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Research Report

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A necessary small revision to the EVI to make it more balanced and equitable

PATRICK GUILLAUMONT



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The Economic Vulnerability Index (EVI) has now been used for a long time (in fact since 2000), as one of the three criteria of identification of the Least developed Countries (LDCs) (Guillaumont 2009a, 2009b, CDP and UNDESA 2008). As such, and in particular since 2005, when its present structure was adopted, it has gained in notoriety and has become recognized beyond the LDCs identification exercise. In particular it has been proposed as a criterion for aid allocation, including in a UN GA resolution (A/C.2/67/L.51) (Guillaumont 2009b, 2013). This proposal has even been implemented by the European Commission for the allocation of its assistance among the ACP countries, and among the countries eligible to the Development Cooperation Instrument. For its double use of criterion of LDCs identification and aid allocation, the consistency of the EVI appears to be a matter of utmost importance.

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ELLE COORDONNE LE LABEX IDGM+ QUI L'ASSOCIE AU CERDI ET À L'IDDRI. CETTE PUBLICATION A BÉNÉFICIÉ D'UNE AIDE DE L'ÉTAT FRANÇAIS
GÉRÉE PAR L'ANR AU TITRE DU PROGRAMME « INVESTISSEMENTS D'AVENIR » PORTANT LA RÉFÉRENCE « ANR-10-LABX-14-01 »

► The “environment component” added in 2011-2012

Several changes were made to the design of EVI by the Committee for Development Policy (CDP) in 2011-12, the most significant one being the inclusion of a new component, the share of population located in low elevated zones (LECZ), threatened by sea level rise due to climate change. The weight given to this component (1/4 of the exposure sub-index, 1/8 of the full index) was taken from the weight given to the smallness of population size (see figure). This inclusion was motivated by the intent to enhance the environmental dimension of EVI, by taking into account the economic vulnerability resulting from climate change. Accordingly the LDCs have been (re) designed as poor countries suffering from handicaps to “sustainable development” (and not only to economic growth).

and equitable way, which was not the case. Indeed the new LECZ component should have been combined with a comparable indicator reflecting the exposure to aridity of the countries with a large share of drylands, prone to droughts and threatened by water scarcity, also in relation to climate change.

Just the fact of including this new LECZ component changed the relative position of countries (as is shown below for LDCs), compared to the position that would have resulted from the previous composition of the index, making dry land countries (such as Mali) ranked as “less vulnerable”, although highly threatened by climate change (see table below). Even a small island country prone to typhoons, such as Vanuatu, with a low LECZ index due to its relief, appears to have been ranked as “less vulnerable” (by 11 ranks out of 48 LDCs)¹.

► Resulting unbalance

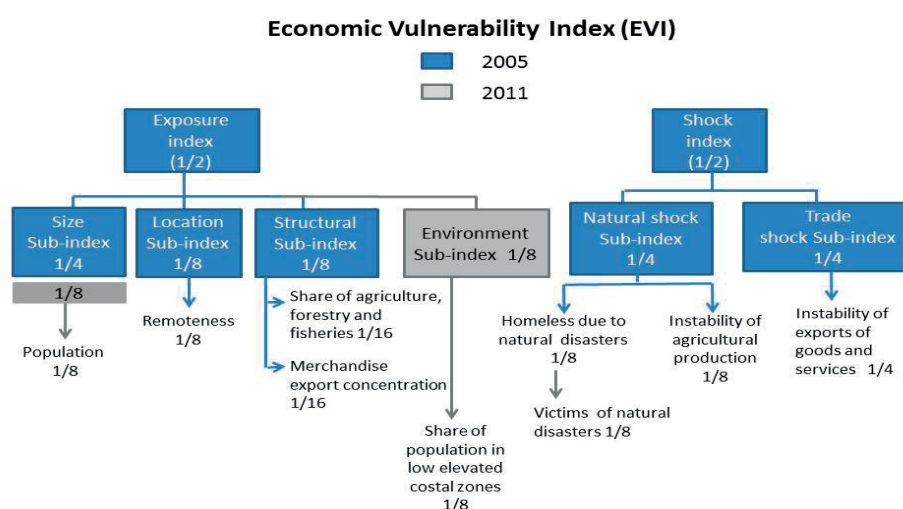
There might be a debate about the rationale of mixing handicaps to medium term economic growth with handicaps to longer term sustainable development, but since it was decided to do so, it should have been done in a balanced

► An easy way to cancel the bias and improve EVI

Correcting this unequitable bias is easy. It would be necessary to balance the LECZ component with a dry land component (DLZ) which could be the share of arid but not desert lands in the non-desert total area of the country. Such an

1. With Samoa still included, also now graduated.

Figure : Composition of the Economic Vulnerability Index (EVI), 2005-2011 versions compared



index can easily be calculated from the UNEP definitions of arid and desert areas. This has been done by Ferdi. This index (DLZ) could then be included either averaged with the LECZ index, or by taking the maximum of the two indices (LECZ and DLZ). In both cases it would significantly change the rankings of countries, as shown in the table below (from Ferdi data). Significant increases in vulnerability ranking would be observed for African countries of the Sahel zone : Mauritania, Mali, Burkina Faso, Niger and Sudan (with respectively + 6, +7, +4, +5, +5 ranks out of 48, when using the average of the two indices), but also for Somalia (+8), Yemen (+6), and Afghanistan (+5).

Another method of calculation would be taking the share of the population living in arid or desert areas, a ratio comparable to the LECZ component, but possibly suffering from an endogeneity bias (people are leaving arid areas because these areas are arid...). Anyway, the results are similar : Sahelian African countries would again be ranked as more vulnerable (Mauritania +5 ranks, Mali +6, Burkina Faso +5, Niger +4 and Sudan +5), and also Somalia (+8), Yemen (+5) and Afghanistan (+5).

► Conclusion

Correcting the present bias is necessary not only for a more equitable identification of LDCs, although there might not be significant consequences on inclusion and graduation, but above all to make EVI a more credible and balanced index of structural economic vulnerability, likely to be an equitable aid allocation criterion (as well as low income per capita and low HAI), as recommended by the UN GA resolution A/RES/67/221 (26 March 2013).

► References

- **Guillaumont, P.** (2009a). *Caught in a trap: Identifying the least developed countries*, Economica.
- **Guillaumont, P.** (2009b). « An Economic Vulnerability Index : Its Design and Use for International Development Policy », *Oxford Development Studies*, 37 (3), 193-228
- **Guillaumont, P.** (2013). "Measuring Structural Vulnerability to Allocate Development Assistance and Adaptation Resources", *Ferdi Working Paper*, 68, (revised), september
- **Committee for Development Policy (CDP) and United Nations Department of Economic and Social Affairs (UNDESA)**, (2008). *Handbook on the Least Developed Country Category: Inclusion, Graduation and Special Support Measures*, United Nations publication, Sales No. E.07.II.A.9.

The table (see last page) gives the scores and rankings of EVI for 48 LDCs, according to the following designs, with the corresponding differences of ranking :

- EVI as calculated by the CDP in 2012 (A)
- EVI as it would have been *ceteris paribus* in 2012 if the LECZ component had not been included (B)
- EVI as it would have been *ceteris paribus* if the LECZ index had been replaced by the average of LECZ and the DLZ index (C)
- The difference of rank between (B) and (A)
- The difference of rank between (C) and (A)

| Country name | EVI 2012 (according to Official definition) | | EVI (excluding lecz) [B] | | Difference in Ranking (1)= [B]-[A] | EVI (using mean Dryland/ LEcz) | | Difference in Ranking (2)= [C]-[A] |
|--------------------------|--|----------|-----------------------------|----------|---|--------------------------------------|----------|---|
| | Value | Rank [A] | Value | Rank [B] | | Value | Rank [C] | |
| Afghanistan | 37,5 | 16 | 39,9 | 16 | 0 | 43,1 | 21 | +5 |
| Angola | 49,7 | 33 | 51,8 | 31 | -2 | 50,9 | 37 | +4 |
| Bangladesh | 31,5 | 6 | 23,0 | 1 | -5 | 27,2 | 3 | -3 |
| Benin | 34,8 | 8 | 35,5 | 7 | -1 | 34,2 | 7 | -1 |
| Bhutan | 42,4 | 22 | 51,9 | 32 | +10 | 42,4 | 20 | -2 |
| Burkina Faso | 36,9 | 15 | 40,4 | 17 | +2 | 42,3 | 19 | +4 |
| Burundi | 53,9 | 40 | 58,4 | 40 | 0 | 53,9 | 40 | 0 |
| Cambodia | 50,3 | 35 | 48,3 | 24 | -11 | 47,5 | 29 | -6 |
| Central African Republic | 31,3 | 4 | 37,3 | 10 | +6 | 31,6 | 5 | +1 |
| Chad | 56,0 | 43 | 60,1 | 42 | -1 | 61,8 | 45 | +2 |
| Comoros | 47,9 | 31 | 54,9 | 36 | +5 | 46,6 | 28 | -3 |
| DR Congo | 37,7 | 17 | 38,6 | 13 | -4 | 37,7 | 12 | -5 |
| Djibouti | 46,1 | 29 | 48,0 | 23 | -6 | 48,7 | 32 | +3 |
| Equatorial Guinea | 42,1 | 20 | 50,4 | 28 | +8 | 41,5 | 17 | -3 |
| Eritrea | 59,0 | 44 | 64,0 | 46 | +2 | 65,0 | 46 | +2 |
| Ethiopia | 31,4 | 5 | 31,6 | 5 | 0 | 34,8 | 8 | +3 |
| Gambia | 67,3 | 47 | 68,3 | 47 | 0 | 69,2 | 47 | 0 |
| Guinea | 27,4 | 3 | 30,2 | 4 | +1 | 26,7 | 1 | -2 |
| Guinea-Bissau | 59,8 | 45 | 63,0 | 45 | 0 | 57,4 | 43 | -2 |
| Haiti | 44,7 | 24 | 47,8 | 22 | -2 | 44,4 | 24 | 0 |
| Kiribati | 82,1 | 48 | 82,1 | 48 | 0 | 75,9 | 48 | 0 |
| Lao PDR | 35,7 | 11 | 41,0 | 18 | +7 | 35,7 | 9 | -2 |
| Lesotho | 42,2 | 21 | 49,7 | 26 | +5 | 43,8 | 22 | +1 |
| Liberia | 51,5 | 38 | 54,8 | 35 | -3 | 50,1 | 36 | -2 |

| Country name | EVI 2012 (according to Official definition) | | EVI (excluding lecz) [B] | | Difference in Ranking (1)= [B]-[A] | EVI (using mean Dryland/ LEcz) | | Difference in Ranking (2)= [C]-[A] |
|-----------------------|--|----------|-----------------------------|----------|---|--------------------------------------|----------|---|
| | Value | Rank [A] | Value | Rank [B] | | Value | Rank [C] | |
| Madagascar | 36,8 | 14 | 38,9 | 14 | 0 | 37,2 | 11 | -3 |
| Malawi | 48,0 | 32 | 51,6 | 30 | -2 | 48,2 | 31 | -1 |
| Mali | 35,3 | 9 | 39,0 | 15 | +6 | 40,9 | 16 | +7 |
| Mauritania | 45,7 | 28 | 46,7 | 21 | -7 | 49,3 | 34 | +6 |
| Mozambique | 45,4 | 27 | 45,9 | 20 | -7 | 45,6 | 27 | 0 |
| Myanmar | 40,1 | 19 | 36,8 | 9 | -10 | 37,8 | 13 | -6 |
| Nepal | 27,1 | 2 | 29,6 | 3 | +1 | 27,1 | 2 | 0 |
| Niger | 37,9 | 18 | 41,4 | 19 | +1 | 44,1 | 23 | +5 |
| Rwanda | 45,0 | 25 | 49,2 | 25 | 0 | 45,0 | 26 | +1 |
| Samoa | 50,5 | 36 | 56,8 | 38 | +2 | 47,6 | 30 | -6 |
| Sao Tome and Principe | 42,9 | 23 | 50,4 | 27 | +4 | 40,6 | 15 | -8 |
| Senegal | 36,4 | 13 | 34,6 | 6 | -7 | 38,8 | 14 | +1 |
| Sierra Leone | 50,1 | 34 | 53,8 | 33 | -1 | 49,2 | 33 | -1 |
| Solomon Islands | 50,9 | 37 | 57,9 | 39 | +2 | 49,4 | 35 | -2 |
| Somalia | 47,0 | 30 | 50,5 | 29 | -1 | 52,8 | 38 | +8 |
| Sudan | 52,4 | 39 | 54,2 | 34 | -5 | 58,6 | 44 | +5 |
| Timor-Leste | 53,9 | 41 | 62,0 | 44 | +3 | 53,6 | 39 | -2 |
| Togo | 33,5 | 7 | 36,7 | 8 | +1 | 32,5 | 6 | -1 |
| Tuvalu | 61,1 | 46 | 61,1 | 43 | -3 | 54,8 | 41 | -5 |
| Uganda | 35,7 | 10 | 37,7 | 11 | +1 | 36,5 | 10 | 0 |
| Tanzania | 26,9 | 1 | 27,9 | 2 | +1 | 28,9 | 4 | +3 |
| Vanuatu | 45,3 | 26 | 55,9 | 37 | +11 | 44,8 | 25 | -1 |
| Yemen | 35,9 | 12 | 38,3 | 12 | 0 | 42,0 | 18 | +6 |
| Zambia | 54,6 | 42 | 58,4 | 41 | -1 | 55,9 | 42 | 0 |



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