POLICY-DRIVEN FINANCIAL INSTITUTIONS RATING METHODOLOGY

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BEYOND RATINGS

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OVERVIEW AND SCOPE

This document details the methodology used by Beyond Ratings to assess the creditworthiness of supranational financial entities –subsequently referred to as Supranationals– as well as public sector financial enterprises (PSFE). Collectively, we refer to this asset class as Policy-driven Financial Institutions (PFIs). The approach includes the innovation of integrating Environmental, Social, and Governance (ESG) assessments from the ground up into the credit rating assigned to PFIs. ESG influences directly or indirectly most of the major rating factors. For example, the capital assessment is based on sovereign ratings issued by Beyond Ratings, in which ESG drives about half of the rating.

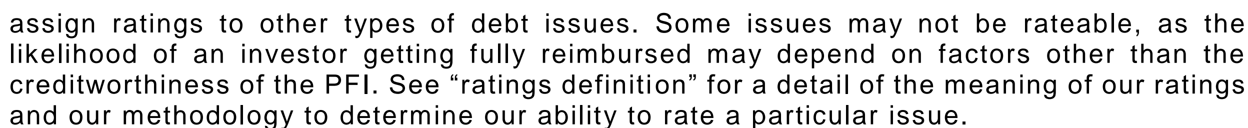
Supranationals are entities established by two or more sovereigns to fulfil a multilateral public policy role. Their shareholders would generally be sovereigns, but sometimes include other PFIs or even private entities. Supranationals includes multilateral, such as the International Bank for Reconstruction and Development (IBRD), supranational investment banks, such as the European Investment Bank (EIB), supranational monetary funds, such as the International Monetary Fund (IMF), or supranational investment funds. PSFEs pursue similar public policy roles but are established or controlled by a single sovereign. Examples include national development banks, such as China Development Bank (CDB), and export credit agencies, such as the Export-Import Bank of Korea (KEXIM).

Beyond Ratings approach to rate other supranational institutions and PSFEs, such as supranational insurers, for example the Multilateral Insurance Guarantee Agency (MIGA), or national strategic oil reserves, would borrow the relevant sections from this methodology, and complement them with specific factors.

Even though they are structured as financial institutions, PFIs differ significantly from private and public sector commercial financial institutions. Some of the key characteristics, which may help determine if an institution is a PFI, are:

1. PFIs operate under different incentives from commercial banks. Whereas the profit-maximising imperative of a commercial financial institution will usually push them to compete with other institutions for market share and optimised profit margins, the PFIs often share their public policy role with other institutions, resulting in a cooperative behaviour that increases the probability for all participants to achieve their goal.
2. PFIs operations are simpler than commercial banks, but may undertake higher risks. On the one hand, they are less likely to pursue trading strategies or to develop new products that could increase variability of earnings. On the other hand, Supranationals, and to an even greater extent PSFEs, engage in quasi-fiscal activity that may entail risks no commercial bank would assume.
3. PFIs are typically not regulated. They are also often not subject to commercial law the same way as private corporations are. Supranationals are generally established by international treaties, and governed by non-commercial by-laws. They therefore benefit from immunities. They are not subject to commercial bankruptcy laws, and are often exempt from corporate income tax.
4. PFIs are typically not deposit taking institutions. The main source of funding for retail banks is deposits. PFIs also typically do not have access to central bank refinancing. The combination of these two factors make PFIs more sensitive to liquidity stresses, hence their usually large treasury assets as a share of total assets.
5. PFIs may be treated differently by their sovereign (and to a lesser extent private sector) debtors facing situations of stress. This can lower the incidence of default compared to commercial institutions in the case of preferred creditor treatment (see section Role), or increase it when sovereigns default on bilateral loans from PSFEs while remaining current on their commercial debt.

The ratings determined using this methodology apply to the issuer, as well as the “plain vanilla” senior unsecured debt issues. Positive or negative adjustments may be applied to



assign ratings to other types of debt issues. Some issues may not be rateable, as the likelihood of an investor getting fully reimbursed may depend on factors other than the creditworthiness of the PFI. See "ratings definition" for a detail of the meaning of our ratings and our methodology to determine our ability to rate a particular issue.

MAJOR RATING FACTORS

The rating on a PFI is assessed in two successive steps (see Illustration 1): the institution is first assessed on a self-standing basis, that is, without exceptional intervention from its shareholders, or the government. Then the potential for external intervention is factored in to obtain the final rating. In the context of PFI, external support is typically exceptional shareholder government intervention, either directly or indirectly through other controlled entities, such as another PFI.

PFI self-standing assessments are the weighted average of 4 factors: Role, Governance, Capital, and Liquidity. Each factor is graded on an ordinal scale following the classification of our rating scale, from AAA to CCC, without the "+" and "–" modifiers. The PFI self-standing assessment is then computed as the weighted average of the 4 factors. The weights are long-term averaged cumulative 5-years historical default rates per rating category (see appendix 1). The resulting PFI self-standing assessment is disclosed using the full rating scale, using "+" and "–" modifiers. The section describes each of the 4 factors.

Beyond Ratings may adjust the resulting self-standing assessment by one notch, positively or negatively, to reflect either a positive or negative trend, or to reflect factors which would not have already been captured elsewhere in the methodology. The adjusted self-standing assessment then forms the basis for the final issuer rating, by incorporating the potential exceptional shareholder intervention.

Potential shareholder support can take different forms, the most common being guarantees and subscribed callable capital. Beyond these formal mechanisms, potential large injections of capital or potential liquidity backstop mechanisms could also sustain the rating of a PFI. Though most exceptional interventions would be to support the institution, some could also have a negative impact. For example, shareholders could decide extraordinarily large distributions from earnings, or a government could direct a PSFE to lend to state-owned industrial firms in secular decline. Thus, the potential for exceptional external intervention can also be a negative adjustment. There is no absolute limit to the range of the exceptional external intervention adjustment in terms of number of notches. Section details exceptional external intervention.

Long term sustainability issues, Environmental, Social and Governance (ESG), may prove to have a financial materiality on PFIs creditworthiness. We integrate the impact assessment of these issues in the two steps above-mentioned:

- Self-standing assessment:
    - We characterize to what extend ESG goals are determinant in the uniqueness of the PFI in its role (additionality)
    - We assess the ESG risks associated to the PFI assets (especially loans and guarantees), and how the value of these assets could be impacted.
    - We assess specifically the PFI's risk management procedures dedicated to identifying, monitoring and mitigating ESG risks with regards for example to project financing risks, counterparty risks, sectoral policy guidelines and ESG related balance sheet stress tests.
- Potential shareholder support:
    - As the shareholder support is to be provided by sovereign(s), we refer to our sovereign ratings, which embed our assessment of ESG risks.

Figure 1: Methodology Overview

Role

Governance

Capital

Liquidity

Self-Sustainable Assessment

Exceptional External Intervention

Issuer Rating

SELF-STANDING ASSESSMENT

A. ROLE

The public policy role that a PFI plays is assessed according to two equally weighted dimensions: additionality and treatment. PFIs exist to fulfil one or more public policy roles. The importance of these roles for their shareholders, on a forward-looking basis, is key to the ongoing support that the shareholders will provide to the PFI. Moreover, evidence that the institution is efficiently fulfilling its mission over time will bolster its role.

Such role may entail the production of public goods, the advancement of widely-agreed international goals, the contribution to improvement of the ESG, the promotion of regional integration, or the economic development of their member countries. Many PFIs pursue this role primarily through lending, and providing technical advice to less economically developed governments or to targeted industries. Depending on their mandate, PFIs also increasingly finance the private sector, through debt and equity participations.

Each of the two dimensions is graded on an ordinal scale of 1 to 4, 1 being the strongest, and 4 the weakest. In order to determine the role, the scores are added up, and the resulting total is mapped onto the ordinal rating scale without modifiers (see Table 1).

Table 1: Role assessment

Sum of additionality and treatment	Role assessment
2	AAA
3	AA
4	A
5	BBB
6	BB
7	B
8	CCC

1. Additionality

There are two pillars to additionality in our methodology. The first concerns financial market failure. The PFI provides a service (such as countercyclical lending) where the markets are not willing or able to provide it adequately. Beyond Ratings evaluates the adequacy of market solutions both in terms of scale versus developmental needs, and of financial terms versus risks.

The second pillar of additionality is the contribution to developmental or other non-financial objectives. This dimension is evaluated both with regards to the importance of the objectives, as well as to the efficacy of the actions pursued by the PFI. The setting of ESG objectives and the performance of the institution in this regard largely informs this sub-factor.

The uniqueness of an institution’s activities makes it more likely to receive ongoing as well as exceptional support from its shareholders. The size of a PFI’s activity compared to the total market may be a component of that uniqueness, but some PFIs may be unique because they fulfil a niche activity that no other institution can readily undertake.

Another way to approach additionality is to think about the replication of the activities of the PFI. Could the activities of the PFI be readily undertaken by the private sector or by another

public institution? If an institution were to cease to exist, would its shareholders miss it? An institution may be missed because of its activities, but also because of the power that its shareholders exert through it. Any withdrawal of shareholders, whether in the past, or expected in the future, is carefully examined to assess if it signals a decrease of the relevance of the PFI to its shareholders

Table 2: Typical Characteristics

Additionality score	Typical Characteristics
1	The PFI addresses an important market failure, and the PFI contributes significantly and efficiently to all three aspects of ESG objectives. No other institution can fully replicate the activities of the PFI, and we expect this to continue. The mandate is key to shareholders
2	The PFI addresses a market failure and contributes to ESG goals, but of lesser importance, or less efficiently than PFIs in group 1. Activities could be undertaken by other institutions, but they cooperate with each other, and the PFI remains important to its shareholders.
3	The additionality of the PFI is diminishing, or it is missing, or underperforming against, one of the two pillars of additionality. ESG goals are not fully elaborated or ineffectively pursued. The activities of the PFI are diminishing, for instance as a result of pro-cyclical behaviour, or changing priorities of its shareholders.
4	The activity of the PFI is to a large extent fulfilled by private markets and the PFI does not have any ESG objectives or performs poorly against them. The mandate and activities of the PFI could be readily, or are expected to be, undertaken by another institution, or become irrelevant to shareholders.

2. Treatment

Beyond Ratings captures in its Treatment assessment the behaviour of shareholders with regard to the institution. The PFIs' capital is usually significantly smaller than its shareholders budgetary resources. Thus, shareholders usually have the means to support their PFI. Beyond Ratings anchors its opinion about the anticipated treatment of the shareholders in historical treatment, as well as potential shifts in the policies of the shareholders. A shorter track record is assessed more cautiously.

The development of the PFI's activities periodically requires general capital increases. The magnitude of such increases compared to the mandate, and the execution of these increases, inform our assessment of the treatment of the PFI by its shareholders. Arrears in the payment of previously-agreed capital subscriptions may be an indicator of worsening treatment. A major shareholder leaving a Supranational, or the partial privatisation of a PSFE could also indicate diminishing support from shareholders to the PFIs.

Shareholders can also bolster the ability of a PFI to generate capital internally by exempting it from corporate taxes. Also, they may declare no dividends in order that all earnings be retained as reserves or converted into paid-in capital. Whereas many PFIs do not pay dividends, they instead distribute large grants and other transfers out of their earnings. These transfers may contribute to the mandate of the PFI, but also slow down, or may even erode, the accumulation of capital, limiting its capacity to fulfil its role.

One practice that has differentiated Supranationals and PSFEs from commercial creditors is the treatment that they have received from their public sector debtors that are in default.

On some of their financial obligations, we have observed historically[1] a hierarchy of treatments from defaulting sovereigns to their lenders. The average sovereign default rates to some bilateral creditors and PSFEs have been higher than to commercial banks, which in turn have been higher than to commercial bond holders, which in turn have been higher than to most Supranationals.

Preferred Creditor Treatment (PCT) is the practice that lead to some Supranationals being exempt from the comparability of treatment, that usually applies to other public sector creditors (mainly PSFEs) participating to a sovereign debt restructuring under the aegis of the Paris Club. Though some international treaties may refer to this exemption, the practice is more aptly referred to as treatment, rather than status. The willingness of the sovereign in default to afford such treatment to its creditors is to be assessed. Another aspect of PCT is the solidarity among Supranationals. For example, the custom of the International Monetary Fund (IMF) to provide balance-of-payment support to a member country in distress only under the condition that it brings eligible Supranationals current.

PCT not only lowers the default rate that Supranationals have experienced compared to commercial and PSFE creditors, but also improves the recovery rate. Many supranational institutions have never directly written off a loan, though they have used other mechanisms, such as the Heavily Indebted Poor Countries (HIPC) Initiative and Multilateral Debt Relief Initiative (MDRI). These mechanisms transferred sovereign loans at risk of becoming distressed to trusts. The trusts in turn forgave the loans with fresh shareholder funds and these grants absorbed the losses.

With regards to private sector exposures, a sovereign under stress may also provide specific treatment towards a Supranational, by exempting the corporates which can repay the PFI from restrictions on access to foreign exchange for such payments. The government may also undertake other actions which will ultimately reduce the risk on private sector exposures to support the PFI. That said, most of the relevant commercial risks remain with the Supranational that lends to a private entity.

The table below shows the typical characteristics of each score. In the case of PSFEs, PCT is not relevant to the treatment assessment, as there is only one shareholder government. We only assess the characteristics regarding PCT for Supranationals:

Table 3: Treatment Scores

Treatment score	Typical Characteristics
1	Shareholder commitment to general PFI capital increases is unwavering, and payment is timely. The PFI is exempt from taxes. Most earnings are retained. Defaulting sovereigns consistently afforded PCT to the Supranational, and there are no indications that this will stop.
2	Capital increases are less forthcoming and instalments may experience delays. The PFI is exempt from taxes and distributions are not larger than profits. For a supranational, PCT has been less strong, or less consistent than for Supranational in group 1.
3	Important capital increases or subscriptions may have been long delayed or cancelled. The PFI may experience reduction in capital as a result of distributions.

[1] See for example "Database of Sovereign Defaults, 2017, by David Beers and Jamshid Mavalwalla".

	The track record of PCT to the supranational may be unproven or its future uncertain
4	The PFI distributes to its shareholders most of its earnings. Capital increases are not voted, or even discussed. The PFI is not exempt from taxes. If a supranational, it has experienced, or is expected to experience, a worse treatment than commercial creditors.

B. GOVERNANCE

There are two pillars to our assessment of a PFI's governance. The first one relates to the governance of the institution itself, and the second to the governance of its shareholders. Similarly to the Role, Beyond Ratings grades each of the two dimensions of Governance on an ordinal scale of 1 to 4, 1 being the strongest, and 4 the weakest. In order to determine the Governance assessment, the scores are added up, and the resulting total is mapped onto the ordinal rating scale without modifiers as follows:

Table 4: Governance Assessment

Sum of governance sub-scores	Governance assessment
2	AAA
3	AA
4	A
5	BBB
6	BB
7	B
8	CCC

1. Governance of the PFI

The governance of PFI is assessed from its institutional arrangements, as well as their execution, including the quality of its management. Supranationals are generally established by international treaties or equivalent. Domestic PFIs generally benefit from special incorporating law and immunities. Beyond Ratings assesses the nature of the articles of incorporation and by-laws, for example the nature of the treaty establishing a supranational. The political ranking of the government officials representing the shareholders (e.g. finance ministers) may also inform our assessment.

The quality of the management is also relevant to the governance of the institution. Besides the general management of the company, it is understood that the PFI can strengthen the robustness both for management and governance through the implementation of a strong ESG policy with monitored achievements. Following the recommendations of management's best practices as observed in the corporate world, it is recommended that the PFI deploys a comprehensive ESG framework rooted into its very core mission of the organization, as if the PFI had also to be accountable for it. This framework applied to each ESG dimension can be threefold as such:

- Leadership
  - Long-term Vision including ESG considerations and interactions with stakeholders
  - Strategy
  - Targets and Objectives
  - Embodiment and organizational structuration
  - Monitoring and Review Process for Action
  - Reporting (external and internal)

- Implementation
    - Setting ESG Codes and Commitments
    - Setting relevant ESG Policies
    - Aligning operational activities with ESG Policies

- Results and Achievements
    - Internal Results (Efficiency, Effectiveness, Comprehensiveness, Improvement)
    - External Results (Efficiency, Effectiveness, Comprehensiveness, Improvement)

Applied to each dimension (environment, social, governance) and potentially benchmarked against other PFI's performances as well as international standards in that field, the framework measures the robustness of ESG at PFI for various horizons of time and then the acceptability, licence to operate and above all contribution to the community beyond the market.

As with other public institutions, the transparency of PFIs is essential to their governance being maintained in check. The PFI itself often mandate independent evaluations of their performance, but the ability and freedom of the wider public to assess a PFI.

As PFIs are most of the time active in a wide number of geography and sectors bridging financial market gaps, the assessment of ESG risks linked to their activities appears a key criteria of their governance. In assessing a PFI's risk management procedures dedicated to identifying, monitoring and mitigating ESG risks we focus on the following criteria:

- Integration of ESG risks in project financing due diligence;
- Integration of ESG risks in counterparty risks assessment;
- Existence of ESG related sectoral policy guidelines;
- Processes to integrate and manage ESG related alerts by external stakeholders;
- ESG risks management dashboard within the Finance Department
- ESG related balance sheet stress tests;
- ESG impact assessment to support board decisions;
- ESG risk training program and overall awareness assessment among staff.

The table below summarizes the typical characteristics we use to assess the governance of the institution itself:

Table 5: Typical Governance Characteristics

PFI Governance score	Typical Characteristics
1	The Supranational was established by international treaty or equivalent with vast immunities, or the PSFE has a specific organic law. ESG considerations are transparently embedded in all activities and at all levels of the organisation. Performance is independently reviewed. Management and shareholders representatives have appropriate expertise and track record of delivering on their financial and non-financial targets. Internal policies and staff implement state-of-the-art risk and financial management. Human resources are well managed. Financial and non-financial reports are comprehensive and transparent. There is no material private shareholding.

2	The PFI exhibits most of the characteristics of group 1, but its standards are somewhat less strong, or less appropriate to its activities compared to institutions in group 1. The PFI does not feature any characteristic listed in group 4.
3	The PFI could exhibit a few of the characteristics listed in group 4, but those would be compensated by stronger governance in other areas, such as the ones listed in group 1. Alternatively, the PFI aspires to best practices in terms of governance, but has not yet demonstrated its capacity to implement them fully.
4	The supranational does not benefit from significant immunities, or the PSFE from a specific organic law. The PFI does not have ESG assessments of its activities. Strategy is unclear and financial goals are missed. Management is concentrated and succession planning is vague. Policies are weak or not well adhered to. Risk management is unsuited to the activities of the PFI. Transparency is limited. Private shareholders have preponderant influence. There is no external audit from an international accounting firm.

2. Shareholders Governance

Any governance or social issue with the government, or governments, controlling the PFI is at risk of spilling over into the institution. Domestic PFI are governed directly or indirectly by one government. Beyond Ratings therefore uses its governance performance score, or a proxy if not available, on that government as a basis for its assessment. The score is directly mapped onto the integer scale from 1 to 4, using the following thresholds:

Table 6: Shareholder Governance

Shareholder Governance score	Shareholder governance
1	75%-100
2	50%-75%
3	25%-50%
4	0%-25%

When a score is near a threshold (defined as plus or minus 10% from the threshold on a relative basis), Beyond Ratings may assign the score from the next segment based on a forward-looking trend.

Supranationals are governed directly or indirectly by their sovereign members. We compute an index of member countries governance as the average of Beyond Ratings social and governance performances scores, weighted by the voting rights of each sovereign. Where private sector institutions have significant voting rights, a qualitative assessment of their social and governance performance may be performed.

Countries are generally divided between borrowing and non-borrowing member countries, or countries of exposures for PFIs financing the private sector. If borrowing member countries have a majority of voting rights, Beyond Ratings considers that there is a further governance risk for the PFI in situation of stress for its countries of exposure. Beyond Ratings therefore also computes an index of governance on member countries of exposure, using the same methodology as above, should they have a majority of the voting rights.

We map the index of member countries governance (or indices if countries of exposure have a majority) onto the ordinal scale as described above (including the qualitative forecast, if relevant). If countries of exposure have a majority of voting rights, we determine the final governance assessment qualitatively in the range between the two scores. The determination is function of our assessment of checks and balances in favour of the minority shareholders, and track record or our anticipation of diverging opinions between countries of exposures and other member countries.

For example, if the index of all member countries is 60%, mapping to a score of 2, and the index of borrowing member countries, which have a majority of voting rights, is 35%, mapping to a score of 3, the shareholder governance assessment may be 2 or 3.

C. CAPITAL

This analysis of the financial status for a supranational financial institution aims to measure the adequacy of its own funds against its risk exposures. Beyond Ratings uses primarily its capital ratio in this assessment. The capital ratio is defined as the total of own funds readily available to absorb losses, the “capital”, divided by potential losses under an extreme stress.

Beyond Ratings has developed its own comparable capital ratio. PFIs are typically not regulated, so their internal capital metrics may not be comparable. Many PFIs compute capital ratios following international recommendations, such as that of the Basel Committee on Banking Supervision (BCBS), however, they are typically not subject to review by a regulator. Consequently, the capital ratios computed by PFIs themselves, however useful to understand the risk management and risk appetite of the institution itself, cannot be compared across PFIs.

The denominator of the ratio aims to capture credit and counterparty risks primarily. A charge for operational risk is also factored in. Market risks are usually systematically hedged by supranational institutions and are therefore not weighted quantitatively. The denominator is computed in two successive steps: first the total credit and counterparty risk potential total losses are calculated. Then an add-on for operational risk is determined.

1. Loss Absorbing Capacity

The numerator of the ratio excludes all components of the own funds that may have been accounted as shareholder’s equity for accounting purposes but may not be readily available to absorb losses under a stress scenario. Loan loss reserves are included as our approach aims to measure total loss absorption capacity, in order to provide for a more comparable capital ratio across institutions with different provisioning policies.

Capital, the numerator of Beyond Ratings capital ratio, is therefore calculated as follows:

Table 7: Calculation of Capital

	Shareholder’s equity
+	General and Specific loan loss Reserves
-	Capital not yet paid-in
-	Capital subscriptions in restricted currencies
-	Unfunded pension liabilities
-	Unrealised fair value losses
-	Other non-loss absorbing items

If there are fair value gains, those are not included in the capital due to the uncertainty of their realisation. However, unrealised fair value losses are deducted from shareholder’s equity to reflect the potential risk of losses measured.

2. Credit and Counterparty risks

Beyond Ratings uses a stochastic Credit Value at Risk (VaR) and Expected Shortfall model to determine the amount of potential losses under extreme stress. The Credit VaR is a quantile of the simulated credit and counterparty risk loss distribution at a 5 years horizon.

We compute the VaR at different quantiles to assess the capital adequacy of the PFI. We also look at Expected Shortfalls, a better measure of credit risk. Expected Shortfall is defined as the expected average loss in the tail of the loss distribution, that is beyond the Credit VaR.

The exposure is the sum of on-balance sheet credit exposure, and off-balance sheet exposure converted to an on-balance sheet credit risk equivalent. The credit conversion factors broadly represent the risk that the exposure be converted to on-balance sheet by the time of default of the counterparty. Please see appendix 2 for details of the model parameters and assumptions.

3. Operational Risk

Beyond Rating's measure of potential operational risk losses covers notably the following risks: fraud, systems or process failures, legal and reputation risks. As a starting point, we consider a simple metric based on the cumulative annual net interest income plus net non-interest income. Following the standards from the BCBS, "It is intended that this measure should: (i) be gross of any provisions (e.g. for unpaid interest); (ii) be gross of operating expenses, including fees paid to outsourcing service providers; (iii) exclude realised profits/losses from the sale of securities in the banking book; and (iv) exclude extraordinary or irregular items."[2]

The operational risk charge is the product of the net income, as defined above, with an operational risk factor, similarly to that in the Basic Indicator Approach of the BCBS. In order to avoid volatility in the metric, and at variance with Basel, the largest charge calculated over the last three full annual periods is retained for the Capital assessment.

The table below shows the operational risk factors for each rating category:

Table 8: Operational Risk Factors by Rating Category

Rating	Operational risk factor (%)
AAA	34
AA	23
A	15
BBB	10
BB	7
B	4
CCC	3

4. Capital Assessment

The capital assessment is determined by the capital ratio. The numerator of the ratio is the amount of capital, reflecting the loss absorbing capacity as defined above. The denominator is the sum of the Credit VaR and the operational risk charge. This total risk charge depends on the level of stress applied on our rating scale. The Credit VaR for each stress level is the quantile of the credit loss distribution at the corresponding default weights shown in appendix (section 2.1).

The capital assessment is the highest possible rating category such that the capital ratio is still higher than 100% (or 90% in case of a positive trend assessment as explained below).

For example, assuming a PFI capital equal to 100, a capital charge at AAA level of 120 (83% capital ratio), and a capital charge at AA of 80 (125% capital ratio), the capital score is AA, as the ratio at AA level is higher than 100%, and the ratio at AAA level is lower than 100%.

[2] Basel Committee on Banking Supervision, International Convergence of Capital Measurement and Capital Standards, A Revised Framework, June 2006

When the capital is near a threshold (i.e., when the ratio of the capital to the capital charge is between 90% and 110%), Beyond Ratings may assign the assessment from the next segment based on our assessment of the trend and the expected shortfall metrics. The purpose of this adjustment is to ensure that the assessment is forward looking. For example, if we expect that the trend is positive in such a manner that a capital ratio currently above 90% is expected to increase to over 100% in the next 1 to 2 years, we may assign the assessment as if the ratio was already above 100%.

A qualitative adjustment to the capital assessment may be applied. The objective of this adjustment is to reflect material risks, or risk mitigation, which would not have been captured in the ratio, such as unhedged foreign-exchange or interest rate risk. Another example would be to reflect significantly better risk management and lending policies compared to other PFIs involved in similar activities, resulting in private sector exposures significantly less risky than that of peers. Our assessment of the quality of the risk management is informed by the loss and delinquency history, as well as by policies, systems, metrics, governance and transparency.

Our qualitative adjustment may only improve the capital assessment by one category at most. However, should we assess that very material risks are not captured in our ratios, there is no limit to the potential downward qualitative adjustment to our capital assessment.

D. LIQUIDITY

The liquidity factor aims to estimate the resilience of the funding of an PFI under macroeconomic or idiosyncratic shocks. There are two dimensions to the liquidity assessment. First, we run liquidity stress tests, which estimates the time that a PFI is able to survive without issuing new debt, under extremely stressed market conditions. Second, we complement this analysis with a qualitative assessment of the resilience of the PFI, primarily looking at structural features of the liquidity profile of the institution.

As with the Role and Governance, Beyond Ratings grades each of the two dimensions of liquidity on an ordinal scale of 1 to 4, 1 being the strongest, and 4 the weakest. In order to determine the liquidity assessment, the scores are added up, and the resulting total is mapped onto the ordinal rating scale without modifiers as follows:

Table 9: Liquidity Assessment

Sum of Liquidity sub-scores	Liquidity assessment
2	AAA
3	AA
4	A
5	BBB
6	BB
7	B
8	CCC

1. Liquidity Stress Test

Beyond Ratings analyse the liquidity stress tests produced by the PFIs (if any) to assess the capacity of the PFI to sustain prolonged liquidity crisis. The stress tests may be static and dynamic liquidity gaps under stressed conditions. Beyond Ratings may also compute its own stress tests based on confidential data from the PFI.

The stress conditions we would typically expect include the complete loss of market access, and the full withdrawal of wholesale deposits. If there are obligations with may be redeemed early at the option of the investors, they would exercise such option. Liquidity facilities need to be cautiously assessed, as they may not remain available under such conditions, especially if the rating of the institution providing the line is to very high. There would also

be a concomitant deterioration of the credit quality of the assets, leading to arrears or defaults which reduce the cash inflows, or a dramatic loss of value on private equity portfolios. The market value of securities is heavily stressed, resulting in very large haircuts being applied.

As PFIs tend to play a countercyclical role, a differentiating factor is the capacity of a PFI to continue to fulfil its role under stressed conditions. This implies significant liquidity buffers to be built in order that stressed dynamic liquidity gaps remain positive, even in the case of a significant surge in demand concomitant to the liquidity stress.

Table 10: Liquidity Stress Test

Quantitative Liquidity Assessment	Typical Characteristics
1	The PFI is able to fulfil its role and respond to increasing demand under stressed conditions for at least one year. The stress conditions are of the highest level. The stressed static and dynamic liquidity gaps remain positive at all horizons up to one year at least.
2	The PFI is able to survive at least one year to the highest level of stress, i.e. the stressed static liquidity gaps remain positive at all horizons up to one year at least. However, the institution may not be able to fully respond to a potential surge in demand.
3	The PFI may not be able to survive one year under liquidity conditions stressed to the highest level. The PFI is typically able to survive for one year under more moderate stressed conditions, and 6 months under the highest level of stress.
4	The PFI exhibits large static or dynamic liquidity gaps under one year. The PFI may not be able to survive 6 months under liquidity conditions stressed to the highest level.

2. Liquidity Qualitative Assessment

To complement the stress test analysis above, Beyond Ratings assigns a qualitative liquidity assessment to PFIs, as per the table below:

Table 11: Qualitative Liquidity Assessment

Qualitative Liquidity Assessment	Typical Characteristics
1	The PFI has access to central bank refinancing, or the PFI has access to unlimited liquidity from a government itself rated higher. The PFI’s ALM procedures and management are transparent and appropriate to the complexity of funding and products. There are no covenants at risk of creating liquidity strains.
2	The PFI exhibits most of the characteristics of group 1, but its standards are somewhat less strong, or less appropriate to its activities compared to institutions in group 1. The PFI may not have direct access to central bank refinancing. The PFI does not feature any characteristic listed in group 4.

3	The PFI could feature some of the characteristics in group 4, but would compare significantly better on other fronts, for example by showing several characteristics from group 1.
4	The PFI relies primarily on short-term borrowings. The PFI lacks market access, or suffers from significantly deteriorated market access. The PFI's ALM management or procedures are opaque or inappropriate to the operations. There are covenants which are at risk of being triggered, and which would result in liquidity strain if they were enacted.

EXCEPTIONAL SHAREHOLDER INTERVENTION

A. CAPITAL INCREASES AND CALLABLE CAPITAL

Many Supranationals only have a fraction of their paid-in capital. The shareholders commit to pay the remainder of the subscribed capital, the callable capital, if called by the institution, usually to avoid an imminent default. The conditions under which a call can be made vary across the institutions, and so do the mechanisms of approval of the call. Consequently, Beyond Ratings reviews those processes and terms, to ensure that the institution would effectively receive capital in a timely manner to avoid a default. Given that the institution which makes the capital call is controlled by shareholders that pay the capital, Beyond Ratings scrutinise the incentives as well as the mechanisms of the callable capital.

Beyond Ratings computes a complementary capital ratio which includes the callable capital and planned capital increases from eligible shareholders. The difference between this augmented ratio and the assessment of capital determines the uplift resulting from capital increases and callable capital. The uplift is the difference, in terms of notches, between the assessment on the full rating scale determined using a capital ratio augmented of eligible callable capital and planned general capital increase, and the PFI's self-standing assessment.

In addition to the review of the governance for the capital calls, Beyond Ratings assesses the ability and consent of the shareholders to respond favourably to capital calls. We take into account only the callable capital subscribed by shareholders that we deem willing and able to answer to capital calls in situations of extreme stress. In particular, we evaluate the risk that a legislative branch of government may not appropriate budgetary funds for a capital injection approved by the executive branch.

The consent is informed by the attitude of a particular sovereign with regards to the institution. The role that a supranational plays for that particular shareholder is key to determine its consent to honour a capital call. History of payment of regular capital increases, or other payments due to the institution, is also relevant to the potential timeliness of payment on a capital call. Should a PSFE have callable capital, the role determined in section Role above must be BBB or above for us to take into account this callable capital or future payments of a general capital increase payable over time.

The ability is informed by the rating of the shareholder, compared to the rating of the supranational after taking into account the exceptional shareholder intervention. Beyond Ratings qualitatively assess the likelihood of contagion risk between the PFI and its shareholders. For example, we assume that a stress on the supranational of such a magnitude that it would request a capital call is likely to be a stress affecting the borrowing member countries and potentially on other member countries as well.

The table below summarizes the eligibility criteria for inclusion of the callable capital from a member country in our assessment of capital including exceptional shareholder intervention:

Table 12: Criteria for Inclusion of the Callable Capital

Risk of Contagion Under Stress	Minimum rating of the shareholder
High (includes all borrowing member countries)	Equal to that of the PFI including support
Medium (typically countries in the same geographic region)	1 notch below that of the PFI including support
Low	2 notches below that of the PFI including support

For example, let us consider a supranational institution where all member countries are in the same limited geographic region. We would likely consider that all borrowing member countries have a high risk of contagion, and that the non-borrowing member countries have a medium risk. Consequently, only callable capital subscribed by borrowing member countries rated equal to or higher than the PFI, and by non-borrowing member countries rated 1 notch below or higher than the PFI could be taken into account. We may exclude further countries based on considerations of consent above.

When shareholders are in the process of significantly increasing the capital of a PFI through a general capital increase payable over time, Beyond Ratings will reflect the prospective additional capital in additional to potential callable capital, in our analysis of exceptional shareholder intervention. The criteria for the eligibility of such additional capital is the same as for callable capital, i.e., a review of the terms and processes of the capital increase, as well as a review of the consent and ability of each shareholder.

B. GUARANTEES

Support may be provided in the form of issue or issuer guarantee. Beyond Ratings analyses the characteristics of the guarantee before assigning the rating of the guarantor to the guaranteed issue. In cases where the guarantee meets all of the conditions below for all present and future obligations of the issuer, Beyond Ratings may assign the rating of the guarantor to the issuer.

The conditions for credit substitution are all of the following:

- The guarantee is unconditional, the investor must have the right to receive any payments from the guarantor without first having to take legal actions in order to pursue the issuer for payment.
- The guarantee is timely. Beyond Ratings excepts that the guarantor will pay the guaranteed amounts on their due date or within their grace period.
- The guarantee documentation must be binding on all parties and legally enforceable in all relevant jurisdictions.
- The guarantee is explicit. There may be implicit guarantees, but those would be assessed using the section Parent and Government Support below.
- The guarantee covers all types of payments due under the terms and conditions of the issue and the extent of the cover is incontrovertible.
- The guarantee is irrevocable. The guarantor is not allowed to unilaterally cancel the guarantee.
- The guarantor's obligations under the guarantee rank pari passu with its senior unsecured debt obligations.

C. PARENT AND GOVERNMENT SUPPORT

PFIs may receive support from their parent institution, if any. PSFEs may receive support from a parent institution, or from the government who is the ultimate parent of PSFEs. The degree of potential exceptional support depends on the role, as assessed above, that the PFI plays for the parent, as well as the degree of integration of the PFI with its parent or with the government.

The degree of integration is informed by the level of control that the parent or government exercises on the PFI, as well as by evidence of practical integration, such as the sharing of brand names, reputation, services or administrative functions. The table below highlights typical characteristics for each category:

Table 13: Characteristics of Government Support

Degree of Integration	Typical Characteristics
High	Full control by the government of the parent over the PFI, not only via direct or indirect shareholding, but also in the management of the PFI. CEO should be equivalent to a cabinet-level appointment. Framework in place to provide explicit and timely support to the PFI. Privatization is not contemplated within the next 5 years. Private sector shareholders, if any, have almost no influence on the institution. There is a track record of consistent support to the PFI or other similar institutions, by, for example, proper capital support, regular budgetary appropriations, prompt appointment of management vacancies, broad public support for PSFE's mission. Sharing of brand names in case of a parent. A deterioration in the creditworthiness of the PFI would affect the reputation of the parent or government.
Medium	PFIs other than those classified as High or Low versus their parent or government. For example, a PFI could highlight most of the characteristics of group 1 but be at risk of privatisation in the medium term.
Low	The parent or government may be a minority shareholder or is expected to become one. The government or parent has limited influence on the strategy and management of the PFI. There are legal or administrative impediments to a potential sufficient and timely support to the PFI. The parent or government is remote, or is significantly distantiating itself, from the strategy and management of the PFI.

The impact of parent and government support for a PFI, notably a PSFE, is determined by the tables below:

Table 14: Support for a PFI with a Self-Assessment Lower than the Parent or Government

Role for the parent or government	Degree of Integration with the Parent or the Government		
	High	**Medium**	**Low**
AAA or AA	PFI Rating is equalised to that of the parent or Government	PFI rating is equal to parent or government rating, minus 1 notch if the difference between that rating and the self-standing assessment of the PFI is at least 1 notch	PFI rating is equal to parent or government rating, minus 3 notches (capped to the difference between that rating and the self-standing assessment of the PFI)
A or BBB	PFI rating is equal to parent or government rating, minus 1 notch if the difference between that rating and the self-standing assessment of the PFI is at least 1 notch	PFI rating is equal to parent or government rating, minus 3 notches (capped to the difference between that rating and the self-standing assessment of the PFI)	PFI rating is equal to self-standing assessment, plus 2 notches if the difference between that rating and the self-standing assessment of the PFI is at least 4 notches, plus 1 notch if the difference is 3 notches
BB	PFI rating is equal to self-standing assessment, plus 2 notches if the difference between that rating and the self-standing assessment of the PFI is at least 4 notches, plus 1 notch if the difference is 3 notches	PFI rating is equal to self-standing assessment, plus 1 notch if the difference between that rating and the self-standing assessment of the PFI is at least 3 notches	PFI rating is equal to self-standing assessment, plus 1 notch if the difference between that rating and the self-standing assessment of the PFI is at least 6 notches
B or CCC	PFI rating is equal to self-standing assessment, plus 1 notch if the difference between that rating and the self-standing assessment of the PFI is at least 3 notches	PFI rating is equal to self-standing assessment, plus 1 notch if the difference between that rating and the self-standing assessment of the PFI is at least 6 notches	PFI rating is equal to self-standing assessment

Table 15: Adjustment for a PFI with a Self-standing Assessment Higher than the Parent or Government

Degree of Integration with the Parent or the Government		
High	**Medium**	**Low**
PFI Rating is equalised to that of the parent or Government	PFI rating is equal to parent or government rating, plus 1 notch if the difference between the self-standing assessment of the PFI and that rating is at least 3 notches	PFI rating is equal to its Self-standing Assessment, minus one notch if the difference between the self-standing assessment of the PFI and that rating is at least 3 notches

The rating of the issuer is equalized to that of the parent in cases where the role for the parent or the government is assessed at AAA or AA, and the degree of integration is high, regardless of the self-standing assessment. Consequently, when we expect the role and the degree of integration to be maintained as such, we may decide not to specifically assess the other components of the analysis, since they do not have a bearing on the final rating. However, beyond ratings may also decide to assess them, for transparency purposes, or to highlight the rating transition risk should the role or degree of integration wane.

APPENDICES

A. DEFAULT WEIGHTS

In order for our ratings to be comparable to those from other rating agencies, we calibrated our default weights to statistics published by the main two rating agencies. S&P Global and Moody's Investor Services publish every year a default study containing cumulative historical default rates by rating category[3].. Our primary rating horizon being 5 years, we use the long-term averaged cumulative 5-years default rates. The two tables below show the arithmetic average between those two long-term averaged default rates. The default weights are idealized to ensure a consistent rating – default weights growing relationship. Then Beyond ratings use the weights of table 16 to derive our assessment of capital through the confidence levels at which we run our Credit VaR and expected shortfalls, as well as to determine the self-standing assessment, as the weighted average of our 4 major assessments.

Table 16: Default Weights

Rating	Default weights (%)
AAA	0.21
AA	0.33
A	0.67
BBB	1.67
BB	7.92
B	19.95
CCC	40.85
D/SD	100

For the self-standing assessment of the PFI, here is the complete 5-years default matrix (including modifiers):

Table 17: 5 Years Cumulative Default Weights With Modifiers

Rating	Default weights (%)
AAA	0.21
AA+	0.23
AA	0.25
AA-	0.36
A+	0.52
A	0.74
A-	1.06
BBB+	1.52
BBB	2.17
BBB-	3.10
BB+	4.43
BB	6.33
BB-	9.05

[3] Standard & Poor's "Global Corporates 2017 Default Study and Rating Transitions": http://media.spglobal.com/documents/RatingsDirect_DefaultTransitionandRecovery2017AnnualGlobalCorporateDefaultStudyAndRatingTransitions_38612717_Apr-17-2018.PDF. Moody's "Annual Default Study: Corporate Default and Recovery Rates, 1920-2016" at https://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_1059749.

B+	12.93
B	18.47
B-	26.39
CCC/C	40.85
D	100

B. TECHNICAL DETAILS OF CAPITAL MODEL

This annex aims to describe the methodology used by Beyond Ratings to evaluate the global portfolio risk of PFIs. It also provides information about parameters of the model. Risks concepts are defined in section 2 and are broadly consistent with the recommendations from the BCBS. We use characteristics that are asset (or obligor) specifics (EAD4, LGD, default probability) and correlation matrix between assets to assess a global portfolio risk.

Monte-Carlo simulation approach is considered to evaluate losses. A set of 2,000,000 random samples are generated based on default rates assumption and assets correlations. Consistently with Beyond Ratings timeframe, losses and other risk metrics are computed for a 5 years period.

1. Model Inputs

Exposure At Default (EAD): it indicates the total amount a PFI is exposed if the obligor defaults.

Loss Given Default (LGD): It represents the percentage of effective loss over the total exposure (EAD) in case of default of the obligor. It depends on type of assets.

Default Probability: it is directly linked to an asset (or obligor) rating. We use the default weights in appendix 1 as cumulative default rates for each rating category. We consider 8 ratings (AAA, AA, A, BBB, BB, B, CCC, D/SD) where D/SD is the default value. For sovereign – supra and sub-sovereign bonds and loans we use BR Ratings as risk assessment ratings, or a proxy if either the detailed exposure or the rating is not available. For corporate related assets we use a market consensus from other ratings agencies if the PFI publishes its list of exposition or a global risk if reported by the PFI.

In case of lack of information, we ask the PFI for additional confidential information. As a last resort Beyond Ratings will make assumptions that will be disclosed. For example:

- Banks: A
- Corporates (except banks): sovereign ratings minus 2 to 3 notches
- Other: B

Lastly, actual ratings might be adjusted accordingly to Preferred Creditor Treatment Scores as described in section 2.4.

Correlation Matrix: it represents the level of (in)dependence between assets. As a full correlation matrix (covariance between each couple of assets) is not easily available/computable, we gather assets in homogeneous groups called sectors and we assume the same level of independence (same correlation) between every assets from each group. If we have 5 sectors, information is summarized in 5X5 matrix whatever the number of assets in each sector.

Loading Factor: defined at sector level, it represents the intra-sector covariance between assets. We consider this is equal for every couple of assets in each group and set to 0.5. This variance corresponds to rare events and stressed situation to a better assessment of the distribution tail (VaR above 99.9%).

2. Risk Metrics

Expected Loss (EL): It represents the mean of the portfolio loss distribution for a given time horizon.

Value a Risk (VaR): For a given risk level (probability of occurrence), it represents the minimal portfolio loss.

Expected Shortfall (ES): It represents the average loss in case of rare event (probability of occurrence lower than a given threshold). This is the average loss of the distribution loss tail.

Expected Loss, Value at Risk and Expected Shortfall are the three risk metrics to be computed to characterize the credit and counterparty risks portfolio. The first one is an average loss evaluation that does not inform about worst case scenarios. The second one provides an additional information about rare event risks. The last one evaluates the average loss in case of crisis and rare event.

3. Sectors definition: correlation matrix and loading factor

We define 5 typologies of assets to compute the correlation matrix:

- Sector 1: Governmental loans and Guarantees
- Sector 2: Sovereign/supra/sub-sovereign bonds
- Sector 3: Loans and Bonds to corporate
- Sector 4: Interests and currency derivatives
- Sector 5: Others

Table 18: Inter-Sector Correlations Matrix

Sector	Sector 1	Sector 2	Sector 3	Sector 4	Sector 5
Sector 1: Governmental loans and guarantees	1	0.25	0.25	0.25	0.25
Sector 2: Sovereign/supra/sub-sovereign bonds	0.25	1	0.25	0.25	0.25
Sector 3: Loans and Bonds to corporate	0.25	0.25	1	0.25	0.25
Sector 4: Interest and currency derivatives	0.25	0.25	0.25	1	0.25
Sector 5: others	0.25	0.25	0.25	0.25	1

Default correlations between sectors are set to 0.25 but depending on the type of assets in each sector and/or specificities, correlations can be adjusted to better stick to the situation. For instance, if corporates highly depend on governmental orders, correlations between sector 1/2 and 3 could increase.

Table 19: EAD/LGD asset parameters

Asset\ EAD-LGD	Exposure At Default (EAD)	Loss Given Default (LGD)
Outstanding Sovereign Loans	Notional Amount	Statistic Distribution with 50% as average[4].
Outstanding Corporate Loans	Notional Amount	Statistic Distribution with 50% as average.
Loans approved but not yet effective	50% of notional amount	Statistic Distribution with 50% as average.
Undisbursed balance of effective loans	50% of notional amount	Statistic Distribution with 50% as average.
Sovereign Bonds	Notional Amount	Statistic Distribution with 50% as average.
Agencies, Commercial paper, Asset-Backed Securities, Corporates Loans ad Time Deposits	Notional Amount	Statistic Distribution with 50% as average.
Guarantees	50% of Notional Amount	Statistic Distribution with 50% as average.
Derivatives Assets (Currency and Interest Rates)	50% of Notional Amount	100%
Non Commercial Counterparty	Fair value exposures that depends on the type of counterparty (from 0% to 50%)	Statistic Distribution with 50% as average.
Equities	Notional Amount	Statistic Distribution with 90% as average.
Buildings	30 years depreciation	50%
Buildings improvements	15 years depreciation	50%
Property and equipment other than buildings	2 to 10 years depreciation	50%

4. Risk adjustments (Default Probability and LGD) thanks to Preferred Creditor Treatment Score

As explained in section Treatment above, the practice of PCT results in potentially lower risk of default, as well as higher recovery expectations for the institutions to which sovereigns afford it.

Consequently, Ratings and Loss Given Defaults related to PFI's shareholders are adjusted depending on the Preferred Creditor Treatment Score following the hereunder adjustments:

Table 20: Adjustment thanks to Preferred Creditor Treatment Score

Treatment Score	Rating Adjustment	LGD Adjustment
1	Max adjustment +3 notches	Minimum Average: 10%
2	Max adjustment +2 notches	Minimum Average: 25%
3	Max adjustment +1 notch	Minimum Average: 35%

[4] Average values are subject to adjustment depending on Preferred Creditor Treatment Score for relevant obligors. For additional information, please refer to section 4

4	No Adjustment	Average: 50%

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