



# Multidimensional Vulnerability and Sovereign Debt\*

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## **Abstract**

Lack of fiscal space and the risk of sovereign debt distress remain key stumbling blocks to achieving Sustainable Development Goals (SDGs) in developing countries. Because the allocation of concessional funds and debt relief is essentially reserved to Low Income countries (LICs), official financing strategies and mechanisms to support developing countries provide insufficient support to non-LICs that may need and deserve special consideration concerning official financing. This paper discusses how official financial support allocation could consider countries' vulnerabilities in critical dimensions, with special reference to Small Island Developing States (SIDS). It explores how a multi-dimensional vulnerability indexes (MVI) could be used to expand the access of vulnerable countries to official financing, including concessional financing, and facilitate constructive debt restructuring when they need it.

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## 1 Introduction

Lack of fiscal space and the risk of sovereign debt distress remain key stumbling blocks to achieving Sustainable Development Goals (SDGs) and have come into sharper focus because of the exacerbation of financial gaps and debt stress by the Covid-19 pandemic. As palliative financial needs increase, available public and private financing for SDG investments are reduced throughout developing countries. This concept note discusses how official financial support allocation could consider countries' vulnerabilities in critical dimensions, with special reference to Small Island Developing States (SIDS).

Official financing strategies and mechanisms to support developing countries are often not up to the challenge. One key limitation is their two-tier structure, in which the allocation of concessional funds and debt relief is essentially reserved to Low Income Countries (LICs). This is expressed in separate Debt Sustainability Analysis (DSA) exercises by IMF/WB, with wide-ranging implications for the allocation of concessional funds, and the Heavily Indebted Poor Countries (HIPC) and the Multilateral Debt Relief Initiative (MDRI) official debt restructuring initiatives aimed at LICs. As a result, non-LICs that may need and deserve special consideration concerning official financing, including those that graduate from LIC status, fall through the cracks of official financing.

SIDS are a prime example of the latter. These economies have unique external vulnerabilities to climate, financial and other shocks, often carry high debt burdens due to narrow resource and tax bases, but can be excluded from helpful official support efforts due to comparatively higher levels of per capita income. Several papers have constructed multidimensional vulnerability indexes (MVIs) and showed that SIDS often score very high in this regard. This note examines analytically how a comprehensive MVI could be used to expand the access of vulnerable countries to official financing, including concessional financing, and facilitate constructive debt restructuring when they need it.

The note is structured as follows. Section 2 discusses the relevance of expanding the income per capita yardstick to include a multidimensional vulnerability perspective in economic development assessments. Sections 3 and 4 analyze the rationale for using MVI information in official financial support: Section 3 focuses on equity objectives and Section 4 looks at development impact. Section 5 discusses the potential use of MVI information in official financing frameworks and Section 6 focuses on key tailored-made products for vulnerable economies worth official support. Section 7 concludes by summarizing the proposed uses of MVI information to revamp sovereign debt architecture.

## 2 The information value of MVIs

This section builds on papers that make proposals for MVI formulas and advocate their usefulness.<sup>1</sup>

### MVI as complement of income-based criteria

Income per capita is traditionally used as a proxy for stage of economic development because it is highly correlated with development challenges and attainment. It makes sense that official financing strategies use country income per capita as a key summary statistic to make decisions on how to allocate and design support. However, this catch-all statistic leaves out important pertinent aspects that ought to be considered when simple and homogeneous statistical information is available to reflect them, as in the case of UNDP

<sup>1</sup> The analysis in this section is well aligned with UN-OHRLLS (2021), which was brought to the author's attention after the section was drafted.

Human Development Index (HDI) in relation to health and education indicators. Unfortunately, while the current system of official financing includes some exceptions, such as IDA's small-state allowance and MDBs' flexibility concerning country graduation, by and large it is firmly anchored in per capita income thresholds.

One example of additional relevant information that is currently used in official financing in conjunction with income per capita is the Country Policy and Institutional Assessment (CPIA). The CPIA is an index used to assess the government's ability to put to good use official financing that reviews economic management, structural policies, policies for social inclusion and equity, and public sector management and institutions. While it is natural to expect a positive association between income per capita and the quality of policies and institutions, the actual measurement of countries' CPIA adds information to what could be expected solely based on income per capita.

Multidimensional vulnerability is another instance of complementary information to income-based criteria useful for official financing.<sup>2</sup> The remainder of the paper identifies several vulnerability dimensions, both concerning equity and efficiency considerations, that appear relevant for official financing determinations beyond current income per capita. Correspondingly, it proposes changes to the official financing framework incorporating MVI information to the current income-driven process to make it more effective.

The United Nations initiative to develop an MVI, taken forward since March 2022 through a High Level Panel appointed by the President of the General Assembly, provides a good framework to discuss the issue.<sup>3</sup> The remainder of this section discusses country vulnerabilities along multiple dimensions that have been utilized in MVI proposals and appear especially useful for this concept note. For a survey of the literature on MVIs see Guillaumont and Wagner (2021) and Assa and Meddeb (2021).

## The content of MVIs

The Economic and Environmental Vulnerability Index (EVI) adopted by the UN Committee for Development Policy is a good starting point. As originally defined, it refers to the likelihood that a country's economic development could be hindered by unforeseen exogenous shocks (Guillaumont 2009). In this formulation, economic vulnerability depends on the size and likelihood of shocks as well as the exposure to them, leaving aside endogenous country resilience understood as the capacity of economic policy to react to shocks. It includes two main categories of shocks: natural shocks and external shocks (such as commodity price volatility or slumps in external demand) measured by eight indicators. It leaves aside domestic shocks such as political and social instability, which are not considered exogenous. A recent UNDP proposal (Assa and Meddeb 2021) adds three indicators to capture financial vulnerability to overdependence on tourism revenue, remittances and FDI.

A recent study by the UN Sustainable Development Solutions Network (SDSN) (Sachs et al. 2021) extends this formulation to propose a broader MVI to track SIDS vulnerabilities. This proposal focuses on structural vulnerabilities impeding the achievement of sustainable development, not necessarily in relation to shocks. This larger framework bodes well with the aim of this note concerning the use of an MVI for better official financing mechanisms to help development pathways and the achievement of SDGs. This note assumes that the MVI to be used captures all structural vulnerabilities.

<sup>2</sup> More generally, ECLAC (2012) has proposed a structural gap analysis as an alternative to income criteria, making the case that per capita income is an incomplete criterion for allocating international resources because it misses many structural obstacles that hold back sustained, equitable and inclusive growth.

<sup>3</sup> For an overview of the work of the High Level Panel of the MVI, see: <https://sdgs.un.org/topics/small-island-developing-states/mvi>, and <https://www.un.org/ohrlls/mvi/hlp>

This more comprehensive proposed MVI includes three components: economic vulnerabilities, environmental vulnerabilities and structural development limitations. The first two components capture vulnerabilities similar to those included in the EVI extending and refining some important aspects, in particular paying specific attention to the shocks related to climate change. Specifically, economic vulnerabilities are captured by seven indicators measuring the country's degree of exposure to external shocks that arise from economic openness and dependency on a narrow range of exports and critical imports as well as from declines in economic resources from abroad. Environmental vulnerabilities are captured by six indicators related to natural hazards and climate change (proxied by the percentage of land areas with elevation below 5 meters). Structural development limitations is a new vulnerability dimension introduced by this MVI that is captured by five indicators of geophysical vulnerability. These are the size of the population, maritime connectivity, associated transport costs, and the availability of arable land and of renewable freshwater resources, and all structural handicaps to economic development.

Finally, the Commonwealth Universal Vulnerability Index recently proposed (The Commonwealth 2021) builds an elaborate index that incorporates additional dimensions useful for this note's purpose. First, it is meant to be universal, applicable to all developing countries rather than geared towards SIDS vulnerabilities. For example, it would recognize being landlocked as a structural development limitation. In this way, it is a more credible instrument for general application in official processes in conjunction with income per capita. Second, in contrast to the previous indices, it includes domestic shocks related to socio-political factors, such as conflict and violence, as long as they are linked to structural factors such as inequalities, ethnic fragmentation and regional instability. These are all structural factors exogenous to policymaking. In this conceptual framework there are four dimensions of vulnerability: economic vulnerability to external shocks, economic vulnerability to natural shocks, physical vulnerability to climate change (both risks related to progressive environmental degradation and the intensification of recurrent shocks), and socio-political vulnerability.

This universal MVI explicitly incorporates the measurement of resiliency to vulnerability exposure. Consistent with its focus on structural factors, exogenous to policymaking, it distinguishes between structural resilience and non-structural or policy resilience. The latter relates to the government's ability to respond to shocks that the country is vulnerable to and would be therefore relevant information to supplement CPIA rankings in allocating more funds to more able governments. In other words, it is not part of the shock exposure but of the response to its occurrence. However, structural resilience is a relevant factor shaping the shock aftermath that the government needs to deal with, and in that sense it can be considered as relevant information in a MVI that measures the potential challenges that a government faces in a vulnerable economy. The measurement of structural resilience would be in the spirit of the Human Development Index (HDI) of the UN, paying attention to the level of human capital (mainly health and education) as well as poverty and inequality. This proposal further includes demographic challenges and poor physical infrastructure and connectivity.

This concept note is concerned with how an MVI could be used in official financing rather than which specific MVI will or should be used. Nevertheless, to enrich the analysis showcasing the diversity of its potential uses, it is assumed that the MVI used is universal and captures the above structural dimensions of vulnerability (effective vulnerability, factoring in taking structural resilience) to exogenous shocks (natural, economic and socio-political), climate change vulnerability, and structural development limitations or handicaps. The analysis identifies roles for each one of these dimensions.

## MVI and development performance

The relationship between high MVI and poor development performance is well established. The UN SDSN reference shows that their MVI is negatively associated with the SDG index, which measures the degree to which a country has already covered its SDGs. This means that it is more difficult for highly vulnerable countries as measured by the MVI to reach SDG targets. There is evidence of this negative association for three SDG outcomes: poverty, subjective well-being, and life expectancy. To the extent that the MVI reflects structural or exogenous characteristics, this negative association means that high vulnerability leads to poor development performance.

SIDS are a prime example of the association of high MVI and poor development performance (despite the fact that they have often been at the forefront of economic openness to take advantage of economic globalization). On the one hand, as expected, all SIDS regions are structurally more vulnerable than other regions. This holds true for each one of the three dimensions of the MVI, especially in relation to vulnerability of food imports, export concentration, tourism dependence, small population, limited size of arable land and sea-level rise. On the other hand, SIDS generally do not fare well along several development indicators. UNDP (2015) shows that SIDS tend to have relatively higher public debt levels, lower current account balances, and lower international reserves. Their GDP growth is poor relative to other developing countries.

However, showing that high structural vulnerability leads to poor development performance does little to support the notion that MVI should be used together with income-based criteria. To the extent that such association is mediated by negative effects on income per capita, it would remain true that income per capita fully captures relevant development performance information. It is important that future research explores whether there is a negative association with development performance controlling for income per capita.

Another missing piece of evidence that future research could uncover concerns the association between high vulnerability and future development performance. The elaboration of principles and rules to guide official financing for development is a forward-looking exercise. A highly relevant piece of evidence would be to show that high vulnerability helps predicting poor future performance given current income level. Such evidence would establish that income is not sufficient as an indicator of development concerns. If income is sufficient to proxy current development performance as suggested before, then such test would amount to show that high vulnerability depresses growth (given initial income). It would be important to test these hypotheses with evidence.

This note relies on the hypothesis that high structural vulnerability has a negative effect on growth. Therefore, countries with the same income per capita face different development outlooks so that those with higher measured vulnerability are expected to underperform. This hypothesis is based on two reasons. First, the higher expected incidence of negative shocks leads to loss of wealth and costly reconstruction. This effect would increase over time as climate change progresses. Second, structural impediments to development imply the need for higher investment to achieve the same development impact. These structural handicaps amount to lower aggregate productivity.

### **3** MVI and equity objectives of official financing

As mentioned, the official framework for development financing discriminates sharply between low-income countries and the rest of developing countries or middle-income countries. What is the rationale for using income criteria for official financing? In particular, what is the rationale for reserving concessional resources to low-income countries, through the allocation of grants and soft official loans as well as providing official

debt reduction relief? These are key questions to answer to clarify and justify the use of additional criteria to allocate official financing. There are multiple possible answers to the above questions but, unfortunately, they are not provided in official documents. Since there is no doctrine to analyze, a proposal for using the MVI needs to appeal to first principles.

From a normative viewpoint, the official framework ought to maximize the development impact of official resources allocated to developing countries. In this context, development impact is the social return of the additional investment made possible by official resources, or development additionality. In turn, development impact has an aggregate and a distributive component across countries. The aggregate component measures the overall, global wealth increase of developing countries without distinguishing country circumstances and the distributive component adjusts its valuation to favor certain beneficiary countries in more meritorious circumstances. This is akin to an efficiency consideration (the size of the pie) and an equity consideration (how the pie is distributed). This framework is similar to the one used to evaluate social returns of public investment at the national level, in which benefits are valued differently depending on who benefits (for example, using a higher weight for low-income beneficiaries to favor equality and for certain disadvantaged groups to favor inclusiveness). This note derives rationales for the possible use of a MVI along with income criteria from these first principles, focusing first on equity or distributive considerations in this section and then analyzing efficiency considerations or overall development impact in the following section.

### The Rationales for using MVI on equity grounds

While what circumstances merit a higher valuation of certain beneficiaries is a value judgement, it appears reasonable to assume that the official framework ought to favor countries with lower income per capita, everything else equal, for equity reasons.<sup>4</sup> This redistributive concern in favor of the poor is also traditional in domestic public investment in relation to classes of beneficiaries. There are however other potential equity rationales grounded not in outcome equality but in opportunity equality that may deserve attention to favor certain countries, whether or not they are low-income. This concern for equality of opportunities, for example in connection with special protection for the handicapped, is also traditional at the national level. While seeking more equal outcomes is subject to the concern that it may distort incentives for self-improvement efforts, seeking more equal opportunities is not subject to the same reservations.<sup>5</sup> However, the flexibility of the official framework for development finance is largely restricted to a binary per capita income consideration, either below or above a threshold.

This note makes the case that high-MVI countries should also be favored in the allocation of official resources on equity grounds in recognition of their structural development disadvantages or handicaps that impede normal economic development. These disadvantages are not created by these nations and are therefore exogenous to their economies. A more favorable treatment would put them closer to equal footing with other nations. This note distinguishes three equity motives for also favoring high-MVI countries, especially those with low structural resilience.

First, countries vulnerable to exogenous shocks as reflected in the MVI suffer welfare losses for no fault of their own. In the case of natural and socio-political shocks, they consistently suffer catastrophic loss of welfare and incur costly reconstruction. Reconstruction implies costly investment only to restore the same standard of living, and is therefore additional to the investment needed to develop and grow. The deadweight

<sup>4</sup> This note disregards equity considerations for allocating international resources concerning inequalities within a country.

<sup>5</sup> It can be argued that SIDS are penalized for having been relatively successful in the past at counteracting their natural disadvantages with niche strategies associated with globalization that allowed many of them to escape low-income status.

loss of reconstruction cost is akin to a negative shock to productivity (more investment is needed to produce a certain GDP growth), the implication being that countries vulnerable to negative shocks are on the receiving end of negative productivity shocks for no fault of their own. Apart from the cost of reconstruction, countries vulnerable to shocks also experience catastrophic welfare impacts and severe welfare losses while reconstruction takes place. In the case of economic shocks, welfare losses and reconstruction take the form of lost income and unproductive capital (and costly economic adjustments) with similar lower consumption implications.

Second, countries vulnerable to climate change offer perhaps the strongest case for equity consideration because welfare losses are not only of no fault of their own but of fault of others. Since there is substantial alignment between official donors and countries historically responsible for current global warming, the ethical imperative of compensating victims would be not only altruistic but a call to responsibility. SIDS are the quintessential example of this motive. Climate change poses a severe and increasing threat to their economies as the sea level rises and weather events intensify, and an existential threat to many of these states.

Third, structural impediments to development as reflected in the MVI are also a motive for equity consideration because they amount to a handicap that makes development in these countries more difficult. In economic terms, these countries are naturally endowed with a lower level of productive capacity or productivity, so that more capital is required to achieve the same level of income. Equal opportunity to develop to achieve satisfactory levels of welfare for their people calls for consideration of their in-born disadvantages. Once again, SIDS are a clear example of this vulnerability dimension.

The above justification for using the MVI for equity considerations assumes that the weights of their components are well aligned with the economic value of the inequities they produce. Otherwise, the components of the MVI should be used separately.

It is important that only structural factors are used as a basis for equity considerations. Countries able to invest and incur costly regulations to develop resilience to vulnerabilities should be encouraged to do so. A prime example is climate change adaptation in SIDS. If official equity concerns are based on the expected loss from risk factors it would implicitly discourage resilience efforts, the opposite of what should be encouraged. Therefore, it is critical that the MVI is not affected by (non-structural) resilience driven by policy and that equity concessions be dependent on the MVI but not on the resilience developed by countries.

Contrary to the efficiency motivations of official financing analyzed in the next section, equity motivations are value judgements that cannot be derived from cost and benefit, optimality considerations. This section makes the point that donors concerned with equity objectives should be sensitive not only to low income but also to high vulnerability. The weight given to high vulnerability would depend on their specific justification for equity redressing.

#### **4 MVI and development additionality of official financing**

Leaving aside equity considerations, official financing allocation should depend on how to produce a larger global development impact return per dollar of official resources. Conceptually, the impact is the net or additional production made possible by official financing. As money is fungible, financing public spending that would have been made anyways means that the actual impact is something else. The development return is the social valuation of the impact, which by assumption would be uniform across countries (on a PPP basis)<sup>6</sup> but

<sup>6</sup> This assumes that governments are regarded as social welfare maximizing. If official financiers do not regard governments that way they could still allocate funds according to their own views of social welfare, constraining the use of resources by certain governments. This note touches upon conditionality later on.

may differ from a private valuation on account of development externalities. Furthermore, macroeconomic variables adjust to the availability of new sources of sovereign external credit, including public sector balances, which may be non-neutral from a social valuation viewpoint.

On the other hand, the official resource cost is also difficult to assess. If official resources were plentiful and costless, there would be no allocation problem. However, that is not the case: official financing involves a fiscal cost to financiers. This is obviously so in the case of grants and explicitly concessional lending. But there is also a fiscal cost in all official lending potentially subject to default and restructuring (or implicitly swapped for concessional debt) that is not charged with the corresponding risk premium, including the expectation of additional concessions in the case of debt reduction. To the extent that there is a binding fiscal resource envelope to deliver concessional terms or back financially risky lending made at riskless terms, there is an allocation problem.

The problem facing official international financing for development is to allocate the embedded fiscal resources as to maximize overall development returns. In other words, allocate loans and terms as to maximize overall development returns subject to available fiscal resources. This constrained maximization problem is similar to the allocation problem that a National Development Bank faces concerning domestic lending (see Fernandez-Arias and Xu, 2020).

There are several factors relevant for how to rank official financing across countries according to this metric that are discussed in what follows. It is obvious that emergency financing after the onset of a substantial shock in a country in need of official support would be a first priority and requires the provisioning of dedicated official resources. The following analytical framework leaves aside emergency financing to focus on how to allocate regular development financing. While income per capita is often a relevant indicator to justify official financing, it is an imperfect proxy. This note makes the conceptual case that an MVI would be a useful additional indicator for better targeted, larger and more concessional regular financing leaving aside implementation considerations.

## **The need for large public investment**

Low-income countries can be presumed to have high social returns to public investment geared towards development catching up, and therefore are good targets for relatively large official financing if they can absorb it productively. However, high-MVI countries also have a separate claim in this regard. Apart from additional public investment for reconstruction after shocks, high-MVI countries need to conduct larger sustained public investments relative to less vulnerable countries. First, vulnerable countries need to invest in resilience to reduce exposure to shocks, such as stronger infrastructure or international trade diversification. For example, investments in adaptation to climate change is a critical need of SIDS but not of other countries. Second, structural impediments to development imply additional infrastructure and investments to compensate and adapt to disadvantaged circumstances. In summary, public investment has higher marginal effectiveness under vulnerability situations (Guillaumont and Wagner 2014). The point here is not that vulnerable countries merit equity consideration, analyzed in the previous section, but that, *ceteris paribus*, in those countries social marginal returns to public investment are likely to remain high at large volumes of investment.

## **Limited Access to Private Resources**

The need for large public investment translates into the need for large official financing when there is limited access to private resources to make high-return investments possible. The more private resource access is impeded, the more useful is official financing. On the other extreme, if a country has easy access to private



resources, official financing would substantially crowd out private financing and produce little additionality. Therefore, impediments to private resources are critical for guiding official financing allocation.

Access to private resources may be domestic (via tax revenues and domestic borrowing) or external. As to limited capacity to mobilize domestic resources, it is well known that low-income countries have small tax bases that exclude the mass of the population unable to contribute and rely on able contributors who often evade or elude taxes. Domestic borrowing is similarly constrained by low domestic savings due to poverty and little ability to regulate preferential public access to them. While a similar case cannot be made for high-MVI countries, in the specific case of SIDS it holds true that tax revenues based on international trade were eroded by trade liberalization and that their savings rate is substantially below that other developing countries (UNDP and UN-OHRLLS (2015)).<sup>7</sup>

Concerning access to external private resources, the key is the capacity to borrow at reasonable terms. Public debt carrying capacity depends on the resources available to pay public debt obligations if they are not rolled over. By and large, such capacity is generally presumed to be related to resource bases such as GDP, or more specifically tax revenues (to come up with fiscal resources to pay) and exports (to convert fiscal resources into foreign currency), which are often used as proxies (alternatively, public spending and imports, respectively) assuming that the level of these variables is related to the government's capacity to free the needed additional resources.<sup>8</sup> It is an accepted fact that low-income countries generally have less flexibility to accommodate payments that would detract from their meager incomes and would run the risks of defaulting more easily. In this regard, the same argument could be made for SIDS, which have weak fiscal and balance of payments positions.

However, importantly, a more rigorous application of capacity to pay considerations indicates that high-MVI countries can be expected to have lower capacity to carry debt than their income per capita suggests. First, vulnerability to shocks implies that capacity to pay may vary widely and unexpectedly fall below outstanding debt after adverse shocks. This instability generates credit risk and less access to private finance. Second, capacity to pay is a forward-looking concept related to the capacity to pay obligations over time, so present values are relevant. For the same reason that the debt burden should be considered as the present value of the stream of debt obligations to factor in concessional interest rates, the resource flow base backing capacity to pay should also be considered as a present value.<sup>9</sup> Current income per capita would be a poor proxy for this measure if expected growth varies widely across countries. To the extent that high-MVI countries can be expected to grow more slowly on account of vulnerability, as it is for example the case of exposure to climate change of SIDS that intensifies recurrent shocks and progressively deteriorates economic prospects, the MVI indicator is relevant to gauge a country's debt carrying capacity.

### **The need for large and concessional official financing**

The need for large public investment and limited access to private resources would make the case for the need for large and concessional official financing. This issue has complexities because there is an interplay between official and private financing sharing the country's capacity to pay that exceeds the scope of this note.

<sup>7</sup> To make a case for vulnerable countries in this regard it would be important to study their tax revenues and savings rate controlling for income per capita.

<sup>8</sup> FDI and remittances may also be important foreign exchange sources but more inelastic than exports to the real exchange rate.

<sup>9</sup> Incapacity to pay may also be produced by insufficient liquidity to cover debt obligations at a point in time, which may be provoked by disruptions to the credit supply preventing rolling over payments to an otherwise capable borrower. This additional limitation to debt carrying capacity relates to appropriate debt management.

However, a simple model of the forces at play collapsing the dynamic process to one period illuminates the tradeoffs and shows the implications for official financing for development.

Let  $C$  be the country's capacity to pay,  $P$  the private debt level,  $F$  the official debt level, and  $g$  the subsidy rate or grant element in concessional official debt, so that  $Fg$  is the grant equivalent or fiscal cost of concessional lending and  $F(1-g)$  is the present value of official debt. Grants obtain when  $g=1$ , in which case the stock  $F$  is the grant amount.

Since payments to all creditors need to be generated by the same resource base, official and private debt compete for payment capacity. It is assumed that they share the capacity to pay  $C$  so that official debt is senior (paid first) and private debt is junior (paid second with the remaining capacity to pay), which implies that official creditors do not have a superior technology to extract payment other than being senior. In this simple model capacity to pay  $C$  is assumed to be fixed, which puts a rigid limit to overall debt obligations: all loans are riskless up to the credit ceiling and lending is rationed beyond that point.<sup>10</sup> The generic case of a feasible mix of private and official lending satisfies the credit ceiling constraint:

$$F(1 - g) + P \leq C$$

The government has a development plan and demands financing to carry it out. Let  $I$  be the financing level needed to fund the investments within the plan that have sufficiently high social returns (above a certain hurdle to be determined by official lenders as they allocate their resources globally). The efficient level of financing is such that:

$$F + P = I$$

The solution to the overall allocation problem requires the simultaneous consideration of all the beneficiary countries to find the maximum social return hurdle that exhausts global available official fiscal resources. Short of that, consider the necessary optimality condition of how official creditors can minimize their fiscal cost  $Fg$  of ensuring the resulting level  $I$  of public investment. It is easy to see that there are two situations:

If socially profitable public investment exceeds capacity to pay ( $I > C$ ), concessional official financing is needed for a minimum fiscal cost or grant equivalent  $Fg = I - C$ , which implies that the overall debt  $Fg + P$  reaches the credit ceiling  $C$ . In this case, official lending has financial additionality to reach the investment target beyond the credit ceiling. A different allocation rule of official debt would reach suboptimal development gains. In this simple formulation the volume of official financing and the concessional rate are not separately determined; the only thing that matters is the grant equivalent of overall financing. If financing is provided as a grant, then  $F = I - C$  and private financing takes its maximum value  $P = C$ . At the other extreme, private financing can be completely crowded out, so that  $F = C$  and  $P = 0$ , in which case  $g > 0$  takes its minimum value at  $(I - C)/C$ .

On the other hand, if the volume of socially profitable public investment does not exceed capacity to pay ( $I < C$ ), concessionality is not needed. In that case no official financing is required and private lending can achieve the best developmental solution within the country's capacity to pay. Official financing helping

<sup>10</sup> In a more realistic case  $C$  would be stochastic and debt, especially junior debt, would be increasingly risky up to the point of rationing, but the simple model suffices to illustrate the key factors in official financing.

finance investment would crowd out private lending and fail to produce any change irrespective of concessionality (because marginal private financing beyond  $I$  would be at non-concessional terms).

It is interesting to note that in this simple model if official financing is needed for optimal investment, it involves concessionality. Official (concessional) financing is needed when socially profitable investment demand exceeds the country's capacity to pay. Otherwise, official financing is not needed and plays no role. To the extent that a high MVI is a contributing factor for both the need for large public investment and limited access to private resources, it would be pertinent for the allocation of concessional official financing. Furthermore, on top of regular developmental lending, emergency financing in the aftermath of a shock would abruptly increase the need for public spending and add an additional factor in the direction of requiring (concessional) official financing in dedicated windows, a situation that can be expected to occur with higher frequency in high-MVI countries.

In the above model official non-concessional finance plays no role because of the stark assumption that they share a given country's capacity to pay  $C$ , which is a useful device to focus on the reasons for concessional official debt. Relaxation of that assumption in various ways, beyond the scope of this note, can give a role for non-concessional official debt.<sup>11</sup> Another implication of this simple model is that since  $C$  is fixed (and known), borrowing never exceeds the credit ceiling (if contractual concessionality of official lending does not fully ensure this result, ex-post concessionality through official debt relief would; the grant element in the model incorporates both sources of concessionality). The key implication of this assumption is that costly private debt restructuring does not occur. However, with uncertainty about  $C$ , clearly a more realistic assumption, there is a role for non-concessional official debt if it is more accommodating than private debt when debt restructuring is needed and avoids unnecessary costs to the country, for example cooperating to alleviate liquidity pressure by being amenable to rescheduling or rolling over debt obligations. Note that this rationale for non-concessional official financing for development is stronger when there is more uncertainty about  $C$ , a case more prevalent in high-MVI countries.

## 5 Incorporating MVI into official financing strategies and frameworks

This note examines the current official financing framework in light of the previous model and derives the implications for the use of the MVI. It starts from the positive analysis of the status quo and discusses ways to improve it by making use of the MVI in three areas of application: debt sustainability assessments, debt limits and concessional lending, and sovereign debt restructurings. The note incorporates the MVI into the framework to fulfill both the equity and development additionality objectives of official financing.

In current practice the framework for official financing is anchored in income per capita criteria, sharply discriminating between low-income countries and the rest of the countries, with no role for country vulnerability indices. As mentioned, income per capita is a key proxy for the factors underlying efficient official financing, namely capacity to pay  $C$  and the socially efficient level of investment financing  $I$ . Therefore, it appears to be a good foundation for the framework. The framework also makes use of additional information pertinent for the estimation of  $C$  and  $I$ , such as the CPIA, but fails to incorporate information on country vulnerability. As to equity concerns, while income per capita is a natural reference for equity objectives, the analysis showed that country vulnerability also provides a solid justification. In this section we show

<sup>11</sup> For example, it would still play a role in a model in which official lending may give additional confidence to private lenders, effectively expanding the perceived  $C$ . In that case it would have a catalytic effect and would be a complement of private lending. This would be a macroeconomic version of blended finance.

that the additional use of MVI would be a key step to refine the overall framework of official financing for development.

### Debt sustainability assessments

DSAs conducted by the IMF/WB is the backbone of the official framework. DSAs determine IMF debt limits policy, drive IDA concessional lending allocation, and inform financing of all multilateral and bilateral official lending. Interpreted in the light of the model, DSAs estimate the capacity to pay C for each country. It does so following two different processes: DSAs for low-income countries and DSAs for market-access countries. This classification is not mutually exclusive (or complete); in practice the first classification is applied to low-income countries without sustained market access and the second to the rest of the countries. Notice that income per capita is the entry point to this bifurcated framework, so that income per capita is a key variable in the estimation of capacity to pay C. Low-income countries are subject to stricter (and more elaborate) prudential benchmarks to evaluate debt carrying capacity, so that they are correspondingly assessed a lower C, *ceteris paribus*.

In a nutshell, the LIC DSA makes use of a country composite indicator that classifies countries in three levels of debt absorption capacity (weak, medium and strong) that in turn determine three levels of applicable debt benchmarks. The indicator is obtained by a formula dependent on CPIA, country GDP growth, remittances to GDP, reserves to GDP and world growth. The coefficients of these factors obtained from regression analysis of debt stress events imply that better CPIA, more growth (domestic and global), more remittances and more reserves (albeit with a decreasing marginal effect) improve creditworthiness. The previous section explained why vulnerable countries can be expected to have lower debt tolerance, that is, they are expected to lower the country composite indicator. A first proposal is to also include the MVI variable in the regression analysis to derive a more accurate country composite indicator. The presumption is that higher-MVI countries would tend to have lower, more stringent, debt benchmarks.

The risk ratings in the LIC DSA are obtained from risk signals from not only baseline projections but also stress tests of these projections. Some of the standard and suggested stress tests would be sensitive to the risks of highly vulnerable countries, so that this second-round reassessment of the LIC DSA provides a back channel for vulnerabilities to impact the final assessment. Stress tests of baseline projections are certainly welcome and provide a safety check to ensure that the risk implications of specific shocks are not diluted by aggregate indicators like the MVI, but it is important to directly recognize the lower debt tolerance of highly vulnerable countries as measured by the MVI in correspondingly lower benchmarks.

The MAC DSA is less elaborate and uses fixed prudential benchmarks to produce a heat map, rather a risk rating as in LIC DSA. The heat map is based on baseline projections and a battery of stress tests whose stringency depends on the level of scrutiny the country deserves based on *prima facie* evidence. Pertinent aspects of country vulnerability dimensions are considered only to the extent that they are included in stress tests. To make sure that the MAC DSA taken them into account, the proposal is a) make the high scrutiny protocol, which involves more comprehensive stress testing, mandatory for high-MVI countries, and b) ensure that high scrutiny stress testing includes all relevant vulnerability dimensions captured in the MVI.

In contrast to the LIC DSA, the MAC DSA makes no attempt to refine the prudential benchmarks to country circumstances. While it makes sense to make a larger effort in this regard in the LIC DSA because its conclusions carry more operational consequences concerning official lending and the use of concessionality, it would be useful that high scrutiny MAC DSA also attempts to refine benchmarks using the same logic utilized in LIC DSA incorporating the MVI as previously proposed (and with the key addition of the

information contained in the market perception of country creditworthiness expressed in market risk spreads and ratings).

Even if the methodological approach in LIC DSA and MAC DSA is made uniform, however, it would still hold true that a country migrating from one class to the other would obtain a totally different risk assessment because there is a jump in the underlying benchmarks that does not match the expansion in market access experienced by a graduating country. Put differently, two similar countries with income per capita on each side of the boundary of LIC and non LIC would receive radically different assessments despite having essentially the same fundamentals. The solution to this incongruity between LIC and MAC DSA would be to model benchmarks as a function of income per capita, which would bring continuity to assessments and ensure that the adverse effect of vulnerability is fairly assessed irrespective of income per capita.

### Debt limits and concessional lending

Debt limits policy aims to contain debt vulnerabilities while providing incentives for countries with access to concessional financing to seek it. It serves to coordinate lending by IDA, and MDBs in general, not to bridge the debt limit. Furthermore, debt limits policy coordinates OECD member countries to provide overall financial support to LICs' public sectors not exceeding the debt limit estimated in the LIC DSA in present value.

The country debt limit is a key factor to determine the concessional nature of official lending because a smaller debt headroom to ensure debt sustainability leads to higher concessional nature. To illustrate this point, we interpret IDA concessional lending allocation among its beneficiary countries with the model of the previous section. IDA allocation or country funding level is determined with a formula (the Country Performance Rating) according to which, in per capita terms, poorer countries and countries with better performance (as measured by CPIA) receive a larger allocation. This allocation formula is in the spirit of estimating the level of high social return public investments in need of financing, which is presumably higher for poor and able countries. As previously discussed, like lower-income countries, high-MVI countries can also be presumed to have a high level of worthwhile investments. The proposal would be to modify IDA's allocation formula to include an additional factor that increases with the MVI to reflect the overall country's investment absorptive capacity resulting from opportunities and ability to perform.<sup>12</sup> (While IDA contains an exception for small states and vulnerable IDA countries which would benefit from the IDA Crisis Response window after a shock, it is important to fully recognize the structural demand for funds of high-MVI countries in the country allocation formula.) IDA further tops up its formula allocation with an allocation to address fragility, conflict and violence that is to a large extent designed to build resilience. The proposal would be consider enlarging the perimeter of this top-up funding to include non-structural resilience spending concerning vulnerabilities in the MVI.<sup>13</sup>

As to IDA's financial terms, it provides concessional lending that includes a share of grants of up to 100% depending on the degree of country debt stress as informed by the LIC DSA. This can be interpreted as determining a degree of concessional nature to ensure that the country's overall borrowing does not breach the debt limit. Assuming for simplicity that all new lending comes from IDA (countries under debt distress would be barred from borrowing at non-concessional terms), it would ideally provide a grant equivalent to the excess of the country's debt headroom. In practice IDA coordinates all sources of official lending to LICs to ensure that debt limits are enforced.

<sup>12</sup> This is in line with the practice of the Caribbean Development Bank (CDB).

<sup>13</sup> Alternatively, investments in resilience could be considered as an additional factor in the country allocation formula.

The main difficulty with this architecture of debt limits and concessional lending is that it only applies to the LIC DSA. In fact, the MAC DSA is not intended to be part of a process to ensure adequate development financing or resolve an unsustainable debt position. While its conclusion on debt sustainability analysis and the resulting debt limit to be used in conditionality in conjunction with IMF support are useful pieces in a strategy to keep or regain debt sustainability, it is not part of a system to ensure that investments with high development impact are financed (on concessional terms if needed). Valuable investments left without financing amount to an efficiency loss. The official framework only focuses on development gains of low-income countries. In particular, highly vulnerable countries that, as explained, may share many of the same features (low C and high I) would receive no protection if they are not below the low-income threshold. This is a particularly severe problem for recent graduates, and more generally to countries in the “missing middle” (UN 2018).

A radical solution to this ex-post inefficiency would be that official creditors deliver IDA-like allocations and terms to countries that lost fluid market access to cover their financial needs. This is not as extreme as it looks considering that these countries are market-access countries only in name, even if in the past they accumulated substantial private debt. Another way to put it is that LIC DSA and its attendant concessional lending could be extended to all countries without fluid market access. In that case, the MAC DSA would be exclusively applied to countries that effectively have market access. If this radical solution to extend the application of the LIC DSA to non-LICs cutoff by the market appears to invite moral hazard on the part of countries that would have not lost market access if they had behaved responsibly, the proposal would be to restrict this last resort mechanism to high-MVI countries, which are subject to shocks exogenous to their behavior and where the potential efficiency loss of not delivering the required concessional lending would be maximal. In this way, all high-MVI countries without effective market access would be protected by the necessary concessional lending even if they are not low-income. This expansion could also be means-tested to ensure that it only covers countries in an intermediate income range.

One way to soften the need for additional donor contributions to expand the scope of concessional lending to non-LICs without fluid market access is to consider long grace periods and contingent grant equivalents that can be reduced if future capacity to pay allows it, for example triggered by future GDP per capita above a certain threshold. The option value of this recapture clause would be a partial offset to the expected fiscal cost of official financing. Furthermore, it would contribute to keeping the right incentives of official development financing to finance productive investments.<sup>14</sup>

Rating agencies are also an obstacle to the ability of official lending to step up financial support to countries under debt stress to defend development gains. There is much debate about whether agencies have a sufficiently long-term view that is not swung by market mood and are able to produce fair ratings for developing countries reflecting their long-term potential. These concerns extend to their ratings of MDBs, since lower country ratings permeate to lower ratings of the MDBs lending to them. But even if country ratings are technically sound, their unfiltered translation into MDBs’ ratings is myopic. Lower MDB ratings hamstringing official lenders to support distressed countries, which may lead to severe development losses and financial collapse with all sides losing. Rating MDBs in this mechanic fashion is myopic because it ensures that a bad situation will become worse, which implies that a system based on these ratings is dysfunctional to address

<sup>14</sup> There is a broader use of state-contingent lending that would be especially useful to high-MVI countries, analyzed in the next section.

debt stress.<sup>15</sup> The sovereign debt architecture needs to provide contingent backing to ensure forbearance for MDBs so that they can fulfill their development mandates efficiently.

Finally, the above considerations refer exclusively to concessional lending for development gains. Section 3 analyzed the equity rationale for delivering grants or grant equivalents to LICs and to vulnerable countries. The proposal would be to establish a metric for an allocation in grant equivalent terms for LICs and high-MVI countries according to the altruistic inclinations of donors (or the recognition of responsibility in the case of climate change effects), and then make sure that concessional lending to these countries is topped up to complete that goal if official lending in a certain period falls short. As mentioned, the separate use of MVI dimensions may be needed to reflect equity considerations. A case in point is the separate use of a climate change vulnerability index, which may be considered the highest equity priority and can be associated with initiatives in advanced countries to take responsibility for SIDS and other highly vulnerable developing countries. The establishment of an explicit floor to the grant content of official financing to these vulnerable countries would facilitate scaling up the provision of debt swaps and buybacks for climate as well as financing climate change adaptation, which right now is piecemeal.

### Sovereign debt restructurings

It is clear that in a world with uncertainty shocks may lead to overindebtedness despite the best efforts of the official financing system, especially in countries with financial market access. Once debt carrying capacity is breached, roll-over financing stops and concessional lending cannot accommodate financial needs within a sustainable framework. In fact, as the debt carrying capacity headroom shrinks, market roll-over terms would be increasingly onerous and concessional lending may cease to be an acceptable solution because it would be implicitly financing high-risk spreads of new private lending. This case is especially relevant for countries with substantial accumulated private debt, which limits the applicability of concessional lending to countries that lost market access discussed before as a reliable solution to ensure financing of investments with development gains in a pre-crisis situation.

Debt that cannot be managed within the country's capacity to pay calls for debt relief. The prospects of restructuring excessive debt creates uncertainty and distorts investment incentives in anticipation of debt renegotiation as the borrowing headroom shrinks, even before new lending stops. In those circumstances, efficient investment to obtain high development gains requires debt restructuring before default occurs with deep reduction in present value that produces a sustainable restructuring. Debt restructuring needs to be clean to minimize costly economic disruption and avoid deterring future market access. The official approach falls short of these goals. The official approach to sovereign debt restructuring is built on the same LIC and MAC divide: debt restructuring programs focused on official debt, both multilateral and bilateral, are designed for LICs (HPIC and MDRI). Bilateral creditors participating through Paris Club agreements or voluntarily engage in rescheduling and interest rate reduction to other countries, but by and large non-LICs lack systemic protection when their debt is not sustainable.

Official debt restructuring amounts to ex-post concessional lending when it involves a reduction in present value. For the same reasons that, barring moral hazard, it would be efficient to lend at concessional terms to countries that are under debt stress by effectively treating countries that lost market access as IDA countries, it would be efficient to secure debt relief to all countries that need to restructure debt. And as before, restricting this escape to high-MVI countries may be a good compromise between ex-post efficiency

<sup>15</sup> More generally, myopic ratings are impediments to the countercyclical function of official lending.

gains and controlling for moral hazard. The corresponding proposal would be to extend the framework of official debt relief for LICs to cover the debt restructuring needs of high-MVI countries.

However, in the case of debt restructuring, the expansion of programs to non-LIC countries may fail to deliver the desired results. Official debt relief programs are bound to be less impactful when countries have substantial private debt, which is often the case of non-LICs. In fact, a restructuring based on official debt reduction may be unable to remove the need for private debt reduction. In that case it would strengthen the hand of private creditors by eliminating competing official claims with little benefit to the country. For this reason, as a second best, an expansion of official debt relief programs should be restricted to countries with a substantial share of official debt or where it is coordinated with private creditors to produce joint debt restructuring.

Effective debt restructuring of countries in debt distress requires that it be timely, expeditious, and deep enough to be sustainable and functional to the financial needs of economic development. The Achilles' heel of the current framework is private debt relief, which often does not comply with any of the desirable characteristics.<sup>16</sup> The adoption of Collective Action Clauses (CACs) in many markets to facilitate private creditor coordination helped but did not satisfactorily resolve the shortfalls, in part because of incomplete coverage and in part because the problems are deeper. In particular, even when perfectly coordinated, private creditors have incentives to provide shallow debt reduction to retain an upside value if countries experience a growth acceleration, which often leads to sustained debt distress with near credit rationing and recurrent renegotiations. Upside recapture clauses such as GDP-linked debt claims could be helpful in this regard but may need official support to certify the contingencies and make the new market attractive. An effective way to provide this support could be to introduce GDP-linked debt in official development lending, which would help with certification and demonstration effects as well as to align its incentives with beneficiary countries.

The first best, however, would be to establish comprehensive debt relief mechanisms regulating the participation of private creditors and make them available to all countries in need. An international bankruptcy court, whose jurisdiction needs to be recognized in all sovereign debt instruments, would coordinate standstills and creditors' claims so that free riding impeding efficient restructuring is avoided. Concessional lenders may be willing to voluntarily coordinate debt relief terms among themselves as they currently do or follow some rules to adjust their grant elements to ensure that they contribute to a comprehensive debt relief at least as much as the rest of the lenders. As to non-concessional lenders, both official and private, one possible compromise would be to allocate debt relief according to their historical risk spreads to equalize some measure of ex-post financial gain.<sup>17</sup> In this way, creditors assessing higher risk premiums would face larger debt reduction.

This orderly framework would be efficient and may even deliver better results to private creditors, which tend to be harmed by free riding in the current system. Incentives for private creditor participation in sovereign lending under the new system may be enhanced by facilitating the stipulation of debt reduction recapture clauses such as a GDP-linked bonus. This is an issue that exceeds the scope of this note. However, in the context of this note, inviting private participation more forcefully in an extended Debt Service Suspension Initiative (DSSI), which does not involve debt reduction but modest short-term rescheduling of debt service to

<sup>16</sup> This is also a limitation of debt relief programs for LICs with substantial private debt.

<sup>17</sup> IMF credit could be exempted from debt relief to ensure that it can play its role of lender of last resort to facilitate crisis prevention and resolution.



help countries deal with the Covid-19 shock, could be a first step in this direction. The proposal would be to use the MVI as an additional factor to qualify for eligibility in (a hopefully more muscular) DSSI.

## **6 Tailored-made products for highly vulnerable economies**

Aside from regular financing of public investment projects and ad-hoc emergency lending open to all countries that need support after a shock hits, it would be important to develop specific precautionary financial products that directly address vulnerabilities ex-ante. These products, particularly valuable to high-MVI countries, would reduce the MVI and consequently diminish demands for official financing. This section analyzes two types of products: insurance against shocks and loans contingent on shocks. It also discusses contingent contractual clauses with the same objectives and incentives to invest in vulnerability resilience to prevent shocks.

### **Insurance**

Insurance against shocks underlying the vulnerability dimensions in the MVI would be the first-best solution to the corresponding risks if it is feasible to develop a market that ensures fair pricing. A well-designed insurance product would offset the welfare consequences of the shock (or more generally adverse developments, such as the progress of climate change) in exchange for a premium. In this way the structural handicap of high-MVI countries would be reduced to the premium they need to pay and all unnecessary additional losses from the realization of risks would be eliminated.

There are a number of characteristics that are needed for a good insurance product. First, shock exogeneity, both the occurrence of the shock and the exposure to it. Otherwise, an insurance product would lead to inefficient moral hazard repercussions on the part of the country, which would not take the best prudential precautions to mitigate the insured risk. Most MVI dimensions appear to be good insurance candidates because risks are largely exogenous. Apart from the traditional market solution of partial insurance to help align incentives to control moral hazard, the official sector may cooperate by monitoring and certifying appropriate resilience policies. Second, an objective ex-post assessment of the covered event or loss. If there is room for disagreement, the official sector may cooperate by certifying losses and mediating differences. Third, fair pricing requires market competition, which in turn needs scale to justify including these products in insurance and reinsurance portfolios. Even then, insufficient statistical information may produce substantial actuarial risk that would push up the premium, in effect reducing the value of the insurance. The official sector can contribute to lower premiums by helping to pool risky countries across regions to increase scale and risk diversification.

The incidence of risks in the MVI would give an indication of the risk dimensions and specific risks that appear widespread and are important to cover. The Caribbean Catastrophe Risk Insurance Facility (CRIIF) is a good practical example of the kind of insurance product that the official sector may want to support to cover risks underlying the MVI, starting by extending that program to other vulnerable countries in the world.

### **Contingent loans**

Official loans in response to the occurrence of shocks, or emergency lending, can dramatically reduce losses by providing liquidity at the right time, and for this reason these loans may have the highest development impact. Nevertheless, this approach to dealing with shocks is inferior to insurance for two reasons. First, ex-post lending leads to unpredictable levels of debt depending on how lucky or unlucky a country is, which could result in debt distress and its attendant consequences. In any event, the country is exposed to uncertain

debt payments rather than a predictable insurance premium. However, countries may prefer this inferior approach if they anticipate that they would capture large grant equivalents when official creditors are forced by circumstances to extend concessional lending after a shock occurs, a potential moral hazard. To the extent that the expected grant equivalent of emergency lending is large enough, countries may choose not to take up suitable insurance. The solution to this problem is to develop a highly effective insurance product at possibly subsidized terms (or enforced by conditionality) to make credible the commitment not to be forthcoming with emergency lending if insurance is not taken up. Second, funds for official emergency lending may compete with development financing, while that is not the case for private insurance products or official insurance products reinsured privately. Therefore, ex-post lending should be in consideration only if insurance proves not feasible.

Furthermore, emergency lending may fail to deliver the best results if it is complex to access and funds are not delivered in a timely fashion. The current system for emergency lending suffers from both problems to some extent: a myriad of emergency windows and operational frictions to disburse. When emergency lending mechanisms are considered as second-best solutions, contingent lending or disbursement automaticity is key to solve these issues. In a contingent lending program eligible countries qualify to immediate loan disbursements at pre-agreed terms when certain contingency occurs. It is like a line of credit that cannot be accessed until the contingency occurs. The contingent aspect of the program is similar to an insurance product covering the risk of the contingency, but the financial consequence is a loan (to be repaid in the future) rather than a transfer (as the quid pro quo for unconditional, fixed insurance premiums). Like in insurance, a well-designed contingent lending facility would have an effective process for quickly ascertaining the occurrence of the contingency that is credible ex-ante to all parties. While contingent lending facilities could be open to all countries, high-MVI countries would be natural candidates to qualify.

### **Contingent contractual clauses**

Insurance and contingent lending may be embedded in loan contracts by means of contractual clauses. For example, GDP-linked loans in which the present value of remaining debt depends on GDP (by making the terms of future obligations contingent) amounts to insurance. Such device could eliminate or cap changes to the debt-to-GDP ratio in present value terms that originate in GDP changes. Similarly, GDP-linked loans in which debt service is rescheduled depending on the phase of the GDP cycle can automatically deliver counter-cyclical financing. While in theory it is disadvantageous to tie contingent lending to existing loans rather than preserving a degree of freedom for the country to decide whether and to what extent to use the pre-approved contingent loan, this implementation may be the easiest way to start building a culture of contingent lending that would be of great benefit to vulnerable countries.

Highly vulnerable countries could benefit from anticipating the realization of shocks to which they are critically exposed in contractual clauses included in sovereign bonds and bank loans. It stands to reason that those contingent clauses cannot be as elaborate as insurance and contingent loan products designed with the objective of optimizing the response to specific shocks, but even blanket contractual clauses may be useful to temporarily suspend debt service if certain types of shock occur, where certification parameters would be summarily ascertained by a credible agent. The official sector has a role to play to facilitate these mechanisms, including the certification of the contingency. High-MVI countries would be natural candidates to benefit from an official certification body. These clauses would provide an automatic temporary standstill that can be very useful to sort out the optimal response over time as the problem and potential solutions become clearer.

## Investment in vulnerability resilience and conditionality

Investments in vulnerability resilience reduce the need for insurance products and contingent lending programs, and the need for official resources by vulnerable countries in general. To the extent that these activities involve concessional official resources, both provided up-front or implicit in debt relief risk, and tie up alternative development financing, official lenders have a special interest in promoting investment in vulnerability resilience. In terms of the MVI, if high MVI leads to more intensive use of official fiscal resources as proposed, then it makes sense to provide incentives to investments in vulnerability resilience that reduce the MVI. While incentives could take the form of favorable terms for this kind of investment, in the context of these tailored-made products it is natural to include conditionalities relative to resilience policies and investments in exchange for granting eligibility to insurance and contingent lending facilities.

## 7 Concluding remarks

There is a growing literature on the vulnerabilities of developing countries and their relevance to informing economic development challenges. The United Nations has spearheaded an initiative to put together pertinent dimensions of country vulnerabilities in a multidimensional vulnerability index that rates countries' overall vulnerability to focus international cooperation on vulnerable countries. This note shows the rationales for using the countries' MVI information in sovereign debt architecture and derives ideas to put them in practice. It does so for each one of its three main pillars, namely debt sustainability assessments, debt limits and concessional lending, and sovereign debt restructuring. Furthermore, it explores precautionary financial products tailored to vulnerable countries.

The note shows that MVI information is useful concerning both the equity and development impact objectives of official lenders. Concerning equity, high-MVI countries are exposed to substantial shocks of no fault of their own and, in the case of climate change vulnerability, of the fault of others. Furthermore, they are hindered by structural development handicaps that deny them an equal opportunity at development. Official grant equivalents to developing countries made on equity grounds ought to consider not only income per capita but also MVI information. As to development impact objectives across developing countries, the note shows that MVI information is useful to allocate official fiscal resources across countries to maximize global development impact. This is so because high-MVI countries justify higher levels of public investment to counteract vulnerabilities and at the same time tend to have a capacity to pay lower than what their current income per capita would predict.

Concerning debt sustainability analysis, at a minimum both LIC and MAC DSAs would benefit from making use of MVI information to make the current framework more accurate. In the case of LIC DSA, by using the MVI as an additional debt tolerance factor in the country composite indicator of debt management capacity. In the case of MAC DSA, a) by mandating a high scrutiny review to all high-MVI countries and ensuring that they are subject to the stress tests relevant to them, and b) by utilizing a country composite indicator similar to the one used in LIC DSAs (as previously amended) in high scrutiny cases. The last proposal would make LIC and MAC DSAs more consistent but still render them incongruent because they are based on two separate sets of debt capacity benchmarks that cause problems to countries around the boundary. Making debt benchmarks a continuous function of income per capita around the boundary would solve this problem and also lead to a more consistent estimation of MVI effects.

The allocation of official concessional lending would also benefit from using MVI information. Concerning lending allocation, the MVI would be a relevant additional factor to gauge the country's absorptive capacity of financial volumes. In particular, IDA's country allocation formula (Country Performance Ratings)

ought to be extended to include the MVI (and also make room for resilience investments of high-MVI countries).

Vulnerable countries may be currently unprotected by official concessional lending because concessionality is focused on LICs. IDA's logic of providing sufficiently deep concessionality to ensure that the country lending allocation does not exceed the (present value) debt limit estimated in the DSA exercise could be extended to non-LICs that lack market access to enable investments with high development impact outside the low-income country set. This extension could be restricted to high-MVI countries to control for moral hazard. Sovereign debt relief programs to provide needed additional concessions ex-post are also focused on LICs and could be extended to high-MVI countries in debt distress for similar reasons. However, extensions of official concessional programs in both lending and debt relief will not fully work unless the private debt of these countries is engaged in the effort (or it is too small to matter much). A sustainable incorporation of high-MVI non-LICs to official concessional facilities may depend on deeper reforms of international financial regulations to ensure the cooperation of private creditors.

Finally, official support to financially engineer tailored products that address vulnerabilities ex-ante, as opposed to rushing to organize emergency lending ex-post, may go a long way to alleviate the problem and reduce the MVI. The official sector has an important role to play in promoting and providing the legal infrastructure of insurance products to a diversified pool of vulnerable countries as well as pre-arranging contingent credit lines when insurance is not feasible. Contingent clauses in regular lending contracts may also be helpful to provide breathing space and diffuse shocks through standstills. High-MVI countries ought to be first in line to qualify for these products. All these ex-ante products are complementary to resilience policies and may be made conditional on satisfactory efforts in this regard.

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