GINI COEFFICIENTS: THEIR ROLE AND OPERATION

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INTRODUCTION

The G*ini coefficient* (also known as the index of income concentration), is a term coined by Corrado Gini (1884-1965), an Italian statistician and demographer. According to Gini's 1912 paper entitled "Variabilità e mutabilità", the Gini coefficient represents the gap between the perfect distribution of a country's diagonal and a country's actual distribution curve of wealth.[1]

The impetus to analyse Gini coefficients is beneficial across a broad spectrum of occupations in the international sphere as poverty is a highly influential variable. This is not to say that all forecasting stemming from the use of Gini coefficients would be seen as legitimate. For instance, the Collier and Hoeffler's (CH) study claims that economic inequality was *insignificant* in causing civil war.[2] Yet the CH model of civil war should be, and has been, questioned by Sørli, Gleditch and Strand who claim that a lack of economic and political opportunities provide a fruitful base for frustration and opposition.[3] Furthermore, it is widely agreed that poverty is the primary variable explaining conflict in sub-Saharan Africa.[4] Poor countries (or groups within a nation state) trapped in poverty have a greater propensity for violent conflict, with an average probability of conflict outbreak at 8.8 per cent, more than five percentage points above the global average.[5]

S. Brock Blomberg and Gregory D. Hess state that "reduced levels of domestic economic activity tend to create incentives for increased external and internal conflict, which in turn reinforces low levels of domestic economic activity".[6] Therefore, a conflict-poverty trap emerges where conflict plays a role in reducing capital accumulation, and the lack of capital accumulation results in further conflict.[7] There is contention as to whether inequity directly motivates civil war, yet there is a recognised causal relationship between inequity and violence. It is likely that economic inequity is significant in causing civil war, the CH model seems to lack a means to measure its influence.

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[1] Gini C. "Variabilità e mutabilità" (1912) Reprinted in Memorie di metodologica statistica (Ed. Pizetti E, Salvemini, T). Rome: Libreria Eredi Virgilio Veschi, 1955.
[2] Paul Collier, "Doing Well Out of War", *Paper presented at the Conference on Economic Agendas in Civil Wars*, London, April 26-27 1999, <http://econ.worldbank.org/files/13200_CollierDoingWell.pdf>, accessed 10 January 2005, pp.6-8.
Mirjam E. Sørli, Nils Petter Gleditsch, Håvard Strand, "Why Is There So Much Conflict in the Middle East?", *Journal of Conflict Resolution*, Vol. 49, No. 1, February 2004, p.145.
[3] Sørli, et al, p.160.
[4] Sørli, et al, p.152.
[5] Sørli, et al, p.158.
[6] S. Brock Blomberg, George D. Hess, "The Temporal Links Between Conflict and Economic Activity", *Journal of Conflict Resolution*, Vol. 46, No.1, February 2002, p.74.
[7] I. Elbadawi, *Civil War and Poverty: The Role of External Interventions, Political Rights and Economic Growth*, Mimeo, 1999.
Blomberg et al, p.89.

THE GINI CO-EFFICIENT IN OPERATION

A Gini coefficient is a score between zero and one, although it sometimes appears in percentile form. It represents the degree of inequality in the distribution of income in a given society. A Gini score would register zero (0.0 = no inequality) where each member received exactly the same income, the Gini score would register one (1.0 = maximum inequality) if one citizen received all the income and the rest of society gets nothing.

A Gini coefficient provides a useful language to enunciate the principal factors that characterise equality and inequality for nation states and communities inside states. Where the gross national product (GNP) per capita expresses a national average of wealth, it does not provide an insight into the levels of actual wealth distribution to individuals within the state.

By focusing on social equity (or lack thereof) the Gini coefficient provides a useful *guide* by which forecast upon trends in aid effectiveness, health emergencies, infant mortality, corruption, organized crime and even as one basis to predict a coup d'ètat. Yet the validity of the Gini coefficient depends upon the quality of the statistical data used to calculate it. Even where a uniform Gini formula is used to draw comparisons between states (there are several Gini formulas), there is not an agreed uniform methodology for the manner in which data is collected. Therefore, a Gini coefficient is vulnerable to being contaminated by those seeking to overstate inequality or by those wishing to present the inequality as a minimum, usually by state leaders. Care should be taken to ensure the objectivity of Gini sources to mitigate error.

CONCLUDING REMARKS

Despite regular references to Gini coefficients in non-government organisations (NGOs) and United Nations agencies like the United Nations Development Program (UNDP), there are numerous so-called international country analysts who return a blank face when one speaks of Gini coefficients. Likewise, there are those who overstate (often through a Freudian slip) Gini coefficients as an undeniable fact on which to base a staunch conclusion.

To be sure, Gini coefficients can be used as one means to discuss economic and social reform, and as a means for evaluating select aspects of aid conditionality. They can be used to forecast upon trends towards civil violence, organised crime and migration rates. Gini coefficients are useful, yet great care should be taken towards the veracity of the sources used to calculate Gini coefficients. Any conclusions drawn from Gini coefficients are, of course, only speculative.

APPENDIX

Wikipedia provides the following formula for Gini coefficients.[8] Small sample variance in G, are not known, and large sample approximations to the variance of G are poor. In order for G to be an unbiased estimate of the true population value, it should be multiplied by n/(n-1). The Gini coefficient is often calculated with the Brown Formula shown below:

$$G = |1 - \sum_{k=0}^{k=n-1} (X_{k+1} - X_k)(Y_{k+1} + Y_k)|$$

G: Gini coefficient
X: cumulated proportion of the population variable
Y: cumulated proportion of the income variable

2004 Gini coefficients in selected countries

(from the United Nations Human Development Report 2004)

Australia:	0.352
China:	0.447
France:	0.327
Germany:	0.283
India:	0.325
Japan:	0.249
Mexico:	0.546
UK:	0.360
USA:	0.408

[8] Wikipedia, "Gini coefficient", <http://en.wikipedia.org/wiki/Gini_coefficient#Calculation>, accessed 10 January 2004.

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