Falling Poverty and Income Inequality: A Global Phenomenon

by Xavier Sala-i-Martin

In 2000, the United Nations brought attention to the matter of global poverty by establishing the Millennium Development Goals. First among these goals was a commitment to "reduce by half the proportion of people that, in 1990, lived on less than one dollar per day" by the year 2015. While an important challenge, great care must be taken in defining poverty and its causes, so that appropriate solutions and accurate measurement of progress towards such goals can be achieved. Unfortunately, most past research on poverty and inequality, including the UN Development Program's Human Development Reports, does not provide a clear picture of human welfare.

Sala-i-Martin's (2006) summary assesses world poverty and income inequality using a new measurement tool that estimates the distribution of income among individuals in 138 countries between 1970 and 2000. After reviewing past research on poverty and inequality, the study presents the World Distribution of Income (WDI) in order to analyze global trends in poverty and inequality. The results show that despite the growing income gap between rich and poor countries, world poverty and income

Main Conclusions

- **World poverty rates in 2000 were between one-third and one-half of the rates in 1970. This means that between 212 and 428 million people worldwide escaped poverty over the last three decades**

- **The improvements in poverty mean that the world has already achieved 60 percent of the United Nations' Millennium Development Goal of cutting the world poverty rate to half of 1990 levels by the year 2015**

- **World poverty is now concentrated in Africa, not Asia. In 1970 over 80 percent of the world's poor lived in East and South Asia; in 2000, 75 percent of the world's poor lived in Africa**

- **Global inequality, or the income gap between rich and poor people, also declined between 1980 and 2000**

- **Most inequality in the world is due to income differences between countries, not differences in income between individuals within those countries**

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inequality fell markedly between 1970 and 2000.

Defining Poverty

A citizen can be defined as poor if his income (or consumption) lies below a predefined cutoff level known as the *poverty line*. The *poverty rate* is the percentage of citizens facing poverty and the *poverty headcount* is the total number of people living in poverty in a given country or the world. Historically, some researchers associate absolute poverty with the lack of physical means of survival defined in terms of a minimum caloric intake. More recently, poverty has been defined in monetary terms, specifically, a minimum level of income or consumption. Since there is no agreement on the level of income below which people are poor, we report results for four poverty lines: (1) the World Bank (WB) Poverty Line of $1.00 per day[1]; (2) an adjusted WB Poverty Line of $1.50 per day[2]; (3) $2.00 per day, and (4) $3.00 per day.[3]

Income inequality, on the other hand, refers to the gap between rich and poor people in a region, country, or the entire world. Statisticians have come up with many ways to measure income inequality; Sala-i-Martin (2006) provides eight different estimates.

Past Research on Poverty and Income Inequality

Past research on poverty and income inequality has found that the gap in average incomes between rich and poor countries has increased over time. In other words, it has found that the per capita income across countries has diverged (see, for example, Barro and Sala-i-Martin, 1992). In these country-based comparisons, the average income of each country is given equal weight regardless of population size. For example, there are 41 countries in Africa even though that continent's overall population is about one half of China's. Thus, when country-based comparisons are made, the average income of Africa is given 41 times the weight of China's.

Countries are useful units for testing growth theories because many of the policies or institutions that affect income growth are national. But if we are interested in whether poor people's living conditions improve more rapidly than rich people's, then the correct unit is a person rather than a country: China has almost twice as many citizens as all 41 African countries combined. If we give equal weight to all countries, we actually under value the well-being of a Chinese peasant relative to a Senegalese farmer just because the population in China is larger than that of Senegal. In order to compare the well-being of citizens across countries, more recent studies have used adjustments for country size as measured by population in comparing average incomes across countries. In these individual-based comparisons, the average incomes of nations with large populations are given greater weight than the incomes of countries with small populations. Using the example above, Africa would then get half the weight of China after adjusting for population differences.

Although they represent a step in the right direction, population-weighted studies still have problems since they do not account for differences in the incomes of individuals within countries, implicitly assuming that all citizens have the same level of income within a country. This sometimes leads to the misleading conclusion that no citizens in a country are poor if the average per capita income in that country is just a couple of dollars above the poverty line. Similarly, this method of measuring poverty would show dramatic declines in poverty rates as the per capita income in very large countries goes from a few dollars below the poverty line to a few dollars above it. Unfortunately, incorporating in-country differences in the incomes of individuals into the analysis of world poverty and inequality has proved challenging due to data limitations.

The World Distribution of Income (WDI)

The study summarized in this Alert addresses this difficulty by estimating income distributions for 138 countries over the period 1970-2000.[4] Income distributions measure the proportion of people earning income in each of five levels of income (quintiles), when world income is ranked from highest to lowest. In other words, it measures the percentage of people earning the lowest 20 percent, the highest 20 percent, and the three categories in between.

The income distributions for each country are estimated by combining income data as measured by population-adjusted Gross Domestic Product (GDP) per person with data from country surveys to capture

Figure 1: Poverty Rates
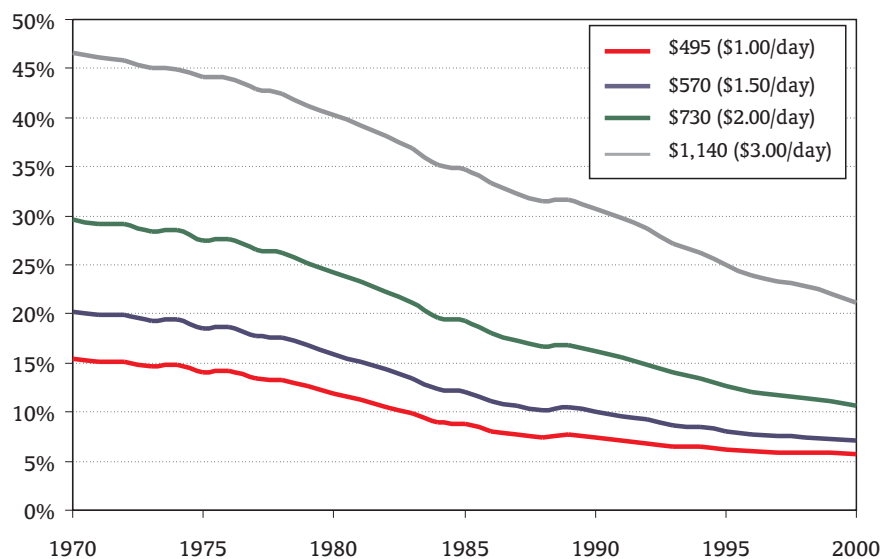
Source: Heston, Summers, and Aten (2002); Deoninger and Squire (1996); UNU-WIDER.

Global Trends, 1970-2000

Figure 1 provides a graphic illustration of how dramatically global poverty rates have fallen over the last three decades, while table 1 provides details on poverty rates and head counts for the same period. The poverty rate declined from 15.4 percent of the world population in 1970 to 5.7 percent in 2000 using the World Bank Poverty Line of $1.00 per day. Using the adjusted WB Poverty Line, poverty rates from 1970 to 2000 declined from 20.2 to 7.0 percent. This means that the world has already achieved more than half of the United Nations' Millennium Development Goal (MDG) to "reduce by half the proportion of people that, in 1990, lived on less than one dollar a day" by the year 2015 (United Nations, 2000).

The decline is even more striking using the $2.00 per day measure, falling from 29.6 percent in 1970 to 10.6 percent in 2000. The $3.00 per day poverty line more than halved during the same period, from 46.6 to 21.1 percent.

Table 1 also translates these falling poverty rates into human terms by calculating the number of people affected by poverty. Depending on the poverty line considered, between 212 and 420 million people were lifted out of poverty between 1970 and 2000. Using the World Bank's $1.00 per day poverty line, the number of poor fell from approximately 534 to 322 million people. Similar declines can be observed if other poverty lines are used. This is especially impressive given that world population increased almost 50 percent (from 3.5 to 5.7 billion citizens) over these three decades.

Regional Trends

This success can largely be attributed to the remarkable achievements of some Asian countries, especially the two most populous ones: China and India. For example, using the poverty line of $1.50 per day, the poverty rate in East Asia declined from 32.7 percent in 1970 to 2.4 percent in 2000 (figure 2). Put differently, some 309 million people living in East Asia were lifted out of poverty between 1970 and 2000.

In Africa, unfortunately, the proportion of the population living in poverty using the $1.50 a day measure actually increased from 35.1 percent in 1970 to 48.8 percent in 2000. This means that roughly 203 million additional Africans were living in poverty in 2000 compared to 1970.

These trends implied a shift in the regional composition of poverty. In 1970, over 80 percent of the world's poor lived in East and South East Asia as measured by the poverty line of $1.50 per day. By 2000, less than 20 percent of the world's poor lived in this region.

Africa, in contrast, has been moving in the opposite direction. In 1970, less than 15 percent of the world's population fell below the $1.50 per day poverty line in Africa but by 2000, it was home to 75 percent of the world's poor. Thus, while close

Table 1: Poverty Rates and Headcounts for Various Poverty Lines

Poverty Line	Definition	Poverty Rates							
		1970	1975	1980	1985	1990	1995	2000	Change 1970-2000
$495	World Bank Poverty Line ($1.00/Day)	15.4%	14.0%	11.9%	8.8%	7.3%	6.2%	5.7%	-9.7
$570	$1.50/Day	20.2%	18.5%	15.9%	12.1%	10.0%	8.0%	7.0%	-13.1
$730	$2.00/Day	29.6%	27.5%	24.2%	19.3%	16.2%	12.6%	10.6%	-19.0
$1,140	$3.00/Day	46.6%	44.2%	40.3%	34.7%	30.7%	25.0%	21.1%	-25.4

Poverty Line	Definition	Poverty Headcounts (thousands)							
		1970	1975	1980	1985	1990	1995	2000	Change 1970-2000
World Population		3,472,485	3,830,514	4,175,420	4,539,477	4,938,177	5,305,563	5,660,342	2,187,858
$495	World Bank Poverty Line ($1.00/Day)	533,861	536,379	498,032	399,527	362,902	327,943	321,518	-212,343
$570	$1.50/Day	699,896	708,825	665,781	548,533	495,221	424,626	398,403	-301,493
$730	$2.00/Day	1,028,532	1,052,761	1,008,789	874,115	798,945	671,069	600,275	-428,257
$1,140	$3.00/Day	1,616,772	1,691,184	1,681,712	1,575,415	1,517,778	1,327,635	1,197,080	-419,691

The 138 countries surveyed for this study represented 93 percent of the world population in the year 2000.

to half a billion (487 million) people were lifted out of poverty in East and South Asia, an additional 200 million Africans have fallen into poverty over the past three decades. Table 2 provides details of these trends.
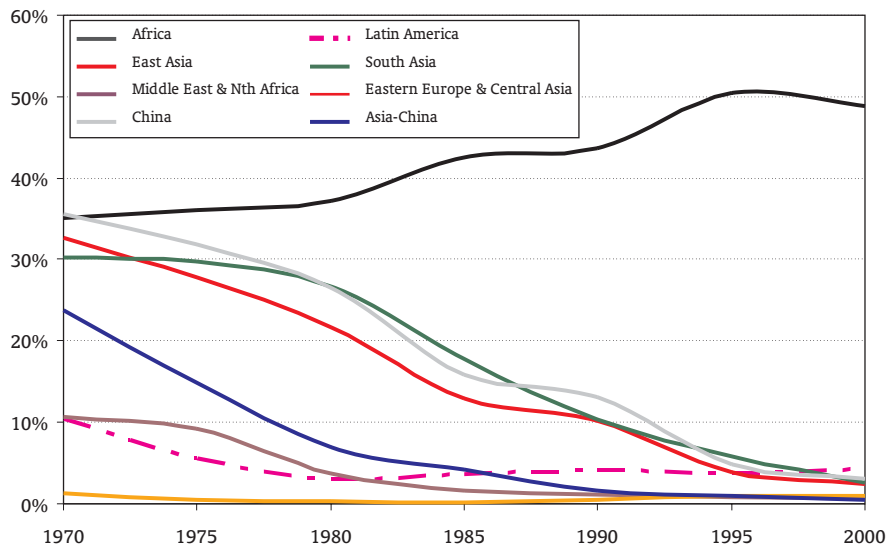
Income Inequality

By measuring the incomes of individual citizens, rather than GDP per capita across countries, the WDI also allows for a more accurate analysis of trends in world inequality. The results show that inequality, as captured by eight widely used indices, clearly declined over the 1980-2000 period after a decade of stagnation in the 1970s.[6] This trend of decreasing inequality over the past two decades also marks a more significant reversal of steadily increasing inequality over the previous century and a half (Bourguignon and Morrison, 2002).

Again, the explanation for this reversal can be found in the phenomenal income growth of some the largest countries on the planet, such as China and the larger Asian region. Consider, for instance, that in 1820 the whole world was equal, but poor. Slowly, the incomes of the 1 billion citizens (in 2000 population size) in the OECD countries grew and diverged from the 5 billion poor people in the developing world. Then, in the 1970s, dramatic growth rates in the Asian countries helped push up the incomes of the 3 to 4 billion people in that part of the world. With the convergence of Asian incomes with those in OECD countries, worldwide inequality began to fall for the first time in centuries. This more than offset the

Figure 2: Regional Poverty Rates
(using the $1.50 a day poverty line)

Source: Heston, Summers, and Aten (2002); Deoninger and Squire (1996); UNU-WIDER.

divergent incomes and growing inequality of the 608 million Africans. Africa remains a serious concern since world inequality may increase if income growth in African countries fails to catch up with that in the rest of the world.

Conclusion

Sala-i-Martin's study uses income distributions for 138 countries to analyze global trends of poverty and inequality. This analysis shows that world poverty rates fell by between one-third and one-half between 1970 and 2000. Between 212 and 428 million people have escaped poverty worldwide over the past three decades. This means that the world has already achieved more than half the United Nation's Millennium Development Goal (MDG) of cutting the world poverty rate to half of 1990 levels by the year 2015.

Global inequality, or the gap between rich and poor, has also declined dramatically over the past 20 years after a decade of stagnation in the 1970s. These trends have been driven by the dramatic income growth in the populous countries of China, India, and the rest of Asia.

Despite this global trend of falling poverty and income inequality, some regions are still seeing poverty rates increase. While in 1970 over 80 percent of the world's poor lived in East and South Asia, some 75 percent of the world's poor now live in Africa. In other words, whereas poverty was once mostly an Asian problem, it is now primarily an African tragedy driven by dismal rates of economic growth on that continent.

Notes

1 Since the World Bank's original poverty line was expressed in 1985

prices, and given that our baseline year is 1996, the corresponding annual income in our analysis is $495.

2 The adjustment of the original World Bank Poverty Line of $1.00 per day ($495 per year) is made to account for the fact that it is believed that the rich tend to underreport their income relatively more than the poor in the survey data used for this study. Bhalla (2002) argues that this bias is best corrected by adjusting the poverty line by roughly 15 percent. If we increase the $495 poverty line by 15 percent, we get an annual income of $570. Since this roughly corresponds to $1.50 per day in 1996 prices, we refer to this adjusted WB poverty line as the $1.50 per day line.

3 Poverty lines include farm output for personal consumption. Hence, countries with a large rural population that may rely less on cash income to meet their basic needs are comparable to those with a primarily urban population that faces higher costs for food and other basic necessities.

4 These countries comprised 93 percent of the world population in the year 2000.

5 These data are adjusted for purchasing power across countries such that, for example, $100 in the United States can buy the same amount of goods and services as $100 in Germany. The data on GDP per person is reported by the Penn World Tables (PWT) developed by Hester, Summers, and Aten (2002) and are based on the annual National Accounts of countries. Data used for this study are from the latest version (6.1) of the PWT. Country survey data are based on the work of Klaus Deininger and Lyn Squire (1996).

6 These widely used measures include: (1) the Gini coefficient; (2) Atkinson index with coefficient 0.5; (3) Atkinson index with coefficient 1; (4) Variance of the logarithm of income; (5) the ratio of the income of the person at the top twentieth centile divided by the income of the corresponding person at the bottom

Table 2: Poverty by Region ($1.50 per Day or $570 per Year Poverty Line)

Poverty Rates

Poverty Rates	2000 Population (000s)	1970	1975	1980	1985	1990	1995	2000	Change 1970-2000	Change 1970s	Change 1980s	Change 1990s
World*	5,660,040	20.2%	18.5%	15.9%	12.1%	10.0%	8.0%	7.0%	-13.2	-4.3	-5.9	-3.0
East Asia	1,704,242	32.7%	27.8%	21.7%	13.0%	10.2%	3.8%	2.4%	-30.3	-11.0	-11.5	-7.8
South Asia	1,327,455	30.3%	29.7%	26.7%	17.8%	10.3%	5.7%	2.5%	-27.7	-3.6	-16.4	-7.8
Africa	608,221	35.1%	36.0%	37.2%	42.6%	43.7%	50.5%	48.8%	13.7	2.0	6.5	5.1
Latin America	499,716	10.3%	5.6%	3.0%	3.6%	4.1%	3.8%	4.2%	-6.1	-7.4	1.2	0.1
Eastern Europe	436,373	1.3%	0.5%	0.4%	0.1%	0.4%	1.0%	1.0%	-0.3	-0.9	0.1	0.6
MENA**	220,026	10.7%	9.2%	3.6%	1.6%	1.2%	0.7%	0.6%	-10.2	-7.1	-2.5	-0.6

Poverty Head-counts

Poverty Head-counts	2000 Population (000s)	1970	1975	1980	1985	1990	1995	2000	Change 1970-2000	Change 1970s	Change 1980s	Change 1990s
World*	5,660,040	699,896	708,825	665,781	548,533	495,221	424,626	398,403	-301,493	-34,115	-170,560	-96,818
East Asia	1,704,242	350,263	334,266	281,914	182,205	154,973	61,625	41,071	-309,192	-68,349	-126,941	-113,902
South Asia	1,327,455	211,364	234,070	236,366	176,536	113,661	69,582	33,438	-177,926	25,002	-122,705	-80,223
Africa	608,221	93,528	109,491	129,890	172,175	204,364	269,733	296,733	203,205	36,361	74,474	92,369
Latin America	499,716	27,897	17,014	10,195	13,836	17,406	17,379	21,012	-6,885	-17,702	7,211	3,607
Eastern Europe	436,373	4,590	1,991	1,418	369	1,906	4,238	4,402	-188	-3,172	488	2,496
MENA**	220,026	11,250	10,954	4,991	2,507	2,101	1,466	1,264	-9,986	-6,259	-2,890	-837

Fraction of the World's Poor in Each Region

	2000 Population	1970	1975	1980	1985	1990	1995	2000	Change 1970-2000	Change 1970s	Change 1980s	Change 1990s
World*	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%				
East Asia	30.1%	50.0%	47.2%	42.3%	33.2%	31.3%	14.5%	10.3%	-39.7	-7.7	-11.0	-21.0
South Asia	23.5%	30.2%	33.0%	35.5%	32.2%	23.0%	16.4%	8.4%	-21.8	5.3	-12.6	-14.6
Africa	10.7%	13.4%	15.4%	19.5%	31.4%	41.3%	63.5%	74.5%	61.1	6.1	21.8	33.2
Latin America	8.8%	4.0%	2.4%	1.5%	2.5%	3.5%	4.1%	5.3%	1.3	-2.5	2.0	1.8
Eastern Europe	7.7%	0.7%	0.3%	0.2%	0.1%	0.4%	1.0%	1.1%	0.4	-0.4	0.2	0.7
MENA**	3.9%	1.6%	1.5%	0.7%	0.5%	0.4%	0.3%	0.3%	-1.3	-0.9	-0.3	-0.1

*The 138 countries surveyed for this study represented 93 percent of the world population in the year 2000.

**MENA = Middle East and North Africa.

centile; (6) the ratio of the top 10 percent of the income distribution to the bottom 10 percent of the distribution; (7) the Mean Logarithmic Deviation (MLD), and; (8) the Theil index. For further discussion and explanation, see Sala-i-Martin, 2006, p. 383.

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