ECONOMIC VULNERABILITY AND RESILIENCE: CONCEPTS AND MEASUREMENTS

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ABSTRACT

This paper argues that the economic vulnerability index should include only inherent and permanent economic features which render a country exposed to forces outside its control. The paper also proposes that an index of resilience should be constructed to complement the vulnerability index, and to assess the degree to which economically vulnerable countries, individually or as a group, are moving ahead or otherwise, in coping with or withstanding economic vulnerability. A number of variables, which could be used to construct a composite resilience index, are proposed.
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1. BACKGROUND

Chapter 17 of Agenda 21, emanating from the 1992 UN Conference on Environment and Development, asserts that small island developing states are a special case both for environment and development, and that they face special challenges in planning and implementing sustainable development. The Programme of Action for the Sustainable Development of Small Island Developing States (SIDS Programme of Action), approved during the 1994 UN Global Conference held in Barbados, identified the priority areas for action to address the special challenges faced by SIDS. During the Barbados Global Conference and in many subsequent international fora on the sustainable development of SIDS, it was established that small island developing states merit special consideration in view of a number of factors, including economic vulnerability.

The Barbados Programme of Actions (BPoA) for the sustainable development of SIDS was endorsed by the General Assembly in 1994 in its resolution 49/122 of 19 December 1994, with Paragraphs 113 and 114 calling for the development of a vulnerability index (indices) for small island developing States (SIDS) as follows:

"Small island developing States, in cooperation with national, regional and international organizations and research centres, should continue work on the development of vulnerability indices and other indicators that reflect the status of small island developing States and integrate ecological fragility and economic vulnerability. Consideration should be given to how such an index, as well as relevant studies undertaken on small island developing States by other international institutions, might be used in addition to other statistical measures as quantitative indicators of fragility."

In 1996 the Commission on Sustainable Development called on "the relevant bodies of the United Nations system to accord priority to the development of the index". Subsequently the Department of Economic and Social Affairs 1997, engaged two consultants1, one to develop an economic vulnerability index, and the other to develop an ecological vulnerability index. The Department also convened an ad hoc expert group to review the technical work of the consultants and to make appropriate recommendations. The meeting, held at the UN headquarters in December 1997, concluded that “Judging from the results of a number of studies using a diversity of approaches, in particular, two reports of the Commonwealth Secretariat, the report of UNCTAD and the reports of consultants that were submitted to the meeting, the group concluded that …. as a group small island developing States are more vulnerable than other groups of developing countries.” (A/53/65 - E/1998/5).2

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1 These were Professor Lino Briguglio of the University of Malta and Dr Dennis Pantin of the University of the West Indies.
2 The report of this meeting is carried on the following website: http://www.un.org/documents/ecosoc/docs/1998/e1998-5.htm
One outcome of this meeting was the development of the economic vulnerability index by the Committee for Development Policy (of the UN ECOSOC) which it uses for the purpose of identifying the Least Developed Countries (CDP, 2000; United Nations, 2001). Which it uses as one of the criteria for the identification of Least Developing Countries (LDCs) and for deciding which countries are to be graduated from the list of LDCs.

Other international fora, including the 1999 UN General Assembly special session and the regional and interregional meetings in the run-up to the high level meeting on the 10 year review of the BPoA, scheduled to be held in Mauritius in August/September 2004, also gave prominence to the economic vulnerability of SIDS. During these meetings, it was asserted that SIDS, as a group, tend to be more economically vulnerable than other groups of countries.

The economic vulnerability of SIDS was also treated by Commonwealth Secretariat, which convened a number of expert meetings on the subject and produced a number of studies on the Vulnerability Index, all indicating that SIDS, as a group, tend to be more economically vulnerable than other groups of countries. Recent updates of the economic vulnerability index carried out by the University of Malta, again confirm this tendency.

2. WHAT MAKES COUNTRIES ECONOMICALLY VULNERABLE

Economic vulnerability stems from a number of inherent and permanent economic features, including:

- A high degree of economic openness rendering these states particularly susceptible to economic conditions in the rest of the world;
- Dependence on a narrow range of exports, giving rise to risks associated with lack of diversification;
- Dependence on strategic imports, in particular energy and industrial supplies, exacerbated by limited import substitution possibilities;
- Insularity, peripherality and remoteness, leading to high transport costs and marginalization from the main commercial centres.

Small States, particularly Island Developing ones (SIDS) tend to be particularly vulnerable because of their small size and insularity. Small size forces SIDS to resort to international trade more so than other group of countries. They need to find export

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3 There were three regional meetings, respectively held in Samoa (date) for the Pacific region, Cape Verde (date) for the AIMS region and Trinidad and Tobago (date) for the Caribbean region. The interregional meeting was held at The Baham{as in January 2004.
4 See for example Atkins et al (2001) and Easter (1998)
5 The fist studies on the vulnerability index were carried out by the University of Malta, which has been updating the index on an ongoing basis since the early nineties. See Briguglio 1992; 1993; 1995; 1997; 2002.
6 There are human induced measures (possibly as a result of bad policies or lack of awareness) which exacerbate the inherent vulnerability of SIDS. In this paper these are considered as man-made actions leading to the weakening of resilience against vulnerability.
markets due to their small domestic market, and they need to import heavily, due to lack of natural resources. At the same size, the small size of the market limits the possibilities for diversification.

Small size leads to additional constraints, since it limits SIDS’ ability to reap the benefits of economies of scale, leads to high infrastructural, administrative and other overhead costs, and poses additional constraints, such as limited attraction for FDI.

Small size also leads to the prevalence of natural monopolies and oligoplistic structures, leading to high consumer costs. Transforming a government monopoly to private business may even make matters worse, due to fact that private business is often less accountable to consumers than the public sector.  

3. THE ECONOMIC VULNERABILITY INDEX

3.1 The University of Malta and Commonwealth Secretariat Indices

The economic vulnerability indices as developed by Briguglio, Commonwealth Secretariat and Crowards, generally include a relatively small number of variables, often limited to three to five. One reason for this is that many economic variables are correlated with each other, and one variable could be used to represent others.

The most frequent variables used as components of economic vulnerability indices relate to:

- Economic openness
- Export concentration
- Dependence on strategic imports, such as fuel and food
- Peripherality

**Economic openness**

Economic openness captures the degree to which a state is susceptible to economic conditions in the rest of the world. It is often measured by expressing exports or imports, or an average of both, as a percentage of GDP. 

**Dependence on a narrow range of exports**

The range of exports captures the extent to which a country lacks export diversification, a condition exacerbating the degree of economic openness. This is usually measured by the

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7 The size variable should not however form part of the vulnerability index for SIDS because it will bias the results in favour of SIDS

8 During the December 1997 UN meeting on the Vulnerability Index, it was argued that this variable should not form part of the vulnerability index because high dependence on foreign trade is not a disadvantage but strength of SIDS. As a result, the Committee for Development Policy (UN ECOSOC) excluded this variable from its Vulnerability Index.
export concentration index devised by UNCTAD, which only covers merchandise. Briguglio (1997) argued that export concentration can also be observed in the trade in services, especially in tourism and financial services, and he devised a concentration index with services and exports included.

Peripherality

Peripherality is associated with insularity and remoteness, leading to high transport costs and marginalization. The problem with remoteness and insularity is that these variables cannot be measured directly by taking the number of kilometres from a main commercial centre, the nearest island or the nearest continent. In the case of certain islands, a relatively large proportion of international trade is directed to and from their ex-colonizing powers, even though other centres of commercial activity could be more proximate. In other words measuring remoteness by taking distance in kilometres may convey the wrong sort of information regarding insularity and remoteness, for economic purposes. Two variables which may reflect the effects of remoteness are (1) the ratio of FOB/CIF factors and (2) the ratio of transport and freight costs to imports. The second has been considered to be more meaningful in studies that utilise the “paripherality” variable.

Dependence on strategic imports

This variable is intended to measure the extent to which a country’s livelihood depends on imports. There are obvious vulnerability connotations, when a country depends heavily on imported energy and industrial supplies for production and on imported food for consumption. Various indices have been used for this purpose. Briguglio (1997) and Atkins et al (2000) suggested that this variable can be measured as average imports of commercial energy as a percentage of domestic energy production.

These variables are suitably standardised, and combined together in a composite index. In some studies, the summing procedure involved weighting.9

A recent study conducted by Briguglio and Galea (2003) updated the vulnerability index, using these variables, and reconfirmed that SIDS tend to be:

• more exposed to international trade,
• have higher concentration indices,
• more dependent on strategic imports, and
• have higher transport costs than other groups of countries.

As a result SIDS tends to have higher economic vulnerability scores.

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9 The Commonwealth Vulnerability index, utilises Least Squares Method to derive the weights. Briguglio and Crowards use equal weights, although they have also experimented with variable weights.
3.2 The CDP Vulnerability Index

An alternative formulation of the vulnerability index is that proposed by the Committee for Development Policy (of the UN ECOSOC). The variables used are the following:

- Share of manufacturing and modern services in GDP
- Merchandise export concentration
- Instability of agricultural production
- Instability of exports of goods and services
- Population size

The CDP uses this index as one of the criteria for the identification of Least Developing Countries (LDCs) and for deciding which countries are to be graduated from the list of LDCs.10

The CDP Vulnerability Index assigns importance to instability, which implies that countries with relatively unstable export growth or agriculture production will register higher vulnerability scores. The variables “share of manufacturing and modern services in GDP” and “population size” were intended to capture the extent to which a country was exposed to shocks. The aim of the index is not only to capture the susceptibility to external shocks beyond domestic control, but also to measure the elements of structural fragility which render a country exposed to external shocks. The index is also assumed to capture the structural handicaps explaining high exposure of the economy, namely economic smallness, which is measured with a population variable.11

4. VULNERABILITY AND RESILIENCE

Resilience can be defined in many ways, but here it is defined here, as the ability to recover from or adjust to change. This definition is associated with the coping ability of an economically vulnerable country.

Resilience may be inherent or nurtured. The inherent aspect of resilience may be considered as the obverse of vulnerability, in the sense that inherently resilient countries should register low vulnerability scores.

10 The CDP uses three indices to identify which countries are Least Developed. These are (1) the GDP per capita index (for one benchmark year, converted at three year average exchange rate, using the World Bank Atlas Method) (2) the Augmented Physical Quality of Life Index, consisting of Education, Nutrition and Health sub-indices, and (3) the Economic Vulnerability Index. To be eligible for graduation out of the list of LDCs, a country must at least meet two of the following three criteria, namely (a) a per capita GDP higher than US$1035 (b) an APQLI score greater than 68 and (c) an Economic Vulnerability Index score smaller than 31. In case of marginal scores a vulnerability profile is to be taken into consideration. The be eligible for inclusion in the list of LDCs a country has to have a population of 75 million or lessee CDP, 2000; United Nations, 2001):

11 The population size indicator is very problematic, if the index is to be used in the context of SIDS, since it will bias the index in favour of small states, thereby begging the question. It would therefore not be proper to use this sub-index to show that small states are more vulnerable than larger ones.
Nurtured resilience is that which is developed and managed, often as a result of some deliberate policy. In this sense, a country can adopt policies which enable it to withstand its inherent vulnerability, thereby nurturing its resilience. This is of course what is meant by resilience-building. On the other hand, a country can adopt polices which exacerbates its inherent vulnerability.

*Four Possible Scenarios*

We can therefore consider 4 possible country scenarios with regard to vulnerability and resilience as follows:

<table>
<thead>
<tr>
<th>Inherently vulnerable countries</th>
<th>Countries that adopt policies to withstand vulnerability</th>
<th>Countries that adopt policies that exacerbate vulnerability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inherently resilient countries</td>
<td>Best case scenario</td>
<td>The “prodigal son” scenario</td>
</tr>
</tbody>
</table>

This method of defining vulnerability in terms of inherent features and resilience in terms of policy measures has a number of advantages, including:

1. The vulnerability measurement would refer to features on which a state has little or not control and therefore cannot be attributed to bad governance. In other words, a country with high inherent vulnerability score cannot be blamed that is has self-inflicted vulnerability.
2. The resilience component would refer to what a country can do. In this regard, the international donor community can be a source of support to enable vulnerable countries build up their resilience.

*Usefulness of Considering Resilience-Building*

The issue of resilience-building in small states is important because it carries the message that these states should not be complacent, even if inherently economically vulnerable. In other words, they should adopt measures, and be helped to do so, to step up economic, environmental and social resilience (see Binger, 2002).

In addition, the discussion on resilience sheds light as to why a number of vulnerable small states have managed to do economically do well in spite of (and not because of) their inherent economic vulnerability. Briguglio (2001) has referred to this reality as the
“Singapore Paradox”.12

5. MEASURING RESILIENCE

It would be useful to construct a resilience index, to complement the vulnerability index, and to assess the degree to which economically vulnerable countries, individually or as a group, are moving ahead or otherwise, in coping with or withstanding economic vulnerability.

It is being suggested here that the exercise of constructing a resilience index be undertaken in earnest. Such an index could help SIDS identify their weak points with regard to resilience-building and serve as a monitoring tool in this regard.

It is proposed that such an index should the following characteristics:

Simplicity

The index should not be too complicated to construct. This necessitates that the data must be relatively easy to obtain and to process. Preferably it should be collected as a matter of routine in line with the information required for the economic management of a country.

Ease of comprehension

This criterion requires that the overall composite index must have an intuitive meaning, that it produces plausible results and that it summarises the many facets of resilience, but at the same time making sure to avoid the redundancy problem.13

Suitability for international comparisons

The index should lend itself for international comparisons. In addition, of the index is intended to be used for domestic comparisons over time, the variables mush lend themselves to time-series analysis.

It is being proposed that a composite index of economic resilience should include the following variables:

i. An indicator of good governance (which covers political stability, rule of law, control of corruption, accountability, regulatory quality and effectiveness on the lines

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12 It is sometimes argued that many small states have managed to register high GDP scores in the past, partly as a result of the preferential trade arrangements that they enjoyed, and the incentive package they were allowed to put in place to attract FDI. However, the success of the likes of Singapore, Cyprus, Malta, Barbados and others small states cannot be attributed simply to trade preferences.

13 This could happen if, for example, two or more variables reflect the same underlying changes, in which case they would be measuring the same thing and, if included in a composite index, would implicitly increase the weight of that underlying change.
proposed by Kaufmann et al (2002).

ii. An indicator of macroeconomic stability (inflation, exchange rate fluctuations, government deficits, current account balances, and others)

iii. An indicator or market reform (possibly covering costs of infrastructural services, internal market competition, state aid and labour productivity)

iv. An indicator of social cohesion (possibly covering income distribution, early school-leaving and long-term unemployment)

v. An indicator of environmental protection (possibly covering greenhouse gas emissions, air quality, energy intensity, waste management and protection of resources, as proposed in the EU Lisbon agenda)

Many of these indicators exist already, although one has to see the extent to which they cover different country groupings and the extent to which they can be used for temporal comparisons.

6. CONCLUDING CONSIDERATIONS

A number of considerations emerge from this write-up:

1. The Economic Vulnerability Indices produced so far indicate clearly that small states, particularly SIDS, tend to be more economically vulnerable than other groups of countries.

2. Many small states have managed to register high GDP scores in the past in spite of their inherent economic vulnerability. This suggests that these states have adopted policies to withstand or cope with their vulnerability.

3. SIDS with a relatively low GDP per capita are vulnerable and poor, and therefore merit special attention and support by the donor community, to enable them to strengthen their resilience

4. Building economic resilience to cope with and withstand economic vulnerability should take centre stage in the sustainable development strategy of such states. The international donor community should assist small states that do not have the resources or the capacity to strengthen their resilience

5. It would be useful to construct a resilience index, to complement the vulnerability index, and to assess the degree to which economically vulnerable countries, individually or as a group, are moving ahead or otherwise, in coping with or withstanding economic vulnerability.
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