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Overcoming the challenges in assessing relative credit risk in highly
rated institutions based on public data

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Multilateral Development Bank Credit Rating Methodology: Overcoming the Challenges in Assessing Relative Credit Risk in Highly Rated Institutions Based on Public Data



by David Chen, Philippe Muller and Hawa Wagué

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May 2017

**Multilateral Development Bank Credit Rating
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Abstract

The investment of foreign exchange reserves or other asset portfolios requires an assessment of the credit quality of counterparties. Traditionally, foreign exchange reserve managers and other investors have relied on credit rating agencies (CRAs) as the main source for credit assessments. The Financial Stability Board issued a set of principles in support of financial stability to reduce reliance on CRA ratings in standards, laws and regulations. To support efforts to end mechanistic reliance on CRA ratings and instead establish stronger internal credit assessment practices, this paper provides a detailed technical description of a methodology developed to assign an internal credit rating to multilateral development banks (MDBs), using only publicly available data. The methodology relies on fundamental credit analysis that produces a forward-looking assessment of the investment entity's capacity and willingness to pay its financial obligations, resulting in an opinion on the relative credit standing or likelihood of default. This methodology proposes four key innovations: (i) a simple way of estimating the capital adequacy ratio, (ii) new metrics to evaluate the liquidity and funding profile of an MDB, (iii) a straightforward approach to evaluating the exceptional support from shareholders, and (iv) a new criterion related to corporate governance, which provides a high level of objectivity in assessing some of the qualitative indicators. The methodology is a key component of the joint Bank of Canada and Department of Finance Canada initiative to develop internal credit assessment capabilities and is currently used to assess eligibility and inform investment decisions in the management of Canada's foreign exchange reserves.

Bank topics: Credit risk management; Foreign reserves management

JEL codes: G24; G28; G32; F31

Résumé

Le placement des réserves de change ou d'autres portefeuilles d'actifs nécessite au préalable une évaluation de la qualité du crédit des contreparties. En règle générale, les gestionnaires de réserves de change et les autres investisseurs recourent principalement aux cotes de crédit attribuées par les agences de notation. Le Conseil de stabilité financière a publié un ensemble de principes visant à soutenir la stabilité financière et à réduire le recours systématique aux cotes des agences dans les normes, les lois et les règlements. Pour appuyer les efforts entrepris en vue de mettre fin au recours mécanique aux cotes des agences et d'établir plutôt des pratiques internes d'évaluation du crédit plus solides, le présent document d'analyse fournit une description technique détaillée d'une

méthodologie conçue pour attribuer une cote de crédit interne aux banques multilatérales de développement fondée entièrement sur des données publiques. La méthodologie repose sur une analyse fondamentale du crédit qui génère une évaluation prospective de la capacité et de la volonté des entités de placement de s'acquitter de leurs obligations financières, ce qui se traduit par une opinion sur la solvabilité relative ou la probabilité de défaillance de ces entités. Cette méthodologie propose quatre grandes innovations : 1) une façon simple d'estimer le ratio de fonds propres, 2) de nouvelles mesures pour évaluer la liquidité et le profil de financement des banques multilatérales de développement, 3) une méthode simple pour évaluer le soutien des actionnaires dans des cas exceptionnels et 4) un nouveau critère relatif à la gouvernance institutionnelle, lequel fournit un haut degré d'objectivité dans l'évaluation de certains des indicateurs qualitatifs. La méthodologie est un élément essentiel de l'initiative conjointe de la Banque du Canada et du ministère des Finances ayant pour objet d'établir des capacités d'évaluation interne du crédit. Elle est actuellement utilisée pour déterminer l'admissibilité et éclairer les décisions de placement dans le cadre de la gestion des réserves de change du Canada.

Sujets : Gestion du risque de crédit ; Gestion des réserves de change

Codes JEL : G24 ; G28 ; G32 ; F31

1. Introduction

This paper provides a detailed technical description of a methodology designed to assign internal credit ratings to multilateral development banks (MDBs)¹ using only publicly available data. Our MDB methodology relies on fundamental credit analysis that produces a forward-looking and through-the-cycle assessment of an MDB's capacity and willingness to pay its financial obligations, resulting in an opinion on the relative credit standing or likelihood of default. The paper focuses on the components of the methodology that are new to the science of credit risk assessment for MDBs, and includes components that have been borrowed from the existing literature. The authors' intention is that this paper will support efforts by managers of foreign exchange reserves and other investors to end mechanistic reliance on credit rating agency (CRA) ratings and instead establish or strengthen internal credit assessment practices. The methodology we present can be used as is by credit risk practitioners to assess the relative credit quality of an MDB, or it can be used to facilitate the development of a methodology that caters to their specific needs.

The investment of foreign exchange reserves or other asset portfolios in fixed-income securities requires an assessment of the credit quality of investment counterparties. The overriding objectives of most portfolios are capital preservation, liquidity and return. As such, investment guidelines for portfolios typically include a requirement that investment counterparties meet or surpass a minimum level of credit risk quality. Requirements could also limit portfolio exposures both to individual investment counterparties and to categories of aggregated counterparties on the basis of their credit rating. In the case of Canada's foreign exchange reserves, the Statement of Investment Policy stipulates that investment counterparties must meet or surpass the credit risk quality or tolerance, defined as a rating of A-.² A source for credit assessments is thus required.

Traditionally, foreign exchange reserve and asset managers have relied on CRA assessments as the source for credit assessments, for a number of reasons. The use of CRA ratings facilitates the process by providing an efficient, widely recognized and available, long-standing and third-party measure of relative credit risk. For public institutions and regulators, the availability of the CRA ratings facilitates both the communication of standards, laws and regulations and adherence to them. For instance, the availability of CRA ratings allows foreign exchange reserve managers to communicate to the public the credit quality of the investments in their portfolios, according to an independent third party.

More recently, best practices have evolved and motivated market participants to develop and rely on internal credit assessment capabilities. The Financial Stability Board (FSB) issued its *Principles for*

¹ MDBs are founded by a group of member sovereigns. They are autonomous international institutions that raise money on the capital markets and/or use funds contributed by member countries to finance economic and social development programs in different regions of the world.

² See Department of Finance Canada (2016), the [Statement of Investment Policy for the Government of Canada](#) (Annex 1B) for the policies governing the acquisition, management and divestiture of Canada's foreign exchange assets.

Reducing Reliance on CRA Ratings in October 2010.³ These principles were subsequently endorsed by the G20. The intention is to reduce reliance on CRA ratings in standards, laws and regulations and, ultimately, to reduce the threats to financial stability from the herding and cliff effects that could arise from CRA rating thresholds being embedded in laws, regulations and market practices. Specifically, for central banks and managers of foreign exchange reserves, the principles state, “Central banks should reach their own credit judgments on the financial instruments that they will accept in market operations, both as collateral and as outright purchases,” and “Central bank policies should avoid mechanistic approaches that could lead to unnecessarily abrupt and large changes in the eligibility of financial instruments.”⁴ Moreover, best practices in the asset management industry, exemplified by prominent asset management firms, suggest that investors should understand the credit risks they are exposed to and, more broadly, that internal credit assessment should be relied upon to inform investment decisions. Indeed, as stewards of public funds, both the Bank of Canada and the Department of Finance Canada have a responsibility to understand their credit risk exposures.

In 2013, the Bank established a Credit Rating Assessment Group within its Financial Risk Office. The purpose of the Credit Rating Assessment Group is to evaluate the credit (default) risks of assets and other financial exposures of the Bank and that the Bank manages on behalf of the Government of Canada. The Credit Rating Assessment Group supports the Credit Rating Committee, sponsored jointly by the Bank and the Department of Finance Canada, which assigns ratings to the trading and investment counterparties used in the management of the Exchange Fund Account⁵ and by the Bank. Internally determined ratings will be used to set eligibility requirements and credit limits as part of the government’s risk-management policy.⁶ The ratings are intended to replace or complement those currently being provided by the following CRAs: DBRS, Fitch Ratings, Moody’s and Standard & Poor’s (S&P).

Since its creation, the Credit Rating Assessment Group has developed internal rating methodologies built upon the best practices of credit risk practitioners. In addition to the internal MDB methodology, the Credit Rating Assessment Group has developed methodologies for rating both sovereign and government-related entities.⁷ To develop internal ratings of the highest quality, this initiative began with the development of templates based on provisional rating methodologies that drew from the work of other credit risk practitioners and relevant academic research. As expertise and knowledge expanded, the Credit Rating Assessment Group improved its internal methodologies, retained components from

³ See Financial Stability Board (2010) for more on the Principles for Reducing Reliance on CRA Ratings, and Financial Stability Board (2014) for progress achieved in applying these principles.

⁴ Financial Stability Board (2010, 3).

⁵ The Exchange Fund Account represents the largest component of Canada’s official foreign exchange reserves.

⁶ See Bank of Canada (2013, 32, Box 2) for more on the new internal credit assessment process, including a discussion of governance.

⁷ Government-related entities (GREs) are primarily defined by their roles and functions related to the provision of critical public services, which makes them more prone to receiving government support in the event of financial difficulty. GREs generally include administrative bodies, agencies and public corporations formed, nationalized or controlled by a government. However, some entities with little or no government link may also be considered GREs, based on their systemic importance to the economy or functioning of government.

provisional templates that were deemed to align with the objectives of the internal methodologies, and bolstered its models with new components and measures.

For instance, our internal MDB methodology proposes a simple way to estimate the capital adequacy ratio as well as the liquidity and funding profile of an MDB based on publicly available data. In addition, our methodology contains a straightforward approach to evaluate the exceptional support from shareholders using callable capital and the debt level and introduces new criteria related to corporate governance.

The rest of this paper is divided into four main sections. Section 2 describes the key constructs used in the development of our internal methodologies. These include the need for a solid governance structure, ratings that are applicable to existing credit risk management policies, and high-quality ratings—based solely on public information—that remain internal to the Bank of Canada and the Department of Finance Canada. Section 3 presents the framework of the MDB methodology, including a brief description of each of the five components of the model and an explanation of how individual scores assigned to each component are combined to obtain an opinion on the relative credit standing or likelihood of default of the MDB being assessed. Section 4 provides a detailed description of each component or factor intrinsic to the credit quality of an MDB, including the rationale and theory behind each risk factor. Section 5 focuses on exceptional member support and the overall rating. The paper concludes with a brief discussion of potential future research and encourages feedback from other credit risk practitioners.

2. Fundamental Constructs Used in the Development of the Methodologies

This section describes the key constructs used in the development of our internal methodologies. Readers interested in only the technical aspects of the MDB methodology can proceed directly to the next three sections.

The framework in the joint Bank of Canada–Department of Finance Canada initiative is based on the belief that it is beneficial to develop internal credit assessment capabilities to be used to assign internal credit ratings that would replace or complement those from CRAs and, more broadly, to apply insights gained in the conduct of credit assessments to support the investment decision-making process used to manage Canada’s foreign exchange reserves.⁸

The overall approach followed to develop our internal methodologies is based on four key fundamental constructs: (i) to rely on a governance process that ensures that ratings are influenced only by considerations related to the credit quality of the entity being assessed, (ii) to generate credit ratings that are applicable to existing credit risk management policies, (iii) to generate ratings of the highest quality that would remain internal to the Bank and the Department of Finance Canada, and (iv) to generate consistent ratings that are produced with a transparent methodology that relies on publicly available data.

⁸ See Bank of Canada (2013, Box 2) for a detailed description of the joint Department of Finance Canada and Bank of Canada initiative to develop internal credit risk assessment capabilities.

2.1. Ratings Supported by a Robust Governance Framework

The Credit Rating Assessment Group and the internal credit risk assessment framework are structured to ensure that credit risk assessments are influenced only by considerations related to the credit quality of the entity being assessed.

The Credit Rating Assessment Group, part of the Bank's Financial Risk Office, is independent of the front office operations. The Credit Rating Assessment Group supports the Credit Rating Committee, an operationally independent committee sponsored jointly by the Bank and the Department of Finance Canada, which assigns ratings. The Credit Rating Committee is composed of individuals from across the Bank of Canada and the Department of Finance Canada and is co-chaired by the Director of the Financial Risk Office and an executive member of the Bank.⁹ A key consideration for Credit Rating Committee membership is to ensure that representation is balanced and that no single business line (including from the Financial Risk Office or the Credit Rating Assessment Group) forms the majority. Another consideration is to ensure the independence of those assigning credit ratings from those making investment decisions.

A governance process is also in place to ensure our internal methodologies produce ratings that are appropriate. The internal ratings assigned by the Credit Rating Committee are reviewed annually by a risk committee to assess whether the ratings have met their objectives. In addition, the internal rating methodologies are recalibrated on an annual basis and undergo a fundamental review triennially.

In terms of responsibility and accountability, although the internal methodologies are formally approved by senior management, the Credit Rating Assessment Group and the Credit Rating Committee share ownership of the rating methodologies. The Credit Rating Assessment Group is the sole owner of the recommendations it makes to the Credit Rating Committee, and the Credit Rating Committee is the sole owner of the internal ratings it assigns. Accountability for the quality of the internal methodologies and the internal ratings generated by their use is seen as a key fundamental construct in support of the initiative to develop internal credit risk assessment capabilities. Indeed, accountability for the internal credit ratings assigned on the basis of our internal methodologies is internal to the Bank of Canada and the Department of Finance Canada.¹⁰

The internal ratings generated using our internal methodologies are intended to be used only for internal credit risk management. The objective is to generate ratings that can inform investment decisions and replace CRA opinions. Internally determined ratings are thus geared to generate benefits for the internal investment decision-making process and global financial stability. Publishing the ratings could be counter to the objective of the G20 and FSB principles to encourage investors to conduct independent credit risk assessments rather than relying on opinions from the CRAs, the Bank of Canada–Department of Finance Canada Credit Rating Committee or other external sources.

⁹ See the listing of the Bank's [Executive Leadership and Senior Management](#).

¹⁰ Previously, when the source for credit risk assessments was CRAs, the responsibility and accountability for the credit ratings had effectively been outsourced to the CRAs.

2.2. Ratings Applicable to Credit Risk Policies

The aim of this initiative is to replace CRA ratings with internal opinions, supported by in-house research, that are comparable with or broadly in line with CRA ratings. The underlying assumption is that CRAs consider relevant factors in their rating methodologies for asset categories eligible for investment in Canada's foreign exchange reserves. The methodology developed thus relies on credit risk assessment approaches consistent with those of CRAs.

Our internal methodologies seek to produce a rating that can be used as a credit assessment to determine eligibility for investment and set investment limits according to existing credit risk guidelines. To replace CRA credit assessments with internal ratings, without requiring other changes to credit risk policies, our methodologies assess a debt issuer's capacity and willingness to pay its financial obligations, resulting in an opinion on an issuer's relative credit standing or likelihood of default using CRA scales and symbols. Similarly, the horizon over which an opinion on the relative credit standing of an issuer is intended to be valid is three to five years, or through the cycle.

The internal methodologies assess default risk or the relative ranking of an issuer's probability of default. The definition of default includes both payment default, where the issuer fails to make principal or interest payments on the due date or within a grace period, and distressed exchanges, where the issuer offers new debt for existing debt on terms (e.g., coupon, maturity) less favourable than those for the original instrument. Overall, our definition of default is broad, and differences in ratings reflect differences in intrinsic financial strength.

2.3. Ratings of the Highest Quality

The internal methodologies we developed to assign a credit rating to an entity rely on fundamental credit analysis that is forward-looking and considers both qualitative and quantitative factors. These factors are empirically based, with inferences about debtor behaviour based on data derived from past credit cycles. To develop its methodologies, the Credit Rating Assessment Group relied on fundamental credit analysis based on the belief that, resources permitting, fundamental credit analysis is usually preferred to market-based measures because qualitative and quantitative factors can be combined to make sound credit judgments.

The aim is to produce ratings that respond, in a timely fashion, to changes in credit considerations affecting the quality of the entity over a three- to five-year horizon. The ratings generated reflect the most recently available information. There is an underlying belief that internal ratings can be more timely than those of rating agencies because the internal ratings process is not subject to some of the constraints faced by CRAs. For instance, internal ratings are not affected by the conflict inherent in the CRA business model, whereby issuers (generally) pay to have a CRA assign ratings to their debt securities. Similarly, internal ratings are not subject to the challenges raised by the publication of CRA

ratings.¹¹ In addition, CRA ratings may be influenced by regulatory and political considerations. All of these considerations could influence the timing of the rating actions.¹²

As we highlighted in the introduction, the development of methodologies for internal use at the Bank of Canada began with the creation of templates based on provisional rating methodologies that drew from the work of other credit risk practitioners and relevant academic research. Using macroeconomic scenarios and credit analysis conducted by the Credit Rating Assessment Group, the Credit Rating Committee began assigning (provisional) internal ratings to the sovereign, MDB and other issuers that make up the Exchange Fund Account portfolio. This phased approach was adopted to gain experience in applying rating methodologies and scoring templates. This in turn strengthened the robustness of the final rating methodologies and templates. Indeed, provisional internal ratings were used alongside those of CRAs for at least a year, while investment guidelines continued to officially rely on CRA opinions. As expertise and experience grew, the Credit Rating Assessment Group enhanced the credit rating methodologies, modified template components to ensure they are aligned with the objectives of the internal methodologies, and bolstered models with new components and measures to assign various scores to risk factors. Over time, in many cases the methodologies that were developed maintained only the shell and structure of the publicly available credit rating methodologies.

To attain the objective of generating ratings that are both high-quality and timely, internal ratings were back-tested to ensure they would yield results comparable with those of CRAs across a range of issuers of varying credit quality. Conducting this back-testing exercise on the internally generated ratings allowed the Credit Rating Assessment Group to assess whether the methodology properly captured the credit quality of different issuers at a given point in time.

Lastly, as outlined in section 2.1, a governance process is in place to ensure that the methodologies continue to meet the desired objectives.

2.4. Consistency, Transparency and Reliance on Public Data

Another construct is to generate internal ratings that can be produced consistently by different analysts using the same information. A methodology was therefore sought that is robust and that relies as much as possible on quantifiable metrics to guide forward-looking assessments of entities' credit risk. To the greatest extent possible, quantitative metrics are used and, as required, supplemented with qualitative judgments.

Given that the internal methodologies are intended to produce ratings of the highest quality, the methodologies developed should be transparent and published so as to benefit from comments and suggestions from specialists advancing the frontier of credit risk assessment methodologies.

¹¹ Recall from section 2.1 that internal ratings are not publicly disclosed.

¹² Regulations imposed by the European Union on CRAs have—for instance, and with some exceptions—limited the times when CRAs can review and potentially change issuer ratings to only two or three days a year, established in advance.

A further objective is to generate ratings that could be explained and justified solely on the basis of public data. Indeed, it is important that internally generated ratings avoid the perception that they result from insights obtained by staff in the course of their work at the Bank of Canada or the Department of Finance Canada.¹³

3. Key Risk Factors and Overall Rating Framework

Developing a methodology to assess the credit quality of MDBs using only publicly available data is challenging because of some of their distinctive characteristics. Generally, MDBs are considered by credit risk practitioners as being of the highest credit quality.¹⁴ In fact, we are unaware of any instances of defaults by MDBs. Their credit quality also tends to be stable, with few changes to their CRA credit ratings. Although MDBs share some similarities with commercial banks, we do not believe that bank rating methodologies can be used to rate MDBs. The majority of global and regional MDBs benefit from preferred creditor status, which means that borrowers typically prioritize debt repayments to an MDB over repayments to other creditors. Unlike commercial banks, MDBs do not take deposits, are highly capitalized and rely to a greater extent on wholesale funding to finance their operations. Moreover, MDBs are established by international treaties; they have no specific nationality and consequently are exempt from national and international banking regulations. MDBs are also unique because under certain circumstances their government shareholders generally commit to providing callable capital, which, in theory,¹⁵ provides additional financial support to pay MDB obligations. MDBs also are not profit-maximizing and thus typically have a much lower return on equity (ROE) than commercial banks. For a commercial bank, MDB-like levels of ROE would be considered a weakness. In our view, these distinctive characteristics make many MDBs intrinsically stronger than conventional banks, and consequently make it difficult to compare MDB metrics with banking sector financial indicators.

The literature review of existing MDB methodologies shows that practitioners broadly use similar risk factors to assess MDBs. These risk factors include the MDBs' financial position, institutional governance and support of members. However, the indicators used to measure specific risks, the weights of the risk factors and the way the risks are accounted for in each methodology are different. The financial position component generally covers capitalization and leverage, asset quality, concentration risk, profitability, liquidity risk and market risk. The criterion assessing the support of members and governance weighs callable capital of members based on the MDB's public policy importance, shareholders' willingness and ability to support, and linkages and correlation between members and borrowers.

Our methodology draws from best practices of other practitioners' methodologies.¹⁶ It provides a way to independently replicate indicators that reflect the key credit risk factors of an MDB and ways to apply

¹³ For certain entities, analysts at the Bank or the Department of Finance Canada may come across non-public information relevant to the credit quality of such issuers. Insights obtained by staff are used to develop and improve the methodology, however.

¹⁴ For instance, according to S&P Global Ratings (2016), the majority (more than 80 per cent) of rated supranationals, including MDBs, have a credit rating of AA- and above.

¹⁵ To date, no MDB has ever made a capital call.

¹⁶ See section 2.3 for a description of the process followed to develop the methodology.

judgment to infer a credit rating for any MDB. Specifically, we propose a simple way to estimate the capital adequacy ratio as well as the liquidity and funding profile of an MDB based on publicly available data. We also propose a straightforward approach to evaluate the exceptional support from shareholders using callable capital and the debt level. Our framework introduces new criteria related to corporate governance that provide a high level of objectivity and guidance in assessing some of the qualitative risk factors (e.g., governance and management effectiveness).

3.1. Key Risk Factors

The five key risk factors are presented in Exhibit 1. Specific qualitative and quantitative indicators are identified to measure each sub-factor of the main factors. These specific indicators are a combination of those used in various other practitioners' methodologies and those we propose. The scoring category for each main factor and sub-factor ranges from 1, the highest possible score, to 7, the weakest score.

The first key risk factor, **Capital Adequacy**, is the base for assessing an MDB's solvency or financial strength. It is considered by all practitioners to be one of the most important elements in defining a financial institution's credit profile. This factor assesses the level of capital available for an MDB to absorb potential losses from its operations. In our methodology, the strength of an MDB's capital position is measured primarily by a simple risk-weighted capital measure that is based primarily on the Basel standardized approach,¹⁷ using publicly available data about the MDB's loan exposures. The methodology also proposes using secondary indicators, such as the leverage ratio (equity to assets) and the MDB's self-reported capital adequacy metrics. Complete reliance on the self-reported capital adequacy metrics is not recommended, as these ratios may not be comparable among MDBs because of the lack of a common regulatory and supervisory body.

The second key risk factor is related to **Liquidity and Funding Strength**. Our methodology measures the quantity of liquid assets that an MDB has to repay its debt and maintain its lending operations in the event that it is shut out of the capital markets. The key indicator used is the liquidity ratio, calculated as liquid assets divided by the sum of debt maturing within one year and the disbursement amount for the most recent year. Funding assesses how readily MDBs can finance themselves in capital markets. Unlike traditional or commercial banks, MDBs do not take deposits, and the majority of them do not have access to a central bank's liquidity facilities. Their full reliance on capital markets under normal operating conditions to fund their operations makes the assessment of funding critical to their credit profile. Our methodology proposes an adjustment-based approach to the overall liquidity strength score to account for the funding risk.

Considering how an MDB's specific characteristics affect its credit profile, **Mission and Relevance**, the third key factor, captures the relevance of its business model and operations. Among other topics, two MDB-specific characteristics are considered under this factor: (i) the focus of an MDB's public policy mandate track record (i.e., whether the MDB focuses on social and economic development), and (ii) the

¹⁷ See Basel Committee on Banking Supervision (2015) for an explanation of the Basel standardized approach.

fact that, in general, MDBs benefit from preferred creditor status—borrowers typically prioritize debt repayments to an MDB over repayments to other creditors—and preferred treatment that protects MDBs from transfer and convertibility risks. In our methodology, the **Mission and Relevance** factor is based mainly on a qualitative assessment and takes into consideration four sub-factors: the institutional relevance of an MDB’s role, the importance of the MDB’s public policy mandate and its track record in fulfilling that mandate, the cohesiveness and permanence of the MDB’s shareholders, and the preferred creditor treatment (PCT) track record.

The fourth key factor is **Organizational Structure and Management Capability** (OSMC). Although MDBs are owned by several sovereigns and are not bound by specific banking or corporate regulations, their governance framework is relatively strong. In general, MDBs are overseen by both a board of governors and a board of directors representing their member country governments, and voting shares are based on each member country’s paid-in capital contributions. The **OSMC** factor examines whether the institution has the governance structure necessary to credibly implement an appropriate development strategy, thus enhancing the probability of support from its shareholders. A results-based approach is introduced to analyze how effectively and efficiently management is able to carry out its mandate to reach its self-imposed strategic goals. The assessment of this factor relies on a quantitative approach that takes into account the shareholder and corporate governance levels, augmented by an assessment of the shareholder composition as well as the evaluation of the MDB’s track record in implementing its strategic plan using the Common Performance Assessment System (COMPAS) indicators.¹⁸

The final key risk factor, **Exceptional Member Support**, is based on callable capital and captures the magnitude, ability and willingness of shareholders to provide additional support in periods of distress. Callable capital is defined as a form of exceptional support whereby capital can be called from shareholding countries, if required, to prevent default on the financial obligations of an MDB. As described in the industry practitioner MDB frameworks, callable capital is an extremely important element in the evaluation of an MDB’s creditworthiness, although no call on callable capital has occurred in the past. The debt-to-callable-capital ratio and the average shareholder-weighted sovereign credit rating are the main indicators used to determine the amount of rating uplift, if any, to give above the MDB’s intrinsic credit rating (referred to as the baseline credit profile, or BCP).

3.2. Overall Rating Framework

Exhibit 1 shows how the five key risk factors combine to create the overall rating. It also sets out the two-step approach used to determine an MDB rating. The first step is to assess the BCP, and the second is to estimate the exceptional member support to generate the final rating.

The **Capital Adequacy** and **Liquidity and Funding Strength** factors are combined to create an Intrinsic Financial Strength score: the financial resources available to serve as backstops. **Mission and Relevance** and **Organizational Structure and Management Capability** are combined to make up the Business Position, which documents how well run the MDB is as a going concern. The Intrinsic Financial Strength

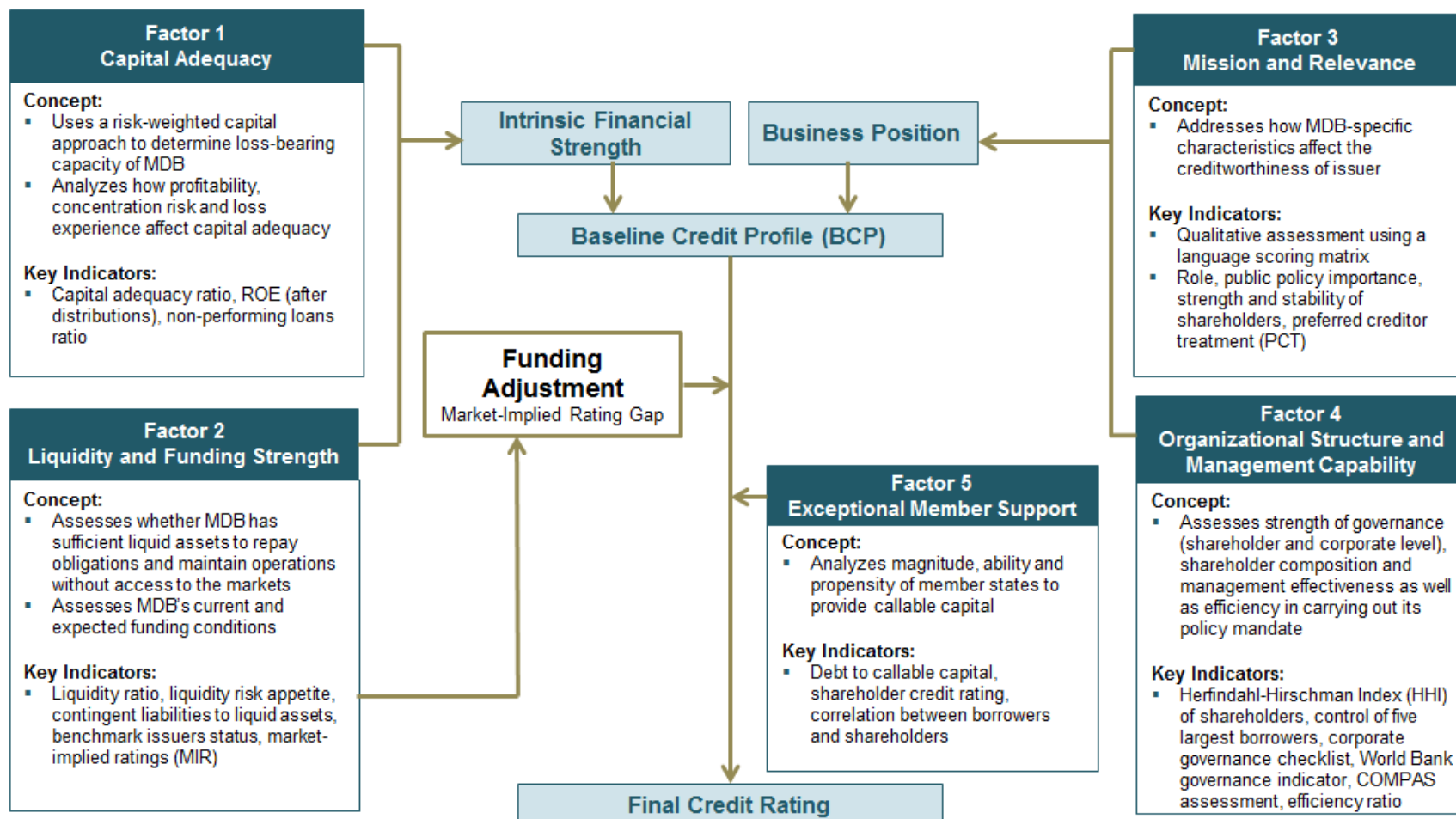
¹⁸ See *Managing for Development Results* (2015). See also Appendix 1 of this paper for more information about the COMPAS indicators.

and Business Position scores are put into a matrix to come up with an entity's BCP. **Exceptional Member Support** is then factored in to come up with the fundamental rating. If required, a downward "funding adjustment" of one or more notches can be applied to the fundamental rating before computing the final credit rating, based on the market-implied rating (MIR) gap, which is the difference between the bond-implied rating and the fundamental rating. The MIR gap aims to assess the actual funding conditions that an MDB is experiencing. The MIR gap is an important consideration in a fundamental evaluation of credit risk, given MDBs' significant dependence on wholesale markets.

3.3. Calibration Exercise

As described in the introduction and section 2, the fundamental credit analysis incorporated in our methodology is forward-looking and considers both qualitative and quantitative factors. The quantitative thresholds and scoring matrices presented in this paper were selected as the result of calibration work, including back-testing and comparison with industry benchmarks. For the calibration process, we used the publicly available historical financial data of about 15 MDBs over an entire credit and/or business cycle. Our data sample included MDBs that varied in size, ownership, area of intervention and CRA-assessed credit ratings. The sample incorporated international MDBs as well as regional ones and ranged from highly rated to relatively lower-rated issuers, ranging from AAA/Aaa to BBB/Baa. It is worth noting that almost all MDBs in the rating universe covered by this methodology are very highly rated, with no history of default or capital calls, making it difficult to calibrate the scorecards and rating scales, especially at the medium to bottom end of the rating spectrum. To test the robustness of our model, we also compared the results of our calibration with those typically applied to traditional banks (although MDBs tend to record better financial metrics than banks). In addition to financial ratios, qualitative assessment and judgment are required in the process of deriving the final credit rating. Given the confidentiality requirement described in section 2.1, the results of the back-testing exercise remain internal and are excluded from this paper.

Exhibit 1: Methodology Structure



4. Intrinsic Assessment or the Baseline Credit Profile of an MDB

As presented in section 3.2, Business Position and Intrinsic Financial Strength are the two main components of the BCP. The literature review shows that most credit risk practitioners put more emphasis on the financial risk factors and do not conduct a full assessment of the business position. It is important to note that most failures of financial institutions involve a failure of governance, and standard financial metrics often fail to provide a warning. In our view, a poorly governed MDB or one whose policy importance is in decline may provide higher-risk loans or otherwise erode its capital and earnings. Accordingly, the business position and the intrinsic financial strength have equal weight in our methodology.

4.1. Intrinsic Financial Strength

Table 1 highlights the two key risk factors (with their related sub-factors and indicators) that make up Intrinsic Financial Strength. To keep their borrowing costs low, MDBs tend to maintain a very high level of capitalization and hold a large volume of liquid assets invested in highly rated instruments, despite not being bound or supervised by a common international regulatory body.

Table 1: Intrinsic Financial Strength Factors and Related Indicators

Intrinsic Financial Strength - Factors and Sub-Factors	Indicators for Sub-Factors or Adjustment
Factor 1 - Capital Adequacy	
Sub-Factor	
1. Capital Adequacy Ratio	Capital Adequacy Ratio based on Basel standardized RWA, adjusted for the loan book concentration/diversification
Adjustment Factors	
2. Asset Quality or Loan Performance/Loss experience	Non-performing loans (NPL) ratio (3-year average)
3. Profitability and Retained Earnings	Return on equity (ROE) after distribution (3-year average)
Factor 2 - Liquidity and Funding Strength	
Sub-Factors	
1. Liquidity Ratio	Treasury portfolio / (Borrowing less than 1 Year + disbursements) (2-year average)
2. Strength of Liquidity Policy	Survivability period
Adjustment Factors	
3. Liquidity Support Factor	Access to central bank liquidity facilities
4. Benchmark Issuers' Status	Based on relative presence in capital markets, reputation and size of bond issues
5. Contingent Liabilities	Off-balance-sheet liabilities (as % of total treasury assets): guarantees, derivative margins
6. Funding Adjustment	Market-implied rating gap

4.1.1. Factor 1: Capital Adequacy

Currently, all practitioners consider the level of capitalization as key when estimating the intrinsic credit profile of an MDB. However, each practitioner uses specific indicators to assess the capitalization level, and re-estimating these ratios can be difficult using only publicly available data. For instance, S&P uses risk-adjusted capital as a main indicator, while Fitch Ratings uses three combined indicators related to

the leverage ratio. In its methodology, Moody's proposes calculating MDB leverage by estimating the debt-to-usable-equity ratio, and the capital position by analyzing the asset coverage ratio and borrower quality. DBRS assesses capital adequacy through the leverage ratio (equity to asset) and total risk weight exposures to capital.¹⁹ Indeed, all practitioners also look at the asset quality and concentration risk, as well as profitability, among other risk criteria.

In common with the MDB frameworks of various practitioners, including the aforementioned CRAs, this methodology estimates a Capital Adequacy Ratio to determine the initial score for the **Capital Adequacy** factor. The Capital Adequacy Ratio is defined as an MDB's capital relative to its risk-weighted assets (RWAs) and takes into account credit risk, market risk and operational risk. For many MDBs, the largest risk on their balance sheet is the credit risk associated with their development-related lending portfolio and treasury assets. Together, these two categories of assets can comprise up to 90 per cent of an MDB's balance sheet.²⁰

The Capital Adequacy Ratio in our methodology is appraised using the Basel standardized approach (with some adjustments) as the primary indicator for the **Capital Adequacy** factor. We use the Basel standardized approach to avoid reliance on MDBs' internal models or on non-public information that may be available to some practitioners. The Capital Adequacy Ratio is estimated based on the most recent data or current information. Total equity includes subscribed paid-in capital, reserves and retained earnings. An MDB is exposed to credit risk through its treasury activities and development-related lending operations, because treasury counterparties and borrowers can potentially default on their obligations, or the value of an MDB's investment can become impaired. An MDB's development-related lending exposure can include sovereign loans, private sector lending, equity participation, etc. Assumptions for assets-at-risk risk weights are based on the Basel standardized approach for credit risk:²¹

- A 10 to 20 per cent risk weight is suggested for treasury portfolios, as these assets are generally invested in highly rated instruments (based on the minimum credit ratings on treasury asset investment policies), unless analysis suggests otherwise.
- The weighted-average sovereign credit ratings (based on internal credit ratings, when available, or the second best from CRAs) are used as a reasonable proxy for rating sovereign exposure. The sovereign risk weights are largely based on the standardized approach and are as follows: 5 per cent risk weight for AAA to AA-, 20 per cent for the A range, 50 per cent for the BBB range, 100 per cent for BB+ to B-, 150 per cent for below B- and 150 per cent for unrated sovereigns.²²
- For private sector exposure (including loans or advances to financial institutions), a 100 to 300 per cent risk-weight range is recommended, unless analysis suggests otherwise.
- For equity exposures, the risk weights range from 500 to 1,250 per cent, based on the volatility of the associated country's or region's equity markets.

¹⁹ See Standard & Poor's Ratings Services (2011, 2012), Moody's Investors Service (2017), Fitch Ratings (2016) and DBRS (2016) for more detailed information.

²⁰ The combined share of MDBs' lending portfolio and treasury assets was more than 90 per cent of total assets for 75 per cent of rated MDBs.

²¹ See Basel Committee on Banking Supervision (2015, 7, 17).

²² See Bank for International Settlements (2013) .

The loan book geographical concentration and diversification is incorporated into the calculation of the Capital Adequacy Ratio by modifying the RWAs. Two indicators—overall loan book concentration and single-name (country) concentration—are assessed and used to determine the modification to the RWA. The overall loan book concentration uses the Herfindahl-Hirschman Index (HHI) of borrowers,²³ which is calculated by summing up the squares of loan exposure to each country. The related percentage change to the RWA, ranging from -25 to 25 per cent, is computed based on the corresponding formula in Box 1. The single-name concentration is calculated by summing up the product of the squares of loan exposure to the top three individual countries and the sovereign risk weight of the specific borrower country. The related percentage change to the RWA, ranging from 0 to 100 per cent, is computed based on the corresponding formula in Box 1.

Since the Capital Adequacy Ratio is computed based on only publicly disclosed information, with limited detailed data regarding an MDB's development-related lending and treasury portfolios, the Capital Adequacy Ratio's calculation is supplemented by a sensitivity analysis to measure how it changes with alternative assumptions for risk weights, in line with anticipated loan losses from variations in MDB strategy or higher risks in the operating environment.

The use of the leverage ratio (equity to assets) and the MDB's reported risk-weighted capital ratios as secondary indicators is also advised, to enrich the qualitative assessment as well as the comparative evaluation among peers. These secondary indicators are used to support the conclusions derived from the Capital Adequacy Ratio and sensitivity analysis and can also be used to apply judgment and reduce reliance on the Capital Adequacy Ratio. It is worth noting that assessing an entity's leverage via the equity-to-asset ratio has been a reliable indicator of capitalization problems for financial institutions and may be more robust than risk-based capital ratios.

Unlike Fitch Ratings and S&P,²⁴ our methodology does not include a specific adjustment related to an MDB's PCT status for sovereign exposure, as the weighted-average sovereign credit rating for public sector exposures of an MDB already reflects some of the relative default probability and recovery rate expectations from sovereigns. Moreover, an asset quality assessment using non-performing loans (NPLs) also reflects some of the historical PCT status because MDBs that enjoy strong PCT tend to record no arrears or loan losses. This view is supported by Moody's approach: "The benefit of using the NPL indicator is that this captures the preferred creditor treatment status enjoyed by the supranational sector. Rather than make a possibly inaccurate assumption regarding the benefits of preferred creditor treatment on asset quality, we choose to include the NPL indicator, which captures the reality of the benefit on asset quality..."²⁵ Nevertheless, adjustment based on analysts' judgment of an MDB's PCT status may be used to form the final **Capital Adequacy** score.

²³ HHI measures general market concentration depending on the number of firms and their size relative to the market.

²⁴ S&P applies a discretionary adjustment on risk-adjusted capital based on a qualitative analysis of the PCT strength.

²⁵ See Moody's Investors Service (2017, 12).

Potential adjustments to the initial score of the **Capital Adequacy** factor are recommended regarding Loan Performance and Profitability.

The steps to assess the **Capital Adequacy** factor are presented in Box 1. Overall, the adjustment factors can change the initial score by one category up or by a maximum of two categories down.

Box 1: Computing the Capital Adequacy Score

Step 1: Estimate the initial Capital Adequacy Ratio and map it to the scoring matrix (Table 2)

The initial score is computed based on the risk-weighted assets (RWAs) described above and the following formula:

Capital Adequacy Ratio = $\frac{\text{Total Equity}}{\sum RWA}$. The RWA is modified based on two concentration/diversification adjustments, as follows:

a) Overall loan book concentration adjustment:

Step 1: Calculate the non-risk-adjusted HHI

$$HHI = \sum \text{Country } MS^2$$

Step 2: Apply a -25% adjustment to RWA for MDBs with HHI <= 500 and a 25% adjustment to RWA for MDBs with HHI >= 1500

Step 3: Apply an adjustment to RWA for MDBs with HHI greater than 500 but less than 1500 based on the following formula:

$$[-25\% + (HHI - 500) * 50\% / (1500 - 500)]$$

b) Single-name concentration adjustment:

Step 1: Calculate the risk-adjusted Single-Name Concentration Indicator (SNCI) based on MDB's top 3 exposures

$$SNCI = \sum (\text{Country } MS^2 * \text{country risk weight})$$

Step 2: Apply a 100% adjustment to RWA for MDBs with SNCI >= 7% and no adjustment for MDBs with SNCI <= 2%

Step 3: Apply 0% to 100% adjustment to the RWA based on SNCI, using the formula:

$$[(SNCI - 2\%) * 100\% / (7\% - 2\%)]$$

Total equity includes paid-in capital, retained earnings and reserves, while RWAs include the lending book (development related) and treasury portfolio.

The computed Capital Adequacy Ratio is scored according to the following scoring matrix (Table 2).

Table 2: Capital Adequacy Ratio Mapping Matrix

Category	1	2	3	4	5	6	7
CAR	>30%	20–30%	12–20%	8–12%	5–8%	3–5%	Below 3%

Step 2: Conduct a sensitivity analysis and estimate the leverage ratio

As the analysis relies on RWAs, undertaking a sensitivity analysis is advisable to assess how the Capital Adequacy Ratio changes with differing RWAs in line with potential loan losses as a result of changes to the MDB strategy and/or higher risks in the operating environment. Other indicators, such as the leverage ratio (equity-to-assets ratio), as well as an MDB's self-reported Capital Adequacy Ratio, are used to augment the initial score with judgment for borderline cases.

Step 3: Apply adjustments based on asset quality and profitability

Profitability is estimated by ROE, which is measured *after* dividends and other transfers and is calculated as $ROE = \frac{\text{Net Income (after distribution)}}{\text{Equity}}$. Several global and regional MDBs make annual transfers to the concessional arms of their groups, while others pay dividends to their shareholders. ROE (after distribution) explicitly measures how many capital resources are retained within an MDB. Despite the non-profit-maximizing nature of MDBs, above-average profitability helps an MDB to internally generate capital buffers. Therefore, our methodology contains a one-category positive adjustment when the three-year average ROE (after distribution) is greater than 5 per cent or a one-category negative adjustment when the ROE (after distribution) over the last three years is negative.

Asset quality is estimated through the NPL ratio $NPL = \frac{\text{Nonperforming loans}}{\text{Total loan portfolio}}$, which examines loan loss history and loan performance,²⁶ since sustained periods of weak loan performance may negatively affect Capital Adequacy. Our methodology indicates a one-category negative adjustment when the three-year average NPL is greater than 3 per cent.

4.1.2. Factor 2: Liquidity and Funding Strength

Liquidity and Funding Strength are important parts of an MDB's creditworthiness, as they capture whether the MDB has sufficient liquid assets to cover upcoming cash flow requirements and analyze its current and expected funding conditions.

Given their dependence on wholesale funding, MDBs need large pools of liquidity to meet obligations and maintain lending volumes in periods of liquidity stress. In general, MDBs tend to have conservative liquidity risk management frameworks in comparison with commercial or traditional banks.

The initial score of factor 2 (**Liquidity and Funding Strength**) is based on Liquidity sub-factors, while Funding uses an adjustment-based approach.

A matrix approach is proposed to evaluate the initial score of the Strength of an MDB's Liquidity Policy and its Liquidity Ratio. To estimate the Liquidity Ratio, the most recent year's self-reported treasury assets are used as the numerator. The denominator is the sum of debt maturing within one year and the most recent full-year disbursement amounts (a proxy for the following year, because MDBs typically do not disclose expected upcoming disbursements). A two-year average of the Liquidity Ratio is used to smooth out years where there might be significant maturities among an MDB's liabilities or particular years where disbursements are high. Assessing the MDB's liquidity policy sheds light on its liquidity risk appetite by determining a "survivability period"—i.e., how long the MDB can maintain operations if it strictly follows its own liquidity policy without access to financial markets. There are two liquidity-specific adjustments to the initial score: (i) access to a central bank liquidity facility related to the Liquidity Support factor, and (ii) Contingent Liabilities, affecting the treasury portfolio.

Funding uses an adjustment-based approach, depending on whether an MDB is deemed to have a Benchmark Issuer Status as defined by the Credit Rating Assessment Group and how its fundamental

²⁶ Differences exist in how MDBs define their NPLs.

rating compares with its MIRs.²⁷ The first funding-adjustment factor, Benchmark Issuer Status, is determined by the relative size of the MDB, the frequency and average size of its public bond issues, the reputation of the MDB in the capital markets, the level of geographical diversification of its funding sources, and the type of investors. As presented in section 5.2, the MIR gap constitutes an additional indicator that is used as the second funding-adjustment factor after the determination of a fundamental rating.

The steps to assess liquidity and funding risk factors are presented in Box 2.

Box 2: Computing the Liquidity and Funding Strength Score

Step 1: Determine the initial score of liquidity strength

The Liquidity Ratio is estimated as follows: $\frac{\text{Treasury Portfolio}}{\text{Borrowings in the next year} + \text{Disbursement}}$. To estimate the survivability period, the liquidity risk appetite is assessed as defined in the MDB's liquidity policy. For example, the European Investment Bank (EIB) states in its 2014 liquidity policy, "...the total liquidity ratio (defined as a target percentage of annual projected net cash flows) must at all times exceed the 25 per cent of the average forecasted net cash flow for the following year."²⁸ This implies that EIB can maintain operations for a quarter of a year without access to markets provided that it strictly follows its own liquidity policy. This derived survivability period is different from the actual survivability period, which in practice tends to be much higher than the policy requirement.

Table 3: Liquidity Strength Mapping Matrix

		Liquidity Ratio (2-Year Average)							
		>250%	200–249%	150–199%	100–149%	75–99%	50–74%	25–49%	0–24%
Liquidity Risk Appetite "survivability period" (years)	Above 1.25	1	1	1	2	2	2	3	3
	1.00–1.24	1	1	1	2	2	3	3	3
	0.75–0.99	1	1	2	2	2	3	3	4
	0.50–0.74	1	2	2	3	3	3	4	4
	0.25–0.49	2	2	2	3	3	4	4	5
	0.10–0.24	2	2	3	3	4	4	5	6
	Below 0.10	2	3	3	3	4	5	6	6

Step 2: Apply three discretionary adjustments when required

Liquidity Support Factor: The methodology applies a discretionary one-category positive adjustment when an MDB has access to central bank liquidity facilities. Although very few MDBs benefit from this, access to central bank liquidity is seen as a positive credit factor.

Contingent Liabilities: As part of their business, the majority of global and regional MDBs provide guarantees to their customers for trade finance and other business lines. These off-balance-sheet commitments can represent a potentially significant drain of funds during a period of stress, hence increasing their liquidity risk. Accordingly, this methodology includes a provision for a discretionary one-rating-notch negative adjustment where there is a significant level of off-balance-sheet contingent liabilities (i.e., contingent liabilities \geq 15 per cent of treasury portfolio). An MDB's posting of margin collateral on its portfolio of cross-currency swaps is also included in the assessment of contingent liabilities.

²⁷ See Moody's Investors Service (2017, 15). The market's perception through bond-implied rating and the weighted average cost of loan debt are used to assess this funding criterion.

²⁸ For details, see European Investment Bank (2016, 64).

Benchmark/Large Issuers: Because of their business model, most MDBs are highly rated and have regular access to the financial markets, even during periods of financial stress. However, a relative ranking of MDBs based on a combination of criteria, such as reputation of the issuer, frequency and size of public bond issues and funding source diversification, shows that certain MDBs are considered “benchmark issuers.” Each institutional investor (front office) should confer internally to evaluate which MDB qualifies as a benchmark issuer, based on the considerations defined above. The methodology indicates a discretionary one-category positive adjustment if an MDB is considered a benchmark issuer.

Regarding other types of risk that can affect an MDB’s financial strength, such as currency, interest rate and counterparty risks, the quantitative assessment proposed in this framework can be complemented with a qualitative analysis of an MDB’s financial risk-management policies. For instance, meaningful market-related risks not fully captured by the methodology could justify layering judgment on the **Liquidity and Funding Strength** score when scoring metrics are close to a calibrated threshold between categories.

4.1.3. Computing the Intrinsic Financial Strength Score

The scores for the first two factors (**Capital Adequacy** and **Liquidity and Funding Strength**) are combined, as shown in Table 4, to derive the overall Intrinsic Financial Strength score.

Table 4: Intrinsic Financial Strength Scoring Matrix

Capital Adequacy	7	6	7	7	7	7	7
	6	5	6	7	7	7	7
	5	4	5	6	7	7	7
	4	3	4	5	6	7	7
	3	2	3	4	5	6	7
	2	1	2	3	4	5	6
	1	1	1	2	3	5	6
		1	2	3	4	5	6
		Liquidity and Funding Strength					

4.2. Business Position

Table 5 highlights the risk factors **Mission and Relevance** and **Organizational Structure and Management Capability**, combined with their related sub-factors and indicators, to form the Business Position. The methodology contains several quantitative indicators that add precision to scoring descriptors used by practitioners. These quantitative indicators enhance consistency in the methodology by reducing subjective assessments.

Table 5: Business Position Factors and Related Indicators

Business Position - Factors and Sub-Factors	Indicators for Sub-Factors or Adjustment
Factor 3 - Mission and Relevance	
Sub-Factors	
1. Institutional Relevance	Qualitative analysis + five-year average loan growth
2. Track Record	Qualitative analysis + five-year average loan growth
3. Shareholder Cohesiveness and Permanence	Qualitative assessment
4. Preferred Creditor Treatment (PCT)	Qualitative assessment + sovereign exposure (as % of total lending) + loan arrears and/or loss experience
Factor 4 - Organizational Structure and Management Capability	
Sub-Factors	
1. Shareholder Concentration	HHI of shareholders
2. Control of Major Borrowers	Control of five largest borrowers
3. Country Governance	Shareholder-weighted average World Bank Governance Indicators
4. Corporate Governance Best Practices	Checklist for best corporate governance practices
Adjustment Factors	
5. Private Sector Ownership	Private sector ownership (as % of total capital)
6. Management Effectiveness and Efficiency	Overall performance (COMPAS) or two-year average efficiency ratio

4.2.1. Factor 3: Mission and Relevance

The literature review of existing methodologies²⁹ highlights that there is a correlation between an MDB’s policy relevance and its shareholder support. An MDB’s mission and policy relevance is very important to its financial strength. The relevance of an MDB’s business model throughout the credit cycle is critical to shareholders’ willingness to provide timely support, if needed.

Although most MDBs’ operations are countercyclical in nature, development-related lending that increases steadily over the medium term can indicate the relevance of an MDB’s mandate. A large decrease in lending could be viewed as lower demand from customers; increased competition from other public or private entities, including commercial banks; or changed business strategy. In addition, the importance of an MDB’s public policy mandate can be measured by the involvement of its members. Shareholders are usually keen to provide continuous support to an entity whose mission remains pertinent.³⁰

Our framework evaluates the **Mission and Relevance** factor of an MDB using four equally weighted sub-factors: Institutional Relevance, Track Record, Shareholder Cohesiveness and Permanence, and Preferred Creditor Treatment. The criteria for how to rate each sub-factor from categories 1 to 5 are similar to those of S&P’s policy importance factor.³¹ For the sub-factor Institutional Relevance, the five-year development-related lending portfolio growth indicator is used to provide objectivity in the assessment. For the sub-factor related to Preferred Creditor Treatment, the methodology incorporates the share of exposure to sovereigns in addition to the qualitative assessment.

²⁹ Including DBRS, Fitch Ratings, Moody’s and S&P supranational or MDB methodology.

³⁰ According to Fitch Ratings, the importance of an MDB can be estimated by two factors: the volume of both subscribed and paid-in capital and shareholder readiness to respond to capital increase requests.

³¹ See Standard & Poor’s Rating Services (2012) for more detailed information.

The first step in the assessment is to evaluate the four sub-factors. Then, the average of the scores is estimated to get the overall **Mission and Relevance** factor. If the average of scores spans two score categories, judgment is used to determine the overall **Mission and Relevance** score.

4.2.2. Factor 4: Organizational Structure and Management Capability

The **OSMC** factor assigns higher scores to MDBs that (i) have diverse shareholders with high governance standards, (ii) follow best practices in corporate governance, and (iii) achieve their mandates effectively and efficiently. The **OSMC** factor averages the scores of two equally weighted matrices with scoring categories ranging from 1 to 4.

The first matrix is related to shareholder and borrower composition and looks at shareholder concentration, borrowing member composition and private shareholding. Concentration of Shareholders, estimated based on the HHI of member countries, measures whether large shareholders could dominate decision making within the institution. Because voting shares are based primarily on each member country's contributions, measuring the Borrower Composition sub-factor helps validate whether the five largest borrowing countries are also large shareholders, potentially creating a conflict of interest. There is an inherent conflict of interests when borrowing members have significant influence on, or exert control over, the MDB. Although Private Shareholding is not common among the large MDBs, our methodology includes this sub-factor, as per S&P's methodology, because it is applicable to small MDBs, such as the African Trade Insurance Agency, which have such shareholders. Private Shareholding/Ownership assesses the risk that a material level of private ownership may dilute an MDB's focus on lending directed to achieve public policy goals. In our framework, we make a one-category negative adjustment where private ownership is above 10 per cent.

The second matrix covers management, country and corporate governance levels. Governance standards capture risks that country-specific weak governance practices may spill over to an MDB and lead to the adoption of poor practices. We use the World Bank Governance Indicators (WBGI) of member countries as one of the inputs to evaluate an MDB's Country-Level Governance Standards. The WBGI ranks more than 200 countries on issues related to voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption.³² Regarding Corporate Governance Standards, our methodology introduces a checklist of 12 best practices, covering the board of directors, ethics and transparency, risk governance, and audit and independent evaluation (see Table 6). Information related to corporate governance criteria can be found in MDBs' official documents, including the foundation treaty board policies and annual reports. The Corporate Governance score is based on the percentage of indicators that the institution meets. For regional MDBs that operate in countries characterized with weak Country Governance Standards, a strong Corporate Governance score would typically offset weak country-specific governance concerns.

³² For more information on WBGI, see The World Bank Group (2017).

Table 6: Corporate Governance Checklist or Criteria³³

<p>Independence of the Board of Directors</p> <ol style="list-style-type: none"> 1. The role of the Chair is separate from that of the CEO (executive manager). 2. The Board is independent from senior management. 3. The Board meets regularly to perform its duties and in special or extraordinary sessions as required by events. 	<p>Ethics and Transparency</p> <ol style="list-style-type: none"> 1. The MDB has a code of ethics or code of conduct for both its staff and members of the Board. 2. The MDB has clearly defined governance responsibilities for managers and directors. 3. Governance requirements highlight complete transparency and accuracy in disclosures regarding operations, performance, risk and financial position.
<p>Risk Governance</p> <ol style="list-style-type: none"> 1. A Board-approved risk appetite framework exists and is consistent with the MDB's business model. This includes an assessment of the MDB liquidity risk framework in line with Basel principles on governance of liquidity risk.³⁴ 2. A dedicated Board committee exists to oversee risk management. 3. A chief risk officer (CRO) is the head of the risk management function. The CRO and his or her staff are not directly involved in management or performance of the MDB. 	<p>Audit and Independent Evaluation Mechanism</p> <ol style="list-style-type: none"> 1. An audit committee exists and comprises a majority of non-employee members who have sufficient expertise and experience in financial, accounting and legal matters. 2. The external audit function follows the international standards of audit issued by the International Federation of Accountants. 3. The MDB has an independent evaluation and accountability mechanism.

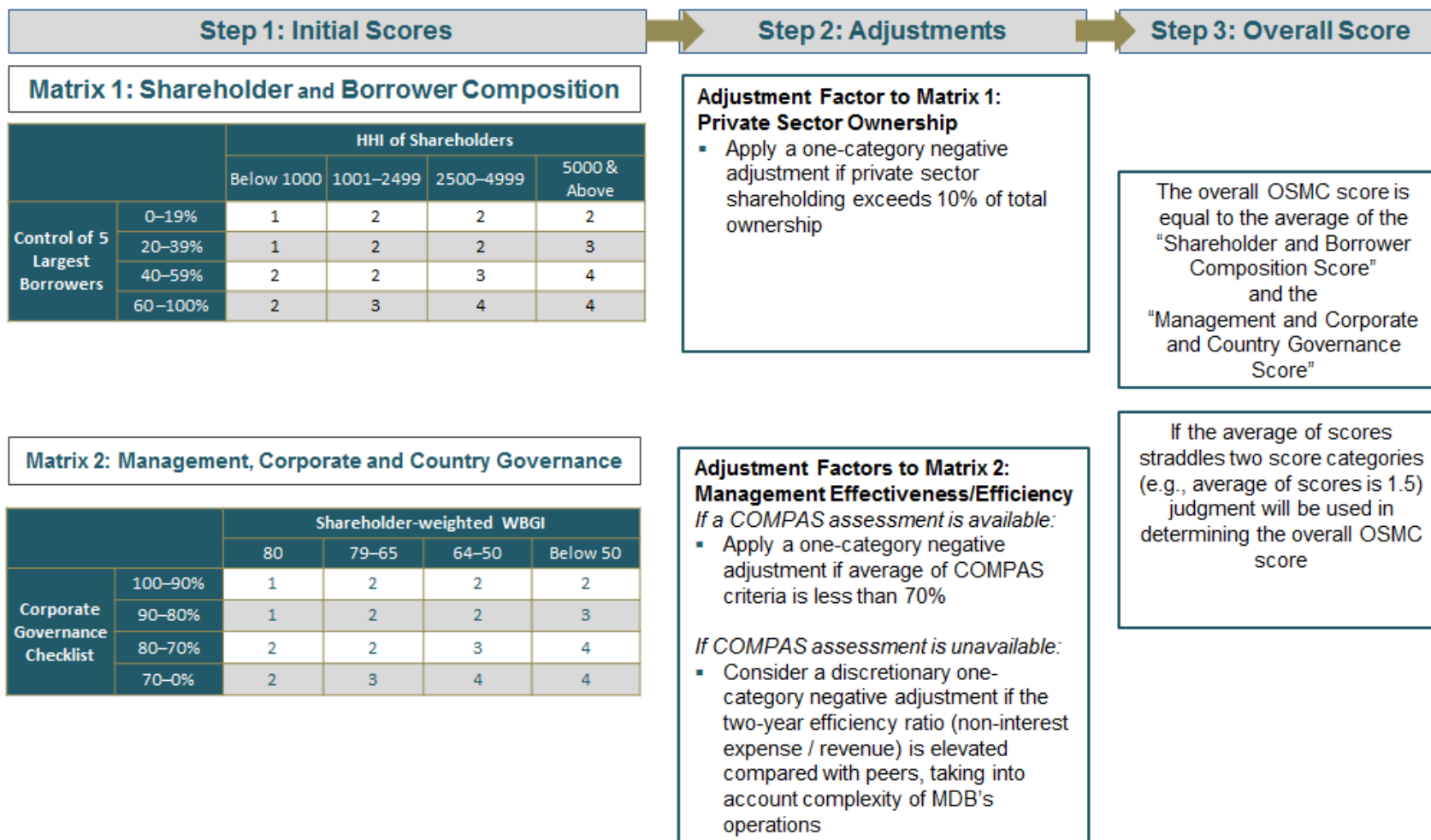
For assessing the Management Efficiency and Effectiveness sub-factor related to strategic planning, the COMPAS indicators are selected to complement the corporate governance checklist. The COMPAS is an annual report published by a working group of senior staff from seven MDBs, assessing how well they achieved their development objectives (see Appendix 1 for more details). The efficiency ratio, measured as the non-interest expense to net revenue, is suggested as an alternative indicator when the COMPAS is not available.

As presented in Exhibit 2, three specific steps are required to estimate the score for **OSMC**.

³³ For a discussion of the guidelines on corporate governance for financial institutions, see Office of the Superintendent of Financial Institutions (2013).

³⁴ For additional information on the three principles, see Basel Committee on Banking Supervision (2008, 9).

Exhibit 2: Determining the OSMC Score



4.2.3. Computing the Business Position Score

Table 7: Business Position Scoring Matrix

Mission and Relevance	5	5	6	7	7
	4	4	5	6	7
	3	3	4	5	6
	2	2	3	4	5
	1	1	2	3	4
		1	2	3	4
		OMSC			

The **Mission and Relevance** and **OMSC** factors are combined, as shown in Table 7, to derive the overall Business Position score.

4.3. The Baseline Credit Profile

The Intrinsic Financial Strength and the Business Position scores are combined, as shown in Table 8, to compute the BCP. Where the matrix returns a range of BCPs, we propose that the determination of a BCP be based on a qualitative analysis, including an examination of forward-looking factors—specifically, the outlook on the **Capital Adequacy** score, as well as peer comparisons and historical trend of the main credit risk factors (when available).

Table 8: BCP Mapping Matrix

Intrinsic Financial Strength	7	BBB+ / BBB	BBB / BBB-	BB+ / BB	BB / BB-	B+ / B / B-	CCC range	CC
	6	A- / BBB+	BBB+ / BBB	BBB / BBB-	BB+ / BB	BB / BB-	B+ / B / B-	CCC range
	5	A+ / A	A / A-	BBB+ / BBB	BBB / BBB-	BB+ / BB	BB- / B+	B / B-
	4	AA / AA-	A+ / A	A / A-	BBB+ / BBB	BBB / BBB-	BB+ / BB	B+ / B
	3	AA+ / AA	AA / AA-	A+ / A	A / A-	BBB+ / BBB	BBB / BBB-	BB+ / BB
	2	AAA / AA+	AA+ / AA	AA / AA-	A+ / A	A / A-	BBB+ / BBB	BB+ / BB
	1	AAA	AAA / AA+	AA+ / AA	AA / AA-	A+ / A	A- / BBB+	BBB / BBB-
		1	2	3	4	5	6	7
		Business Position						

5. Exceptional Member Support and Overall Rating

5.1. Uplift from Exceptional Member Support

The degree of additional support that MDBs can rely on from member countries (shareholders) under exceptional situations is a key factor in their creditworthiness. This factor measures the magnitude, ability and propensity an MDB's members, if and when called, to provide callable capital to the institution. The assessment of exceptional member support is tied to the MDB-specific characteristic known as callable capital, defined as the portion of subscribed capital not yet paid in. In other words, through governing bodies, MDBs can demand additional capital payments from shareholders to prevent a default on their obligations. Although the share of callable capital as a percentage of subscribed capital can represent more than 90 per cent for some MDBs, we propose to cap the maximum uplift from the BCP at three notches, as it is in S&P's and Moody's methodologies.

Since the inception of the first MDB, the International Bank for Reconstruction and Development, in 1944, callable capital has never been used by any such institution, to our knowledge. This creates uncertainty about whether shareholders would meet their obligations in a timely manner should an MDB make a capital call. Table 9 sets out the two equally weighted sub-factors proposed to determine the initial number of uplifts. Our methodology does not consider potential uplift that can come from other types of support, such as direct shareholder guarantees or close links between MDBs and their shareholders, as such support is, in our view, already reflected in the mission and relevance factor.

Table 9: Exceptional Member Support Factors

Exceptional Member Support - Factors and Sub-Factors	Indicators for Sub-Factors or Adjustment
Factor 5 - Exceptional Member Support	
Sub-Factors	
1. Magnitude of Support	Debt as a percentage of callable capital
2. Ability to Support	Weighted-average shareholder rating
Adjustment Factors	
3. Overlap Between Members and Borrowers	Correlation coefficient of ownership between members and borrowers
4. Propensity / Priority of Support	Judgment based on qualitative analysis and the importance of the MDB's policy mandate

The first sub-factor, Magnitude of Support, measures the coverage of debt toward callable capital or how much callable capital is available compared with the obligations of the MDB. The literature review reveals that practitioners use a range of ways to include callable capital in the rating uplift estimation. For instance, Moody's estimates the contractual support based on a ratio of debt stock to discounted callable capital, committed only by investment-grade shareholders, while Fitch Ratings uses only callable capital from shareholders rated AA- and above. S&P includes in the calculation of the risk-adjusted capital a portion of callable capital of member countries rated equal to, or higher than, the intrinsic MDB rating.

Unlike many practitioners, in our framework we consider the overall commitment of all shareholders, including non-investment-grade member sovereigns. In our view, the second sub-factor, Ability to Support, discounts the support from lower-rated shareholders.

Ability to Support is measured by the weighted-average shareholder credit rating. Sovereigns with higher credit ratings are more likely to be in a position to support the MDB under stress.

The assessment is enhanced by two adjustment factors. The first is the Overlap Between Members and Borrowers, measured by the correlation between borrowing shares and ownership shares. In a scenario in which a borrowing member country that is also a shareholding country is in distress and project loans to this country from an MDB are being defaulted upon, this country may not be in a position to provide extra support to the MDB. The correlation coefficient is used to quantitatively assess the level of overlap and provides an objective indicator to measure this risk.

The second adjustment factor, Propensity to Support, is a one-category discretionary assessment that covers different aspects of the exceptional member support, ranging from the priority of support in relation to the importance of the MDB, to the credibility of the commitment from shareholders, to the execution of capital calls. It is vital to consider the level of priority of support: some MDBs are viewed as being more systemically important than others, and shareholders may divert resources to one but not another. Propensity to Support also captures the fact that some member states may not credibly offer additional support, despite pledging callable capital. Finally, the complexity of the MDB-specific bylaws regarding the timeliness of the execution of capital calls can be considered under this adjustment factor. Overall, as there is no history of capital calls, the Propensity to Support adjustment factor is a means of applying judgment in this area of the assessment.

Box 3 describes a matrix-based approach used to estimate the initial number of notch uplifts. Then, two possible adjustments are made based on the correlation between borrowers and members and on the propensity to support.

Box 3: Computing the Number of Upward Notches from Exceptional Member Support

Step 1: Determine the initial number of upward notches

Assess the debt-to-callable-capital ratio and the weighted-average shareholder credit rating to determine the number of upward notches to the baseline credit profile. Numbers in Table 10 represent the initial number of upward notches an MDB could receive.

Table 10: Scoring Matrix for Initial Number of Uplift Notches

		Debt-to-Callable-Capital Ratio				
		<200%	200–499%	500–999%	1000–1499%	1500% and above
Shareholder Weighted Credit Rating	AAA	4	4	3	2	1
	AA+	4	4	3	2	1
	AA	4	4	3	2	1
	AA-	4	4	3	2	1
	A+	3	3	2	1	1
	A	3	3	2	1	1
	A-	3	2	2	1	1
	BBB+	3	2	2	1	1
	BBB	3	2	2	1	1
	BBB-	2	2	1	1	1
	BB+	2	2	1	1	0
	BB	2	2	1	1	0
	BB-	2	2	1	0	0
	B+	1	1	1	0	0
	B	1	1	1	0	0
	B-	1	1	1	0	0
Below B-	0	0	0	0	0	

Step 2: Apply adjustment based on correlation and propensity or priority of support

Correlation Adjustment: A one-category negative adjustment is applied if the correlation coefficient between countries' shareholdings and borrowings is > 0.75.

Propensity to Support: A positive one-category adjustment is applied if a particular MDB is of vital importance and support is greater than the initial score indicates; a negative one-category adjustment is suggested if a particular MDB is of lesser importance compared with peers.

The number of upward notches from Exceptional Member Support, net of adjustments, is capped at a maximum of 3.

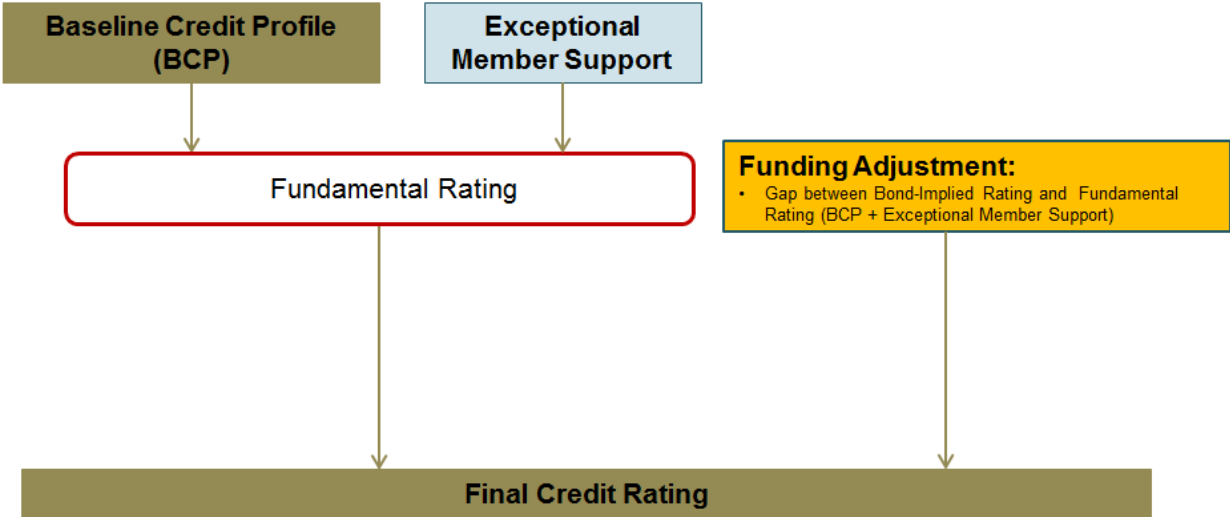
5.2. The Overall Rating

As presented in Exhibit 3, the rating uplift from **Exceptional Member Support** is added to the BCP to obtain the fundamental rating.

In addition, a funding adjustment to the fundamental rating is proposed. A one-notch negative funding adjustment related to MIR is applied if there is a large and sustained difference between an MDB's fundamental rating and the MIR. A large gap might suggest that the fundamental rating is not representative of the actual funding conditions that an MDB is experiencing, and may be a reason to apply a negative adjustment. The negative adjustment would better align the overall rating with a rating that is commensurate with the entity's funding conditions. For instance, a difference of three notches or

more over at least one year could be considered as signalling an increasing funding risk. A more recent and significant deterioration in the MIR compared with the fundamental rating can also justify a decrease by one notch. The authors propose that use of this adjustment be exceptional and rare, yet it may be warranted given MDBs' reliance on funding in capital markets.

Exhibit 3: Computing the Final Rating



6. Conclusion

This paper provides a detailed technical description of a methodology designed to assign internal credit ratings to MDBs using only publicly available data. This MDB methodology builds upon best practices from practitioners' methodologies. The methodology presented here relies on fundamental credit analysis that produces a forward-looking and through-the-cycle assessment of an MDB's capacity and willingness to pay its financial obligations, resulting in an opinion on the relative credit standing or likelihood of default.

Our methodology uses publicly available indicators that reflect the key credit risk factors of an MDB and enables us to apply expert judgment to determine an internal credit rating for any MDB. It incorporates four key innovations: (i) a simple way of estimating MDB capital adequacy ratios based on the Basel standardized approach, (ii) new metrics to evaluate the liquidity and funding profile of an MDB, (iii) a straightforward approach to evaluating the exceptional support from MDB shareholders using callable capital and the debt level, and (iv) a new criterion to evaluate corporate governance that provides a high level of objectivity in assessing some of the qualitative indicators traditionally used to assign ratings to MDBs.

Built upon a rigorous analysis of MDBs' credit risk factors and a calibration exercise that includes back-testing, the proposed methodology generates results that are comparable with historic credit ratings produced by various credit risk practitioners. The ratings generated using this methodology are able to assess the relative credit quality of different types of highly rated MDBs. Our methodology also

produces ratings that reflect changes in credit quality that can occur over time. These ratings can be used as part of existing credit risk management policies and can help reduce mechanistic reliance on CRA ratings.

Perhaps most important, using this methodology generates insights that can inform and support investment decisions and thus improve the ability of managers of foreign exchange reserves and other investors to manage credit risk and enhance the financial performance of their portfolios.

The authors' intention is that this paper will support efforts by managers of foreign exchange reserves and other investors to strengthen internal credit assessment practices. The methodology presented herein can be used as is by credit risk practitioners to assess the relative credit quality of MDBs, or it can be used to facilitate the development of an alternative methodology that caters to other institutions' specific needs.

We welcome comments and suggestions on the methodology. We intend to pursue further improvements to it, including revisions to the assessment of the **Capital Adequacy** score.

Appendix 1: Common Performance Assessment System (COMPAS) Indicators

The MDBs' initiative Managing for Development Results (MfDR) was formally adopted in 2005, along with the Paris Declaration. Following this adoption, global MDBs created the Working Group on Managing for Results. The objectives of this working group are to improve publicly available information on members' MfDR performance, learn from each other and help minimize duplications in multilateral assessments. To monitor MDB contributions on effectiveness, a framework was created for self-assessment of MDBs based on multiple "tier" indicators, going from country to project to institutional levels. This led to the Common Performance Assessment System (COMPAS) report, which provides standardized information (shown in the table below) across MDBs, including the main features of each MfDR Working Group member.

Common Performance Assessment System (COMPAS) Indicators	
Public Sector	
	Percentage of completed MDB country strategies independently evaluated/reviewed in the reporting year and rated satisfactory or better
	Percentage of completed MDB country strategies approved in the reporting that included an explicit strategy to promote private sector development
	Percentage of projects approved in the reporting year whose design quality was reviewed at arm's length and that were rated satisfactory or better
	Percentage of project completion reports evaluated during the reporting year whose quality of documentation was reviewed at arm's length and that were rated satisfactory or better
	Percentage of projects independently reviewed ex post in the reporting year and rated satisfactory or better with respect to achievement of development objectives
	Percentage of technical assistance and advisory services projects completed in the reporting year and rated satisfactory or better
	Percentage of ongoing projects with unsatisfactory implementation progress
Private Sector	
	Provide the latest score for compliance with good practice standards (GPSs) for the evaluation of private sector investment operations
	Percentage of reported share of success ratings in the latest published annual evaluation reports for development transition outcomes and for ratings on all GPS criteria (financial, economic, environmental and social performance, and private sector development performance)
	Percentage of investment projects for which clear development objectives are defined at approval, tracked during supervision and assessed at evaluation
	Percentage of private sector technical assistance and advisory services projects for which clear development objectives are defined at approval, tracked during supervision and assessed at evaluation
	Comprehensiveness of external results reporting

References

Bank for International Settlements. 2013. "International Banking and Financial Market Developments." *BIS Quarterly Review* (December): 10–12. Available at www.bis.org/publ/qtrpdf/r_qt1312.pdf.

Bank of Canada. 2013. "Box 2: Reducing Reliance on External Credit Ratings: The New Internal Credit-Assessment Process." *Financial System Review* (June): 32. Available at www.bankofcanada.ca/wp-content/uploads/2013/06/fsr-0613.pdf.

Basel Committee on Banking Supervision. 2008. *Principles for Sound Liquidity Risk Management and Supervision*. Basel, Switzerland: Bank for International Settlements. Available at www.bis.org/publ/bcbs144.pdf.

Basel Committee on Banking Supervision. 2015. "Standards: Revisions to the Standardised Approach for Credit Risk," Consultative Document (March): Bank for International Settlements. Available at www.bis.org/bcbs/publ/d307.pdf.

DBRS. 2016. "Methodology: Rating Supranational Institutions." (March). Available at www.dbrs.com/research/292453/rating-supranational-institutions.pdf.

Department of Finance Canada. 2016. *Report on the Management of Canada's Official International Reserves*. Available at www.fin.gc.ca/activty/oirrep/oir-rol-16-eng.pdf.

European Investment Bank. 2016. *2015 Financial Report*. Available at www.eib.org/attachments/general/reports/fr2015en.pdf.

Financial Stability Board. 2010. "Principles for Reducing Reliance on CRA Ratings." Available at www.fsb.org/wp-content/uploads/r_101027.pdf.

Financial Stability Board. 2014. *Thematic Review on FSB Principles for Reducing Reliance on CRA Ratings—Peer Review Report*. Available at www.fsb.org/wp-content/uploads/r_140512.pdf.

Fitch Ratings. 2016. "Supranationals Rating Criteria." Available at www.fitchratings.com/site/re/881783.

Managing for Development Results (WG-MfDR). 2015. "The Common Performance Assessment System of the Multilateral Development Banks. Reporting by Indicator, COMPAS Indicators 2013–2014." Available at www.mfdr.org/compas/2014/By_indicator2013-14.pdf.

Moody's Investors Service. 2017. "Rating Methodology: Multilateral Development Banks And Other Supranational Entities." (March). Available at www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_1059755.

Office of the Superintendent of Financial Institutions. 2013. "Corporate Governance." Available at www.osfi-bsif.gc.ca/eng/fi-if/rg-ro/gdn-ort/gl-ld/pages/cg_guideline.aspx.

S&P Global Ratings. 2016. *Supranationals: Special Edition*. Available at www.spratings.com/documents/20184/86957/Supranationals+Special+Edition+2016/f4676dd6-0822-4e02-a5ce-e8a6dc2e36f4

Standard & Poor's Ratings Services. 2011. "Banks: Rating Methodology and Assumptions." (November): 18–42. Available at www.standardandpoors.com/en_US/web/guest/article/-/view/sourceId/6921376

Standard & Poor's Ratings Services. 2012. "Multilateral Lending Institutions and Other Supranational Institutions Ratings Methodology." (November). Available at www.standardandpoors.com/en_US/web/guest/article/-/view/sourceId/7648299

The World Bank Group. 2017. "Worldwide Governance Indicators." Available at <http://info.worldbank.org/governance/wgi/index.aspx#doc/>.