About Resilience in the Multidimensional Vulnerability Index (MVI)

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Origin of the concept related to vulnerability

Before recently invading the vocabulary of the social sciences, the concept of resilience was a physical notion that referred to shock resistance. The use that is now made of it in the social sciences, particularly in economics, psychology, and ecology, remains in accordance with the initial definition: it is a capacity to resist shock or trauma. In the vocabulary of economics the concept of resilience has spread in the wake of that of vulnerability: vulnerability to a shock.

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... /**...** In the work of the Committee for Development Policy (CDP) in the introduction of economic vulnerability as a criterion for identifying the Least Developed Countries (LDCs), the ability to adapt or react to exogenous shocks was excluded from the measurement of the economic vulnerability index for two reasons: the first was that two other criteria were taken into account in parallel - the level of per capita income and the level of human capital (Human Assets Index, HAI); the second was that the ability to react or adapt to shocks which did not depend on per capita income and human capital, so was primarily linked to national policy and therefore could not be taken into account in a structural vulnerability index.

▶ Two types of resilience factors

Resilience to shocks (whether external or environmental) depends on two categories of factors: structural factors and factors related to current policy. Structural factors, besides per capita income and human capital (the two main ones), can also include more specific factors, notably the quality of infrastructure, particularly in the field of transport and communications. For present governments, these are indeed structural factors, because this state of the infrastructures is what they have inherited. It is therefore a stock indicator (measured in year t-1) that will have to be used, and not a flow indicator.

In total, the indicator or indicators of structural resilience that will be used in the measurement of structural vulnerability will of course depend on what has been included in the measurement of exposure to shocks (see below), but mainly on the use that is expected for the Multidimensional Vulnerability Index (MVI).

At the origin of the project it was clear that the development of such an index was sought to escape the sometimes almost exclusive predominance of the reference to per capita income in international debates and that therefore the level of per capita income should not appear as such in the construction of the MVI. So, even if per capita income is an essential factor of resilience and since it will probably remain in the debates on the allocation of concessional resources, like for the identification of LDCs, it should not be included in the resilience component of the MVI. With regard to human capital, which is also essential to resilience, although it is to some extent correlated with the level of per capita income, and because it does not generally appear in aid allocation formulas, it should appear as an indicator of structural resilience. As for the identification of LDCs, it will then be up to the CDP, if it chooses to refer to the MVI, either to ensure that the two indicators EVI and HAI are brought together in the new indicator proposed by the High Level Panel, or to maintain HAI as a specific indicator and adapt its vulnerability indicator, keeping aside the resilience, that strongly depends on human capital[1].

▶ One or more indicators of structural resilience

Structural resilience as it has been defined above is essentially common to the three dimensions of structural vulnerability that are used (economic, environmental, and social) and it would therefore be artificial and laborious to want to differentiate structural vulnerability according to each dimension of vulnerability.

This is not to say that structural resilience cannot itself have several dimensions (possibly economic, environmental, and social), but these dimensions do not correspond specifically to the three dimensions of structural vulnerability and must be defined according to their

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1. See the previous "brief", Guillaumont P. "Back to the rationale of the MVI and its components to enhance its consistency" FERDI Policy Brief 239, September 2022.

common relevance for the three dimensions of vulnerability (or the three types of shocks). In this respect, it could be clearer, in order to avoid confusion on this topic, to use two components rather than three in structural resilience, these could be respectively related to the level of human capital and the quality of infrastructure.

It might be added that if unidimensional measures of resilience were designed, they would unavoidably include some common components, which would result in redundancy when the three dimensions are aggregated in a MVI. Instead, one common measure of weak structural resilience would appear as a kind of fourth dimension in the MVI[2].

▶ The border issue between structural vulnerability and low structural resilience: Case of remoteness

Finally, some indicators may be included in structural vulnerability or in weak structural resilience. An example of this is remoteness, conveniently measured by the distance from/to the world market (from/to the various potential markets), possibly adjusted according to landlockedness. This measure reflects difficulty of access or structural transport costs[3]. Such an indicator was introduced by the CDP in 2005 as a component of its Economic Vulnerability Indicator (EVI) and since maintained because CDP considered that it indeed measures the structural handicap corresponding to higher trade costs, but is also a specific factor of vulnerability in case of natural disasters and food shortage. However, the difficulty of access can just as easily appear as a factor of weak structural resilience, then as a factor of structural resilience. The same may be said of the weakness of infrastructure, which is another structural factor of transportation costs and itself reflects low capacity for access or supply in the event of a crisis, for any origin of the shocks. It should be noted that it is in "structural resilience" that (a low) remoteness, as well, as infrastructure quality, has been taken into account by the Universal Vulnerability Index (UVI) of the Commonwealth Secretariat[4], which underlines that it concerns the three dimensions of vulnerability and not only economic vulnerability. Finally, another argument may justify placing remoteness in low structural resilience rather than in shock exposure: it may be paradoxical to consider remoteness as an element of exposure to shocks while it is a structural factor of low trade openness.

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2. It can also be debated whether this structural resilience dimension should be included as a 4th one, as an indicator of weak structural resilience added to the three unidimensional structural vulnerability indicators, to be aggregated accordingly, or as an indicator of structural resilience dividing the structural MVI. The two methods have been proposed in the Commonwealth Universal Vulnerability Index (2021). The first or additional method with the index of weak resilience as a 4th dimension seems preferable to dividing the structural MVI by an index of resilience, that is too sensitive to extreme values of resilience, and may lead to underestimation of the vulnerability of some countries which have a high human capital.

3. See Guillaumont P. *Caught in a trap. Identifying the Least Developed Countries*, Economica, 2009.

4. The Commonwealth, *The Commonwealth Universal Index. For a Global Consensuson the Definitionand Measurement of Vulnerability*, April 2021.

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