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# INCOME DISTRIBUTION, SOCIAL COHESION AND ECONOMIC RESILIENCE

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**Abstract.** The distribution of income has major implications regarding the social and economic development of a country. In particular, this is expected to impinge upon the extent of social cohesion, and, as a result, on the social development of a country, which, according to Briguglio et al. (2006), is in turn a fundamental component of the Economic Resilience Index (ERI). However the methodology adopted by Briguglio et al. in measuring social development within the economic resilience framework makes no explicit use of an income distribution variable. This chapter assesses the benefits of including an income distribution variable in the ERI, and utilises the Gini Coefficient for this purpose. The chapter concludes that although the Gini Coefficient possesses a number of desirable characteristics as a component of the ERI, its inclusion in the Index poses additional computational burdens and leads to a “loss” of countries due to lack of data for these countries, without significantly affecting the rankings of countries in the Index.

## 1. Introduction

The distribution of income has major implications on the social and economic development of a country. In particular, the pattern of income distribution can be expected to impinge upon the extent of social cohesion, and, as a result, on the social development of a country, which, according to Briguglio et al. (2006) is in turn a fundamental determinant of economic resilience. However the methodology adopted by Briguglio et al. in measuring social development within the economic resilience framework makes no explicit use of an income distribution variable. This chapter assesses the benefits of including an income distribution variable in the measurement of the social development aspect of economic resilience.

The chapter is organised as follows. The next section presents a discussion on income distribution from the perspective of inequality and on its measurement. The conceptual links between economic resilience and the distribution of income are subsequently explored. The results of

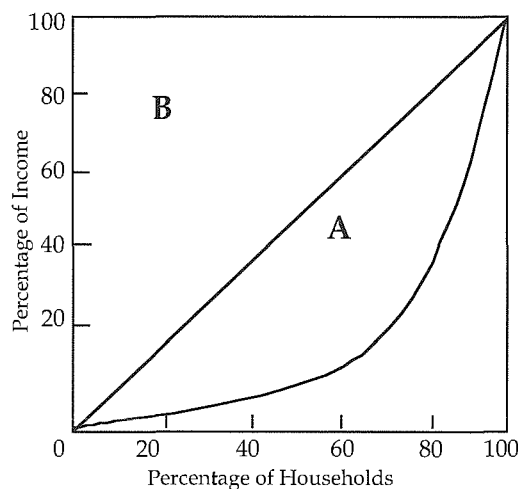
empirical tests of the usefulness of including an income distribution variable within the social development sub-index of economic resilience are then presented. The main conclusions are drawn in the final section.

## 2. Income Inequality and its Measurement

In any society, incomes are determined by a multitude of factors, meaning that in turn the distribution of incomes is the outcome of a very complex process. Government policy is only one of a number of influences on income distribution.

A simple method of measuring income inequality is by the Lorenz curve which plots cumulative number of households on the horizontal axis

**Figure 1**  
**The Lorenz Curve**



against the cumulative share of total income on the vertical axis. If incomes in a society were to be completely equal, the Lorenz curve would be represented by a 45 degree line. The farther the curve from the 45 degree line, the higher is the degree of income inequality. A statistic that measures income inequality that is obtained from the Lorenz Curve is the Gini coefficient. The coefficient is measured as the ratio of the area of the inequality line under the 45 degree line (shown as Area A in

the diagram) divided by the entire area below (or above) the 45 degree line (shown as Area B in the diagram). It takes a value of between 0 and 1, whereby the lower the value of the Gini coefficient the less is the inequality implied. A value of zero indicates complete equality – everyone having exactly the same income – while a value of 1 would occur if all the income in the economy accrues to only one household.

### *Income Distribution and Economic Growth*

Traditionally, studies of the relationship between aggregate economic activity and income distribution emphasised the link from output to the

distribution of income. In his pioneering work, Kuznets (1955) hypothesised that as countries developed, the degree of inequality initially increased and then fell, depicted by the so-called inverted U-shaped Kuznets curve. There exists mixed evidence about the existence of this hypothesised relationship.

The traditional theory about the link between income distribution and growth is that greater inequality leads to greater savings, and thus greater accumulation and growth. Kaldor (1957) assumes that all wages are consumed and only profits provide resources for additional capital accumulation. In Pasinetti (1962), this is interpreted as a consumption function in which the rich have a lower marginal propensity to consume than the poor, so that increasing inequality will result in higher savings and thus more rapid capital accumulation and growth.

This hypothesis, which is consistent with the capital-accumulation based theories of economic growth pioneered by Solow (1957), was subsequently challenged. In particular, the role of capital accumulation in economic growth was diminished by the onset of endogenous growth theories. Friedman (1957) also showed that the consumption function used in the Kaldor-Pasinetti theory is not based on permanent income. Friedman hypothesised that saving is proportional to permanent income. Hence, with a constant marginal propensity to consume, the distribution of income has no effect on saving.

Empirical tests of the impact of income distribution on saving produce conflicting results. Early empirical studies on the subject such as Blinder (1975), Della Valle and Oguchi (1976), Musgrove (1980) and Bunting (1991), focus on the effect of personal income inequality on saving. For the most part, they find either no effects or a positive impact, although in the latter case the estimates are often statistically insignificant at conventional levels. However, recent studies seem to suggest that there may be no effect of income distribution on saving (Deininger and Squire, 1995). This result continues to hold in studies that control for other determinants of saving (Schmidt-Hebbel and Serven, 1997).

#### *Inequality and Social Cohesion*

A second relationship between income inequality and growth relates to social cohesion. Intuitively, it can be assumed that income inequality leads to the emergence of social cleavages which work against cohesion and social development.

Empirical evidence strongly points out that income inequality leads to greater social and political instability (Londregan and Poole 1990; Alesina

and Rodrik, 1994; Alesina et al., 1996). Bruno (1993) has argued that consensus is essential to undertaking successful macroeconomic stabilisation. In turn, consensus is facilitated by a greater degree of equality. Rodrik (1998) also argues that in OECD countries, the level of inequality affects the government's ability to develop sound policies to cope with major shocks.

### 3. Income Inequality and Economic Resilience

The concept of resilience with regard to small states gained its importance when Briguglio (1995) found that many such states managed to attain a relatively high GDP per capita despite their economic vulnerability when compared to larger developing countries. Briguglio (2004) termed this phenomenon the "Singapore Paradox", referring to those countries, like Singapore, that are able to withstand and counteract the negative effects of vulnerability on economic development through resilience building.

A broad definition of resilience is given in Briguglio et al. (2006) who argue that resilience relates to the ability of an economy to recover quickly following an adverse shock and to withstand negative shocks. This definition is embodied in an index which seeks to quantify those variables which enhance economic resilience, enabling a country to improve its ability to absorb and/or counteract shocks. The components of the Economic Resilience Index (ERI) which Briguglio et al. (2006) proposed are macroeconomic stability; microeconomic market efficiency; good governance; and social development.

Briguglio et al. (2006: 275) justify the inclusion of the social development component in the ERI as follows:

"Social development is another essential component of economic resilience. This factor indicates the extent to which social relations in 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 would in turn enable collaborative approaches towards the undertaking of corrective measures in the face of adverse shocks".

Briguglio et al. (2006) measured social development through the health and education components of the Human Development Index (HDI), arguing that these variables are also likely to capture other important components of social cohesion. It can be argued that income distribution can be an important variable in this regard, potentially capturing aspects

of social cohesion that are not encompassed by the health and education components of the HDI. The main reason for this is that the health and education components of the HDI relate to population averages and do not contain information on differences within populations.

#### 4. The Inclusion of an Income Inequality Variable

Is the inclusion of an index of income inequality within an ERI warranted? In order to answer this question, it is useful to recall the desirable criteria which according to Briguglio (1997) should be considered when constructing a composite index of country performance. These criteria are:

- (i) *Relevance*: The components of a composite index are to be chosen in view of their relevance in explaining a phenomenon being investigated;
- (ii) *Simplicity and ease of comprehension*: The number of components should be as small as possible, and their computation should be easily understood. This criterion is also useful for reasons of parsimony and ease of construction, particularly in relation to data availability;
- (iii) *Suitability for international comparisons*: If an index is used to compare country scores, it should be based on variables which are measured in a homogenous manner internationally;
- (iv) *Non-redundancy*: If two components of a composite index are highly correlated, only one of them should be retained, as these would very likely be measuring the same variable. Including both components would be tantamount to increasing the weight of that variable.

These concepts can be applied to test the suitability of including an index of income inequality in the ERI produced by Briguglio et al. (2006). For the purpose of this study, income inequality is measured by a Gini Coefficient Index (GCI), data for which are presented in Appendix 1.

In terms of relevance, the foregoing discussion strongly points to the importance of income distribution for social cohesion and therefore for social development. Going by the relevance criterion, therefore, the Gini coefficient variable is suitable for inclusion in the ERI.

Simplicity and ease of comprehension also work in favour of the inclusion of the Gini coefficient, as it is a widely understood indicator used in a number of fields of study.

In terms of the suitability for international comparisons, concerns may emerge regarding the homogeneity of data collection processes applied in different countries for the production of the Gini coefficient. In

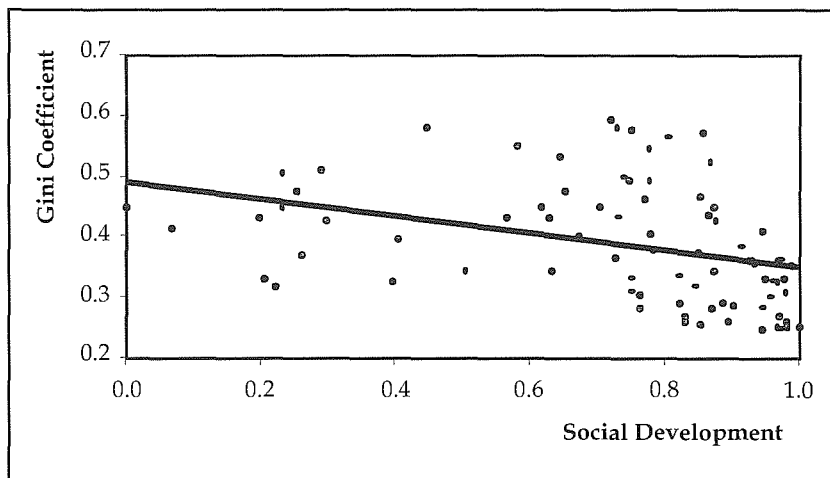
addition, the Gini coefficient data is available for only 82 countries out of the 86 included in the ERI.<sup>1</sup>

An important test to undertake with regard to redundancy relates to the assessment as to whether the Gini coefficient improves the information content within the social development component of the index produced by Briguglio et al. (2006). As argued above, the Gini coefficient does factor in additional information, in that it relates to dispersion of social realities, rather than averages as is the case with the education and health variables.

A test that is often used to assess whether or not a component is redundant is the correlation test. If two variables are highly correlated it can be construed that one of them does not add useful information, and in addition this imposes higher computational burdens. This test was applied by correlating the GCI with the social development component of the ERI.

The results are shown in Figure 2, which plots, for the 82 countries in the dataset, the scores relating to the social development sub-index with those relating to the GCI. It should be noted that the GCI is only available for 82 countries out of the 86 covered by the ERI.<sup>1</sup>

Figure 2  
The Social Development and the Gini Coefficient Scores



<sup>1</sup> There are four “lost” countries, namely Barbados, Belize, Kuwait and Mauritius, the four of which happened to be small states.

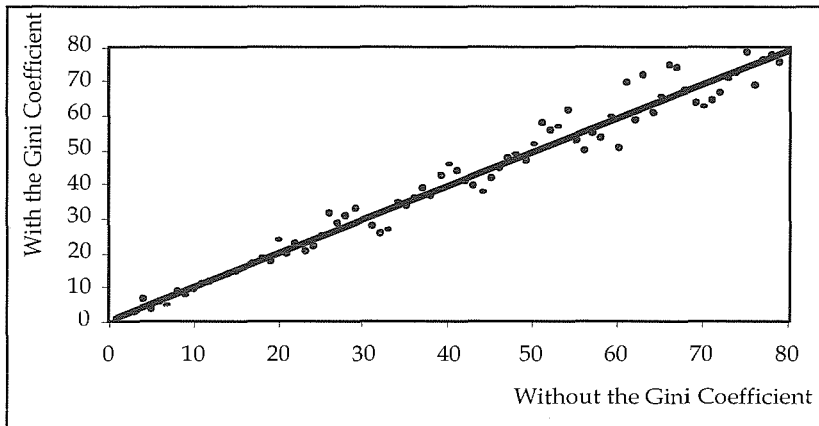
Figure 2 shows that as expected, there is a significant degree of negative association between the two variables, but the correlation coefficient is rather low, with a value of 0.13. A similar exercise was carried out with regard to the rankings, using the Pearson Rank Correlation method, where the resulting correlation coefficient value was 0.53.

In situations like this, one has to make a subjective choice as to whether to retain the GCI. Although the two variables are correlated, the correlation coefficient appears to be not large enough for one to conclude that the Gini Coefficient would be redundant within the Social Development sub-index.

A second test to assess whether it would be useful to include the GCI in the ERI produced by Briguglio et al. (2006) is to examine how the overall country rankings would be affected by such inclusion. This was done by assigning an 8.3 percent weight to the GCI and a 16.7 percent weight to the health and education sub-indices of the HDI, given that in Briguglio et al. the social development index was assigned a total weight of 25 percent.

It turns out the inclusion of the Gini coefficient did not change the ERI scores in a significant way, so much so that the correlation coefficient between the ERI with our without the GCI was 0.99. Figure 3 shows the scatter between the rankings of the ERI with and without the GCI. The Rank correlation between the rankings of the indices was again 0.99. It is to be noted that any differences in information produced by Gini coefficient was diluted as this has taken place through the application of a low weight.

**Figure 3**  
**The Resilience Index with and without the Gini Coefficient**



When examining the actual differences in the rankings of country scores of the ERI with or without the GCI, it was found that out of 82 countries, only 16 changed their rank between 5 and 9 places, with the remaining countries, by and large, retaining their rank (see Appendix 2). Of interest is that the small states included in the ERI were very minimally affected by the inclusion of the GCI.

A major drawback of including the GCI in the ERI is that information on countries is “lost”, due to the fact that data on income inequality was not available for four small countries covered by the ERI. It can therefore be concluded that on grounds of international coverage, it is better not to include GCI as a component of the ERI.

Consideration of income distribution in discussion relating to economic resilience building is however useful on the grounds that this would foster interest in this relationship. As discussed earlier, the reduction of income inequality may indeed enable a country to better absorb or counteract shocks. If a large section of the population is very poor relative to others, it may be unwilling to make sacrifices in order to meet the effects of adverse shocks, thereby compromising the overall resilience of a country. A more equal distribution of income could entail a greater readiness across a wide spectrum of the population to shoulder the burdens of adverse shocks when these arise.

## 5. Conclusion

This chapter has argued that income distribution is an important aspect of social cohesion and, therefore, social development, and is, consequently, conducive to economic resilience within an economy. Conversely wide divergences in income distribution tend to curtail social cohesion and hence may dent the ability of different groups to respond to adverse shocks.

The study measured income inequality in terms of a Gini Coefficient Index, and this was considered as a possible component of the ERI. While the Gini Coefficient Index possesses a number of desirable characteristics for this purpose, it was concluded that it does not add much information to the ERI as produced by Briguglio et al. (2006). When the GCI was actually included as part of the social component of the ERI, it did not markedly change the rankings of the country scores.

An important drawback of including the GCI in the ERI is that a number of small countries would have to be excluded from the analysis as data on the Gini coefficient are not available for the whole country set covered by the ERI.

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### Appendix 1 Data Used

	GCI	SDI	Score		Rank	
			ERI(1)	ERI(2)	ERI(2)	ERI(2)
Albania	0.282	0.899	0.453	0.464	58	54
Argentina	0.522	0.205	0.472	0.419	54	62
Australia	0.352	0.697	0.808	0.784	9	8
Austria	0.300	0.847	0.777	0.768	12	12
Bangladesh	0.318	0.795	0.334	0.380	76	69
Belgium	0.250	0.991	0.729	0.730	16	16
Bolivia	0.447	0.422	0.405	0.389	65	66
Brazil	0.593	0.000	0.436	0.378	61	70
Cameroon	0.446	0.425	0.368	0.383	72	67
Canada	0.331	0.757	0.829	0.812	6	6
Chile	0.571	0.064	0.667	0.603	26	32
China	0.447	0.422	0.480	0.458	52	56
Colombia	0.576	0.049	0.416	0.359	63	72
Costa Rica	0.465	0.370	0.639	0.600	29	33
Cote d'Ivoire	0.446	0.425	0.246	0.280	82	82
Croatia	0.290	0.876	0.579	0.583	38	37
Cyprus	0.290	0.876	0.585	0.584	36	36
Czech Republic	0.254	0.980	0.626	0.635	33	27
Denmark	0.247	1.000	0.836	0.840	5	4
Dominican Republic	0.474	0.344	0.521	0.496	48	49
Egypt, Arab Rep.	0.344	0.720	0.412	0.429	64	61
El Salvador	0.532	0.176	0.534	0.497	47	48
Estonia	0.372	0.639	0.716	0.699	17	17
Finland	0.269	0.936	0.819	0.816	7	5
France	0.327	0.769	0.681	0.666	22	23
Germany	0.283	0.896	0.695	0.691	19	18
Honduras	0.550	0.124	0.389	0.352	67	74
Hong Kong, China	0.434	0.460	0.811	0.779	8	9
Hungary	0.269	0.936	0.630	0.638	32	26
Iceland	0.250	0.991	0.890	0.892	1	1
India	0.325	0.775	0.440	0.471	60	51
Indonesia	0.343	0.723	0.350	0.357	74	73
Iran, Islamic Rep.	0.430	0.471	0.445	0.432	59	60
Ireland	0.359	0.676	0.790	0.770	11	11
Israel	0.355	0.688	0.652	0.633	27	29
Italy	0.360	0.673	0.610	0.589	34	35
Jamaica	0.379	0.618	0.517	0.504	49	47
Japan	0.249	0.994	0.681	0.682	23	21
Jordan	0.364	0.662	0.558	0.553	45	42
Kenya	0.425	0.486	0.385	0.400	69	64
Latvia	0.336	0.743	0.598	0.591	35	34

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Legend: GCI = Gini Coefficient Index;  
SDI: = Social Development Index;  
ERI(1): = Economic Resilience Index without the Gini Coefficient Index;  
ERI(1): = Economic Resilience Index with the Gini Coefficient Index;

Sources: Social Development Index and Economic Resilience Index: Briguglio et al. (2006); Gini coefficient: *Human Development Report* except for Cyprus, Iceland, Luxembourg and Malta, where the data is sourced from Eurostat.

**Appendix 1 (Continued)**  
**Data Used**

	GCI	SDI	Score		Rank	
			ERI(1)	ERI(2)	ERI(2)	ERI(2)
Lithuania	0.319	0.792	0.564	0.560	43	40
Luxembourg	0.260	0.962	0.682	0.687	21	20
Madagascar	0.475	0.341	0.285	0.292	80	81
Malaysia	0.492	0.292	0.649	0.613	28	31
Malta	0.280	0.905	0.674	0.676	24	22
Mexico	0.546	0.136	0.490	0.439	51	58
Morocco	0.395	0.572	0.460	0.473	56	50
Nepal	0.367	0.653	0.380	0.411	70	63
Netherlands	0.309	0.821	0.772	0.760	13	13
New Zealand	0.362	0.668	0.874	0.850	2	2
Nicaragua	0.431	0.468	0.316	0.308	78	78
Nigeria	0.506	0.251	0.358	0.360	73	71
Norway	0.258	0.968	0.750	0.749	14	14
Pakistan	0.330	0.760	0.291	0.335	79	76
Panama	0.564	0.084	0.577	0.520	40	46
Papua New Guinea	0.509	0.243	0.386	0.382	68	68
Paraguay	0.578	0.043	0.395	0.340	66	75
Peru	0.498	0.275	0.506	0.469	50	52
Philippines	0.461	0.382	0.474	0.443	53	57
Poland	0.341	0.728	0.567	0.555	42	41
Portugal	0.385	0.601	0.684	0.659	20	24
Romania	0.303	0.838	0.463	0.469	55	53
Russian Federation	0.310	0.818	0.427	0.433	62	59
Senegal	0.413	0.520	0.260	0.296	81	80
Singapore	0.425	0.486	0.874	0.842	3	3
Slovak Republic	0.258	0.968	0.564	0.575	44	38
Slovenia	0.284	0.893	0.634	0.633	31	28
South Africa	0.578	0.043	0.571	0.539	41	44
Spain	0.325	0.775	0.673	0.658	25	25
Sri Lanka	0.332	0.754	0.458	0.458	57	55
Sweden	0.250	0.991	0.749	0.748	15	15
Switzerland	0.331	0.757	0.791	0.775	10	10
Thailand	0.432	0.465	0.547	0.526	46	45
Trinidad and Tobago	0.403	0.549	0.635	0.617	30	30
Tunisia	0.398	0.564	0.582	0.575	37	39
Turkey	0.400	0.558	0.320	0.310	77	77
Uganda	0.430	0.471	0.377	0.399	71	65
United Kingdom	0.360	0.673	0.714	0.690	18	19
United States	0.408	0.535	0.839	0.807	4	7
Uruguay	0.446	0.425	0.577	0.542	39	43
Venezuela, RB	0.491	0.295	0.345	0.306	75	79