Chapter 2: Economic Freedom and World Poverty

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Introduction

The eradication of world poverty is one of the most important issues facing economists, policy makers, and concerned citizens. There are several reasons why this is the case. First, as Theodore W. Schultz (1980) notes, most of the world is poor and this fact makes poverty reduction a central issue of economics. On varying intellectual terrains, scholars such as Lucas (1988), North (1981) and de Soto (1990) have spread that message. Second, increased trade and capital flows in recent decades, that is, "globalization," have drawn increased attention to cross-country differences in income, living standards, and the plight of the poor, particularly those living in impoverished countries. Third, modern communications and transportation have increased the visibility of global poverty. The issue has attracted the attention of celebrities such as the Irish rock star, Bono. Clearly, there is a cachet associated with the movement to eradicate world poverty.

Some act as if the eradication of poverty is primarily a matter of elevating this objective and directing aid from high-income to low-income countries. This view is largely reflected in the United Nations Millennium Development Goals. It also permeates the recent popular book by Jeffrey Sachs, *The End of Poverty* (2005). Sachs argues that the elimination of extreme poverty is simple and readily achievable if wealthy nations are willing to make the commitment and supply needed funds to the poorer nations of the world, particularly those in Africa. In fact, Sachs's book can be viewed as an apologetic for the feasibility of the Millennium Development Goals, buttressed by criticisms of leaders of industrialized countries for failing to instantly affirm the goals and subsidize strategies to achieve them.

Other researchers argue that the views of Bono, Sachs, and the proponents of the Millennium Development

Goals are unrealistic, wasteful, and even counter-productive. Recent books by William Easterly (2006) and Paul Collier (2007) are representative of this less sanguine view. Both criticize the "top down" approach to eradicating poverty and generate considerable doubt about the ability of the Millennium Development Project to achieve the desired objectives.

All of these factors have contributed to increased interest in, and active discussion of, the causes of world poverty and its reduction. This chapter develops a measure of poverty that makes it possible to track its path since 1980 for a large set of countries comprising approximately 90% of the population in the less-developed world. Building on previous research showing that economic freedom improves the quality of life of the poor (Norton 1998, 2003), the chapter also examines the link between economic freedom and reductions in poverty. Jeffery Sachs has argued that economic freedom is a "mantra" for "instant solutions" and that it is a concept that serves as a "substitute for analysis" (2005: 318–19). He also contends that economic freedom is irrelevant to reducing poverty in sub-Saharan Africa (2005: 320). These contentions will be considered within the framework of the institutions and policies currently present in that region and their predictable impact on the growth process.

Dimensions of World Poverty

Poverty is a multidimensional term with wide usage (Deaton, 2006). Some of its connotations are linked with low-income status or the absence of economic growth. In other contexts, it is associated with inequality. Popular use of the term may also be associated with the absence of health or the presence of conditions that threaten health. Thus, there are both pecuniary and non-pecuniary aspects to poverty. The former are primarily associated with per-capita income and the latter with a host of items linked with "basic needs" including nutrition, health, hunger, education, and mortality.

By any standard—whether based on income or on quality of life—poverty is ubiquitous. There are approximately six billion people in the world. Perhaps as many as five billion might be classified as poor. Nearly one billion live on less than one dollar per day measured in terms of the purchasing power of the dollar in 1990. They are commonly labeled the "extreme poor." The remaining poor are better off but by most dimensions of modern life experience misery or the threat of misery. Using quality-of-life measures, the ubiquity of poverty is also evident. In at least 28 countries, one third or more of the population does not have access to safe drinking water. In short, no matter how we measure it, poverty is widespread throughout the world.

The widely celebrated United Nations Millennium Development Goals also underscore both the multidimensional nature and ubiquity of poverty. Consider the details of the goals. They are to: (i) eradicate extreme poverty and hunger, (ii) achieve universal primary education, (iii) promote gender equity and empowerment of women, (iv) reduce child mortality (v) improve maternal health (vi) combat HIV/AIDS, malaria, and other diseases, (vii) ensure environmental stability, and (viii) develop a global partnership for development. Thus, the Millennium Development Goals fit well with concepts of poverty based upon either income or quality of life.

Alternative Measures of Poverty

Because poverty is multidimensional and because there are considerable difficulties measuring the incomes of residents in the world's poorest countries, it is useful to consider both pecuniary and non-pecuniary indicators of poverty. Moreover, many will find that non-pecuniary indicators are a more easily understandable measure of poverty than those that are income based. Thus, we will consider measures of poverty based upon both income and quality of life.

Measures Based on Income

The standard income-based measure of poverty is the number of people living below $1 or $2 per day derived by the purchasing power parity method and measured in 1990 US dollars. These measures have a standardized unit of account feature and thus they are meaningful even if it is difficult to understand how people could survive on such a meager income. The advantage of using these measures is that they provide a standardized measure across time. If the purchasing power over goods and services

of the poor increases across time periods, the percentage of persons below the $1 or $2 threshold will decline. They also have an inherent distributional aspect because the percentage of persons with incomes below the respective cutoffs constitutes the fraction of the population that seems to have missed the benefits of economic growth.

Measures Based on Quality of Life

In recent years, the United Nations organization has constructed alternative measures of poverty not based on income. The UN developed and introduced the Human Poverty Index (HPI) in the 1997 Human Development Report. This framework is designed to provide a broader and not exclusively monetary view of poverty.

The HPI is constructed by combining several indicators of the absence of well-being. The first indicator is the proportion of people not expected to survive to age 40. The second is the proportion of adults who are illiterate and therefore excluded from the benefits and privileges of reading and communication. The third indicator is a composite consisting of the proportion of people without access to health services, the proportion of people without access to safe water, and the percentage of malnourished (underweight) children under the age of five. The components are combined into an indicator scaled from zero to 100.[2]

While the HPI is calculated for most less-developed countries, it is largely unavailable for high-income countries and for years prior to 1995. However, some of the components of the HPI and other non-pecuniary indicators of poverty are available for more countries and over a longer period of time. These indicators provide useful information about changes in world poverty during recent decades.

Exhibit 2.1 defines the various measures of poverty used in this paper and indicates their source. The first two measures are pecuniary. They are the percentage of the population that subsists on less than $1 per day (or $2 per day) at standardized international prices. The first category is often referred to as "extreme poverty" while the second category is labeled "moderate poverty." Exhibit 2.1 also defines the various non-pecuniary indicators of poverty that we will analyze. Clearly, increases in the magnitude of variables like life expectancy at birth and access to safe water are indicative of improvements in the quality of life

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2 In more recent years, the UN has omitted the health-services factor of the standard-of-living component of the HPI because reliable estimates for health-services provision are not available for many countries.

Exhibit 2.1: Descriptions and Sources of Various Measures of Poverty

$1 per day

Percentage of the population living on less than $1.08 a day at 1993 international prices (or $1 per day in 1990 prices).

Sources: United Nations, Human Development Report (1997;2004); World Bank, World Development Indicators

$2 per day

Percentage of the population living on less than $ 2.15 a day at 1993 international prices (or $2 per day in 1990 prices).

Sources: United Nations, Human Development Report (1997;2004); World Bank, World Development Indicators

Improved Water

Percentage of the population with access to safe water.

Sources: World Bank, World Development Indicators

Life Expectancy at Birth

The number of years a newborn infant would live if prevailing patterns of mortality at birth were to stay the same throughout its life.

Sources: World Bank, World Development Indicators

Infant Survival Rate

The number of infants surviving to one year of age per 1,000 live births. It is equal to 1,000 minus the infant mortality rate.

Sources: World Bank, World Development Indicators

Under Five Survival Rate

The number of infants, per 1,000 live births, projected to survive to age five, given current mortality rates. It is equal to 1,000 minus the under-age-five mortality rate.

Sources: World Bank, World Development Indicators

Physicians per 1,000 People

Number of graduates of any facility of a school of medicine, working in the country in any medical field, per 1,000 population.

Sources: World Bank, World Development Indicators

Adequate Nutrition

Percentage of population with adequate nutrition. It is equal to 100 minus the percentage of the population whose food intake is insufficient to meet dietary energy requirements continuously.

Sources: World Bank, World Development Indicators

Human Poverty Index (HPI)

A measure of the percentage of people deprived of a long and healthy life, knowledge, and a decent standard of living. Items included in the index are: percentage not surviving to age 40, percentage of adults who are not literate, percentage of people without access to safe water, and the percentage of children underweight for their age. The index runs from 0 to 100. In the original index higher values indicated greater poverty, but we reversed the scale so that higher values would represent less poverty and improved well being.

Sources: United Nations, Human Development Report, 2004

and reductions in the incidence of poverty. However, the opposite is the case for variables like infant mortality rate or percentage of the population with inadequate nutrition. In order to make it easier to track changes, the scale of the non-pecuniary indicators is arranged so that higher values are always indicative of lower poverty rates and improvements in well-being. For example, rather than presenting the infant mortality rate per 1000, we present the infant survival rate so that a higher value translates to an improvement in well-being. In its original form, increases in the HPI on its 100-point scale are indicative of reductions in the well-being of the poor. Again, we reversed the direction of that scale, so that higher values indicate an improvement in the quality of life of the poor.

What Is Happening to the World Poverty Rate?

The $1-per-day and $2-per-day poverty rates are available for a substantial number of developing countries for various years, mostly since 1995. However, these data are incomplete. In searching for an instrument that might be used to provide estimates for the missing values, we discovered that the mortality rate for children under age five is highly correlated with the $2-per-day poverty rate and

is available for a larger set of countries and years. Thus, this instrument is used, along with per-capita GDP, to estimate the missing values for the $2-per-day poverty rate for a large set of countries at five-year intervals for the period from 1980 to 2000 and for 2004. Unsurprisingly, the $1-per-day poverty rate is closely linked to the $2-per-day rate. While the $1-per-day rate is lower, countries with a high $2-per-day rate also tended to have a $1-per-day rate that was relatively high. Thus, the data for the $2-per-day poverty rate can be used to derive the $1-per-day rate. The source note to the Appendix to Exhibit 2.1 (page 38) provides additional details on these calculations and that table presents both the $1-per-day and $2-per-day poverty rates for 79 less-developed countries for various years during the period from 1980 to 2004.

The population of the 79 countries of the Appendix to Exhibit 2.1 sum to 4.8 billion, approximately 90% of the total residing in the world's less developed countries for the period from 1980 to 2004. Because the $1-per-day and $2-per-day poverty rates are largely unavailable for high-income developed countries, it was not possible to make estimates for these countries. The omitted high-income countries have a population of approximately 800 million.

Exhibit 2.2 provides a graphic illustration of the mean values of the $1-per-day and $2-per-day poverty rates for the developing countries shown in the Appendix

Exhibit 2.2: Average Percentage of Population in Developing Countries Living on $1 and $2 per Day, 1980–2004
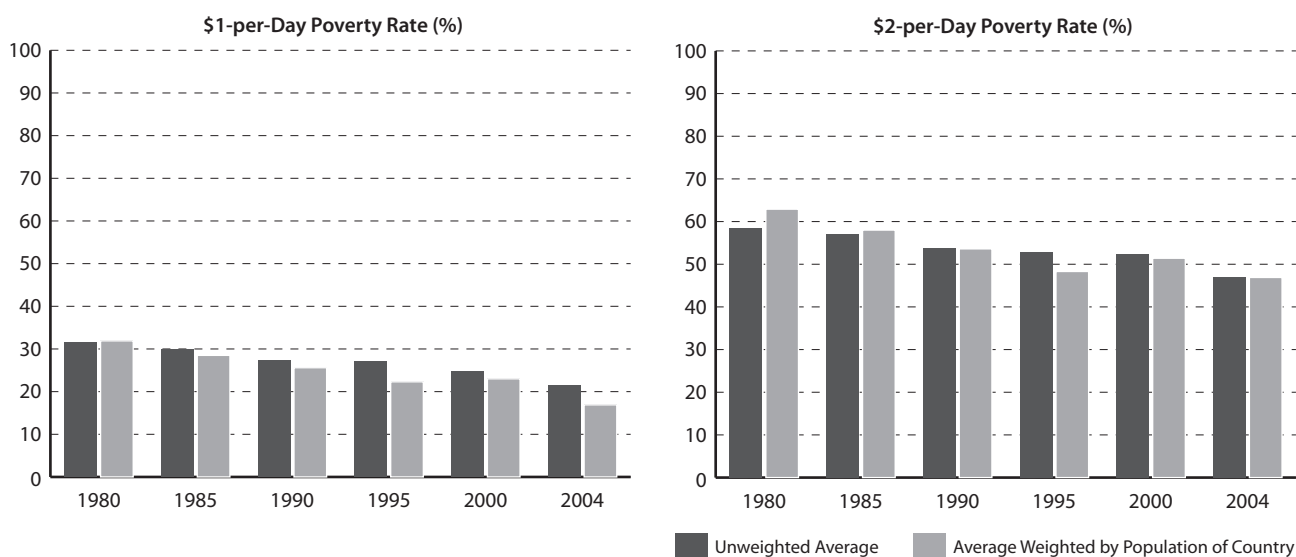
Source: Derived from World Bank, *World Development Indicators* and United Nations, *Human Development Report*; see Appendix to Exhibit 2.1 for details. These figures are for the 79 countries shown in the Appendix, which constitute approximately 90% of the population of less-developed countries. The number of countries for which data were available ranged from 65 in 1980 to 78 in 2004. Calculations were made for only countries with data during all years and the mean values were virtually identical to those presented above.

to Exhibit 2.1 for various years from 1980 to 2004. Both unweighted and weighted means are presented. The unweighted mean is merely the average of the entire set of countries with data during the year. The number of countries for which the poverty rates were available ranged from 65 in 1980 to 78 in 2004. In the case of the weighted average, the mean percentage with income below the cutoff is weighted by the population of the country. Thus, more populous countries like China and India will have a larger impact on the mean calculation when it is derived by the weighted method. The weighted method will also tend to provide a more accurate measure of the poverty rate for the entire sample of countries.

In 1980, the mean values of both the unweighted and weighted $1-per-day poverty rates were approximately 32%, indicating that about one third of the population in developing countries had incomes of less than $1 per day. The $1-per-day poverty rate declined steadily during the 1980s and 1990s. By 2004, the unweighted mean had fallen to 21.5% of the population. The weighted average fell by an even larger amount, to 16.9% in 2004. Thus, the weighted mean indicates that the overall $1-per-day poverty rate of developing countries was nearly cut in half between 1980 and 2004.

The relative reduction in the $2-per-day poverty rate was not as pronounced. The unweighted $2-per-day poverty rate fell from 58.5% in 1980 to 47% in 2004. The weighted mean fell by 16 percentage points from 62.9% in 1980 to 46.9% in 2004. This reduction of 16 percentage points in the weighted $2-per-day rate between 1980 and 2004 was nearly the same as the percentage point reduction in the weighted $1-per-day rate during the same time frame.

As was previously noted, these figures are for approximately 90% of the world's population living in less-developed countries. At least 800 million people residing in high-income countries are omitted from these calculations. No doubt, the share of the population with an income of $1 per day or $2 per day is considerably lower in the omitted high-income countries. Thus, the overall world poverty rate is somewhat lower than the figures presented in Exhibit 2.2.

Both the $1-per-day and $2-per-day poverty rates indicate that progress has been made since 1980. However, they also indicate that slightly more than one in six persons in the less-developed countries of the world had an income of less than $1 per day in 2004, and nearly half of the population in these countries had an income of less than $2 per day.

Exhibit 2.3 presents data on several measures of poverty based on quality of life for various periods from the early 1980s through 2005. These indicators are similar to those included in the United Nations *Human Poverty Index*. The data of Exhibit 2.3 are for a larger number of countries than Exhibit 2.2. They include both high-income developed countries as well as those with low incomes.

The pattern of the indicators of quality of life is similar to that of the $1-per-day and $2-per-day poverty rates. The mean values for all of the non-pecuniary indicators increased across time periods, illustrating an improvement in conditions and a reduction in poverty. For example, for every 1,000 children under the age of five, over 23 more children survived the first five years of life in the period from 2001 to 2005 compared to the fraction surviving in the period from 1981 to 1985. In a nation with a million children under age five, that would mean 23,000 fewer deaths and grieving parents. The emotionally wrenching effects of child mortality that are so inextricably linked with poverty are notably reduced. Less dramatically, but hardly unimportant, the percentage of people with access to "improved" water increased more than an average of 6% during this period and life expectancy at birth on average increased from about 64 years of age to more than 68 years, a remarkable occurrence in light of the AIDS pandemic. In short, both the income based and quality of life based measures indicate that there has been a noticeable reduction in poverty since 1980.

How Does Economic Freedom Affect Poverty?

Numerous studies have shown that countries with more economic freedom grow more rapidly and achieve higher per-capita income levels than those that are less free (Berggren, 2003; Cole, 2003; Dawson, 1998, 2003; de Haan, Lundstrom, and Sturm, 2006; Easton and Walker, 1997). One would expect that this growth would also result in less poverty. Using ratings from various editions of *Economic Freedom of the World* (EFW), we now turn to an examination of this issue.

Exhibit 2.4 divides the less-developed countries of the Appendix into three categories: those with an average EFW summary rating during the period from 1980 to 2000 of less than 5, those between 5 and 6, and those between 6 and 7. Because the data on poverty rates are unavailable for high-income developed economies and even some of the more successful developing economies like Chile, South Korea, and Malaysia, among the countries of the Appendix there are none with an average EFW summary rating from 1980 to 2000 of 7 or more .

Exhibit 2.3: Alternative Indicators of World Poverty, 1981–1985 to 2001–2005

Indicators [number of countries]	Average 1981–1985	Average 1986–1990	Average 1991–1995	Average 1996–2000	Average 2001–2005
% of population with access to improved water [96]	—	80.1	82.4	84.7	86.2
Life expectancy at birth, total (years) [122]	64.4	65.8	66.4	67.1	68.1
Infant survival rate (per 1,000 live births)[a] [118]	947.7	953.1	957.0	961.3	964.6
Under-five survival rate (per 1,000)[a] [106]	918.3	926.9	932.8	938.3	941.9
Physicians (per 1,000 people) [71]	1.3	1.5	1.6	1.8	1.9
% of population with adequate nourishment[b] [103]	83.3	—	83.1	83.6	85.3

Note a: These figures are based on the infant mortality rate and the under-5 mortality rate, respectively. They are presented here as survival rates (i.e., 1000 minus mortality rate) so that a larger number represents improvement.

Note b: This is derived from the data on prevalence of undernourishment. It is presented here as sufficient nourishment (i.e., 100 minus the undernourished as a percentage of the population) so that a larger number represents improvement.

Source: World Bank, *World Development Indicators*. A country is included if it has data for the indicator across all time periods and it was included in *Economic Freedom of the World: 2000 Annual Report*. While the number of countries differs from indicator to indicator, it is the same across time periods for each indicator.

Exhibit 2.4: Economic Freedom, 1980–2000, and \$1- and \$2-per-Day Poverty Rates for Developing Countries
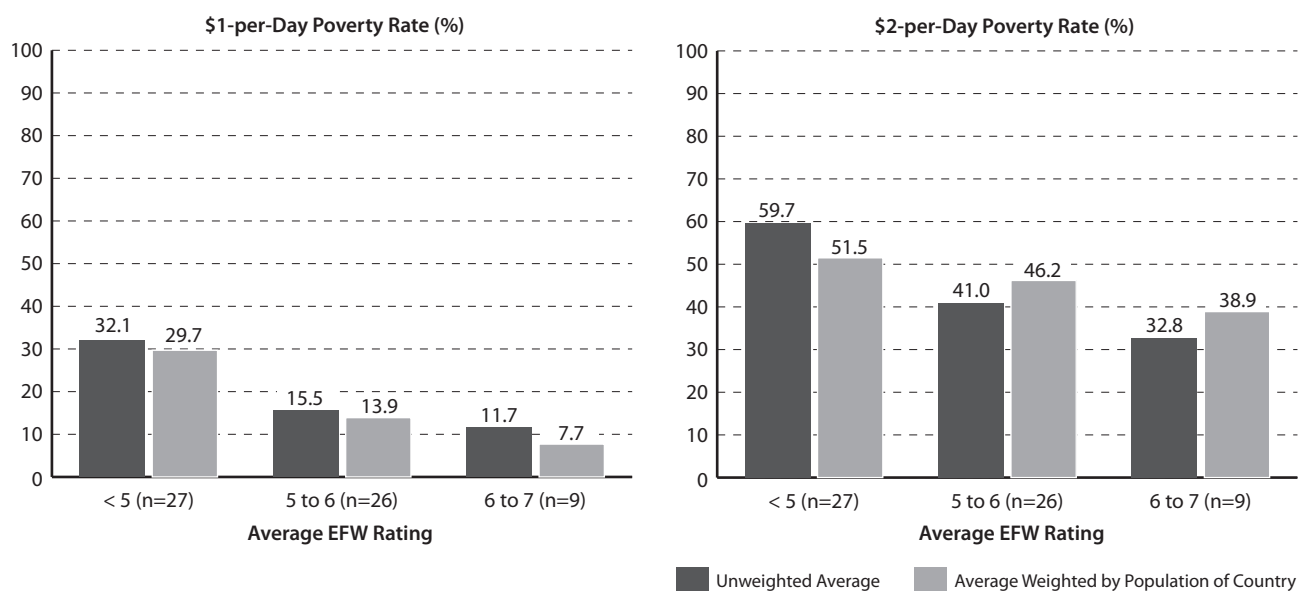
Source: Derived from World Bank, *World Development Indicators*; United Nations, *Human Development Report*; and *Economic Freedom of the World: 2008 Annual Report*. See note at end of Appendix to Exhibit 2.1 for the explanation of how the poverty rates were derived. The 62 countries for which there are 2004 poverty rates and EFW ratings from 1980 to 2000 are included here. The chain-link method was used to derive the EFW average ratings for countries from 1980 to 2000 (see exhibit 1.5).

Exhibit 2.4 indicates the average of the $1-per-day and $2-per-day poverty rates during 2004 for the countries in the three categories. Both the unweighted and weighted (by population) means are shown. If economic freedom makes a difference, the mean poverty rates for the freer economies should be lower. This is indeed the case. The unweighted $1-per-day poverty rate was 32.1% in 2004 for countries with EFW ratings of less than 5, but only 11.7% for countries with EFW ratings between 6 and 7. The $1-per-day poverty rate for the middle group was between these two extremes. For the weighted means, the pattern of the $1-per-day poverty figures was similar. As Exhibit 2.4 shows, the $2-per-day poverty rate declines from 59.7% to 41.0% to 32.8% as one moves from the less free to the more free economies. In the case of the weighted means, the difference between the freer economies and the least-free group was smaller, but still substantial.

Persons with incomes of less than $1-per-day and $2-per-day are largely people who experience few if any of the gains from trade, specialization, cooperation with others, and economies of scale. With gains from these sources blocked by political factors, physical obstacles, and the absence of transportation and communication networks, they survive by raising a few fruits and vegetables on small land plots, building shelters with whatever they can get their hands on, and only a low level of trading with others, mostly those living in their village or surrounding area. There will be little change in their economic well-being until they are brought into the exchange economy. Economic freedom helps make this possible. Thus, the lower poverty rates of the freer economies are an expected result.[3] Further, the strong relationship between more economic freedom and lower poverty rates observed in exhibit 2.4 is particularly revealing, given that these data include only less-developed countries (LDCs) and even the freest economies among this group are omitted.

The initial objective of the Millennium Development Goals is to reduce extreme poverty—of those living on $1 per day—by one half. The data in exhibit 2.4 suggest that a straightforward step would be to promote institutions and policies supportive of economic freedom in the less developed world. After all, the freest of the LDCs already have $1-per-day poverty rates that are substantially less than half of the least-free LDCs.

Exhibit 2.5 examines the relationship between economic freedom and the non-pecuniary set of poverty indicators. These variables are available for a larger set of countries, including those with higher income levels and average EFW ratings of more than 7 between 1980 and 2000. Thus, the poverty indicators are shown for four categories: countries with an average EFW summary rating of less than 5, between 5 and 6, between 6 and 7, and greater than 7. These four categories might properly be thought of as mostly unfree, lower middle, upper middle, and mostly free. The quality-of-life indicators are for the most recent period, from 2001 to 2005. As previously indicated, the direction of the scale of the non-pecuniary variables has been arranged such that a higher value is always indicative of less poverty and an improvement in well-being.

In the mostly unfree economies, 72.6% of the population has access to safe water, compared to nearly 100% in the mostly free economies. The two middle groups fell between these two extremes. Given the centrality of clean water to health and well-being and the excessive caloric expenditures to obtain clean water, the impoverishing effect of this differential is highly noteworthy. Consider next, life expectancy at birth. As one moves from the mostly unfree to the middle groups and on then to the mostly free economies, life expectancy increases. The life expectancy of people in the mostly free group is slightly more than 20-years greater than for the mostly unfree group.

For every 1,000 births on average, 64 more babies survive in freer economies per year than in the unfree economies. The gap in the rate for child mortality under age five is even greater, with an average of 109 more children per thousand surviving each year in economically free economies than for those that are mostly unfree. Similarly, there are more than twice as many physicians per 1,000 population in the mostly free economies than for those that are mostly unfree. Malnutrition affects more than a quarter of the population for the least-free economies but only a small fraction—approximately 2.5%—in the free economies. There is also a substantial difference between the free and unfree economies in the United Nations Human Poverty Index. The HPI increases from 63.9 for the mostly unfree to 93.7 for the mostly free economies with the middle groups again falling in between.[4]

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3 Regression analysis was also used to examine the data of exhibit 2.4 in more detail. When the average EFW rating from 1980 to 2000 was regressed on the 2004 $1-per-day poverty rate, a one-unit increase in the EFW rating reduced the $1-per-day poverty rate by 13 percentage points. Parallel analysis indicated that a one-unit increase in the EFW average reduced the $2-per-day poverty rate by 17 percentage points. Both of these estimates were significant at the 99% confidence level.

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4 Regressions were run with each of the quality-of-life indicators of exhibit 2.5 as the dependent variable and average EFW from 1980 to 2000 as the independent variable. The EFW variable was significant at the 99% level of confidence in every regressions.

Exhibit 2.5: Economic Freedom and Country Averages for Alternative Indicators of Poverty, 2001–2005

Indicators [number of countries]	Mostly Unfree (Avg. 1980–2000 EFW Rating < 5)	Lower Middle (Avg. 1980–2000 EFW Rating 5–6)	Upper Middle (Avg. 1980–2000 EFW Rating 6–7)	Mostly Free (Avg. 1980–2000 EFW Rating > 7)
% of population with access to improved water [90]	72.6	86.0	90.3	99.9
Life expectancy at birth, total (years) [112]	58.0	67.4	71.8	78.6
Infant survival rate (per 1,000 live births)[a] [108]	931.1	961.1	979.7	994.9
Under-five survival rate (per 1,000)[a] [96]	884.1	936.3	977.3	993.4
Physicians (per 1,000 people) [63]	1.2	1.1	2.3	2.5
% of population with adequate nourishment[b] [102]	72.1	86.2	90.5	97.5
***UN Human Poverty Index, 2004*[c] [68]**	63.9	75.5	80.8	93.7

Note a: These figures are based on the infant mortality rate and the under-5 mortality rate, respectively. They are presented here as survival rates (i.e., 1000 minus mortality rate) so that a larger number represents improvement.

Note b: This is derived from the data on prevalence of undernourishment. It is presented here as sufficient nourishment (i.e., 100 minus the undernourished as a percentage of the population) so that a larger number represents improvement.

Note c: In the original index, higher values indicated greater poverty but we reversed the direction of the scale so that higher values would represent less poverty and improved well being.

Sources: World Bank, *World Development indicators*; United Nations, *Human Development Report*; and *Economic Freedom of the World: 2008 Annual Report*. The chain-link method was used to derive the EFW average ratings for countries from 1980 to 2000 (see exhibit 1.5).

Exhibits 2.4 and 2.5 paint a similar picture: poverty rates are substantially lower in persistently free economies compared to those with persistently lower levels of economic freedom. This is true regardless of whether poverty is measured by income or quality-of-life indicators. No doubt, this pattern is largely reflective of the linkage between economic freedom and growth. The freer economies grow more rapidly and, at the same time, they achieve both higher income levels and lower rates of poverty.

Hong Kong and Singapore provide early evidence for the linkage between economic growth and lower poverty rates. These two economies achieved high levels of economic freedom in the 1960s and 1970s and in recent years they have ranked first and second in the EFW index. Even though they were relatively poor in 1960, today the income levels and poverty-rate indicators of Hong Kong and Singapore are virtually identical with those of the high-income countries of North America and Western Europe.

Since 1980, the EFW ratings of Thailand, Malaysia, and Panama have been persistently greater than 6.0. Their average ratings from 1980 to 2000 are among the highest

of LDCs during this period. In turn, they have achieved substantial progress against poverty. The $2-per-day poverty rate of Thailand fell from 45% in 1980 to 30% in 1990 and 15% in 2005. Life expectancy at birth in Thailand increased from 64 years in 1980 to 70 years in 2004. Thailand's under-five mortality rate fell from 58 per thousand in 1980 to 21 in 2005.

While the poverty rates of Malaysia are unavailable for the entire period, the $2-per-day poverty rate fell from 15% in 1987 to 9% in 1997. Malaysia's $1-per-day poverty rate of 2% is among the lowest among LDCs. The increase in life expectancy at birth and reduction in under-five mortality rates in Malaysia also indicate that the quality of life of the poor has improved substantially since 1980.

Panama has also made substantial progress against poverty. Its $2-per-day poverty rate fell from 30% in 1980 to 17% in 2004. The $1-per-day poverty rate of Panama fell from 11% in 1980 to 6% in 2004. Like the figures of exhibits 2.4 and 2.5, these case studies of economies with persistently high levels of economic freedom also illustrate that economic freedom is a powerful weapon against poverty.

Changes in Economic Freedom and Reductions in Poverty

Thus far the focus has been on how persistent differences in the level of economic freedom influence poverty rates and related indicators of quality of life. If a country adopts reforms supportive of economic freedom, will the well-being of the poor improve? Theory indicates that the answer to this question is "yes," but substantial reductions in poverty are likely to take some time. It will take time for the new policy direction to acquire credibility, investors and other decision-makers to respond to the more attractive environment, and the rate of growth to increase. As the higher level of economic freedom is sustained and the more rapid growth persists, poverty rates will fall, and they will fall by larger amounts with the passage of time.

Exhibit 2.6 investigates the relationship between changes in economic freedom and reductions in the poverty rate. In equation 1 of exhibit 2.6, the dependent variable is the percentage-point reduction in the $1-per-day poverty rate between 1980 and 2004. In equation 2, the dependent variable is the reduction in the $2-per-day poverty rate during the same period. In each of these equations, the poverty rate at the beginning of the period is an independent variable designed to control for cross-country differences in the initial incidence of poverty. The level of economic freedom in 1980, along with the change in EFW rating from 1980 to 1995 and from 1995 to 2005, are also included as independent variables. The earlier change in EFW rating is expected to exert a larger impact than the more recent change because the earlier change will affect the economy over a longer time frame. The initial poverty rate is insignificant in both equations. Both the initial EFW rating and the change in EFW rating from 1980 to 2005 were positive and significant at the 95% confidence level in both equations. Equation 1 indicates that, when the initial 1980 EFW summary rating

Exhibit 2.6: Regression Analysis of the Linkage between Economic Freedom and Poverty

Independent Variable	Dependent Variable		
	1 Percentage Reduction in $1-per-Day Poverty Rate, 1980–2004	*2* Percentage Reduction in $2-per-Day Poverty Rate, 1980–2004	*3* Human Poverty Index, 2004
Intercept	19.29	−11.61	37.32
	(−1.54)	(−0.72)	(3.32)
Initial Poverty Rate, 1980	0.06	−0.13	
	(0.52)	(−1.31)	
Per-Capita GDP, 1980			0.33***
			(3.16)
Economic Freedom, 1980	4.68**	4.98**	3.78*
	(2.31)	(2.13)	(1.76)
Change in EFW rating, 1980–1995	5.21**	5.22**	7.85***
	(2.43)	(2.31)	(3.08)
Change in EFW rating, 1995–2005	1.20	2.64	2.71
	(0.67)	(1.39)	(1.04)
R^2	0.162	0.266	0.544
Number of Countries	53	53	57

Note: The numbers in parentheses are t-ratios for the coefficients. *, **, and *** indicate significance at the 90%, 95%, and 99% levels, respectively. The dependent variables are the change in the poverty measure for the period from 1980 to 2004 or United Nations *Human Poverty Index*. The GDP per capita was measured in hundreds of dollars.

Sources: World Bank, *World Development Indicators*; United Nations, *Human Development Report*; and *Economic Freedom of the World, 2008 Annual Report*. The chain-link EFW data of exhibit 1.5 were used to calculate the change in economic freedom across periods. The respective equations incorporated all countries for which the data were available.

was one unit higher, countries achieved a reduction in the $1-per-day poverty rate that was 4.68 percentage points larger between 1980 and 2004. At the same time, a one-unit increase in the EFW rating between 1980 and 1995 was associated with a 5.21 percentage-point reduction in the $1-per-day poverty rate. As equation 2 indicates, a one-unit increase in the initial EFW rating reduced the $2-per-day poverty rate by 4.98 percentage points, while a one-unit increase in EFW during the period from 1980 to 1995 reduced the $2-per-day poverty rate by 5.22 percentage points. The change in EFW rating from 1995 to 2005 is insignificant in both equations. This is an expected result because there would be only a brief time period for the later change to affect growth and thereby reduce the poverty rate.[5]

Equations 1 and 2 indicate that both higher initial levels and larger increases in economic freedom reduce the poverty rate. Thus, countries that move toward more economic freedom achieved lower poverty rates with the passage of time. A one-unit increase in EFW rating reduced both the $1-per-day and $2-per-day poverty rates by about 5 percentage points a decade later. A two-unit improvement reduced poverty rates by approximately 10 percentage points over the following decade.

Peru and Chile illustrate the potency of major reforms that increase economic freedom. Both have become substantially more free in recent decades. After stagnating around 4.0 during the 1980s, Peru's EFW rating jumped from 4.2 in 1990 to 6.3 in 1995 and on to 7.1 in 2000. Over the same period, Peru's $2-per-day poverty rate only fell from 43% in 1980 to 42% in 1990 but, as the economy became substantially more free during the 1990s, the $2-per-day rate fell to 31% in 2000. The $1-per-day poverty rate of Peru went from 23% in 1980 to

19% in 1990 but it fell even more sharply to 11% in 2000 and 7% in 2004. Peru also achieved a major increase in life expectancy and reduction in the under-five mortality during the same period.

Chile's EFW rating increased from 5.6 in 1980 to 6.9 in 1990 and 7.3 in 2000. While the $1-per-day and $2-per-day poverty rates are unavailable for early years, Chile's $2-per-day rate declined from 24% in 1987 to 6% in 2003. Its $1-per-day poverty rate has been around 2% for at least a decade. Life expectancy at birth in Chile increased from 69 years in 1980 to 74 years in 1990 and 78 years in 2005. Correspondingly, the under-five mortality rate fell from 45 per thousand in 1980 to 21 in 1990 and 8.4 in 2004. Just as equations 1 and 2 of exhibit 2.6 imply, the big increases in the economic freedom of both Peru and Chile were closely followed by a substantial improvement in the well-being of the poor.

Equation 3 of exhibit 2.6 investigates the impact of economic freedom on the incidence of poverty as measured by the United Nations' Human Poverty Index. The 2004 HPI is the dependent variable in equation 3, while initial per-capita GDP and the three economic-freedom variables are included as independent variables. The initial (1980) per-capita GDP, inserted to control for initial differences among countries, is highly significant. Both the initial EFW rating and the change between 1980 and 1995 are also significant. A one-unit increase in EFW during the period from 1980 to 1995 increases the 2004 HPI by 7.85 points. This is a huge increase, given that the difference in the HPI values between the low and high countries included here is only about 50 points. (Remember the scale of the HPI has been reversed so that higher values reflect less poverty.)

Exhibit 2.6 indicates that both the level of economic freedom and the change in economic freedom exert a strong impact on the poverty rate. Countries with higher initial levels of economic freedom achieved more rapid reductions in poverty. At the same time, countries adopting liberal reforms from 1980 to 1995 received an additional payoff in the form of lower poverty rates in 2004. Both the initial level and the change in economic freedom from 1980 to 1995 also exerted a positive impact on the recent HPI measures. The fact that both the initial level and the change in EFW rating reduce the incidence of poverty is strong evidence that, contrary to the views of Jeffery Sachs, economic freedom is a powerful weapon with which to combat world poverty.

These results highlight the need for further research into the connection between reducing poverty and economic freedom, including testing with various control

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5 To check for the robustness of the change in EFW rating over other time frames, modified forms of regression equations 1 and 2 of exhibit 2.6 were run with changes in EFW ratings during the 1980s and the period from 1990 to 2005 as independent variables.

For the $1-per-day poverty rate, this estimated equation was: percentage-point reduction in $1-per-day poverty rate = 20.65 − 0.001 × ($1-per-day poverty rate in 1980)* + 5.46 × (EFW rating in 1980)* + 6.73 × (change in EFW rating 1980−1990)* + 2.42 × (change in EFW rating 1990−2005).

The estimated equation for the 2$-per-day poverty rate was: percentage-point reduction in 2$-per-day poverty rate = 13.95 − 0.15 × (2$-per-day poverty rate in 1980)* + 5.80 × (EFW rating in 1980)* + 7.06 × (change in EFW rating 1980−1990)* + 3.37 × (change in EFW rating 1990−2005)**.

* indicates significance at the 99% level; ** indicates significance at the 95% level.

variables. The initial results reported here show strong positive linkages between economic freedom and the reduction of poverty and we will continue to investigate this issue in more detail.

Why Is the Poverty Rate of Africa So High?

Exhibit 2.7 presents the mean values for the $1-per-day and $2-per-day poverty rates of the 34 sub-Saharan African countries for various years during the period from 1980 to 2004. The mean value of both the weighted and unweighted $1-per-day poverty rate hovers around 40% for each of the years. On average, the $1-per-day poverty rate in 2004 is not much different than that in 1980 and no obvious trend is present. Exhibit 2.2 provides the same figures for all less developed countries. Comparisons indicate that the $1-per-day poverty rate (weighted average) in 2004 for sub-Saharan Africa was more than twice the rate of less developed countries as a whole. The $2-per-day poverty rate for sub-Saharan Africa fluctuated around 70% throughout the period from 1980 to 2004; as was the case for the $1-per-day rate, there was no discernible downward trend. The weighted average for the sub-Saharan African countries was 69.4% in 2004, compared to 46.9% for all LDCs. This indicates that the $2-per-day poverty rate of the sub-Saharan countries was approximately 50% higher than for other less developed countries. Clearly, the poverty rate of sub-Saharan Africa is exceedingly high. Why is this the case? It is not because Africa has received an inadequate share of foreign aid from high-income countries and international organizations such as the World Bank. During the past 50 years, no region has received more aid than Africa.[6]

Reducing Poverty through Economic Growth

Reductions in poverty are closely tied to economic growth. The poverty rates in countries such as Chile, Peru, Thailand, Malaysia, South Korea, China, and India have fallen sharply in recent decades because these countries

have achieved rapid economic growth. Growth is the driving force underlying reductions in poverty. Thus, if you want to reduce poverty rates, it is vitally important to understand the growth process.

Growth and the achievement of high income levels are strongly dependent on (1) gains from trade, (2) entrepreneurship, and (3) investment. Division of labor, specialization, and economies of scale facilitate larger outputs and lower per-unit costs. But trade restrictions retard gains from these sources. Discovery and development of improved products and less costly methods of production are also a major contributing factor to growth. Just think of how innovative new products like cellular phones, personal computers, DVD players, microwave ovens, air conditioning for buildings and automobiles, laser surgeries, and life-saving drugs have improved living standards during the past 50 years. These products and many others are the fruits of business entrepreneurship. Investment in equipment, structures, and roads also enhance our productive capabilities. When people work with more and better capital assets, they will be able to produce more and achieve higher levels of income.

Thus, gains from trade, entrepreneurship, and investment are the core of the growth process. However, gains from these sources do not just happen. They are the result of institutions and policies supportive of economic freedom. Uncertain protection of property rights, biased law enforcement, trade restrictions, and regulations that restrict entry into markets and impose heavy costs on business will undermine these gains. Areas 2, 4, and 5C of the index published in *Economic Freedom of the World* provide insight on cross-country differences in these areas. Let's consider how the institutions and policies of sub-Saharan Africa measure up in these vitally important areas.

Exhibit 2.8 presents the 2006 average summary ratings for Africa and other less developed regions for the EFW index, Area 2 (Legal Structure and Security of Property Rights), Area 4 (Freedom to Trade Internationally), and 5C (Business Regulations). In addition to the 34 sub-Saharan African countries, the countries of central and South America, the LDCs of Asia, and the former, centrally planned, Soviet-bloc economies are included in Exhibit 2.8. All of the countries in these groups have had very low EFW ratings at various times during the past two decades and many of them still do. Most also have high poverty rates, although some have achieved major reductions in poverty in recent years. In essence, these countries have an historical background of institutions and policies inconsistent with economic freedom.

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6 While African countries have received large amounts of foreign aid, research in this area indicates that aid has little or no positive effect on the economic performance of recipient countries. For evidence on this point, see Easterly, Levine, and Roodman, 2004; Easterly, 2006; Djankov, Montalvo, and Reynal-Querol, 2006; Rajan, and Subramanian, 2005; and Vásquez, 1998.

Exhibit 2.7: Average Percentage of Population in Sub-Saharan Africa Living on $1 and $2 per Day, 1980–2004
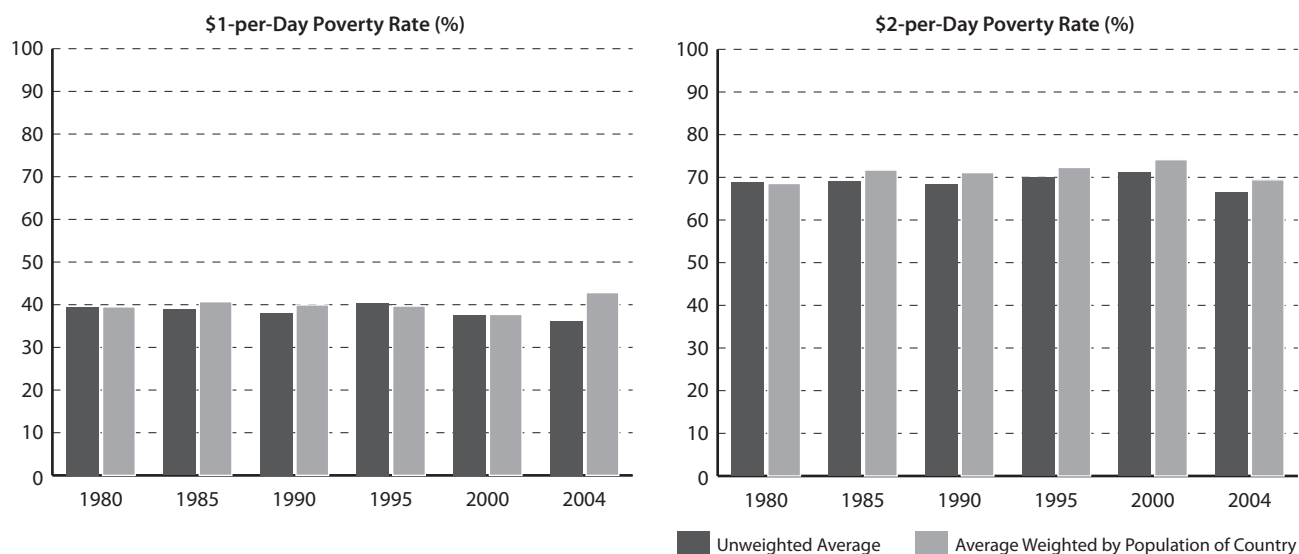
$1-per-Day Poverty Rate (%)

$2-per-Day Poverty Rate (%)

■ Unweighted Average   ■ Average Weighted by Population of Country

Source: Derived from World Bank, *World Development Indicators* and United Nations, *Human Development Report* (1997, 2004) see addendum 2.1A for details. These figures are for the 34 countries in sub-Saharan Africa that have $1-per-day and $2-per-day poverty rates and are included in *Economic Freedom of the World: 2008 Annual Report*. These countries are: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Demoncratic Republic of Congo, Republic of Congo, Côte d'Ivoire, Ethiopia, Gabon, Ghana, Guinea-Bissau, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Tanzania, Togo, Uganda, Zambia, Zimbabwe.

Exhibit 2.8: Average Summary Ratings, Area 2, Area 4 and Area 5C from *Economic Freedom of the World* for Countries in Sub-Saharan Africa Compared to Other Groups of Countries

Groups [number of countries]	EFW Summary Rating (average)	Area 2 (Legal Structure and Security of Property Rights) (average)	Area 4 (Freedom to Trade Internationally) (average)	Area 5C (Business Regulations) (average)
Sub-Saharan Africa[a] [34]	5.71	4.20	5.83	4.92
Central and South America[b] [19]	6.66	4.89	6.96	5.61
Asia[c] [14]	6.26	5.14	6.47	5.37
Formerly Centrally Planned [24]	6.76	5.66	6.98	5.60
G7 Countries [7]	7.66	7.80	7.26	7.32

Note a: See exhibit 2.7 for the list of countries.

Note b: This group comprises: Argentina, Belize, Bolivia; Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Nicaragua, Panama, Paraguay, Peru, Trinidad & Tobago, Uruguay, Venezuela.

Note c: This group comprises: Bangladesh, China, India, Indonesia, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Philippines, South Korea, Sri Lanka, Thailand, Vietnam. Note that Hong Kong, Singapore, and Japan were omitted because of their high economic freedom and income status. The Asian former Soviet-block countries are included in the centrally planned group.

Source: Derived from exhibits 1.2 and 1.3.

The mean values of the sub-Saharan African group are lower, and often substantially lower, than for any of the other three groupings. The weak ratings of the African countries in the legal system and trade areas are particularly pronounced. Even though the legal system is still a major weakness of Central and South America, the mean rating of the African countries is still worse (4.20 compared to 4.89). The rating of African countries in this crucial area is lower by almost a point and a half than that of the group of countries that formerly had a centrally planned economy. In the international exchange area, the average rating of the African group is a full point lower than Central and South America and the former Soviet-bloc countries.

The ratings for the G7 nations are included as a benchmark. The average ratings of the African countries are well below the G7 group in each of the four categories, and lower in the legal system area by a whopping three points and a half.

Exhibit 2.9 considers the quality of African institutions and policies from another interesting perspective: the representation of the region in the bottom 40 and top 40 among the 141 countries covered by the index in *Economic Freedom of the World: 2007 Annual Report.* This issue is examined for the summary ratings, as well as for Area 2 (Legal Structure and Security of Property Rights), Area 4 (Freedom to Trade Internationally), and 5C (Business Regulations). The sub-Saharan countries dominate the bottom 40 for each of these institutional measures, supplying 23 of the bottom 40 in both the summary ratings and Area 2 (Legal Structure and Security of Property Rights). They also make up 21 of the bottom 40 in Area 4 (Freedom to Trade Internationally) and 18 in 5C (Business Regulations). In contrast, there is virtually no representation of sub-Saharan Africa in the top 40 in the summary rating or any of the three areas.

Once one thinks about the importance of gains from trade, entrepreneurship, and investment, it is easy to see why Africa is poor. The countries of sub-Saharan Africa are approximately the geographic size of the typical US state. Before resources and products can cross these national boundaries, they are subject to both taxes and the inspection of customs officials.[7] This is a costly, time-consuming, and onerous ordeal that exerts a corrupting influence on both business and government. Most

important, it is a major deterrent to gains from specialization, economies of scale, entrepreneurship, and investment. If trade restrictions of this type were present among the states, the United States would be a poorer country and poverty would be more wide-spread.

The trade restrictions alone are enough to undermine prosperity but, when coupled with legal systems that fail to protect property rights and regulations that restrict entry and drive up the cost of doing business, the results are catastrophic. Africa will not grow and prosper as long as these institutional restraints are in place. Africa needs institutional reforms that will reduce trade barriers, provide legal protection for property rights, and reduce business regulation. Until such reforms are instituted, doubling or tripling of foreign aid will not have much impact on the poverty rates of Africa.[8]

Implications and Conclusion

Progress has been made in reducing poverty during the past several decades. Measures of poverty based both on income and on quality of life illustrate this point. But the progress has been uneven. Reductions in poverty are closely related to institutions and policies consistent with economic freedom. Both the level and change in economic freedom have contributed to reductions in the poverty rate over recent decades.

The growth process is the driving force underlying reductions in poverty. Without economic growth, there will be little or no reduction in poverty. The poverty rates of sub-Saharan Africa are exceedingly high and the current rates are virtually unchanged from the levels of 1980. Once one takes a close look at the institutional quality of sub-Saharan Africa, the high and largely unchanged poverty rates of the region are not mysterious. The institutions and policies of the region are highly inconsistent with economic growth. The failure of the legal system to protect property rights, the roadblocks imposed by trade restrictions, and the heavy regulation and administrative costs imposed on business undermine economic growth because they stifle the gains from trade, entrepreneurship, and investment. Given that most of the sub-Saharan countries are relatively small, the high trade barriers are particularly damaging.

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7 In Area 4 (Freedom to Trade Internationally), 30 of the 34 African countries rank in the bottom half of the 141 countries covered by the index in *Economic Freedom of the World: 2007 Annual Report.*

8 Paul Collier (2007) emphasizes the ubiquity of conflict in Africa. His compelling argument strengthens the case that aid, unaccompanied by institutional changes, offers little hope of eradicating poverty in Africa.

Exhibit 2.9: Number of Countries in the Bottom 40 and Top 40 of the EFW Summary Rankings, Area 2, Area 4 and Area 5C, Sub-Saharan Africa Compared to Other Groupings

Number of Countries in the Bottom 40			
Summary Index	Area 2	Area 4	Area 5C
Sub-Saharan Africa			
23	23	21	18
Angola; Benin; Burkina Faso; Burundi; Cameroon; Central Afr. Rep.; Chad; Congo, Dem. Rep.; Congo, Rep.; Côte d'Ivoire; Ethiopia; Gabon; Guinea-Bissau; Madagascar; Malawi; Mozambique; Niger; Nigeria; Rwanda; Senegal; Sierra Leone; Togo; Zimbabwe	Angola; Benin; Burkina Faso; Burundi; Cameroon; Central Afr. Rep.; Chad; Congo, Dem. Rep.; Congo, Rep.; Côte d'Ivoire; Gabon; Guinea-Bissau; Madagascar; Mali; Mozambique; Niger; Nigeria; Rwanda; Senegal; Sierra Leone; Togo; Uganda; Zimbabwe	Benin; Burkina Faso; Burundi; Cameroon; Central Afr. Rep.; Chad; Congo, Dem. Rep.; Congo, Rep.; Côte d'Ivoire; Ethiopia; Gabon; Guinea-Bissau; Madagascar; Malawi; Mozambique; Niger; Rwanda; Senegal; Sierra Leone; Togo; Zimbabwe	Angola; Benin; Burundi; Cameroon; Central Afr. Rep.; Chad; Congo, Dem. Rep.; Congo, Rep.; Guinea-Bissau; Lesotho; Madagascar; Mauritania; Mozambique; Niger; Nigeria; Senegal; Togo; Zimbabwe
Central and South America			
5	8	3	5
Argentina; Colombia; Ecuador; Guyana; Venezuela	Argentina; Bolivia; Colombia; Ecuador; Guyana; Nicaragua; Paraguay; Venezuela	Belize; Colombia; Venezuela	Argentina; Bolivia; Brazil; Ecuador; Venezuela
Asia			
7	5	4	5
Bangladesh; Indonesia; Myanmar; Nepal; Pakistan; Sri Lanka; Vietnam	Bangladesh; Indonesia; Myanmar; Nepal; Pakistan	Bangladesh; Myanmar; Nepal; Pakistan	Bangladesh; China; Nepal; Pakistan; Vietnam
Former, Centrally Planned, Soviet Bloc			
4	3	3	8
Azerbaijan; Bosnia & Herzegovina; Russia; Ukraine	Bosnia & Herzegovina; Kyrgyz Rep.; Macedonia	Albania; Bosnia & Herzegovina; Russia	Armenia; Azerbaijan; Bosnia & Herzegovina; Bulgaria; Poland; Russia; Serbia; Ukraine

Number of Countries in the Top 40			
Summary Index	Area 2	Area 4	Area 5C
Sub-Saharan Africa			
0	2	0	0
	Botswana; Namibia		
Central and South America			
5	2	6	3
Chile; Costa Rica; El Salvador; Honduras; Panama	Chile; Costa Rica	Chile; Costa Rica; Guyana; Panama; Paraguay; Peru	Belize; Chile; El Salvador
Asia			
1	2	3	2
South Korea	Malaysia; South Korea	China; Malaysia; Thailand	Malaysia; South Korea
Former, Centrally Planned, Soviet Bloc			
6	3	8	5
Estonia; Georgia; Hungary; Latvia; Lithuania; Slovak Rep.	Estonia; Latvia; Lithuania	Bulgaria; Czech Rep.; Estonia; Georgia; Hungary; Latvia; Lithuania; Slovak Rep.;	Estonia; Georgia; Latvia; Lithuania; Hungary

Source: Derived from exhibits 1.2 and 1.3 of this report.

Three Steps towards Economic Growth in Africa

1 Eliminate Trade Barriers and Business Regulations
The trade barriers and business regulations that are currently paralyzing Africa need to be reduced and eliminated. Tariffs, quotas, and marketing boards need to be abolished. Regulations that restrict entry into markets and increase the administrative cost imposed on business need to be drastically cut. These changes would both reduce the roadblocks to African trade and lead to the movement of customs officials and other government employees from counter-productive into productive activities.[9] These are vitally important reforms that could be adopted and implemented quickly.

2 Improve the Legal System
Steps need to be taken to improve the legal system. This is a more complex task and it will require some time. Eliminating or, at least substantially reducing, trade and regulatory barriers will also be helpful in the legal area. Currently, these regulations are a breeding ground for corruption and they help explain why sub-Saharan African countries rank so low in the Transparency International index and other measures of political corruption. But other steps are also needed. Private ownership rights need to be more clearly defined and the entitlement process made more transparent. Further, the law needs to make it clear that arbitration provisions included in contracts will not be over-ruled by judges or other political decision-makers.

3 Develop an Interstate Highway System throughout Africa
Third, from an investment standpoint, the most constructive thing for the Millennium Development Project would be to provide funding for the development of a major African road network, something akin to the interstate highway system of the United States.[10] This link would reduce transport costs and widen markets. It would also increase competition and make it possible for successful businesses in one African country to quickly enlarge the market for their good or service by expanding into other countries.

Sub-Saharan Africa is in dire need of policies consistent with economic freedom. Peru and Chile have shown that such reforms are possible and that they make a huge difference. Both of these countries adopted reforms that increased their EFW ratings by about two units in a relatively short period of time. Our analysis indicates that reforms of this magnitude would reduce the number of persons with incomes below $1 and $2 per day by about 10 percentage points. Given the 660 million people living in sub-Saharan Africa, this would mean that, about a decade after the reforms, there would be approximately 66 million fewer Africans living in such poverty.

Without such reforms, prior experience indicates that the Millennium Development Goals will not be met. Foreign aid, even in large doses, will not reduce poverty, at least not by much, unless institutions and policies consistent with economic growth are adopted. There is little evidence that the leading proponents of the Millennium Development Goals have any appreciation of this point. Jeffery Sachs has certainly made it clear that he does not.

Good intentions alone will not reduce poverty. As they reflect on their actions, the planners working towards meeting the Millennium Development Goals must focus on economic freedom and growth. If they fail to do so, the results, tragically, of the project are virtually certain to be disappointing.

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9 See Baumol (1990) for the classic analysis of how the allocation of resources between productive and counter-productive activities influences economic performance.

10 Jeffrey Herbst (2000) documents the importance of road traffic in Africa: 80%–90% of passenger and freight traffic in Africa moves via roads. Herbst also argues that lack of a road infrastructure sorely limits the economic participation of Africans.

Appendix to Exhibit 2.1:　$1-per-Day and $2-per-Day Poverty Rates (in 1990 USD) for Developing Countries, 1980–2004

	Percentage Living on $1 per Day or Less						Percentage Living on $2 per Day or Less					
	1980	1985	1990	1995	2000	2004	1980	1985	1990	1995	2000	2004
Albania		16.74	15.02	13.28	8.50	**2.00**		40.31	38.40	36.32	27.71	**11.81**
Algeria	23.52	18.16	15.07	**2.00**	10.49	8.74	43.86	38.11	35.26	15.10	29.24	26.17
Angola		44.42	43.09	45.38	44.75	43.90		69.78	67.04	71.75	70.47	68.72
Armenia			17.36	19.79	15.11	**2.00**			41.19	47.67	39.66	30.81
Azerbaijan				27.67	24.32	**3.70**				57.25	51.04	**9.10**
Bangladesh	43.27	40.05	36.89	32.86	**36.00**	25.14	74.84	72.41	69.30	64.94	**82.80**	54.88
Belize	19.08	17.26	13.60	11.25	9.22	8.25	43.36	41.53	34.95	30.80	27.03	25.36
Benin	45.84	43.84	43.38	41.62	39.85	**30.90**	78.92	76.83	77.77	76.19	**73.40**	72.50
Bolivia	34.12	32.08	29.85	26.87	23.60	**23.20**	60.11	59.69	58.07	54.66	**42.80**	47.50
Botswana	22.78	16.74	13.11	**23.50**	16.94	17.51	49.08	39.24	32.73	**50.10**	34.78	33.93
Brazil	15.76	14.59	12.16	9.42	7.08	**7.54**	34.40	33.33	30.51	26.49	22.91	**21.50**
Burkina Faso	49.40	46.29	45.48	44.54	43.22	**27.19**	81.91	79.03	78.72	77.60	75.97	**71.77**
Burundi	45.51	44.21	43.98	**54.60**	46.28	46.27	80.80	78.81	78.32	81.51	**87.60**	83.03
Cameroon	34.64	30.67	31.73	34.63	**17.10**	33.06	61.44	56.80	60.05	64.38	62.45	**50.64**
Central African Rep.	38.98	38.04	38.76	**66.60**	41.85	42.87	69.41	68.96	70.58	83.96	73.55	75.64
Chad	48.75	44.93	44.67	44.74	45.12	38.58	83.40	77.59	77.98	78.54	79.33	65.88
China	29.34	23.45	20.93	16.18	**16.64**	7.36	65.27	55.05	50.01	40.66	33.38	**46.70**
Colombia	13.53		7.86	5.46	4.15	**7.03**	33.85		24.90	20.91	18.90	**17.76**
Congo, Dem. Rep.	39.89	39.45	40.64	44.42	47.19	47.44	67.22	66.99	69.44	77.22	82.91	83.42
Congo, Rep.	37.69		34.05	32.03	33.89	34.37	74.18		68.73	64.86	68.66	69.66
Côte d'Ivoire	34.41	33.87	34.65	37.66	38.91	**14.77**	61.09	62.29	63.61	67.36	68.19	**48.82**
Dominican Republic	20.88	18.53	16.46	13.21	8.32	**2.52**	44.10	41.30	38.66	33.61	25.31	**11.00**
Ecuador	22.92	19.27	16.42	14.05	**15.78**	9.07	47.48	43.49	39.67	36.68	**37.19**	28.70
Egypt, Arab Rep.	34.66	28.95	24.86	19.87	**3.08**	11.30	61.47	54.61	50.65	44.86	**43.89**	31.96
El Salvador	23.76	20.50	16.70	12.63	9.68	**19.04**	46.50	44.53	39.83	33.35	28.79	**40.55**
Ethiopia		48.98	47.52	47.17	**22.98**	43.01		85.64	83.72	84.61	**77.80**	79.52
Gabon	19.37	18.22	17.44	16.98	17.37	17.41	37.89	37.28	37.04	36.23	37.03	37.11
Georgia		11.34	12.55	20.89	18.85	**6.51**		29.90	33.06	50.47	46.28	**25.29**
Ghana	35.03	34.88	31.76	29.71	**44.80**	28.49	64.40	65.97	62.39	59.81	**78.50**	57.04
Guatemala	26.84	24.32	20.71	17.24	14.68	**13.46**	50.00	49.15	45.09	40.41	36.63	**31.89**
Guinea-Bissau	54.54	52.56	49.47	47.59	46.95	47.06	86.53	85.15	81.10	79.68	81.06	82.90
Guyana	23.72	23.37	21.39	19.60	**2.00**	16.50	48.04	48.67	45.68	43.22	39.97	38.82
Haiti	34.29		31.73	32.89	**53.89**		57.74		58.56	62.70	**77.90**	
Honduras	25.43	23.35	19.36	17.26	**20.70**	15.27	51.97	50.39	45.43	42.48	**44.00**	39.52
India	39.62	35.50	31.29	27.73	**34.70**	22.35	71.68	66.85	61.31	56.55	**79.90**	48.04
Indonesia	32.70	29.28	25.02	19.10	15.80	**7.51**	63.92	59.07	52.73	43.96	39.61	**52.40**
Iran, Islamic Rep.	23.97	19.07	16.80	12.81	**2.00**	7.17	45.32	39.98	38.42	32.51	**7.30**	23.28
Jamaica	12.25	9.09	6.65	6.46	**2.00**	6.47	34.20	29.19	24.58	24.19	**13.28**	24.21
Jordan	16.18	12.79	12.23	10.64	9.72	**2.00**	38.09	33.15	33.35	30.77	29.54	26.24
Kazakhstan			13.76	17.85	16.96	13.90			33.38	41.25	38.62	32.33
Kenya	33.73	32.31	31.08	**22.81**	34.52	34.61	67.39	66.50	64.38	**58.34**	68.75	68.60
Kyrgyz Republic			22.88	27.33	24.81	**2.00**			49.83	59.78	55.15	**21.40**
Lesotho	36.82	35.28	31.03	**36.40**	27.39	27.31	70.40	69.85	63.40	**56.10**	55.70	54.59
Macedonia, FYR			7.18	6.00	2.11	**2.00**			23.25	22.44	15.52	**4.00**
Madagascar	39.94	41.19	40.72	40.62	38.48	37.17	72.05	74.89	74.60	76.02	**85.10**	73.45
Malawi	52.83	52.08	52.70	49.64	**41.66**	45.13	86.39	87.01	89.36	86.45	**76.13**	82.69

	Percentage Living on $1 per Day or Less						Percentage Living on $2 per Day or Less					
	1980	1985	1990	1995	2000	2004	1980	1985	1990	1995	2000	2004
Mali	54.31	53.91	51.28	**72.30**	47.84	46.11	84.69	87.27	85.23	**90.60**	81.67	78.80
Mauritania	36.75	33.90	34.08	31.85	**25.93**	31.17	66.17	64.37	65.69	61.91	**63.08**	60.78
Mexico	12.99	9.61	8.28	6.11	3.14	2.47	30.31	26.07	24.43	21.28	16.01	14.96
Moldova			12.57	20.20	**22.00**	15.95			34.00	49.22	**63.70**	42.61
Mongolia		33.04	30.19	27.74	**27.02**	20.26		64.09	61.06	58.87	**74.90**	48.19
Morocco	29.85	25.50	21.72	19.11	**2.00**	12.65	55.50	50.89	46.23	43.58	**14.44**	33.83
Mozambique	49.30	50.77	49.98	**37.85**	42.41	37.64	83.86	88.23	84.58	**78.39**	76.73	70.48
Namibia	17.34	16.51	17.63	**34.93**	14.20	12.38	34.66	34.45	38.23	36.06	33.49	30.49
Nepal	44.62	41.60	37.64	33.75	29.71	**24.10**	78.98	75.47	71.37	66.76	61.83	**68.53**
Nicaragua	22.79	19.89	19.85	16.72	**45.12**	12.92	45.19	43.02	45.22	40.82	**79.93**	35.01
Niger	53.57	55.69	55.97	**60.60**	52.87	51.72	80.48	84.83	85.42	**85.80**	85.80	84.94
Nigeria	46.39	49.10	47.47	47.78	45.25	**70.80**	78.14	83.18	80.11	80.73	78.65	75.05
Pakistan	38.26	35.58	32.77	30.31	28.51	**16.98**	71.57	67.54	63.40	59.96	57.61	**73.58**
Panama	11.10	9.72	9.44	6.98	4.74	**6.52**	30.22	28.33	28.43	23.97	19.91	**17.13**
Papua New Guinea	27.96		27.82	25.28	25.36	25.00	56.49		57.14	52.33	52.91	52.49
Paraguay	14.41	12.95	10.85	8.65	7.54	**16.37**	35.00	33.34	30.37	26.93	25.47	**33.22**
Peru	22.89	20.85	19.41	14.85	11.12	7.14	43.63	42.43	42.70	36.04	30.79	**31.81**
Philippines	18.94	19.36	16.49	14.39	**15.50**	10.15	41.60	43.13	39.12	36.58	**47.50**	29.83
Rwanda	43.55	40.57	39.80	44.88	**51.66**	42.75	73.54	71.72	72.04	77.61	**83.72**	74.06
Senegal	42.81	38.38	35.57	**26.30**	34.45	33.47	72.14	68.84	66.73	**67.80**	65.63	63.94
Sierra Leone	55.71	54.34	**57.00**	55.34	57.45	56.40	82.72	82.74	**74.47**	87.76	93.05	91.32
South Africa	13.03	11.60	8.94	9.57	**10.70**	9.81	28.11	26.93	23.90	25.32	**34.07**	24.72
Sri Lanka	19.86	16.88	14.08	10.51	**7.60**	3.40	47.94	42.88	38.19	31.83	24.65	**41.60**
Syrian Arab Rep.	20.95	18.60	16.17	11.52	8.49	6.04	46.67	44.01	40.91	33.10	28.10	23.81
Tanzania			44.45	**19.90**	42.46	39.42			83.22	84.58	**89.93**	77.61
Thailand	19.14	14.99	10.25	4.52	3.40	**1.00**	45.11	38.48	29.68	19.40	17.64	14.48
Togo	35.61	35.72	35.22	35.42	34.78	34.64	63.16	65.14	65.47	66.68	65.90	65.95
Tunisia	21.68	16.73	13.47	10.10	6.26	**1.00**	44.67	38.55	34.27	28.98	**6.64**	17.53
Turkey	25.58	21.27	16.94	13.50	9.08	**1.00**	48.23	43.15	37.36	32.86	26.34	20.65
Uganda		42.57	40.49	38.77	36.22	34.73		77.45	75.22	72.22	68.47	66.38
Vietnam			23.82	20.18	**15.00**	10.85			55.41	49.14	39.80	32.78
Zambia	37.69	39.15	41.91	43.80	**63.70**	42.91	70.12	72.18	75.42	79.05	79.00	77.21
Zimbabwe	26.54	23.41	22.09	**56.10**	27.61	31.15	53.58	50.11	48.21	50.41	**82.97**	60.21

Note: The values in **bold** are the actual figures for the $1-per day and $2-per day poverty rates as reported by the United Nations. These figures were unavailable for many countries and years. However, the under-five mortality rate is highly correlated (approximately 0.80) with the $2-per day poverty rate. The following regression was derived for countries with the $2-per day poverty rate, the under five-mortality rate, and real per-capita GDP during the same year:

$$\%\$2Day_t = 114.68 + 13.366 \times \log(U5Mort_t) - 15.820 \times \log(GDP_t) \quad R^2 = 0.723,$$

where %$2*Day* is the estimated percentage of the population living beneath $2 per day, *U5Mort* is under-five mortality and *GDP* is per-capita GDP in constant 2000 dollars. The R^2 for this equation indicates that the independent variables explained 72.3% of the cross-country variation in the $2-per-day poverty rate. The under-five mortality rate and per-capita real GDP are available for a larger set of countries and years. Thus, they were used as instruments in the above regression to estimate the missing values for the $2-per-day poverty rate for various countries and years. The linkage between the $2-per-day poverty rate and the $1-per-day poverty rate was then derived for countries containing actual observations for both measures. The estimated regression equation was:

$$\%\$1Day_t = -6.629 + 0.487 \times \%\$2Day_t + 0.066 \times U5Mort_t \quad R^2 = 0.804.$$

This equation was then used to estimate the missing values for the $1-per-day poverty rate by country and year. The figures derived by the procedures explained here are presented in regular type. Because data on poverty rates are largely unavailable for high-income, developed countries, it was only possible to make estimates for less-developed countries.

Source: Derived from United Nations, *Human Development Report* (1997, 2004) and World Bank, *World Development Indicators*.

References

Baumol, William (1990). Entrepreneurship: Productive, Unproductive and Destructive. *Journal of Political Economy* 98 (October): 893–921.

Berggren, Niclas (2003). The Benefits of Economic Freedom: A Survey. *Independent Review* 8, 2 (Fall): 193–211.

Bourguignon, François, and Christian Morrisson (2002). Inequality among World Citizens: 1820–1992. *American Economic Review* 92 (September): 727–44.

Cole, Julio H. (2003). The Contribution of Economic Freedom to World Economic Growth, 1980–99. *Cato Journal* 23: 189–98.

Collier, Paul (2007). *The Bottom Billion.* New York: Oxford University Press.

Dawson, John W., (1998). Institutions, Investment and Growth: New Cross-Country and Panel Data Evidence. *Economic Inquiry* 36 (October): 603–19.

Dawson, John W. (2003). Causality in the Freedom-Growth Relationship. *European Journal of Political Economy* 19: 479–95.

Deaton, Angus (2006). Measuring Poverty. In Abhijit Vinayak Banerjee, Roland Benabou, and Dilip Mookherjee (eds.), *Understanding Poverty* (Oxford University Press).

de Haan, Jakob, Susanna Lundström, and Jan-Egbert Sturm (2006). Market-Oriented Institutions and Policies and Economic Growth: A Critical Survey. *Journal of Economic Surveys* 20, 2: 157–81.

de Soto, Hernando (1990). *The Other Path.* Harper & Row.

Easterly, William(2006). *The White Man's Burden.* Penguin Press.

Easterly, William, Ross Levine, and David Roodman (2004). Aid, Policies, and Growth: Comment. *American Economic Review* 94, 3 (June): 774–80.

Easton, Steven T., and Michael A. Walker (1997). Income, Growth, and Economic Freedom. *American Economic Review* 87 (May): 328–32.

Djankov, Simeon, Jose G. Montalvo, and Marta Reynal-Querol (2006). Does Foreign Aid Help? *Cato Journal* 26, 1: 1–28.

Herbst, Jeffrey (2000). *States and Power in Africa.* Princeton University Press.

Lucas, Robert E. Jr. (1988). On the Mechanics of Economic Development. *Journal of Monetary Economics* 22 (July): 3–42.

Norton, Seth W. (1998). Poverty, Property Rights and Human Well-Being: A Cross-National Study. *Cato Journal* 18, (Fall): 233–45.

Norton, Seth W. (2003). Economic Institutions and Human Well-Being: A Cross-National Analysis. *Eastern Economic Journal* 29 (Winter): 23–40.

North, Douglass C. (1981). *Structure and Change in Economic History.* Norton.

Rajan, G. Raghuram, and Arvind Subramanian (2005). *Aid and Growth: What Does the Cross-country Evidence Really Show?* NBER Working Paper No. 11513. National Bureau of Economic Research.

Sachs, Jeffrey C. (2005). *The End of Poverty.* Penguin.

Schultz, Theodore W. (1980). The Economics of Being Poor. *Journal of Political Economy* 88 (August): 639–51.

United Nations (1997). *Human Development Report, 1997.* Oxford University Press.

United Nations (2004). *Human Development Report, 2004.* Oxford University Press.

Vásquez, Ian (1998). Official Assistance, Economic Freedom, and Policy Change: Is Foreign Aid like Champagne? *Cato Journal* 18, 2 (Fall): 275–86. <http://www.freetheworld.com/papers/IanVasquez.pdf>.

World Bank (2006). *World Development Indicators.* CD Rom. World Bank.

World Bank (2008). *World Development Indicators.* World Bank.