Chapter 3

Economic resilience: Concepts and measurements[1]

Introduction

In this paper, the term economic resilience is used in two senses respectively relating to the ability of an economy to (i) recover quickly from harmful external economic shocks; and (ii) withstand the effect of such shocks[2].

Ability of an economy to recover from the effects of adverse shocks

This is associated with the flexibility of an economy, enabling it to bounce back after being adversely affected by a shock. This ability will be severely limited if, for example, there is a chronic tendency for large fiscal deficits. On the other hand, this ability will be enhanced when the economy possesses discretionary policy tools which it can utilise to counteract the effects of negative shocks, such as a strong fiscal position, which would entail that policy-makers can utilise discretionary expenditure or tax cuts to contrast the effects of negative shocks. This type of resilience is therefore associated with 'shock-counteraction'.

Ability to withstand shocks

This relates to the ability to absorb shocks, so that the end effect of a shock is neutered or rendered negligible. This type of resilience occurs when the economy has mechanisms in place to reduce the effects of shocks, which can be referred to as 'shock absorption'. For example, the existence of a flexible, multi-skilled labour force could act as an instrument of shock absorption, as negative external demand shocks affecting a particular sector of economic activity can be relatively easily met by shifting resources to another sector enjoying stronger demand.

Importance of resilience considerations

The issue of resilience building is important for small states in view of the fact that such states tend to be inherently economically vulnerable, as already explained. In an analysis of the economic performance of small states, it is important to distinguish between vulnerability considerations and resilience factors.

For example, some studies argue that small economic size presents an economic advantage on the basis of simple correlations between small size and indicators of economic performance, such as GDP growth and GDP per capita. However, a proper analysis of the

relationship between size of countries and economic performance should factor in control variables, such as good economic governance. This paper suggests that the relatively good performance of some small states is certainly not due to small size, but is attributed to nurtured economic resilience. In other words, the relatively good economic performance of a number of small states is not because, but in spite, of their small size and inherent economic vulnerability.

Consideration of economic resilience building also conveys the message that small vulnerable states should not be complacent in the face of their economic vulnerability, but could, and should, adopt policy measures to enable them to improve their ability to cope with, or bounce back from, external shocks.

The construction of a resilience index

The resilience index proposed in this study is intended to measure the effects of shock absorption or shock counteraction policies across countries[3]. It is hypothesised that the variables that capture these effects are the following:

1 macro-economic stability;
2 micro-economic market efficiency;
3 good political governance; and
4 social development.

Macro-economic stability

Macro-economic stability relates to the interaction between an economy's aggregate demand and aggregate supply. If aggregate expenditure in an economy moves in equilibrium with aggregate supply, the economy would be characterised by internal balance, as manifested in a sustainable fiscal position, low price inflation and an unemployment rate close to the natural rate, as well as by external balance, as reflected in the international current account position or by the level of external debt.

These can be considered to be variables which are highly influenced by economic policy and which could act as good indicators of an economy's resilience in facing adverse shocks.

The macro-economic stability component of the resilience index proposed in this study consists of three variables, namely (i) the fiscal deficit-to-GDP ratio; (ii) the sum of the unemployment and inflation rates; and (iii) the external debt-to-GDP ratio. The variables are available for a reasonably wide set of countries spread over a spectrum of stages of development, size and geographical characteristics.

- *Fiscal deficit.* The government budget position is suitable for inclusion in the resilience index because it is the result of fiscal policy, which is one of the main tools available to government, and relates to resilience of a shock-counteracting nature. This is because a healthy fiscal position would allow adjustments to taxation and expenditure policies in the face of adverse shocks. The fiscal deficit, standardised as a ratio to GDP, is thus included in the resilience index proposed in this study.
- *Inflation and unemployment.* Price inflation and unemployment are also considered to

be suitable indicators of resilience and at the same time they potentially provide additional information to that contained in the fiscal deficit variable. This is because price inflation and unemployment are strongly influenced by other types of economic policy, including monetary and supply-side policies. They are associated with resilience because if an economy already has high levels of unemployment and inflation, it is likely that adverse shocks would impose significant costs on it. If, on the other hand, the economy has low levels of inflation and unemployment, then it can withstand adverse shocks to these variables without excessive welfare costs. In this sense, therefore, unemployment and inflation are associated with resilience of a shock-absorbing nature. The sum of these two variables, also known as the economic discomfort index (or economic misery index), is thus included in the resilience index proposed here.

- *External debt.* The adequacy of external policy may be gauged through the inclusion of the external debt-to-GDP ratio. This is considered to be a good measure of resilience, because a country with a high level of external debt may find it more difficult to mobilise resources in order to offset the effects of external shocks. Thus, this variable would indicate resilience of a shock-counteracting nature[4].

The variables utilised for the macro-economic component of the resilience index are measured as period averages across business cycles so as to eliminate the effects of cyclical fluctuations and policies. The sources of the data and country rankings associated with this component are presented in the Appendix to this chapter. As can be seen, a number of small states, notably Singapore and Hong Kong, obtain relatively high scores on this component.

Micro-economic market efficiency

The science of economics views markets and their efficient operation through the price mechanism as the best way to allocate resources in the economy. If markets adjust rapidly to achieve equilibrium following an external shock, the risk of being negatively affected by such a shock will be lower than if market disequilibria tend to persist. Indeed, with very slow or non-existent market adjustment, resources will not be efficiently allocated in the economy, resulting in welfare costs, manifested, for instance, in unemployed resources and waste or shortages in the goods markets. These considerations have important implications for shock-absorbing resilience.

Not many indicators of market efficiency are available which span a sufficiently wide range of countries as required for the purpose of this study. Following a search for suitable indicators, it was decided to use a component of the *Economic Freedom of the World Index* (Gwartney and Lawson 2005), entitled 'regulation of credit, labour and business' which is aimed at measuring the extent to which markets operate freely, competitively and efficiently across countries. It is designed to identify the effect of regulatory restraints and bureaucratic procedures on competition and the operation of markets.

In the financial market, this index assesses the extent to which (i) the banking industry is dominated by private firms; (ii) foreign banks are permitted to compete in the market; (iii) credit is supplied to the private sector; and (iv) controls on interest rates interfere with the

credit market. All these relate to the degree of interference by government in the financial market, which could preclude the economy from reacting flexibly to shocks.

Similar considerations apply in the case of the labour market. Here interference relates to unduly high unemployment benefits (which could undermine the incentive to accept employment), dismissal regulations, minimum wage impositions, centralised wage setting, extensions of union contracts to non-participating parties and conscription. All these are viewed as possibly precluding work effort, thereby limiting the ability of a country to recover from adverse shocks. A country would have a higher market efficiency score if it allows market forces to determine wages and establish conditions of dismissal, avoid excessive unemployment, and refrain from the use of conscription.

Bureaucratic control of business activities is also thought to inhibit market efficiency. This subcomponent is designed to identify the extent to which bureaucratic procedures limit competition and the operation of markets. When such activities retard entry into business and increase the cost of production, when prices are not market-determined and when governments use their power to extract financial payments and reward some businesses at the expense of others, private sector involvement is discouraged, thereby inhibiting the freely-operating markets to absorb shocks.

The relative data and country-ranking results with regard to this component of the resilience index are presented in the Appendix to this chapter. Small vulnerable countries can be found across the entire range of this component, indicating that such countries are adopting different policy approaches in terms of micro-economic market efficiency[5].

Good governance

Good governance is essential for an economic system to function properly and hence to be resilient. Governance relates to issues such as rule of law and property rights. Without mechanisms of this kind in place, it would be relatively easy for adverse shocks to result in economic and social chaos and unrest. Hence the effects of vulnerability would be exacerbated. On the other hand, good governance can strengthen an economy's resilience.

An explanation as to why the good governance component has been included alongside a market efficiency component is warranted at this juncture. The market efficiency index emphasies the importance of freely and properly operating markets for allocative efficiency and hence, relates to the ability of an economy to reallocate resources quickly and effectively following an economic shock. This fundamentally neo-liberal approach, which has been recently questioned with the market failures associated with the financial turmoil, is here balanced by an emphasis on appropriate government intervention to foster economic resilience as measured by the governance index. Thus, the resilience index proposed here views properly functioning markets and a framework of appropriate governance as two essential aspects of economic resilience.

The *Economic Freedom of the World Index* has a component which focuses on legal structure and security of property rights[6]. This is considered to be useful in the context of the present exercise in deriving an index of good governance. The component covers five subcomponents, namely (i) judicial independence; (ii) impartiality of courts; (iii) the

protection of intellectual property rights; (iv) military interference in the rule of law; and (v) the political system and the integrity of the legal system.

The relative data and country-ranking results are presented in the Appendix to this chapter. The highest rankings on the governance component are the more economically advanced countries, with the first five placings occupied by major industrialised economies. Singapore, which was among the most resilient economies according to economic criteria, ranks 15th in terms of governance. Vulnerable economies tend to obtain lower rankings on this count, but it still appears to be the case that the vulnerable economies enjoying a higher per capita GDP also tend to have better systems of governance.

Social development

Social development is another essential component of economic resilience. This factor indicates the extent to which relations within a society are properly developed, enabling an effective functioning of the economic apparatus without the hindrance of civil unrest. Social development can also indicate the extent to which effective social dialogue takes place in an economy which, in turn, would enable collaborative approaches towards the undertaking of corrective measures in the face of adverse shocks.

Social development in a country can be measured in a number of ways. Variables relating to income, such as its dispersion and the proportion of the population living in poverty, the long-term unemployment rate (indicating the proportion of the population with low skills and inadequate employment prospects) and the proportion of the population with low levels of education, could be useful indicators. Still another possible approach would be to measure the number and extent of instances of industrial or civil unrest. These approaches are interesting but rather narrow in scope and very difficult to measure across countries.

The social development component of the resilience index in this paper consists of the education and health indicators utilised to construct the UNDP human development index (HDI).

- *Education*: Educational advancement, measured by the adult literacy rate and school enrolment ratios, is considered to be a good indicator of social development. In addition, an improved standard of education could be indicative of an improved ability to cohere in the face of external shocks—a condition conducive to economic resilience.
- *Health*: Life expectancy at birth is considered to be suitable for measuring the health aspects in a society. This in turn is likely to be related to medical facilities, housing and degree of proneness to accident or risk of injury. Again, advancement in health standards is considered to be conducive to economic resilience.

The relative data and country ranking results are presented in the Appendix to this chapter. Small island developing states occupy the entire range of the component, with those with a high per capita GDP obtaining higher rankings.

Correlation between the components of the index

The components discussed above have been found to be positively related to each other, as shown in Table 3.1, but the correlation is somewhat weak.

Table 3.1. Correlation matrix

Macro-economic stability	1.00			
Market efficiency	0.17	1.00		
Good governance	0.29	0.68	1.00	
Social development	0.22	0.40	0.67	1.00

The highest correlation scores relate to good governance and social development and good governance and market efficiency.

The question arises therefore as to whether or not the good governance component is redundant. Given that its correlation with market efficiency and social development is not unduly high, it was decided to retain all four components in the composite index.

Other determinants of economic resilience

Economic resilience can also be viewed to be determined by a plethora of other factors apart from those mentioned above. It may be argued, for example, that it could be useful to consider the effects of environmental management in this regard. The environment can be an important source of vulnerability by giving rise to shocks of an adverse nature, principally by rapid events, such as earthquakes and floods. In turn, these would have important repercussions on the economy and society.

In this regard, the efforts undertaken to compile the Environmental Sustainability Index (Esty et al., 2005) are commendable. Data on environmental matters are, however, not readily and extensively available across countries of different sizes and the inclusion of environmental variables for the present exercise would have drastically reduced the countries covered by the resilience index[7]. In addition, there is the possibility that incorporating an environmental management index could lead to the problem of redundancy, that is, using indicators which are highly correlated which would add no new information but would render the procedure unnecessary complex. In the case of environmental management factors, the socio-economic resilience aspects covered by the variables discussed above are likely to be highly correlated with environmental management, although in the absence of data, this assertion cannot be tested.

Computation of the composite index

The composite index was computed by taking a simple average of the four components just described, namely: macro-economic stability, micro-economic market efficiency, good governance and social development. Data for 86 countries were obtained. All observations of the components of the index were standardised using the well-known transformation:

$$XS_{ij} = (X_{ij} - MinX_j) / (MaxX_j - MinX_j) \qquad j = 1, 2, \ldots 4 ; i = 1, 2, \ldots. 86.$$

where:

XS**ij** is the value of the standardised observation for country **i** of component **j**;
X**ij** is the actual value of the same observation;
MinX**j** and MaxX**j** are the minimum and maximum values of the same observations for component j.

This transforms the values of observations in a particular variable array so that they take a range of values from 0 to 1.

The results

The results of averaging the four components of the economic resilience index are given in the table in the Appendix. These show that most of the small island states included in the index, namely Singapore, Barbados, Malta and Cyprus, register relatively high resilience scores. Other small states with relatively high resilience scores include Iceland, Hong Kong, Slovenia and Estonia. Unfortunately, data for small island developing states that register low resilience scores were available for two countries only, namely Jamaica and Papua New Guinea. It is, therefore, not possible to compare the performance of country groupings in this regard. However, it appears that the worst performers in terms of resilience building were a number of larger African, Asian and South American countries.

The uses of the resilience index

The resilience index developed in this paper may be useful to support decision-making, especially for setting directions and justifying choice of priorities for resilience building. In particular it could help to:

1. disseminate information on, and draw attention to, the issue of resilience building;
2. focus the discussion on essential resilience-building issues; and
3. promote the idea of integrated action.

Dissemination of information

An index is a very good instrument for drawing attention to the issue being investigated. Thus, for example, the exercise of computing an index of resilience may itself make decision makers and stakeholders more aware of the factors that lead to resilience building. Such an exercise may also generate academic discussion and enhance awareness amongst scholars and practitioners on the issues involved.

The resilience index can also be used to give high profile to certain policies which can strengthen resilience. In this regard, the index can be useful for communication and for alerting stakeholders about failures and success stories relating to resilience building.

Focusing the discussion

Indices can help to develop a common language for discussion. One often finds that parties engaged in debate go off at tangents because of lack of common definitions. In the case of

indices, the quantification of their components requires precise definitions, and this could help focus the discussion on matters directly relevant to the issue.

Promoting the idea of integrated action

Although a composite index yields a single-value measure of the phenomena under consideration, it summarises complex realities and therefore conveys the message that the issue under investigation is not the outcome of a single factor. This could help to foster an awareness of the interconnections between the components of the index. In the case of economic resilience, for example, it is often not enough, and may even be counterproductive, to take action in one area in isolation from others. The resilience index proposed here could therefore promote the need for an integrated action in this regard.

Concluding considerations

This paper dealt with conceptual and methodological aspects associated with economic resilience and its measurement. The index developed here covers four aspects of economic resilience, namely macro-economic stability, micro-economic market efficiency, good governance and social development. Each of these components contains variables which are considered suitable to gauge the extent to which the policy framework is conducive to absorb and counteract the effects of economic shocks.

The results of this exercise can provide an explanation as to why inherently vulnerable countries may register high levels of GDP per capita. It is argued that countries may be economically successful because they are inherently not vulnerable, or because they are resilient in the face of the vulnerability they face. The obverse is also true, in that countries may be unsuccessful because they are not sufficiently resilient.

The paper has also shown that GDP per capita is positively related to economic resilience and negatively related to economic vulnerability. Furthermore, per capita GDP is found to be more sensitive to resilience variables than to vulnerability variables.

Notes

1 This chapter is reproduced from sections of Briguglio et al. (2006), as revised and updated in Briguglio et al. (2009), with minor changes to render it compatible for inclusion in this volume.

2 An analogy relating to an attack of influenza virus may help explain the two senses in which the term ‘resilience’ is used. A person exposed to the virus may (i) get infected but recovers quickly; and/or (ii) withstand the effect of the virus, possibly by being immunised.

3 The choice of variables which compose the index is somewhat subjective. However, care was taken to base the choice on a set of desirable criteria related to appropriate coverage, simplicity and ease of comprehension, affordability, suitability for international comparisons and transparency. A more detailed consideration of these criteria is given in Briguglio (2003) and Farrugia (2007). In addition, the summing of the components of the index also involves subjective decisions, principally in selecting the weighting procedure. There is considerable debate in the literature on composite indices on this issue. Again, these questions are discussed in Briguglio (2003) and Farrugia (2007) and are not elaborated upon in this study.

4 It is, however, recognised that certain countries may have external debt not because of a weak

policy framework but due to a highly-developed international financial activity. This is a weakness in the use of this indicator. However, the inclusion of other variables related to market efficiency and governance would to an extent 'correct' this weakness, since these variables either exacerbate the effect of external debt in the presence of a weak policy framework or counteract it otherwise.

5 An attempt was made to augment the micro-economic market efficiency indicator used in the resilience index by assessing the degree of exchange rate and financial controls exercised by countries covered in the resilience index. The premise is based on the notion that countries that use capital controls are not likely to have efficient financial markets. In turn, due to the strong interlinkages between financial markets and the entire economy, inefficiencies in the financial markets are likely to reflect and result in inefficiencies in other sectors of the economy. The IMF *Annual Report on Exchange Arrangements and Exchange Restrictions* (2006) was used to identify the presence of such controls. This approach, however, met with a number of practical difficulties including the fact that the IMF yields a *de jure* classification of exchange rate regimes based on the stated intentions of the central banks. However, difficulties arise when actual policies diverge from the stated intentions. Moreover, given the numerous and often complicated controls exercised by a number of countries, a relevant comparison of the controls across countries is difficult to obtain.

6 An alternative governance index is presented by the World Bank (Kaufmann, Kraay and Mastruzzi 2006). A Pearson correlation test of the World Bank governance indicators and the *Economic Freedom of the World's* 'legal structure and security of property rights' component yielded a value of 0.92. Thus, both indices are likely to be measuring a similar phenomenon. In fact, when the Kaufmann index was used in the compilation of the resilience index, the ranking of countries only changed marginally.

7 Esty et al. (2005) do produce some results for a few small states but they are reluctant to include them in the Environmental Sustainability Index.

Appendix

The resilience index: Data and country rankings

Country	Macro-economic stability[a]	Micro-economic market efficiency[b]	Good governance[c]	Social development[d]	Resilience index[e]	Country ranking
Albania	0.250	0.387	0.411	0.765	0.453	62
Argentina	0.534	0.259	0.227	0.868	0.472	58
Australia	0.472	0.800	0.971	0.988	0.808	9
Austria	0.693	0.531	0.928	0.956	0.777	12
Bangladesh	0.635	0.305	0.174	0.223	0.334	80
Barbados	0.632	0.627	0.722	0.915	0.724	17
Belgium	0.661	0.474	0.800	0.982	0.729	16
Belize	0.186	0.671	0.607	0.754	0.554	49
Bolivia	0.468	0.360	0.174	0.619	0.405	69
Brazil	0.388	0.210	0.423	0.721	0.436	65
Cameroon	0.443	0.451	0.344	0.232	0.368	76
Canada	0.633	0.798	0.910	0.977	0.829	6
Chile	0.636	0.562	0.611	0.859	0.667	28
China	0.653	0.095	0.468	0.704	0.480	56
Colombia	0.417	0.273	0.220	0.754	0.416	67
Costa Rica	0.609	0.470	0.623	0.853	0.639	31
Côte d'Ivoire	0.422	0.327	0.237	0.000	0.246	86
Croatia	0.524	0.516	0.451	0.824	0.579	40
Cyprus	0.360	0.407	0.687	0.886	0.585	38
Czech Republic	0.571	0.444	0.631	0.856	0.626	35
Denmark	0.716	0.682	1.000	0.944	0.836	5
Dominican Republic	0.657	0.470	0.305	0.654	0.521	52
Egypt, Arab Rep.	0.588	0.151	0.403	0.504	0.412	68
El Salvador	0.655	0.485	0.351	0.645	0.534	51
Estonia	0.635	0.705	0.673	0.850	0.716	18
Finland	0.638	0.671	0.997	0.971	0.819	7
France	0.494	0.526	0.744	0.962	0.681	23
Germany	0.551	0.349	0.932	0.947	0.695	20
Honduras	0.425	0.388	0.157	0.584	0.389	71
Hong Kong, China	0.650	1.000	0.731	0.865	0.811	8
Hungary	0.435	0.598	0.656	0.830	0.630	34
Iceland	0.722	0.912	0.960	0.968	0.890	1
India	0.501	0.309	0.555	0.396	0.440	64
Indonesia	0.420	0.060	0.285	0.633	0.350	78

Country	Macro-economic stability[a]	Micro-economic market efficiency[b]	Good governance[c]	Social development[d]	Resilience index[e]	Country ranking
Iran, Islamic Rep.	0.595	0.000	0.555	0.630	0.445	63
Ireland	0.748	0.632	0.855	0.927	0.790	11
Israel	0.599	0.348	0.730	0.933	0.652	29
Italy	0.564	0.277	0.669	0.930	0.610	36
Jamaica	0.404	0.413	0.468	0.783	0.517	53
Japan	0.473	0.530	0.745	0.974	0.681	24
Jordan	0.388	0.480	0.637	0.727	0.558	48
Kenya	0.489	0.471	0.283	0.299	0.385	73
Kuwait	0.579	0.656	0.705	0.748	0.672	27
Latvia	0.523	0.490	0.555	0.824	0.598	37
Lithuania	0.548	0.391	0.471	0.848	0.564	46
Luxembourg	0.170	0.752	0.910	0.894	0.682	22
Madagascar	0.362	0.266	0.256	0.255	0.285	84
Malaysia	0.732	0.493	0.625	0.748	0.649	30
Malta	0.484	0.631	0.708	0.871	0.674	25
Mauritius	0.602	0.371	0.625	0.701	0.575	43
Mexico	0.607	0.281	0.294	0.777	0.490	55
Morocco	0.496	0.373	0.566	0.405	0.460	60
Nepal	0.492	0.458	0.310	0.261	0.380	74
Netherlands	0.483	0.656	0.971	0.979	0.772	13
New Zealand	0.690	0.882	0.951	0.974	0.874	2
Nicaragua	0.024	0.486	0.187	0.566	0.316	82
Nigeria	0.472	0.509	0.219	0.232	0.358	77
Norway	0.557	0.550	0.910	0.982	0.750	14
Pakistan	0.395	0.414	0.148	0.205	0.291	83
Panama	0.582	0.536	0.384	0.806	0.577	42
Papua New Guinea	0.509	0.434	0.310	0.290	0.386	72
Paraguay	0.578	0.164	0.106	0.730	0.395	70
Peru	0.568	0.401	0.316	0.739	0.506	54
Philippines	0.451	0.388	0.285	0.771	0.474	57
Poland	0.569	0.304	0.520	0.874	0.567	45
Portugal	0.595	0.458	0.768	0.915	0.684	21
Romania	0.388	0.290	0.409	0.765	0.463	59
Russian Federation	0.517	0.092	0.348	0.751	0.427	66
Senegal	0.403	0.225	0.342	0.067	0.260	85
Singapore	1.000	0.730	0.888	0.877	0.874	3
Slovak Republic	0.446	0.446	0.536	0.830	0.564	47
Slovenia	0.660	0.308	0.664	0.903	0.634	33
South Africa	0.576	0.600	0.664	0.446	0.571	44
Spain	0.545	0.556	0.625	0.968	0.673	26
Sri Lanka	0.318	0.407	0.356	0.751	0.458	61

Country	Macro-economic stability[a]	Micro-economic market efficiency[b]	Good governance[c]	Social development[d]	Resilience index[e]	Country ranking
Sweden	0.474	0.574	0.949	1.000	0.749	15
Switzerland	0.557	0.744	0.912	0.950	0.791	10
Thailand	0.399	0.473	0.582	0.733	0.547	50
Trinidad and Tobago	0.641	0.562	0.557	0.780	0.635	32
Tunisia	0.511	0.484	0.683	0.651	0.582	39
Turkey	0.000	0.213	0.391	0.674	0.320	81
Uganda	0.516	0.424	0.370	0.199	0.377	75
United Kingdom	0.062	0.844	0.977	0.971	0.714	19
United States	0.646	0.907	0.860	0.944	0.839	4
Uruguay	0.523	0.376	0.537	0.874	0.577	41
Venezuela, RB	0.511	0.091	0.000	0.777	0.345	79

Notes to appendix

a The macro-economic stability sub-index is made up of the simple average of the following three variables: (i) the fiscal deficit to GDP ratio; (ii) the sum of the unemployment and inflation rates; and (iii) the external debt-to-GDP ratio. The data sources are IMF (2005) and World Bank (2004). National statistical offices were consulted for a few countries.

b The micro-economic market efficiency index is a component of the *Economic Freedom of the World Index* (Gwartney and Lawson, 2005), namely 'regulation of credit, labour and business' and is intended to measure the extent to which regulatory restraints and bureaucratic procedures limit competition and the operation of financial, labour and product markets. Data pertain to 2001 through 2003.

c The governance index consists of five components, namely (i) judicial independence; (ii) impartiality of courts; (iii) the protection of intellectual property rights; (iv) military interference in the rule of law; and (v) the political system and the integrity of the legal system (source: Gwartney and Lawson, 2005). Data pertain to 2001 through 2003.

d The social development index is the sum of the education and health indices of the HDI for the years 2000 to 2002 (see UNDP, 2002, 2003, 2004). Education is measured by the adult literacy rate and school enrolment rates, while health is measured by life expectancy at birth.

e The resilience index is the simple average of the four indices in the previous four columns.