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Economic and Non-economic Determinants of Poverty in Developing Countries: Competing Theories and Empirical Evidence*

Ming-Chang Tsai

ABSTRACT — *This study conducts cross-national research on 97 developing countries to test competing hypotheses of poverty. Four major theories from the social sciences were examined, including (1) economic development and openness, (2) geographical and demographical disadvantages, (3) regime characteristics and war, and (4) social policy and human capital enhancement, to determine their explanatory power by modelling the ratio of the poor to total population in those countries. Poverty is defined by living below an income of US\$ 1 or \$ 2 a day. Both the incidences of poverty and the poor's income shortfall from the non-poor are analysed with ridge regression modelling. Empirical outcomes reveal that besides a country's income level, tropics, landlockedness, population growth, and secondary schooling opportunity are significant predictors of poverty reduction, whereas political factors (democracy, military spending, and war) and government social spending are only weak predictors. No evidence was found to support the economic openness proposed by the neoliberal school.*

RÉSUMÉ — *L'auteur signale les résultats d'une recherche menée dans 97 pays en développement pour vérifier des hypothèses concurrentes sur la pauvreté. Il examine quatre grandes théories en sciences sociales : (1) le développement et l'ouverture de l'économie; (2) les désavantages géographiques et démographiques; (3) les caractéristiques du régime et la guerre; (4) les politiques sociales et le développement du capital humain. L'auteur met à l'épreuve le pouvoir explicatif de ces théories à l'aide d'une modélisation du rapport entre le nombre de pauvres et la population totale dans les pays étudiés. Aux fins de sa recherche, la pauvreté signifie devoir vivre avec un revenu de moins de 1 \$ ou 2 \$US par jour. La fréquence de la pauvreté et les écarts de revenu entre les pauvres et les non-pauvres sont analysés à l'aide de la méthode de régression ridge. Les résultats empiriques révèlent qu'à part le niveau de revenu d'un pays, les variables associées à la pauvreté sont : la situation du pays dans la zone des tropiques; le fait d'être un pays enclavé; la croissance de la population; et les possibilités d'études secondaires. Par ailleurs, les facteurs politiques (régime démocratique, dépenses militaires et guerre) et les dépenses sociales des gouvernements ont une faible influence sur la pauvreté. La recherche n'a fourni aucune preuve appuyant l'ouverture de l'économie prônée par l'école néolibérale.*

INTRODUCTION

Overcoming poverty has been and will continue to be one of the greatest challenges facing developing countries (DCs). The World Bank estimates that at the beginning of the 21st century, over half of the world's population (52.8%, or 2.7 billion people) live on less than US\$ 2 a day, despite global

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progress in reducing poverty since 1981, when 65.9% of the population lived below this threshold of absolute poverty (World Bank 2004a, 3). Optimistically, the World Bank forecasts that the proportion of the global population living below US\$ 2 a day will decline to 40% by 2015. This favourable forecast is predicated on the present strong rates of economic growth in DCs. Pessimistically, as many as 2.1 billion people could remain trapped in extreme poverty (World Bank 2004b, 11).

This study examines international variation in absolute poverty, the theoretical and policy implications of which differ from frequently analysed phenomena such as social inequality as indicated by the Gini index or by the income share of different quintiles. The latter measures tend to grasp a society's relative poverty. Very poor DCs likely have a high poverty rate but a pattern of income inequality resembling that of a middle-income country. Such inconsistency can be illustrated by comparison of India and Indonesia. Both countries differ only negligibly in terms of Gini index (India=32.5, Indonesia=34.3). However, 79.9% of the Indian population live on below US\$ 2 a day, while 52.4% of the population of Indonesia subsist at the same level of scarcity (World Bank 2004a, 55, 61). Furthermore, in countries with relatively lower income inequality, the poor likely comprise the majority of the population. For instance, Bangladesh registers a lower Gini index (31.8) than the previous two countries but has a larger proportion of poor people (82.8%). Burundi is another example exhibiting this paradox (World Bank 2004a).

It is argued that a trade-off between poverty and inequality may happen, especially in countries with initial low income that are experiencing rapid economic growth (Ravallion 2005a). That is, certain growing economies not only failed to alleviate poverty but also increased inequality (Krongkawe and Kakwani 2003; Woodward and Simms 2006). However, some authors suggest that this trade-off can be avoided if the lower income group's material well-being can significantly benefit from economic growth (Ravallion 2005a). Countries that seek social equity should prioritize poverty reduction.

The dominant explanation of poverty has emphasized economic growth, contending that economic accumulation and the rising income level can play a key role in alleviating poverty. The World Bank (2002), as well as numerous other researchers, has concentrated on representing the possible links between poverty reduction and economic growth in poor countries (Dollar and Kraay 2002; Ravallion 2001). An important fact is that paralleling the global trend toward decreasing poverty is enormous divergence among DCs in terms of poverty. The countries that suffer most from absolute poverty tend to be low-income countries, indeed. However, even among these countries, there exists vast inequality in poverty level that requires explanation beyond economic factors. Thus, rather than focus on a single, primary economic cause such as income level (Ravallion and Chen 1997), this study adopts a multiple causal approach to explore the diverse conditions of poverty in developing countries. On the basis of a broader theoretical formulation, our central research question is: Besides the income level factor, what are the main non-economic structural determinants of differences in poverty among DCs?

This study uses a cross-national research design and seeks to provide empirical evidence to assess the relative explanatory powers among competing theories of global poverty. Besides the economic growth paradigm, this study examines major theories in the social sciences, including (1) the geographical-demographical explanation, (2) the regime characteristics and war explanation, and (3) the social spending and human capital explanation. By empirically testing these competing theories, this study provides substantial suggestions for both governments and international organizations to broaden their policy toolkits for improving general human welfare.

I. COMPETING THEORETICAL ARGUMENTS

A. Growth, Economic Openness, and Poverty

One of the most widely promoted hypotheses in social sciences is that economic growth reduces poverty. While growth without distribution is not merely a theoretical possibility, but is being experienced in certain countries or regions, most researchers consider that the widespread poverty in DCs results from slow economic accumulation. The notion of the “trickling down” effect proposes a downward spread of the benefits of economic growth. The speed of sharing favourable yields toward the lower stratum is faster when growth models are “pro-poor”; that is, when there is high sensitivity of poverty to growth in average income (Kraay 2006).

Countries seeking to promote economic growth are usually advised to integrate their economies into the global market. In proposing the thesis that globalization reduces poverty, the neoliberal school prescribes economic openness as a central policy. Specifically, trade and foreign investment constitute two main poles of economic openness. International trade generates the following crucial mechanisms that benefit the poor in DCs: (1) export activities create access to the markets of rich countries for both manufacturing and agricultural goods and thus mobilize abundant but unused labour, including that in rural areas, into a globalizing economy; (2) by intensifying competition among producers as well as among providers, foreign trade reduces the price of basic consumption goods and thus benefits the poor; and (3) trade increases labour productivity and wages, and thus reduces inequality (World Bank 2002). The potential benefits from trade do not discriminate against lower-income countries such as those in Africa with predominantly rural economies (Mshomba 2000).

Recent studies have indirectly indicated the influences of economic liberalization on the poor. Reuveny and Li (2003) reported that trade volume is negatively associated with the Gini indices and with the income share of the richest 20% of the population in DCs. Dollar and Kraay (2002) analysed a large sample of cross-national data that directly targeted the lower income stratum. They found that the average income of the poor (the bottom fifth of the population) varied depending on pro-growth factors such as low inflation, financial development, and openness to foreign trade. However, the incidence of poverty had not been directly assessed using a cross-national multivariate design approach.

The second element of economic openness examined here is foreign direct investment (FDI) inflow. On the positive side, FDI implies increased jobs, especially in the export processing zones (EPZs) in many DCs. The inroad of FDI into rural towns, as the example in China, has contributed to reduced urban–rural inequality (World Bank 2002). For numerous DCs that have suffered from insufficient credit because of low interest rates or conventional possession of wealth in non-monetary forms, FDI compensates for the shortage. Finally, FDI can bring new technologies and improve corporate management, thus increasing economic production efficiency. However, the dependency school stresses the negative influence of FDI. This critical perspective emphasizes that multinational corporations mined local economies and expatriated enormous surpluses to home countries. FDI failed to generate the expected forward and backward linkage effects. Instead, FDI produced an underdeveloped economy with only limited growth opportunities in certain sectors depending solely on capital inputs from multinational corporations (MNCs). More important to the present research topic of poverty, MNCs tend to ally with local elites to curb unions and suppress the wages of the working class. MNCs paid low wages in labour-intensive manufacturing sweatshops such as the footwear and garment sectors. A select few well-paid managers in MNCs have become a class of

labour aristocracy that widens the income gap between the rich middle class and the rest of the population (Bornschieer and Chase-Dunn 1985; Dixon and Boswell 1996; Kentor 1998; cf. Firebaugh 1996). While the neoliberal contention argues for a positive correlation between FDI and poverty, the dependency argument forecasts a negative relationship.

B. Geographic and Demographic Factors

The relevance of the natural environment for economic growth has been highlighted in recent literature (Bloom and Sachs 1998; Englebert 2000; Sachs and Warner 1997). Tropical weather particularly is cited as one critical element contributing to poverty. O'Connor (1991) specifies that it is not merely high temperature and the resultant parasitic diseases but the extreme variability of the rainfall from year to year that features tropical weather. Using central African countries as example, O'Connor indicates that tropics generate several unfavourable outcomes, including nomadic pastoralism, concentration on a narrow range of drought-resistant but low-yielding crops, and uncertainty in crop planting. Tropical countries that rely on a few cash crops additionally risk export shocks that make poor people even poorer (Collier and Gunning 1999). Another interesting geographical factor is "landlockedness." Landlocked countries suffer from high costs of economic transactions and thus have difficulties in accessing the global markets and consequently experienced slower economic growth in comparison to those having access to seas (Sachs and Warner 1997). The impact of geographical isolation may be a potential factor in accelerating poverty in landlocked countries.

There is much theoretical consensus that rapid population growth aggravates poverty. While the spell of an inflated population over a resources-lacking economy is quite well-known, previous studies of poverty in cross-national settings did not take these demographic factors sufficiently seriously. Rapid population growth necessarily redistributes the population structure in favour of the young and increases the size of families in the poor stratum, thus increasing poverty (Adams 1994; Deaton and Paxon 1997). This Malthusian process is more likely to affect DCs, where a combination of poor agricultural economies, limited human capital, and rudimentary technology mean that the increment of population does not translate to increasing labour forces and consequently upgrading income levels (Becker, Glaeser, and Murphy 1999). This study proposes considering this critical element as a competing independent variable for assessing poverty among DCs.

C. Democracy, Military Spending, and War

Three main lines of theorization suggest that democracy reduces poverty. First, democracy operates as an inclusive regime that allows the lower class to voice their interests to a responsive government (Lipset 1981). Second, Przeworski, Alvarez, Cheibub, and Limongi (2000) maintain that it is struggle among elites for power via elections that explains the policy outcomes favourable to the masses in democracies compared to autocracies. Third, Olson (2000) forcefully asserts that the intimate relationship between majority rule and equality derives out of a market that operates with less political interference. Given that individual rights are asserted in a democracy in the first place, the state is prevented from capturing returns in the markets and is *less* likely to dissipate public resources to certain interest groups at the expense of the relatively disadvantaged (Olson 2000). Despite these different emphases of fundamental mechanisms of a democracy ("voices and responsiveness," "elite contention," and "market-enhancing"), the prevailing theorizations suggest that democracies should outperform autocracies in reducing the proportion of the population living in extreme scarcity.

Several researches have presented cross-national evidence supporting the democracy–equality hypothesis. Muller (1988) indicated that both the length of democratic experience and democratic regime stability are strong predictors of income equality. Bollen and Jackman (1989) found that level of democracy accounted for more variation of cross-country inequality than the two democratic variables that Muller used. Przeworski et al. (2000) demonstrated that during 1950–1990, per capita income grew faster and income distribution was more equal in democracies compared with autocracies. However, Przeworski et al. (2000, 271) have commented on the limited influence of democracy in reducing poverty, as they found that economic scarcity exerted a greater influence than political regimes in determining the life chances of individuals and that the lower population growth rates confounded the favourable growth outcomes that democracy should bring. However, most studies have focused on overall income distribution rather than on the marginalized poor population across DCs.

The military's significant influence in the governments of DCs has been a central concern in relevant cross-national studies that focused on the basic needs provision in DCs. Many previous researchers theorized that higher military spending demonstrates the imposition of an excessive fiscal burden on the government by the military, causing the failure of the redistribution of public goods toward the popular sector (Dixon and Moon 1987; Moon and Dixon 1985). These studies reported a notable harmful effect of the military spending on the basic needs achievement. Other studies also found military spending to be negatively correlated with the human development index (Brauer 1996) as well as with an index of human suffering (Hess 1989). We decide to consider the military spending variable, hypothesizing that a government allocates more fiscal resources on the military sector (for instance, the salaries of the military personnel, arms production and purchase, and so on), is less likely to attend to the needs of the poor, and consequently generates a higher proportion of the population in poverty.

Wars in developing countries have been a major factor of human disasters. Wars during the past decades continued to cause social disruption and political instability, undermine economic production, spread hunger and disease in DCs, and greatly attenuate the ability of governments to handle human emergencies (Nafziger and Auvinen 2002; Collier et al. 2003). Previous studies have focused on the plausible causes of war-generated human deaths, refugees, and infant mortalities (Auvinen and Nafziger 1999). We expect in the cross-country research setting that war should operate as a strong predictor of poverty as its devastating outcomes tend to affect the poor more than the non-poor.

D. Social Protection Policy and Human Capital

Another line of reasoning regarding the impact of the state involves considering its effort of offering social protection. Predatory extraction of social resources by the governing elites in numerous DCs notwithstanding (Evans 1992), some states have managed to alleviate poverty by allocating public resources to meet the basic needs of the population (Brett 1998; Mehrotra and Jolly 1998). These policy actions are justified via a rights-based philosophy in which the government prioritizes social justice for those who are worse off. At least, the well-being of the poor should be included in the equation as an independent determinant of policy choices (Rodrik 2000). The critique of neoliberal structural adjustment programs by Sen (1998) highlighted the devastating influence of a narrow-minded “anti-deficit radicalism” that ruled out public provisions of health care, education, and social security, which have benefited the poor more than the rich. Elson and Cagatay (2000) extended the notions developed by Sen to propose an entitlements approach for correcting the potential deflationary and commodification bias embedded in reform policies that had operated against the poor

in DCs. To summarize, social security policy can be considered a key indicator for evaluating the efforts of the state to provide social safety and alleviate absolute poverty.

One main reason for the poor remaining poor is that they lack sufficient means to invest in their own human capital to achieve future market returns. Gary Becker summarizes the significant role of education in economic development by identifying the reciprocal influences between human capital and increased income: "The expansion of scientific and technical knowledge raises the productivity of labor and other inputs in production. The systematic application of scientific knowledge to production of goods and services increases the value of education, technical schooling, and on-the-job training as the growth of knowledge becomes embodied in people" (Becker 1992, 8). Becker and others (Becker 1992; Oshima 1988) maintain that education beyond the elementary level is required given the highly competitive global economy. Ramcharan (2004) contends that human capital accumulation in different levels constitutes specific but complementary functions in the production processes, justifying a policy package including both primary- and higher-level human capital upgrading. The cross-country study of O'Neill (1995) indicated that the returns to those with higher education explained the divergence in income inequality between developed and underdeveloped countries. Case-based studies in poorer African rural economies also indicate that improving human capital beyond the primary level was important for increasing access to remunerative non-farm employment and thus enlarging the pool of familial income (Mukherjee and Benson 2003; Sahn and Younger 2004). Generally, besides strong support for the importance of schooling in escaping poverty for the population of DCs, the recent literature has especially highlighted the significance of obtaining secondary education.

II. THE HYPOTHESES

To summarize, this study tests competing theories of poverty, as displayed in the following four groups of hypotheses. FDI in Hypothesis 1-2 is stated to generate positive effects to focus the analysis, although the theoretical debate regarding its influence is ambiguous. While several studies have individually proposed certain poverty-reducing factors, the possibility that these factors have spurious relationships with poverty cannot be overlooked. For example, many democracies have registered high levels of development but slower population growth (Przeworski et al. 2000), and thus this regime factor may not influence poverty after controlling for other economic variables. War, social spending, and educational participation may also confound each other. Previous studies have attempted to test some of these hypotheses but have often found evasive answers due to the testing methods employed. A multivariate analysis is required to sort out the individual contributions of each argument to explain variation of poverty among DCs.

Hypothesis 1-1: High personal income level reduces poverty.

Hypothesis 1-2: Economic growth and economic openness (trade and foreign direct investment inflow) reduce poverty.

Hypothesis 2-1: Tropical weather and landlockedness increase poverty.

Hypothesis 2-1: Population growth increases poverty.

Hypothesis 3-1: Democracy decreases poverty.

Hypothesis 3-2: Military burden and war increase poverty.

Hypothesis 4-1: Social protection policy reduces poverty.

Hypothesis 4-2: Human capital enhancement at the primary and secondary levels reduces poverty.

III. METHOD AND MEASUREMENT

A. Data

This study uses cross-national data to test the proposed hypotheses. The study sample comprises 97 countries¹ for which the World Bank (2004a) provided estimates of the population living under US\$ 1 and \$2 (more discussion follows about these poverty criteria). Not all middle- or low-income countries were listed. Certain countries that suffer from severe poverty, such as Chad, Congo, and Guinea-Bissau, were excluded due to lack of information. The average gross national income per capita of the 97 sample countries during 1991–2000 was US\$ 3,820 (PPP), while the remaining non-OECD countries together obtained a lower average of around US\$ 2,330 (excluding oil producing and small island economies). The present research design is prone to problems of sampling selection that produce estimation bias. However, this concern appears unwarranted since the list of countries includes typical poverty-stricken nations such as India, Bangladesh, Cambodia, Uganda, and Bolivia. Furthermore, the geographical distribution is balanced, with sub-Saharan Africa comprising 28%, Eastern Europe and Central Asia 27%, Latin America and the Caribbean 22%, and East Asia and the Pacific 9%. Finally, the analysed countries constituted as much as 92.6% of the population outside the OECD countries. Thus, in general, the sample examined in this study should not compromise the issue of representativeness. But estimation of war effect indeed encounters a selection problem whose influence on estimation will be discussed in the statistical analysis section.

B. Measurement

1. *Dependent Variables*

The World Bank (2004a) reported the proportions of the population of a country living on below US\$ 1 and \$ 2 a day (at 1993 PPP price) respectively for cross-national comparison.² The World Bank (2004a) also provides a *poverty gap* index that illustrates the average distance in cents of the poor living below US\$ 1 or \$ 2 a day from the rest of the population. The latter measure reflects the “depth of poverty,” while the former “head count” measure demonstrates the “incidence of poverty” within a country. This study uses these indicators as the dependent variables. These indicators are mostly collected from a single year during the period of 1997–2002. Several notably methodological critiques of these poverty measures exist. First, the international standard measures do not reflect local variation in prices and consumption. However, Ravallion, Datt, and van de Walle (1991) indicated that the measurement errors caused by deviation from local measures are small and randomly

1. The analysed countries were: Albania, Algeria, Argentina, Armenia, Azerbaijan, Bangladesh, Belarus, Bolivia, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Central African Republic, Chile, China, Colombia, Costa Rica, Côte d'Ivoire, Croatia, Czech Republic, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Ethiopia, Gambia, Georgia, Ghana, Guatemala, Guyana, Honduras, Hungary, India, Indonesia, Iran, Jamaica, Jordan, Kazakhstan, Kenya, Kyrgyz, Laos, Latvia, Lesotho, Lithuania, Macedonia, Madagascar, Malawi, Malaysia, Mali, Mauritania, Mexico, Moldova, Mongolia, Morocco, Mozambique, Namibia, Nepal, Nicaragua, Niger, Nigeria, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Russia, Rwanda, Senegal, Sierra Leone, Slovakia, Slovenia, South Africa, South Korea, Sri Lanka, Tajikistan, Tanzania, Thailand, Trinidad and Tobago, Tunisia, Turkey, Turkmenistan, Uganda, Ukraine, Uruguay, Uzbekistan, Venezuela, Vietnam, Yemen, Zambia, and Zimbabwe. Portugal and South Korea both are members of the OECD but have relatively lower GNP per capita levels within this organization. We included them in the analysis as “upper middle-income” countries.

2. Unsurprisingly, the two indicators of the incidence of poverty are highly correlated, with a correlation coefficient of .88, because the populations living on under \$1 per day in a country are incorporated in calculating the population living on under \$2 per day. Table 1.A provides bivariate correlation coefficients of the poverty measures with the Gini index and the income share of the fourth 20% and the lowest 20% among the sample countries.

distributed. Second, the World Bank data are calculated from household surveys, and may be influenced by errors arising from sample design, different response rates, and inaccurate reporting of income and expenditure. Karshenas (2003) has shown that in higher income countries the household survey results tend to systematically underestimate average consumption.³ Third, the US\$ 1 a day line appears too strict, while the \$ 2 a day line, which the World Bank considers (2004b, 2) to be “closer to a practical minimum,” especially in middle-income countries, can be conservative. Last but not the least, there is concern that the World Bank’s money-metric approach is not equivalent to measure of deprivation of varied kinds (nutrition, health, and capacity enhancement) such that a global trend of reduced poverty can be too easily evidenced (Reddy and Pogge 2005). Despite these shortcomings, the World Bank poverty data provide a reasonable measure of “absolute consumption needs” on a consistent basis across countries (Ravallion 2005b). Developing improved alternatives of measuring various dimensions of poverty is an issue for future research but lies beyond the scope of this study.

2. Independent Variables

The independent variables used in this study are lagged to firmly capture their influence on the cross-country variation of poverty. Unless otherwise indicated, the lagged variables were calculated using the average scores during 1990–1997, to even out short-term fluctuations.

(1) Growth and economic openness. Economic growth is measured by annual GDP growth rates. Foreign trade as a percentage of GDP and the yearly inflow of foreign direct investment (World Bank 2004c) are computed to represent proxies of economic openness. Some earlier studies demonstrated that these two openness variables were negatively correlated with social inequality (Reuveny and Li 2003).

(2) Geographical and demographical variables. Tropics is measured by the approximate fraction of a country’s land area that is subject to tropical climate (Sachs and Warner 1997; Englebert 2000). To indicate landlockedness, a dummy variable is assigned to a country without access to the sea. The average of annual population growth rate was calculated for the 1990–1997 period (World Bank 2004c) and is expected to be positively associated with the proposed measures of poverty. The literature also suggests that a large population size might create a potential obstacle to the spread of the fruits of economic growth (Mehmet and Tahiloglu 2002). The average population of individual countries is used to test the “microstate” effect.

(3) Democracy, military spending, and war. This study uses the index of liberal democracy developed by the widely used Polity Data Project as a measure (Marshall and Jaggers 2002). This index focuses on the institutionalized authority traits of a country, and includes three indicators: (1) the presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders; (2) the existence of institutionalized constraints on the exercise of power by the executive; and (3) the guarantee of civil liberties to all citizens in their daily lives and in acts of political participation. The average score during 1980–1997 of this widely used index of democracy was computed to obtain a reliable longer-term measure. The military spending as a percentage of the central government spending during 1990–1997 (World Bank

3. Karshenas (2003) recently offered a corrected poverty estimate on the basis of national accounts information. However, this data set contains a much smaller sample of 57 countries. Some lower-income countries exhibited surprisingly low poverty rates. For instance, Thailand had just 5.8% of its population living on below \$1 a day, while the World Bank data indicated a figure of 32.5%. To maintain a cautious stance regarding such disagreements and avoid sampling selection problems, this study decided not to use the data of Karshenas for model estimation.

2004c) was calculated as a measure of the military burden. To assess the war's potential impact on poverty, the accumulated years a country experienced a war is computed. We use Gleditsch et al. (2004) for the war measure. In this study, war — whether civil or interstate — is defined by armed conflicts that result in at least 1,000 deaths in a certain year. In order to assess the impact of those wars that were prolonged but with fewer deaths, armed conflicts that had fewer than 1,000 battle-related deaths in a certain year but accumulated a total of 1,000 deaths during the conflict course were also coded as war. To capture the war's lasting effect we decided to compute the war years during the 1970–1997.

(4) Social spending and schooling. The government provision of social protection is measured by the central government's social securities and welfare spending. The data on government social spending were obtained from the International Monetary Fund (2000). Both primary and secondary school enrollments were measured using gross rates rather than net rates, enabling the assessment of the educational opportunities for the general population, but particularly for the youth regardless of their ages. The two enrollment rates might also indicate the capacity of schools in individual countries, which should not influence the causal inference among variables since a correlation is assumed to exist between larger capacities and schooling opportunities. The two enrollment variables were obtained from the World Bank (2004c).

C. Estimation Methods

Information on liberal democracy and social spending is unavailable for certain countries.⁴ The expectation–maximization (E–M) method was used to impute the missing data in the sample, as suggested by statistical experts (Allison 2002). The E–M imputation operates as a general method for obtaining maximum-likelihood estimates of parameters from incomplete data to achieve efficient estimation of mean, variances, and covariances (or correlations) using all of the cases in the data set, including those that are partially missing. The E–M method is capable of modelling systematic variation and generates approximately unbiased and efficient estimates than the conventional means–substitution or pair–wise deletion, which simply ignores countries for which data are lacking.

Cross-national analysis might also suffer from estimation bias owing to some idiosyncratic country cases. This study checked the residuals from the OLS estimation and found that they behaved well. The robust regression technique (the least absolute error method) was applied to suppress the influences of a few outliers, but did not produce different estimation outcomes from that of the OLS estimation.

However, several of these predictors are closely correlated and multicollinearity may have distorted the regression coefficients from the conventional OLS estimation by generating a larger variance for estimation, usually giving wrong signs for the predictors, and less accurate hypothesis tests. A conventional alternative treatment is to develop a composite index of selected independents through data reduction techniques such as the principal component method that generates latent factors that are difficult to interpret. Another alternative is to simply drop some of the highly correlated independents to “destroy” the relation bonds among them. But these practices are unsatisfactory as our purpose of study is to observe the individual effect of the estimated predictors. To avoid

4. Information on liberal democracy was lacking for 20% of the sample (mostly “new” countries in Eastern Europe), and social spending statistics were unavailable for 43% of the sample. The plausible estimation problems and the validity of our imputation method are further investigated in footnote 8.

incorrectly identifying certain predictors as insignificant from the OLS method, this study decided to use the ridge regression for obtaining more reasonable estimation (Hoerl and Kennard 2000).⁵

IV. ANALYSIS AND RESULTS

Table 1 illustrates the estimation results for the US\$ 1 and \$ 2 poverty incidences among DCs, respectively. Instead of adding variables willy-nilly into the equations, as often practised in cross-national research, we entered all independent factors into the equations but indicated four distinctive sets of potential causal factors that were tested against the incidence of poverty. This study also reports in the table the adjusted R^2 of the baseline models, in which the incidences of poverty are regressed on the four economic factors.

Table 1. Ridge Regression Estimates of the Population living below US\$ 1 and \$ 2 a Day in DCs

	Population below US\$ 1		Population below US\$ 2	
	b	s.e.	b	s.e.
ECONOMIC FACTORS				
GNP pc (logged)	-3.87 ***	.75	-8.39 ***	1.01
GDP growth rate	-.10	.16	-.34	.22
Trade	-.03	.02	-.04	.03
FDI inflow	.01	.29	-.39	.39
GEO-DEMOGRAPHICAL FACTORS				
Sub-Saharan Africa effect dummy	4.17 ***	.73	3.93 ***	1.01
South Asia effect dummy	3.83 **	1.49	8.18 ***	1.59
Tropical climate	3.95 *	1.49	6.64 **	2.02
Landlock dummy	5.28 **	1.65	7.99 ***	2.25
Population size logged	-.25	.52	1.16	.70
Population growth	1.50 *	.60	2.45 **	.82
REGIME AND WAR				
Democracy index	.13	.15	-.07	.20
Military spending	-.17	.13	-.26	.17
War (1970–97)	-.06	.11	.25	.15
SOCIAL POLICY AND HUMAN CAPITAL				
Social spending	-.06	.05	-.16 *	.07
Primary school enrollment	-.07	.04	-.06	.05
Secondary school enrollment	-.08 ***	.02	-.07 *	.03
Constant	66.30	10.90	102.71	14.80
Adj. R^2	.65 ***		.73 ***	
Adj. R^2 of baseline model	.49 ***		.64 ***	

* $p < .05$; ** $p < .01$; *** $p < .001$

5. Statistical experts suggest using the variance-inflation factor to detect multicollinearity (Fox 1991, 11). For instance, GNP per capita, social spending, and secondary school enrollment registered over 5.0 on this index, indicating the need for a correction. In the following statistical tables (see Tables 1 to 3), we use ridge factor of .5 for correction; that is, we estimate $\beta^* = [X'X + .5I]^{-1}X'Y$. This practice does not imply "mechanical" utilization of a "fixed" ridge estimation, rather a careful evaluation of various ridge estimates conducted before presenting the outcomes herein. That is, estimates largely stabilized despite the introduction of larger ridge factors. The ridge estimation was supported by the SHAZAM econometrics program (White 1999).

Equation 1 of Table 1 indicates that income level is highly correlated with the proportion of the population living on less than US\$ 1 a day in DCs. This fact should not be surprising: as a society advanced in terms of mean income, the population living in absolute poverty decreased significantly. Interestingly, the regression outcome shows no significant impacts of economic growth rates, indicating that a country's level of poverty is not closely tied to its velocity of economic accumulation during the analysed period. This study extended the years for which GDP growth rates were targeted back to 1980, and this *longue-durée* variable (during 1980–1997) similarly was found to be statistically insignificant. Two economic openness proxies also failed to generate significant influences on the incidence of poverty in terms of US\$ 1 a day. Two additional tests of the economic openness hypothesis were performed. First, the *difference scores* of trade and FDI inflow might be more suitable reflections of the magnitude of increasing openness during the analysed period.⁶ This study examined this possibility but obtained no significant results from the analyses (not shown here). Second, Ravallion (2001) suggests an evaluation of the potential systematic influence on poverty of the initial economic conditions in individual countries. Ravallion speculates that for countries with a lower development level, economic openness might increase the demand for relatively skilled labour and thus reduce the population living below the poverty line (Ravallion 2001, 1811). However, this study found no such differential effect pattern through introducing an interaction term of GNP per capita with trade and with FDI, respectively. Of the 50% of the variance explained by the baseline model, mean income contributes most, as the other three factors fail to reach statistical significance.

The second set of factors are geographical and demographical. As sub-Saharan Africa (SSA) and South Asia particularly suffered from poverty due to some unobserved influences not considered in this study (see Table A.2), such as infrastructure inefficiency and weak institutional governance, the “effect dummies” of two regions were introduced to indicate their unusual disadvantages, when compared with the average level of DCs.⁷ As is expected, tropics, landlockedness, and population growth displayed strong impacts on aggravating poverty, contrasting with the negligible influence of population size, which the microstate perspective has suggested as a causal factor. Poverty thus tended to occur in countries trapped in geographical disadvantage and unchecked population increase.

The political factors we analysed included democracy, military spending, and war. The three variables all failed to display statistical significance. Earlier studies focusing on the relationship between democracy and income equality also documented that democracy generated limited effects in alleviating poverty (Bollen and Jackman 1985; Przeworski et al. 2000). The combination of these research outcomes represents a conclusion devaluing the plausible influences of democracy on the very bottom of social stratification in DCs. Military spending is not related to the poverty incidence in terms of living below US\$ 1, a result sceptical of the military burden argument. The insignificant influence of war calls for further exploration. The limited war impact might be due to too long a lagged period as we had operated it. We replaced it with a war year variable focusing on recent armed conflicts experienced during 1980 to 1997. However, the result of this manipulation remains insignificant in statistical test. More plausibly, the insignificance stems from the sample selection problem: several poor countries engaged in prolonged wars during the analysed years, such as Angola, Chad,

6. For the trade and FDI variables, respectively, the difference score from the averages of two periods, namely, 1989–1991 and 1996–1998, was calculated to obtain stable measures.

7. The effect dummy technique operates to compare the designated groups with the *mean* of the sample, rather than with a certain reference group as conventional dummy variables attempt to. See Pedhazur (1982) for detailed explication. Also see Table A.2 for regional differences in four poverty measures.

and Sudan in SSA, were not included in the sample due to lack of information on poverty, and thus might have remarkably attenuated the regression estimation of the war variable.

Government social spending and both primary and secondary school enrollments are negatively correlated with the incidence of poverty as defined by the below US\$ 1 per day threshold.⁸ But only the secondary school enrollment reached significance. In fact, primary school enrollment bordered on the significance level ($p=.051$). That the primary school factor carries a smaller coefficient might be because the average rate for primary school enrollments had approached a ceiling level at 93.8% in the sample countries. At any rate, strengthening human capital at both educational levels stands out as one powerful predictor of the incidence of absolute poverty. Non-economic factors as a whole increased 16% of the explained variance in the equation.

While the US\$ 1 threshold in Table 1 focuses on extreme poverty, it tends to underestimate the poor population in middle-income countries. Column 3 of Table 1 investigated the poverty rate using the criterion of US\$ 2, which is more sensitive to increased consumption levels for the middle-income DCs, a group defined by approaching about US\$ 2,000 in terms of gross national income per capita, according to the World Bank (2004a, 16). On the basis of this more "generous" standard that allows a greater proportion of the population to be counted as poor, the regression model performed well to account for a large amount of variance (73%). All the predictors that reach the significance level at US\$ 1 a day threshold maintain their momentum in influencing poverty as defined by below US\$ 2 a day threshold. Government social spending also reaches significance level, and its negative effect on poverty is exactly what our hypothesis had expected. However, economic openness, population size, and three political factors did not improve their predicting power.

Besides examining the divergences in the proportion of the poor across countries, this study also mobilized two measures of poverty gap that estimated the average shortfall of the poor at the designated consumption levels of US\$ 1 and US\$ 2 a day. Table 2 displays the regression outcomes for the two dependents. GNP per capita, SSA effect dummy, tropics, landlockedness, population growth, and two school enrollments generated remarkable expected effects on the poverty gap in terms of below US\$ 1 a day, while three political factors and social spending failed to demonstrate notable influence (columns 1 and 2 of Table 2).

The estimation results for the gap of US\$ 2 listed in columns 3 and 4 of Table 2 provide similarly favourable support as was found in the difference of the incidence equation, while the coefficient of social spending borders on the significance level ($p=.09$). Two school enrollment variables significantly reduce the poverty gap.

The limited influence of social spending on reducing poverty is surprising as the literature suggests that the government provision of safety nets should generate redistributive outcomes that favour the poor in DCs (Adams 1998; van Ginneken 2003). Two additional checks were performed for this possibility. First, in numerous DCs, the social protection effect might have been markedly reduced owing to welfare provisions, cash transfers, or foreign aids not being delivered as intended, but instead being diverted by corrupt governing elites or distributed within existing narrow patronage relationships. The powerless poor thus may have been excluded (Adams 1998; Brett 1998; Muhumuza 2002). Thus it can be argued that the intended consequences of social spending largely depend on a regime's accountability. This argument suggests adding an interaction term of democ-

8. Disaggregated estimates of government expenditure in DCs are difficult to collect. Given the large sample loss of the social spending variable (43.3%), the reliability of the outcomes obtained from the imputed data requires further checking. This study conducted similar modelling throughout the regression tables using the unimputed social spending data ($n=55$) and arrived at the same conclusion. This practice was repeated in the following three tables, which also received similar outcomes, with a trivial difference in the regression coefficients less than .02.

Table 2. Ridge Regression Estimates of the Poverty Gap at US\$ 1 and \$ 2 a Day in DCs

	Poverty Gap at US\$ 1		Poverty Gap at US\$ 2	
	b	s.e.	b	s.e.
ECONOMIC FACTORS				
GNP pc (logged)	-1.35 **	.46	-3.95 ***	.61
GDP growth rate	-.09	.10	-.17	.13
Trade	-.01	.01	-.03	.02
FDI inflow	.13	.17	-.02	.24
GEO-DEMOGRAPHICAL FACTORS				
Sub-Saharan Africa effect dummy	2.04 ***	.45	3.20 ***	.61
South Asia effect dummy	.98	.72	3.87 ***	.96
Tropical climate	1.82 *	.91	3.70 **	1.22
Landlock dummy	2.06 *	1.01	4.59 **	1.36
Population logged	-.32	.32	.18	.42
Population growth	.71 *	.37	1.37 **	.50
REGIME AND WAR				
Democracy	.10	.09	.08	.12
Military spending	-.09	.08	-.17	.10
War years (1970–97)	-.09	.07	.02	.09
SOCIAL POLICY AND HUMAN CAPITAL				
Social spending	-.03	.03	-.07	.04
Primary school enrollment	-.05 *	.02	-.06 *	.03
Secondary school enrollment	-.04 **	.01	-.06 **	.02
Constant	31.10	6.70	58.72	9.16
Pseudo R ²	.48 ***		.69 ***	
Adj. R ² of baseline model	.32 ***		.56 ***	

* p < .05; ** p < .01; *** p < .001

racy with social spending to capture their specific effects on poverty. However, no supporting evidence was identified for this interaction term throughout the four poverty models (the results are not shown to save space).

The second probing to determine the influence of social spending is to assess the extent to which it reduces the numbers of the poor. Restated, in countries with relatively “generous” social spending, such transfers from the government should help reduce some, if not all, of the population suffering from material scarcity. An empirical question is: Which segment of the population can benefit from social spending? The present theorization is that given the generally limited social protection in DCs, its poverty alleviation effect might decrease the proportion of the population situated *right above* the very bottom, while those trapped in the bottom generally comprise a large marginalized population whose poverty is attributed to various structural causes as analysed, and is beyond the capacity of the limited social safety nets offered by the governments in DCs. In short, increased social spending tends to benefit the “upper strata” among the poor population, and does little to help the extremely poor. Column 1 in Table 3 tests this sub-hypothesis by modelling the differences between two poverty incidences. The outcome indicates that social spending significantly suppressed the size of the population living on more than US\$ 1 but less than \$ 2 a day, supporting the “limited effect” idea. Additionally, we also find that war significantly increased this difference, revealing further distressing of the poorest population in wars. Column 3 of this table evaluates the influence of social spending in narrowing the deviation of the income of this bracket of population from that of the society as a

whole. The result also indicates that social spending reduces the difference between the two poverty gaps, though the effect here is not as strong ($p=.11$) as in predicting the decrease of the incidences of poverty defined by a less strict criterion.

Table 3. Ridge Regression Estimates of the Differences of the Incidence and the Gap of Poverty between US\$ 2 and \$ 1 a Day in DCs

	Difference in incidence		Difference in gap	
	b	s.e.	b	s.e.
ECONOMIC FACTORS				
GNP pc (logged)	-4.52 ***	.75	-2.60 ***	.34
GDP growth rate	-.24	.16	-.07	.07
Trade	-.01	.02	-.01	.01
FDI inflow	-.48	.29	-.15	.13
GEO-DEMOGRAPHICAL FACTORS				
Sub-Saharan Africa effect dummy	.24	.75	1.16 **	.34
South Asia effect dummy	4.35 ***	1.18	2.89 ***	.54
Tropical climate	2.69	1.49	1.88 **	.68
Landlock dummy	2.71	1.66	2.52 **	.76
Population logged	1.41 **	.52	.49 *	.24
Population growth	.95	.61	.66 *	.28
REGIME AND WAR				
Democracy	-.21	.15	-.02	.07
Military spending	-.09	.13	-.09	.06
War (1970–97)	.31 **	.11	.11 *	.05
SOCIAL POLICY AND HUMAN CAPITAL				
Social spending	-.10 *	.05	-.037	.02
Primary school enrollment	-.004	.036	-.01	.02
Secondary school enrollment	.01	.02	-.02 *	.01
Constant	36.41	10.96	27.62	4.99
Pseudo adj. R^2	.47 ***		.69 ***	
Adj. R^2 of baseline model	.41 ***		.59 ***	

* $p < .05$; ** $p < .01$; *** $p < .001$

CONCLUSION

This cross-national study of poverty rates and poverty gaps in DCs has reached several substantial conclusions. First, besides the income level's significant impact, tropics, landlockedness, population growth, and schooling opportunities (particularly the secondary school enrollment) stand out as key determinants of poverty among DCs. Addition of these non-economic factors increased the explained variance of the regression models by approximately 6% to 15%, a remarkable raise given the strong predicting power of mean income. This result demonstrates that non-economic factors as this study examined should be emphasized in order to more fully understand the complicated causal processes of poverty in DCs.

Second, in contrast to the above-mentioned influential predictors, social spending demonstrated a relatively weak effect on poverty alleviation. In numerous DCs, government social spending has been embedded in a patron–client relationship that excludes the poorest among the poor. The regime characteristics (elite conception of distribution, governance structure, etc.) in which social welfare policies were operated require careful specification to effectively assess “state-mediated”

redistribution programs' influences on the poor even if the policy outcomes are only modest.

Third, no evidence was found that trade and FDI benefit the poor, as the neoliberal school had expected. It is likely that the poor are over-presented in the non-tradable sectors and that they are not sufficiently sensitive to these market-oriented activities. Three political factors, namely liberal democracy, military spending, and war, similarly generate little influence in poverty despite theoretical contentions for these factors. Specifically, democracy and military spending failed to produce statistically significant impact throughout the regression equations in this study (although war reaches significance in modelling differences in poverty incidences and gaps). That liberal democracy fails to deliver sufficient material consumption to the poor might be due to the fundamental characteristic of the democratic regime: democracy is not a political system that aims to level societal inequality via radical methods of redistributive policies. As Bollen and Jackman (1985, 451) assert, democracy in the capitalist system has "more to do with establishing 'equality of opportunities' than with equality of 'results'." With regard to the impact of the war, we speculate that the insignificant outcome may stem from potential sample selection disfavoring the war variable. The problem of data availability for countries in war deserves careful treatment in future research.

On the basis of the empirical findings, the policy implications from this study are that population growth rate and human capital improvement should be posited as part of the first tier of public policy to fight poverty of DCs. Slower population growth and quality human capital are policies on which agreements have emerged among the neoliberals (World Bank 2002) and their critics (Elson and Cagatay 2000; Gauri 2004; Sen 1998) and among the results from different research methods, namely, among the cross-country researches (Barro 2000; Dollar and Kraay 2002; O'Neill 1995; Przeworski et al. 2000) and case studies (Brett 1998; Lustig 2001). Although not a sufficient condition to poverty alleviation, democracy should be considered a necessary institutional basis such that social safety nets that target the bottom of social stratification can be effectively spread. On the other hand, economic openness as it has been practised in contemporary DCs generally has a minimal positive effect on the life chances of the very poor. Thus this study does not endorse economic openness as a primary policy tool for poverty alleviation.

That tropical weather and landlockedness have made the poor poorer is a disturbing fact evidenced in this study. As many sub-Saharan countries suffer from such geographical distresses, poverty reduction herein requires more efforts than establishing a "market economy" as the neoliberals had proposed so keenly. An integrated development project is needed that solves problems in disease control, malnutrition, rural isolation, a still-booming population, and a deep-seated dependence of agricultural production on the global economy — this appears critical for breaking the bond of poverty (Sachs 2005; McMichael 2005). The finding of this study has identified the importance of this geographical factor for policy reflection if not for policy prescription.

REFERENCES

- Adams, J. (1998) "Review Article: Structural Adjustment, Safety Nets, and Destitution," *Economic Development and Cultural Change* 46, 403–420.
- . (1994) "Continuing Poverty in the Global Economy: the Impact of Population Growth," in T.R. DeGegori and H.R. Rodgers, Jr. (eds.) *Poverty Policy in Developing Countries*, Greenwich, CT: Jai Press, 173–196.
- Allison, P.D. (2002) *Missing Data*, Thousand Oaks, CA: Sage.
- Auvinen, J. and E.W. Nafziger (1999) "The Sources of Humanitarian Emergencies," *Journal of Conflict Resolution* 43, 267–290.
- Barro, R.J. (2000) "Inequality and Growth in a Panel of Countries," *Journal of Economic Growth* 5, 5–32.

- Becker, G.S. (1992) "The Adam Smith Address: Education, the Labor Force Quality and the Economy," *Business Economics* 27, 7–12.
- Becker, G.S., E.L. Glaeser, and K.M. Murphy (1999) "Population and Economic Growth," *American Economic Review* 89, 145–9.
- Bloom, D.E. and J.D. Sachs (1998) "Geography, Demography, and Economic Growth in Africa," *Brookings Papers on Economic Activity* 2, 207–95.
- Bollen, K.A. and R.W. Jackman (1989) "Democracy, Stability, and Dichotomies," *American Sociological Review* 54, 612–21.
- . (1985) "Political Democracy and the Size Distribution of Income," *American Sociological Review* 50, 438–57.
- Bornschier, V. and C. Chase-Dunn (1985) *Transnational Corporations and Underdevelopment*, New York: Praeger.
- Brauer, J. (1996) "Military Expenditures and Human Development Measures," *Public Budgeting and Financial Management* 8, 106–124.
- Brett, E.A. (1998) "Responding to Poverty in Uganda: Structures, Policies, and Prospects," *Journal of International Affairs* 52, 313–37.
- Collier, P. and J.W. Gunning (1999) "Explaining African Economic Performance," *Journal of Economic Literature* 37, 64–111.
- Collier, P., L. Elliot, H. Hegre, A. Hoeffler, M. Reynal-Querol, and N. Sambanis (2003) *Breaking the Conflict Trap: Civil War and Development Policy*, Oxford: Oxford University Press.
- Deaton, A.S. and C.H. Paxson (1997) "The Effect of Economic and Population Growth on the National Saving and Inequality," *Demography* 34, 97–114.
- Dixon, W. J. and B.E. Moon (1987) "The Military Burden and Basic Human Needs," *Journal of Conflict Resolution* 30, 660–84.
- Dixon, W.J. and T. Boswell (1996) "Dependency, Disarticulation, and Denominator Effects: Another Look at Foreign Capital Penetration," *American Journal of Sociology* 102, 543–62.
- Dollar, D. and A. Kraay (2002) "Growth Is Good for the Poor," *Journal of Economic Growth* 7, 195–225.
- Elson, D. and N. Kagatay (2000) "The Social Contents of Macroeconomic Policies," *World Development* 28, 1347–64.
- Englebert, P. (2000) "Solving the Mystery of the African Dummy," *World Development* 28, 1821–35.
- Evans, P. (1992) "The State as Problem and Solution: Predation, Embedded Autonomy, and Structural Change," in S. Haggard and R.R. Kaufman (eds.) *Politics of Economic Adjustment: International Constraints, Distributive Conflicts, and the State*, Princeton, NJ: Princeton University Press, 139–81.
- Firebaugh, G. (1996) "Does Foreign Capital Harm Poor Nations? New Estimates Based on Dixon and Boswell's Measures of Capital Penetration," *American Journal of Sociology* 102, 563–75.
- Fox, J. (1991) *Regression Diagnostics*, Thousand Oaks, CA: Sage.
- Gauri, V. (2004) "Social Rights and Economics: Claims to Health Care and Education in Developing Countries," *World Development* 32, 465–77.
- Gleditsch, N.P., P. Wallensteen, M. Eriksson, M. Sollenberg, and H. Strand (2004) *Armed Conflicts 1946–2001*, Oslo: The Department of Peace and Conflict Research at Uppsala University and the International Peace Research Institute.
- Hess, P. (1989) "The Military Burden, Economic Growth, and the Human Suffering Index: Evidence from the LDCs," *Cambridge Journal of Economics* 13, 497–515.
- Hoerl, A.E. and R.W. Kennard (2000) "Ridge Regression: Biased Estimation for Nonorthogonal Problem," *Technometrics* 42, 80–6.
- International Monetary Fund (2000) *Government Finance Statistics Yearbook*, Washington, DC: IMF.
- Karshenas, M. (2003) "Global Poverty: National Accounts Based versus Survey Based Estimates," *Development and Change* 34, 683–712.
- Kentor, J. (1998) "The Long-term Effects of Foreign Capital Dependence on Economic Growth, 1940–1990," *American Journal of Sociology* 103, 1024–46.

- Kraay, A. (2006) "When Is Growth Pro-Poor? Evidence from a Panel of Countries," *Journal of Development Economics* 80, 198–227.
- Krongkawe, M. and N. Kakwani (2003) "The Growth-equity Trade-off in Modern Economic Development: The Case of Thailand," *Journal of Asian Economics* 14, 735–57.
- Lipset, S.M. (1981) *Political Man: the Social Bases of Politics*, 2nd edition, Baltimore, MD: Johns Hopkins University.
- Lustig, N. (2001) "Life Is Not Easy: Mexico's Quest for Growth and Stability," *Journal of Economic Perspectives* 15, 85–106.
- Marshall, M.G. and K. Jagers (2002) *Polity IV Project*, College Park, MD: Center for International Development and Conflict Management, University of Maryland, available on-line at <<http://www.cidcm.umd.edu/inscr/polity/#data>> accessed 23 November 2004.
- McMichael, P. (2005) "Book Review of *The End of Poverty: Economic Possibilities for Our Time* by Jeffrey Sachs," *International Journal of Comparative Sociology* 46, 347–55.
- Mehmet, O. and M. Tahiroglu (2002) "Growth and Equity in Microstates: Does Size Matter in Development?," *International Journal of Social Economics* 29, 152–62.
- Mehrotra, S. and R. Jolly (eds.) (1998) *Development with a Human Face: Experiences in Social Achievement and Economic Growth*, New York: Oxford University Press.
- Moon, B.E. and W.J. Dixon (1985) "Politics, the State, and Basic Human Needs: A Cross-National Study," *American Journal of Political Science* 29, 661–94.
- Mshomba, R.E. (2000) *Africa in the Global Economy*, Boulder, CO: Lynne Rienner.
- Muhumuza, W. (2002) "The Paradox of Pursuing Anti-Poverty Strategies under Structural Adjustment Reforms in Uganda," *Journal of Social, Political, and Economic Studies* 27, 271–306.
- Mukherjee, S. and T. Benson (2003) "The Determinants of Poverty in Malawi, 1998," *World Development* 31, 339–58.
- Muller, E.N. (1988) "Democracy, Economic Development, and Income Inequality," *American Sociological Review* 53, 50–68.
- Nafziger, E.W. and J. Auvinen (2002) "Economic Development, Inequality, War, and State Violence," *World Development* 30, 153–63.
- O'Connor, A. (1991) *Poverty in Africa: a Geographical Approach*, London: Belhaven.
- Olson, M. (2000) *Power and Prosperity*, New York: Basic Books.
- O'Neill, D. (1995) "Education and Income Growth: Implications for Cross-Country Inequality," *Journal of Political Economy* 103, 1289–1300.
- Oshima, H.T. (1988) "Human Resources in East Asia's Secular Growth," *Economic Development and Cultural Change* 36, s103–s122.
- Pedhazur, E.J. (1982). *Multiple Regression in Behavioral Research*, New York: Holt, Rinehart and Winston.
- Przeworski, A., M.E. Alvarez, J.A. Cheibub, and F. Limongi (2000) *Democracy and Development: Political Institutions and Well-being in the World, 1950–1990*, New York: Cambridge University Press.
- Ramcharan, R. (2004) "Higher or Basic Education? The Composition of Human Capital and Economic Development," *IMF Staff Papers* 51, 309–26.
- Ravallion, M. (2005a) "A Poverty-Inequality Trade-off?," *Journal of Economic Inequality* 3, 169–81.
- . (2005b) "How Not to Count the Poor? A Reply to Reddy and Pogge," The Institute of Social Analysis, available on-line at <<http://www.columbia.edu/~sr793/wbreply.pdf>> accessed 26 June 2006.
- . (2001) "Growth, Inequality and Poverty: Looking Beyond Averages," *World Development* 29, 1803–15.
- Ravallion, M. and S. Chen (1997) "What Can New Survey Data Tell Us about Recent Changes in Distribution and Poverty?," *The World Bank Economic Review* 11, 357–82.
- Ravallion, M., G. Datt, and D. van de Walle (1991) "Quantifying Absolute Poverty in the Developing World," *Review of Income and Wealth* 37, 345–61.
- Reddy, S.G. and T.W. Pogge (2005) "How Not to Count the Poor," The Institute of Social Analysis, available on-line at <<http://www.columbia.edu/~sr793/count.pdf>> accessed 26 June 2006.

- Reuveny, R. and Q. Li. (2003) "Economic Openness, Democracy, and Income Inequality," *Comparative Political Studies* 36, 577–601.
- Rodrik, D. (2000) "Growth Versus Poverty Reduction: A Hollow Debate," *Finance and Development*, Dec., 8–9.
- Sachs, J.D. (2005) *The End of Poverty: Economic Possibilities for Our Time*, New York: Penguin.
- Sachs, J.D. and A.M. Warner (1997) "Sources of Slow Growth in African Economies," *Journal of African Economies* 6, 335–76.
- Sahn, D.E. and S.D. Younger (2004) "Growth and Poverty in Sub-Saharan Africa: Macroeconomic Adjustment and Beyond," *Journal of African Economies* 13(supplement), i66–i95.
- Sen, A. (1998) "Human Development and Fiscal Conservatism," *World Development* 26, 733–42.
- van Ginneken, W. (2003) "Extending Social Security: Policy for Developing Countries," *International Labor Review* 142, 277–94.
- White, K.J. (1999) *The SHAZAM Econometrics Program*, Vancouver: Northwest Econometrics.
- Woodward, D. and A. Simms (2006) "Growth Is Failing the Poor: The Unbalanced Distribution of the Benefits and Costs of Global Economic Growth," United Nations DESA Working Paper No. 20, New York: United Nations.
- World Bank (2004a) *World Development Indicators, 2004*, Washington, DC: World Bank.
- World Bank (2004b) *Partnerships in Development: Progress in the Fight Against Poverty*, Washington, DC: World Bank.
- World Bank (2004c) *World Development Indicators, 2004 CD-ROM*, Washington, DC: World Bank.
- World Bank (2002) *Globalization, Growth, and Poverty*, Washington, DC: World Bank.

ANNEX

Table A.1. Correlation Coefficients of the Poverty Measures, Gini Index, and Income Share in Developing Countries (n=97)

	Population below US\$ 1 a day	Population below US\$ 2 a day	Poverty gap at US\$ 1 a day	Poverty gap at US\$ 2 a day	Gini index	Income share of the fourth 20%
Population below US\$ 2 a day	.88					
Poverty gap at US\$ 1 a day	.94	.72				
Poverty gap at US\$ 2 a day	.98	.95	.90			
Gini index	.36	.20	.43	.32		
Income share of the fourth 20%	-.40	-.32	-.44	-.39	-.63	
Income share of the lowest 20%	-.36	-.14	-.46	-.29	-.93	.51

Table A.2. The Population in Poverty in Developing Countries (circa 1991–2002)

	Population below US\$ 1 a day (%)	Population below US\$ 2 a day (%)	Poverty gap at US\$ 1 a day (%)	Poverty gap at US\$ 2 a day (%)	Number of people below US\$ 1 a day (2004)	Number of people below US\$ 2 a day (2004)
East Asia and the Pacific	13.67	45.39	3.14	16.37	261	873
Europe and Central Asia	4.93	19.45	1.24	6.32	20	101
Latin America	12.25	27.69	4.75	6.55	56	136
Middle East and North Africa	4.11	19.97	1.07	5.34	8	72
South Asia	25.68	71.24	5.88	28.92	432	1,052
Sub-Saharan Africa	40.45	71.29	16.91	37.47	323	504
Total	—	—	—	—	1,100	2,737

Note: the averages of the regions on columns 1 to 4 are computed from World Bank (2004a, 54–56), with a sample size of 97 countries; the figures on column 5 and 6 are in millions, estimated by World Bank (2004b, 11).