAs can be constructively involved in the successful evolution of PPP infrastructure projects in South Asia. For all these initiatives, the growth of DCRA-led activities can be catalyzed if governments and multilateral organizations, such as the Asian Development Bank, subsidize funding for their services. Following are some potential areas where rating agencies can benefit PPP infrastructure projects.

### **a. Credit Ratings**

159. These help PPP projects raise funds for development and implementation. The methodologies used should be customized to handle the unique risks of PPP projects

(as explained in section I.E). Financing may either be through bank loans or bond issuance in capital markets. Credit ratings can provide an independent and objective assessment of the credit risk profile of PPP projects to bankers and other lenders and thus serve as an input to their decision-making process. Furthermore, for bank loans, projects with a credit rating can get risk-weight benefit for capital adequacy calculations under the Basel II paradigm.

160. It would be appropriate if a credit rating agency made the default statistics of the PPP project ratings available to the public, once a ratings track record was established. This would help enhance the credibility of the rating process for such projects.

161. Credit rating can be either for the issuer (project entity) or the debt instrument. The analytical process is similar in both cases and the rating assigned would also be the same unless the instrument is supported by an external credit enhancement (section I.E.3). If there is an external credit enhancement, the rating of the instrument is likely to be higher than the rating of the issuer.

*b. Benchmarking Services*

162. Rating agencies can benchmark the performance of various entities operating PPP projects within appropriate peer groups, such as power, road, and water projects. These benchmarking services can be performed at various stages of the project life cycle. The results of such benchmarking can be used to assess the viability of the projects and potential returns over the period of time. This could also be one of the inputs for the lenders in deciding upon the tenure and pricing of loans to such projects.

163. The benchmarking for PPP projects within the appropriate peer groups should take into consideration critical factors such as the regulatory framework, business risk, PSE risk, and key financial parameters. An illustrative benchmarking exercise pertaining to operational PPP road projects in India has been carried out in Table 9.

*c. Research Services and Opinions*

164. At the developmental or incubation stage, when a country is yet to establish a track record of substantial PPP implementation, DCRA's can provide research services and informed opinions on the environment, projects, and companies in various sectors. This will benefit potential investors, who can then take an informed decision about participating in such projects.

165. Given the lack of data availability in the nascent stage of PPP implementation, research services and opinions on specific sectors would inform both the private sector developers as well as lenders. Further, DCRA's could also undertake in-depth focused analysis of certain infrastructure in specific South Asian regions as follows:

- Examine medium to long-term privatization plans and capital contribution feasibility options in loss making utilities.
- Assess human resource lacunae in the system.
- Analyze organizational restructuring options.
- Conduct assessments on key profitability drivers for PPP projects in specific infrastructure.

**Table 9: Illustrative Benchmarking for Operational Public–Private Partnership Projects in the Road Sector**

Projects	Weight (%)	A	B	C	D	E
PSE sponsor	15	Central Government Authority	State Government Authority	State Government Authority	Central Government Authority	Central Government Authority
Regulatory and contractual risk	10	Low	Low	Low	Low	Low
Business risk (demand and price risk)	15	Low	Medium	High	Medium	Medium
OPBDIT margin (%)	5	63	92	21	92	81
Debt/Net worth (times)	5	1.5	1.0	4.7	4.2	2.8
Average debt service coverage ratio throughout the tenure of loan (times)	50	2.3	1.8	1.4	1.3	1.0
<b>Overall ranking</b>		1	2	5	3	4

OPBDIT = operating profit before depreciation, interest, and tax, PSE = public sector entity.

Notes:

1. The table above covers key credit risk parameters for operational road projects. Each parameter is given a weight based on its envisaged importance in operational road projects. The sum of the parametric weights should be equal to 100%.
2. Based on the credit risk assessment, the quantitative and qualitative inputs are provided for each parameter.
3. Each parameter is assigned a score, wherein the best project on every parameter gets a score of 1.0 and others get a proportionately lower score. The weighted score for each parameter is computed by multiplying its weight with its score.
4. The total weighted score for each project is then arrived at by calculating the sum of the parametric weighted scores.
5. The ranking of the projects is done based on the total weighted scores, with the highest rank being assigned to the project with highest score.

*d. Grading Services*

166. When PPP activity increases in a country DCRA's can, at this stage, provide grading services on various facets of a project's progress: for example project-execution ability; financial closure; operational, industry, and business risks; project bankability; contractor or developer capability; and sponsor's capacity to fulfill obligations. A grading, comprising all these facets or a specific combination, can then be used by early stage investors to participate in projects and monitor ongoing performance.

167. In infrastructure projects, given the project implementation risk, most project credit ratings at the construction stage cluster around high non-investment grade or minimum investment grade ratings. An appropriate grading, on the other hand, will allow better differentiation of projects on various aspects and facilitate informed decision making for the prospective investor or stakeholder.

## **II. CREDIT RATING METHODS FOR SMALL AND MEDIUM-SIZED ENTERPRISES**

### **A. Introduction**

168. Small and medium-sized enterprises (SMEs) contribute substantially to employment generation, exports, and economic output in the South Asian region. The social contribution of SMEs to employment, infrastructure, and better standards of living is perhaps even more significant.

169. Small and medium-sized enterprises in developing countries are mostly unorganized and need support from government policies that facilitate access to optimal sources of finance and reduce procedural bottlenecks.

170. They are marked by several unique features and face constraints not typically shared by large companies. In many instances and in many countries these constraints have restricted the ability of SMEs to realize their full growth and size potential.

171. A key step toward ensuring that SMEs get access to adequate financial resources is through appropriate evaluation and assessment of creditworthiness that makes it easier for them to borrow. The objective is to accelerate the development and performance of SMEs comprehensively, through a structured methodology.

172. This can be achieved through a customized credit rating approach that assesses specific nuances of SMEs and evaluates them in a manner that is distinct from conventional credit rating approaches. Customized rating of SMEs can not just provide missing credit information but can also provide valuable inputs to SME entrepreneurs and managers so that they can improve their entrepreneurship approaches and managerial skills. Thus, in the medium to long term, SME ratings can ease SME access to finance while also bringing in benefits for their businesses and improving their bargaining power in the economy as a whole. Moreover, the credit assessment of SMEs is also relevant to banks as they migrate to the internal rating based approach (IRBA).

173. This section sums up the constraints that SMEs face and presents an outline of a suitable credit rating methodology. The ratings reflect the rated units' overall creditworthiness, adjudged in relation to other SMEs. It also proposes methods by which DCRAs can be more useful for SMEs besides providing a credit rating.

### **B. Addressing the Challenges Faced by Small and Medium-Sized Enterprises**

174. Small and medium-sized enterprises have repeatedly cited various constraints to their operations that have hindered their growth. Chief among them is the absence of an enabling environment and their inability, often as family-run concerns, to borrow adequate and affordable funds. This chapter seeks to highlight these limitations.

#### **1. Absence of an Enabling Environment**

175. The lack of an enabling environment is a common barrier for SME borrowers and is manifested in the following forms:

*a. Absence of Policy Focused on Small and Medium-Sized Enterprises*

176. Ad hoc policies have done little to provide SMEs with the much-needed direction and focus. A more exhaustive framework for facilitating development through SME-centric policies would also help financial institutions target specific SMEs better. Governments, therefore, should formulate SME-specific strategies and policies that determine and fully reflect their role in the overall economy.

*b. Inconsistency in the Definition of Small and Medium-Sized Enterprises*

177. For countries lacking consistent or legal definitions of SMEs, arriving at a clear standard for what constitutes an SME in law would greatly improve the efficacy of policies, development institutions, and financing institutions in targeting SMEs and creating an impact. South Asian economies may need to have a standard definition for SMEs so as to correctly identify the beneficiaries of SME reforms and appropriately target policy initiatives. A standard definition of SMEs with an emphasis on regulatory recognition would greatly improve the effectiveness of development and financing institutions in funding the SME sector.

*c. Unavailability of Basic Infrastructure*

178. Governments need to actively promote provision of basic infrastructure of acceptable quality at affordable prices to SMEs such that their needs for electricity, water, road connectivity, and telecommunications, as well as skilled human resources, may be met. Public-private partnerships may be pursued to expedite infrastructure provisioning.

*d. Lack of Incentives*

179. Incentives such as tax concessions and subsidized interest rates to SMEs are often missing from national economic policy and thus pose constraints for domestic SMEs to overcoming competition from cheaper imports.

## **2. Inadequate Funding—A Key Constraint**

180. Small and medium-sized enterprises play a pivotal role in a country's economy, sustaining growth, enhancing trade, generating employment, and helping to alleviate poverty. However, despite their importance, most are unable to compete on a global platform, primarily because of obstacles to funding. Addressing these barriers is a key to unlocking SME growth.

*a. Lack of Access to Finance*

181. Institutional limitations, such as underdeveloped or inefficient legal and regulatory framework, pose significant barriers to effective financing. Financing programs for SMEs have also been compromised because of ineffective government policies or their ad hoc implementation. At the same time, the high cost of finance is a common problem for SMEs in the region. The underlying perception is that loan repayments are not borrower-friendly. This can be attributed to both a mismatch in terms of repayment cycles vis-à-vis the cash flow cycles of different businesses (which will vary across poultry producers, cold storage companies, crop farmers, and foundries) and in a lack of flexibility in repayment terms such as the rescheduling of debt or rigid liquidation procedures.

182. The limited network of banks in smaller towns and rural areas restricts access to credit. Although banks are the most important source of external financing for SMEs, they underserve their needs and many SMEs are forced to rely on retained earnings and informal avenues for borrowing. These can take considerable time to accumulate and may not be cost-effective. Shortage of finance could well be the primary impairment to the competitiveness and growth of SMEs in South Asia.

183. Similar to priority sector lending targets currently imposed on banks in India, central banks in the region could set SME-lending targets for banks in order to enhance credit flows to them. Lending to SMEs will also receive a strong boost if banks can simplify assessment procedures and develop borrower-friendly financing guidelines for them.

*b. Large Collateral Requirements*

184. Banks are known to demand large collateral from SMEs because lending systems are based more on borrowing backed by assets than project earnings and cash flow. Many banks have revealed that they insist on large collateral as a safeguard against losses from risk exposure.

185. Collateral-based lending can prove a major barrier because of the difficulties faced in assessing the quality of land offered and in obtaining an unblemished ownership title and deed. On many occasions, banks also do not accept the same kind of collateral from SMEs (such as sales or project contracts) that they would from large borrowers. Another problem with SME lending is the mismatch between the loan size and the value of collateral—typically, the value of the collateral demanded is far greater than the loan sought. In the event of default in either loan repayments or other loan covenants, liquidation of an asset to repay an amount smaller than the asset is worth imposes a significant burden on the borrower.

186. Banks and financial institutions need to explore the possibility of offering more loans based on cash flows rather than highly collateralized lending. Credit guarantee funds can also be established to protect banks and financial institutions from exposure to risk of SME default. Such backing would encourage banks and financial institutions to reduce stipulations on minimum collateral that SMEs must put up to support their funding applications.

*c. Credit Information Gap*

187. Banks face a number of issues in lending to SMEs, the most pronounced being information asymmetry and granularity (level of detail at which information is available on which lending decisions may be based). Banks do not have the requisite information and systems in place in order to quantify risk and differentiate between SMEs. This results in tightened credit terms and inefficient allocation of resources.

188. Lending to SMEs is seen as a moral hazard because wherein SMEs are perceived to be entities that take higher risks with funds borrowed from banks than larger companies. Therefore, governments should work toward implementing a mechanism under which SMEs are mandated to provide accurate, reliable, and quality information to banks to allow for precise risk assessments.

189. Credit appraisals of SMEs are constrained by the limited track record of DCRA's with regard to SME ratings in most countries in South Asia, the limited (or decreasing) numbers of analysts covering SMEs, and a lack of access to SMEs information. The ability of banks to

develop exhaustive credit models for the SME segment is impaired by lack of data. In order to develop a more thorough understanding of SMEs and promote better access to finance, greater availability, centralization, and documentation of such data is necessary. In other words, a robust credit information system will facilitate lending to SMEs. The function of DCRA's needs to be reviewed since such institutions can be constructively involved in the successful evolution of SMEs in several different ways. Credit rating of SMEs should be made mandatory; if required, SMEs should be supported through government grants and subsidies so that they can fund the rating process year on year. In India, the National Small Industries Corporation plays such a role. Credit information bureaus would also help in this regard.

*d. Cumbersome Documentation Process*

190. Borrowers can often find the complex documentation processes stipulated by lenders excessive and incomprehensible. Banks and financial institutions need to establish customer-friendly documentation processes for SMEs. Recognizing the vital role that information plays in functioning markets, governments should deploy information technology to design effective communication tools that can simplify the documentation stipulated for the borrower without diluting its richness for the lender such that loan disbursement can be expedited as per SME needs.

### **3. Inadequate Institutional Capacity**

191. Sourcing and retaining of workforce is a major challenge for SMEs. These are a function of location, scale, and technology, and are compounded by deficiencies in institutional capacity.

*a. Lack of Information and Marketing Skills*

192. To optimally exploit and market their offerings is difficult for SMEs given poor access to appropriate information about local and international markets. There is a need for an SME-centric institution that is geared specifically toward SME entrepreneurs, providing them with market intelligence and information as well as undertaking studies by sector and subsector that are relevant for SMEs. The institution could also organize training programs for entrepreneurs on setting up companies and registering them.

*b. Inadequately Skilled Staff and Poor Proposal-Making Skills among Small and Medium-sized Enterprises*

193. Labor migration to urban centers occurs because of individual aspirations, access to better technology, and opportunities for skills enhancement. Small and medium-sized enterprises are primarily located in subsidized industrial areas, provincial cities, small towns, and villages. As a result, most find it difficult to market their products and source new technology from metropolitan areas and international markets. As a consequence they routinely lose out to larger companies when it comes to attracting and retaining high-quality staff.

194. Most SMEs are family-managed businesses. Therefore, a number of senior personnel in many such companies are unskilled relatives with little or no prior work experience, no employment contracts, and/or few well-defined job responsibilities. In the absence of trained personnel, if the entrepreneur himself/herself does not have the requisite skill to prepare proposals and business plans needed for seeking bank finance, the prospects of such a firm ever getting a bank loan remain poor. Training SME employees and counseling them to prepare funding proposal documents is essential.

195. The skill sets required to enable funded transactions for SMEs present a challenge for borrowers and lenders alike. Banks also face a dearth of skilled personnel who can assess, evaluate, and devise feasibility tests to process SME loan applications. This constraint is the most acute when it comes to evaluating loans requested by the manufacturing sector to which most SMEs belong. Employees of banks that lend to SMEs need to be specifically trained for SME project appraisals. Otherwise banks will never be able to enhance credit flow to the sector and gain from its growth process.

### **C. Typical Hurdles That Evaluators of Small and Medium-Sized Enterprises Face**

196. Small and medium-sized enterprises display great geographic diversity, typically operating from small clusters across countries. Disclosure levels are low and there is a high tendency to establish several group entities in the same line of business, leading to opacity when it comes to assessing actual business dynamics.

197. For evaluators of SMEs the following blind spots create difficulties:

- the absence of organized information on industries,
- non-availability of data on market share,
- poor information on competition dynamics,
- unreliable financial information on the SME under scrutiny, and
- sketchy historical information regarding the track record of the promoter or management.

198. There are hardly any sources of information on, say, size of the market, number of players, their respective market shares, industry trends, and similar parameters. Such enterprises typically create a niche for themselves in a small market but are unable to expand because of limited understanding and information on competitive dynamics.

199. Partnership and proprietorship firms have a lower degree of accountability than larger companies, as legislation that governs corporations with more complex structures is typically not applicable. Furthermore, some SMEs follow innovative tax-avoidance practices, where multiple entities operate at low income and there are intergroup transactions and window dressing. There is also generally a high intensity of cash transactions. These factors make it difficult on many occasions for a bank to take a lending and pricing decision based on the reported financials of an SME.

200. Small and medium-sized enterprises are typically organized as proprietorships or partnership firms. Even if some are set up as private or public limited companies, in many cases the management tends to comprise family members. There is then an absence of a clear demarcation of activities in such entities, and control is usually based on seniority rather than capability. Family-run businesses often experience the problem of finding capital for growth without diluting family equity. Furthermore, family-run businesses find it difficult to optimally balance the needs of the family for liquidity and the need of the business for cash. Another prominent problem is poor estate planning and lack of willingness of the older generation to “let go” of ownership and management power at an appropriate time. Family businesses often fail to attract and retain competent and motivated family successors. It is also seen that new generations join the business, but are not necessarily always active. This raises concerns about the ability of an SME to continue and scale up its business.

201. For assessing SMEs, we should take into account why SMEs are successful and reasons why SMEs fail. A few critical points on the above issues are as follows:

*a. Why Some Small and Medium-Sized Enterprises are More Successful*

- expanding management skills of entrepreneur/business managers,
- good record keeping,
- proper cash flow management,
- appropriate rotation in roles,
- an efficient and effective marketing strategy, and
- proper planning.

*b. Why Some Small and Medium-Sized Enterprises Experience Failure*

- lack of principal business skills,
- lack of professional management skills,
- poor financial control and lack of adequate accounting knowledge,
- credit problems,
- no attention devoted to marketing and sales problems,
- ignoring the human factor,
- poor time management,
- uncontrolled growth or inability to manage growth appropriately,
- poor location,
- incorrect pricing,
- the entrepreneurs' inability to adapt to the changing demands of the business enterprise, and
- entrepreneurs' failure to develop an effective strategic plan.

202. All the above factors clearly establish that it makes sense to have different tools for assessing SMEs than those traditionally employed in assessing the creditworthiness of large companies.

#### **D. Suitable Credit Rating Methodology for Small and Medium-Sized Enterprises**

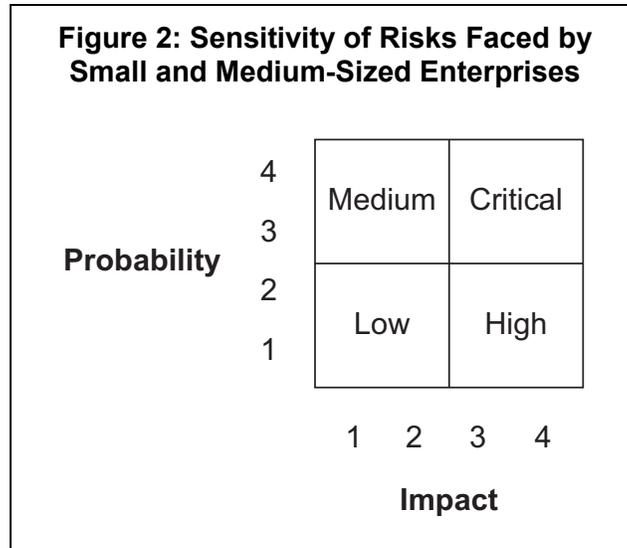
203. Rigorous risk assessment is one of the most important factors overlooked by entrepreneurs in small businesses. This is despite the fact that it is clear to most small business owners that operating any business involves some risk. Risk assessment is an important aspect of developing business continuity plans. It involves identifying the risks an organization faces and determining their relative importance.

##### **1. Understanding Risk in the SME Sectors**

204. Figure 2 shows that while assessing risks, it is important to estimate the probability of occurrence of a risk event and the criticality of its impact.

205. As Figure 2 depicts, if the probability of occurrence of a risk event is high and its expected impact is also serious then the SME needs to identify, analyze, and safeguard against such risks at the outset. There may be other risks which can have a seriously deleterious impact upon occurrence but are less likely to occur in the first place. And again there may be

recurrent minor risk events with relatively low impact. The SME then needs to take cognizance of the entire risk landscape as depicted in Figure 2 and come up with a suitable risk management strategy.



206. Small businesses face risks that large corporate firms also contend with—increases in the cost of overhead, equipment, salaries, and taxes; product obsolescence; or changes in forecasted sales volumes and prices charged for services or products. Strategies of competitors, changes in the local economy or market dynamics, and other shifting trends also present risks. Other risks include damage from fire, water, and natural calamities and intentionally inflicted damage; and the loss of data and property due to theft or machine breakdown that forces work to come to a standstill.

207. The difference between their predicament and that of a large firm lies in the fact that unlike large corporate firms, small businesses seldom have safety nets or buffers in place to cushion against risk events, rendering them more vulnerable. They also have less bargaining power both in the market and beyond. Obtaining necessary licenses and permits is a challenge as is guarding against liability losses, liability to employees, public liability, and employee fraud.

208. Furthermore, large corporate firms generally have well-defined organizational structures with clear segregation of departments managed by experienced and professionally qualified persons. The decision making in large corporate firms is usually decentralized with appropriate authority and power given to the managers at each level.

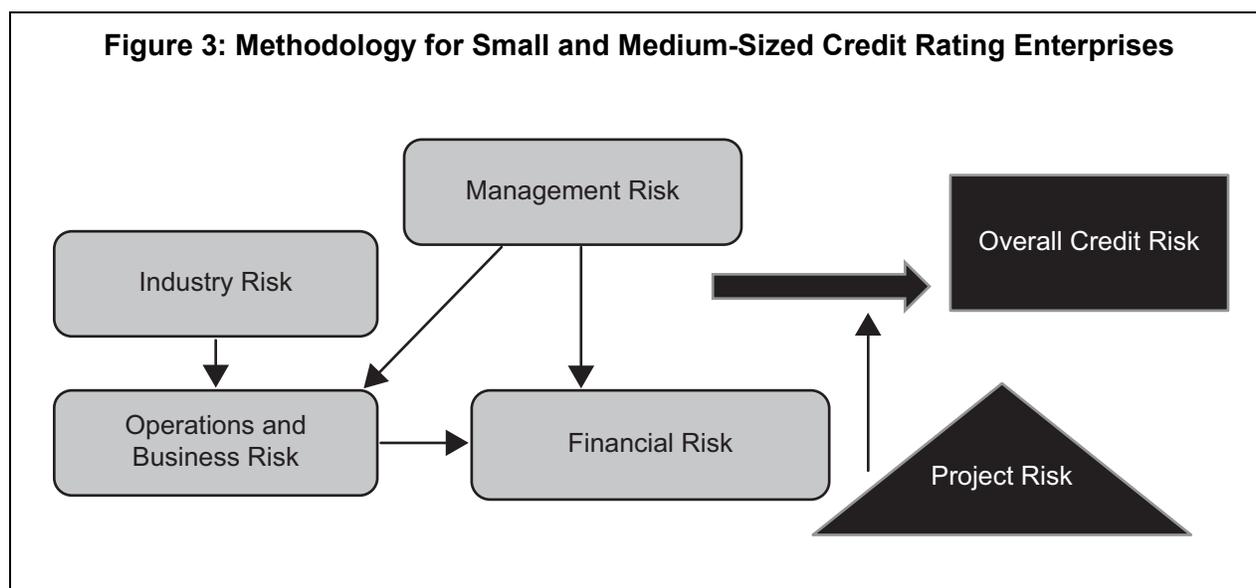
209. A typical SME on the contrary is generally family-owned, with centralized decision making almost entirely driven by the promoter without inputs from independent professionals. Sometimes unqualified relatives or acquaintances hold key positions while bringing little value to the venture. The owner's ill health or demise or even the loss of a competent employee can spell doom for the enterprise, which does not always grow beyond the individuals that set it up. When cash flow forecasts are inaccurate, an SME runs the risk of taking bad decisions inimical to the business, for instance, applying for a larger loan than the business can afford.

210. Moderate setbacks, a wrong decision or two, and/or cash flow problems are often enough to push a small business to closure.

211. It is important that a DCRA, through interactions with the SME management, assesses whether the promoter or management is aware of the relevant risks that the business faces and whether it has taken reasonable steps to mitigate them.

## 2. Credit Rating Methodology

212. An appropriate credit rating methodology for evaluating SMEs should be comprehensive and cover risk in three broad categories: business, management, and financial (Figure 3).



213. While these categories of risk are similar to the credit assessment frameworks used for large companies, it should be kept in mind that shifts in political and/or policy trends which pose credible risks for large corporations have relatively less impact on SMEs, which operate at a micro level.

214. The approach for analyzing SMEs is distinct in the following ways:

- **Assessing business risk.** The business risk for SMEs will be different from that of large companies as the SMEs are smaller in size. Further, SMEs as Tier II or Tier III suppliers of inputs to large manufacturing companies often have a higher geographic and customer concentration in their businesses. Their business growth is thus closely tied to the growth of their customers. Small businesses face intense competition from the unorganized as well as the organized sector. So, it becomes very crucial for the SMEs to differentiate and have a competitive edge over the other players in the market to survive and grow.

- **Peer group comparison.** Small businesses may be compared with each other either across industries or within the same industry but rarely by sector or business segment because, unlike large companies, granularity of information within each sector or segment is generally poor for SMEs. While analyzing the SMEs, the comparison is done on relative scale across various industries and also within the specific industry.
- **The importance of various parameters.** The overall rating assigned will take into account key risks and strengths of the business. Business risk to an SME will factor in the viability of the business model, its past performance, market position and operational efficiency. Management risk analysis will examine the competency and track record of the management, the organizational structure, and the internal controls and systems set up to support business growth. An assessment of the financial stability of the SME based on the past financials and the projected future financials along with an understanding of its cash flows vis-à-vis its debt obligations will determine the financial risk it faces. Financial flexibility or the ability of the SME to raise funds to meet capital expenditure or ride through periods of liquidity pressure is also an important determinant.
- **The importance of promoter and management evaluation.** As SMEs are mainly managed by the promoter and decision making is centralized, experience and demonstrated capability of the management or promoter in successfully running other profitable ventures in the same line of business is a significant parameter in credit rating.
- **The importance of qualitative evaluation.** The transparency and disclosure levels demonstrated by a SME are key determinants in its qualitative evaluation. The timely payment of all statutory compliance-related taxes and dues and evaluation of litigations or disputes faced by the SME also provide key qualitative indicators important in the overall evaluation of the SME.

### 3. Risk Assessment

215. We now examine in greater detail, the types of risk that a DCRA needs to consider in any SME rating as depicted in Figure 3. Risks to be analyzed for the rating include the following:

#### a. *Industry Risk*

216. Rating analysis of an SME incorporates an assessment of the company's business environment and the dynamics of the industry in which it participates. Industry analysis focuses on the strength of industry prospects, market conditions, and the competitive factors affecting that industry. The factors to be assessed include industry prospects for growth, stability, or decline, and the pattern of business cycles. It is critical, for example, to determine vulnerability to technological change, labor unrest, regulatory interference, or changes in the supply/demand balance.

217. The industry risk assessment sets the stage for analyzing the SME's risk factors and keys to success and establishing the priority of these factors in the overall evaluation. For example, if technology is a critical competitive factor, research and development (R&D) prowess is emphasized. If the industry produces a commodity, cost of production is of major importance.

## i. Industry Prospects

218. Some industry-related risks at the macro-level include the following:

- exit/entry barriers;
- labor market constraints or incentives;
- the strength and political inclination of labor unions;
- labor cost and strike experience;
- condition of general infrastructure in the country—water supply, cost of electricity, and price and availability of oil and gas;
- transportation services in roads, ports, and airports;
- existence or potential for heavy taxation; and
- industry characteristics and the mix of opportunities and risks they represent:
  - the sector's growth and profit potential,
  - degree of cyclicality,
  - nature and degree of competition,
  - capital intensity,
  - operational and cost structure,
  - regulatory structure, and
  - intensity of technology use.

219. While characteristics pertinent to credit risk across industries are broadly similar, the impact of these factors can vary significantly between industries or across countries for the same industry. Some industries are more sensitive to changes at the national level than others. Utilities, telecom, retail, and chemicals tend to be more easily affected by issues and events at the country level. By contrast, oil and gas and technology are global in nature.

220. Some important industry characteristics that determine risk are explained in detail below:

- **Cyclical**ity. Industry cycles result not only from fluctuating demand, but also from swings in supply capacity. An analyst may avoid assigning high ratings to an SME at its peak of cyclical prosperity, if that performance level is expected to be only temporary. Similarly, the analyst may not lower ratings to reflect weakening performance because of cyclical factors, if the downturn is likely to be only temporary or there are good prospects for management to respond to the changed circumstances. Rating through the cycle requires an ability to predict the cyclical pattern—usually extremely difficult to do. The phases of a cycle may be longer or shorter, or steeper or less severe, than the historical data suggests.
- **Rapid change**. Industries undergoing rapid change because of technological innovation and/or deregulation tend to have greater industry risk. Barriers to entry can be substantially reduced, allowing entry to new competitors that may not be burdened by legacy business models, technologies, and the cost structures of incumbents. There is greater potential for industry peers sorting themselves into winners and losers as companies pursue different business models or strategies. The quality of management is particularly important in such industries.
- **Risks in maturing or declining industries**. Maturing economic and demographic environments can lead to market saturation. Technological change may spur substitution (fixed-wireline phones by mobile/wireless, traditional media advertising by internet ads, pharmaceutical medications by bio-medications, and print media/news by internet news services). New business models can lead to disintermediation (local retailers by mega

retailers, and traditional airlines by low-cost carriers). Stagnant or declining revenues require cost reductions to maintain profitability. Product differentiation also tends to be difficult in maturing industry environments, as there is a high degree of correlation between industry maturity and product commoditization.

- **Risks in rapidly growing, immature industries.** The promise of new technologies and new business models—while a threat to the existing companies—is not a panacea for the innovators either (for instance, internet and dot.com companies). High-growth industries, particularly those driven by technological change, tend to have long investment breakeven horizons, especially if they are capital intensive. Their early periods are associated with losses and negative cash flow. Unproven commercial viability of a new technology and/or business model also makes them poor candidates for obtaining credit. New industries normally are funded in their early phases through venture capital (e.g., biotechnology).
- **Barriers to entry.** Barriers to entry erected by governments in the form of licensing, franchise auctioning, and laws barring competition and acquisition by non-sanctioned entities are used to provide a protected environment to new industries. However, as industries mature, governments open them up to varying degrees of competition by allowing new entrants or removing monopolistic privileges incumbents had previously enjoyed. Once deregulated, such industries normally become much riskier from a credit perspective, because increased competition erodes industry profit margins.

221. Companies that are best positioned to take advantage of key industry drivers or to mitigate associated risks more effectively possess a competitive advantage and a stronger business risk profile.

ii. Market Condition

222. The market structure within which the SME being rated operates needs to be carefully assessed to understand the relative market share of each player and the trends in those shares. A market leader or a major player may be considered favorably during a rating exercise if it is able to generate sustainable cash flows. But this does not mean that small players should always be put into a high-risk category. The relative position of the entity is indicative of its sustainability and ability to exercise control over the nature and pace of development. If vast up-front costs need to be incurred for set up, production, or service offering by competitors, barriers to entry remain high and market share of the SME being rated is an important statistic.

223. A mature market, although not appealing from an earnings growth viewpoint and possibly exposed to risks of price commoditization or revenue decline, can mean greater protection for market shares. Large companies in mature markets have substantial staying power. Their sizable staff, vast array of disposable assets, and often-significant restructuring potential can positively influence their fates. Therefore, rating for large companies generally would favor a solid, established position in a mature, consolidated industry, which would have greater ability to offer predictable revenue and earnings streams, and to protect a company's capacity to service its debt over the long term. However, this may not be applicable to rating for an SME.

### iii. Competitive Positioning

224. Competitive positioning is the cornerstone of business risk analysis. While the industry environment, favorable or otherwise, will strongly influence business risk, differences in competitive positioning can justify substantial differences in credit standing among industry players. A strong business profile score can only be achieved through a very competitive position. Such status supports revenue and cash flow stability and generally goes in tandem with superior profitability measures. A comparatively weak competitive position—even in the most favorable industry environment—is unlikely to result in a solid credit standing. The sustainability and trend of a competitive position are critical rating factors. Sustainability of competitive advantage is often determined by cost leadership or product differentiation. A broader evaluation would look at

- product positioning (quality, pricing) and brand reputation;
- market shares, the installed customer base, and geographic coverage;
- distribution capabilities;
- customer relationships;
- technology and/or manufacturing capabilities; and
- meaningful barriers to entry, such as transportation, capital or technology intensiveness, and regulation.

225. The assessment of these factors must, of course, be forward looking; historical data may be used only to the extent that they provide insight into future trends.

226. Several other factors also are critical in determining the strength and sustainability of a company's competitive position. Vertical integration, for instance, often enables a stronger competitive position (but not necessarily higher returns on capital employed), protection of the customer base, and pricing power, as well as better ability to adjust to technology developments. That said, it is of utmost importance for a company to have the strongest grip on that part of the value chain that comprises the highest value added.

227. An emerging or fast-growing market offers considerable growth prospects, but competitive positions in such markets are likely to be more volatile. Companies may reap substantial benefits in relatively short periods of time but find it difficult to manage over the long haul. (Moreover, fast-growth companies often tend to retain high-risk financial policies as they aggressively pursue ever more ambitious objectives, thereby limiting potential credit quality.) The promise of small companies can fade very quickly on growth-related risks, including management's experience and resources to enter new markets, or to integrate acquired companies.

### *b. Operation and Business Risk*

228. Operation and business risk can be termed as “a risk of direct or indirect loss arising due to deficient or unsuccessful internal systems, processes, people or external factors.” The operation and business risk assessment of an SME is critical to its overall evaluation.

229. With operations and business risk, the following elements are of utmost importance:

- premises,
- product,

- purchasing,
- people,
- procedures,
- protection,
- processes (including technology),
- performance,
- planning, and
- policy.

230. The purpose of the assessment of these risks is to determine the criticality of each of these factors, which are the key aspects of the overall business of an SME. The above factors can be broadly grouped as follows:

- physical properties: premises, product and purchasing;
- people: people, the procedures they follow and such protection as insurance coverage, pension provision, and other benefits and incentives;
- action or processes: processes and performance (against targets); and
- management issues: policies and strategy and planning and organization.

231. These are explained in further detail below:

i. Physical Properties

232. Physical properties are tangible in nature and have a direct impact on the performance of the business. These factors consist predominantly of the following parameters:

- **Premises:** This includes infrastructure and quality of utilities like stable power and water supply, adequate drainage, access to roads, transport facilities etc.
- **Product:** The product is the key element of any business and the key risk in the product is the product concentration. Entities that manufacture a single or limited range of products that have restricted applications (customized components) are considered to have product concentration. A company can mitigate its product concentration risk by reducing its dependence on a single product through diversification and product extension or modification.
- **Customers:** The customer portfolio should be diversified with minimum concentration on any one customer. It is preferable from a risk perspective that the SME's portfolio has large and stable corporate firms as customers rather than other small businesses. Further, long-standing and healthy relationships with customers indicate the ability of an entity to build and maintain relationships. It adds stability to revenues as the entity receives repeat orders and is exposed to minimal risk of losing its clientele.
- **Raw material:** Raw material is an important factor in the production process and constitutes around 80% of the total cost of sales for many SMEs focused on manufacturing activities. Easy accessibility and availability of raw material ensures smooth production and timely execution of orders, thereby avoiding strain on customer relationships.

ii. People

233. The quality of second-tier management is an important determinant of the success and stability of any business. Entities in which promoters play only an administrative role usually

perform better than those in which the promoters are also running the daily operations. In the latter, the promoter is not able to concentrate on strategy planning for the future and the execution of that strategy. Therefore it is desirable to have qualified and experienced second-tier management with the authority to take necessary decisions without the promoter's interference. Entities need to rope in professionals who are equally or more qualified than the promoters themselves, to ensure that experts in the respective domains are running the operations.

234. Risks associated with people elements, and their protection measures such as insurance coverage, pension provision, and other benefits and incentives, also need to be considered.

iii. Action or Processes

235. This can be further divided into two categories:

- **Quality of systems and controls:** It is most desirable to have a high frequency of reporting operations such as weekly reporting along with an advanced reporting system such as an enterprise-wide resource planning (ERP) process. This parameter is one of the best indicators for corporate governance and internal audit mechanisms. It captures the type and frequency of reporting, adherence to accounting standards, statutory compliances, and the compliance with banking requirements. A good quality of systems and control will also ensure availability of proper data to check the real time performance vis-à-vis the actual targets of the businesses, thereby ensuring the scope for timely corrective action wherever necessary.
- **Transparency and disclosure including corporate governance:** Transparency and/or disclosure in the accounting policies, tax payouts and business dealings and adopting good governance practices help the SME to create a good image of itself with its business partners like bankers, customers, suppliers, regulators, and the government. Nondisclosure of income and other accounting irregularities leading to regulatory action like tax raids can tarnish the image of the entity and affect its credit profile.

iv. Management Risk

236. Management competencies are evaluated mainly on the following key parameters:

- **Promoter's track record and qualification.** Promoters with extensive experience in a line of business will always have an advantage over new entrepreneurs trying to establish themselves in it. Such promoters understand the trends in the business better, and they are alert to new developments and technologies. They have established relationships with customers and suppliers and hence are less vulnerable to competition. Furthermore, a promoter who is qualified in the same trade as the one in which he/she is running the business is bound to be more successful than one who is completely dependent on hired staff for technical and industry know-how.
- **Strategy conceptualization and policy formulation.** Strategy planning defines organizational goals over a relatively longer time frame of a year or more. The very presence of a strategy and the quality of its planning are entirely dependent upon the promoter's or management's experience and expertise. Where the SME management has robust capabilities in strategy planning, and such a plan is shared with the team clearly, the organizational trajectory is focused; the staff has a sense of ownership over

the end objective and processes gain in terms of efficiency and effectiveness. Also, clarity in terms of strategy conceptualization and proper documentation and follow-through on policy and practices at the firm level that cannot just meet the organizational objectives but also address other short-term tactical requirements has a strong bearing on the strategy implementation process of the organization.

- **Planning and execution.** Competent managers demonstrate a strong track record of strategizing well and then executing the same efficiently. Poor planning and execution is enough to kill the brightest of business ideas.

v. Environmental Factors

237. Both new and existing businesses read indicators off the business environment in order to provide their ventures the desired direction. In addition, geographic and climactic factors may also have a direct or indirect influence. For example, a company that relies on vegetable or fruit crops must consider seasonal temperatures, rainfall, and other conditions. Other environmental factors include the general economic mood and customer demand. Businesses should be able to evaluate these factors and find ways to work around them or with them through innovative technologies, appropriate marketing tactics, and unique product and service offerings.

c. *Financial Risk*

238. Financial risk analysis is based on disclosed financial statements. Assessment of financial risk includes evaluating the following key parameters:

i. Sales and Turnover

239. Entities that display steady and continuous growth, with strong compounded annual growth rates that match or outperform the industry, will be considered stable as compared with entities that have fluctuating sales. Maximum scores are assigned to firms where growth is visible both in terms of value as well as volume of sales consequent to increase in capacity utilization, addition of new customers, and increase in prices due to value addition.

ii. Profitability Margins

240. Profit is a key indicator of business health. A steady and continuous rise in profitability that matches or outperforms the industry indicates a strong and healthy business. Profitability at various levels, such as operating profit (OPBDIT or operating profits before depreciation, interest, and tax) and net profit (PAT or profit after tax) indicate how robust a business is.

- The efficiency of the business to generate profits solely from its operations is measured by OPBDIT. It focuses on the ability of the business to generate profits by reducing the cost of sales and increasing the selling price.
- The ability of the entity to serve its financial commitment to lenders and tax authorities is measured by PAT. It also reflects the dependence of the entity on income from nonoperational activities. A business where PAT is moving in alignment with OPBDIT is considered stable.

iii. Profitability Interest Coverage: (Profit before Depreciation, Interest, and Tax)/(Interest)

241. This parameter reflects the ability of the business to fulfill its interest commitments to its lenders. It is calculated by dividing the profits before depreciation, interest, and tax by the interest expenses of the entity. The higher the ratio, the better is the ability of the entity to service the interest component of the business expenses. If the ratio is less than one, the entity will find it difficult to meet its financial commitments with respect to interest and hence will not be preferred by lenders.

i. Net Worth

242. Net worth or owned funds reflect the financial flexibility of a firm. A high net worth enterprise will find bankers more willing to take favorable lending decisions. Where the promoter is seen to be plowing back profits into the business to increase its net worth, it reflects the promoter's sincere intent to grow the business. A strong net worth helps the business absorb external shocks during economic downturns by serving as a cushion against unexpected risks.

ii. Liquidity (Current Ratio)

243. Liquidity is the soul of any business and is necessary for an entity to carry on its daily operations smoothly. An entity needs cash reserve to not just meet its ongoing expenses comfortably but also to ensure security during unstable times. Current ratio is a measure of an entity's liquidity situation. It indicates whether a firm has enough resources to meet its business commitments over the next 12 months. If an entity expects to get a good rating, it must not be seen using these resources to pay off long-term commitments (term loans) or utilizing them for capital expenditure (investment in fixed assets) as it will put a strain on the availability of funds for daily operations.

iii. Working Capital Management

244. Proper working capital management, that is, the management of an entity's short-term assets to meet its short-term liabilities, is necessary for the seamless functioning of an SME. The four important aspects of working capital management are inventory management, cash management, receivables management, and payables management.

- **Inventory management.** The inventory of raw material, product-in-progress, and finished goods needs to be managed in a way that the product is readily available in case there is demand and at the same time inventory holding and handling costs are minimized. Low inventories (raw material and/or finished goods) can affect an entity's production or strain relationships with its customers due to delays in adhering to timelines for executing orders. Similarly, high inventories increase inventory holding and handling costs, thus loading up the price of the product. An entity should always hold adequate inventories to meet orders in a timely manner and at the same time minimize holding and handling cost by avoiding excess.
- **Cash management.** Cash is money that is easily accessible either from a bank or from the running business operations. It is not inventory, accounts receivables, or property. These might be converted to cash at some point in time, but it takes cash in hand or in the bank to pay suppliers, to pay the rent, and to meet the salary expenses. Profit growth does not always mean more cash. Strong cash management involves the following:

- knowing when, where, and how your cash needs will occur;
- knowing what the best sources are for meeting additional cash needs;
- being prepared to meet these needs when they occur by maintaining adequate cash balances; and
- relationship with bankers and other creditors to have a firm idea of the timing and the quantum of cash access expected from these channels.
- **Receivables management.** Receivables are the amount owed to the entity by its customers. The rate at which the receivables are converted into cash affects an entity's liquidity. Therefore, it is necessary to have an efficient collection process as it infuses timely liquidity into the business and reduces the risk of bad debts. Delayed payments from customers affect an entity's paying capacity and also add to its interest burden as bank funds utilized for manufacturing will then get blocked with the debtors. An entity should always have prudent credit terms for its customers, which will not affect its liquidity and provide it with the flexibility to give credit as per industry practices.
- **Payables management.** Payables are what the entity owes to its creditors (suppliers and vendors). An efficient payables management system has to be in place to avoid delays in payment to suppliers. If the entity's relationships with its suppliers are strained due to payment delays, this can ultimately affect the supply of raw material and disrupt the production cycle. It might also add to costs if penal interest is charged by creditors on the delayed payments. It is always prudent to have credit terms from suppliers that are longer than the credit terms that an entity provides to its customers to ensure that all commitments are met smoothly.

#### iv. The 6 Cs of Credit Assessment

245. In addition to the framework described, the same can also be summarized by using the 6C approach as follows:

- **Character.** Business experience, management succession, credit discipline and lifestyle of a promoter
- **Capacity.** Performance track record and financial assessment
- **Capital.** Retained earnings, net worth, and promoter's stake in the business
- **Condition.** Environmental factors
- **Corporate governance.** Governance issues in relation to general SME standards
- **Collateral.** Last resort security factor (which may not have a link to the SME rating as such)

#### d. *Project Risk*

246. Having examined business, management, and financial risks, we now look at risk as a result of an SME's aspiration to expand and diversify.

247. This risk is called project risk, which constitutes an important element in the risk assessment of an SME. However, this risk element is only applicable in those cases where there is a significant new project that an SME is embarking upon and not otherwise.

248. Often SMEs propose to diversify into unrelated areas or perhaps take up significantly large projects relative to their existing size. In such cases, the impact of these initiatives on their credit risk profiles can be considerable because of their small size. Such project risks therefore also need to be critically examined (as applicable) in evaluation of SMEs.

249. The project feasibility needs to be studied in detail and assumptions made on costing and pricing validated against industry averages. Poor forecasting can cause considerable harm to the entity, which can be purely because of limited access to professional support for project evaluation. Rating agencies can play an important role here because of better access to industry reports and a more complete understanding of trends, which can be appropriately leveraged while assessing the proposed business plan of the SME and its financial implications.

### **E. Illustrative Scorecard for Rating Small and Medium-Sized Enterprises**

250. While the parameters necessary to assess the credit risks of SMEs have already been explained, it is important to mention here that it is not easy to ascribe standardized weights to each parameter and create a rating model because different entities may differ in terms of specifications and complexities and it is very difficult thus to standardize such parametric weights. Further, it is possible that in specific SMEs any one parameter may override others to such an extent that becomes a rating driver.

251. Table 10 provides the standard parameters of a typical SME rating model:

**Table 10: Rating Parameters for a Rating Model for Small and Medium-Sized Enterprises**

<b>Rating Parameter</b>	<b>Rating Sub-Parameter</b>
Industry risk	Industry prospect
	Market condition
	Competitive advantage
Operations and business risk	Physical properties
	People
	Action or processes
	Management risk
	Environmental factors
Financial risk	Sales/Turnover
	Profitability
	Interest coverage
	Net worth
	Liquidity
Project risk	Working capital management

252. The standardization of parametric weights in the rating for SMEs is very challenging as it depends substantially upon organizational specificities and complexities. Section II.J of this paper illustrates the rating approach for a typical SME where a particular parameter plays a key role in determining the rating in a specific situation.

253. An illustrative rating scorecard is presented below to demonstrate how a rating can be arrived at in a hypothetical scenario.

254. For the purpose of the illustration, the following rating symbols and definitions have been used (Table 11):

**Table 11: Rating Symbols and Definition**

<b>Rating</b>	<b>Rating Definition</b>
SME1	Highest creditworthiness
SME2	High creditworthiness
SME3	Adequate creditworthiness
SME4	Moderate creditworthiness
SME5	Moderate risk
SME6	High risk
SME7	Very high risk
SME8	Default

255. Next, rating symbols and equivalence between a rating and a rating score used are presented in Table 12:

**Table 12: Rating Symbols and Scores**

<b>Rating</b>	<b>Rating Score</b>
SME1	8
SME2	7
SME3	6
SME4	5
SME5	4
SME6	3
SME7	2
SME8	1

256. In order to arrive at the overall rating based on the weights assigned to various risk parameters, the above equivalents between a rating and a rating score have been used. This is only for illustration and not based on specific default rates per se. A situation that poses the least risk under a specific parameter should typically be eligible for a SME1 rating while the highest-risk situation should correspond to a SME8 rating. Other ratings should be assigned progressively corresponding to various levels of risk. A credit risk assessor may also decide (with appropriate justification) that an SME1 rating is not to be assigned even under the least risk scenario because there is still a reasonable degree of risk present.

257. Using the above equivalents, a rating score card has been constructed (Table 13).

258. It is important to note that weights given to various rating parameters could vary depending on the entity-specific nuances as well. The credit risk assessor needs to determine the weight for each rating parameter based on its relative importance for a specific SME, such that the sum of the parametric weights is equal to 100%.

**Table 13: Rating Scorecard**

Rating Parameter	Rating Sub-parameter	Weight (A)	Rating Score (B)	Weighted Rating Score (C = A X B)
<b>Industry risk</b>				
	Industry prospect	5.0%	4	0.2
	Market condition	2.5%	4	0.1
	Competitive advantage	2.5%	6	0.15
<b>Operations and business risk</b>				
	Physical properties	10.0%	6	0.6
	People element	10.0%	7	0.7
	Action or processes	10.0%	7	0.7
	Management risk	15.0%	7	1.05
	Environmental factors	5.0%	7	0.35
<b>Financial risk</b>				
	Sales/Turnover	5.0%	6	0.3
	Profitability	7.5%	6	0.45
	Interest Coverage	7.5%	7	0.525
	Net worth	7.5%	8	0.6
	Liquidity	5.0%	7	0.35
	Working capital management	7.5%	7	0.525
<b>Project risk</b>				
	Not applicable	0.0%		0
<b>Total weighted rating score</b>				<b>6.6</b>
<b>Final rating</b>				<b>SME 3</b>

## Notes:

- Each rating sub-parameter is given a weight based on the envisaged importance of that particular sub-parameter to the rating. The sum of the sub-parametric weights should equal to 100. The weight assigned to each sub-parameter does not vary across SMEs when they are comparable to each other and belong to the same group, so to speak, on a certain basis. However, when comparing SMEs across groups, weights assigned to the same sub-parameter may vary. In other words, the weights given to the sub-parameters may vary from one SME sample group to another depending on group specifications. For example, if a commercial bank requests all its SME clients to undergo the ratings process, the weight assigned to each sub-parameter may not vary across SMEs. However, if the same commercial bank wants to get those SME customers who have started operations in the last 12 months rated separately, the weight assigned to each sub-parameter for this group may be different from those assigned in the previous group.
- Based on risk analyses, each sub-parameter is assigned an appropriate rating score using the equivalents indicated in Table 12.
- The weighted rating score for each rating sub-parameter is then computed by multiplying its weight with its rating score.
- The total weighted rating score is then arrived at by calculating the sum of the sub-parametric weighted rating scores and rounding it off to the nearest integer.
- Using Table 12, the rating equivalent to the total weighted rating score is arrived at.
- This rating is deemed to be a rating based on the model methodology. However, the actual final rating may be a notch up or down depending on the economic cycle or critical risk factors that override the model rating. Sometimes, one risk factor can dictate the rating rather than the weights assigned to multiple factors. Weights of multiple factors can lead to the overrating of an enterprise.

## 1. Industry Risk

### a. *Industry Prospect*

259. Industry prospect refers to the outlook of the industry to which the SME belongs. The prognosis for the industry could be assessed on a scale—very favorable, favorable, developing, stable, or neutral, declining and with cause of concern. The weight assigned to this parameter can increase if

- the industry is at the peak of cyclicity, which is not temporary and will remain at the same for sometime, and company management could not respond to the changing circumstances, and
- the industry is undergoing rapid change because of technological innovation and/or deregulation.

### b. *Market Condition*

260. Market condition refers to the relative market share of each player and trends in those shares. Market condition could be assessed on a scale—market lead/highly positive, neutral, and negative. The weight for this parameter can increase in monopoly, duopoly, or oligopolistic markets where the firm has an established position in a mature and consolidated industry. It then displays greater ability to offer predictable revenue and earnings streams, and to protect its capacity to service its debt over the long term.

### c. *Competitive Positioning*

261. A strong business profile score can only be achieved through a very competitive position. Competitive advantage is often determined by: cost leadership, product differentiation, distribution capabilities, customer relationship, capital and technology intensiveness, and regulation. Competitive positioning could be assessed on a scale ranging from high competitive advantage to competitive disadvantage. The weight for this parameter can increase if at least one of the following is true:

- Competitive positioning is the key driver for sustainability of the cash flow, irrespective of industry prospect or market condition.
- The company faces strong competitive disadvantages.
- Predictability of cash flow is uncertain.

## 2. Operations and Business Risk

### a. *Physical Properties*

262. Physical property refers to the manufacturing or the service facility of the SME. The weight assigned to this parameter can increase if at least one of the following is true:

- The building, machinery, etc. are in a dilapidated condition.
- Working environment seems to be hazardous.

263. The site visit report should highlight these facts.

*b. People*

264. The weight on people can increase in case of

- labor unrest,
- strikes,
- lockouts, and
- child labor issues.

*c. Action or Processes*

265. Actions or processes can attract greater weight if

- the SME does not acquire/renew the required licenses for production,
- the SME does not acquire/renew the required quality certifications,
- the SME does not acquire/renew the required pollution control approvals,
- internal processes of the SME are not strong and there is a delay or default in the payment of statutory dues and/or debt repayments, or
- management information systems (MIS) are not maintained properly.

*d. Management Risk*

266. The weight assigned to management risk can increase if any of the following are true:

- Urgent needs of customers are not met and critical decisions on the purchase of raw material, equipment, and other resources are delayed due to a centralized organizational structure where all important decisions are entirely dependent on the promoter and second-tier management is stunted.
- There is no succession plan where the sustainability of operations will be at stake.
- There is any litigation against the management or substantial political interference as a result of which the management is unable to discharge its responsibilities adequately.

*e. Environmental Risk*

267. The weight assigned to environmental risk can increase if any of the following are true:

- A bad monsoon causing crop failure has a bearing on the product or service offering of the SME.
- Obsolescence of technology leads to a slowdown in the demand for the SME's products.
- Expiry of the generic pharmaceutical formulation leading to the drugs not being accepted in the market.
- Slowdown in the economy has an adverse impact on the sustainability and growth of the business.
- Political unrest disrupts operations.
- A ban is imposed by the government on imports of the raw material impacting the production of the SME.

### 3. Financial Risk

#### a. Sales or Turnover

268. The weight on the parameter of sales/turnover can increase if there is significant decline in the sales/turnover owed to

- product obsolescence, entry of substitutes, and stiff competition;
- loss of key customers in the business; and
- economic slowdown.

269. The declining trend of sales/turnover may indicate that the SME is not able to sustain its operations and survive the business cycles.

#### b. Profitability

270. The weight assigned to profitability can increase if there is substantial and sudden decline in the profits or if there is a significant loss in the business.

271. The reason for decline in the profits or losses may include

- lower sales realization,
- higher degree of competition from the domestic as well as the international market,
- availability of cheap substitutes,
- higher input cost (raw materials or other consumables), and
- higher interest burden.

272. A declining trend of profitability or a rising trend of losses indicates that the SME may not be able to sustain its operations, meet business requirements, and/or make scheduled repayments on its debt obligations.

#### c. Interest Coverage

273. The weight on the interest coverage ratio may increase if the SME has a very low interest coverage ratio which indicates that the SME may not be able to make the interest payment on its outstanding debt obligations.

274. The interest coverage ratio may be adversely affected if any (or "all") of the following are true:

- Substantially lower profits or losses in the business do not leave adequate funds to meet debt obligations.
- There is a sharp increase in the debt levels owing to capital expenditure undertaken.

275. The lower the interest coverage ratio, the higher is the SME's debt servicing burden and the greater is the possibility of the SME defaulting on its interest payments.

*d. Net Worth*

276. The weight on net worth can increase if there is

- a substantial decline in the SME's net worth or
- the SME has negative net worth.

277. The net worth may decline due to

- losses in the company,
- withdrawal of capital by the management, and
- diversion of funds by the management for investing in group companies.

278. Further, net worth may be negative if the SME has carried forward losses over the years or incurred heavy losses during the year.

279. This parameter can be given higher weight in such instances as it reflects a much lower ability of the SME to bear unpredicted external shocks.

*e. Liquidity and Working Capital Management*

280. The weight assigned to this parameter can increase if the liquidity position of the SME is strained and the SME is not able to convert its assets into cash quickly.

281. The liquidity of a SME is likely to be strained if any of the following are true:

- It is not able to recover payments from its customers in time and there are huge bad debts.
- There is a delay in making the payments to suppliers, resulting in poor vendor relationships and shorter credit periods.
- Short-term funds are utilized for short-term purposes.
- There is a large inventory of unsold goods.

282. Strained liquidity position and weak working capital management will have an impact on the SME's relationship with its customers and suppliers and thereby may affect the overall profile of the company.

**4. Other Comments**

283. If the credit risk assessor increases the weight of a parameter in a particular assessment, he or she should appropriately lower the weight of some other parameter so that the overall sum of weights remains at 100%. An alternate approach may be to push the final rating a notch or two up or down if the credit risk assessor decides that a particular parameter or a set of parameters is exerting a disproportionately high influence on the overall rating.

**F. Rating Definition and Scale**

284. As already highlighted, SMEs have several unique characteristics that warrant a customized credit rating methodology. Taking it a step forward, it would be optimal to also have a customized rating definition and rating scale applicable to SMEs. This would ensure that

the users of the rating have complete clarity on what the ratings convey. In addition, since SME ratings would be customized for the sector, comparing one SME with another would become a simpler process.

## 1. Definitions of Entities

285. In India, there is a separate rating scale for entities defined as small-scale industries (SSIs) and SMEs.

286. A small enterprise or an SSI unit in India is an industrial undertaking in which the investment in fixed assets in plant and machinery, whether held on ownership terms, on lease, or on hire purchase, does not exceed Rs50 million. Rating agencies in India undertake the SSI rating in association with the National Small Industries Corporation (NSIC) and the Ministry of Micro, Small and Medium Enterprises (MSMEs) supports the scheme.

287. Business entities with investment in plant and machinery between Rs50 million and Rs100 million are typically treated as medium-sized enterprises. In India, DCRA define enterprises with turnover up to Rs1 billion as SMEs. Larger enterprises displaying the characteristics of SMEs could also be considered under this definition for rating purposes if the entity requires such a rating.

## 2. Rating Scales in India

288. There are two broad categories of customized rating scales for SMEs in India. The one meant for SSI units (as defined by the Ministry of MSMEs) receives support through subsidies from the government. The other rating scale is meant for entities that are not eligible to be called SSIs but still need a customized rating process run for them. This rating process is not supported by state subsidy and must be paid for by the rated entity. If they so desire, SMEs can also get themselves rated on the traditional rating scale of DCRA, which is typically used to rate large companies, again at their own cost.

### a. *Performance Capability and Financial Strength Ratings of the National Small Industries Corporation*

289. The rating definition and scale under this program is shown in Table 14.

**Table 14: Rating Definition and Scale of the Program of the National Small Industries Corporation**

		Financial Strength		
		High	Moderate	Low
Performance capability	Highest	SE 1A	SE 1B	SE 1C
	High	SE 2A	SE 2B	SE 2C
	Moderate	SE 3A	SE 3B	SE 3C
	Weak	SE 4A	SE 4B	SE 4C
	Poor	SE 5A	SE 5B	SE 5C

Note: SE 2B is the score assigned to firms with high performance ability and moderate financial strength.

290. The NSIC rating scale plots SSIs as per their performance capability in conjunction with their financial strength. Performance capability is measured on a five-point scale (1 to 5, with 1 being the best), and financial strength is measured in three categories (A to C, with A being the best). The ratings symbolize the relative position of the rated entities with respect to other SSIs.

*b. Ratings of Small and Medium-Sized Enterprises*

291. This rating definition and scale (not eligible for the NSIC subsidy) were devised by Indian DCRA's to meet the needs of entities which were not eligible to be called as SSIs but nevertheless required a customized rating product (Table 15).

**Table 15: Rating Symbols and Definitions of the Program of the National Small Industries Corporation**

SME Rating	Definition
SME1	Highest
SME2	High
SME3	Above average
SME4	Average
SME5	Below average
SME6	Inadequate
SME7	Poor
SME8	Default

SME = small and medium-sized enterprise.

Note: SME 3 indicates "Above average" level of creditworthiness in relation to other SMEs.

292. The SME rating scale is on an eight-point scale (SME1 to SME8) that symbolizes the rated entity's creditworthiness in relation to other SMEs.

**G. Relevance of Credit Ratings for Small and Medium-Sized Enterprises**

293. In the Indian context, as per Reserve Bank of India (RBI) requirements, the capital maintained by a bank is to be linked to the credit rating of its customers (typically for customers with loan limits above Rs100 million). The higher the rating, the lower the capital that the RBI requires the lender to maintain in its reserves. The corollary to this is that loans considered riskier are mandated to be backed by more capital held in reserves. This is consistent with international banking standards under the Basel II accord.

**1. Rating of Small and Medium-Sized Enterprises and the Basel II Framework**

294. Ratings have to be obtained from accredited third-party rating agencies. If customers are not rated, then a bank will have higher capital requirements corresponding to unrated exposures. Therefore, the credit rating is relevant to banks from the perspective of their internal capital requirements.

295. SME ratings, however, are different from traditional ratings, as explained above, and are not eligible to be used as permissible external credit ratings under the Basel II framework. The rating of an SME is related to the performance, management, and financials of other SMEs.

Accordingly, even a small but efficient company could obtain a high SME rating as it may be well placed compared with its peers. For a banker dealing mainly with SMEs, it gives a good perspective about better-performing SMEs. Since the rating refers specifically to the SME sector, comparison is within that space itself, rather than with large companies. In the case of the traditional rating, the focus is more on the credit facilities that the company enjoys and its capability to meet financial obligations. On the other hand, SME rating focuses on the overall performance and financial capability of the company as a whole.

## **2. Entity and Exposure Ratings**

296. Banks refer to SME ratings to better understand the performance of the company with respect to its business, management, and financials before making fresh loans, enhancing limits, or negotiating interest rates. The rating is not a direct indicator of the timeliness of the debt repayment of a particular security issued by the entity but a guide to the overall capability of the entity. In this sense, this is typically an entity rating.

297. Exposure ratings are primarily covered in the domain of traditional credit ratings, where the focus is on the likely timeliness of the debt repayment of a particular exposure. Traditional credit ratings may also encompass an entity rating, where the focus would still be on the timely debt repayment ability of the entity as a whole.

## **H. Default Statistics**

298. Default is defined as any missed payment on a rated debt instrument. If the borrower fails to service a rated obligation in full by the due date, the rating will move to a “D” rating or its equivalent. Since credit ratings are an opinion on timely repayment of debt, any post-default recovery is typically not factored in.

### **1. Different Approaches to Default**

299. Rating agencies can adopt different approaches to recognizing default. Where differences exist, it is important to distinguish between default rates computed in different ways, based on the fact that default definitions and recognition practices are not always directly comparable. The application of a definition of default that is less rigorous than another will automatically result in a reduction in the default rate, since it is possible that many credit events seen as defaults under the more rigorous definition would go unrecognized under the relaxed one. Comparison of the default statistics of two rating agencies must necessarily be preceded by a normalization that takes into account the potential for different default recognition policies.

300. Clarity on the definition of default, and the consistency with which it is applied in any rating system, has a direct bearing on the reliability of the default statistics that the system generates over time. To generate credible default statistics, it is essential to have a transparent and objective definition of default, and to apply it consistently.

### **2. Indian Study on Default Statistics**

301. As an illustration, the results of a study by CRISIL, India on the defaults of 1,018 rated SMEs are presented in Table 16.

**Table 16: An Example of Default Statistics**

NPA cases			
Rating Buckets	Number of Entities	% of Entire Sample (1,018)	% of Respective Ratings Bucket
SE 2B	245	0.20	0.82
SE 3C	198	0.49	2.53
SE 4C	21	0.20	9.52
SE 5C	10	0.49	50.00

302. Clearly, higher the ratings, lower the default rate and vice versa. Such a conclusion validates the robustness of the rating process adopted by the DCRA concerned.

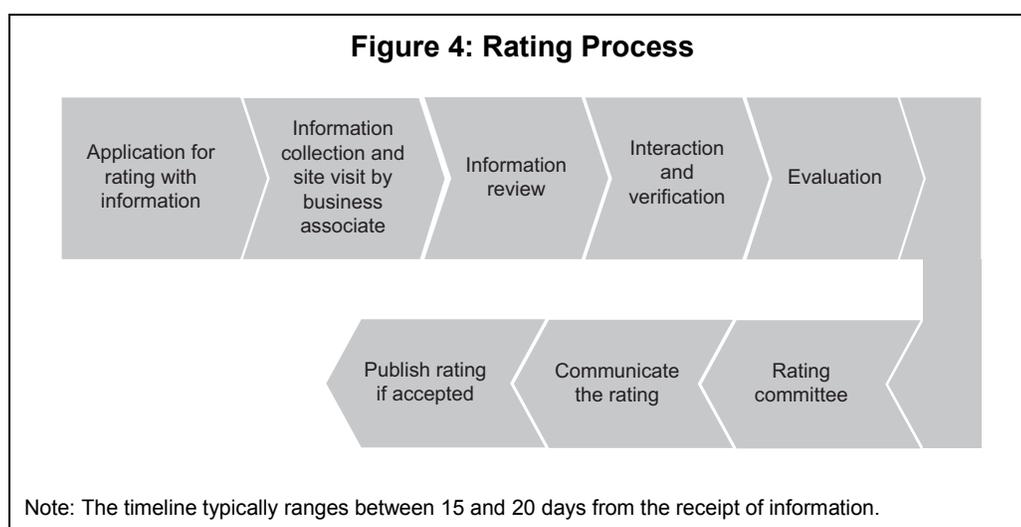
### I. Application of Credit Ratings for Small and Medium-Sized Enterprises

303. Large companies have to prepare annual reports in compliance with regulations and these become reliable performance indicators. Additionally, industry reports and market trends are easily available as the basis for understanding a large company's prospects. For the SME sector, typically a DCRA will have to refer to the performance of other SMEs as proxies to gain an understanding about the SME being analyzed.

304. An illustrative example of ABC Enterprise demonstrates how a DCRA identifies different sources of information about an SME and interprets them in order to gain a deeper understanding of company performance and hence to rate it.<sup>2</sup>

#### 1. The Rating Process

305. The rating process, in its entirety, can consume about 3 weeks. It is conducted in two parts: (i) process followed by the business associate of the DCRA (in the case of India this could be a chartered accounting firm that helps the DCRA expand its SME ratings network); and (ii) follow-up by the rating analysts (Figure 4).

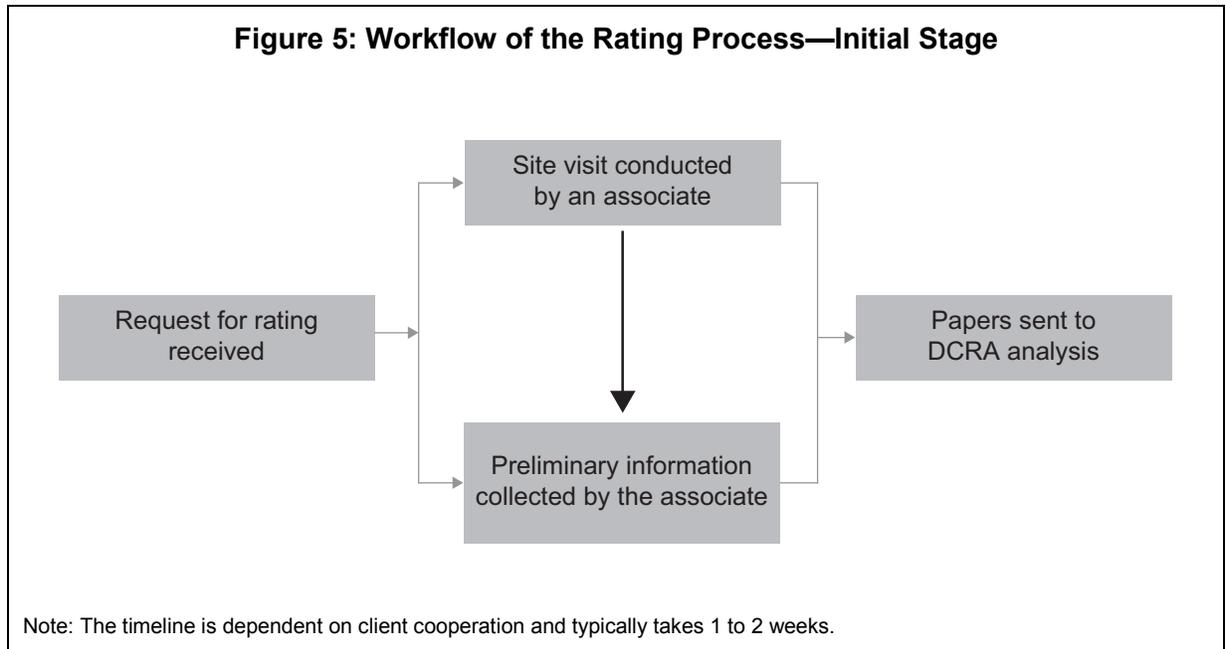


<sup>2</sup> The name of the SME has been modified to preserve confidentiality.

a. *The Business Associates' Channel*

306. In the case of India, a DCRA's SME ratings business usually ensures country-wide presence through tie-ups with chartered accounting firms which assist in the credit-rating process by undertaking site visits, collecting preliminary information, and providing the base data in the format required by the DCRA to run the rating.

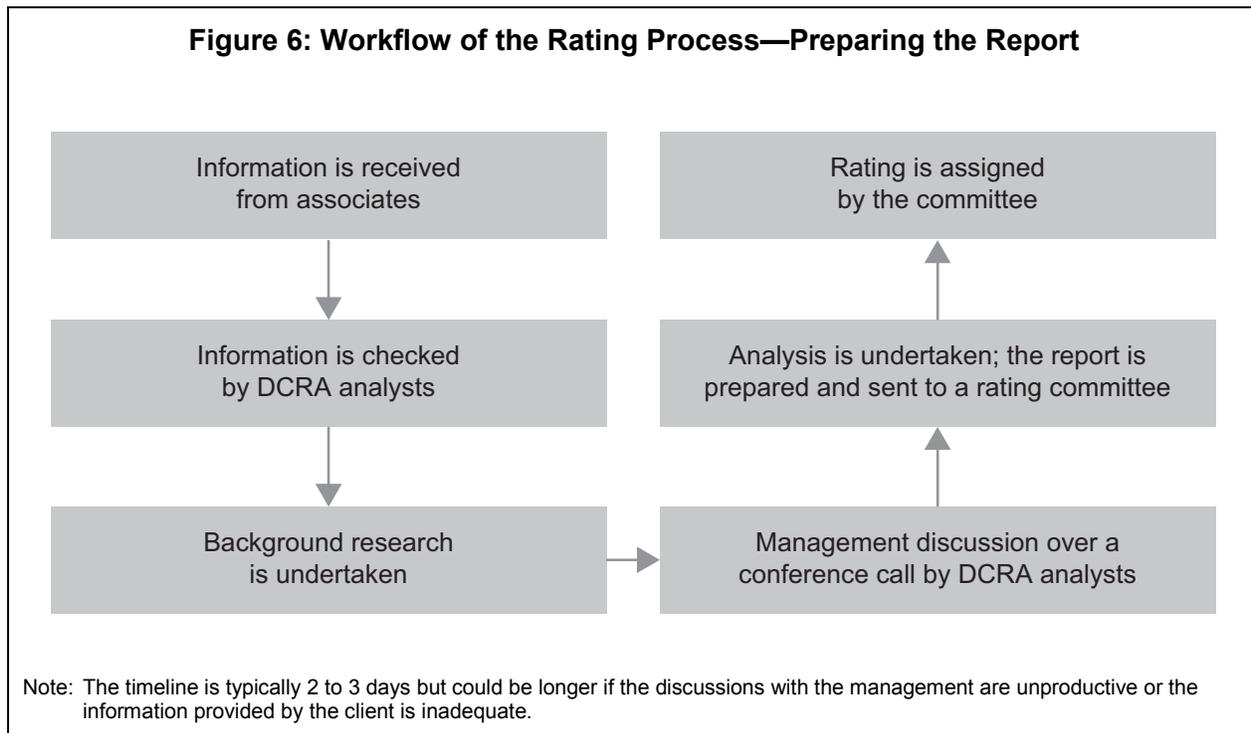
307. The process followed by a business associate is outlined schematically in Figure 5, starting with the first request to gather information.



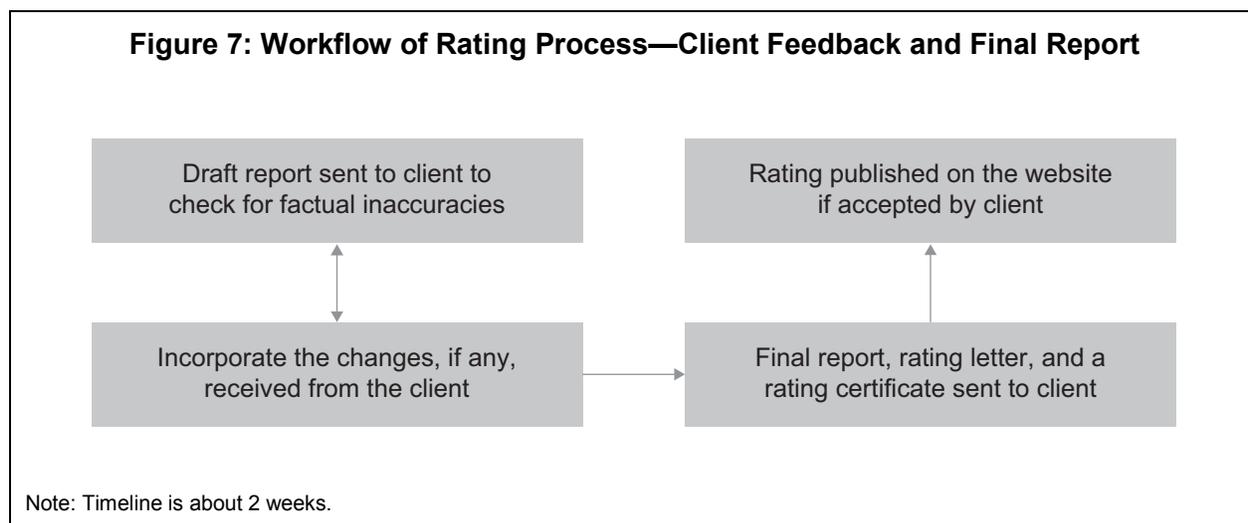
b. *Follow-up by a Rating Analyst*

308. Once the information is received from the business associate the rating analyst proceeds with the evaluation and report preparation. Figure 6 shows how the information received from associates is used to undertake the rating and Figure 7 shows how the draft rating report is shared with the client, feedback incorporated, and report published.

i. Information Review and Rating Assignment



ii. Communication and Publishing of the Rating



309. Once the rating is assigned by the rating committee, a draft report is prepared and sent to the SME (Figure 7).

## 2. 360-Degree Feedback

310. For a robust ratings process, 360-degree feedback is sought on a firm from various business partners of the entity. In the case of ABC Enterprises, the DCRA contacted key customers, suppliers, bankers, and the auditor of the enterprise as part of its background research while carrying out the rating exercise.

311. Feedback from customers on years of relationship, timeliness of delivery, and how commitments have been honored reflects the stability of these relations and the ability of the promoters to scale up the business. Long-standing relations indicate that customers are satisfied with the entity's products or service. The ability to pass on changes in raw material prices is also important as it indicates how critical the entity is for its customers.

312. In the case of ABC Enterprise, feedback from suppliers on the length of the relationship, timeliness of payments, and insistence on quality gave the DCRA information on the company's ability to sustain ties with suppliers. When an entity enjoys good relations with its suppliers, it can extend the payable period in times of distress, giving it a chance to stabilize operations.

313. The DCRA also spoke to the bankers and lenders on the performance of the account, the timeliness of submission of reports, the regularity in servicing debt, and whether they would be willing to lend to ABC Enterprise again. All this information threw light on the competence of the management and their commitment to the business. The willingness of the banks to lend again demonstrated their confidence in the management's ability to successfully expand the business.

314. Feedback from the auditor is important in helping to understand the degree of transparency and accountability within an organization. It also gives information on the integrity of the promoters and their willingness to comply with regulatory requirements.

## 3. Proxy Documents

315. While annual reports may reveal little about the SME's operations, several other documents can act as proxies for crucial information.

316. The DCRA inspects the partnership deed of ABC Enterprise to verify the ownership pattern and the capital introduced by each partner. The DCRA arrives at an understanding about internal controls and systems, and the discipline of the management in complying with regulations by examining certain documents, such as tax returns. ABC Enterprise has filed these returns on time, indicating reasonably well-established internal processes. Similarly, ABC Enterprise has won export awards and obtained quality certifications—indications of its commitment to business and discipline. These are important for a growing business and also a sign of customer satisfaction and the company's ability to establish long-standing relationships with customers.

317. Verification of the insurance details of the plant and machinery of the entity is also a very important step in evaluating an SME. A large part of ABC Enterprise's net worth is represented as fixed assets. This means that if the assets are destroyed in a fire or an earthquake or any other unforeseen event, the firm will not be able to withstand the loss. Adequate insurance reflects the foresight and preparedness of the management in this regard.

318. An analysis of ABC Enterprise's bank statements over the past 6 to 12 months clearly indicates the level of business activity by the number of transactions. These also revealed irregularities. This is an important source of information on SME operations.

319. The DCRA also examines the personal net worth statement of the partners of ABC Enterprise. The promoter's personal net worth is a good indicator of the actual wealth creation ability of the business. It also indicates the ability of the promoters to infuse funds for growth and expansion or to bail out the entity in times of distress.

#### **4. Audited Financials**

320. The DCRA evaluates the audited financial statements of ABC Enterprise for the past 3 years to understand its growth rate, to assess if the disclosed profitability is in line with broad industry trends, to evaluate the extent of dependence on debt, to calculate the extent of debt in the form of unsecured loans, and to examine the firm's working capital management and cash flow position. Although there is a risk of cash transactions obscuring the picture, these financials are still a reasonable indicator of the financial health of the entity. Over time, DCRA's typically develop both an expertise on SME ratings as well as a database on the various industries in which an SME and its peers operate. This enables comparison of an SME's profitability and other financial trends vis-à-vis its industry.

#### **5. Group Performance**

321. Small and medium-sized enterprises are typically structured as multiple group entities in similar or related businesses. How the group entities fare is a good indication of the management's entrepreneurial skills. If these are channeled into unrelated businesses, it could either indicate an appetite for high risk or an ability to manage diverse businesses. Also, group entities can be a good source of funds in times of need, an area of investment, or a way to generate a circular flow of funds.

322. Rating agencies need to incorporate the use of such proxies in the evaluation process to deal with the absence of organized data, industry information, and poor transparency. The proxies used in the evaluation process can take the form of feedback received from important channels, such as customers, suppliers, and bankers. This feedback will help fill in any information gap during the rating process and also help validate conclusions.

#### **J. Credit Rating of a Small/Medium-sized Enterprise: A Case Study**

323. The case study outlined here illustrates a scenario where a high weight has been assigned to a particular parameter as it was felt that this particular parameter played a key role in the overall rating of the SME.

324. ABC Limited is an SME engaged in the marketing of home appliances such as food processors, juicers, mixers, microwaves, toasters, and chimneys in India. The company imports about 35% of the traded goods from the People's Republic of China. The balance is purchased from contract manufacturers appointed by the company domestically. The company supplied goods to its distributors, wholesalers, and direct customers based in the domestic market.

325. ABC Limited is a 100% subsidiary of the Spanish group "XYZ." The XYZ Group is financially strong with over Rs1 billion in net worth. Further, the XYZ Group has the stated philosophy of providing financial and business support to ABC Limited in case it is required. The

loans of the ABC Limited are also guaranteed by XYZ Group. Hence, ABC Limited is deemed to enjoy very strong support from the XYZ Group, which has enhanced its rating.

326. ABC Limited has been in the business for over 10 years and the management has remained the same since inception. The promoters of the company have the required experience and the expertise in managing the overall business of the company. The company has employed an experienced and qualified second line of management. The company has various departments which include production, marketing, finance, and quality control. Though each department is headed by experienced personnel, the key decision-making powers are centralized with the promoters.

327. The company has an adequate marketing setup with a five-member team. The sales team participates in various exhibitions and conducts sales promotion activities to ensure a regular flow of orders. The company also sells its products through brokers (commission agents). There are about 8 brokers located across the major metropolitan cities in the country. The company pays about 5%–8% commission to its brokers on the sales originated by them.

328. ABC Limited maintains an internal reporting system that is updated on a monthly basis. The company does not, however, have a high-frequency reporting system and has not installed an ERP system for the daily tracking of its operations.

329. As the company is engaged in the marketing of home appliances, it has obtained the requisite approvals and is compliant with the necessary regulations. The company is not seriously affected with the external environmental factors. However, there is a risk of its products becoming obsolete due to technological advancements in the market.

330. Infrastructure and related facilities of the company are well maintained. The company has adequate storage capacity, which enables it to maintain the stock of traded goods for an average of 45 to 60 days. However, the company does face the issue of not having proper raw material availability. To mitigate this risk, the company has entered into an arrangement with its suppliers for the supply of raw materials on time and on demand.

331. The company sources about 35% of the traded goods from the export market; this leaves the company exposed to foreign exchange fluctuation risk. The company does not hedge to cover its forex risk and this has the potential to impact the profitability of company.

332. Over the years, the company has managed to scale up its operations and has now reached a sales level of around Rs50 million. However, due to stiff competition and tough market conditions, the sales of the company have remained stagnant over the past 3 years.

333. The company has been able to set prices and attain good margins on its products sold in the market.

334. The company has maintained healthy relationships and has good bargaining power with its customers. This is mainly because of its delivering goods with better quality and on time. Hence, the company has been able to manage its liquidity position well by recovering payments from its customers on time and at the same time making payments to its suppliers on a timely basis.

335. The company has adequate credit protection measures with lower dependency on external debt. However, the company has to rely on short-term facilities offered by banks to meet its working capital requirements.

336. The rating of ABC Ltd is the analyzed as per the model below using the equivalents provided in Table 17.

**Table 17: ABC Limited Rating Scorecard**

Rating Parameter	Rating Sub-parameter	Weight (A) (%)	Rating Score (B)	Weighted Rating Score (C = A X B)
<b>Industry risk</b>				
	Industry prospect	5.0	4	0.200
	Market condition	2.0	4	0.100
	Competitive advantage	2.5	6	0.150
<b>Operations and business risk</b>				
	Physical properties	10.0	7	0.700
	People element	10.0	6	0.600
	Action or processes	10.0	6	0.600
	Management risk	15.0	6	0.900
	Environmental risk	5.0	7	0.350
<b>Financial risk</b>				
	Sales/Turnover	5.0	5	0.250
	Profitability	7.5	6	0.450
	Interest Coverage	7.5	7	0.525
	Net worth	7.5	5	0.375
	Liquidity	5.0	6	0.300
	Working capital management	7.5	7	0.525
<b>Project risk</b>				
	Not applicable	0.0		0.00
<b>Total weighted rating score (rounded to nearest integer)</b>				<b>6.000</b>
<b>Stand-alone rating</b>			<b>SME3</b>	
<b>Parent support</b>				<b>1</b>
<b>Final rating score</b>				<b>7.000</b>
<b>Overall rating</b>			<b>SME2</b>	

337. Rationale for assigning the respective parametric rating scores is presented in Table 18.

338. Though the rating as per the model is SME3, the rating has been upgraded based on the parental support to SME2. Had ABC not enjoyed the strong support from XYZ Group, its rating would have been lower at SME3.

**Table 18: Rationale for Rating Scores**

<b>Rating Parameter</b>	<b>Rating Sub-parameter</b>	<b>Score</b>	<b>Basis of Scoring</b>
Industry risk	Industry prospect	4	There is moderate risk of its products becoming obsolete due to technological advancements in the market.
	Market condition	4	Due to stiff competition and tough market conditions, the sales of the company have remained stagnant over the past 3 years. Therefore, in terms of market conditions, the firm is placed in the moderate risk category. If a declining trend is observed in the future the score could be placed one notch below the existing score.
	Competitive advantage	6	The company has been able to set prices and attain good margins on its products sold in the market. The company has maintained healthy relationships and has good bargaining power with its customers, mainly because it delivers goods with better quality and on time. Hence, the score for competitive advantage indicates adequate safety.
Operations and business risk	Physical properties	7	The infrastructure and the facilities were well maintained. The company did face the issue of proper raw material availability. To mitigate this risk, the company entered into an arrangement with the suppliers for prompt and adequate supply of raw materials.
	People	6	The company employs qualified and experienced second-tier management. However, the decision-making power is substantially vested with the top management, hence the score of 6.
	Action or processes	6	The company maintains an internal reporting system which is updated on a monthly basis. The company also adheres to all the policies and is compliant with the necessary requirements. The company does not, however, have a high-frequency reporting system and has not installed an ERP system for the daily tracking of its operations.
	Management risk	6	Management risk score is based on the long experience of the management in the same line of business. The score assigned is also based on the management's competence in managing the existing business. The score is not higher as the management was not successful in achieving a diversified portfolio by expanding the existing business line.
	Environmental risk	7	Environmental risk is not significant as the company has not been seriously affected by internal or external environmental factors. However, there is an inherent risk of product obsolescence due to continuous technology changes in the home appliances market.
Financial risk	Sales/Turnover	5	The score of sales/turnover is based on the company's turnover ranging from Rs30 million to Rs50 million. It is also based on the stagnancy of the turnover over the past 3 years.
	Profitability	6	The company has scored better on the profitability as it has been able to generate good margins on the products sold in the market.
	Interest coverage	7	The company has a good interest coverage ratio, which enables it to make the interest payment on a timely basis. Hence, the score on interest coverage is as high as 7.
	Net worth	5	The company has moderate net worth in the range of Rs20 million to Rs30 million. Hence, the score is also moderate at 5.
	Liquidity	6	The company has been able to manage its liquidity position well by recovering client payments on time and making prompt vendor payments. Based on the liquidity position (as reflected in its current ratio) a score of 6 has been assigned.
	Working capital management	7	The receivables, payables, and the inventory position in days are in line with the business requirements. Working capital is well-managed.

339. The rating has been enhanced on the assumption that XYZ Group will provide the following to ABC Limited:

- financial support in case of distress,
- funds to support capital expansion,
- technical know-how,
- support in increasing the customer base through the existing network of the parent company, and
- support in marketing activities through the existing brand value of the parent company.

## **K. Suggested Report Content**

340. This section presents suggested content of a typical SME rating report, which may be drafted by a DCRA once it has reached an informed decision about the performance the SME based on an analysis of the parameters mentioned above.

### **1. Fact Sheet**

341. This should present general information about the entity including the following:

- name of the company,
- name of promoter(s),
- year of incorporation,
- legal status and legal history,
- registered/administrative office and service facility,
- branches,
- number of employees,
- certifications and awards,
- brands, and
- statutory compliance status.

### **2. Business Profile**

342. This section should include details such as the business description, customers and suppliers, product or service profile, and the share of sales in each product, terms of trade, geographical reach, future plans, and funding strategies.

#### *a. Ownership and Management*

343. This section should carry information about the management, including the profile of key promoters, their experience, qualifications, lifestyle, and personal net worth. Any outstanding litigation against the promoters or group entities should also be investigated. This section should also include the ownership pattern and information on group entities such as the nature of their business, track records, and main financial parameters.

344. Another important aspect to include in this segment would be the profile of key management personnel and the organizational structure. Observations on the firm's internal controls and procedures, the quality of its reporting systems, and the ability of the second-tier management to manage the business in the absence of the promoter would appear here.

*b. Financial Profile*

345. Financial performance needs to be evaluated in two parts. The first is the ongoing and most recent performance of the entity and the forecast for the year ahead. As SMEs often do not maintain projections for more than a year, the forecast is done for only 1 year. In any case, it would be difficult to make projections beyond a year with a high degree of accuracy. The second is the past financial performance, ratio analysis, trend analysis, and fund flow analysis.

*c. Site Visit*

346. A separate site visit report should be prepared where observations on the following parameters can be recorded:

- address of the site visited,
- size of premises,
- number of employees at the location,
- evidence of child labor at the site, if any
- locality,
- site use,
- state of infrastructure,
- electricity consumption,
- building structure,
- ownership of premises,
- sharing premises with group entities, and
- facilities available at the site.

**L. Other Ways in Which Rating Agencies Services Can Be Relevant for Small and Medium-Sized Enterprises**

347. Apart from undertaking credit risk rating there are several different ways in which DCRAs can be constructively involved in the successful evolution of SMEs in South Asia.

**1. Supplier and Dealer Evaluations**

348. Evaluations specific to supply chains of large companies may serve as a valuable rating. Large companies typically deal with several SMEs as their dealers or vendors. Access to an evaluation methodology, specifically focusing on an SME's ability to perform as a dealer or to meet commitments as a supplier, will be of value to companies.

349. The rating methodology for SMEs discussed earlier can be used to make an assessment of suppliers and dealers with minimal modification. It entails evaluating the entity on the basic parameters of business, management, and financials using different and relevant tools. For a dealer or vendor evaluation, DCRAs should develop criteria relevant to the specific group of dealers or vendors being analyzed. Separate benchmarks may also be created to reveal a greater differentiation within a group of similar entities.

**2. Information Exchange for Small and Medium-Sized Enterprises**

350. A large bank of information relevant to SMEs resides with multiple entities such as government agencies, lenders, and financial institutions that SMEs deal with in their regular

course of business. This may include information on tax payments, loan servicing, credit card payments, and trade. Given systemic opacity and weak accounting standards generally followed by SMEs, a single reference compendium of such information would be of immense help to various agencies dealing with SMEs. An SME information exchange where it is mandatory for members to share their data and where members have the right to access data of other members could provide a treasure trove of information for a variety of third parties such as lenders. For meaningful use of data available with the information exchange, DCRA could analyze the information and classify it into categories or grades based on the track record of timely payments of debt, taxes, or other dues. This would allow DCRA to come up with products, such as short-term liquidity and long-term sustainability ratings, trackers of default rates, and monitors of the most recent commercial transactions.

351. In order to successfully create an information exchange for SMEs, rating agencies will have to find technology-driven solutions that can analyze massive datasets to arrive at conclusions on behavioral trends. The analysis could look at payment or servicing patterns and behavior across different parameters, such as geography, industry clusters, and demography, among others, so that decisions regarding future loans and pricing can be aligned to the outcomes of such analysis.

### **3. Portfolio Credit Evaluation**

352. Evaluating the credit risk profile of a portfolio of SMEs may sometimes be more meaningful for banks when taking a lending decision, rather than focusing on individual SMEs. In many jurisdictions, banks are required to earmark a certain portion of their loans for certain industries. They may also have internal ceilings on investments or loans per industry. Understanding the credit profile in aggregation of a cluster of SMEs operating in similar businesses will be useful for lenders to take decisions regarding portfolio behavior, forecasting trends, assessing benchmarks, and pricing. This helps diversify risk and makes lending decisions easier, thus facilitating greater credit flow to the SME sector.

353. In order to undertake portfolio credit evaluation, rating agencies will have to study past default statistics of a large sample of SMEs, classified into various industries. From this, joint default probabilities for various types of clusters may be arrived at. Correlation between different clusters may be used for creating benchmarks that may form the basis for ranking a particular portfolio vis-à-vis others.

### **4. Assessment of Collateral Mitigants**

354. Demand for large collateral from lenders is a chronic issue with SMEs in many countries. Obtaining credit becomes a problem, especially for start-ups. This difficulty can be addressed by establishing guarantee funds, which can take the following forms:

#### *a. Credit Guarantee Funds*

355. Default-rate analysis of SMEs is possible in the long run once relevant information and credit repayment track records become available. This information can act like actuarial data, where past repayment trends are used to determine the pricing of risk going forward. This can be an important step in setting up self-sustaining credit guarantee funds (CGFs).

356. The CGF can be provided by governments and/or a multilateral development institution such as the Asian Development Bank (ADB). It would then use the default risk analysis provided

by DCRAs to fix the guarantee fee for the buyers of the fund's guarantee/protection. The CGF could extend guarantees to banks against SME default, thus helping to lower the prohibitive collateral barriers that SMEs face. This would be particularly relevant for start-ups, which have to tackle serious challenges in arranging collateral securities and third-party guarantees. The CGF could also expedite the loans process, thereby facilitating timely availability of credit. This kind of guarantee creates confidence among other players dealing with SMEs, thus pushing the boundaries of credit and growth opportunities for the sector.

*b. Mutual Guarantee Funds*

357. In this architecture, a set of SMEs can come together, pool resources, and deposit them in a bank. This resource pool or the mutual guarantee fund (MGF) would serve as collateral for the SMEs to borrow funds. Industry associations, special economic zones, or even community groups (enterprises in a geographical cluster) can pool their resources and hold the fund with banks as a guarantee against default by members. In such an arrangement, peer pressure among members is generally sufficient to ensure timely repayment. The guarantee results in lower credit risk which enables SMEs to borrow at a lower cost. Within such structures DCRAs can play a role in evaluating relative risk associated with a specific set or group of SMEs, which can then help determine the adequacy of the collateral. The risks can include those related to the group's track record, profiles of its individual members, the nature of the business in question, and the purpose of the loan.

358. The methodology for assessing the credit risk given the presence of CGFs and MGFs would be similar to that for portfolio credit evaluation. Rating agencies will have to undertake default statistical evaluation for a large sample of SMEs and then arrive at relative risk grades for various clusters. For MGFs, the correlation between SMEs in a cluster to pool together resources will also be important.

## **5. Benchmarking Services**

359. Rating agencies can benchmark the performance of various SMEs within appropriate peer industries such as textiles and automobile ancillaries. Large companies can use the results of such benchmarking to select SMEs that they would want to work with. Furthermore, large manufacturers with SMEs as their dealers may use this service to enhance the capabilities of the laggards. The benchmarks can also be used as measures by the government while administering certain schemes. For instance, the government may offer a credit-linked capital subsidy scheme, where the benchmarking services help identify deserving candidates.

360. A benchmarking exercise involves the study of a representative group of entities from a particular industry to arrive at median or average trends in relevant parameters such as sales turnover, employee productivity, return on assets, and working capital turnover. These are set as benchmarks with which industry players can be compared. Players whose performance is below the benchmark can be identified for training support or aid, while those who perform better than the benchmark can be identified as case studies to understand their strategies and establish best practices.

## **6. Providing Services Across the Life Cycle of a Small/Medium-sized Enterprise**

361. Domestic credit rating agencies may be involved in many different ways in evaluating and analyzing SMEs across their life cycle, depending on the needs of users:

*a. Credentials Evaluation*

362. Entities may require some assurance on the credentials of an SME before establishing a relationship. This is especially true in the import–export business where the counterparty is unaware and unsure about the authenticity of the SME they plan to deal with. Rating agencies can provide the following services in this area:

- authentication and verification services,
- basic information and profiling,
- commercial information about customers and track record, and
- financial information.

*b. Payment Record Overview*

363. There are entities that may want information on SME payment records. Rating agencies can provide these after evaluating the transactional information about the SME, say, in the last three transactions. This activity can be a subset of the information exchange discussed earlier, where a report on the transaction quality of recent months can be generated depending on the need of the user.

*c. Evaluation of Core Fundamentals*

364. An analysis of the core fundamentals of SMEs can cater to the needs of both equity and debt investors. For equity investors, the focus of the analysis would be the potential upside and gains the investor can make on a risk adjusted basis. This could be captured in the form of a grading of fundamentals and valuations. Rating agencies could add credibility to the equity offering of the SME and generate confidence amongst market players that the SME is a genuine entity running a genuine business, and not a fly-by-night operator.

365. For debt investors or lenders, the analysis would assess the potential risks to the investment. The output could be in the form of a rating or a grading. A rating conveys an opinion on the ability of the entity to service its obligations on a timely basis, which is critical for any debt investor. It needs to know whether the entity it is investing in will be able to service the interest dues as well as return the investment at the end of the specified period.

366. For undertaking authentication and verification, DCRAs need to identify a list of official documents that are accepted as proof of identity and/or proof of business operations across the country. These documents should be collected and verified with official agencies to establish the credibility of the entity. For payment records, bank statements may be analyzed, or similar records of payments can be verified to establish the consistency and timeliness of payments by the entity.

367. Analysis of fundamentals can be carried out in a manner similar to a rating exercise.

**M. Enabling Domestic Credit Rating Agencies to Play the Benefactor’s Role**

368. Rating agencies can play benefactors to SMEs only within an enabling policy and regulatory environment. Regulatory intervention must be able to pitchfork DCRAs into the position of important intermediaries. This may require a two-pronged approach:

- Ratings should be made mandatory for SMEs.
- Ratings should be an essential input for lenders in their internal evaluation process, with pricing linked to the ratings. This should be accompanied by governmental efforts to channel the flow of information on SMEs to DCRA's either through an information exchange or by some other mode.

369. Subsidy support from either the government or a multilateral development institution such as ADB could ensure that the initial expenses for the successful operation of the chosen architecture can be met. If need be, a phased approach could be formulated to ensure optimal coverage of SMEs by, say, an information exchange that will be a repository of information on SMEs where medium-sized enterprises could be covered first followed by the smaller businesses.

## **Credit Rating Methods for Public–Private Partnership Infrastructure Projects and Small and Medium-Sized Enterprises in South Asia**

A credit rating compresses an enormous amount of diverse information into a single symbol. Credit quality embraces relative default probability, loss severity, financial strength, and transition risk. The purpose of this rating methodology is to help domestic credit rating agencies (DCRAs), issuers, investors, regulators, and other market participants understand how public–private partnership (PPP) projects could be assessed, and to explain how key quantitative and qualitative risk factors can be mapped to specific rating outcomes. This paper does not present an exhaustive treatment of each and every factor reflected in ratings of PPP projects and small and medium-sized enterprises, but it should enable the reader to understand the key rating factors used by DCRAs in the final rating determination. It covers this ground and suggests rating methodologies that can help reduce procedural bottlenecks and thus boost credit availability in South Asia.

### **About the Asian Development Bank**

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two-thirds of the world's poor: 1.6 billion people who live on less than \$2 a day, with 733 million struggling on less than \$1.25 a day. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

Asian Development Bank  
6 ADB Avenue, Mandaluyong City  
1550 Metro Manila, Philippines  
[www.adb.org/poverty](http://www.adb.org/poverty)  
Publication Stock No. WPS146310