IBRD Lending as a Tool to Avoid Future Debt Crises in IDA Countries

An extended proposal, with a review of the literature and estimates of scale, cost and risk

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Summary

This paper proposes that, once debt relief has brought a country's debt back to a sustainable level, the IBRD make a standing offer of unconditional, standard-terms lending worth up to 25 percent of a transparently calculated 'robustly sustainable debt level' (RSDL) – with the explicit purpose of replacing private-creditor claims with cheaper, senior IBRD debt, so reducing the private-debt share of the balance sheet that produced the crisis in the first place. The 25 percent cap is a design choice, not an estimate: it is the smallest IBRD stake that, on its own, makes borrowing above the RSDL costly enough to deter (Section 4.7). In return, borrowers would report all public and publicly guaranteed borrowing, including contingent liabilities, and would lose the cheap IBRD money if they took on new debt that pushed them back above the RSDL. The target population is countries below IDA's own graduation threshold – the poorest, least creditworthy group, and the one least able to absorb another cycle of private borrowing and distress. The idea is to use a cheap, senior tranche of debt as an anchor in the sovereign's capital structure and the threat of losing it as a commitment device against over-borrowing, specifically against a repeat of the debt build-up now being resolved.

We place the idea in the literature on debt dilution and seniority, and then put numbers on the central question: how much private debt could realistically be replaced, and at what cost and risk to IBRD. We use the IMF's April 2026 World Economic Outlook, World Bank debt-stock data by creditor type, the latest published LIC-DSF risk ratings and IBRD's current loan pricing. The main findings are:

- ***The scale is real but not transformative.*** For the 27 sized IDA-only countries below IDA's $1,365 income threshold – our target population – IBRD lending at the 25 percent cap comes to about $59 billion at λ=0.8, rising to about $67 billion at the looser λ=0.9, since the result scales with the buffer (Table 1). Because private creditors hold roughly a quarter of these countries' external public debt, the cap is about enough to replace all of it. Ethiopia ($9bn), Tanzania ($7bn) and Myanmar ($7bn) are the largest before the governance screen proposed in Section 5, which removes Myanmar and six other countries and leaves about $44 billion across 20 countries. The same cap applied to the full IDA-eligible list (including Nigeria and other countries that are already

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IBRD-blend or have grown past the threshold) gives about $243 billion (Appendix); there private creditors hold more, so the cap leaves about $117 billion of private debt in place.

• ***Most of the target population would need debt relief first.*** The figures above assume each country starts at its RSDL. Today, 21 of the 27 do not. Bringing them there would take about $117 billion of relief, or $60 billion (16 percent of their GDP) excluding Sudan. Only 8 countries have external PPG debt above their external RSDL (Table 2), so just $18 billion of the total is external; the rest is total public debt, including domestic debt, that international restructuring processes do not reach. Where external relief is needed, it comes to about half of non-multilateral external debt. For the 17 countries that would pass the governance screen, about $55 billion of relief would unlock $27 billion of IBRD lending (Section 4.3). Ethiopia, although rated in distress, is already below both RSDLs on its post-restructuring numbers. Because most countries have not yet borrowed up to their external RSDL, the opportunity the proposal targets is pre-empting future private borrowing as well as replacing debt that already exists.

• ***The central result now scales with the buffer, unlike before.*** Raising λ from 0.8 to 0.9 raises the IBRD-lending total by exactly 12.5 percent (Table 1), the same proportion by which the RSDL itself widens, because the calculation is now anchored to each country's sustainable capacity rather than its current debt. The backward-looking eligibility test used in Section 4.2 is, if anything, even more sensitive to the buffer – swinging by an order of magnitude across reasonable choices of buffer and capacity class (Appendix Figure A2) – but for a different reason: small changes in λ push individual countries' current debt across the RSDL threshold entirely, rather than simply rescaling a fixed capacity.

• ***The savings per dollar are large.*** IBRD's current Group A rate (about 5.1 percent) is roughly 4.4 percentage points below frontier Eurobond yields. Replacing a 10-year Eurobond with an IBRD loan cuts the DSF present value of the debt by about a quarter and first-decade debt service by two-thirds; applied to the $59 billion central estimate, that is about $2.6 billion a year in interest savings for the target population (Section 4.4).

• ***But seniority is not a free lunch.*** In a simple recovery-waterfall model calibrated to observed haircuts and MDB recoveries, junior creditors reprice when a senior tranche is added. If the probability of default does not fall, the borrower's overall cost is unchanged or slightly higher. Savings survive only if the mechanism lowers default risk – precisely what replacing a volatile private-creditor base with a stable senior one is meant to deliver. The break-even reduction is small (about 1.5–4.5 percent), and our historical estimates imply that the lower interest bill alone delivers a 7–20 percent reduction, so roughly a quarter to a half of the headline saving survives repricing.

• ***A standard, backward-looking eligibility test is not the point of this paper, but for the record:*** only 1 of 19 under-threshold countries with enough data to assess currently has any additional borrowing headroom under that test (Mali, about $1.1 billion). That says more about how little room is left after years of borrowing than about the proposal itself (Section 4.2). The equivalent exercise for the full IDA-eligible list – including countries that have already grown past the threshold or are already IBRD-blend, like Nigeria, the largest potential borrower by debt stock alone ($42bn), excluded by a liquidity constraint despite qualifying on solvency – is in the

Appendix and is roughly 80 times larger ($87bn) – almost all of IBRD's current capacity to lend to IDA-type countries sits with higher-income, already-creditworthy borrowers, not the poorest ones.

- ***A debt-ratio RSDL is a reasonable but imperfect early-warning signal.*** Across 59 IDA countries in 2006–2022, debt/GDP predicts distress onsets within two years with an AUC of 0.81. A 44 percent threshold flags 85 percent of pre-distress years but also 40 percent of calm years. Of 13 distress episodes since 2011, the rule would have stopped new IBRD lending 2 to 8 years ahead in 4 cases (median 4), but it missed Chad and Djibouti, where the problem was collateralised or SOE debt and liquidity rather than the headline ratio.

- ***The repayment rule is self-financing and bites hard at the margin.*** Because a breach requires repaying IBRD only enough to bring debt back below the RSDL, the repayment equals the excess new borrowing, and the proceeds of that borrowing can fund it. The penalty is that expensive debt replaces cheap IBRD debt dollar for dollar. In present value this costs about 39 cents per dollar of excess borrowing, so the effective cost of borrowing above the RSDL is roughly 14 percent a year rather than 9.5 percent – the mechanism that keeps the post-relief private-debt share down once it has been brought down. This is also what sets the 25 percent cap. At λ=0.8 the RSDL sits 20 percent below the LIC-DSF threshold, and an IBRD stake of 25 percent of the RSDL is exactly that buffer ($0.25 \times 0.8 = 0.2$), so every dollar a government borrows between the RSDL and the IMF–World Bank high-risk threshold carries the penalty. For a medium-capacity country the stake is about 8 percent of GDP, and the penalty for using all of it is worth about 3 percent of GDP in present value. The rule remains weaker when a breach is only revealed after the money has been spent (hidden debt).

- ***The risk to IBRD is modest if the offer is confined to the target population and screened for governance.*** After the screen, the target population takes about $44 billion across 20 countries, with an exposure-weighted entry rating of about B−. A portfolio credit model calibrated to MDB default and recovery history puts expected losses on the new loans at about $23 million a year, against about $475 million of net lending spread, and adds only $0.3–0.4 billion to IBRD's one-year 99.9 percent tail loss. The binding constraints are capital ratios, not losses: IBRD's equity-to-loans ratio falls from 21.6 to 18.6 percent – just above its 18 percent minimum – and our replication of S&P's risk-adjusted capital ratio falls from 40.1 to 33.7 percent, still well above the 23 percent S&P cites as a downside trigger (Section 4.8). Without the screen, the equity-to-loans ratio would breach its minimum. The full IDA-eligible list (about $224 billion after screening) would take the S&P ratio to 16 percent and need about $28 billion of additional capital to keep it at 23 percent.

We conclude that the proposal is best understood as a tool for consolidating the debt relief now underway or recently completed in several IDA countries, not as a new source of finance for countries that are already fully borrowed up. Its value lies in shrinking the private-creditor share of the poorest countries' balance sheets and in the commitment device that keeps it that way, rather than in the modest additional headroom a backward-looking eligibility test finds today. We suggest several design changes that follow from the numbers: a cap on IBRD lending of 25 percent of each country's RSDL, a governance screen, liquidity and collateralisation triggers alongside the debt ratio, PV-based measurement, a phased offer, a staged repayment schedule for breaches discovered late, and sequencing

the offer explicitly to follow debt relief rather than to precede it, with that relief calibrated to the RSDL rather than the DSF threshold and covering total, not only external, debt.

1. The proposal

A wave of IDA-country debt crises and restructurings – Zambia, Ghana, Ethiopia, Malawi, Chad, Mozambique and Suriname among them – has forced down the debt of several of the poorest countries from unsustainable to merely high levels, largely at the expense of private bondholders and commercial banks. The question this paper asks is what happens next: once relief has done its work, what stops the same countries re-accumulating the same kind of private debt and arriving at the same point again in a decade? We propose that the IBRD promise to lend countries under the IDA income threshold unconditional funds (not linked to projects or policies beyond those connected with debt) at its standard rates, worth up to a quarter of a level set by a transparent debt sustainability model – and, where debt relief has just occurred, actively refinance the remaining private creditors within that limit, so that a larger share of the post-relief balance sheet is senior, cheap, and not prone to repricing in the next external shock. In return, countries would have to report on all borrowing from other sources, including contingent liabilities and guarantees made by the state or SOEs. If their total debt load exceeded the sustainability model due to new debt issuance, they would have to repay sufficient debt to the IBRD to reach sustainability again. As IBRD debt is cheaper than other debt, countries would have a significant incentive not to trigger that event.

The World Bank is already deeply involved in efforts to avoid debt distress in the poorest countries. IDA's Sustainable Development Finance Policy (SDFP) encourages more transparent and sustainable financing through set-asides that reduce a country's allocation if it does not comply, and the Bank is pushing for 'radical debt transparency', including of contingent liabilities. What is missing is a mechanism that acts at the moment debt relief concludes, when a country's debt stock is for once below a sustainable level and the composition of what remains can still be changed. The Bank could take that further step for countries under the IDA income threshold: an open offer of IBRD debt on standard terms, worth up to 25 percent of an RSDL calculated with a transparent algorithm and available for as long as total debt from all sources, including contingent liabilities, stays below that RSDL, with newly-relieved countries a natural first group to approach.

The RSDL could build on indicators including external and total public debt and debt service relative to GDP, exports and revenue, perhaps alongside the fiscal balance and inflation measures used in the IMF–World Bank Debt Sustainability Framework (LIC-DSF). Alternatively, it could simply use the DSF itself to calculate the capacity to absorb additional debt safely. The IBRD would offer debt to countries that are below the RSDL, capped at 25 percent of the RSDL. The cap is a design parameter, not a forecast of demand: it is set so that the IBRD stake is, by itself, large enough to make borrowing above the RSDL unattractive (Section 4.7), without making IBRD so large a share of each borrower's debt that its preferred-creditor status or its own capital comes under strain (Sections 4.6 and 4.8). It would be issued as policy lending with a single trigger, being transparently under the RSDL, and on standard repayment terms for as long as borrowers remain transparently under it. Borrowers could still

borrow, or take on contingent liabilities, from other private or public sources.

If a borrower issued new debt while above the RSDL, or issued debt or sovereign guarantees whose terms were not transparent, this would trigger repayment clauses in its IBRD loans. If the RSDL itself fell (because of a shock to GDP, the exchange rate or revenues), no new IBRD loans would be offered, but the repayment clauses would not be activated. Only new borrowing or new contingent liabilities would trigger them. Cheap IBRD debt thus serves as an anchor in the capital structure, and the threat of losing it gives governments a strong incentive to keep total borrowing within sustainable limits.

The rest of this paper asks five empirical questions about the idea:

1. How much private debt could realistically be replaced after relief, and what would a standard eligibility test find today for comparison?
2. How much debt relief would countries need, from current levels, before they could borrow?
3. What would it save borrowers?
4. Would a transparent RSDL have caught past crises?
5. Does the incentive survive once other creditors react, and what are the risks to borrowers and to IBRD?

2. Where the proposal sits in the literature

2.1 Debt dilution and the commitment problem

Since Eaton and Gersovitz (1981), sovereign debt has been analysed as a problem of limited enforcement: governments repay to preserve access to credit rather than because they can be compelled to. Quantitative models in this tradition (Arellano, 2008) generate defaults when output falls and debt is high. A later strand identifies debt dilution as a first-order cause of excessive borrowing. Because a sovereign cannot commit not to issue more debt later, lenders price in the expected future dilution of their claims, borrowing costs rise, and the government borrows more than it would if it could commit (Bolton and Jeanne, 2009; Hatchondo, Martinez and Sosa-Padilla, 2016). Hatchondo et al. estimate that dilution accounts for the large majority of default risk in a calibrated emerging-market model.

The remedies proposed in this literature are close cousins of the RSDL mechanism. Chatterjee and Eyigungor (2015) show that a seniority arrangement protecting existing creditors from dilution lowers default frequency and raises welfare. Hatchondo, Martinez and Roch (2022) show that fiscal rules (debt brakes) lower sovereign spreads by limiting future dilution, and that the gains depend on the rule being enforced. The RSDL proposal is effectively an externally enforced debt rule with a financial penalty attached, and its credibility rests on the enforcement question those papers highlight.

2.2 A close policy analogue: blue and red bonds

The closest precedent is Delpla and von Weizsäcker's (2010) Blue Bond proposal for the euro area. Countries could borrow cheaply in senior, jointly guaranteed 'blue' bonds up to 60 percent of GDP,

while anything above that would be junior ‘red’ debt. The design aimed to lower the average cost of prudent borrowing while making marginal borrowing above the threshold expensive. The RSDL mechanism has the same architecture, with IBRD’s preferred-creditor status playing the role of the blue tranche. The criticisms of blue bonds therefore apply here too:

- The junior tranche becomes riskier and more expensive, so part of the saving is a transfer from other creditors (we quantify this in Section 4.6).
- The ceiling has to be credible.
- A government near the threshold may face a cliff-edge in its marginal cost of funds.

2.3 Preferred creditor status in practice

The proposal assumes that IBRD debt remains senior. Schlegl, Trebesch and Wright (2019) document a stable de facto seniority ordering in sovereign debt: the IMF first, then MDBs, then bonds, with bilateral official lenders last. Cordella and Powell (2021) model why preferred creditors can lend when others will not, and why that status depends on the preferred creditor lending in a way that keeps the borrower solvent. Perraudin, Powell and Yang (2016) and Humphrey (2022) show how rating agencies credit MDBs for preferred status.

The empirical record is favourable. The GEMs consortium reports that MDB lending to sovereigns and sovereign-guaranteed entities over 1984–2024 had an average annual default rate of 0.77 percent and an average recovery rate of 95.1 percent (GEMs, 2025). A mechanism that asks IBRD to accelerate or reprice its claims precisely when a borrower is borrowing heavily could, however, test that status. Rating agencies and other creditors may view it differently from ordinary lending.

2.4 Debt thresholds and the LIC-DSF

The DSF thresholds trace back to Kraay and Nehru (2006), who estimated the probability of debt distress as a function of debt burdens, policy quality and shocks. The 2017 reform (IMF and World Bank, 2018) replaced the CPIA-only classification with a composite indicator of debt-carrying capacity (weak, medium, strong). The indicative thresholds are 30/40/55 percent of GDP for the PV of external public debt and 35/55/70 percent of GDP for the PV of total public debt. On 9 September 2026 the IMF and World Bank Boards completed the first review of the framework since 2017. It concluded the framework remains fit for purpose but should be refined (IMF, 2026). Based on the Fund-Bank staff presentation of the reform (DMF Forum, April 2026), the new framework keeps the three debt-carrying-capacity tiers but refines the composite indicator (dropping world growth, adding output volatility and a proxy for exposure to global financing conditions); re-estimates the external thresholds we use, targeting predictive power ‘comparable to the 2017 review’ – a true-positive/false-positive trade-off of 0.82/0.38, close to what our own backtest finds for debt/GDP (Section 4.5); and adds, for the first time, thresholds for overall (not just external) debt burden indicators, including a face-value (not PV) overall-debt solvency measure and an interest-payments-to-revenue liquidity measure similar to the ones we use here. It also introduces a model-based probability of debt unsustainability to replace judgment-only sustainability calls, but the Board has for now restricted publication of the probability cut-offs that would operationalise it, and the new framework is not expected to be operational before

the second half of 2027. We therefore keep the current (2018-vintage) thresholds throughout rather than anticipate figures the Fund has not published; Section 6 returns to this.

Critics argue that the framework blends economic analysis with judgment, has been prone to optimistic forecasts, and needs better treatment of domestic, commercial and collateralised debt and of climate risk (Carnegie Endowment, 2026; Boston University GDP Center, 2026). The Independent Evaluation Group has examined how the Bank uses the framework. An RSDL built on the DSF inherits these strengths and weaknesses. An algorithmic RSDL would, however, remove the room for judgment that the critics object to, which is a feature for a commitment device and a cost for accuracy.

Alternatives to threshold-based rules include the IMF's 'debt-at-risk' approach (Fiscal Monitor, October 2024), which uses quantile regression to estimate the tail of the future debt distribution. Stochastic DSAs are another option.

2.5 Hidden debt and transparency

The proposal's transparency trigger addresses a recurrent source of crises. Horn, Reinhart and Trebesch (2021) estimate that a large share of Chinese overseas lending went unreported in standard statistics. Gelpern et al. (2023) document collateral, confidentiality and cross-default clauses in Chinese loan contracts. Mozambique's undisclosed loans (2013–16) and Senegal's recent misreporting are the canonical cases. In Senegal, the Court of Auditors revised end-2023 central government debt from 74 percent to almost 100 percent of GDP, and later estimates put debt near 119 percent of GDP at end-2024.

These episodes show both why a transparency trigger is valuable and why it is hard to enforce. The debt in question was, by definition, not known at the time.

2.6 Conditionality, covenants and institutional precedents

Svensson (2003) shows why conditional aid often fails: donors find it costly to enforce penalties ex post, and recipients anticipate this. The RSDL mechanism's single, verifiable trigger is designed to reduce that time-inconsistency, but the question of whether the Bank would really call loans remains central. The corporate-finance literature on covenants (Smith and Warner, 1979; Chava and Roberts, 2008) offers a useful analogy. Covenant violations shift control rights to creditors, and borrowers manage their finances to stay clear of covenant thresholds, which is exactly the behaviour the RSDL aims to induce.

Institutional precedents include IDA's former Non-Concessional Borrowing Policy, the IMF's debt limits policy, and the SDFP. Bank-side tools that already exist include the Climate Resilient Debt Clause, fixed-rate conversion under the IBRD Flexible Loan, and IDA non-concessional financing, which is already priced on IBRD Group A terms (World Bank, 2026a).

Finally, a growing literature on the liquidity squeeze facing low-income countries motivates the proposal, including the World Bank's International Debt Reports, Kose et al. (2021) and the Finance for Development Lab's proposals for cheaper, longer-maturity refinancing. The 2025 International Debt Report notes that coupons of around 4–6 percent on pre-2020 Eurobonds have given way to rates

of 8–10 percent or more for many issuers (World Bank, 2025).

3. Data and method

3.1 Data

The analysis uses publicly available sources only:

- ***Macro-fiscal data:*** IMF World Economic Outlook, April 2026 vintage. We use general government gross debt, revenue, overall and primary balances (their difference gives interest) and GDP in US dollars, for 2000–2031. The 2026–31 values are IMF projections. A few countries' dollar GDP jumps sharply between 2025 and 2026 in this vintage – Uzbekistan +23 percent, Nigeria +30 percent, Tajikistan +16 percent – well above real growth; we checked these against the live IMF DataMapper (which draws on the same vintage) and they reproduce to three decimal places, so this is WEO data, not a unit error in our pipeline. For Nigeria it reflects the 2023 naira float and the 2025 national-accounts rebasing; we have not traced the Uzbekistan and Tajikistan series to a specific cause.

- ***Risk ratings:*** the IMF's list of LIC-DSAs for PRGT-eligible countries as of 30 September 2025. At that date 9 countries were in debt distress, 24 at high risk, 27 at moderate risk and 7 at low risk. (A newer list, as of 31 March 2026, shows 9/23/27/8; we keep the September 2025 vintage throughout so that the risk ratings line up with the WEO April 2026 projection horizon used elsewhere.)

Eligibility threshold: each country's latest available GNI per capita, Atlas method (World Bank API, indicator NY.GNP.PCAP.CD, checked October 2026), compared with IDA's FY27 operational cutoff of $1,365. Thirty of the 78 IDA-eligible countries are below it; the rest have grown past it on income grounds but remain IDA-eligible as blend or gap countries. A few countries only have stale Atlas GNI estimates (Eritrea 2011, South Sudan 2015, Syria 2022, Yemen 2018); we used the latest available rather than exclude them.

- ***Debt-carrying capacity:*** taken from each country's most recent published DSA composite-indicator score, checked against the IMF's DSA country-report archive (October 2026). We verified 15 of the 58 eligible countries this way: DRC and Uzbekistan as in our earlier draft, plus Cambodia, Bangladesh and Tanzania (medium); Chad, Haiti, Burundi and Timor-Leste, which turn out to be weak, not medium; and Tajikistan and Nicaragua, which turn out to be strong, not medium; and Cameroon, the Kyrgyz Republic, Mali and Mauritania, which confirm medium. For the remaining countries we still assume 'medium', the modal classification, which should be replaced with the classification in each country's latest DSA.

- ***Pricing:*** IBRD Flexible Loan spreads for January–March 2026 (World Bank, 2026a). For Group A borrowers with an 18–20 year average maturity the total spread is 142 basis points over SOFR, which gives a rate of about 5.1 percent at an August 2026 SOFR of 3.65 percent. We take 9.5 percent as the representative frontier market rate, the midpoint of the 8–10 percent-plus range

reported in the 2025 International Debt Report.

- ***Loss history and capital:*** GEMs sovereign default and recovery statistics (2025); IBRD's own default and loss-given-default history (IBRD, 2024); IBRD's loans by country, equity and risk classes at 30 June 2025 (IBRD, 2025); S&P's and Moody's 2026 assessments of IBRD; the Bank of Canada–Bank of England sovereign default database (2026); and, for the rating model in Section 4.8, sovereign ratings from the three agencies, the Worldwide Governance Indicators, IMF fiscal data and World Bank and UN Comtrade export data. Appendix A.4 gives details.

3.2 Operationalising the RSDL

We define the RSDL for country i as a fraction λ of the DSF total-public-debt benchmark B for its debt-carrying capacity (35, 55 or 70 percent of GDP). Headroom is the smallest gap between the RSDL and the projected debt ratio over the six-year WEO horizon, converted into dollars at that year's GDP:

$$H_i = \max\{\, 0, \min \text{ over } t = 2026\ldots2031 \text{ of } [\, (\lambda \cdot B_i - \pi \cdot d_{it}) / 100 \times GDP_{it} \,] \,\}$$

Here d is gross public debt as a percentage of GDP and π converts nominal debt to present value. Taking the minimum over the projection period means that headroom is additional to the borrowing already built into the IMF baseline.

The central case uses $\lambda = 0.8$ (an RSDL 20 percent below the benchmark, i.e. 44 percent of GDP for a medium-capacity country) and $\pi = 1$. Using nominal debt is conservative: concessional debt has a PV below face value. Tanzania's 2025 DSA, for example, reports a PV of public debt of 40.3 percent of GDP against a WEO nominal ratio of about 50 percent, which implies $\pi \approx 0.8$.

A solvency test alone is not enough. Chad and Djibouti reached distress with debt ratios near 30 percent of GDP, and Nigeria would qualify for tens of billions on a debt-stock test while spending a quarter of its revenue on interest. We therefore also impose a liquidity ceiling: the debt service on new IBRD borrowing, plus existing interest payments, must stay within λ times the DSF debt-service-to-revenue threshold (14, 18 or 23 percent). IBRD debt service is taken as 8.4 percent of the outstanding stock a year (5.07 percent interest plus amortisation over 30 years after a five-year grace period). Headroom is the smaller of the two tests.

This liquidity proxy is lax, because WEO reports interest but not amortisation, so existing principal repayments are left out. With full external debt service from the DSA templates, the test would bind for more countries. We flag where it binds.

We report two bounds. The lower bound uses the tighter PV-of-external-debt threshold (30/40/55) and assumes all public debt is external. The upper bound uses $\pi = 0.8$.

3.3 Who is eligible

The starting universe is all IDA-eligible countries, whether or not they use the LIC-DSF – 78 countries on the current World Bank borrower list (October 2026), which we checked directly against our original 75-country list built from the IMF's LIC-DSA roster plus IDA blends assessed under the market-access framework. Two corrections followed: Moldova, still on the IMF's PRGT-eligible list

but graduated from IDA in FY2020, is dropped; Guyana, Sri Lanka, Kosovo and Syria, current IDA borrowers the original list missed, are added. Guyana has full WEO coverage and enters the calculations; Sri Lanka, Kosovo and Syria lack a usable projection or any WEO series at all (next paragraph) and contribute nothing to either universe's totals. Within that 78-country list we define two universes. The primary universe is the 29 IDA-only countries whose latest Atlas GNI per capita is below IDA's $1,365 operational cutoff – not yet creditworthy for IBRD on income grounds, and not yet IBRD-blend either. Thirty countries are below the threshold on income grounds alone; we exclude the one blend country among them, Nigeria, because it already borrows from IBRD and has much deeper bond-market access than the IDA-only countries the mechanism targets, so private creditors hold a larger share of its external debt than the 25 percent cap would replace. Nigeria is reported only in the robustness universe, the full 78-country IDA-eligible list reported throughout alongside the primary result. The two universes are not otherwise nested by income: most of our existing IDA-only/gap countries (small Pacific and Caribbean states, Guyana) have incomes well above the threshold despite not yet being creditworthy for IBRD.

Eligibility then rests on two factual tests rather than on the published risk rating, applied separately in each universe. First, the country must not be in debt distress, which under the LIC-DSF means unresolved external arrears or an ongoing restructuring; we also drop countries with no usable WEO series or no usable 2026-31 projection. In the primary universe this excludes three countries already in debt distress (Ethiopia, Malawi, Sudan), five with no usable WEO series (Afghanistan, Eritrea, Myanmar, Syria, Yemen) and two with no usable projection (Somalia, Zambia), leaving 19 eligible countries, of which one – Mali – has positive headroom. In the robustness universe the same tests exclude nine countries in debt distress (and Suriname, which restructured in 2023), six with no usable WEO series, and four with no usable projection (Pakistan, Somalia, Sri Lanka, Zambia), leaving 58 eligible countries, of which 19 have positive headroom. Second, the country must be below the RSDL on both the solvency and the liquidity test.

We deliberately do not screen on the low or moderate risk rating in either universe. The rating is a summary judgment that blends baseline projections, stress tests and staff discretion, and a mechanism whose main virtue is a transparent, non-discretionary ceiling should not make access turn on it. Appendix Table A2 reports headroom by rating for the robustness universe so that readers can see what a rating screen would have changed; in the primary universe it makes no difference, since Mali's rating is already moderate.

3.4 Backtest and distress model

To test whether a debt-ratio RSDL would have flagged crises, we coded 13 onsets of debt distress among IDA countries since 2006. An onset is the first year of an external payment default, a restructuring request, or a first 'in debt distress' rating. Countries in protracted arrears throughout (Sudan, Somalia, Zimbabwe, Eritrea, Afghanistan, Yemen) are excluded, as are the seven MAC-SRDSF countries used in Section 4.2's headroom calculation (Nigeria, Pakistan, Belize, Eswatini, Fiji, St. Lucia, Suriname): they were never under LIC-DSF surveillance, none has a coded distress onset below, and including them as implicit 'no distress' controls both understated the signal's accuracy and silently included Suriname's actual 2021 default. The outcome variable is an onset in the

next one or two years. Years during and immediately after an episode are dropped. This leaves 923 country-years for 59 countries, with 26 pre-distress observations.

We compute ROC curves and estimate a logit of distress on debt/GDP and interest/revenue, with standard errors clustered by country. Two caveats apply. First, the event coding should be checked against the Bank of Canada–Bank of England sovereign default database and the DSA archive; entries marked for verification in the code are less certain. Second, WEO data are revised ex post and now include debt that was hidden in real time, notably in Mozambique and Senegal. Real-time performance would therefore be worse.

4. Results

4.1 Replacing private debt after debt relief

This is the central analysis of the paper. Debt relief – the kind recently completed or underway for Zambia, Ghana, Ethiopia, Malawi, Chad, Mozambique and Suriname, among others – brings a country's debt back to a sustainable level, but does nothing by itself to stop the same mix of private bondholders and commercial banks re-accumulating over the following decade. We ask how much of that private debt IBRD could realistically take onto its own balance sheet, as a senior, cheap, less flighty replacement, without pushing any country above its own RSDL. We report results for both $\lambda = 0.8$ and the looser $\lambda = 0.9$.

The exercise, country by country: take each country's RSDL – its sustainable external-debt capacity (λ times the external-debt benchmark for its debt-carrying capacity, 30/40/55 percent of GDP for weak/medium/strong) – and cap IBRD lending at 25 percent of it. The cap is a design rule, set for the incentive reasons explained in Section 4.7, and we assume every country borrows up to it, which makes the figures an upper bound on IBRD's exposure. The cap also fits the evidence on who holds these countries' debt. Absent the proposal, we assume each country's capacity would be financed in the official/private mix observed for its country group today. For IDA-only countries the private share is about a quarter: the one country-group-specific disclosure we found – IDA-only South Asian countries excluding India, 76.5 percent official (International Debt Report 2025) – implies 23.5 percent private. In the primary universe, then, IBRD lending at the cap replaces roughly all private external debt. In the robustness universe (the full IDA-eligible list), private creditors hold 37 percent (IDR 2025, ch.1, p.31), pulled up by blend and gap borrowers with deep bond-market access such as Bangladesh, Nigeria, Pakistan, Uzbekistan and Kenya; there the cap replaces about two-thirds of private debt and leaves the rest – about $117 billion at $\lambda=0.8$ – with private creditors. Both private shares are group-wide proxies, because the live IDS API no longer exposes a verified country-level breakdown by creditor type (Section 6). Private non-guaranteed (PNG) debt is excluded throughout – in several countries, notably Mozambique, this is large but is private corporate project financing (e.g. LNG developments) with no government guarantee, not sovereign debt.

Table 1 and Figure 1 report the full 27-country result. Because the calculation is anchored to each country's RSDL rather than its current debt, the total scales with the buffer: $59.1 billion at $\lambda=0.8$,

rising to $66.5 billion at λ=0.9 – exactly 12.5 percent higher, matching the gap between the two λ values, since every country's figure is simply the 25 percent cap times λ times its capacity-based threshold times GDP. Ethiopia ($8.7bn), Tanzania ($7.0bn) and Myanmar ($6.6bn) are the three largest at either setting. The governance screen proposed in Section 5 removes seven of the 27, including Myanmar, and leaves $43.9 billion across 20 countries; Section 4.8 uses that screened book.

Table 1. IBRD lending at the 25 percent cap after debt relief, primary universe (countries under the $1,365 income threshold)

Country	λ = 0.8, $bn	λ = 0.9, $bn
Ethiopia	8.7	9.8
Tanzania	7.0	7.9
Myanmar	6.6	7.4
Congo, Dem. Rep.	5.6	6.3
Uganda	5.3	5.9
Sudan	3.2	3.6
Mali	2.4	2.7
Zambia	2.3	2.6
Burkina Faso	2.2	2.4
Mozambique	1.8	2.0
Niger	1.7	2.0
Afghanistan	1.6	1.8
Madagascar	1.6	1.8
Chad	1.3	1.5
Rwanda	1.3	1.4
Malawi	1.2	1.4
Somalia	1.0	1.2
Togo	1.0	1.1
Yemen	0.6	0.7
Sierra Leone	0.6	0.7
South Sudan	0.5	0.5
Liberia	0.4	0.5
Burundi	0.4	0.5
Central African Republic	0.3	0.3
Lesotho	0.2	0.3
Guinea-Bissau	0.2	0.2
Gambia, The	0.2	0.2
Total, 27 countries	**59.1**	**66.5**

Sources: World Bank International Debt Statistics (DT.DOD.DPPG.CD, for Table 2 context only); IMF WEO April 2026 (GDP); World Bank, International Debt Report 2025 (official/private split, Section 4.1). IBRD lending = 25% of the RSDL, the external-debt ceiling (30/40/55% of GDP by capacity, times λ), before the governance screen (Section 5). The robustness equivalent, for the full IDA-eligible list, is in Appendix Table A3.

Figure 1. IBRD lending at the 25% cap after debt relief, primary universe, λ = 0.8 (top 15 of 27 sized countries, before the governance screen)

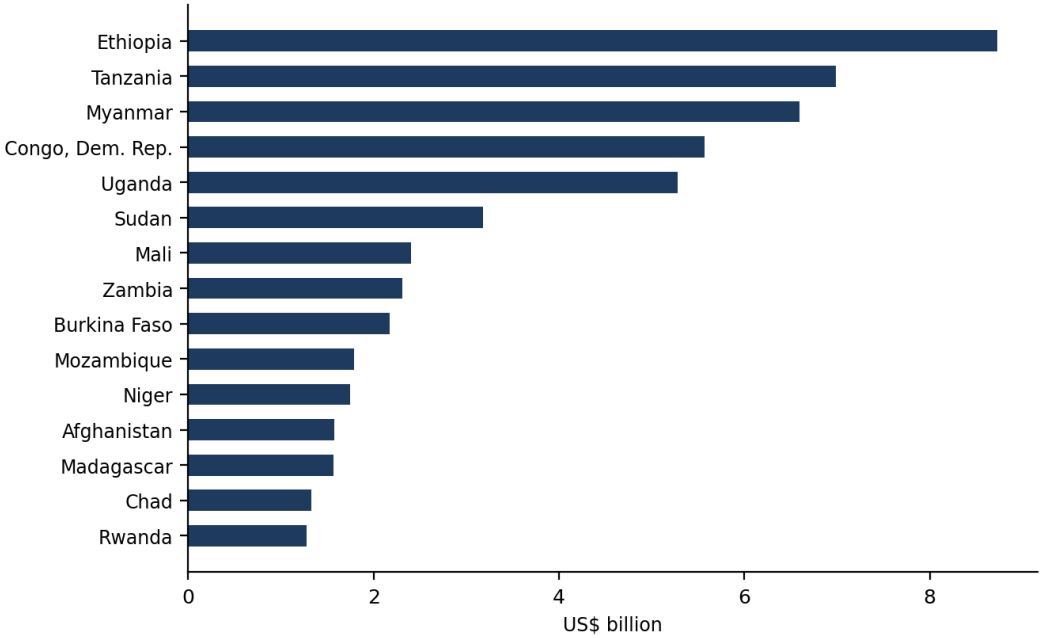


Table 2 compares each country's current external PPG debt to its RSDL, and translates the swapped private debt into an annual interest-service saving. Even before any formal distress rating, 8 of the 27 primary-universe countries currently have external PPG debt above their own RSDL – Zambia (54 percent of GDP against a 32 percent ceiling) is the starkest case – which is exactly the private-debt overhang the proposal is designed to unwind over time, not reverse overnight. Applying the frontier-Eurobond-to-IBRD rate differential of 4.43 percentage points (Section 4.4) to each country's swapped amount gives a combined interest-service saving of about $2.6 billion a year for the primary universe at λ=0.8 (about $2.9 billion at λ=0.9), concentrated in Ethiopia ($0.4bn), Tanzania ($0.3bn) and Myanmar ($0.3bn).

Table 2. RSDL versus current debt, and interest-service savings from swapping private creditors for IBRD debt, primary universe (λ = 0.8)

Country	Capacity	Debt/GDP, %	RSDL, % GDP	Swapped, $bn	Savings, $bn/yr
Ethiopia	Medium	31	32	8.7	0.39
Tanzania	Medium	28	32	7.0	0.31
Myanmar	Medium	11	32	6.6	0.29
Congo, Dem. Rep.	Weak	9	24	5.6	0.25
Uganda	Medium	21	32	5.3	0.23
Sudan	Medium	38	32	3.2	0.14
Mali	Medium	19	32	2.4	0.11
Zambia	Medium	54	32	2.3	0.10
Burkina Faso	Medium	19	32	2.2	0.10
Mozambique	Medium	41	32	1.8	0.08
Niger	Medium	21	32	1.7	0.08

Country	Capacity	Debt/GDP, %	RSDL, % GDP	Swapped, $bn	Savings, $bn/yr
Afghanistan	Medium	9	32	1.6	0.07
Madagascar	Medium	24	32	1.6	0.07
Chad	Weak	11	24	1.3	0.06
Rwanda	Medium	52	32	1.3	0.06
Malawi	Medium	20	32	1.2	0.05
Somalia	Medium	5	32	1.0	0.05
Togo	Medium	20	32	1.0	0.04
Yemen	Medium	72	32	0.6	0.03
Sierra Leone	Medium	17	32	0.6	0.03
South Sudan	Medium	n/a	32	0.5	0.02
Liberia	Medium	27	32	0.4	0.02
Burundi	Weak	9	24	0.4	0.02
Central African Republic	Medium	14	32	0.3	0.01
Lesotho	Medium	36	32	0.2	0.01
Guinea-Bissau	Medium	49	32	0.2	0.01
Gambia, The	Medium	39	32	0.2	0.01
Total, 27 countries		**23**	**31**	**59.1**	**2.6**

Sources: as Table 1. Debt/GDP and RSDL/GDP are external PPG debt and the external RSDL ceiling, respectively, both as a percentage of 2025 GDP. Savings = private debt swapped × 4.43 percentage points (Section 4.4), the gap between a frontier Eurobond yield and IBRD's Group A rate; these are upper-bound estimates for the reasons given in Section 4.4. Total row uses aggregate (debt-weighted) ratios, not a simple average across countries. The robustness equivalent, for the full IDA-eligible list, is in Appendix Table A4.

Section 4.8 assesses what this would do to IBRD's portfolio risk. In brief, after the governance screen the primary-universe book is about $44 billion, which IBRD's existing capital can carry: its equity-to-loans ratio would fall from 21.6 to 18.6 percent, just above the 18 percent minimum, and expected losses are small relative to the lending spread.

4.2 How much additional headroom exists today?

Table 3 shows the same standard, forward-looking eligibility test (current debt against the RSDL, with no debt relief applied) for the primary universe. Of the 19 eligible countries under the income threshold, only Mali has positive headroom – about $1.1 billion, 3.6 percent of its GDP. The other 18 already have debt at or above their RSDL at some point in the 2026-31 WEO baseline. This is not the focus of the paper (Section 4.1 is), but it is worth seeing: almost no country below the income threshold has room to borrow more under a conventional test, which is itself part of the case for a post-relief, debt-replacing mechanism rather than a new-money one. The equivalent exercise for the full 78-country IDA-eligible list – 19 of 58 eligible countries positive, $87 billion, almost all of it in countries already above the income threshold – is in Appendix Table A1 and Figure A1.

Table 3. Headroom today under a standard eligibility test (λ = 0.8): primary universe (countries under the $1,365 income threshold)

Country	DSF risk	Capacity	Debt 2025 %GDP	Interest %rev	Headroom $bn	% GDP	% revenue	Binding test	Range $bn	5-yr phased $bn
Mali	Moderate	medium	41.9	8.0	1.1	3.6	19	solvency	0.0–3.8	1.1
Total, 1 country					**1.1**				**0–10**	**1.1**

Sources: IMF WEO April 2026; World Bank GNI per capita, Atlas method (Oct 2026); IMF LIC-DSA list (30 Sep 2025); author's calculations. Debt is general government gross debt; interest is the difference between the overall and primary balances. Range = lower bound (external-debt threshold, all debt external) to upper bound (PV = 0.8 × nominal). See Appendix Table A1 for the full IDA-eligible list.

Nigeria – no longer in the primary universe under the IDA-only restriction (Section 3.3), but still the largest potential borrower by this test in the robustness universe – illustrates why a liquidity test matters: it would qualify for about $42 billion on the solvency test alone, but with interest at 26.5 percent of revenue and revenue at only 10.0 percent of GDP it fails the debt-service test outright. Because our liquidity proxy uses interest only (WEO has no amortisation data), it is lax; with full external debt service the test would bind in more countries. (This eligibility-test liquidity constraint does not apply to the post-relief stress test in Section 4.1, which is capped by the solvency RSDL only.)

This eligibility test is highly sensitive to the buffer λ, unlike the central analysis in Section 4.1: primary-universe headroom runs from $0 at λ=0.7 to $4.6 billion at λ=0.9 (nominal debt), or as much as $24 billion PV-adjusted. The full-list (robustness) equivalent is larger and just as sensitive (Appendix Figure A2). Weak-capacity countries have almost no headroom under any combination; treating DRC as medium rather than its actual (verified) weak capacity would add $18 billion to the robustness total on its own – a reminder of how much a single capacity classification can move this kind of number, discussed further in Appendix.

4.3 How much debt relief would eligibility require?

Section 4.1 takes it as given that debt relief brings each country back to its RSDL, and Section 4.2 shows that, on current debt, almost none is there yet. This section measures the gap: how much debt relief, from current levels, each country in the target population would need before it could borrow from IBRD under the mechanism. A country qualifies only when it is at or below its RSDL on both of the solvency indicators the paper uses: external PPG debt against the external RSDL (the Section 4.1 basis, λ times 30, 40 or 55 percent of GDP) and general government gross debt against the total-debt RSDL (the Section 3.2 basis, λ times 35, 55 or 70 percent of GDP). The relief a country needs is the larger of its two overshoots, measured against 2025 debt and, as elsewhere in the paper, in nominal terms. We report the liquidity test separately rather than adding it to the headline. Our interest-only proxy compares total interest with an external debt-service threshold, and a liquidity gap can be closed by reprofiling or by cheaper debt – including the IBRD swap itself – rather than by cutting the stock.

Table 4 and Appendix Figure A4 report the result. At λ = 0.8, 21 of the 27 sized countries need some relief, about $117 billion in total, or 28 percent of their combined GDP. Sudan, whose gross public debt is close to 190 percent of GDP, accounts for $57 billion of this on its own; the other 20 countries need about $60 billion, 16 percent of their GDP. Needs are very uneven. Seven countries need less than 10 percent of GDP, eight need 10–30 percent, and six – Sudan, Mozambique, Zambia, Malawi, Yemen

and Guinea-Bissau – need more than 30 percent. Only six need none: Ethiopia, Mali and the Democratic Republic of Congo, which are below both RSDLs today, and Myanmar, Afghanistan and Somalia, which are below the external RSDL but lack the WEO data for the total-debt test. Ethiopia is the notable case. It is rated in debt distress, but its post-restructuring debt in the WEO baseline is already just below both RSDLs and its interest bill is well within the liquidity ceiling, so what it needs in order to qualify is to complete its restructuring and clear its arrears, not further relief.

Table 4. Debt relief needed to reach the RSDL from current levels, primary universe (λ = 0.8)

Country	Capacity	External debt / RSDL, % GDP	Total debt / RSDL, % GDP	Interest / ceiling, % revenue	Relief, $bn	Relief, % GDP	Haircut on non-MDB external, %	λ = 0.9, $bn
Sudan*	medium	38 / 32	188 / 44	6 / 14	57.0	144	18	54.8
Mozambique	medium	41 / 32	103 / 44	14 / 14	13.1	59	43	11.8
Zambia	medium	54 / 32	86 / 44	27 / 14	12.1	42	57	10.5
Uganda	medium	21 / 32	54 / 44	28 / 14	6.7	10	–	3.1
Malawi*	medium	20 / 32	78 / 44	36 / 14	5.2	34	–	4.3
Tanzania	medium	28 / 32	50 / 44	15 / 14	5.0	6	–	0.2
Rwanda	medium	52 / 32	65 / 44	12 / 14	3.3	21	>100	2.6
Yemen†	medium	72 / 32	– / 44	– / 14	3.1	40	>100	2.8
Togo	medium	20 / 32	63 / 44	16 / 14	2.3	19	–	1.6
Burkina Faso	medium	19 / 32	52 / 44	10 / 14	2.2	8	–	0.7
South Sudan	medium	– / 32	62 / 44	7 / 14	1.0	18	–	0.7
Madagascar	medium	24 / 32	49 / 44	6 / 14	0.9	5	–	0.0
Burundi	weak	9 / 24	41 / 28	9 / 11	0.9	13	–	0.7
Guinea-Bissau	medium	49 / 32	75 / 44	28 / 14	0.8	31	75	0.7
Gambia, The	medium	39 / 32	74 / 44	13 / 14	0.8	30	47	0.6
Central African Republic	medium	14 / 32	62 / 44	7 / 14	0.6	18	–	0.4
Liberia	medium	27 / 32	55 / 44	8 / 14	0.6	11	–	0.3
Chad	weak	11 / 24	30 / 28	7 / 11	0.5	2	–	0.0
Niger	medium	21 / 32	45 / 44	15 / 14	0.3	1	–	0.0
Lesotho	medium	36 / 32	49 / 44	3 / 14	0.1	5	46	0.0
Sierra Leone	medium	17 / 32	45 / 44	38 / 14	0.1	1	–	0.0
Total (21 countries)					**116.7**	**28**	**50**	**95.9**
Total excluding Sudan					**59.6**	**16**		**41.1**

*Sources: IMF WEO April 2026 (gross debt, interest, revenue); World Bank International Debt Statistics (external PPG debt, end-2024; multilateral share, DT.DOD.MLAT.ZS); authors' calculations (10_relief_needed.py). Relief = the larger of external PPG debt above the external RSDL and general government gross debt above the total-debt RSDL, both against 2025 GDP and in nominal terms. Interest / ceiling: interest as a percentage of revenue against λ times the DSF debt-service-to-revenue threshold, shown for information and not included in the relief figure. Haircut = external relief as a share of external PPG debt not owed to multilateral lenders (IMF credit is not separated out); >100 means the external RSDL cannot be reached through bilateral and commercial relief alone. * In debt distress. † No usable WEO series; external test only. Not shown: Ethiopia, Mali, the Democratic Republic of Congo, Myanmar, Afghanistan and Somalia, which need no relief. The robustness equivalent is in Appendix Table A6.*

Most of the relief needed is not on external debt. External PPG debt exceeds the external RSDL in only 8 countries, by $18 billion in total. The other $99 billion – about 85 percent of the total – is the further reduction needed to bring total public debt, which includes domestic debt, below the total-debt RSDL: for 20 of the 21 countries, the total-debt test is the one that binds. That matters for how relief could be delivered. The Common Framework and similar processes restructure external official bilateral and commercial claims; they do not reach domestic debt, which would need a domestic exchange (as Ghana undertook in 2023) or sustained primary surpluses to bring down. Where external relief is needed, it is large relative to the claims that can be restructured. Because multilateral debt is not restructured, the external relief amounts to about 50 percent of these countries' non-multilateral external PPG debt – 57 percent in Zambia and 43 percent in Mozambique. In Rwanda and Yemen it exceeds the non-multilateral stock altogether, so neither could reach the external RSDL through bilateral and commercial relief alone.

Set against the IBRD lending it would unlock, the relief needed is about two dollars for every dollar of access. Of the $44 billion screened book in Section 4.1, $17 billion – in Ethiopia, the Democratic Republic of Congo and Mali – is available at today's debt levels. The remaining $27 billion sits in 17 countries that pass the governance screen but would first need about $55 billion of relief. The four countries that need relief but fail the screen – Sudan, Yemen, South Sudan and Niger – account for the other $61 billion, and relief alone would not make them eligible.

The estimates move with the same choices as the rest of the paper. At the looser $\lambda = 0.9$, 16 countries need about $96 billion ($41 billion excluding Sudan). Measuring debt in present value ($\pi = 0.8$, Section 3.2) cuts the need to 12 countries and about $67 billion, because concessional debt counts for less. Requiring debt to stay below the RSDL throughout the 2026–31 WEO baseline, rather than only today, raises it to 22 countries and about $146 billion, since the baseline projects rising debt in several countries, including the Democratic Republic of Congo. Adding the liquidity test raises the total by about $15 billion, mostly in Uganda, Sierra Leone and Malawi, where interest takes more than a quarter of revenue. For three of the eight countries that fail the liquidity test (Tanzania, Togo and Niger), the interest the IBRD swap would save, once a country qualified on solvency, would close the gap by itself. For the full IDA-eligible list (Appendix A.5), 45 of 74 countries need about $362 billion, led by Pakistan, Sudan, Kenya and Senegal, and again all but a small part of it is relief on total rather than external debt.

The mechanism therefore cannot by itself be the reason for relief. The sums needed are large relative to the IBRD lending they would unlock, and most of them lie outside the external claims that international restructuring processes reach. Its role is to follow relief that is happening anyway: to make sure that, where Common Framework or HIPC-style treatments do bring debt down, the result is a balance sheet anchored by senior IBRD debt rather than a fresh round of private borrowing. It also gives countries close to their RSDL a concrete reason to make the last part of the adjustment themselves. For the seven countries that need less than 10 percent of GDP, that is within the range that growth and moderate fiscal adjustment can close over a few years.

4.4 What would it save borrowers?

Per dollar, the benefits are substantial (Table 5). Take a 10-year bullet Eurobond at 9.5 percent and an IBRD loan at 5.1 percent with five years' grace and level amortisation to year 35. Discounted at the DSF's 5 percent rate, the Eurobond has a PV of $1.35 per dollar of face value, against $1.01 for the IBRD loan.

Refinancing one dollar of such a Eurobond with IBRD money therefore lowers the PV indicators the DSF uses by about 34 cents, which itself creates headroom. Debt service in the first decade falls from $1.95 to $0.66. That matters because liquidity indicators, not solvency, have been the binding constraint in most recent LIC crises.

Table 5. Cost of $1 of external borrowing: frontier Eurobond vs IBRD Group A loan

	10-yr Eurobond	IBRD Flexible Loan	Difference
Interest rate (%)	9.50	5.07	4.43
PV at 5% discount rate (DSF convention)	1.35	1.01	0.34
Debt service, years 1–10	1.95	0.66	1.29
Final maturity (years)	10	35 (5 grace)	

IBRD rate = SOFR (3.65%, Aug 2026) + 142bp Group A total spread for 18–20 year average maturity (World Bank, 2026a). Eurobond yield: midpoint of the 8–10%+ range reported in IDR 2025.

In aggregate, swapping private-creditor PPG external debt for IBRD debt up to the 25 percent cap – the central, post-relief scenario of Section 4.1 and Table 2 – saves about $2.6 billion a year in interest for the primary universe (at λ=0.8; $2.9bn at λ=0.9), and about $10.8 billion a year for the full IDA-eligible list ($12.1bn at λ=0.9) (Appendix Table A4). These are upper bounds on the savings for three reasons:

- Several countries with headroom (Cambodia, Burundi, Samoa, Micronesia) borrow mainly on concessional terms and would not otherwise pay market rates.
- For countries that still receive IDA credits, IBRD money is more expensive than IDA, so it must be additional to IDA rather than a substitute.
- Other creditors will reprice, as we discuss next.

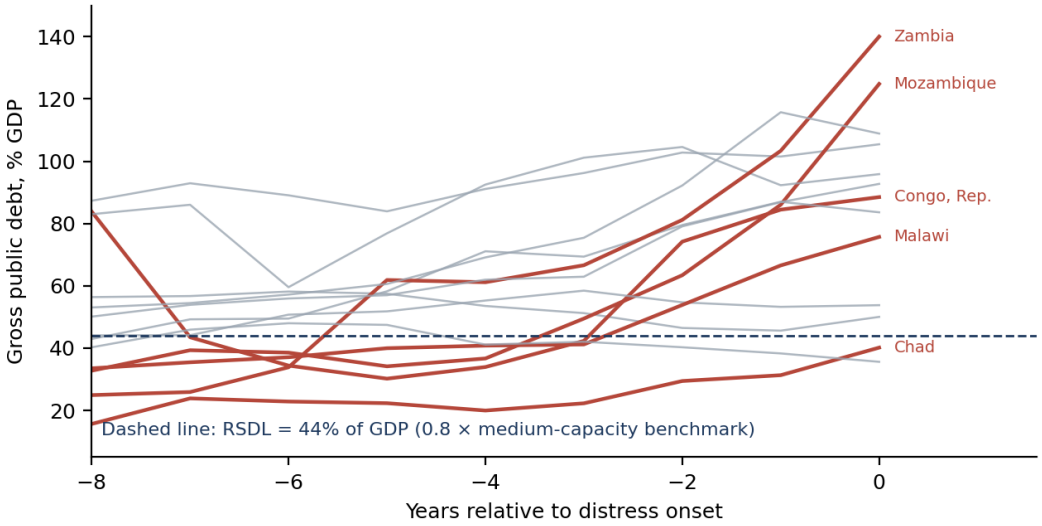
4.5 Would the RSDL have caught past crises?

A simple debt-ratio signal has real predictive power. Across 923 country-years, debt/GDP ranks pre-distress years above other years with an AUC of 0.81, and interest/revenue alone achieves 0.70 (Figure 3). At 44 percent of GDP, the RSDL threshold flags 85 percent of pre-distress years, at the cost of flagging 40 percent of calm years. That trade-off is acceptable for a rule whose 'penalty' for being above the line is simply that no new IBRD money is offered.

In a logit with both variables, a one-percentage-point increase in interest/revenue raises the log-odds of distress by 0.10 (clustered s.e. 0.02), and a one-point increase in debt/GDP by 0.012 (s.e. 0.004). At sample means (debt of 50 percent of GDP, interest of 12 percent of revenue), a 5-point reduction in interest/revenue lowers the two-year-ahead probability of distress from 3.5 to 2.2 percent, a 38 percent reduction. This is the channel through which cheaper IBRD debt could lower default risk, and we use it

in Section 4.6.

Figure 2. Debt paths before 13 distress episodes (2011-2023)



The episode-level evidence (Table 6, Figure 3) is more sobering and more informative:

- Eight of the 13 distress episodes occurred in countries that were already above the RSDL six years earlier. The mechanism would never have lent to them. This protects IBRD but also shows that the proposal is preventive: it cannot help countries that are already highly indebted.
- In four cases (Mozambique, Republic of Congo, Zambia and Malawi) the country was below the RSDL six years before the crisis and crossed it 2 to 8 years before distress – Republic of Congo crossed it earliest, in 2009, eight years ahead. The rule would have stopped new IBRD lending and, where the breach came from new borrowing, triggered the repayment clause well ahead of the crisis.
- Zambia is the clearest case. Its debt ratio almost doubled in 2015, the year of its third Eurobond, amid a sharp currency depreciation. That illustrates why the design must separate valuation effects (no trigger) from new issuance (trigger).
- The rule would have missed two cases: Chad, where collateralised oil-backed debt caused a liquidity crisis at a debt ratio near 30 percent, and Djibouti, where SOE debt and arrears built up while the headline ratio fell.

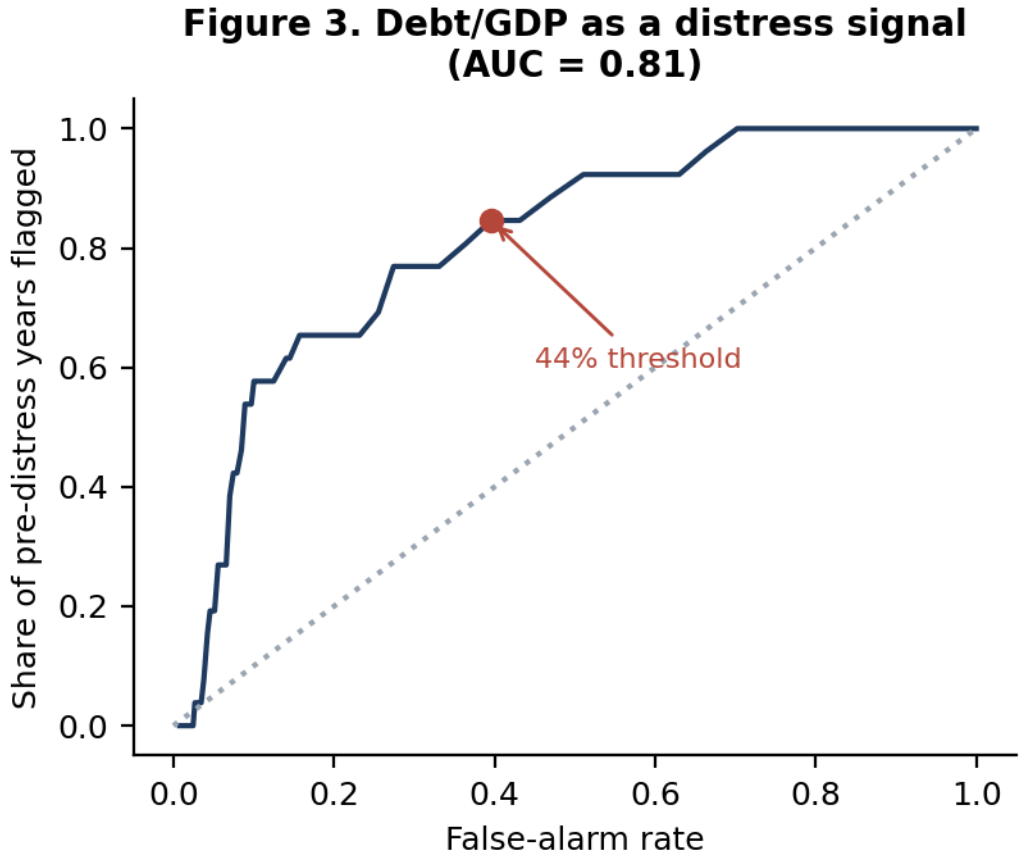
A debt-to-GDP RSDL therefore needs to be complemented by liquidity indicators (debt service to revenue and to exports) and by a trigger for collateralised or resource-backed borrowing.

Table 6. Debt paths before distress episodes and RSDL performance

Country	Onset	Debt t−6	Debt t−3	Debt t−1	Below RSDL at t−6?	RSDL signal
Côte d'Ivoire	2011	58.2	51.2	45.6	No	Above RSDL throughout

Country	Onset	Debt t−6	Debt t−3	Debt t−1	Below RSDL at t−6?	RSDL signal
Grenada	2013	89.1	96.2	101.5	No	Above RSDL throughout
Mozambique	2016	38.6	49.5	86.0	Yes	Breach 2013 (3 yrs before)†
Chad	2016	22.9	22.3	31.3	Yes	Never breached – missed
Congo, Rep.	2017	34.4	42.3	84.5	Yes	Breach 2009 (8 yrs before)
Gambia, The	2018	49.5	69.4	87.0	No	Above RSDL throughout
São Tomé and Príncipe	2018	59.6	101.1	92.3	No	Above RSDL throughout
Zambia	2020	33.9	66.6	103.3	Yes	Breach 2015 (5 yrs before)
Ethiopia	2021	50.7	58.4	53.2	No	Above RSDL throughout
Ghana	2022	55.9	62.9	86.9	No	Above RSDL throughout
Malawi	2022	37.1	41.2	66.5	Yes	Breach 2020 (2 yrs before)
Lao P.D.R.	2023	57.2	75.4	115.7	No	Above RSDL throughout
Djibouti	2023	48.0	42.1	38.3	No	Fell below RSDL before distress – missed

Debt in % of GDP from WEO April 2026 (ex-post data). RSDL = 44% of GDP. † Mozambique's 2013–15 debt ratios include loans that were hidden in real time; the real-time signal would have come later or not at all without the transparency trigger. Event years coded by the author; several should be verified (see code).



4.6 Does seniority just shift costs to other creditors?

Adding a senior tranche changes who absorbs losses in a restructuring. We model this with a simple recovery waterfall. On default, total recoveries equal 63 percent of claims, consistent with the 37 percent average haircut in Cruces and Trebesch (2013). Senior claims (IMF, MDBs, and now IBRD) recover 95 percent, in line with GEMs, and junior creditors share the remainder. Junior spreads are proportional to the probability of default times the junior loss rate, and are calibrated so that junior debt currently yields 9.5 percent. We then replace a share of junior debt with IBRD debt at 5.07 percent.

The result is a variant of Modigliani–Miller (Table 7, Figure 4). With an existing senior share of 40 percent and IBRD taking 20 percent of external debt, the naive saving from the rate differential is 0.89 percentage points of total external debt a year. But if the probability of default is unchanged, remaining junior creditors lose more in default, their required yield rises from 9.5 to about 12 percent, and the borrower's overall cost rises slightly.

The saving is real only if the mechanism lowers the probability of default. The break-even reduction is small, about 4 percent. The interest channel estimated in Section 4.5 implies a reduction of around 13.5 percent in this case: the lower interest bill cuts interest/revenue by about 1.5 points. Net savings are then about 0.31 points, roughly a third of the naive estimate. Across plausible parameters, 27–48 percent of the headline saving survives repricing. The disciplining effect of the RSDL on future

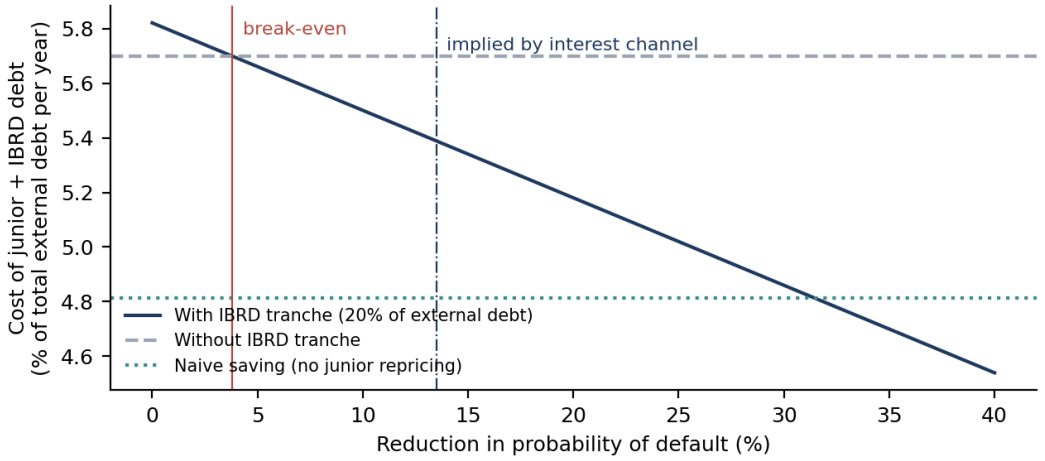
borrowing, which we do not model, would add to this.

Table 7. Borrower cost with and without junior repricing (percentage points of total external debt per year)

Existing senior share / IBRD share	Naive saving	Cost change if PD unchanged	Break-even fall in PD	PD fall implied by interest channel	Net saving	Share of naive saving
30% / 10%	0.44	+0.05	1.4%	7.0%	0.21	48%
30% / 20%	0.89	+0.11	2.9%	13.5%	0.40	45%
30% / 30%	1.33	+0.16	4.4%	19.5%	0.56	42%
40% / 10%	0.44	+0.06	1.9%	7.0%	0.17	38%
40% / 20%	0.89	+0.12	3.8%	13.5%	0.31	35%
50% / 10%	0.44	+0.07	2.5%	7.0%	0.12	27%

Model: aggregate recovery 63% (Cruces & Trebesch 2013); senior recovery 95.1% (GEMs 2025); junior yield 9.5%, risk-free 4%; IBRD 5.07%. External debt 30% and revenue 18% of GDP. Implied PD fall from the logit coefficient on interest/revenue. Cases where junior recovery hits zero are omitted.

Figure 4. Savings survive junior repricing only if default risk falls



The policy implication is that the proposal should be sold not as ‘cheap money’ but as a device that lowers default risk. Its benefits come from better borrowing behaviour and lower debt service, and the price of that is honest disclosure to other creditors that they are junior to IBRD.

4.7 Incentives and the credibility of enforcement

Under the proposal, a breach does not call the whole IBRD loan. The borrower must repay only enough IBRD debt to bring total debt back below the RSDL. Because the RSDL is not breached by falls in GDP or revenue, but only by new borrowing, the required repayment equals the amount by which the new borrowing took the country over the line.

This has an important consequence: the repayment is largely self-financing. A government that issues a $500 million bond that takes it $500 million above the RSDL must use those proceeds to repay $500

million to IBRD. Its total debt is unchanged, but $500 million of cheap, long-dated IBRD debt has been replaced by market debt. The operation creates no liquidity shock. It simply means that any borrowing above the RSDL ends up refinancing IBRD rather than funding additional spending, and it does so at a higher cost.

The size of the penalty follows directly. Discounting at the market rate over a 20-year average life, the interest differential between IBRD and market debt is worth about 39 cents per dollar. Each dollar of borrowing above the RSDL therefore costs the government about 39 cents in present value on top of its own interest.

Equivalently, the effective marginal cost of borrowing above the RSDL is roughly the market rate plus the lost subsidy: about 13.9 percent a year rather than 9.5 percent. That is the 'red bond' cliff of Delpla and von Weizsäcker (2010), created here without any change to the legal seniority of other creditors' claims. For a finance ministry deciding whether to issue a Eurobond at 9.5 percent, a marginal cost near 14 percent is a strong deterrent.

This is also what determines how large the IBRD stake should be. The deterrent works only for borrowing that the IBRD stake can absorb: once a government has repaid its entire IBRD balance, further borrowing carries no penalty. The stake therefore has to be at least as large as the range of borrowing the rule is meant to deter. The natural range is the buffer between the RSDL and the LIC-DSF threshold itself – the zone in which a country is still below the level the IMF and World Bank treat as high risk, but has used up the safety margin the RSDL is designed to preserve. With $\lambda = 0.8$, that buffer is 20 percent of the threshold, and an IBRD stake of 25 percent of the RSDL is exactly the same amount ($0.25 \times 0.8 = 0.2$). A country that uses the full cap therefore cannot borrow its way from the RSDL to the high-risk threshold without repaying IBRD dollar for dollar along the way, and paying the 39-cent penalty on every dollar. At the looser $\lambda = 0.9$, the same cap (22.5 percent of the threshold) more than covers the narrower 10 percent buffer.

In money terms the stake is substantial. For a medium-capacity country the RSDL is 32 percent of GDP, so the cap is 8 percent of GDP, and losing all of it would cost about 3 percent of GDP in present value – for a typical IDA-only country, around a fifth of a year's government revenue. We therefore treat 25 percent of the RSDL as a maximum, not an average, and as the smallest stake that makes the incentive self-sufficient. A larger stake would add little deterrence beyond the threshold, where the IMF–World Bank framework and market pricing already bite, while raising IBRD's share of each borrower's debt and with it the junior-repricing cost (Section 4.6), the strain on preferred-creditor treatment and the capital IBRD must hold (Section 4.8). A smaller one would leave part of the buffer unprotected.

Enforcement also looks more credible than it would under full acceleration. The Bank would be asking for a repayment that the borrower has just raised the money to make, rather than a sum it cannot pay. This avoids the time-inconsistency that undermines most conditionality (Svensson, 2003). The design does, however, have three weak points that the numbers bring out:

1. ***Late discovery.*** When debt is hidden and revealed years later, as in Mozambique (loans exceeding 10 percent of GDP) or Senegal (undisclosed loans of around 25 percent of GDP over

2019–24), the proceeds have already been spent. A repayment obligation equal to the overshoot would then be a genuine liquidity shock at the worst moment. For late-discovered breaches, the repayment should be staged over several years, or the IBRD loans repriced to market rates until repaid. The trigger should also be set so that the full cost falls on concealment.

2. ***Breaches larger than the IBRD stock.*** The deterrent is capped at the outstanding IBRD balance. The 25 percent cap is sized so that, once fully disbursed, the balance covers the whole buffer between the RSDL and the LIC-DSF threshold (above). Beyond the threshold a government faces no further IBRD penalty, but it then meets the IMF–World Bank framework's own consequences and much higher market pricing. Deterrence is weakest early on, when little IBRD debt has been disbursed. That argues for committing the full envelope up front, conditional on compliance, so that the forgone future access counts as part of the penalty.

3. ***Commitment versus disbursement timing.*** Project loans (including much bilateral lending) are committed at once but disbursed over years, and guarantees may only crystallise later. If the breach is measured on commitments, the borrower may owe IBRD repayment before it receives the new money. The rule should therefore allow repayment to track disbursement of the new loan, with commitments counted for the purpose of halting new IBRD lending.

None of this requires changing the core mechanism. Partial, overshoot-sized repayment is what makes the proposal both credible and hard to game, and the refinements above deal with the cases where the timing of discovery or disbursement would otherwise turn it into a liquidity shock.

4.8 Risk and cost to IBRD

We assess what the proposal does to IBRD's portfolio risk in three steps (method in Appendix A.4). First, we estimate the rating each country would carry when the proposal starts to operate for it – out of default and with external debt at its RSDL – using a cross-country rating model fitted to the 141 sovereigns rated by S&P, Moody's or Fitch. After the governance screen (Section 5), the primary-universe book is $43.9 billion across 20 countries, with an exposure-weighted entry rating of about B−: $26 billion is rated B+ to B− and $18 billion CCC+ to CCC− (Appendix Table A5). Second, we add this book to IBRD's existing $283 billion of loans and simulate losses with a portfolio credit model calibrated to MDB experience: default probabilities by rating from GEMs (about 0.3 percent a year at B and 0.8 percent at CCC), loss given default from IBRD's own history (9.6 percent on average), and a default correlation of 0.10, estimated from IBRD, GEMs and Bank of Canada–Bank of England default records. Third, we translate the result into the measures that constrain IBRD: its equity-to-loans ratio and a replication of S&P's risk-adjusted capital (RAC) ratio, calibrated to reproduce S&P's 40.1 percent for IBRD's current book.

Credit losses are small. Expected losses on the new loans are about $23 million a year, against about $475 million of net lending spread – roughly twenty times cover – and the new book adds only $0.3–0.4 billion to IBRD's one-year 99.9 percent tail loss, against usable equity of $57.9 billion (Table 8). The constraints that bind are capital ratios. IBRD's equity-to-loans ratio falls from 21.6 to 18.6 percent, using most of the headroom above its 18 percent minimum. Our S&P replication falls from 40.1 to 33.7 percent – still well above the 23 percent S&P cites as a downside trigger for IBRD – and

restoring 40.1 percent would take about $12 billion of hybrid capital or equivalent. The exposure-weighted rating of IBRD's borrowers slips by about one notch, from BB+ to BB (Figure 5).

The results hold up under the obvious stresses. Raising default correlation to 0.25 or adding a commodity-price factor raises the new book's added tail loss to about $0.5 billion. The largest risk is to preferred-creditor treatment itself. If the new loans defaulted twice as often and lost as much as IBRD's worst historical cases (a 37 percent loss given default, its 95th percentile), expected losses on them would rise to about $178 million a year and the added tail loss to about $1.3 billion, and S&P would no longer give the new loans PCT relief; the RAC ratio would fall to about 31 percent, still above 23 percent. The proposal's own effect on default risk – lower interest bills, through the distress model of Section 4.5 – cuts expected losses on the new loans by about a fifth, but leaves the capital ratios unchanged, because those depend on ratings, which move by less than half a notch.

Two results matter for the design. First, the governance screen is what keeps the proposal within IBRD's policy limits: without it the primary-universe book rises to $59 billion, its entry rating falls to about CCC, and the equity-to-loans ratio drops to 17.7 percent, below the 18 percent minimum. Second, the proposal does not scale to the full IDA-eligible list on IBRD's current capital. At the same 25 percent cap and after the same screen, that book is about $224 billion across 66 countries; the equity-to-loans ratio would fall to 11.8 percent and the S&P ratio to 16 percent, and keeping the S&P ratio at 23 percent would need about $28 billion of additional capital (about $97 billion to restore today's 40 percent). In a severe case – higher correlation, a commodity shock and weaker preferred-creditor treatment across IBRD's whole book – the one-year 99.9 percent tail loss would reach about 55 percent of IBRD's equity.

Two qualifications apply. The default probabilities come from MDB experience, so they assume IBRD keeps being repaid first; the main risk to IBRD is therefore not ordinary credit loss but an erosion of that norm, which an aggressive use of the repayment clause after a late-discovered breach could invite (Section 4.7). And our S&P replication uses the agency's published 2012 risk-weight structure rescaled to its 2026 figures for IBRD, so the agencies' own assessments could differ. Any extension beyond the primary universe would need a dedicated shareholder-backed layer – hybrid capital, portfolio guarantees of the kind IBRD already uses, or exposure exchanges with other MDBs to reduce concentration – to ring-fence the additional risk.

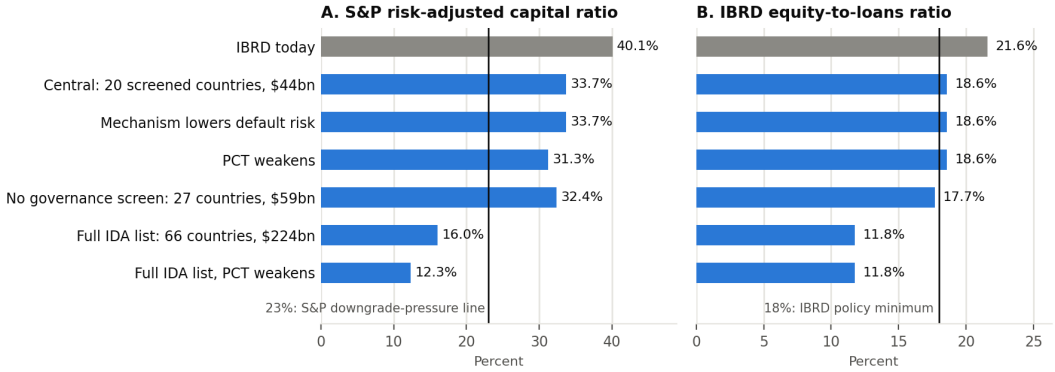
Table 8. IBRD portfolio risk with and without the proposal ($\lambda = 0.8$)

Scenario	New loans, $bn	Expected loss on new loans, $m/yr	Added tail loss, $bn	Equity / loans, %	S&P RAC, %	Capital for 23% RAC, $bn
IBRD today	–	–	–	21.6	40.1	–
Central: screened primary universe	43.9	23	0.3	18.6	33.7	0.0
Mechanism lowers default risk	43.9	18	0.2	18.6	33.7	0.0
High correlation (0.25)	43.9	23	0.5	18.6	33.7	0.0
Commodity shock	43.9	23	0.4	18.6	33.7	0.0
PCT weakens on new loans	43.9	178	1.3	18.6	31.3	0.0
PCT weakens system-wide	43.9	178	1.2	18.6	31.3	0.0

Scenario	New loans, $bn	Expected loss on new loans, $m/yr	Added tail loss, $bn	Equity / loans, %	S&P RAC, %	Capital for 23% RAC, $bn
No governance screen	59.1	75	0.5	17.7	32.4	0.0
Full IDA list, screened	223.9	74	6.7	11.8	16.0	28.1
Full IDA list, severe stress	223.9	571	23.3	11.8	12.3	55.5

Sources: authors' calculations (09_portfolio_risk.py; method in Appendix A.4). Added tail loss = increase in the one-year 99.9 percent expected shortfall (average loss in the worst 0.1 percent of 400,000 simulated years) over IBRD's existing book alone. PCT weakens: default probabilities on the new loans doubled, loss given default 36.9 percent (IBRD's 95th percentile) and no PCT relief in S&P risk weights; system-wide also doubles loss given default on the existing book. Severe stress adds correlation 0.25 and a commodity factor. Equity-to-loans uses IBRD's usable equity ($57.9bn) and its reported denominator. Capital for 23% RAC = additional S&P total adjusted capital needed to keep the ratio at 23 percent.

Figure 5. The screened primary-universe book keeps IBRD inside its limits; the full IDA list does not



Source: authors' calculations (09_portfolio_risk.py). S&P ratio replicated from S&P (2026); IBRD today from IBRD Information Statement FY25. PCT = preferred creditor treatment.

5. Design implications

1. ***Specify the RSDL algorithm precisely and publish it.*** The headroom estimates vary by more than tenfold across reasonable choices of buffer, capacity class and PV measurement. We suggest using the revised LIC-DSF's PV indicators, including both total and external debt, with $\lambda = 0.8$. The RSDL should be the tightest of the solvency and liquidity indicators, not just debt/GDP.

2. ***Cap IBRD lending at 25 percent of the RSDL.*** The cap is the smallest IBRD stake that, once disbursed, covers the whole buffer between the RSDL and the LIC-DSF threshold, so the repayment penalty alone deters borrowing above the RSDL (Section 4.7). It is a maximum, not a target: a larger stake would add risk to IBRD and to its preferred-creditor status without adding much deterrence.

3. ***Add liquidity and collateral triggers.*** Chad and Djibouti show that crises can come from collateralised, resource-backed or SOE borrowing at modest headline debt ratios. Any new collateralised or resource-backed borrowing, and any undisclosed guarantee, should count as a breach regardless of the headline ratio.

4. ***Keep repayment limited to the overshoot, and stage it where needed.*** Repayment should equal the amount needed to return debt below the RSDL, payable from the proceeds of the new borrowing and tracking its disbursement. Where a breach is discovered late (hidden debt or crystallising guarantees), repayment should be staged over several years, with IBRD loans repriced to market rates in the meantime. Valuation-driven increases in the debt ratio should halt new lending but not trigger repayment.

5. ***Phase the offer.*** Cap commitments at around 2 percent of GDP a year within the 25 percent envelope. The incentive is weakest when the IBRD stock is small, so an early commitment to the full envelope, conditional on continued compliance, strengthens deterrence.

6. ***Make it additional to IDA.*** For countries still receiving IDA credits, IBRD money is more expensive than IDA. The offer should be additional to IDA allocations and aligned with SDFP performance and policy actions, with SDFP set-asides used for reporting failures.

7. ***Target the right countries.*** The post-relief mechanism is well-targeted at the poorest, least creditworthy IDA countries: the central analysis finds $59-67 billion of IBRD lending at the 25 percent cap across 27 IDA-only countries below the income threshold, of which about $44 billion across 20 countries passes the governance screen below, led by Ethiopia, Tanzania and the Democratic Republic of Congo (Section 4.1). A standard, backward-looking eligibility test tells the opposite story – only Mali currently has headroom under that test (Section 4.2) – but that reflects how little room conventional lending criteria leave after years of borrowing, not a flaw in the proposal. The mechanism's logic is to follow debt relief, replacing private creditors as debt comes back down to sustainable levels, not to extend new money to countries that are already fully borrowed up under current rules. The equivalent eligibility-test exercise for the full IDA-eligible list (Appendix Table A1) shows the familiar pattern in reverse – most conventional headroom sits with higher-income, already-creditworthy borrowers – reinforcing that a post-relief, debt-replacing mechanism serves the poorest tier better than an unconditional new-money offer would.

8. ***Add a governance screen.*** Being out of default and at or below the RSDL is necessary but not sufficient. A cross-country rating model, fitted to the 141 sovereigns rated by S&P, Moody's or Fitch and evaluated at each country's RSDL, predicts that six primary-universe countries – Myanmar, Sudan, Niger, Afghanistan, Yemen and South Sudan – would still be rated CC or worse at entry. For these countries, conflict, unconstitutional government and volatile growth, not debt, drive credit risk. Eligibility should therefore also require: (a) no arrears to the World Bank Group; (b) normal World Bank engagement with the government, not lending paused or routed through third parties under OP 7.30; (c) an average Worldwide Governance Indicators score of at least −1.7, which excludes roughly the bottom 4 percent of countries; and (d) an IBRD country credit rating at entry no worse than CCC−. In the primary universe this removes seven countries (the six above plus Somalia) and about $15 billion of the $59 billion, leaving about $44 billion across 20 countries with an exposure-weighted entry rating of about B−. Screened-out countries remain eligible for IDA grants and can enter once they pass all four tests.

9. ***Calibrate relief to the RSDL, not the threshold.*** Debt treatments are calibrated to the IMF–World Bank sustainability assessment, which for LIC-DSF countries means bringing debt

back within the framework's thresholds. The mechanism requires debt 20 percent below them, so relief that stops at the threshold leaves a country outside the offer. Where the offer is part of a post-crisis package, the restructuring should target the RSDL. Because most of the gap is in total rather than external debt, the package also needs a domestic-debt or fiscal component (Section 4.3). For countries close to the RSDL, the prospect of IBRD access is itself an incentive to finish the adjustment.

10. ***Match the scale to capital.*** Within the screened primary universe, IBRD's existing capital can carry the risk (Section 4.8). Extending the offer to the full IDA-eligible list would not be prudent without roughly $28 billion of additional capital – shareholder hybrid capital, portfolio guarantees or exposure exchanges with other MDBs – to keep IBRD's S&P risk-adjusted capital ratio above 23 percent.

11. ***Be transparent about seniority.*** Other creditors will price the subordination. The case for the proposal rests on lower default risk, and the Bank should say so.

6. Limitations and next steps

This is a first pass using public data, and several extensions would strengthen it:

- Replace the headroom calculation with country DSA templates, which include external debt, PV and full debt-service paths by creditor, together with each country's current capacity classification. Our liquidity test uses interest only, because WEO has no amortisation data, and is therefore lax. We have verified the capacity classification for 5 of the 19 eligible countries in the primary universe, and 15 of 58 in the robustness universe, against their latest DSA (Section 3.1); the rest still default to 'medium'. For the IDA blends outside the LIC-DSF, an RSDL should be derived from the market-access framework's gross financing needs and debt-at-risk measures rather than from LIC-DSF thresholds.

- Model the route to eligibility. Section 4.3 measures relief as a one-off cut in nominal debt from 2025 levels. A fuller treatment would use DSA debt paths by creditor (including IMF credit, which we do not separate from bilateral and commercial claims), distinguish relief from fiscal adjustment and growth as routes to the RSDL, and value the relief in present value.

- Get a verified, country-level creditor split. Because the 25 percent cap is a design rule, the split no longer sizes the central result, but it determines how much private debt the cap would actually replace in each country. The group-wide proxies we use (about 25 percent private for IDA-only countries, 37 percent for the full list) rest on limited disclosure – the primary-universe figure on a single data point – and the live IDS API no longer publishes the by-creditor-type stocks we would need.

- Verify the remaining distress-event coding against the BoC–BoE database, and redo the backtest with real-time WEO vintages to capture the hidden-debt problem.

- Calibrate a quantitative sovereign default model with a senior, covenant-protected tranche (in the spirit of Hatchondo, Martinez and Sosa-Padilla, 2016) to capture the disciplining effect endogenously.

- Test the rating and capital results with the agencies. Our S&P replication uses the agency's 2012 risk-weight table rescaled to its 2026 IBRD figures, and our ratings come from a public compilation; the agencies' own models, and IBRD's internal country ratings, should be used to confirm them. Revisit the RSDL once the new LIC-DSF is operational (not before H2 2027) and the Fund publishes the probability cut-offs for its new debt-sustainability model; in the meantime, its overall-debt indicators (Section 2.4) suggest our nominal-debt and interest/revenue proxies are reasonable placeholders, not just conservative simplifications.

The replication code and data files accompany this paper.

Appendix. Robustness: the full IDA-eligible list

This appendix reports every main-text exercise for the full 78-country IDA-eligible list (the robustness universe), rather than just the 30 countries below IDA's $1,365 operational income threshold (the primary universe) that are the paper's focus (Section 3.3). Data, methods and sourcing are identical to the main text; only the country list changes.

A.1 Replacing private debt after debt relief, full IDA-eligible list

Table A3 and Figure A3 report the central post-relief exercise (Section 4.1) for the full IDA-eligible list, applying the same 25 percent cap. The total across all 74 countries with a usable GDP figure is $243.4 billion at λ=0.8, rising to $273.8 billion at λ=0.9 – the same 12.5 percent gap as the primary universe, since both scale directly with λ. Bangladesh ($36.6bn), Pakistan ($32.6bn) and Nigeria ($23.2bn, excluded from the primary universe as a blend country) are the three largest. Because private creditors hold about 37 percent of these countries' external public debt, the cap leaves about $117 billion with private creditors at λ=0.8. Section 4.8 reports what this book would do to IBRD's capital: after the governance screen it is about $224 billion, which would take IBRD's equity-to-loans ratio to 11.8 percent and the S&P ratio to 16 percent.

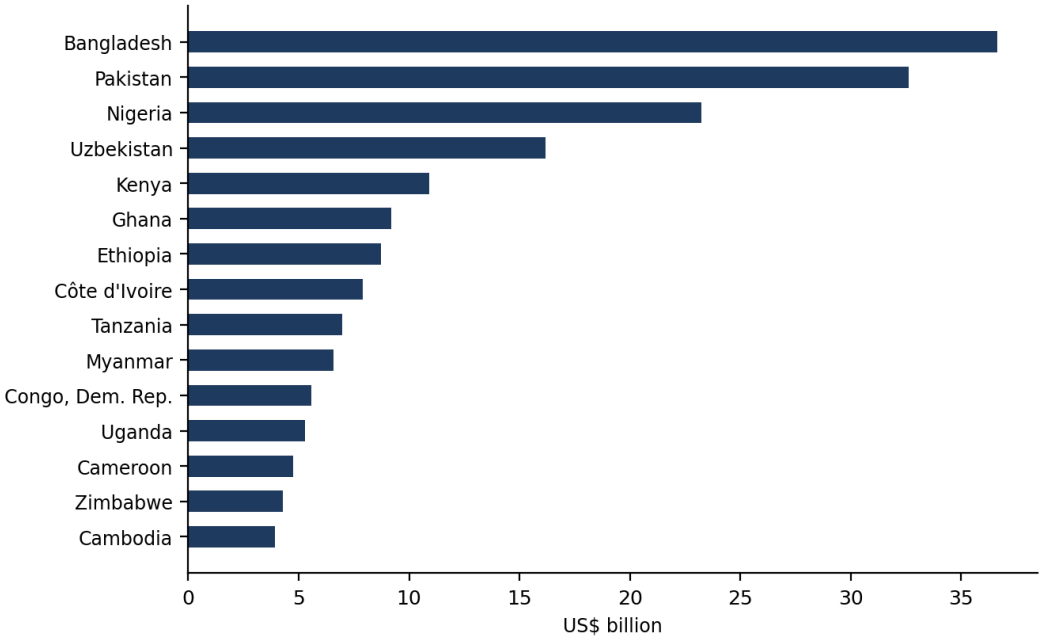
Table A3. IBRD lending at the 25 percent cap after debt relief, robustness universe (full IDA-eligible list; top 15 of 74 sized countries)

Country	λ = 0.8, $bn	λ = 0.9, $bn
Bangladesh	36.6	41.2
Pakistan	32.6	36.7
Nigeria	23.2	26.1
Uzbekistan	16.2	18.2
Kenya	10.9	12.3
Ghana	9.2	10.3
Ethiopia	8.7	9.8

Country	λ = 0.8, $bn	λ = 0.9, $bn
Côte d'Ivoire	7.9	8.9
Tanzania	7.0	7.9
Myanmar	6.6	7.4
Congo, Dem. Rep.	5.6	6.3
Uganda	5.3	5.9
Cameroon	4.7	5.3
Zimbabwe	4.3	4.8
Cambodia	3.9	4.4
Total, all 74 countries	**243.4**	**273.8**

Sources: as Table 1. IBRD lending = 25% of the RSDL, as in the primary universe; about 37% of these countries' external public debt is owed to private creditors (IDR 2025, ch.1), so the cap leaves the remainder in place. Total row covers all 74 sized countries in the robustness universe, not only the 15 shown. – = not shown (ranked below 15th).

Figure A3. IBRD lending at the 25% cap after debt relief, robustness universe (full IDA list), λ = 0.8 (top 15 of 74 sized countries)



A.2 Headroom today, full IDA-eligible list

Table A1 and Figure A1 (panel B) show the same standard, backward-looking eligibility test (Section 4.2) for the full IDA-eligible list: of 58 eligible countries, 19 have positive headroom, totalling $87.0 billion. Uzbekistan ($51.8bn), Cambodia ($8.9bn) and Tajikistan ($7.0bn) are the three largest. Unlike the primary universe, almost all of this sits with higher-income, already-creditworthy IDA blend and gap countries rather than the poorest tier (compare Figure A1 panel A with panel B).

Table A1. Headroom today under a standard eligibility test (λ = 0.8): full IDA-eligible list

Country	Capacity	Rating	Headroom $bn	% GDP	Binding test
Uzbekistan	Strong	Low	51.8	35.2	Solvency
Cambodia	Medium	Low	8.9	18.0	Solvency
Tajikistan	Strong	High	7.0	39.7	Solvency
Nicaragua	Strong	Moderate	5.5	24.8	Solvency
Guyana	Medium	Low	5.0	18.5	Solvency
Cameroon	Medium	High	3.1	5.2	Solvency
Kyrgyz Republic	Medium	Moderate	1.6	7.2	Solvency
Haiti	Weak	High	1.1	3.6	Liquidity
Mali	Medium	Moderate	1.1	3.6	Solvency
Mauritania	Medium	Moderate	0.6	4.5	Solvency
Samoa	Medium	Moderate	0.4	28.7	Solvency
Timor-Leste	Weak	Moderate	0.3	13.7	Solvency
Solomon Islands	Medium	Low	0.2	13.3	Solvency
Comoros	Medium	High	0.2	12.2	Solvency
Micronesia	Medium	Moderate	0.2	37.9	Solvency
Marshall Islands	Medium	High	0.1	30.3	Solvency
Honduras	Medium	Low	0.1	0.2	Solvency
Kiribati	Medium	High	0.0	8.6	Solvency
Tuvalu	Medium	High	0.0	45.7	Solvency
Total, 19 countries			**87.0**		

Sources: as Table 3. Of 78 IDA-eligible countries, 58 are eligible for this test (Section 3.3); 19 have positive headroom.

Figure A1. Headroom today under the RSDL eligibility test (not the central analysis -- see Section 4.2)

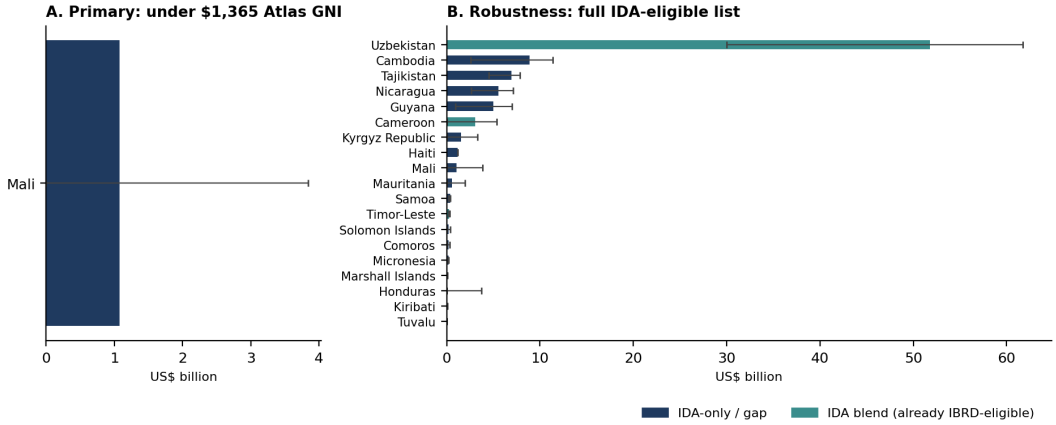


Table A2 breaks the same 19 countries down by LIC-DSF risk rating: seven are rated 'High' risk ($11.5bn), five 'Low' risk ($66.0bn) and seven 'Moderate' risk ($9.6bn). Headroom is concentrated among countries already rated low risk, which is mechanical – a low risk rating and a large solvency buffer both follow from low current debt – and is why Section 3.3 does not screen on the rating directly.

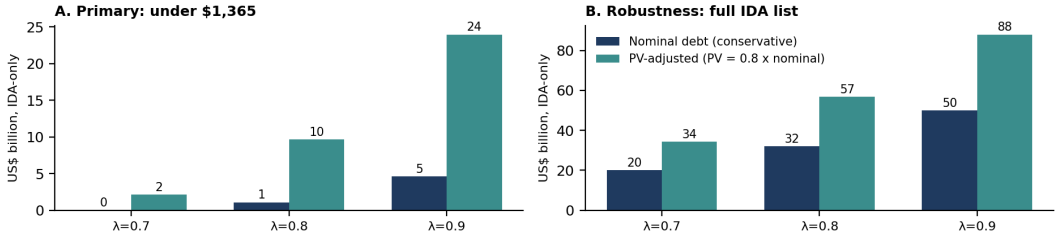
Table A2. Headroom today, full IDA-eligible list, by LIC-DSF risk rating

Risk rating	Countries	Headroom $bn
High	7	11.5
Low	5	66.0
Moderate	7	9.6
Total	**19**	**87.0**

Sources: as Table 3.

Figure A2 shows that this eligibility-test exercise, unlike the central post-relief analysis in Section 4.1, is highly sensitive to the buffer λ and to whether debt is measured at face value or PV-adjusted: the robustness-universe total ranges from near zero at λ = 0.7 to several times the λ = 0.8 figure at λ = 0.9, and PV adjustment alone can roughly double it.

Figure A2. The headroom-today test is highly sensitive to the buffer and to PV measurement -- unlike the central (post-relief) analysis in Table 1



We verified the debt-carrying-capacity (DCC) classification against the latest published IMF DSA for 15 of the 58 eligible countries in the robustness universe (and 5 of 19 in the primary universe); the rest default to the LIC-DSF's modal 'medium' classification (Section 6). Verified cases: Congo, Dem. Rep., Chad, Haiti, Burundi and Timor-Leste are weak capacity, not the unverified medium default; Uzbekistan, Tajikistan and Nicaragua are strong capacity, also not medium; Cameroon, Kyrgyz Republic, Mali and Mauritania are confirmed medium. Treating the Democratic Republic of Congo as the unverified default (medium) rather than its actual, verified weak capacity alone would add about $18 billion to the robustness-universe headroom total, because the external-debt threshold is 10 points of GDP lower under weak than medium capacity, applied to one of the region's largest debt stocks – a reminder that the single most important input to this kind of exercise is the capacity classification, not the buffer or the PV adjustment.

A.3 RSDL versus current debt, full IDA-eligible list

Table A4 is the robustness-universe counterpart of Table 2: each country's current external PPG debt against its RSDL, and the interest-service saving from swapping private debt for IBRD debt up to the 25 percent cap. Across all 74 sized countries, 22 currently have external PPG debt above their own RSDL (against 8 of 27 in the primary universe), consistent with the robustness universe's larger share of countries with crisis histories. The combined saving is about $10.8 billion a year at λ=0.8 (about $12.1 billion at λ=0.9), led by Bangladesh ($1.6bn), Pakistan ($1.4bn) and Nigeria ($1.0bn).

Table A4. RSDL versus current debt, and interest-service savings from swapping private creditors for IBRD debt, robustness universe (λ = 0.8; top 15 of 74 sized countries)

Country	Capacity	Debt/GDP, %	RSDL, % GDP	Swapped, $bn	Savings, $bn/yr
Bangladesh	Medium	17	32	36.6	1.62
Pakistan	Medium	22	32	32.6	1.45
Nigeria	Medium	17	32	23.2	1.03
Uzbekistan	Strong	27	44	16.2	0.72
Kenya	Medium	26	32	10.9	0.48
Ghana	Medium	22	32	9.2	0.41
Ethiopia	Medium	31	32	8.7	0.39
Côte d'Ivoire	Medium	32	32	7.9	0.35
Tanzania	Medium	28	32	7.0	0.31
Myanmar	Medium	11	32	6.6	0.29
Congo, Dem. Rep.	Weak	9	24	5.6	0.25
Uganda	Medium	21	32	5.3	0.23
Cameroon	Medium	21	32	4.7	0.21
Zimbabwe	Medium	10	32	4.3	0.19
Cambodia	Medium	24	32	3.9	0.17
Total, all 74 countries		**23**	**32**	**243.4**	**10.8**

Sources: as Table A3. Total row covers all 74 sized countries and uses aggregate (debt-weighted) ratios, not a simple average; it is not a sum of the 15 rows shown.

A.4 Entry ratings and the portfolio risk model

Entry ratings. We regress each sovereign's rating – the average of its S&P, Moody's and Fitch long-term foreign-currency ratings on a 22-notch scale (AAA = 0, SD = 21) – on log GDP per capita, gross government debt/GDP, interest/revenue, the mean and volatility of real growth over 2016–25, inflation, the average of the six Worldwide Governance Indicators (Kaufmann and Kraay, 2024), dummies for advanced economies and for commodity dependence (commodities at least 60 percent of merchandise exports, UNCTAD's definition, including gold), and default history from the Bank of Canada–Bank of England database (in default now; exited within five years; exited 6–15 years ago; earlier), following Cantor and Packer (1996). Estimated on 141 rated sovereigns, the model explains 87 percent of the variation in ratings, with a leave-one-out error of 2.2 notches. Governance (−2.4 notches per point), income (−1.6 per log point), growth volatility (+0.5 per point of standard deviation) and interest/revenue (+0.07 per point) are the main drivers, and having exited default within the past five years costs about 2.4 notches. On the 25 rated IDA-eligible countries already at or below their RSDL and not in distress, the model is unbiased (mean error 0.02 notches) with an error of 1.4 notches.

We then predict each country's rating at entry by changing only what entry changes: external debt is set to its RSDL; interest reflects official lending on 75 percent of it and IBRD lending at 5.07 percent on the 25 percent cap; and a country that reaches entry through debt relief is treated as having exited default within five years. For rated countries we add the predicted change to the agencies' current rating; for unrated countries we use the model's level. Replacing market debt with IBRD debt improves

entry ratings by only 0.1–0.4 notches, through interest costs alone. Table A5 reports the result for the primary universe.

Portfolio model. Default probabilities by rating are a log-linear fit to GEMs' ten-year cumulative MDB default rates for the BBB, BB, B and CCC categories; on IBRD's current book they imply an average default probability of 0.25 percent a year per borrower, close to IBRD's observed 0.32 percent over 2001–23 (IBRD, 2024). Loss given default is drawn from a beta distribution matching IBRD's 25 historical losses (mean 9.6 percent). Defaults follow a one-factor Gaussian copula (Vasicek, 2002) with asset correlation 0.10; maximum-likelihood estimates from annual default counts are 0.11 for IBRD, 0.06 for GEMs and 0.04 for all-creditor defaults in the BoC–BoE database, with no excess clustering within Sub-Saharan Africa. We simulate 400,000 years. Existing borrowers keep their current agency ratings, capped at CCC− for borrowers that continue to service IBRD; Belarus and Zimbabwe, already in nonaccrual, are excluded, and Ukraine is taken net of $11.2 billion of third-party guarantees. The S&P replication applies S&P's sovereign risk weights by rating and by the borrower's multilateral share of external debt (set at entry to 25 percent plus 75 percent of today's share), scales them to S&P's sovereign risk-weighted assets for IBRD after PCT ($79 billion), and calibrates its geographic-diversification (−$26 billion) and single-name concentration (+$68 billion) adjustments to S&P's figures, so that the existing book reproduces S&P's 40.1 percent exactly (S&P Global Ratings, 2026).

Table A5. Entry ratings and the governance screen, primary universe (λ = 0.8)

Country	Rating today	Entry rating	IBRD lending, $bn	Governance screen
Ethiopia	C	CCC−	8.7	Pass
Tanzania	B+	B+	7.0	Pass
Myanmar	Unrated	CC	6.6	Fails B, C, D
Congo, Dem. Rep.	B−	B−	5.6	Pass
Uganda	B	B	5.3	Pass
Sudan	Unrated	SD	3.2	Fails B, C, D
Mali	CCC	CCC	2.4	Pass
Zambia	CCC+	B−	2.3	Pass
Burkina Faso	CCC+	CCC+	2.2	Pass
Mozambique	CCC	CCC+	1.8	Pass
Niger	Unrated	CC	1.7	Fails D
Afghanistan	Unrated	CC	1.6	Fails B, C, D
Madagascar	B−	B−	1.6	Pass
Chad	B−	B−	1.3	Pass
Rwanda	B+	B+	1.3	Pass
Malawi	Unrated	CCC−	1.2	Pass
Somalia	Unrated	CCC−	1.0	Fails C
Togo	B+	B+	1.0	Pass
Yemen	Unrated	SD	0.6	Fails C, D
Sierra Leone	Unrated	CCC	0.6	Pass

Country	Rating today	Entry rating	IBRD lending, $bn	Governance screen
South Sudan	Unrated	SD	0.5	Fails C, D
Liberia	Unrated	CCC	0.4	Pass
Burundi	Unrated	CCC	0.4	Pass
Central African Republic	Unrated	CCC	0.3	Pass
Lesotho	B	B	0.2	Pass
Guinea-Bissau	Unrated	B−	0.2	Pass
Gambia, The	Unrated	B−	0.2	Pass
Total, passes screen (20)		**B−**	**43.9**	
Total, all 27		**CCC**	**59.1**	

Sources: authors' calculations (09b_entry_ratings.py). Rating today: average of S&P, Moody's and Fitch. Entry rating: with IBRD lending at the cap; totals are exposure-weighted. Screen tests (Section 5): A arrears to the World Bank Group; B lending paused or routed through third parties; C average WGI score below −1.7; D entry rating CC or worse.

A.5 Debt relief needed for eligibility, full IDA-eligible list

Table A6 is the robustness-universe counterpart of Table 4, and Figure A4 shows the primary-universe result country by country. Across the 74 sized countries, 45 need relief to reach both solvency RSDLs from current levels: about $362 billion, or 25 percent of their GDP ($305 billion excluding Sudan). Pakistan ($118bn), Sudan ($57bn), Kenya ($35bn) and Senegal ($32bn) account for two-thirds of it. As in the primary universe, the external component is small – $45 billion across 22 countries, about 56 percent of their non-multilateral external PPG debt – and the rest is total public debt above the total-debt RSDL. Twenty-nine countries need none, including Bangladesh, Nigeria (which fails only the liquidity test, Section 4.2) and Uzbekistan.

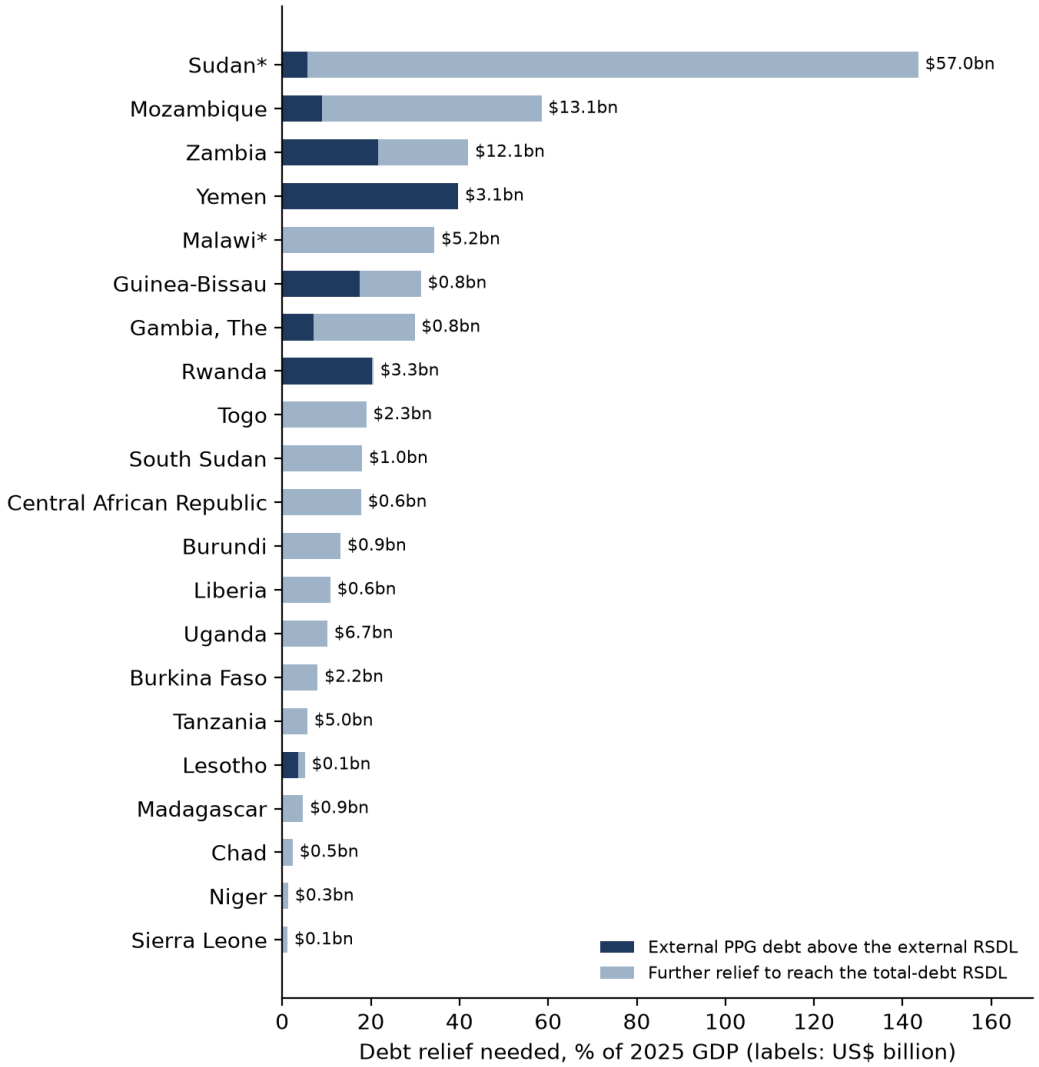
Table A6. Debt relief needed to reach the RSDL from current levels, robustness universe (λ = 0.8; top 15 of 45 countries needing relief)

Country	Capacity	External debt / RSDL, % GDP	Total debt / RSDL, % GDP	Interest / ceiling, % revenue	Relief, $bn	Relief, % GDP	Haircut on non-MDB external, %	λ = 0.9, $bn
Pakistan	medium	22 / 32	73 / 44	49 / 14	117.6	29	–	95.2
Sudan*	medium	38 / 32	188 / 44	6 / 14	57.0	144	18	54.8
Kenya	medium	26 / 32	69 / 44	30 / 14	34.6	25	–	27.1
Senegal	medium	68 / 32	130 / 44	23 / 14	32.0	86	85	29.9
Mozambique	medium	41 / 32	103 / 44	14 / 14	13.1	59	43	11.8
Côte d'Ivoire	medium	32 / 32	56 / 44	16 / 14	12.2	12	–	6.7
Zambia	medium	54 / 32	86 / 44	27 / 14	12.1	42	57	10.5
Congo, Rep.*	medium	34 / 32	97 / 44	14 / 14	8.2	53	9	7.4
Uganda	medium	21 / 32	54 / 44	28 / 14	6.7	10	–	3.1
Lao P.D.R.*	medium	56 / 32	81 / 44	18 / 14	6.5	37	54	5.5
Maldives	medium	54 / 32	125 / 44	12 / 14	6.2	81	47	5.8
Ghana	medium	22 / 32	49 / 44	22 / 14	5.5	5	–	0.0

Country	Capacity	External debt / RSDL, % GDP	Total debt / RSDL, % GDP	Interest / ceiling, % revenue	Relief, $bn	Relief, % GDP	Haircut on non-MDB external, %	λ = 0.9, $bn
Malawi*	medium	20 / 32	78 / 44	36 / 14	5.2	34	–	4.3
Tanzania	medium	28 / 32	50 / 44	15 / 14	5.0	6	–	0.2
Rwanda	medium	52 / 32	65 / 44	12 / 14	3.3	21	>100	2.6
Total (45 countries)					**362.2**	**25**	**56**	**288.5**
Total excluding Sudan					**305.2**	**22**		**233.7**

Sources and definitions: as Table 4. Total rows cover all 45 countries needing relief, not only the 15 shown.

Figure A4. Debt relief needed to reach the RSDL from current levels, primary universe, λ = 0.8 (21 of 27 sized countries; * in debt distress)



References

Arellano, C. (2008). Default risk and income fluctuations in emerging economies. American Economic Review 98(3).

Bank of Canada and Bank of England (2026). BoC–BoE Database of Sovereign Defaults, 2026 edition. Bank of Canada Staff Analytical Paper 2026-48.

Bolton, P. and O. Jeanne (2009). Structuring and restructuring sovereign debt: the role of seniority. Review of Economic Studies 76(3).

Boston University Global Development Policy Center (2026). This decade's best chance to get debt sustainability right. Blog, 16 January.

Cantor, R. and F. Packer (1996). Determinants and impact of sovereign credit ratings. Federal Reserve Bank of New York Economic Policy Review 2(2).

Carnegie Endowment for International Peace (2026). Getting Debt Sustainability Analysis Right: Eight Reforms for the Framework for Low-Income Countries.

Chatterjee, S. and B. Eyigungor (2015). A seniority arrangement for sovereign debt. American Economic Review 105(12).

Chava, S. and M. Roberts (2008). How does financing impact investment? The role of debt covenants. Journal of Finance 63(5).

Cordella, T. and A. Powell (2021). Preferred and non-preferred creditors. Journal of International Economics 132.

Cruces, J. and C. Trebesch (2013). Sovereign defaults: the price of haircuts. American Economic Journal: Macroeconomics 5(3).

Delpla, J. and J. von Weizsäcker (2010). The Blue Bond proposal. Bruegel Policy Brief 2010/03.

Eaton, J. and M. Gersovitz (1981). Debt with potential repudiation. Review of Economic Studies 48(2).

Gelpern, A., S. Horn, S. Morris, B. Parks and C. Trebesch (2023). How China lends. Economic Policy 38(114).

GEMs Consortium (2025). Default and Recovery Statistics: Sovereign and Sovereign-Guaranteed Lending 1984–2024.

Hatchondo, J.C., L. Martinez and F. Roch (2022). Fiscal rules and the sovereign default premium. American Economic Journal: Macroeconomics 14(4).

Hatchondo, J.C., L. Martinez and C. Sosa-Padilla (2016). Debt dilution and sovereign default risk. Journal of Political Economy 124(5).

Horn, S., C. Reinhart and C. Trebesch (2021). China's overseas lending. Journal of International Economics 133.

Humphrey, C. (2022). Financing the Future: Multilateral Development Banks in the Changing World Order of the 21st Century. Oxford University Press.

IBRD (2024). IBRD Portfolio Default Rates and Loss Given Defaults. World Bank.

IBRD (2025). Information Statement, fiscal year ended June 30, 2025. World Bank.

Independent Evaluation Group. The World Bank's Role in and Use of the Low-Income Country Debt Sustainability Framework. World Bank.

IMF (2024). Fiscal Monitor, October 2024: Putting a Lid on Public Debt.

IMF (2025). List of LIC DSAs for PRGT-Eligible Countries, as of 30 September 2025.

IMF (2026a). World Economic Outlook database, April 2026.

IMF (2026b). IMF Executive Board reviews the joint IMF–World Bank Debt Sustainability Framework for Low-Income Countries. Press Release 26/296.

IMF and World Bank (2018). Guidance Note on the Bank-Fund Debt Sustainability Framework for Low Income Countries.

Kaufmann, D. and A. Kraay (2024). The Worldwide Governance Indicators: methodology and 2024 update. World Bank.

Kose, M.A., P. Nagle, F. Ohnsorge and N. Sugawara (2021). Global Waves of Debt. World Bank.

Kraay, A. and V. Nehru (2006). When is external debt sustainable? World Bank Economic Review 20(3).

Moody's Ratings (2026). International Bank for Reconstruction and Development: Credit Opinion, 19 February.

Perraudin, W., A. Powell and P. Yang (2016). Multilateral development bank ratings and preferred creditor status. IDB Working Paper 697.

S&P Global Ratings (2026). International Bank for Reconstruction and Development: Full Analysis, 1 April.

Schlegl, M., C. Trebesch and M. Wright (2019). The seniority structure of sovereign debt. NBER Working Paper 25793.

Smith, C. and J. Warner (1979). On financial contracting: an analysis of bond covenants. Journal of Financial Economics 7(2).

Svensson, J. (2003). Why conditional aid does not work and what can be done about it. Journal of Development Economics 70(2).

Vasicek, O. (2002). The distribution of loan portfolio value. Risk 15(12).

World Bank (2025). International Debt Report 2025.

World Bank (2026a). IBRD Lending Rates and Spreads Applicable on or after January 1, 2026. Memorandum, 27 January.

Annex. Key assumptions

Parameter	Value	Source / rationale
RSDL buffer λ	0.8 (0.7–0.9)	Author's choice; sensitivity in Appendix Figure A2
Total public debt benchmark (PV, % GDP)	**35 / 55 / 70**	**LIC-DSF 2018 (weak/medium/strong)**
External PPG debt threshold (PV, % GDP)	30 / 40 / 55	LIC-DSF 2018; used for lower bound
Debt service / revenue threshold (%)	14 / 18 / 23	LIC-DSF 2018; liquidity test
IBRD debt service per $1 of stock	8.4% a year	5.07% interest + 1/30 amortisation after 5-yr grace
PV / nominal ratio π	1.0 (0.8)	Tanzania DSA: PV 40.3% vs nominal ≈50%
IBRD lending rate	5.07%	SOFR 3.65% + 142bp (Group A, 18–20 yr)
Market rate	9.5% (8–10%+)	IDR 2025
Aggregate recovery in default	63%	Cruces & Trebesch (2013) avg haircut 37%
MDB sovereign recovery / default rate	95.1% / 0.77% p.a.	GEMs (2025)
Existing senior share of external debt	40% (30–50%)	Assumption; should be taken from IDS

Parameter	Value	Source / rationale
IBRD minimum equity-to-loans	18%	World Bank (2024); Moody's (2026)
Phase-in cap	2% of GDP per year	Author's assumption on absorptive capacity
IDA operational / graduation cutoff	$1,365 (Atlas GNI per capita)	World Bank IDA FY27 cutoff; defines the primary universe (Section 3.3)
Official/private split of PPG external debt	63/37% (full list); ≈75/25% (IDA-only)	IDR 2025; context for how much private debt the cap replaces (Section 4.1)
IBRD lending cap	25% of the RSDL	Design rule: covers the RSDL–threshold buffer at $\lambda = 0.8$ (Section 4.6)
Governance floor (WGI average)	−1.7	About the bottom 4% of countries (Section 5)
MDB default probability by rating	B 0.28%, CCC 0.76% a year	Log-linear fit to GEMs 10-year cumulative rates (Appendix A.4)
Loss given default	9.6% (36.9% stress)	IBRD (2024): mean and 95th percentile
Default correlation	0.10 (0.25 stress)	Maximum likelihood on IBRD, GEMs and BoC–BoE default series
IBRD net lending spread	1.08%	IBRD FY25 loan interest net of funding costs, debt-funded loans
Debt relief needed for eligibility	max(external PPG − external RSDL, gross debt − total-debt RSDL), 2025, nominal	Section 4.3; liquidity test reported separately