

GDP+: A Vulnerability Inclusive Measure



The Commonwealth

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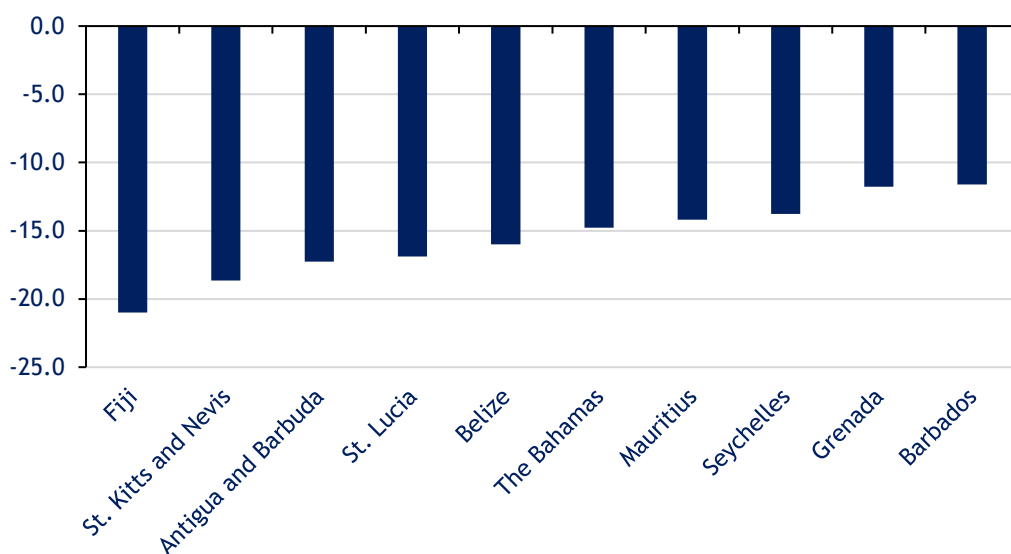
I. Introduction

Traditionally, the World Bank and its IFI peers have classified countries according to their per capita income levels. The standard practice is to divide the total output produced by a country's nationals by the total population in order to get a per capita GDP (or per capita GNI measure - where GNI includes externally generated income by nationals) measure. Based on the per capita measure, the World Bank then places countries into different income groups, namely: high-income, upper-middle-income, middle-income, lower-middle-income, and low-income categories (Box 1).

While the per capita income measure has utility in providing a comparable measure for standard of living across all countries, as well as a measure of development, one of its main shortcomings as an eligibility criterion for financing is that it does not take account of countries' socio-economic vulnerabilities that might affect output, and that more aptly reflects financing needs. These vulnerabilities are most prevalent in least developed countries (LDCs) and small states, who often face short-run contractions in output due to economic and environmental shocks, particularly weather disasters (Box 2). With the increased frequency and severity of such shocks, LDCs and small states are now more exposed to long-term economic setbacks, thereby requiring greater and better access to long-term financing to address their needs.

The economic impact of the COVID-19 pandemic underscored the paradigm shift with respect to the effects of economic shocks on vulnerable economies, such as small states. Within the Commonwealth, the pandemic impacted small states most severely, with Fiji experiencing a decline of more than 20 percent in 2020 (Figure 1).

Figure 1: Commonwealth countries with the largest GDP contraction in 2020 (Annual %)



The per capita income classification of countries, not taking account of countries' vulnerabilities, often has two key effects on economies:

Box 1: Countries by Income Status: The World Bank Classification.

According to the World Bank (2022b), there are four (4) classifications of countries by the level of income of a country. These are the low-income countries (LICs), lower-middle-income countries (LMICs), upper-middle-income countries (UMICs), and high-income countries (HICs). Low-income countries are countries with a GNI per capita of \$1,045 or less, lower-middle-income countries have a GNI per capita of between \$1,046 and \$4,095, upper-middle-income countries have a GNI per capita of \$4,096 and \$12,695, while the high income-countries have a GNI per capita greater than \$12,695 (World Bank, 2022). In the recently published World Bank report (2022b), there are 27 LICs, 51 LMICs, 41 UMICs, and 19 HICs. These countries were categorized in accordance with their income status and ability to access concessional funding.

The criteria for any economy to receive concessional finance is to have a per capita income of \$1,045 or less. However, many countries whose per capita income does not fall within this range (greater than \$1,045) are highly vulnerable and they expect to receive some forms of concessional financing, be it IDA, IBRD, or Blend. For a country to be able to access IDA, its per capita income levels must be \$1,205 or less (World Bank, 2022b). Notwithstanding, IDA also supports several small states whose per capita income is above the threshold but lacks the creditworthiness to borrow from IBRD (World Bank, 2022b).

Blend countries are countries that have access to IDA loans (based on their per capita income levels) and IBRD loans (based on their creditworthiness). Typical examples of such countries are Nigeria and Pakistan. According to the World Bank (2022a), lower-middle-income countries have access to a "Blend" of IDA and IBRD loans (depending on their per capita income and creditworthiness), while Upper Middle-Income countries have access to IBRD loans. Due to the inherent weaknesses of the per capita income approach to giving out concessional loans, some multilateral organizations use a combination of other indexes to complement the per capita income criteria for accessing loans. A typical example is the UN which uses a combination of per capita income, human development index, and the economic vulnerability index to determine which country gets its loans.

- i. Since the income classification approach is a key determinant of development finance, vulnerable economies that are classified as high income are often excluded from access to development finance on concessional terms; and

- ii. Where short term vulnerabilities are not taken into account in long term development planning, longer term economic stability is compromised, with the possibility of a reversal in developmental gains.

Box 2: An Overview of Small States and their Characteristics

Small Island Developing States (SIDS) are a distinct group of countries that face unique socio-economic and environmental challenges. They are a small group of countries, especially in terms of population size, landmass, and geography. They are slightly less than 1% of the world's population and their total population is around 65 million, spread across the Pacific, the Caribbean, Indian, the Atlantic, and South China Sea (AIS). According to Herbert (2019), SIDS is characterized by: a heterogeneous group of countries, different levels of economic vulnerabilities or successes, human development lags, lower economies of scale, higher costs of production, environmental vulnerability, small country sizes, and remote location to economic markets.

SIDS has different characteristics, and income as a sole criterion may disguise the unique qualities of SIDS. These distinct qualities have differentiated small states, especially in terms of their natural resources, population density, population size, and overall economic development. For example, Nauru, a UMIC, has the highest GNI of SIDS within the Pacific region but experiences several economic challenges such as a high unemployment rate (estimated at 90%), a high cost of living, and several other challenges including revenue and debt (OECD, 2018; Asian Development Bank, 2019). On the other hand, Papua New Guinea faces the least number of challenges when it comes to vulnerabilities (OECD, 2019). By implication, SIDS experiences different challenges and their needs are distinct. Since SIDS are a heterogeneous group, we can differentiate them in terms of:

1. Gross national income (GNI) per capita ranges from less than USD \$1,045 (Guinea Bissau) to above USD \$12,696 (Bahamas, Barbados, Seychelles, Singapore).
2. Population size ranges from 11,646 inhabitants (Tuvalu) to over eleven million (Haiti).
3. Remoteness from shipping lanes is high in Nauru, Palau, and Tuvalu, but lower in Fiji.
4. Vulnerability to economic and natural shocks (according to the UVI), is highest in Kiribati (56), Haiti (55.56), and Marshall Islands (55.52), and relatively lower in Barbados (35.72), Dominican Republic (34.50), and Singapore (30.14).

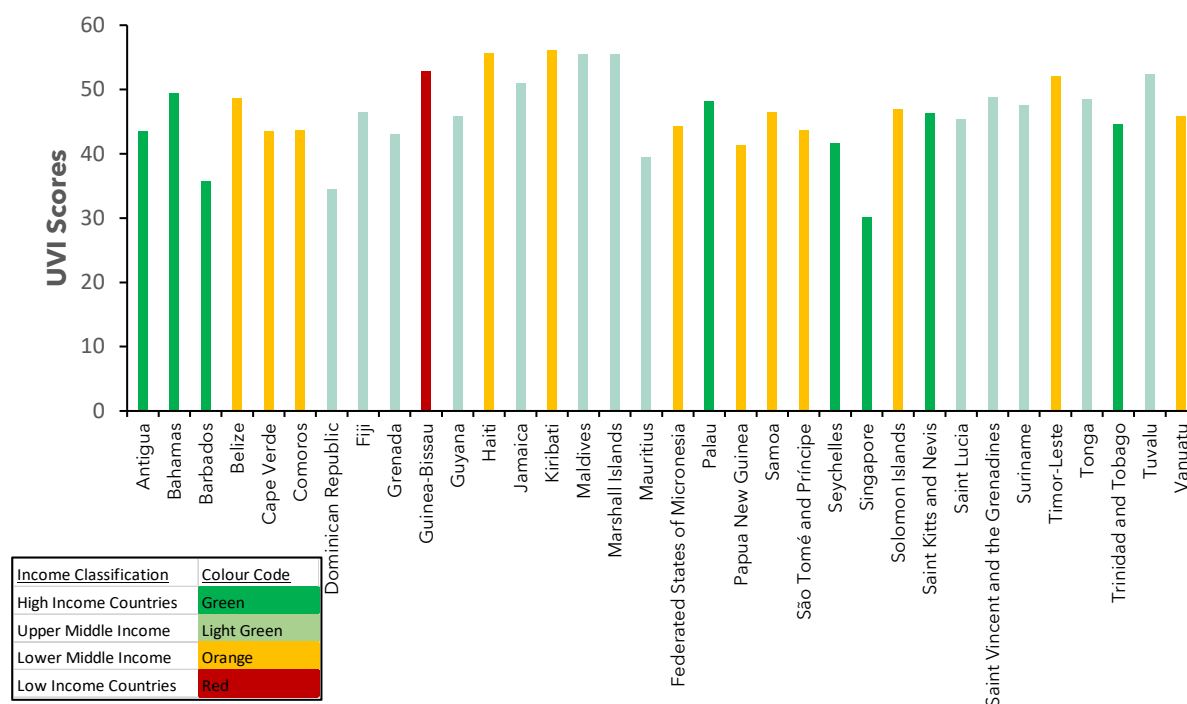
The Commonwealth Secretariat has long been an advocate for inclusion of vulnerability in the eligibility criteria for concessional financing. It is in this regard that the Commonwealth developed the Universal Vulnerability Index (UVI), a framework that reflects all exogenous shocks likely to affect sustainable development within a country (The Commonwealth, 2021). It highlights how countries are affected by shocks they have no control over and the net effect of these shocks on their sustainable development, taking account of the resilience mechanisms in place to cope, for example automatic stabilisers such as unemployment insurance or a low level of debt.

It should then be evident that the concepts of per capita income and UVI are quite different. While one measure assesses income or financial capacity, the other captures aspects that affect the level of development in an economy in addition to income.

An analysis of 34 Small Island Development States shows different rankings for vulnerability using the Commonwealth UVI, against the World Bank Income Classification. Figure 2 below highlights the extent of vulnerability across the 34 SIDS. A value closer to 100 implies a high level of vulnerability, while values close to zero represent a lower level of vulnerability. It also shows the income classification by country as according to the legend.

We can see that the Bahamas is a high-income country while it is also vulnerable. Furthermore, Maldives, Marshall Islands, and Tuvalu are countries within the upper-middle-income category, yet their level of vulnerability is high. Therefore, we can then conclude that the vulnerability and income classification of countries are capturing different country characteristics. If the two measures were equivalent, then a priori, one would expect countries with high levels of income to be less vulnerable/resilient and countries with low levels of income to be vulnerable. The analysis shows that this is not necessarily true as countries with a lower income are more resilient or less vulnerable than others with higher income levels.

Figure 2: The Commonwealth UVI Scores for SIDS



Why GDP+?

Several studies² concur with the assertion that the per capita income criteria as a means for accessing concessional funding may not be suitable simply because it does not reflect the inherent challenges and characteristics of vulnerable countries. The income per capita as an indicator only signifies a single unique feature. There are several other measures that explain the characteristics and challenges a country may face.

We propose a new dimension to include the intricacies of vulnerability and resilience of countries within the GDP per capita framework. This new dimension will merge the Commonwealth's UVI with per capita income to create an index we call "GDP+". The main feature of the GDP+ measure is that it accommodates the vulnerability and resilience characteristics of every country investigated and produces a new value for per capita income, having accounted for their inherent characteristics. Therefore, the new per capita income, adjusted for vulnerabilities, will reflect the true income capacity of a country, often thought of as their potential resilience, after accounting for their vulnerability and available resilience measures.

The rationale for the proposal of this index stems from the realization that none of the existing indices have tried to incorporate the concept of vulnerability and resilience of countries within the per capita income criteria for accessing concessional funds. Furthermore, this index will give an alternate picture of per

² Briguglio et al, 2009; Guillaumont, 2010; Herbert, 2019; and Knowledge for Development, 2021.

capita income levels for countries once the extent of vulnerability has been taken into account.

Interesting cases are, for example, the Bahamas, Barbados, and Seychelles, which are all SIDS classified by the World Bank as high-income countries (above \$12,476) but which according to the Commonwealth's UVI are categorised as vulnerable (despite some levels of resilience) (the Commonwealth, 2021). Based on the GDP+ proposal, it will then be interesting to confirm whether these countries remain within the high-income country category, once the vulnerability and resilience components are factored into the per capita income framework.

II. An Alternative Approach to Income Classification

There are several proposed alternative measures to per capita income as a way of accessing concessional funding. Some of these measures have focused on environmental and economic vulnerabilities, while others have focused on physical, social, or political vulnerabilities. Others have incorporated a combination of these indices, while some have tried to bring the indices together to create a general index. These approaches will be briefly reviewed in this section. We start by discussing the United Nation's Economic and Environmental Vulnerability Index (UN EVI).

i. The United Nation's Economic and Environmental Vulnerability Index (UN EVI)

The UN EVI is a measure used in the eligibility criteria for entry into the UN LDC category, along with the Human Asset Index and the GNI per capita income measure. The UN EVI encompasses 145 countries and ranks them from the least vulnerable (1st) to the most vulnerable economy (145th). The UN EVI is broadly categorized into 4 shock and exposure components (UN, 2021) and a higher value of the EVI indicates a higher level of vulnerability. A country can graduate from LDC status by meeting either two of the criteria for EVI, HAI, or GNI per capita or if its GNI per capita is twice the income only rule for graduation (Ancharaz, 2019).

ii. The Human Asset Index and the Human Development Index (HAI)

The HAI was developed by the United Nations Capital Development Fund (UNCDF), while the Human Development Index (HDI) was developed by the United Nations Development Program (UNDP). As earlier mentioned, the HAI, alongside GNI per capita and UN EVI is the World Bank criteria to classify LDC access to concessional financing. The goal of the HDI was to create an alternative means of ranking countries by their levels of development beyond the GNI per capita measure and it comprises 3 dimensions: health (life expectancy at birth), the standard of living (GNI per capita in PPP terms), and education (expected and mean years of schooling). The index ranks 188 countries into one of four categories (low, medium, high, and very high countries) and a higher index implies a higher level of human development.

iii. The World Bank Small Island Economic Exception

The World Bank (WB) instituted the Small Island Economic Exception (SIEE) in 1985 in a bid to ensure that Small Island Developing States (SIDS) have access to concessional financing even though they have a per capita income higher than the required threshold (World Bank, 2018b). The main beneficiaries under the SIEE are microstates within the Caribbean Oceans and Pacific region which have a population of less than 200,000 (World Bank, 2018b). The IDA benefits they receive include interest-free loans and 40-year amortization with a 10-year moratorium and these benefits will continue until these SIDS graduate to IBRD only status.

iv. The Caribbean Development Bank Multidimensional Vulnerability Index (CDB VI)

The Caribbean Development Bank (CDB) created the CDB Multidimensional Vulnerability Index (CDB VI) and approved a Special Development Fund (SDF) to help vulnerable countries within the Caribbean, using the criteria of population, per capita income, and vulnerability to determine how much funds a country will receive (CDB, 2017). More recently, the CDB included a social and environmental component to the CDB VI to predict how the environment will cope in the event of a future natural or environmental shock (Ram, Cotton, Fredrick, and Elliot, 2019). The CDB VI ranges from 0 to 1. A range of 0 to 0.33 indicates low vulnerability, 0.34 to 0.49 shows medium-low vulnerability, 0.5 to 0.69 suggests medium-high vulnerability, while 0.70 to 1 stipulates high vulnerability (Ram et al, 2019).

v. The UNDP Multidimensional Vulnerability Index (MVI)

The UNDP MVI was designed by Assa and Meddeb (2021) in line with the UN EVI, with its purpose to capture the impact of the Covid-19 pandemic and how it affected the UN EVI metrics and countries. The imposition of lockdowns, the dwindling in remittances, and FDI during the pandemic have shown how SIDS is more dependent on tourism. Even though the index is not yet official, the authors claim that the MVI provides a more robust measure of vulnerability in the wake of the pandemic. The authors argued that the UN criteria for concessional financing should be reviewed, with the addition of a Covid-19 component to capture the inherent vulnerabilities of SIDS which have proven to be more vulnerable within the MVI framework than the UN EVI.

vi. The Commonwealth Vulnerability Index

The UVI is a universal framework that reflects all exogenous shocks affecting sustainable development (The Commonwealth, 2021). This implies that vulnerability stems from the occurrence of shocks likely to affect a country (The Commonwealth, 2021). The UVI accommodates different shocks, ranging from external and natural economic shocks to socio-political and climate change shocks. The Commonwealth in its earlier study on the UVI also noted that shocks may also be endogenous, that is when they are affected by policy changes within a country. The UVI is broadly divided into vulnerability (structural vulnerability) and resilience (structural and non-structural resilience). Structural vulnerability is

affected by exogenous shocks. That is shocks that cannot be determined by policy changes but by natural or external events over which the home country has no or little control.

Therefore, the Commonwealth's UVI separates vulnerability indicators from endogenous factors since it is believed that vulnerability stems from factors outside policy changes. By implication, a vulnerability in this regard will include vulnerability to external and natural shocks, socio-political shocks, and physical vulnerability to climate changes. The Commonwealth (2021) opined that the structural vulnerability index or the structural vulnerability and resilience index (more on structural resilience in the next set of paragraphs) should ideally be the criteria for countries to access concessional finance from multilateral organizations.

Resilience on the other hand refers to the ability of a country to cope with exogenous shocks by implementing measures to mitigate or correct their impacts (The Commonwealth, 2021). Resilience depends on structural and non-structural factors. Structural resilience is the factor that affects human development, infrastructure, and per capita income of a country, while non-structural resilience is the factor that affects the current will of the government and the quality of policies/regulations directed towards mitigating shocks. Therefore, for a country to be able to access some form of assistance, the Commonwealth (2021) in its UVI report recommends the use of structural resilience alongside vulnerability since the non-structural component of resilience is more of policy regulations or endogenous factors under the control of the government or policymakers.

The Commonwealth (2021) further gave a distinction between structural resilience and structural exposure to shocks. Accordingly, they opined that the level of exposure of a country to shocks will determine the level of impact the shock has on the country. For instance, the level of dependence on a country's imports will determine the impact on import stability. Structural resilience on the other hand encompasses the effects of shock exposure on the final influence of that shock on the development of the country (The Commonwealth, 2021). In essence, the resilience of a country refers to the likely impact of future shocks on that country as it can only be measured ex-post rather than ex-ante (The Commonwealth, 2021).

The UVI updates the Commonwealth's Economic Vulnerability Index (2014) by including the size, intensity, and reoccurrence of past shocks in the future to expand its scope to an all-encompassing vulnerability index. By implication, to capture exogenous shocks, it becomes imperative to evaluate the possibilities of past shocks reoccurring in the future vis-à-vis their intensity and reoccurrence in the past as well as how exposed a country is to these shocks. Also, since vulnerability is determined by structural factors, it is most likely to evolve slowly over time. This implies that even when policy regulations, as well as other mitigants, have been adopted and led to considerable improvements in the level of development in a country, the exposure component will still evolve rather slowly over time.

There are two methods of determining the level of vulnerability of a country within the UVI. In the first method, a UVI score of less than 0.5 implies that a country is resilient, while a score of between 0.5 and less than 1 implies that a country is vulnerable. A UVI score between 1 and less than 1.5 implies that a country is highly vulnerable, while a score of 1.5 and above implies that a country is extremely vulnerable. In the second method, the higher the UVI score on a scale of 1 to 100, the higher the level of vulnerability exerted by a country, while lower scores show a higher resilience of a country.

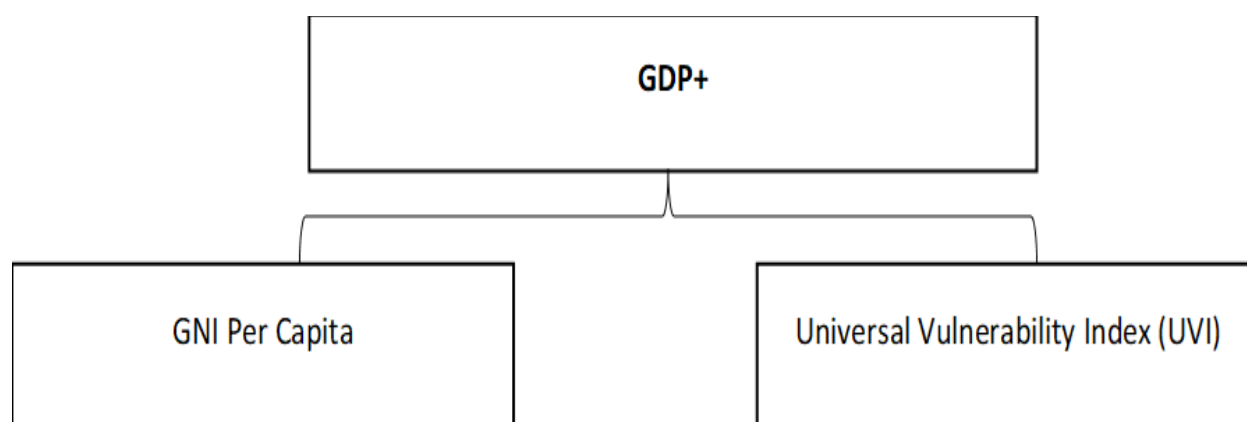
Shortcomings of the Commonwealth's UVI

Although the UVI presents a very useful analysis in categorizing countries with respect to their levels of vulnerabilities and resilience, it is not a barometer through which multilateral organizations provide official development assistance to countries. It is however because of its inability to address the issue of official development assistance that we design an augmentation of the per capita income (GDP+) criterion that incorporates the UVI within the GNI per capita framework. The essence of the GDP+ is to allow other more vulnerable countries within the upper-income and lower-income categories that are nonetheless classified as highly vulnerable still be allowed to access concessional funds.

III. GDP+ : An Application of the UVI

This section proceeds with the technical analysis of the GDP+ proposal. By definition, GDP+ is a combination of GNI per capita and the UVI. Therefore, it is expected that the GDP+ will reflect income per capita values having accounted for the vulnerability and resilience characteristics of countries (Figure 3).

Figure 3: The GDP+



For a country to receive aid, the Commonwealth (2021) posited that the aspect of the UVI more applicable for aid allocation is the structural vulnerability and resilience index (SVRI) (or the structural vulnerability index), which is articulated in Figure 4.

Figure 4: The GDP+ Condition for Accessing Concessional Funds

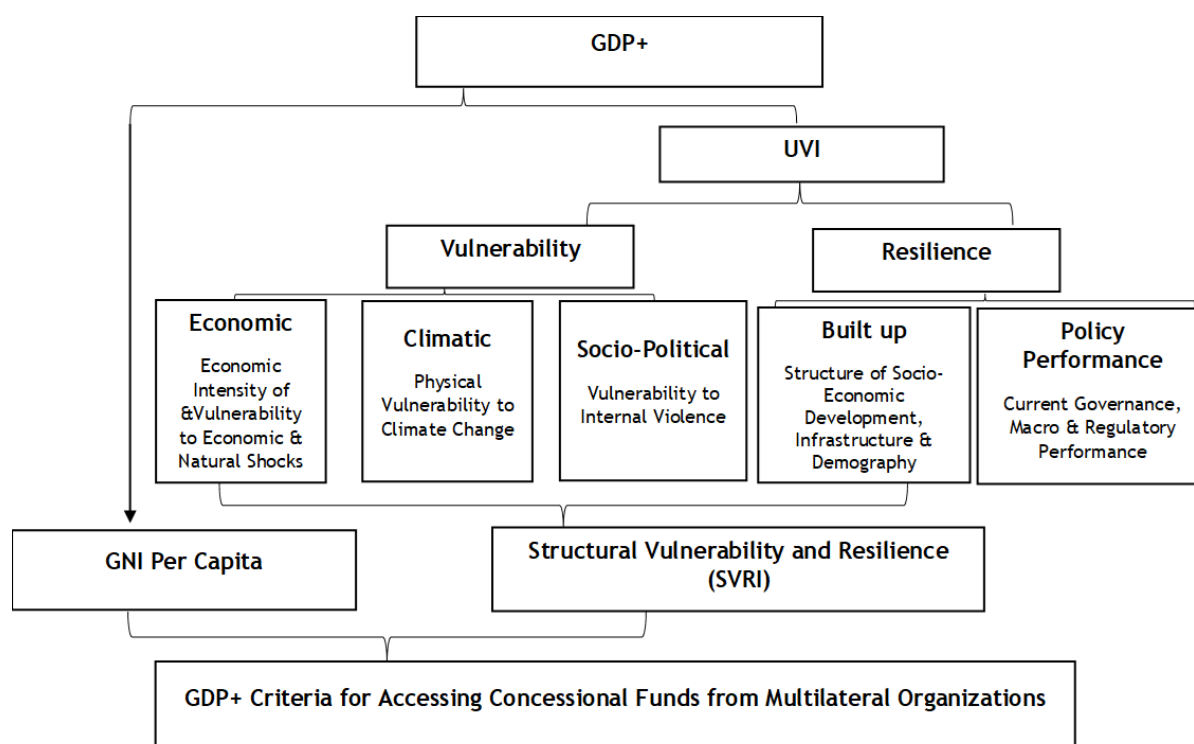


Figure 4 displays a breakdown of the UVI and the conditions for countries to access official development assistance from multilateral organizations. It combines the per capita income measure with the SVRI. We ignore the non-structural resilience in our condition for granting aid because it is endogenously determined and depends on present and previous policies and regulations implemented by the regulators within a country.

Following from Figure 3 and 4, equation (1) below defines GDP+

$$GDP+ = \frac{GNI \text{ Per Capita}}{UVI+0.5} \dots\dots\dots (1)$$

Where GNI per capita is gross national income per capita and UVI is the universal vulnerability index as measured by the Commonwealth Secretariat (The Commonwealth, 2021). For a better understanding of the formula, it is important to understand how the Commonwealth categorises the vulnerability of countries. The Commonwealth considers countries with a UVI of less than 0.5 as resilient, between 0.5 and 1 vulnerable, between 1 and 1.5 as highly vulnerable, and greater than 1.5 countries are extremely vulnerable (The Commonwealth, 2021, Box 3).

· **Box 3: Commonwealth UVI Characterisation of Vulnerability**

UVI < 0.5 Resilient

· 0.5 < UVI < 1 Vulnerable

· 1 < UVI < 1.5 Highly Vulnerable

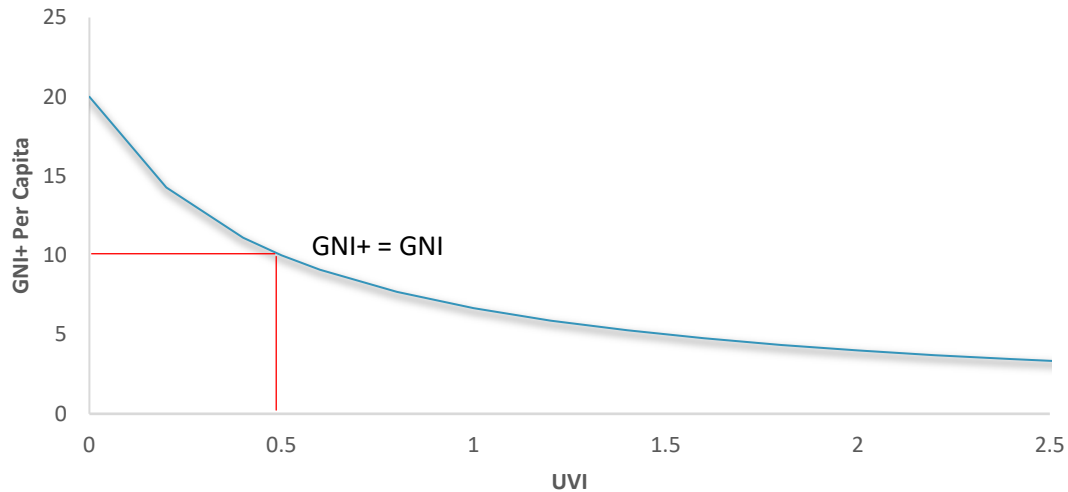
· 1.5 < UVI Extremely Vulnerable

In other words, any country with a UVI of greater than 0.5 is vulnerable; and the higher the UVI, the more vulnerable that country. Our GDP+ formula is based on this assumption. Any country with a UVI of less than 0.5 is considered resilient, thus, GDP+ of that country should be higher than its GNI per capita. Any country with a UVI of greater than 0.5 is vulnerable, therefore, its GDP+ should be lower than its GNI per capita; the higher the magnitude of the UVI, the lower the value of the GDP+. For countries with UVI of greater than 1.5, GNI+ per capita will be more than halved, showing how extreme vulnerability of those countries affect their income capacity or ability to respond to shocks.

Figure 5 below demonstrates the relationship between GNI per Capita and the UVI. Assuming country A has a GNI per capita of 10, the graph represents different values of GDP+ for every value of UVI. For instance, when UVI is 0.5, GDP+ is 10 which is equal to GNI per capita. When UVI is less than 0.5, GDP+ is higher than GNI per capita, capturing the fact that country A is resilient, thus, its GDP+ should be higher than its GNI per capita. When UVI is greater than 0.5, GDP+ becomes lower than GNI per capita indicating vulnerability of country A.

The higher the UVI value, the lower the GDP+. For extremely vulnerable countries (i.e. UVI > 1.5), GNI+ per capita more than halves the GNI per capita value.

Figure 5: GDP+, A Graphical presentation



IV. Results

In this section, we calculate GDP+ for 2018 using two different vulnerability measurements, UVI and SVRI. Data for UVI and SVRI are obtained from the 2021 Commonwealth Universal Vulnerability Index (The Commonwealth, 2021) and GNI per capita data is obtained from the World Bank, which is calculated using the World Bank Atlas method (World Bank, 2022)³. [Our findings are based on a sample of 138 countries \(See appendix 1 for the list of countries\).](#)

As shown in Figures 6a and 6b, when considering GDP+, the number of countries eligible for IDA or Blend/IBRD change significantly compared to the World Bank's GNI per capita criteria. When adapting GNI per capita to take in account vulnerability as measured by the UVI and SVRI, the number of countries eligible for IDA increases to 45 from the World Bank's number of 29; high income countries, which are not eligible for IBRD reduces to 17 from the World Bank's number of 19.

³ Because of unavailability of the 2018 data, we have used the 2011 GNI per capita for Venezuela and Eritrea.

Figure 6a: Effect of GDP+ on income groups

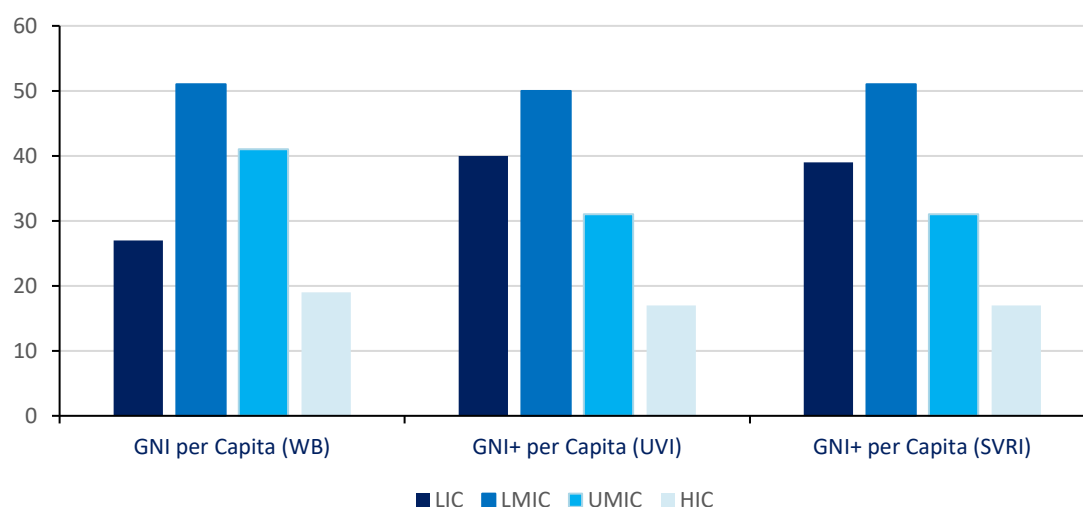
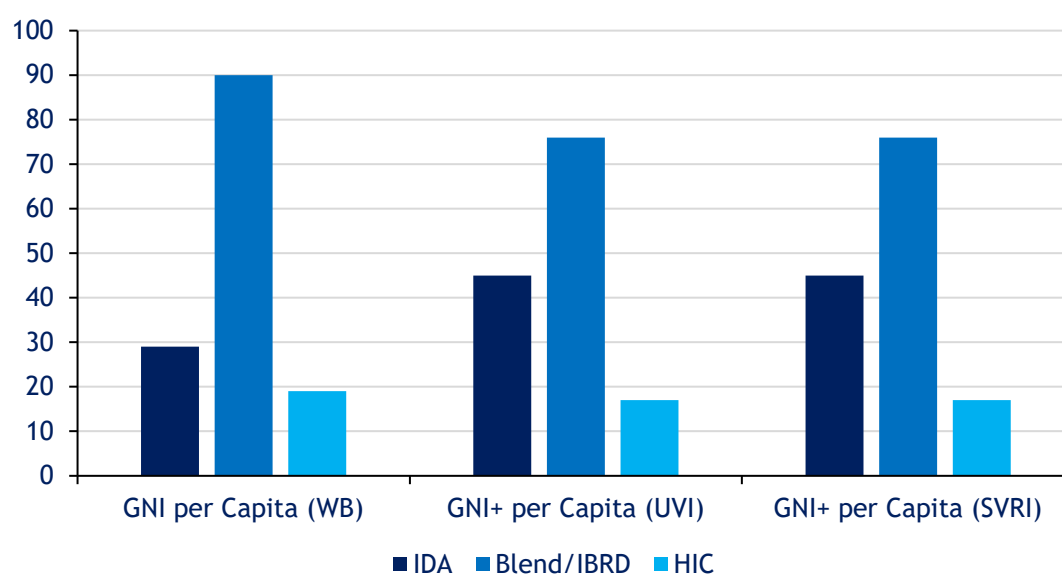


Figure 6b: Effect of GDP+ on lending groups



We proceed by presenting the results in Figure 6b above in the heat maps (Figure 7a, 7b and 7c) for commonwealth countries below. A comparison between Figure 7a and 7b shows an increase in the number of Commonwealth countries eligible for IDA, as presented by the darker colour, when vulnerability (UVI) is included in GNI Per Capita. Similarly, when vulnerability using SVRI is included, the number of IDA eligible countries increases (7c).

For the 46 Commonwealth countries in our sample, the number of countries eligible for IDA increases from 5 to 11 under the GDP+ criterion.

Figure 7a: LDCs under the World Bank Lending Group classification

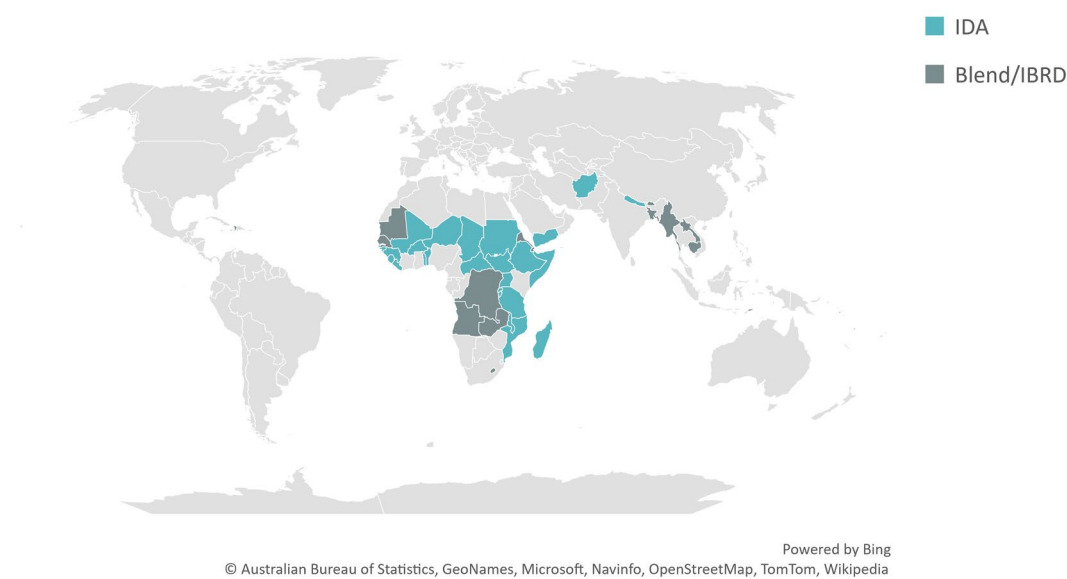


Figure 7b: Commonwealth lending group with GDP+ (UVI)

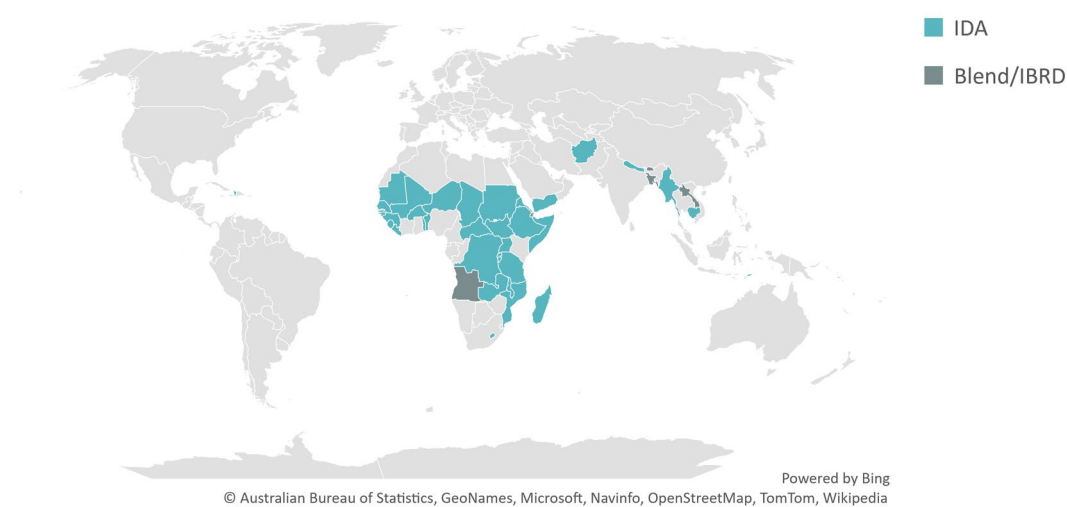
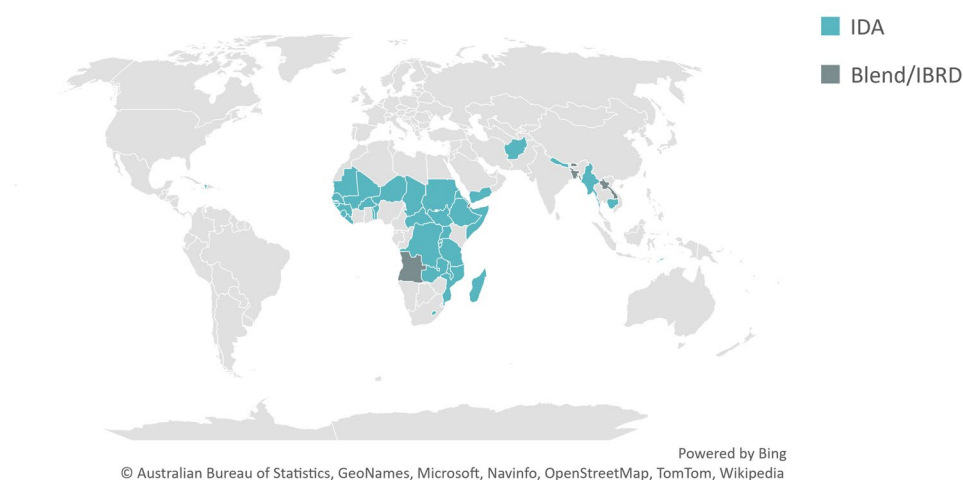
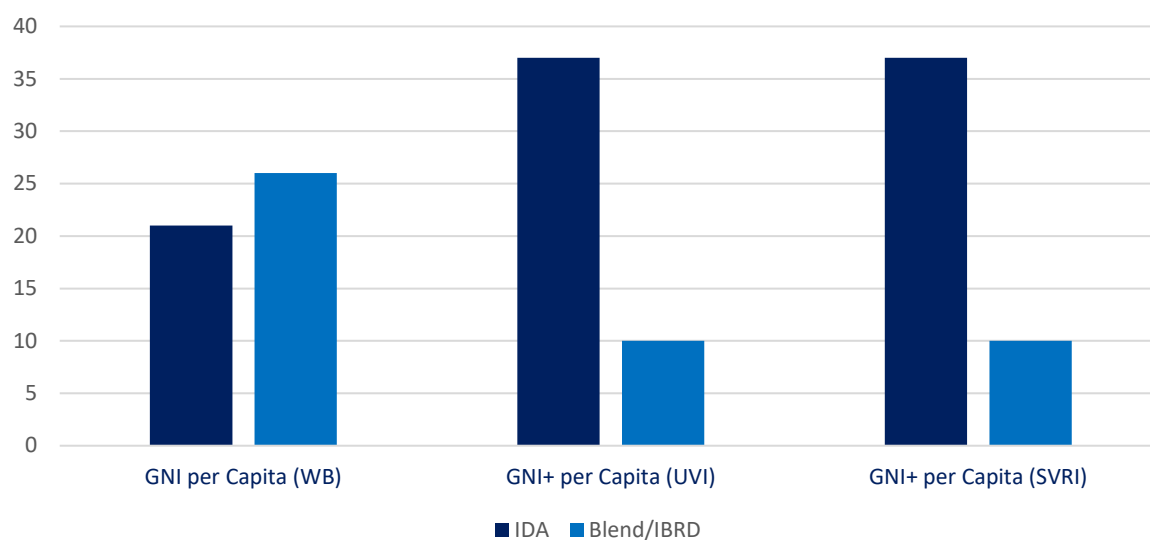


Figure 7c: Commonwealth lending group with GDP+ (SVRI)



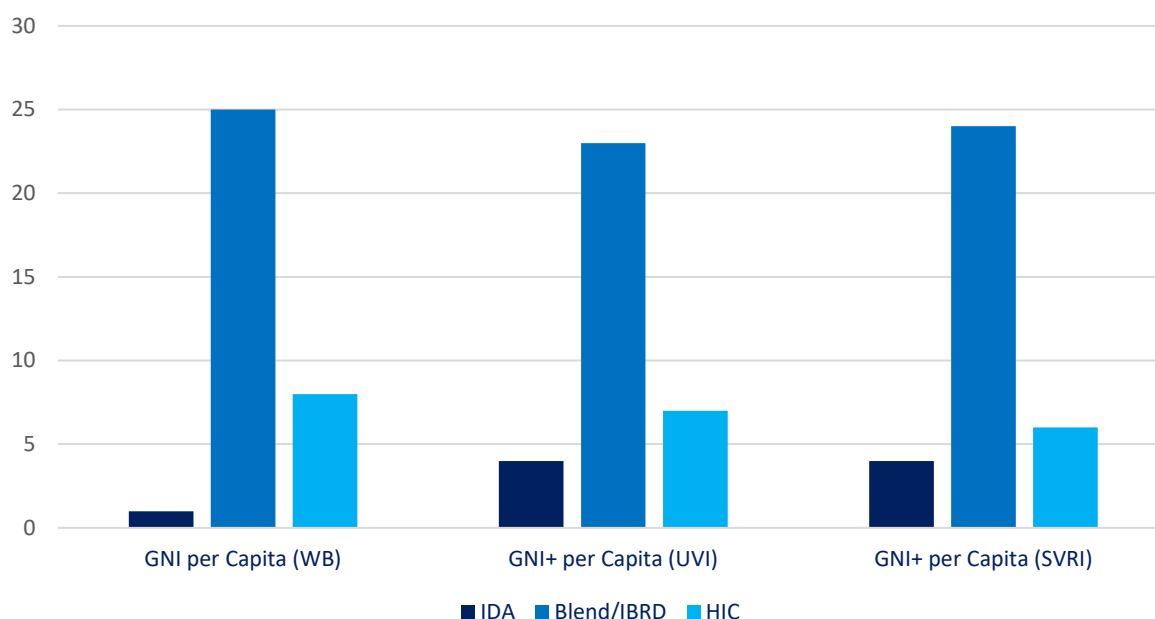
In addition, we take a look at less-developed countries and small island developing states in our sample of 138 countries. For the 47 least developed countries in our sample, the number of countries which would be eligible for IDA with GDP+ increases significantly from 21 to 37 (Figure 8).

Figure 8: With GDP+, LDCs eligible for IDA increase by more than a third



Similarly, for small island developing states, under the World Bank's GNI per capita criterion, only Guinea-Bissau in our sample of 34 small island developing states is eligible for IDA, whereas, when considering GDP+ Comoros, Haiti, and Timor-Leste become eligible for IDA (Figure 9).

Figure 9: Small Island Developing States Lending Group



IV. Conclusion

Over time, per capita income found utility as a standard measure for classification of a country's income capacity over defined time periods. Furthermore, per capita income is central in determining a country's classification, which has significant implications for development lending, often on favourable terms.

Nonetheless, the use of per capita income fails to take into account vulnerabilities, and in particular short-term vulnerabilities, that might have adverse effects on income in the short to long term, with implications for a country's development process.

In this study therefore, we propose the GDP+, a measure that combines per capita income with a country's inherent vulnerability. We use the Commonwealth Universal Vulnerability Index, which measures the vulnerability and resilience of a country.

We find that when vulnerability is combined with per capita income, the classification of country by income changes. Under the GDP+ criteria, some vulnerable countries that are classified as High Income and which would not have had access to development lending, are subsequently reclassified as blended countries using GDP+. Similarly, some vulnerable middle-income countries under the GDP+ criterion are now eligible for concessional financing such as the World Bank's IDA.

Three key policy implications can be identified from the analysis:

- i. Vulnerable countries that would otherwise not be eligible for development financing on concessional terms become eligible under a UVI adjusted GDP criterion. However, the question which would have to be answered is whether the current concessional financial envelope is adequate enough to accommodate an increase in eligible countries. For example, in World Bank IDA or Blend financial envelopes.
- ii. When income volatility, and therefore vulnerability is taken into account in per capita income, the actual income capacity of countries to respond to shocks becomes more apparent. It would therefore be useful for IFIs to jointly publish both GDP and GDP+ measures, were our proposal on GDP/GNI adjustment be taken into account. This would entail a regular update and publishing of the UVI measure, or any other vulnerability measure deemed useful.
- iii. Per Capita income that incorporates vulnerability and strengthens financing on concessional terms would enhance debt sustainability, and macroeconomic stability. Several of the countries that are highly vulnerable are middle income and also have high debt. As such, replacing the traditional GDP/GNI criterion with a GDP+ criterion would be impactful in helping to address not only financing needs, but also long-term debt and macroeconomic sustainability.

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