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Scaling up Lending at the Multi-Lateral Development Banks:

Benefits and Costs of Expanding and Optimizing MDB Balance Sheets

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ABSTRACT

Multilateral Development Banks (MDBs) have a critical role to play in filling global infrastructure gaps, and achieving the objectives of Sustainable Development Goals (SDGs) and the Paris Climate Agreement. The MDB business model allows development banks to borrow funds from capital markets at relatively cheaper rates than what could be obtained by sovereign borrowers. A cornerstone of that business model is the strong credit ratings of the sovereign members of the MDBs and the prudent lending practices of the MDBs themselves. Thus MDBs seemingly face a dilemma whereby rating agencies require MDBs to maintain their low risk profiles intact otherwise they may be at a risk of a downgrade. Meanwhile, MDBs are faced with the pressure to increase the quantum of their lending operations to meet their development objectives. This paper estimates the potential lending headroom available to MDBs under scenarios that attempt to manage both of these parameters. Our estimates suggest that MDBs can collectively increase their lending between US$598 billion - US$1,903 billion depending on the policy option they opt for. More specifically, we estimate lending headroom under scenarios with and without capital increase of 8 "AAA" rated MDBs, and scenarios that maximize lending headroom while maintaining "AAA" ratings and allowing rating to fall by one notch. In the later case we estimate the borrowing expense using two different cost estimates and compare it with the revenue generated from the projected "AA+" development portfolio. Our results suggest that under both cost estimates, the aggregate impact on profitability remains positive reflecting that the benefits of opting for "AA+" rating outweigh the associated cost. We argue that for at least 4 out of the 8 MDBs studied in the paper, the policy option of opting for "AA+" rating may be a viable business case while others are better off in optimizing their balance sheet with current rating level.

1. Introduction

MDBs are international financial institutions established by multiple sovereigns who act as their shareholders with the objective of promoting the economic and social development of member countries. MDBs provide financial and technical assistance to their member countries in their efforts to reduce poverty and strengthen economic development. Some MDBs operate globally while others are regional and sub-regional. MDBs differ from each other on the basis of their mandates, and the structure and scope of activity. In comparison to conventional banks, MDBs have less diversified lending portfolios as focus remains on a few sovereigns. MDBs operations are governed under international treaties and internal bylaws and not under national banking regulations. They are also exempt from paying corporate taxes. During times of economic crisis, MDBs are expected to play a counter cyclical role of lending to private sector entities as they become high risk transactions for conventional financial institutions.

The primary funding avenue of MDBs is capital markets as MDBs generally do not collect deposits, with the exception of European Investment Bank (EIB), for which they aim to maintain the highest or “AAA” rating from a credit rating agency. This allows MDBs to procure stable funding from capital markets on attractive terms and pricing for onward lending to sovereigns. MDBs also enjoy Preferred Creditor Treatment (PCT) which means that their loans get repaid by sovereigns before other lenders. The core element of MDB shareholder equity is paid-in capital while callable capital represents committed capital but has not been actually paid. Callable capital acts as a buffer capital which can be called if an MDB faces financial challenges. To our knowledge, no MDB has ever made a call for callable capital.

In Nov, 2015, the G-20 presented an action plan to optimize MDBs balance sheets and stressed at maximizing MDBs role in supporting global development efforts. The action plan presented five measures which could significantly further their development mission: First, MDBs were asked to engage with shareholders and credit rating agencies to study options to increase capital efficiency without risking their “AAA” ratings. Second, MDBs should consider exposure exchanges to reduce the impact of

concentration penalties on their credit ratings. Third, World Bank, African Development Bank (AfDB) and the Inter-American Development Bank (IADB) were asked to use their concessional windows for financial innovations including leveraging the equity and improved use of liquidity. Fourth, MDBs were asked to evaluate instruments that share risk in their non-sovereign operations that allows banks to free up capital. Fifth, MDBs were asked to consider net income measures that could improve their capital position. The Addis Ababa Action Agenda (2015) also stressed that MDBs should make optimal use of their balance sheets in financing sustainable development. In this context, MDBs have taken various initiatives to increase their scale. Asian Development Bank (ADB) combined the lending operations of its Asian Development Fund (ADF) with its Ordinary Capital Resources (OCR) balance sheet which as per S&P Global Ratings (S&P) estimates could increase ADBs total lending and grant approval by more than 50%. IADB and the Inter-American Investment Corporation (IIC) consolidated IADB group's private sector operations leading to better utilization of resources. Moreover, AfDB, IADB and International Bank for Reconstruction and Development (IBRD) executed an exposure-exchange agreement for some of their sovereign exposures[1].

It is imminent that MDBs would have to continue to aggressively increase the quantum of their lending operations in view of the financing needs of 2030 Sustainable Development Goals and the Paris Climate Agreement contributions. However, without significant capital increases in the MDBs, increasing lending operations may endanger the "AAA" rating of MDBs. Methodologies of rating agencies on the other hand are considered conservative and at times punitive for MDBs particularly for the treatment of concentration/diversification in loan portfolios, as well as PCT. Humphrey (2015) argued that such constraints in the S&P methodology limit the operational capacity of MDBs. Perraudin et al (2016) and Settimo (2017) agree with these claims, and report that if S&P were to use a more industry-standard approach to measure portfolio concentration and PCT, MDBs could lend significantly more.

The paper estimates lending headroom available to 8 "AAA" rated MDBs under scenarios with and without an across the board MDB capital increase and scenarios

[1] S&P 2016

running different simulations of balance sheet optimization while maintaining “AAA” rating and while allowing rating to fall by one notch to “AA+”. Lending headroom is estimated based on S&P methodology for rating Multilateral Institutions (MLIs)[2]. Under various scenarios of capital increase and no capital increase, we estimate that MDBs collectively can add between US$598 billion and US$1,903 billion on top of their lending portfolios (using the end of 2016 as the base case). Our lending estimates take into account additional liquidity requirements emanating from higher lending exposures. Also, if we incorporate proposed changes in S&P methodology pertaining to callable capital, our lending headroom increases further.

We estimate the borrowing expense under the scenario of opting for “AA+” rating by using two incremental borrowing cost estimates of 69 basis points (bps) and 203bps and compare it with the revenue generated from “AA+” rating level development portfolio. Our results suggest that with both incremental borrowing cost estimates, the aggregate net impact on the profitability of MDBs remained positive. European Investment Bank (EIB), IADB, European Bank for Reconstruction and Development (EBRD) and Islamic Development Bank (ISDB) appear to have the strongest cushion available to withstand other associated costs of opting for “AA+”.

[2] MDBs are subset of MLIs

Table 1: Lending Headroom and Aggregate Portfolio (Values in US$ billions)

	No Capital Increase Scenarios			25% capital Increase Scenarios		
	Current Level Business As Usual (BAU)	BAU Capital but optimizing at "AAA"	BAU Capital but optimizing and falling to "AA+"	Current level BAU	Optimizing while maintaining "AAA"	Optimizing and falling to "AA+"
Lending Headroom under current S&P methodology	-	598	919	231	785	1,903
Aggregate Portfolio	923	1,521	1,842	1,154	1,708	2,826
Additional Lending Headroom under revised treatment of callable capital by S&P	None	106	None	None	133	None

Table 2: Impact on profitability under the scenario of no capital increase and opting for "AA+" (values in US$ billions)

A	MDB Loans (net) at end-2016 with "AAA" rating	895
B	Lending headroom – no capital increase and opting for "AA+"	919
C = A+B	Total Lending Capacity of MDBs with "AA+" rating	1,814
D	Annual revenue from Loans with "AA+" rating	61
E	Annual Borrowing Cost (addition of 69 bps) with "AA+" rating	31
F	Annual Borrowing Cost (addition of 203 bps) with "AA+" rating	48
G = D-E	Net Impact (with 69 bps additional borrowing cost)	29
H = D-F	Net Impact (with 203 bps additional borrowing cost)	13

The study adds to the existing literature on MDBs lending headroom in various ways. First, the study uses a more robust approach for estimating lending headroom by optimizing Risk Weighted Assets (RWAs) for a given threshold level of Risk Adjusted Capital (RAC) ratio and takes into account the additional liquidity requirements using a larger dataset of 8 MDBs which represent 85% exposure of all the "AAA" rated MLIs by S&P, the largest rating agency. Second, the study estimates the lending headroom under both capital increase and no capital increase scenarios by running different simulations. Third, two estimates of incremental borrowing cost under "AA+" rating are calculated based on 10 year borrowing data of MDBs which is used to estimate the borrowing expense in a scenario of opting for "AA+" rating. We also discuss some of the additional costs and challenges that MDBs may face in a scenario of opting for "AA+" rating. Fourth, the study evaluates the impact on profitability of MDBs in a scenario of opting for "AA+" rating and identifies "AAA" rated MDBs which are the strongest candidates to operate with a notch lower.

2. Overview of S&P Rating Methodology

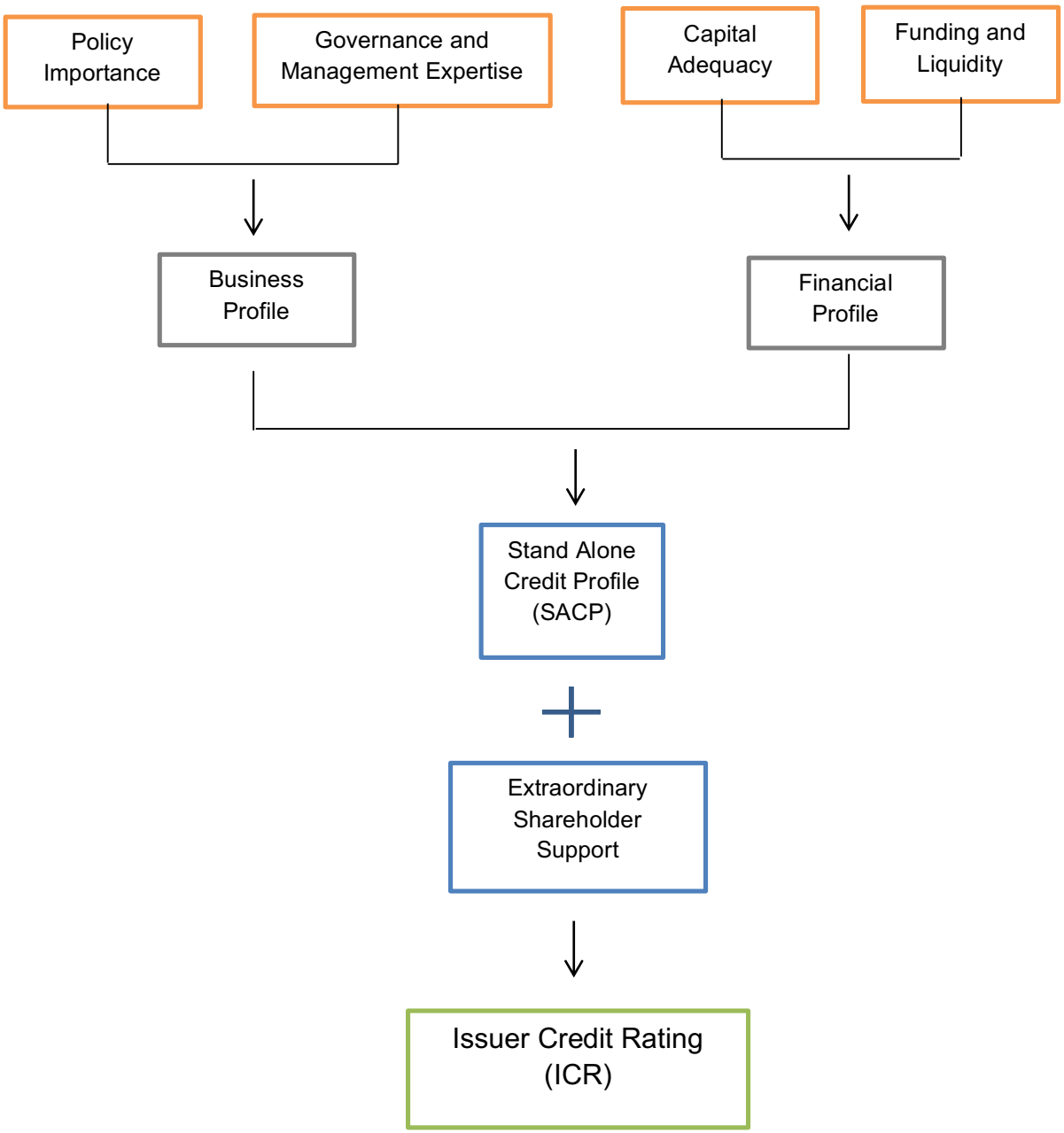
S&P is the largest rating agency among the "Big Three"[3] and probably the most influential on capital markets and bond holders. As per Security and Exchange Commission (SEC)[4], S&P market share in outstanding Government Securities was reported at 53.3% as at end-2016 followed by Moody's Investor Services (34.7%) and Fitch Ratings (11.1%). S&P also has the largest share in total ratings outstanding at 48.9% with Moody's Investor Services and Fitch Ratings market share reported at 34.2% and 13.3%, respectively.

Broadly speaking, the methodology of S&P for rating MLIs takes into account the business and financial profile of the institutions to arrive at a 'Stand Alone Credit Profile' (SACP). S&P's business profile reflects policy importance and Governance and management expertise while financial profile captures capital adequacy and funding and liquidity. Financial profile and business profile are evaluated over a range of seven levels ranging from extremely strong to very weak. Once the SACP is determined, the

[3] "Big Three" includes S&P Global Ratings, Moody's Investor Services and Fitch Ratings
[4] Annual Report on Nationally Recognized Statistical Rating Organization – Dec, 2017

rating agency establishes likelihood of extraordinary shareholder support or callable capital to arrive at the Issuer Credit Rating (ICR). The maximum increase in rating from the callable capital is restricted to three notches from the SACP level. The methodology incorporates callable capital from shareholders having foreign currency rating equal to or higher than the ICR of the MDB.

Figure 1: S&P methodology for rating MLIs



To assess capital adequacy, S&P methodology uses a RAC ratio which compares MDBs capital or Adjusted Common Equity (ACE)[5] to its RWAs.

$$RAC = \frac{ACE}{RWAs}$$

Risk weights are applied to exposures of credit and market and operations to arrive at cumulative RWAs from which MLI specific adjustments are made related to single-name concentration, industry and geographical diversification and PCT. Quantum of these adjustments is a function of portfolio composition of MLIs and other factors, and may lead to addition or subtraction from RWAs and vary from institution to institution. Assessment of Adjusted RAC ratio can range from 'extremely strong' to 'very weak'. In a scenario where the Adjusted RAC ratio is within a 10% threshold from the next category, the rating agency may adjust it to the next category (upper or lower) based on a qualitative assessment.

Table 3 – Adjusted RAC Ratio thresholds

Assessment	Adjusted RAC Ratio
Extremely strong	Above 23%
Very strong	Above 15% and upto 23%
Strong	Above 10% and up to 15%
Adequate	Above 7% and up to 10%
Moderate	Above 5% and up to 7%
Weak	Above 3% and up to 5%
Very Weak	Lower than 3%

Source: S&P 2017a.

Overall, the methodology of S&P is considered more quantitative as compared to the methodology of Fitch Ratings and Moody's Investor Services and offers more transparency. Currently S&P is in the process of revising its methodology on MLIs. The rating agency has proposed to revise the treatment for PCT and single-name

[5] S&P makes specific adjustments to Shareholder's equity (as reported by the institution) to arrive at ACE. For details refer to S&P 2017a

concentration adjustment by adjusting the risk weight based on its PCT assessment instead of adjusting the risk weight for sovereign exposure based on the share of multilateral debt in each sovereign's total external debt. Secondly, eligibility of callable capital is proposed to be revised to include callable capital provided by sovereigns rated at least equal to the MLI SACP rather than the ICR which was previously the case. Thirdly, if MLIs were to issue hybrid instrument it shall be included into the RAC calculation. Also, to arrive at the final ICR, the rating agency has proposed a "Holistic Analysis" which adds to the subjectivity in the overall process. As per S&P, "Holistic Analysis" aims to capture a more comprehensive analysis of creditworthiness by including credit positive or negative factors not explicitly reflected in the methodology. "Holistic Analysis" establishes a forward looking opinion by using competitive and sector-wide data and can alter the indicative ICR by a maximum of one notch in either direction. As per the rating agency, the revised methodology would impact ratings of about 3 out of the 32 MLIs which it rates with their ICR either being upgraded or downgraded by one notch.

In the next section, we present findings of some of the existing studies on the lending headroom. Section 4 presents results which are consistent with the existing studies that MDBs can increase their lending headroom, with varying quantum, under the scenario of both capital increase and no capital increase. Section 5 presents the estimates of the additional borrowing cost in a scenario of "AAA" rated MDBs opting for "AA+" rating. Section 6 evaluates the impact on profitability of "AAA" rated MDBs opting for "AA+" rating. Section 7 discusses some of the additional costs and challenges "AAA" rated MDBs may face in a scenario of opting for "AA+" rating. Finally, Section 8 presents summary and conclusion of the study.

3. Literature review

In April, 2016, S&P published a report "How much can Multilateral Institutions Up the Ante?" and concluded that based on year end, 2014 financial data and rating assessments as of March 15, 2016, 19 rated MLIs by S&P could collectively expand their lending by about US$1 trillion more from their current levels, all else being equal. The US$1 trillion represented 72% rise from the US$1.5 trillion of outstanding exposure

with distribution of additional capacity varying from 0% to 240% of existing exposures and five MLIs estimated to double their exposures from current levels. Most of this additional capacity stem from "AAA" rated institutions which benefited from strong capital adequacy position and availability of "AAA" rated callable capital. S&P added exposures at default to a maximum point which would lead to a downgrade in the ICR. MLI adjustments related to diversification, concentration, preferred creditor status and high risk exposure caps were also considered. The key assumption underlying the US$1 trillion estimate is that the credit profiles of MLI, its shareholders and borrowers will not deteriorate. In a follow up report[6] the rating agency added that the lending headroom could be lower due to a combination of the following factors: weakening sovereign credit quality, buildup of capital buffers for countercyclical operations, diminishing credit quality of callable capital and business profile concerns.

In a more recent study, Settimo (2017) studied 7 major "AAA" rated MDBs including IBRD, International Finance Corporation (IFC), AfDB, EBRD, EIB, ADB and IADB and quantified their aggregate available lending capacity under a scenario of ratings being unchanged and under a "AA+" rating scenario. The aggregate Purpose Related Exposure (PRE)[7] of these MDBs amounted to US$894 billion as of end-2015. To estimate lending headroom, the study added total exposures and therefore RWAs to the RAC threshold that would trigger an ICR downgrade with the assumption that a) assessments of funding, liquidity and business profile do not change, b) ratings of shareholders and borrowers do not deteriorate and c) exposure distribution for each MDBs remain unchanged leading to consider that MLI adjustment made to RWAs remain fixed. The study found that 7 MDBs can collectively increase their PRE by around US$785 billion or 88% in comparison to their end-2015 PRE levels by maintaining their current "AAA" ICR. Distribution of additional lending headroom was found to be not uniform with IBRD and EIB having considerable headroom for increasing exposure while others appeared to be operating close to their thresholds. Under the scenario of opting for "AA+" rating, the lending headroom was estimated to

[6] S&P 2017b

[7] PRE is an S&P term for lending portfolio and includes loans, guarantees and investments that are linked to MDBs respective development missions

increase from US$785 billion to US$1,770 billion. The paper suggested that if S&P were to refine their methodologies pertaining to the treatment of preferred creditor status and single name concentration, it would significantly increase the lending capacity of the institution under both “AAA” and “AA+” ratings.

Humphrey (2018) argues that S&P’s calculation pertaining to MDB’s capital adequacy, concentration treatment and PCT is highly conservative and found that ADB, AfDB, EBRD, IBRD and IADB could potentially add an additional US$333.9 billion on top of their existing portfolios level of US$389.5 billion based on end-2016 data without risking their “AAA” ratings. With the inclusion of “AA+” rated callable capital across all MDBs, the lending headroom increases from US$333.9 billion to US$741.7 billion. The study suggested various policy options to MDBs to maximize their lending including coordinated efforts by MDBs related to rating agencies and capital adequacy, involving a credible external agency to review MDBs capital adequacy, incorporating portion of highly rated callable capital into MDBs capital adequacy calculation, evaluating the cost and benefits of sub-AAA rating, coordinated efforts on balance sheet optimization and to consider new measures to build MDB equity. On the policy option of evaluating the cost and benefits of sub-AAA rating, Humphrey (2018) argues that lower rating would lead to higher funding cost and have other disadvantages as well but “AAA” rating may not be necessary to achieve development goals at least for some MDBs. Moreover, the study suggest that sub-AAA may not be viable for IBRD but could be more beneficial for other MDBs and presents an example of Andean Development Bank (CAF) which has operated successfully with “AA-” rating.

A number of observers have pointed out that there will be an additional cost for MDBs that chose to opt for sub “AAA”, though we are not aware of attempts to measure those costs. Humphrey (2017) states that the “trade-offs of one of the major MDBs going sub-AAA have never been thoroughly explored outside MDB treasuries and would be worth investigating”. The Settimo study (2017) pointed out that targeting a lower than “AAA” rating could lead to a higher cost of funding for MDB, but did not attempt to estimate such costs.

While our study does not attempt to find a causal relationship between ratings and bond spreads, various studies find that rating agencies opinions are informative in explaining spreads. Eichengreen and Mody (1998) analyzed nearly 1,000 developing country bonds issued in years 1991-96 and finds that higher credit quality leads to lower spread and that market discriminates among issuers according to risk. They also studied changes in spread over time and find that these are explained by shifts in market sentiments and not by shift in fundamentals. Powell and Martinez (2008) argue that a small number of economic fundamentals explain the ratings of the two leading rating agencies and that spreads reductions to the end of 2006 can be explained using both ratings and world financial factors. They also report that controlling for fundamentals, there is evidence that ratings matters. Cavallo et al. (2008) finds that ratings do matter and that there is informational content in ratings that is not fully captured by spreads.

4. Methodology and Results

We attempt to build on and improve the existing literature by estimating the lending headroom of a broader group of MDBs, by deploying less onerous assumptions than previous studies, and by attempting to estimate additional borrowing costs and impact on profitability due to changes in balance sheet optimization. All the 8 MDBs studied in this paper maintain "AAA" ICR[8] from S&P and include AfDB, ADB, EBRD, EIB, IADB, IBRD, IFC and ISDB. Using data as of end Dec, 2016[9], PRE of these 8 MDBs amounted to US$923.0 billion. EIB is the largest MDB among the eight with PRE of US$475.2 billion followed by IBRD (US$174.9 billion). Combined equity[10] of 8 MDBs amounted to US$209 billion as of end-2016 reflecting exposure to equity ratio of 4.4x. Total callable capital of the MDBs amounted to US$942.5 billion at end-2016 while total "AAA" and "AA+" rated callable capital stood at US$149.5 billion and US$136.9 billion, respectively. IFC does not have callable capital while none of the sovereigns providing callable capital to ISDB had "AAA" or even "AA+" foreign currency rating. We estimate lending headroom for MDBs under no capital increase and under capital increase scenarios as follows:

[8] Baring AfDB, IADB and EIB which have a SACP of 'aa+', all other institutions SACP is also the highest or 'aaa'
[9] For IBRD and IFC the data is as of end June, 2016 as their fiscal year ends in June
[10] We use S&P Adjusted Common Equity

1. No Capital Increase
    a. Current level BAU
    b. BAU capital but optimizing while maintaining “AAA”
    c. BAU capital but optimizing and falling to “AA+”
2. Capital Increase Scenarios
    a. 25% increase in capital under current BAU
    b. 25% increase in capital plus optimizing while maintaining “AAA”
    c. 25% increase in capital plus optimizing and allowing rating to fall to ‘AA+’

Table 4: Ratings and financial data for MDBs (values in US$ billions)

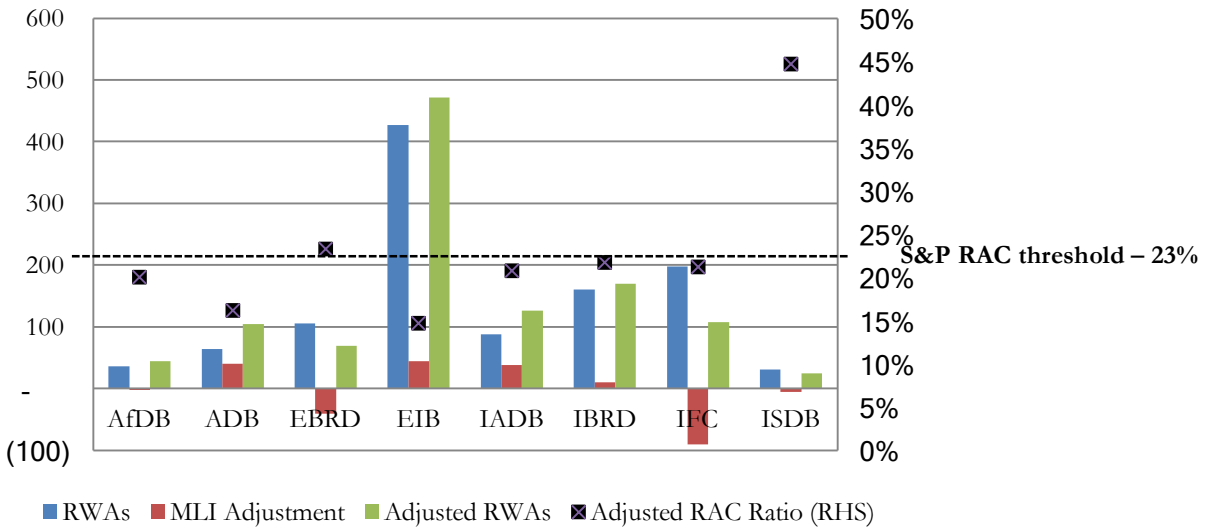
	AfDB	ADB	EBRD	EIB	IADB	IBRD	IFC	ISDB
ICR	AAA	AAA	AAA	AAA	AAA	AAA	AAA	AAA
SACP	aa+	Aaa	aaa	aa+	aa+	aaa	aaa	aaa
Total Callable Capital	81.5	135.5	24.8	233.6	164.9	247.5	-	54.8
“AAA” Callable Capital [11]	10.6	25.3	5.7	60.5	10.5	36.9	-	-
“AA+” Callable Capital[12]	6.1	22.8	3.4	8.2	50.0	46.4	-	-
Adjusted Common Equity	8.9	17.0	16.2	69.6	26.3	37.1	22.8	11.2
Purpose Related Exposure	22.8	69.3	30.0	475.2	92.4	174.9	39.7	18.6

Source: S&P 2017a and MDBs annual reports.

[11] “AAA” rated sovereigns by S&P as of March 15, 2018
[12] “AA+” rated sovereigns by S&P as of March 15, 2018

Under S&P methodology, Adjusted RAC ratio relate to each MDBs capital or ACE to its RWAs for credit, market and operational risk after adjustments for PCT, diversification and concentration. On average around 69% of RWAs are related to credit risk exposure inline with MDBs focus on lending operations. The quantum and direction of adjustment to RWA vary across institutions. In case of our portfolio of 8 MDBs, adjustment led to increase in RWAs for four out of eight institutions whereas for others these adjustments led to a reduction in aggregate RWAs. The RAC ratio, after adjustment, ranged between 44.7% for ISDB and 14.8% for EIB. Straight average Adjusted RAC ratio was 22.9% as of end-2016 for the 8 MDBs. Interesting only two out of eight MDBs had "Extremely strong" or above 23% RAC ratio as of end-2016 implying that other components of the assessments are strong enough to still lead to "aaa" SACP as under S&P methodology a combination of "Very strong" assessment of financial profile and "Extremely strong" business profile can lead to "aaa" SACP. Having a cushion above the threshold is viewed positively as it facilitates the counter cyclical role of MDBs and also act as a buffer during times of economic and financial duress.

Figure 2: MDBs RAC ratios (values in US$ billions)



Under the optimization scenario, we associate an adjusted RAC ratio to SACP and ICR and simulate the RWAs to a point at which under S&P methodology adjusted RAC ratio would reach to such a level which would require lowering the ICR, all else being equal.

would reach to such a level which would require lowering the ICR, all else being equal. In other words, we estimate the capital adequacy or adjusted RAC with callable capital which provides a financial profile assessment given a combination of MDBs business and funding and liquidity profiles. We add a 10% margin to the adjusted RAC as in a scenario where the Adjusted RAC ratio is within a 10% threshold from the next category, the rating agency may adjust it to the next category (upper or lower) based on a qualitative assessment. In the scenario of opting for "AA+" rating, we include callable capital from shareholders rated "AA+" in addition to the "AAA" rated callable capital. Meanwhile, our assumption of increasing the capital by 25% is based on current proposals as shared with us during conversation with market participants and discussions with relevant stakeholders. Nonetheless, executing a capital increase across all the institutions is not an easy task given the associated political challenges. We subtract additional liquidity requirement of 25% from lending headroom as liquidity levels would have to be increased inline with increasing exposure to maintain the same ICR. The liquidity requirement increases to 50% in a scenario when MDBs opt for "AA+" rating as a lower rated institution would have to maintain higher liquidity levels to maintain its ratings.

Figure 3: Estimating Lending Headroom

Current level BAU reflects no change in portfolio size. Under the scenario of no capital increase and optimizing while maintaining "AAA" rating, the aggregate portfolio size increases to US$1,521 billion from the end-2016 level of US$923 billion reflecting lending headroom of US$598 billion or 65%. Allowing the rating to fall to "AA+" and optimizing allows the PRE to more than double from the end-2016 level with lending headroom and aggregate portfolio size estimated at US$919 billion and US$1,842 billion, respectively.

Figure 4: No Capital Increase Scenarios – Optimizing while maintaining "AAA" (values in US$ billions)

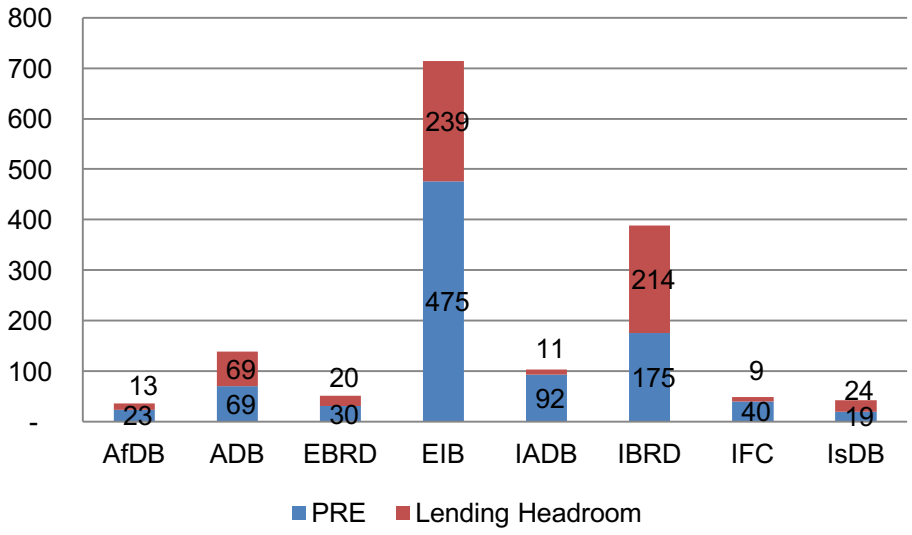
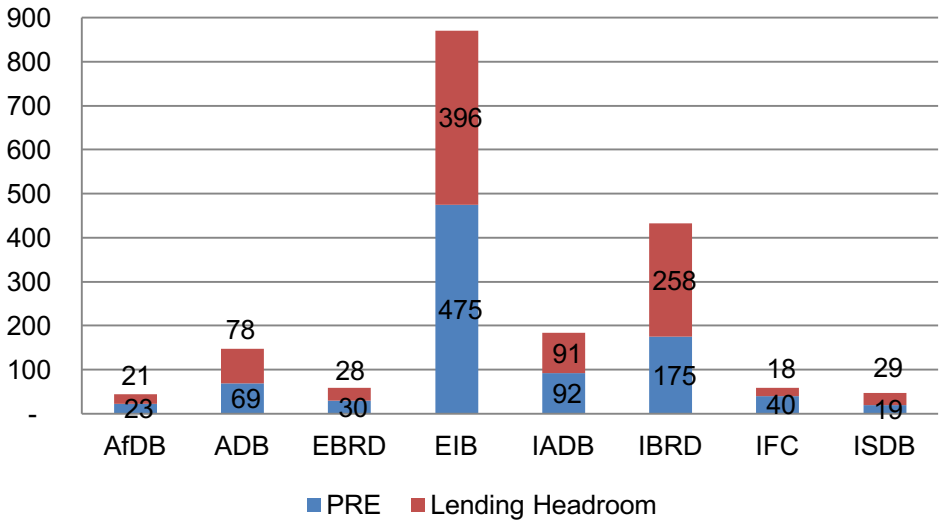


Figure 5: No Capital Increase Scenarios – Optimizing and falling to "AA+" (values in US$ billions)



Under the scenario of a 25% capital increase and current BAU, we assume that the PRE to capital ratio for each MDB would remain constant and resultantly the PRE will also increase by 25% to US$1,154 billion from the end-2016 PRE level of $923 billion. PRE to capital ratio varied from 1.7x (IFC, ISDB) to 6.8x (EIB). The aggregate portfolio

increases to US$1,708 billion under the scenario of 25% capital increase along with optimization of the adjusted RAC ratio and maintaining the “AAA” rating. The largest increase in the lending headroom and consequently aggregate exposure emanates from a 25% increase in capital along with a rating fall to “AA+” with lending headroom and aggregated portfolio estimated at US$1,903 billion and US$2,826 billion, respectively. The distribution of additional lending varies across all scenarios under no capital increase and 25% capital increase with EIB and IBRD contributing the largest share of additional lending.

Figure 6: 25% Capital Increase Scenarios – Business as usual (values in US$ billions)

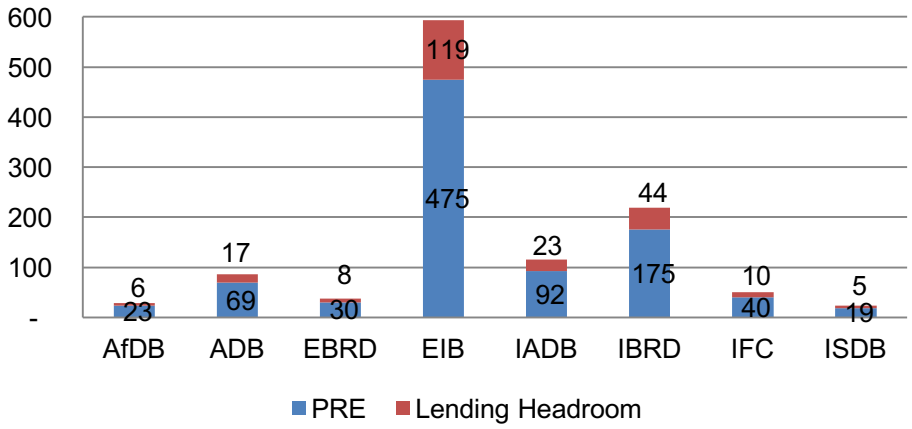


Figure 7: 25% Capital Increase Scenarios – Optimizing while maintaining “AAA” (values in US$ billions)

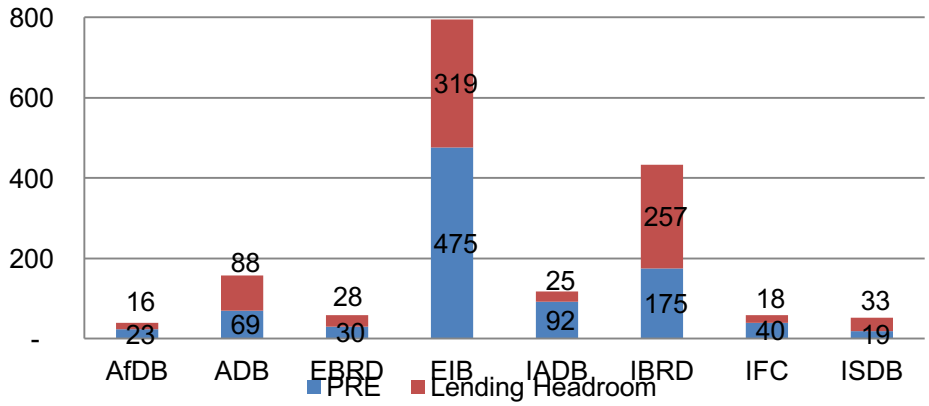
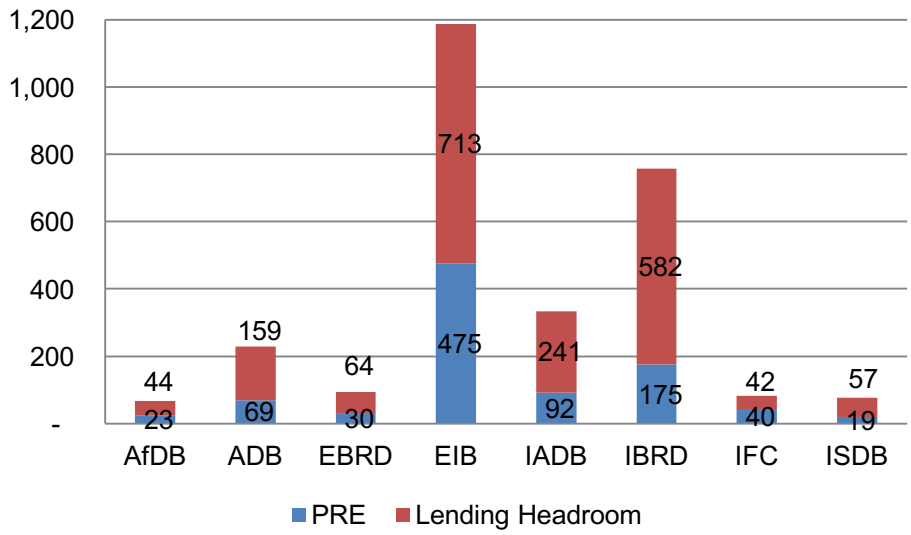


Figure 8: 25% Capital Increase Scenarios – Optimizing and falling to "AA+" (values in US$ billions)



The foremost assumption in estimating the lending headroom is that the business and funding profile of the MDBs do not change. The study further assumes that the distribution of the PRE do not change leading to the assumption that MLI adjustments related to concentration/diversification and PCT also remains unchanged. Deployment of additional lending towards riskier avenues or low income countries would be more capital intensive and as such would reduce the lending headroom. Moreover, downgrades in the ratings of highly rated sovereign could diminish the quantum of callable capital. Additional lending and higher liquid assets would likely increase earning potential and would contribute towards internal capital generation, however the study did not include such additions to capital.

Business profile and financial profile each carries equal weightage under S&P methodology. Also, capital adequacy or RAC is one factor and there are other factors as well which may affect ratings meaning that a rating can be downgraded even if there is no RAC threshold breach. The simulation also assumes RAC ratio being close to the threshold of being downgraded which may jeopardize the countercyclical development role of MDBs during times of financial crisis.

In its revised methodology for MLIs, S&P has proposed to include eligible capital provided by sovereigns rated at least equal to the MLI SACP rather than the ICR on the MLI. Since the methodology is yet not finalized, we did not include this change to the callable capital in the above simulation. If we were to incorporate this change the lending headroom would increase from US$785 billion to US$918 billion under the scenario of increase in capital and optimizing while maintaining "AAA" rating. Under the scenario of no capital increase and optimizing while maintaining "AAA" rating, lending headroom would increase from US$598 billion to US$704 billion. The additional exposure is primarily emanating from IADB which has around US$50 billion "AA+" rated callable capital, EIB with US$8.2 billion and AfDB with US$5.5 billion "AA+" rated callable capital. There would be no change in lending headroom estimates in the scenario of rating falling to "AA+" as the simulation already incorporates callable capital from "AA+" rated shareholders.

Our estimates on lending headroom could not be compared with S&P[13] estimates of US$ 1 trillion because of the non-disclosure of institution by institution details on lending headroom. Moreover, the S&P study does not take into account a liquidity adjustment. Adjusting for the sample, our lending headroom estimates under the scenario of no capital increase and optimizing while maintaining "AAA" are largely inline with Humphrey (2018). However, our interpretation of revision of callable capital treatment under the proposed S&P methodology differs from Humphrey (2018) as our study only includes "AA+" callable capital of MDBs which have a SACP of "aa+" whereas Humphrey (2018) includes callable capital for all MDBs irrespective of their SACP. Our lending headroom estimates under the scenario of no capital increase and optimizing while maintaining "AAA" and opting for "AA+" rating, are largely inline with Settimo 2017, after the adjustment for liquidity requirement.

[13] S&P 2016

Table 5: Comparison of Lending Headroom Analyses

	S&P 2016	Settimo 2017	Humphrey 2018	Munir and Gallagher 2018
MDBs studied	19	AfDB, ADB, EBRD, EIB, IADB, IBRD, IFC	AfDB, ADB, EBRD, IBRD, IADB	AfDB, ADB, EBRD, EIB, IADB, IBRD, IFC, ISDB
Data Period	End-2014	End-2015	End-2016	End-2016
Lending Headroom under "AAA"	US$1 trillion	US$785 billion	US$333.9 billion	US$598.0 billion
Lending Headroom under "AA+"	Not reported	US$1,770 billion	Not reported	$918.5 billion
Liquidity Adjustment	No	No	Yes	Yes
MLI Adjustment[14]	Yes	No	No	No

5. Estimating Additional Borrowing Cost of Going sub "AAA"

Increasing lending headroom may also increase risk and cost. Our lending headroom estimates suggests that MDBs can increase their aggregate loan portfolio with varying quantum to further their development mission. Under both capital increase and no capital increase scenarios, the maximum lending headroom is estimated when MDBs opt for "AA+" rating. However, if MDBs were to opt for "AA+" rating their borrowing cost should increase as investors perceives the MDBs to be more risky and as such may require a higher risk premium. Based on the rating performance of global corporates from 1981-2016, S&P estimates an additional default risk of only 0.02% between "AAA"

[14] MLI adjustment require portfolio level details which are available to the rating agency

and "AA+" rating bands[15]. In this section we estimate the additional borrowing cost "AAA" rated MDBs would have to bear in a scenario of opting for "AA+" rating.

We use borrowing related interest expense as a percentage of average total borrowings outstanding[16] as a proxy to measure borrowing cost. This represents the borrowing cost, in percentage terms, the institution bears on its total borrowings. Total borrowings includes debt outstanding in the form of revolving credit, term loans, senior bonds and notes, other borrowings (derivatives, commodity) and any unamortized discount or premium. Similarly, the interest expense used in the numerator of the ratio includes interest expense of outstanding debt instruments and cost related to any derivatives instruments used to manage the repricing risk between loans and borrowings[17].

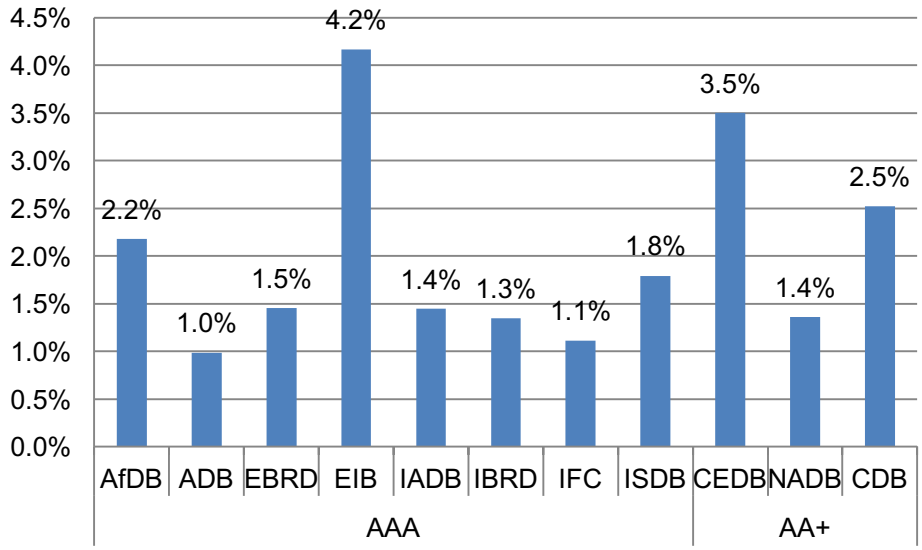
$$Borrowing\ Cost = \frac{Interest\ expense_t}{Average\ Borrowings_{t,t-1}}$$

We calculate the average borrowing cost over the last ten years[18] of the same "AAA" rated MDBs which we used in our lending headroom simulation. In the next step, we calculated weighted average borrowing cost of "AAA" rated MDBs with weights derived from the outstanding borrowings levels as of end-2016. The same process is repeated for "AA+" rated MDBs[19]. Total borrowing of "AAA" rated MDBs amounted to US$1,257.1 billion as at end-2016 while that of "AA+" rated MDBs stood at US$23.0 billion.

Figure 8: Estimating Borrowing Cost

[15] S&P 2017e
[16] Very few MDBs report weighted average borrowing cost on their outstanding debt in their annual reports and hence it cannot be used
[17] Data for interest expense and total borrowing from S&P Capital IQ and from MDBs annual report
[18] Between 2016-2007 as this covers period of low and high interest rates. Averages of daily, with monthly frequency, Fed Fund rate ranged between 5.02% (2007) to 0.09% (2014) during this period.
[19] These include Caribbean Development Bank (CDB), North American Development Bank (NADB) - Aa1 rating from Moody's and Council of Europe Development Bank (CEDB). In case of CEDB, derivatives related borrowings are not included. For NADB, there was no borrowings outstanding prior to 2010

Figure 9: 10 year (2016-2007) Straight Average Borrowing Cost (%)



The weighted average cost of borrowing of "AAA" rated MDBs (with EIB) is estimated at 2.67% while this increases to 3.36% in the case of "AA+" rated MDBs. EIB outstanding borrowings and cost of borrowings are highest among all the "AAA" rated MDBs. At end-2016, EIB outstanding borrowing represented around 47% of the total borrowings of "AAA" rated MDBs studied in this paper. EIB highest borrowings are in EUR which have a weighted average rate of 2.2% while some of its borrowings have weighted average rate as high as 7.6% as of end-2016. If we were to remove EIB from our sample, the weighted average cost of borrowings of "AAA" rated MDBs declines to 1.33%. The additional cost of "AAA" rated MDBs opting for "AA+" rating is estimated at 0.69% or 69 bps (with EIB) and 203 bps (without EIB). The results suggest an intuitive relationship between ratings and borrowing cost: higher the rating, lower the borrowing cost and vice versa. We also run the borrowing cost test on "A" and "BBB" band rated MDBs and found the relationship to hold true in the lower bands as well with borrowing cost increasing further incase of "A" and "BBB" band rated MDBs.

Table 6: Borrowing Cost of MDBs

"AAA" rated MDBs 10 Year Weighted Average Borrowing Cost (with EIB)	2.67%
"AAA" rated MDBs 10 Year Weighted Average Borrowing Cost (without EIB)	1.33%
"AA+" rated MDBs 10 Year Weighted Average Borrowing Cost	3.36%
Incremental Cost of Opting for "AA+" (with EIB)	0.69% or 69 bps
Incremental Cost of Opting for "AA+" (with EIB)	2.03% or 203 bps

Note: Ratings as of August 31, 2017

Estimates for additional borrowing cost should be interpreted with certain caveats in mind. The borrowing cost of an institution is a function of various factors and credit risk or rating is only one important consideration. However, there are other factors including liquidity, scarcity and curve which influence cost. As per S&P annual study of observe default probabilities by rating class which uses data from 1981-2016, "AAA" has a weighted long term 1-year average default rate of 0.00%, "AA" has 0.02% and "A" has "0.06%". Therefore the credit risk component measured through a default rate between "AAA" and "AA" is negligible and as such should not drive any major price deviations and probably there are other factors e.g. investor perception that would eventually drive the cost difference between "AAA" and "AA+" rating, if any[20].

The study focuses on estimating the difference between "AAA" and "AA+" rated MDBs and not on the factors that are driving this difference. Our additional borrowing cost estimates is constrained by the limited number of MDBs in the sub "AAA" rating bands and also by the small quantum of outstanding borrowing in these bands. If "AAA" MDBs were to opt for "AA+" rating, the quantum of liquid assets should increase leading to additional revenue. However, our additional borrowing cost estimate does not offset

[20] As a case in point, S&P downgraded the sovereign ratings of US in August, 2011 and yet US treasury yields actually narrowed after the rating action

income generated from additional liquid assets. Also, using borrowings having same maturities and same currencies would probably lead to a more robust estimate.

6. Evaluating the impact on profitability of opting for "AA+"

Our findings above estimate the incremental borrowing cost associated with "AAA" rated MDBs opting for a notch lower or "AA+" rating. In this section, we study how much revenue each MDB would be able to generate by deploying additional lending headroom on top of their existing portfolios and compare it with the borrowing expense under "AA+" rating using both cost estimates to evaluate the net impact on profitability. Of course funding cost is only one of the costs associated with opting for "AA+" rating and there would be additional cost and challenges that MDBs may face which are discussed in the next section.

To estimate the amount of revenue each MDB would be able to generate by deploying additional lending headroom, we use a matrix similar to the one we used in estimating borrowing cost. We calculate interest income as a percentage of average loans (net) for each MDB at end-2016 and use this most recent pricing on loans, both existing at end-2016 and additional lending headroom from opting to "AA+", to estimate the annual revenue each MDB would be able to generate from a higher loan portfolio. Straight average pricing on loans across 8 MDBs stood at 3.4% with a range of 0.99% (IBRD) to 6.6% (IsDB)[21]. Total amount of loans (net) stood at US$895 billion at end-2016[22] and with additional lending headroom of US$919 billion, the loan portfolio aggregates to US$1,814 billion under the scenario of no capital increase and opting for "AA+" rating. The loan (net) amount differ from S&P PRE amount as in addition to loans, PRE includes guarantees and investments that are linked to MDBs respective development missions.

$$Loan\ Pricing = \frac{Interest\ Income_t}{Average\ Loans\ (net)_{t,t-1}}$$

[21] Data from S&P Capital IQ and MDBs annual reports
[22] Data from S&P Capital IQ and MDBs annual reports

To estimate the annual borrowing expense of going to "AA+", we use the two incremental borrowing cost estimates of 69bps and 203bps and add them to the end-2016 borrowing costs of each MDB. This lead us to an estimate of the higher borrowing cost of each MDB in the scenario of opting for "AA+" which is then multiplied with the outstanding borrowing at end-2016 to arrive at the annual borrowing expense. The incremental borrowing cost of 203bps also acts as stress scenario for MDBs; against the actual straight average borrowing cost of 1.20% across "AAA" MDBs for 2016, the 203 bps incremental borrowing cost increases the straight average borrowing cost to 3.2%

Next, we calculate the net impact of a downgrade on MDBs profitability. Our results suggest that with 69bps as an additional cost of going "AA+", all MDBs report a positive impact on profitability. While some MDBs appears to have little cushion to absorb operating costs and other costs of opting for "AA+" (AfDB, ADB), other MDBs report moderate to strong cushion. In the scenario of escalating the incremental cost of borrowing to 203bps, 6 out of 8 MDBs report a positive impact with cushion to absorb operating costs and other costs further reducing for some of the institutions. Under both the scenarios, EIB, IADB, EBRD and ISDB stands out to be the strongest institutions to absorb the additional funding cost and having a decent cushion to absorb operating costs and other costs associated with a downgrade in rating[23]. For other institutions, the option of opting for "AA+" rating may not be a viable business case and may be better off in optimizing their balance sheet with current rating level.

[23] For EIB, IADB, EBRD and ISDB even after including administrative costs of year, 2016 the net impact remains positive under the scenario of 203bps funding cost increase

Table 7: Impact on Profitability of opting to "AA+" (Values in $ billions)

MDB	Revenue	Additional Borrowing cost at 69 bps	Additional Borrowing cost at 203 bps	Net Impact with 69 bps Additional Borrowing cost	Net Impact with 203 bps Additional Borrowing cost
AfDB	1.0	0.6	0.9	0.5	0.08
ADB	2.4	1.5	2.9	0.8	(0.6)
EBRD	2.4	0.6	1.2	1.7	1.2
EIB	41.6	23.2	31.1	18.4	10.5
IADB	4.8	1.4	2.5	3.5	2.3
IBRD	4.2	3.1	7.4	1.2	(3.2)
IFC	1.9	0.9	1.7	1.0	0.2
ISDB	2.6	0.3	0.5	2.3	2.1
Total	60.9	31.5	48.3	29.4	12.6

Source: S&P Capital IQ and MDBs annual report

The estimates on profitability in the scenario of opting for "AA+" should be interpreted with certain caveats in mind. The scope of these estimates is limited to revenue generated from loans and expenses from borrowings and does not account for other operating costs e.g. staff, administrative and provisioning costs. Likewise, it does not include the income from other avenues e.g. treasury investments, advisory and technical services and guarantees. Taking these costs and revenue items into account, the viability of opting for "AA+" may or may not hold true. We suggest that each MDB should evaluate this on case to case basis and findings from such exercises should be discussed with the management and the Board to make a more informed decision.

7. Other potential costs and challenges of opting for "AA+"

So far we have only estimated the additional borrowing cost associated with "AAA" rated MDBs opting for a notch lower or "AA+" rating. However, there are other important considerations as well which MDBs may face in the scenario of opting for a lower rating. While most of these are extremely difficult to quantify, here our objective is to highlight such consideration[24].

[24] List of additional consideration is not exhaustive and there may be other cost factors as well

Access to capital markets

MDBs are expected to play a vital role during financial crisis by providing financing to projects and institutions which may become risky transactions for conventional lenders under distress conditions. Opting for a lower than "AAA" rating or minimizing the cushion available above the threshold RAC level may jeopardize their role as "lender of the last resort" as access to capital may dry up during the times they need the most.

Cost of Derivative Instruments

MDB use derivative instruments such as currency sways, interest rate swats and foreign exchange sways and forwards for asset and liability management for individual positions and portfolio. Given a change in risk profile, the cost of such hedging transaction may increase.

Investors demand for "AAA" rated MDBs bonds

There is a strong demand for "AAA" rated MDBs bond among the risk averse investors as credit profiles of these institution is extremely strong and they offer a decent return for the level of risk assumed. Moreover, investment limits of certain types of funds restrict them from investing below "AAA" rated bonds. There is a risk that demand for MDB bonds may fall leading to a selling pressure on these instruments.

Issuance of guarantees

MDBs typically issue guarantees to facilitate cofinancing by mitigating the risk of commercial lenders and capital market investors. These guarantees can be a credit guarantee, political risk guarantee or any other type and are recognized as off-balance sheet items. The quantum of these off balance sheet guarantees is small. Based on end-2016 data, amount of guarantees reflect 2.2% of the total loans (net) of MDBs[25]. Nonetheless, commercial lenders draw comfort from "AAA" rated guarantee provided by MDBs and in a scenario of a notch downgrade, MDB would not be able to provide "AAA" rated guarantee.

[25] ISDB was not included in this calculation

Ability to revert back to “AAA”

S&P reports a median global corporate downgrade to upgrade ratio of 1.41 between 1981-2016 reflecting that there have been more downgrades than upgrades[26]. It is a market perception that once an institution gets a “downgrade” in rating, it is very difficult to attain that rating back. However, atleast three MDBs have been able to receive an upgrade after a downgrade. AfDB was downgraded from “AAA” to “AA+” by S&P in August, 1995 and was able to again receive “AAA” in July, 2003. Inter-American Investment Corporation was downgraded from “AA” to “AA-” in May, 2005 and was rated again “AA” in July, 2010. Caribbean Development Bank was downgraded from “AAA” to “AA+” in June, 2012 and then further to “AA” in Dec, 2012 but in May, 2017 received an upgrade to “AA+” from S&P.

8. Summary and conclusion

Given their efficient business model, MDBs are considered important tool in furthering the development objectives of SDG and are increasingly being pushed to lend more. However, increasing their lending exposure may endanger their “AAA” rating. In this context, the paper adopts a more robust approach to quantify potential lending headroom with no capital increase and a 25% capital increase case under maintaining “AAA” rating and by allowing rating to fall by a notch to “AA+”. Our results suggest that 8 MDBs can collectively add between US$ 598 billion - US$1,903 billion on top of their lending portfolios at end-2016 based on the policy options they opt for. Under the proposed revision of callable capital treatment by S&P, our lending headroom estimates increases further as it allows the inclusion of “AA+” rated callable capital for 3 of the 8 MDBs studied in this paper. These lending headroom estimates are based on the assumption of static business and funding profile and that the composition of the lending portfolio would remain unchanged. However, the demand and consequently deployment of additional lending by MDBs is expected to be more pronounced in countries with weaker risk profiles which would lead to different lending headroom than our estimate.

[26] S&P 2017e

The study also calculates two incremental borrowing cost estimates in a scenario of "AAA" rated MDBs opting for "AA+" rating using the borrowing data from 2007-2016. Our results from this exercise suggest that incremental funding cost between "AAA" and "AA+" rated MDBs is 69bps and 203bps (with and without EIB) over the last 10 years. Our estimates on borrowing cost are constrained by the limited number of "AA+" rated MDBs and also by a smaller quantum of outstanding borrowings of these institutions. Given that borrowing cost is a function of many other variables and credit ratings is only one of them, the actual cost of going "AA+" for an institution may differ from our estimates. Institution should also take into consideration that investor perception and market sentiments may have a more profound reaction to a downgrade on borrowing cost than what this study suggests. We also highlight some of the additional cost and challenges MDBs may be faced with "AA+" rating.

We use these cost estimates to calculate the borrowing expense on outstanding borrowing levels and compare it with the revenue generated from "AA+" level loan portfolio. Our result suggests that the aggregate net impact on profitability remained positive under both incremental cost estimates. The cushion to absorb other operating expenses and additional costs associated with "AA+" rating seems to be stronger in the case of EIB, IADB, EBRD and ISDB while other institutions seems to be better off by optimizing their balance sheet and maintaining their current "AAA" rating.

It is not our role to advocate whether or not MDBs should opt for "AA+" rating. Given that such a move has been considered in the policy arena, we aim to acknowledge that there would be costs associated with such a pathway and offer an initial estimate of the magnitude that these costs might be expected to be. We recommend further research in this area that would enable actors to do better a cost-benefit analyses to evaluate the full viability of moving to sub AAA credit ratings.

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