Part 2 Country profiling

Chapter 5

Profiling economic vulnerability and resilience conceptual underpinnings[1]

Introduction

Studies on economic vulnerability and resilience indices undertaken so far focus on a cross-sectional approach, comparing one country with another in terms of a number of variables, with the aim of benchmarking countries within a global context. These indices are useful mainly for three purposes. One is to disseminate information on the issues of vulnerability and resilience because an index is a very good instrument for drawing attention to the issue being investigated. A second purpose is to help to develop a common language for discussion, because the derivation of indices requires quantification and hence, precise definitions of fundamental notions. The third is to promote the idea of integrated action because vulnerability and resilience indices are composite and therefore combine a number of factors thought to determine these conditions.

It is, however, also true that for the purposes of policy formulation and implementation, benchmarking within an international context is often merely a starting point, which needs to be followed by more in-depth investigation of issues within the specific context of the country and its circumstances. Briguglio et al. (2008) argued that while the notions of economic vulnerability and resilience have been crucial towards promoting a better understanding of development issues of small states especially in relation to the success of some of them as compared to larger countries, the practical applicability of these notions within the context of policy-setting for an individual country must go beyond the construction of indices derived from internationally comparable data.

An important limitation of cross-sectional approaches emanates from the fact that, in order to compare one country with another, a variable within an index may be considered redundant, and thereby omitted, if it is highly correlated with another that is already included in the index. While this is a valid action within a benchmarking study, it may not be suitable for a study focusing on an individual country, where all aspects of vulnerability and resilience need to be studied, irrespective of whether they are correlated or otherwise.

This chapter, based on Briguglio et al. (2008), describes a conceptual approach aimed at building a template of variables to be considered in the derivation of a vulnerability/resilience profile for an individual country.

Three assessment facets

The proposed conceptual approach is based on the findings of the literature to date, and extends these concepts as may be appropriate for an individual country setting. The derivation of the economic vulnerability/resilience profile proposed here is based on three facets, namely:

- *An assessment of the symptoms of economic vulnerability.* This facet relates to the manifestations of vulnerability and attempts to determine whether a country appears to be suffering from any one or more of the symptoms of vulnerability or otherwise. This gives a first indication within the country profile as to which areas of economic activity or policy may be conducive to economic vulnerability.
- *An assessment of the causes of economic vulnerability.* This facet of the profile relates to the underlying causes of vulnerability and is aimed at assessing the inherent fundamental conditions which may be rendering a country vulnerable to exogenous shocks.
- *An assessment of the sources of economic resilience.* This facet of the profile aims to highlight the strengths and weaknesses within the policy formulation milieu of a country towards the objective of economic resilience building.

Each of these assessment facets can be carried out through quantitative variables. In cases where quantitative variables are not available or insufficiently representative of the issues under consideration, qualitative data can be used, which could then be expressed through a mapping scale of a number possibilities.

Tables 5.1 to 5.3 below present a number of variables which could be used for the purpose of country profiling. The variables and factors have been selected on the criteria of relevance and parsimony, in such a way that they are comprehensive of all important issues to be discussed without being excessively cumbersome for the purposes of analysis.

The quantitative variables are typically available from a statistical system that corresponds with the Generalised Data Dissemination Standard of the International Monetary Fund, although the requirements for the approach proposed here are less stringent than that of the Standard. The qualitative factors can be obtained from case-study approaches within the individual country, backed by relevant data as may be available.

Assessing the symptoms of economic vulnerability or lack of resilience

Economic vulnerability is often manifested in four phenomena, as identified by Cordina (2008). These are:

- volatility in output and consumption over time;
- volatility in the value and volume of international transactions;
- volatility in exchange rates and prices; and,
- sustained deficits on the external current account deficit and high government expenditure.

The variables that could be used to measure these conditions are summarised in Table 5.1.

Table 5.1. The symptoms of vulnerability

Volatility in output and consumption
GDP at current prices per capita, in domestic currency
GDP at constant prices per capita, in domestic currency
Consumption expenditure per capita at current prices, in domestic currency
Consumption expenditure per capita at constant prices, in domestic currency
Volatility in value and volume of international transactions
Exports of goods and services at current prices, in domestic currency
Exports of goods and services at constant prices, in domestic currency
Imports of goods and services at current prices, in domestic currency
Imports of goods and services at constant prices, in domestic currency
Volatility in exchange rates and prices
Nominal effective exchange rate: highest monthly average
Nominal effective exchange rate: lowest monthly average
Real effective exchange rate: highest monthly average
Real effective exchange rate: lowest monthly average
Short-term shock absorbers
External current account balance as percent of GDP
Government total expenditure as percent of GDP

Volatility in output and consumption can be gauged by developments in the respective variables in per capita terms, at current and constant prices, for a period of time which is sufficiently long to enable the observation of volatility. A ten-year period would be appropriate in this case, as this could indicate the assessment of medium to long-term growth trends, cyclical fluctuations as well the effects of specific shocks and their aftermath. Likewise, the volatility in the value and volume of financial transactions can be discerned from the developments in imports and exports of goods and services, at current and constant prices, over a sufficiently long period of time.

Depending on the type of exchange rate regime adopted, a country that is susceptible to external shocks may experience volatility in either the nominal or the real exchange rate. Volatility in either one or both of these variables, which can be as the maximum and minimum month values over a ten-year period, and this is considered to be a symptom of vulnerability to external shocks.

Economic vulnerability and/or insufficient resilience may also produce persistent deficits on the external current account of the balance of payments, a result of responses to shocks to strategic import prices and to specific demand shocks within a narrow range of exports (Cordina, 2008).

They may also result in relatively high levels of government expenditure, reflecting the need for stabilisation interventions to manage the effects of shocks.

Consideration of these variables yields a generic indication regarding the extent to which a country is being affected by shocks, which is a combination of its inherent vulnerability. In order to derive meaningful comparisons, the numerical values of the variables considered may be analysed over time or in relation to another country or a limited group of countries. This would be followed by an assessment of the specific causes of vulnerability and the sources of resilience, as explained in the following sections.

Assessing the causes of economic vulnerability

From a conceptual viewpoint, the extent to which a country is subject to shocks is a function of two factors. The first is its inherent exposure to such shocks. Exposure on its own, however, does not imply that shocks of a significant nature would influence the economy of a country. For this to happen, exposure would have to be combined by the actual materialisation of shocks, here termed the incidence of shocks. Table 5.2 details the variables which are proposed to be considered in order to measure a country's exposure to shocks and the extent of incidence of shocks to which a country may be exposed.

Table 5.2. The causes of vulnerability

Exposure to shocks	**Trade openness**	Exports as percent of GDP Imports as percent of GDP
	Export concentration	Sum of three main categories of exports of merchandise at the 3-digit level, as percent of total merchandise exports Sum of three main categories of exports covering merchandise (3-digit level) and services (tourism and financial services) as percent of total exports of goods and services
	Price elasticity of international trade	Commodity exports as percent of total exports of merchandise Share of strategic imports (food, fuel and industrial supplies) as percent of imports of merchandise
Incidence of shocks	**Domestic shocks**	Gross fixed capital formation
	International demand	Foreign financial capital inflows as percent of GDP Average weighted GDP of three main partner countries, constant prices
	Terms of trade shocks	Export prices Import prices

The degree of exposure to shocks may be measured by variables which are in common use within the vulnerability literature. These are trade openness, defined as the share of exports and imports within GDP, the degree of export market concentration, measured by the share within total exports of the three main export products/services and a measure of the price elasticity involved in international trade transactions. The notion behind the last factor is that if a country is engaged in price inelastic exports and price inelastic imports, negative shocks to the terms of trade would imply significant welfare losses to the economy. Thus,

it is proposed that the price elasticity of international trade transactions be measured by the shares within the respective totals of commodity exports and of strategic imports, the latter defined to include food, fuel and industrial supplies.

The degree of incidence of shocks on an economy is here construed to depend upon three factors, namely the proneness to domestic demand shocks, to fluctuations in international demand and to terms of trade shocks. It is proposed that the proneness to domestic demand shocks can be evaluated by considering the volatility of gross fixed capital formation for a sufficiently long period of time, in terms of changes in the levels in index format. The choice of this variable is motivated by the fact that gross fixed capital formation is often one of the components of aggregate demand that is most sensitive to changes in economic conditions, including domestic economic policy.

Shocks to international demand can be proxied by considering the volatility of foreign non-direct capital flows in relation to GDP, and through fluctuations in the average GDP in the three main trading partner countries. The choice of non-direct foreign investment flows is motivated by the fact that international capital flows are often a source of monetary volatility in a country with possible repercussions on the real economy. The exclusion of direct investment flows from this section of the analysis is based on the argument that such flows would be already incorporated in the gross fixed capital formation variable.

The GDP of the main trading partner countries is assumed to influence economic activity in the country being analysed, and relates to the causes of external shocks. The volatility in exports of the country in question in this framework is considered as a symptom rather than a cause of vulnerability, as explained in the previous section.

The obvious choice to the modelling of terms of trade shocks is export and import prices. The consideration of the movements of these separate variables over time gives an indication of the sources of shocks to economic activity emanating from changes in prices of strategic imports and of exports which often contribute substantially to incomes.

Thus, the joint consideration of factors which generate exposure to shocks and the extent of the shocks themselves would give a picture of the overall level of economic vulnerability of a country and the primary sources of such vulnerability. Combined with the information collected in the process of analysing the symptoms of vulnerability, a better understanding of the reasons behind, and the effects of shocks on, an economy would be obtained.

Assessing the sources of economic resilience

Following the mainstream literature, economic resilience is here considered to depend upon policy interventions in five areas, namely macro-economic stability, micro-economic market efficiency, adequate governance, social development and environmental management. As discussed earlier on, the issue of environmental management is as yet not given explicit consideration in cross-country measures of vulnerability, although its importance is widely recognised. At a country level, the issue of environmental management should therefore receive attention.

An obvious difficulty in the measurement of resilience performance is that, in practice, it

is often very difficult to identify variables which measure the adequacy of policy interventions. Rather, the variables available would often be the result of policy interventions and other factors which enter into play in determining performance. For example, the inflation, unemployment, deficit and other variables used by Briguglio et al. (2006, 2009) would certainly reflect the quality of policy-making in a country, but not exclusively so. Thus, quantitative approaches towards the measurement of resilience must rely on proxy variables, which would not necessarily reflect solely policy issues. For this reason, the approach proposed here to evaluate the sources of resilience relies in good part on qualitative assessments based on case-study approaches for an individual country.

Table 5.3 details the variables which are here proposed to be considered in the analysis of the sources of resilience of an individual country.

Table 5.3. The sources of resilience*

Macro-economic	Gross fixed capital formation as percent of GDP Consumer price inflation (percent) Unemployment rate (as percent of GDP) Fiscal balance as percent of GDP Net external assets (external reserves less external debt) as percent of GDP
Micro-economic	**Capital Mobility:** Exchange controls Interest rate control Quantitative controls (qualitative assessment over recent 3 years) **Labour Market Flexibility:** Skills mobility within the labour force Geographical mobility of labour (domestic and international) Government involvement in wage setting Union power **Product markets:** Government involvement in price setting (qualitative assessment over recent years) Level of domestic competition (qualitative assessment over recent years) Barriers to international trade (qualitative assessment over recent years) Participation in international trade arrangements/regional blocks (qualitative assessment over recent years)
Governance	Rule of law Security Property rights Institutional development Corruption Freedom of expression

	Human rights Participation in regional political and security arrangements
Social	Percentage of government budget assigned for social development (current and capital expenditures to be treated separately) Poverty/deprivation (measured by the percentage of the population living below the poverty line) Health (possibly measured by the number of hospital beds per capita and life expectancy) Education (possibly measured by school enrolment ratios, literacy rates and early school leaving rates) Income distribution Social cohesion (index could be based on variables related to ethnic fractionalisation, incidence of civil strife, prison population rate and suicide rates)
Environmental	Percentage of government budget assigned for environmental management (current and capital expenditures to be treated separately) Generation of waste per capita (solid and liquid to be treated separately; sewage emissions into the oceans to be considered) Vehicles in use per square kilometre of populated land areas Carbon emissions per capita Percentage of land area designated as environmentally protected area Percentage of energy generated from renewable resources Number of international environmental instruments ratified and operationalised

***** All data is to cover the five most recent years. Most variables, particularly those relating to micro-economic market efficiency, governance and social aspects require a qualitative assessment of policy stances and major changes, accompanied, when available, by quantitative data.

Under the macro-economic dimension, developments in price inflation, unemployment, the fiscal deficit as a percentage of GDP and net external assets as a percentage of GDP, are proposed to be considered, in line with the approach taken by Briguglio et al. (2006, 2009). In addition, developments in gross fixed capital formation as a percentage of GDP may be considered, because capital formation is often an essential element to resilience building within a country (Cordina, 2004a, 2004b).

The role of the gross fixed capital formation variable within the context of this analysis deserves further consideration. Viewed in terms of levels over time, the volatility of gross fixed capital formation can be discerned, and this would constitute a cause of vulnerability, as discussed within the context of Table 5.2. Viewed as a proportion of GDP, where the effects of shocks would tend to be mitigated since capital formation and GDP would be likely affected in similar manner, gross fixed capital formation would indicate the extent to which an economy is building buffers which would enable it to meet the effects of shocks. From this perspective, therefore, the gross fixed capital formation variable would indicate a source of resilience.

The issue of micro-economic market efficiency within a country requires in-depth study which often goes beyond the information provided by international organisations. It is here proposed that this issue be investigated through a qualitative and case-study approach specific to individual countries, backed by data and information that may be available.

The issues to be considered include the extent of capital mobility, as may be gauged by the presence of exchange controls, interest rate controls and quantitative controls on the financial system. The notion in this case is that frictions in the movement of capital within and outside the country would often constitute a barrier to the effective reallocation of resources following an external shock.

Similarly, labour market flexibility needs to be considered within this context. Issues which are relevant in this case would include the degree of skills present in the labour force, including the existence of multi-skilling, the geographical mobility of labour, at both domestic and international levels, as well as the extent of government interference in wage setting and of union power in the labour market. The latter two variables can be measured through, for example, the ratio of the average wage to the minimum wage and the level of union density, among other data-based and qualitative approaches.

As regards efficiency in product markets, the factors that need to be taken on board include the extent of government involvement in the price mechanism, which may be measured by the extent of price control. The level of domestic competition, as could be measured by market concentration ratios and the extent of barriers to international trade, as could be discerned by the average tariffs rates on imports, would also need to be investigated.

Finally, the extent of participation in international trading blocks, customs unions, single markets or monetary unions is to be measured in terms of the efficiencies that it would likely introduce within domestic markets. Data on this and other variables in the market efficiency group are not likely to be easily available. It is important to reiterate that within the individual country approach, quantitative data which cannot be obtained can be substituted by qualitative assessments based on case studies and expert opinion.

Governance issues may be also evaluated through quantitative and qualitative approaches according to the specific circumstances and needs of individual countries. At a conceptual level, the main issues to investigate in this case would include those studied by Kaufmann et al. (2006), including the rule of law, security, the enforcement of property rights, institutional development, absence of corruption, freedom of expression and the safeguarding of human rights. In addition, the effects of participation in international political and security arrangements on the governance structures within a country could be investigated in this context, following Pace (2006).

A similar approach may be adopted in the investigation of social development issues within the context of resilience building. Government budget allocations for social development would seem to be relevant in this regard, although care should be taken to take account of expenditure inefficiencies. Following Springer (2006), the main factors which may be considered in this context include the extent of poverty and deprivation and the situation with regard to health, education, income distribution and social cohesion. Social empowerment requires strong fundamentals with respect to health, education and income

status of the citizens and these variables should feature in the social development group of variables.

Specific issues relating to environmental management policies can be investigated through qualitative and quantitative approaches. The variables included in Table 5.3 were selected on the basis of their link with policy aimed at a more sustainable use of environmental resources. It is assumed that this should effectively improve the economic resilience of the economy.

Conclusion

This chapter has described a conceptual approach at profiling economic vulnerability and resilience of an economy. The approach has been successfully applied in practice in three small island states, namely St Lucia, Seychelles and Vanuatu. On the basis of this exercise, three reports were drawn up, one for each of the three small states. These are reproduced in Part 3 of this publication.

The next chapter will propose a number of practical steps as to how such profiling can be conducted, building on the conceptual underpinnings described in this chapter.

Notes

1 This chapter is a revised and updated versions of Briguglio et al. (2008) modified to fit with the style and content of this volume.