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Research Report

A Retrospective Economic Vulnerability Index

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A retrospective Economic Vulnerability Index

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Economic vulnerability is detrimental to development, particularly in small countries, because economic growth and poverty reduction might be clearly and durably reduced by shocks. The economic vulnerability of a country is the risk of a (poor) country seeing its development hampered by natural and external shocks. Vulnerability can be seen as the result of three components: (i) the size and frequency of the exogenous *shocks*, (ii) the *exposure* to shocks and (iii) the capacity to react to shocks, or the *resilience*. The resilience mainly depends on present policy, what is not the case of the two other components. Structural vulnerability essentially results from the first two components.



•••/••• Exogenous shocks are either natural (environmental or climatic disasters), or external trade-related shocks. Exposure to exogenous shocks is greater for small countries (particularly through a higher trade-to-GDP ratio), for countries specialized in primary goods and for remote countries.

The economic vulnerability index (EVI) is a composite index set up and applied by the United Nations Committee for Development Policy since 2000 as a criterion of identification of the Least-Developed Countries. Revisions were made before the two last triennial reviews of the LDCs list in 2003 and 2006. The 2006 definition has been again applied in 2009. A retrospective evaluation of EVI according to the present definition was needed for research uses. Thanks to the collaboration between the UN DESA and the CERDI, a retrospective EVI has been calculated covering three decades.

The present EVI is a composite index calculated from seven component indices, of which three shock indices (instability of exports of goods and services, instability of agricultural production and a homeless - due to natural disaster - index) and four exposure indices (smallness of population size, remoteness, export concentration, share of agriculture, forestry and fisheries in the GDP). An arithmetic averaging is used for the sake of simplicity and transparency, which gives the following weights to each component: the exposure sub-index (0.5) composed of smallness of population size (0.25), remoteness (0.125), export concentration (0.0625), share of agriculture, forestry and fisheries (0.0625), and the shocks sub-index (0.5) composed of instability of exports of goods and services (0.25), instability of agricultural production (0.125), homeless (due to natural disaster) index (0.125).

The source of data for population size and the share of agriculture, forestry, fisheries are UN. Remoteness from world markets (adjusted for landlockness) have been provided by CERDI. Export concentration coefficients are taken from UNCTAD Statistical Handbook (data base

on line) and has been interpolated when data are missing for a required year. Homelessness is drawn from the longer series available for each country. For countries without data the level of the indicator has been assumed equal to that of the most relevant neighbour(s).

The two instabilities (agricultural production and exports of goods and services), are measured on a rolling basis, and have been provided by CERDI. For each year, five series were first set up: 1) gross data of exports (source WDI and UN) and agricultural production indices (source FAO); 2) trend value "A", obtained from a "mixed trend" estimated over the whole period for which data are available (the longest period being 1962-2004); 3) trend value "B", obtained from a mixed trend estimated over the 12 previous years; 4) deviation (%) from trend "A" and 5) deviation (%) from trend "B". Then instabilities were calculated as the average squared deviation from each of the two trend values on a given set of years.

These shocks indicators are measured as "ex post" or "ex ante": ex post means they are aggregated in EVI with exposure indicators measured on the average or at the beginning of the period covered; ex ante means that they are aggregated with exposure of the end of the period. Ex post EVI reflects the actual vulnerability faced by a country while ex ante EVI rather reflects a potential vulnerability. Two series have been built:

1) decade series (1970s, 1980s and 1990s): ex post EVIs combine the shock indicators of each decade with exposure indicators of the beginning or the average of the decade, while ex ante EVIs combine the shock indicators of each decade with the exposure indicators of the end of the decade;

2) five year series, from 1970 to 2005 (or 2006): shock indicators for each of these periods are combined with exposure indicators respectively of the beginning and the end of the period for the ex post and the ex ante indicators.

Four tables then give the value of component in-

dices, with countries sorted by alphabetical order: EVI *ex post* component indices, 5-year series, EVI *ex ante* component indices, 5-year series, EVI *ex post* component indices, 10-year series, EVI *ex ante* component indices, 10-year series.

The general trend of EVI evidences a rough stability for low income countries (LICs), as well as, at a higher level of EVI, for less developed countries (LDCs), while EVI significantly declines in middle income countries (MICs). The divergence of evolution between LICs and MICs is essentially due to the evolution of the shock index, which rises in LICs, and LDCs from an initial higher level, while the exposure index is declining in the three groups (mainly due to population growth). Agricultural instability increases in all groups, whereas export instability decreases, but faster in MICs than in LICs and even more

than in LDCs; homelessness index is stable in MICs and increase in LICs and LDCs, where again it is the highest. Thus the rise in the level of the shock index of LDCs is due to natural shock index, but the rise in the gap between the shock indices of LDCs and other developing countries is due both to natural and external shocks.

More detailed comments

on the retrospective EVI may be found in:

- **Guillaumont P.** (2009), An Economic Vulnerability Index: Its Design and Use for International Development Policy, Oxford *Development Studies*, 37:3, pp.193-228
- **Guillaumont P.** (2009), *Caught in the Trap: Identifying the Least Developed Countries*, Paris: Economica.



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