

A Multi-Country Analysis of Achievements and Inequalities in Economic Growth and Standards of Living

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This paper compares achievements and inequalities in standards of living across countries. Achievement is measured by an index constructed to reflect greater achievement for an increase in the standard of living of a country already at a high level of development compared to an equal increase in a country starting from a lower base. The paper tests for the statistical relationship between indicators of standards of living and per capita income using data from 177 countries covering 2000–2007. It analyzes disparities between countries of achievement in standards of living and explains inequality in achievement in standards of living both within and between regions. Furthermore, the paper estimates the number of years it will take for different regions and selected Asian countries to catch up with the average standard of living of the industrialized countries.

I. INTRODUCTION

It is commonly believed that economic growth ought to be broad-based enough that the poorer segment of the population experiences significant improvements in living standards. The contemporary concept of human development encompasses a broader and richer process than mere economic growth and wealth accumulation (UNDP 2007). According to this concept, development means the creation of an environment in which all members of a society can take full advantage of their potential, live as they wish to, and have more choices. But in a number of countries, rapid growth has not led to strong improvements in human development. Countries with high per capita incomes can have poor levels of achievement in human development, while those with low per capita incomes or growth rates can nevertheless do well on this front.

Experience in economic development demonstrates that economic growth needs to be complemented by reform of public services if sustainable improvements in human development are to be achieved. Moreover, without such reform, rapid growth will likely be difficult to sustain. A key goal to achieve an equitable pattern of human development should be the equitable provision of

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basic public services such as education and health, which constitute the most important determinants of human development.

That said, human development outcomes in health and education are determined by more than the availability and quality of these services. Many factors influence both the demand for and the supply of public services, and these factors are linked at many levels. Better nutrition helps children learn better, for example, while better storage facilities and transport networks help keep medicines safe. The demand for health and education is determined by individuals and households who weigh the benefits and costs of a particular choice based on the constraints they face. The supply side, meanwhile, covers many factors ranging from global trade networks to teacher absenteeism and water supply. Though important, the factors influencing the supply and demand of public services are beyond the scope of the current study.

The main objective of this study is, instead, to assess inequalities and achievements in health and education outcomes across countries. The paper uses an achievement function to assess how countries at different stages of economic development are performing in terms of standards of living. It suggests that it is a greater achievement for a country already at a high level to make a further increase in its standard of living than for a country at a lower level to make an equal increase in its standard of living.

The paper assesses the performance of 177 countries in different regions during the period 2000–2007, making comparisons within and between regions with a particular focus on Asia. It also tests for the statistical relationship between indicators of the countries' standards of living and per capita gross domestic product (GDP). The questions it addresses include: To what extent can aggregate income measures such as per capita GDP explain standards of living? Can growth in per capita GDP alone bring about significant improvements in standards of living in a reasonable period of time? How many years will it take for Asia to achieve the standards of living of the rich industrialized countries?

Section II discusses the concepts and indicators of standards of living. Section III is devoted to multi-country inequalities in living standards. Section IV introduces the achievement index, and Section V looks into the relationship between income and standards of living. Section VI explores performance in standards of living in relation to a country's per capita income, while Section VII investigates the possibility of the rest of the world catching up to the industrialized countries' standards of living. Section VIII discusses the policies required to facilitate this convergence, and the final section summarizes major findings.

II. LIVING STANDARDS: CONCEPTS AND INDICATORS

As stated in the United Nations' *Human Development Report 1990*, the primary objective of economic development is to improve well-being. Several approaches have been used to define well-being or standard of living, including social indicators, quality of life, and basic needs (see Hicks and Streeten 1979, Hicks 1979, Drewnowski 1974, Morris 1979, Sen 1973, Streeten 1979, Dasgupta 1990). While these approaches are evidently related to the concept of standard of living, they lack a unifying conceptual framework for defining and measuring it. Sen (1985, 1987) has developed such a framework, defining standard of living in terms of functionings and capabilities. According to Sen (1985), standard of living must be seen in terms of an individual's achievements (functionings) and ability to achieve (capabilities), and not merely in terms of that individual's means.

Ideally, the measurement of standard of living should incorporate all the capabilities that enhance human well-being, but this is not feasible from an empirical standpoint. First, many capabilities cannot easily be quantified. For instance, democracy can be regarded as an important component of standard of living, but it can be a problem to quantify. Secondly, for many capabilities, consistent data are not available across countries and over time. This paper focuses on six indicators selected based on the availability of data and their ability to reflect quality of life: life expectancy at birth, adult literacy rate, primary enrollment rate, under-five survival rate, births attended by skilled health personnel, and per capita GDP. Together, I believe these indicators adequately reflect overall standard of living.

Reiterating Sen's conceptualization of standard of living, the primary concern should be with individual achievements and not with means. While input indicators are important because they enhance capabilities and extend functionings, they are not indicators of achievements. Hicks and Streeten (1979) argue that output indicators are, in general, better measures of the level of welfare and basic needs achievement.

The six indicators selected are a mixture of results and inputs. Note that the distinction between input and output indicators may not always be precise. For instance, primary and secondary school enrollments are input indicators because they provide the means to achieve higher literacy in the population. However, can literacy itself be considered an ultimate achievement of a society, or is it only a means to some other end? It is clear that a literate person has access to many capabilities—he or she can read and write and may be able to communicate more effectively with other members of a society. An illiterate person may face many disadvantages because he or she cannot perform these basic functions. Thus, literacy is classified as an output indicator.

The under-five survival rate and life expectancy at birth are the two most important indicators of achievement. The under-five survival rate shows the number of children per one thousand live births who survive until their fifth birthday. This is a good indicator of the availability of sanitation and clean water facilities that can protect children from diseases and infections caused by unsanitary household conditions. Moreover, the survival rate of children under five years old is largely determined by their nutritional status; thus, a child who is seriously malnourished because of dietary inadequacies or deficiencies in the mother's diet during pregnancy and lactation has a lower chance of survival. The infant mortality (or survival) rate, similarly, points to the fulfillment of several basic needs—such as health, sanitation, clean water supply, and good nutrition—making it a good indicator of achievement. Both are classified as output indicators.

Life expectancy at birth indicates the number of years a newborn infant would live if patterns of mortality prevailing in the country at the time of birth were to stay the same throughout his life. It is the outcome of several input variables such as nutrition, water supply, sanitation, and medical facilities. As most people would prefer to live longer irrespective of the quality of life, life expectancy can be regarded as an indicator of achievement and, therefore, can be considered an important component of standard of living.

Births attended by skilled health personnel measures the proportion of births at which a skilled health worker is present. According to the World Health Organization (2008), complications arising from pregnancy and childbirth kill more than half a million women every year and leave many others with serious and lifelong health problems. This input indicator is related to the accessibility of appropriate health care services throughout pregnancy and childbirth. Evidence suggests that having a skilled health worker present during delivery is highly associated with reduced maternal mortality (Graham, Bell, and Bullough 2001). In this regard, the indicator can be regarded as an input measure because it is a means to achieve lower maternal mortality.

Per capita GDP is considered an input variable because it provides a measure of the degree of command people have over commodities. It is an indicator of affluence, which is not the same thing as standard of living.

By confining itself to the five measures of well-being, in addition to per capita GDP, this study excludes many other social and psychological aspects that affect quality of life, such as security, justice, freedom of choice, human rights, employment, and satisfaction (see Morris 1979). This analysis is rather restricted, mainly due to the unavailability of appropriate data, and may appear to be too narrow in its scope. Nevertheless, the selected indicators, apart from per capita GDP, are proxies to a large number of important capabilities that influence human well-being.

The five indicators described above are highly aggregated measures of well-being. Ideal measures would reflect the well-being of individuals or groups. In this context, Dasgupta (1990) correctly argues that focus should be on the distribution of well-being across class, caste, gender, or religion. It should be pointed out that the methodology used in this paper can be applied to analyze the standards of living at individual or socioeconomic group levels. However, it may not be feasible to carry out the same analysis for a large number of countries because of the demanding data requirements.

This study does not attempt to construct a single index of living standards. Several such attempts have been made, including the widely known human development index (Morris 1979, UNRISD 1972, UN 1990). It is convenient and appealing to have a single overall index of well-being by which to rank countries. But the construction of such an index has many drawbacks. One of the main difficulties is the aggregation of several components of well-being into a single measure, which requires the assigning of appropriate weights to each component. In 1979, Morris constructed a single index derived by simply averaging three components—life expectancy at birth, the infant mortality rate, and the literacy rate. While this index has the merit of being simple, it is obviously arbitrary. There exists no rational economic justification for assigning equal weights to the different components. An alternative approach suggested in the literature assigns weights for indicators in proportion to a principal component of the correlation matrix. The rationale behind this approach is that the data determine the optimal weights that capture the largest variation in the selected indicators.

Rather than attempting to combine the five indicators into one single index, this study analyzes each country's achievements in terms of the five separate indicators of living standards. According to Sen (1987), measurements of living standards or well-being that have inherent plurality, such as weight or height, should not be seen as one-dimensional; therefore, a partial-ordering approach is adopted in which comparisons of living standards are made by ranking countries in accordance with each of the capabilities considered.

III. MULTI-COUNTRY INEQUALITIES IN STANDARDS OF LIVING

The analysis is based on data from 177 countries, divided into eight regions. As discussed in Section II, standard of living is measured by five indicators: life expectancy at birth, adult literacy rate, primary school enrollment rate, under-five survival rate, and births attended by skilled health personnel. In addition, per capita GDP is used as a measure of a country's affluence or the command people have over goods and services; the higher this measure, the richer the country. Since per capita GDP is measured in terms of 2005 purchasing

power parity (PPP), values are comparable across countries. The six indicators are selected from the World Bank's *World Development Indicators*.

Table 1 presents, on a regional basis,¹ the weighted average of per capita GDP (at 2005 PPP) and the five standard of living indicators, using the countries' relative populations as weights. It is appropriate that larger countries are assigned a heavier weight when aggregating standard of living across regions.

Table 1. Average Standard of Living by Region, 2000–2007

Region	GDP Per Capita at 2005 PPP (US\$)	Life Expectancy at Birth (years)	Adult Literacy Rate (%)	Net Primary Enrollment Rate (%)	Under-5 Survival Rate (per 1,000 births)	Births Attended by Skilled Personnel (%)
East Asia and Pacific	4,217	70.4	98.2	94.7	969	89.8
South Asia	1,959	63.8	74.0	85.6	918	39.5
Central Asia	3,547	68.0	99.7	92.0	948	95.3
Eastern Europe	10,204	69.3	98.6	91.2	981	96.6
Latin America and Caribbean	8,256	72.2	96.1	95.2	972	89.2
Middle East and North Africa	8,330	70.5	88.9	89.9	961	78.4
Sub-Saharan Africa	1,686	49.7	69.7	64.2	844	46.2
Industrialized countries	33,641	78.9	99.7	97.5	994	99.4
World	8,469	68	87	88	947	74

GDP = gross domestic product; PPP = purchasing power parity.

Source: Author's calculations based on *World Development Indicators*.

It is evident that inequality in per capita GDP is extremely high between regions. Sub-Saharan Africa is the poorest region with per capita GDP of only 19.9 percent of the world average, and South Asia is the second poorest (at 23.1 percent). The gap in per capita GDP between industrialized countries (including Japan) and the rest of the world is extremely large, with the former having a per capita GDP almost four times the world average.

To assess the regions' relative performance, the average standard of living shown in Table 1 is normalized by making the average world standard of living equal to 100. The normalized results are presented in Table 2.

In addition, the disparity between countries can be assessed through the Theil (1967) index, a well-known measure of inequality, with each country as an observation. The estimated index for per capita GDP is 66.51, which could be considered extremely high.

The Theil index has an interesting property: it can be decomposed into between- and within-group inequalities. The groups in this case correspond to the eight regions as shown in Table 2. The between-region inequality is calculated to be 54.00. This means that the disparity in per capita GDP between regions

¹The composition of each region is defined in Table A.1.

explains 81.26 percent of the total inequality in GDP per capita between countries.

Table 2. **Relative Standard of Living Index by Region, 2000–2007**

Region	GDP Per Capita at 2005 PPP	Life Expectancy at Birth	Adult Literacy Rate	Net Primary Enrollment Rate	Under-5 Survival Rate	Births Attended by Skilled Personnel
East Asia and Pacific	49.8	103.9	112.6	107.7	102.3	121.9
South Asia	23.1	94.1	84.9	97.3	97.0	53.7
Central Asia	41.9	100.3	114.2	104.6	100.1	129.4
Eastern Europe	120.5	102.2	113.1	103.7	103.6	131.2
Latin America and Caribbean	97.5	106.5	110.1	108.3	102.6	121.1
Middle East and North Africa	98.4	104.0	101.9	102.2	101.5	106.5
Sub-Saharan Africa	19.9	73.4	79.9	73.0	89.2	62.8
Industrialized countries	397.2	116.5	114.2	110.9	105.0	135.0
World	100.0	100.0	100.0	100.0	100.0	100.0
Between-region inequality	54.00 (81.26%)	0.80 (87.44%)	1.00 (67.78%)	0.80 (55.61%)	0.10 (81.01%)	6.60 (58.09%)
Within-region inequality	12.51 (18.74%)	0.07 (12.56%)	0.50 (32.22%)	0.55 (44.39%)	0.04 (18.99%)	4.76 (41.91%)
Theil index	66.51 (100%)	0.87 (100%)	1.50 (100%)	1.35 (100%)	0.14 (100%)	11.36 (100%)

Note: Figures in parentheses indicate the percentage contribution to the total inequality.

Source: Author's calculations.

By comparison, the between-country inequality for the five indicators of standard of living is much lower than that for per capita GDP. For instance, inequality in life expectancy at birth between countries is just 0.87 compared with 66.51 for per capita GDP. For births attended by skilled health personnel, the corresponding measure of inequality is 11.36, which is much higher relative to the other four non-income indicators but substantially lower compared to per capita GDP.

It should be noted, though, that a lower between-country inequality in standard of living does not suggest that poorer countries with a lower standard of living perform relatively better in achieving a higher standard of living. The issue of standard of living should be distinguished from that of raw value before assessing individual country achievements. This issue will be dealt with in the next section.

IV. ACHIEVEMENTS IN STANDARDS OF LIVING

Unlike per capita GDP, the indicators of standard of living have asymptotic limits, reflecting physical and biological maxima—they cannot go on increasing infinitely. For example, life expectancy at birth has an upper limit of around 85 years and the adult literacy rate cannot exceed 100 percent. Another important characteristic is that as the standard of living reaches progressively higher limits, any incremental improvement represents a higher level of achievement than similar incremental improvements from a lower base. For instance, an increase in life expectancy at birth from 70 to 75 years would imply a greater achievement than an increase from 45 to 50 years. In this regard, the relationship between achievement and the value of the indicator is not linear; thus, the observed differences in the levels of indicators of living standards do not reflect their true achievement.

A hypothetical example will help to explain the idea of non-linearity. Suppose there are two countries: country A in Africa and country B in Europe. Country A is relatively poorer than country B. Further assume that both countries have the life expectancy at birth of 50 years. It would be much easier for country B to increase its life expectancy to 60 years. Similarly, it would be much harder for country A to achieve the same increase because the country may not have the resources to invest in a good health care system. Equivalently, if country B has already achieved the life expectancy of 80 years, the increase from 80 to 90 years (or even to 85 years) would be infinitely harder than that from 50 to 60 years. In this hypothetical example, it could be considered that the performance of country B in increasing its life expectancy from 80 to 85 years is more impressive than its counterpart country increasing its life expectancy from 50 to 60 years.

Is this argument of non-linearity also pertinent to the literacy rate? For instance, it may be argued that closing a literacy rate gap between 90 percent and 100 percent would be easier than closing the gap between 40 percent and 50 percent. This argument may be valid on the grounds that the latter requires more fundamental steps, such as moving people out of agriculture to attend school, building new schools, and training teachers, among other difficulties and inefficiencies that the country is facing. On the contrary, however, any incremental improvement would be more difficult to achieve at a higher level than from a lower base. Experience suggests that even rich countries have not been able to achieve a perfect 100 percent literacy rate.²

Using this idea of non-linearity, Kakwani (1993) derived an achievement index that lies between 0 and 100. The achievement index considers a further increase in the standard of living of a country that is already at a higher level as an achievement greater than that of another country with an equal increase in

²The idea of non-linearity may also apply to democracy, but no empirical evidence of this exists because it is difficult to quantify the degree of democracy.

standard of living but from a lower base. While Kakwani (1993) derived a class of achievement functions, the present study uses only the following member of the class:³

$$f(y, M_0, M) = \frac{100 \times [\ln(M - M_0) - \ln(M - y)]}{\ln(M - M_0)}, \quad (1)$$

where y is a value of an indicator of living standard that has a minimum value of M_0 and a maximum value of M . The achievement function becomes 0 when $y = M_0$ and approaches 100 as y approaches M .

To compute the achievement index, the minimum and maximum values need to be specified. Based on the data for 177 countries, the following minimum and maximum values were calculated:

- Life expectancy at birth: 35 to 86 years
- Adult literacy rate: 0 to 100 percent
- Net primary enrollment rate: 0 to 100 percent
- Under-five survival rate: 0 to 1,000
- Births attended by skilled health personnel: 0 to 100

The results of the achievement index are shown in Tables 3 and 4. Table 3 presents the weighted average of the achievement index by region. Table 4 presents the relative achievement index, which is the normalized index of achievement relative to the average achievement of the world; i.e., the world index is set to 100.

Recall from Table 2 that the average life expectancy at birth for industrialized countries was about 16.5 percent higher than the world average. According to Table 4, however, the average achievement in this indicator for industrialized countries is 76.3 percent higher than the average of achievement in the world. This suggests that the disparity in achievement in life expectancy at birth between countries is far greater than that in actual terms. The Theil inequality measure also shows that between countries, the inequality of achievement in this indicator is much greater than the inequality in actual life expectancy at birth. Similar results hold for the other four indicators of living standards considered in this study.

³This study focuses only on one member of the class of achievement functions because (i) it is the most relevant to the current analysis and (ii) using other members of the class does not add new insight into the analysis.

Table 3. Achievements in Standards of Living by Region, 2000–2007

Region	Life Expectancy at Birth	Adult Literacy Rate	Net Primary Enrollment Rate	Under-5 Survival Rate	Births Attended by Skilled Personnel
East Asia and Pacific	30.6	92.8	69.7	51.7	65.1
South Asia	21.2	29.9	44.5	36.4	11.7
Central Asia	26.6	100.0	63.0	43.7	77.4
Eastern Europe	29.0	91.3	55.0	58.6	88.6
Latin America and Caribbean	33.7	74.4	72.9	52.5	60.4
Middle East and North Africa	30.8	56.2	57.3	48.6	42.2
Sub-Saharan Africa	8.9	28.7	25.7	27.7	16.3
Industrialized countries	51.0	99.8	84.5	74.8	99.8
World	28.9	63.3	57.2	48.9	50.6

Source: Author's calculations.

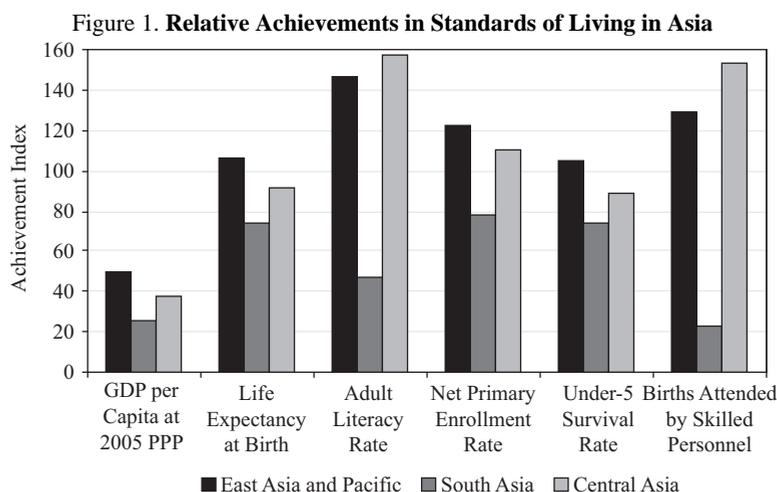
Table 4. Relative Achievements in Standards of Living by Region, 2000–2007

Region	Life Expectancy at Birth	Adult Literacy Rate	Net Primary Enrollment Rate	Under-5 Survival Rate	Births Attended by Skilled Personnel
East Asia and Pacific	105.6	146.6	121.9	105.5	128.5
South Asia	73.3	47.2	77.8	74.4	23.2
Central Asia	92.0	157.9	110.2	89.3	152.9
Eastern Europe	100.2	144.3	96.2	119.8	175.0
Latin America and Caribbean	116.4	117.5	127.4	107.3	119.4
Middle East and North Africa	106.5	88.7	100.2	99.3	83.3
Sub-Saharan Africa	30.8	45.4	45.0	56.7	32.2
Industrialized countries	176.3	157.7	147.7	152.7	197.2
World	100.0	100.0	100.0	100.0	100.0
Between-region inequality	9.50 (84.22%)	13.10 (83.92%)	6.20 (59.50%)	4.10 (85.95%)	27.80 (68.78%)
Within-region inequality	1.78 (15.78%)	2.51 (16.08%)	4.22 (40.50%)	0.67 (14.05%)	12.62 (31.22%)
Theil index	11.28 (100%)	15.61 (100%)	10.42 (100%)	4.77 (100%)	40.42 (100%)

Note: Figures in parentheses indicate the percentage contribution to the total inequality.

Source: Author's calculations.

Figure 1 shows that countries in South Asia have lower achievement in standards of living than countries in East Asia and the Pacific and Central Asia. This result holds uniformly for all six indicators of standard of living. The gap between South Asia and the rest of Asia is narrowest in per capita GDP, but is much wider in the adult literacy rate and births attended by skilled personnel, suggesting that the South Asian region needs to pay greater attention to improving its education and health sectors. Yet, individual country experiences may differ between countries in South Asia.



PPP = purchasing power parity.

Table 5 provides the relative achievements of five major countries in South Asia along with six other Asian countries and the group of industrialized countries for comparison. Sri Lanka has the most outstanding achievements in standards of living in South Asia, with a higher per capita GDP than its four neighbors and a growth rate lower only than India. Furthermore, achievements in standards of living in Sri Lanka are far superior to other countries in the region. Two indicators in particular stand out: life expectancy at birth and net primary enrollment rate, which are the highest among the selected countries in Asia.

Table 5. Relative Achievements in Standards of Living in Selected Countries in Asia

Economy	Growth Rate	GDP Per Capita at 2005 PPP	Life Expectancy at Birth	Adult Literacy Rate	Net Primary Enrollment Rate	Under-5 Survival Rate	Births Attended by Skilled Personnel
Bangladesh	3.8	12.0	68.0	34.7	85.6	75.0	6.6
India	6.1	24.4	72.9	49.6	81.6	74.0	25.3
Nepal	1.1	11.1	23.4	41.4	56.4	79.0	6.8
Pakistan	3.1	24.7	75.8	36.1	36.6	68.0	12.7
Sri Lanka	4.5	39.9	129.3	107.1	152.3	123.0	138.1
China, People's Rep. of	9.5	43.5	109.0	153.5	...	105.0	150.4
Indonesia	3.7	36.2	87.1	149.2	148.0	96.0	48.0
Lao People's Dem. Rep.	4.8	20.1	68.1	52.7	60.7	73.0	9.3
Philippines	2.9	33.7	105.2	103.4	102.2	99.0	38.1
Thailand	4.3	78.2	98.0	134.2	82.8	137.0	174.8
Viet Nam	6.3	23.4	102.2	...	95.1	113.0	75.4
Industrialized countries	1.5	397.2	176.3	157.7	147.7	152.7	197.2
World	5.0	100.0	100.0	100.0	100.0	100.0	100.0

... indicates data not available.

PPP = purchasing power parity.

Source: Author's calculations.

In East Asia and the Pacific, the People's Republic of China (PRC) is the fastest growing economy and its overall performance in virtually all available indicators of living standards surpasses world averages by wide margins, particularly in terms of adult literacy rate and births attended by skilled health personnel. On the other hand, while Thailand has higher per capita GDP than the PRC, its standards of living achievements are not as consistent. Note that although achievements in life expectancy at birth and adult literacy rate are better for the PRC, Thailand has superior achievements in the two other health indicators. Gaps—urban–rural gaps, regional disparities, gender gaps, and gaps among different social groups—in access to basic public services in health and education remain among the challenges facing the PRC in its current phase of development (UNDP 2007).

V. RELATIONSHIP BETWEEN PER CAPITA GDP AND STANDARDS OF LIVING

Per capita GDP measures the total output per person produced in an economy; the higher the output, the greater the access people have to goods and services. Therefore, there should be a strong association between national income and standards of living, with higher national income being strongly associated with lower child mortality and higher primary school completion (World Bank 2004).

As noted earlier, however, the relationship between per capita GDP and standards of living is non-linear. As per capita GDP increases, the standard of living increases less and less steeply until it reaches an asymptotic limit (Hicks and Streeten 1979). Many attempts have been made to estimate the non-linear relationship, which captures the asymptotic behavior of indicators of standard of living (Sheehan and Hopkins 1979, Morris 1979, Grosse and Perry 1983, Goldstein 1985). All these models are generally flawed because of their inherent misspecification of the nature of non-linearity.

The achievement index discussed in the previous section captures the nature of non-linearity of indicators of standards of living. To calculate this non-linearity, Kakwani (1993) argues that it is more natural to relate the achievement index to per capita GDP. Following this argument, the following model was adopted:

$$f_i(y_i, M_0, M) = \alpha + \beta \log(x_i) + u_i, \quad (2)$$

where $f_i(y_i, M_0, M)$ defined in (1) is the achievement index of the i^{th} country with a social indicator y_i , x_i is the per capita GDP of the i^{th} country, and u_i is the

error term. The use of the achievement function captures the non-linear characteristics of standards of living.

The achievement equation (2) was estimated for each of the five indicators of living standards using the least squares method. The coefficient estimates along with the *t*-values are presented in Table 6. One of the assumptions of the least squares method is that the residual variance is constant over the observations. This assumption is unlikely to hold using multi-country data. Even if this assumption is violated, the least squares estimates are still unbiased, but the estimates of the *t*-values are biased. To remedy this situation, the robust *t*-values were calculated using a heteroskedasticity-consistent covariance matrix estimator proposed by White (1980).

Table 6. **Regression Coefficients of Achievement in Standards of Living on Per Capita GDP**

Achievements in Standards of Living	Log (GDP per capita)	Robust t-values	R-squared	Number of Observations
Life expectancy at birth	9.5	21.2	0.7	177
Adult literacy rate	18.1	11.3	0.6	108
Net primary enrollment rate	13.6	11.1	0.4	159
Under-5 survival rate	11.7	12.4	0.8	175
Births attended by skilled health personnel	23.2	22.7	0.6	162

GDP = gross domestic product.
Source: Author’s calculations.

The coefficient of determination—the R-squared—is estimated to assess the accuracy of regression models. Table 6 shows that the estimated values of the coefficient of determination for the regression equations vary from 0.4 to 0.8, which could be regarded as quite high given that the sample observations range from 108 to 177. This suggests that the model is reasonably well specified and that per capita GDP at 2005 PPP is an important determinant of achievements in standards of living.

Differentiating equation (2) and using equation (1), the elasticity of standard of living y_i with respect to x_i was obtained as

$$\eta_i = \beta \log(M - M_0) \left(\frac{M}{y_i} - 1 \right) / 100, \tag{3}$$

which shows that the higher the standard of living of a country, the smaller the elasticity. When the standard of living (y_i) approaches its maximum value M , the elasticity approaches 0. The implication is that economic growth will have a greater impact on standards of living in poorer countries than in richer ones. This is explained by the fact that standard of living becomes more difficult to raise as

it reaches a higher level. A study by Bruns, Mingat, and Rakotomalala (2003) finds that in lower-income countries, 10 percent more income per capita is associated with, on average, a 6.6 percent lower child mortality rate and a 4.8 percent higher primary school completion rate. In middle-income countries, however, 10 percent more income per capita is associated with 7.7 percent less child mortality but little improvement in primary completion.⁴

The growth elasticity of standards of living defined in (3) is a useful indicator because it shows the responsiveness of changes in standards of living to economic growth. This elasticity was calculated for each of the 177 countries, and Table 7 presents the weighted average of elasticities for the eight regions using the population of each country as the corresponding weight.

Table 7. Average Elasticity of Standards of Living by Region, 2000–2007

Region	Life Expectancy at Birth	Adult Literacy Rate	Net Primary Enrollment Rate	Under-5 Survival Rate	Births Attended by Skilled Personnel
East Asia and Pacific	0.08	0.02	0.04	0.03	0.17
South Asia	0.13	0.30	0.11	0.07	2.12
Central Asia	0.10	0.00	0.06	0.04	0.06
Eastern Europe	0.09	0.01	0.06	0.02	0.04
Latin America and Caribbean	0.07	0.03	0.03	0.02	0.20
Middle East and North Africa	0.08	0.11	0.08	0.03	0.45
Sub-Saharan Africa	0.27	0.44	0.41	0.15	2.99
Industrialized countries	0.03	0.00	0.02	0.00	0.01
World	0.11	0.15	0.11	0.05	0.96

Source: Author's calculations.

A 1 percent increase in GDP per capita in the world increases the world's life expectancy at birth by 0.11 percent. The impact of economic growth on life expectancy at birth in sub-Saharan Africa is much greater, as indicated by an elasticity of 0.27. This is expected because given the current shortness of life expectancy at birth in Africa, the indicator would be easily improved with small increases in per capita income. In industrialized countries, on the other hand, the growth elasticity of life expectancy at birth is extremely low at 0.03, since these countries have already achieved high levels for this indicator and further improvements will require substantially larger resources.

Moreover, the results reveal that life expectancy at birth is more responsive to per capita GDP than the under-five survival rate, and this result holds uniformly across regions. This finding suggests that more progress has been made thus far in improving child mortality than improving life expectancy and, thus, higher growth rates would be required to achieve the same level of improvement

⁴The elasticity can change if richer countries put greater resources into the health sector.

in life expectancy in the future. The magnitude of elasticity for sub-Saharan Africa, 0.15, can be considered high; as such, economic growth will play a significant role in improving the under-five survival rate in Africa.

Compared to the other indicators, the number of births attended by skilled health personnel was found to be the most responsive to economic growth. A 1 percent increase in GDP per capita in the world would improve this health indicator by 0.96 percent. In sub-Saharan Africa, the same growth rate would lead to an almost 3 percent higher proportion of births with skilled health staff. In South Asia, an extra 1 percent growth in income per capita would improve this indicator by 2.12 percent.

The education indicators—adult literacy rate and net primary school enrollment rate—are much more responsive to per capita income in South Asia and in sub-Saharan Africa. In both, higher income per capita would result in more school-age children attending primary school and, thus, in a higher adult literacy rate.

This section has shown that income and standards of living are strongly associated, particularly in low-income countries. However, the low elasticities shown in Table 7 suggest that improving living standards will require significantly high growth rates if this is the only channel used for achieving such goals. Thus, policies that can do more than increase growth are required; these policies will be discussed in Section VIII.

VI. PERFORMANCE IN STANDARDS OF LIVING

A. Methodological Framework

Per capita GDP in PPP dollars measures how rich a country is in terms of material consumption. The regression model estimated in the previous section demonstrates that per capita GDP is an important determinant of a country's standard of living. The positive and highly statistically significant values of β imply that the richer a country is, the higher are the expected standards of living. However, a one-to-one relationship between the country's material prosperity and standards of living does not exist because the model only explains around 60 to 80 percent of variations in standards of living. There is still considerable unexplained variation, which implies that factors other than income impact a country's standard of living. These factors may include the scope and quality of basic services in health and education provided by governments.

The unexplained variation in the model suggests that the level and distribution of health and education services vary widely between countries even if they have the same level of per capita income. A country may be assessed as having superior (inferior) performance in standards of living if it enjoys higher

(lower) living standards than what is expected on the basis of its per capita income. The residual term in the model (the difference between actual and expected values of the achievement index) includes the effect of factors other than income that affect living standards. If the residual is positive (negative), it can be said that the country has higher (lower) standards of living relative to its per capita income. This methodology allows the identification of countries that have superior (inferior) performance in standards of living.

The residual term in equation (2) is given by

$$\hat{u}_i = (f_i - \beta \log(x_i)). \quad (4)$$

For large samples, it is expected that \hat{u}_i is normally distributed with zero mean and variance s^2 , where s is the estimated standard error of the regression. This gives the studentized residual as

$$\hat{u}_i^* = \frac{(f_i - \hat{\beta} \log(x_i))}{s}, \quad (5)$$

which, for large samples, is normally distributed with zero mean and unit variance. In this study, the value of \hat{u}_i^* was calculated for each country. The performance of a country on standards of living can be assessed by the magnitude of \hat{u}_i^* ; the larger this value, the better is the performance of the i^{th} country. The average value of \hat{u}_i^* for all countries is equal to zero as some countries will register a positive value and others will record a negative value, with positive (negative) values implying superior (inferior) performance. Thus, \hat{u}_i^* can be used as an indicator of a country's relative performance in living standards.

If \hat{u}_i^* is greater than 1.96, the i^{th} country can be regarded as an outlier or a country with exceptionally superior performance. This is because the probability of achieving such an outcome is less than 0.05; i.e., the estimate is statistically significant at the 5 percent level. Similarly, if \hat{u}_i^* is less than negative 1.96, the i^{th} country can be regarded as a country with exceptionally inferior performance in standards of living. Such outliers deserve special attention from the standpoint of policy making.

B. Identifying Countries with Exceptional Performance

Using the proposed indicator of a country's relative performance, this section identifies the countries that have exceptionally superior or inferior

performance in standards of living. Table A.2 presents the values of relative performance for individual countries.

The results show that Japan is the only country with exceptionally superior performance in life expectancy at birth. Other higher achievers in this indicator include Costa Rica; Hong Kong, China; and Sri Lanka. On the other hand, countries that have exceptionally inferior performance in life expectancy at birth are Equatorial Guinea, Botswana, South Africa, Gabon, Swaziland, Angola, and Namibia. None of the Asian countries is included in the list of these negative outliers. In fact, all the exceptionally inferior-performing countries are located in sub-Saharan Africa.

The high incidence of HIV/AIDS in Africa could be a cause of such short life expectancy relative to per capita income level. Combating the pandemic there has been particularly challenging. The disease has reversed gains in life expectancy made over decades and is undermining growth, reducing the productivity of the workforce, and diverting scarce public resources away from other health issues and education. Moreover, the pandemic is now threatening countries with huge populations such as the PRC and India. Effective policies, backed by adequate resources, are required to check its spread and to provide health care for the millions who are or will be affected.

The under-five survival rate is an indicator that reflects the health status of a country's population. The results show that no country can be categorized as an exceptionally high achiever in this indicator. But three countries—Sri Lanka, Viet Nam, and Moldova—are close to being exceptional and could be regarded as having relatively better performance in the under-five survival rate compared to the other 174 countries. The value of this performance indicator for these three countries is higher than 1.70 but less than 1.96. In contrast, the performance of six countries—Angola, Botswana, Equatorial Guinea, Gabon, Qatar, and Swaziland—has been exceptionally inferior on this indicator. This could largely be explained by the barriers to quality basic health services, such as lack of information and knowledge, inaccessibility and poor quality of service, unresponsive service providers, and high costs involved in seeking health care.

Access to safe water and adequate sanitation has a direct impact on health status and mortality, particularly on children. The World Bank (2004) study of eight countries found that the prevalence of diarrhea in children under three years of age from households with no sanitation declined by six percentage points as conditions shifted from no improved water to “optimal” water. Moreover, the same study found that moving from no sanitation to “optimal” sanitation resulted in a ten-percentage-point drop in diarrhea in households with no improved water source. As with education, there are spillover effects associated with sanitation at the community level. In Peru, for example, sanitation investments by a family's neighbors were associated with better nutritional status for that family's children (Alderman, Hoddinott, and Kinsey 2006).

Another indicator related to the delivery of health services is the number of births attended by skilled personnel. The results suggest that the performance of seven countries—Fiji Islands, Jordan, Kyrgyz Republic, Moldova, Mongolia, Samoa, and Uzbekistan—was exceptionally superior in this indicator. In contrast, Equatorial Guinea is the only negative outlier, suggesting an exceptionally low achievement on this indicator.

Regarding the net primary school enrollment rate, the results suggest that Oman is an exceptionally inferior performer in relation to its per capita GDP, while another rich country in the Middle East and North African region, Qatar, was found to have exceptionally low achievement in adult literacy rate. These findings suggest that an overriding focus on economic growth without similar attention to public service systems and institutions will not produce a strong human development outcome. The absence of complementary actions to establish effective social services can be detrimental to long-term growth.

C. Relative Performance of Asian Countries

Section B was devoted to identifying countries with exceptionally superior or inferior performance. This section introduces a relative performance index to analyze the performance of Asian countries with respect to the world average. The average value of the relative performance index for all countries included in the present study is equal to zero and is regarded as a benchmark for assessing a country's relative performance in standards of living. If an individual country has a value for the index greater (less) than zero, then the performance of that country is judged as better (worse) than the average performance of the world. The average values of the relative performance index are presented in Table 8 for eight different regions; the corresponding values for individual countries are shown in Table A.3.

The relative performance indexes for sub-Saharan Africa and the Middle East and North Africa are negative for all aspects of living standards considered in the current study, suggesting lower standards of living relative to what is expected from their per capita income levels. As noted earlier, the per capita GDP of sub-Saharan Africa is, on average, only 19 percent of world GDP per capita. While sustainable and rapid economic growth is a prerequisite for improving living standards, most people have higher expectations of governments; they are expected to provide basic health services that reduce infant and maternal mortality rates, as well as primary school and higher education that enable people to compete in the labor market.

Table 8. Performance in Standard of Living by Region, 2000–2007

Region	Life Expectancy at Birth	Adult Literacy Rate	Net Primary Enrollment Rate	Under-5 Survival Rate	Births Attended by Skilled Personnel
East Asia and Pacific	0.37	0.50	0.38	0.51	0.18
South Asia	0.36	-0.31	0.23	0.12	-0.84
Central Asia	0.56	2.46	0.30	0.07	1.18
Eastern Europe	-0.10	0.92	-0.16	0.73	0.96
Latin America and Caribbean	0.26	0.04	0.39	-0.02	-0.07
Middle East and North Africa	-0.12	-0.64	-0.51	-0.50	-0.46
Sub-Saharan Africa	-0.75	-0.46	-0.50	-0.68	-0.35
Industrialized countries	0.61	0.22	0.44	0.51	-0.18
World	0.00	0.00	0.00	0.00	0.00

Source: Author's calculations.

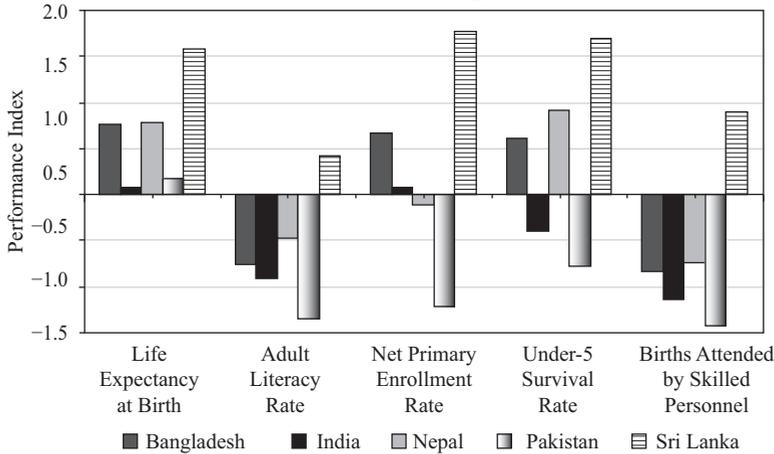
It is surprising that the relative performance of countries in Central Asia is impressive in all aspects of living standards. On adult literacy rate, in particular, two countries—Tajikistan and Armenia—perform exceptionally well. While statistics indicate very high adult literacy rates in Central Asia, there is a clear need to continue expanding access to adult literacy programs and provide an enabling literacy environment for all (World Bank 2004). Equally important are concerns over gender disparity as these remain a challenge in some countries in the region. In Tajikistan, for instance, boys are favored, such that only 95 girls are enrolled in primary education per 100 boys. By contrast, primary education appears to favor of girls in Armenia, where 104 are enrolled for every 100 boys.

Countries in East Asia and the Pacific surpass the world average performance in all aspects of living standards, although Papua New Guinea and Brunei Darussalam have the worst outcomes in the region. In contrast, South Asia as a whole has performed worse than the world average in adult literacy rate and births attended by skilled personnel, but better than the world average in life expectancy at birth, under-five survival rate, and net primary enrollment rate.

South Asia faces many challenges in health services and outcomes. The indicator for births attended by skilled health staff is extremely poor compared to other regions. The region accounts for one third of maternal deaths worldwide (ADB 2007), and the chances of dying during pregnancy are 1 in 43 compared to 1 in 30,000 in Sweden. Maternal death rates vary widely within the region, however, ranging from 58 per 100,000 live births in Sri Lanka to 450 in India in 2005 (World Bank 2008). Maternal mortality can be prevented with appropriate medical care and management, and thus depends mainly on health services. It is worth noting that midwifery services are linked to dramatic declines in maternal mortality in Sri Lanka (World Bank 2004). On the other hand, nutrition and child mortality depend on many other factors such as education, water, food security, communication, electrification, and transportation.

In South Asia, the worst performing countries in all dimensions of standards of living are Bhutan and Pakistan. In Pakistan, poor performance in the social sector is attributed to the effects of elite dominance (Hussain 1999), as well as to the division into linguistic, religious, and regional factions that challenge its ability to provide social services (Easterly 2001). In India, performance is particularly poor in births attended by skilled personnel and adult literacy rate. All countries in South Asia—except Sri Lanka—perform particularly poorly in births attended by skilled personnel, suggesting a strong need for the provision of government health services. It should be noted that Sri Lanka is a superior performer in every dimension of standards of living considered in the current study, exceptionally so in the net primary enrollment rate and the under-five survival rate (see Figure 2).

Figure 2. **Relative Performance in Standards of Living in Selected Countries in South Asia**



Source: Author’s calculations.

The factors contributing to observed achievements were the center of debate in the 1980s (Dreze and Sen 1989, Pyatt 1987, Bhalla and Glewwe 1986, Sen 1981, Isenman 1980). The countries with the best achievements identified in the present study are also known for excellent public welfare programs that include direct public provision of health, education, and other vital services. Sri Lanka has long been known as a unique example of a developing country with impressive achievement in terms of basic needs relative to its income level. Sen (1981) and Isenman (1980) have concluded that it was government action that made Sri Lanka an extraordinary country in promoting extensive social opportunities and providing widespread and equitable schooling, health, and other basic services.

The Sri Lankan government in 1977 diverged from the country’s earlier welfare-oriented development strategy and introduced new economic policies that

focused more on growth and investment. One of the many policy changes was the substitution of food subsidies by a means-tested food stamps program. The enormous savings that were realized as a result of the policy changes were directed to production and employment activities. In addition, the trade sector was liberalized and foreign exchange control was virtually withdrawn. The results of the current study suggest that cuts in welfare expenditures in the late 1970s did not make Sri Lanka an inferior performer in the 1980s and onwards.

Government expenditures on education and health can influence human development outcomes; public spending must therefore concentrate on areas where market failure is pervasive and positive spillover is largest. Given limited public resources, the balance needs to shift more toward investments in primary health and education services. Additionally, the private sector and public-private partnerships should be encouraged to provide tertiary health and education services where market failure is minimal.

VII. CONVERGENCE IN STANDARDS OF LIVING

In the previous sections, it was noted that disparity in standards of living between industrialized countries and the rest of the world is extremely large. As pointed out in Section III, the average GDP per capita of industrialized countries is almost four times the world average. This section explores the likelihood of the rest of the world catching up. Assuming that is feasible, the number of years it will take for the different regions to catch up with the average standard of living in industrialized countries is calculated.

Suppose x_k is the per capita GDP of the k^{th} region, which is growing at an annual rate of γ_k percent on average. Over the period of n years, the per capita GDP of the k^{th} region will be given by

$$x_{kn} = x_k (1 + \gamma_k)^n . \quad (6)$$

Following this, a similar expression can be derived for the reference group, i.e., the industrialized countries. Consider that the per capita GDP of the reference group is denoted as x_0 and it grows at an annual rate of γ_0 percent on average. In n years, the average per capita GDP of the reference group will be

$$x_{0n} = x_0 (1 + \gamma_0)^n . \quad (7)$$

Suppose that after n years, the per capita GDP of the k^{th} region approaches that of the reference group. This scenario results in $x_{kn} = x_{0n}$ and also

$$n = \frac{\log(x_0) - \log(x_k)}{\log(1 + \gamma_k) - \log(1 + \gamma_0)}, \quad (8)$$

which is obtained from equations (6) and (7). Since $x_0 > x_k$ for all k regions, n will be positive if $\gamma_k > \gamma_0$. Estimating the number of years (n) in equation (8) requires the growth rate γ_k for the k^{th} region.

Based on per capita GDP at 2005 PPP, the annual growth rate was calculated for each of the 177 countries for 2000–2007. The growth rate was then averaged over the period for each country. The aggregate growth rates for each region were calculated by averaging the countries' growth rates using their respective populations as weights. The regional growth rates are presented in the first numerical column of Table 9. The regions that exhibited the highest growth were Central Asia and East Asia and the Pacific. Although Central Asia went through a severe economic crisis in the first half of the 1990s, it performed well in 2000–2007 when its average growth rate was 8.13 percent per annum. East Asia and the Pacific includes rapidly-growing economies such as the PRC and slow-growing ones such as the Pacific island countries, putting the region's average growth rate at 7.82 percent over the first seven years of the twenty-first century.

Table 9. Years to Catch Up with Industrialized Countries' Living Standards by Region

Region	Average Annual Growth Rate	Number of Years for Convergence					
		GDP Per Capita at 2005 PPP	Life Expectancy at Birth	Adult Literacy Rate	Net Primary Enrollment Rate	Under-5 Survival Rate	Births Attended by Skilled Personnel
East Asia and Pacific	7.82	34	34	6	17	31	24
South Asia	5.43	74	79	97	74	82	96
Central Asia	8.13	35	39	0	24	40	15
Eastern Europe	6.11	27	50	10	47	30	10
Latin America and Caribbean	2.24	184	235	181	110	243	219
Middle East and North Africa	2.91	98	147	166	138	153	172
Sub-Saharan Africa	3.09	188	273	241	265	246	222
Industrialized countries	1.46	0	0	0	0	0	0
World	5.01	40	66	57	57	62	60

GDP = gross domestic product; PPP = purchasing power parity.

Note: In the calculation, we assume that the industrialized countries' living standards are also improving.

Source: Author's calculations.

As seen in the second column of Table 9, it will take 40 years for the different regions to achieve the average per capita GDP of industrialized countries. Sub-Saharan Africa will take 188 years and South Asia 74. In Latin America, although countries enjoyed high growth rates in the 1960s and 1970s, growth was extremely slow in the 2000s, meaning it will take 184 years to catch up. Note that these results are based on the assumption that countries in the different regions will maintain the same average growth rates over time.

Calculating the number of years to catch up with the reference group in the five living standards indicators requires a different approach. The growth elasticity of living standards presented in Table 7 cannot be used to project future standards of living. This is because elasticity does not remain constant over time, but declines with rising standards of living. To tackle this problem, the following methodology was adopted.

The regression model presented in equation (2) provides the estimated achievement for the k^{th} region as

$$\hat{f}_k = \hat{\alpha} + \hat{\beta} \log(x_k), \quad (9)$$

which, on taking first differences, gives the change in achievement as

$$\Delta \hat{f}_k = \hat{\beta} \Delta \log(x_k) = \hat{\beta} \gamma_k, \quad (10)$$

where $\gamma_k = \Delta \log(x_k)$ is the growth rate of the k^{th} region and $\Delta \hat{f}_k$ is the annual absolute change in achievement of the k^{th} region, of which the per capita GDP increases at an annual rate of γ_k percent.

In n years, the achievement of the k^{th} region will be given by

$$f_{kn} = f_k + n \hat{\beta} \gamma_k. \quad (11)$$

Similarly, the achievement of the reference group over n years will be given by

$$f_{0n} = f_0 + n \hat{\beta} \gamma_0. \quad (12)$$

Suppose that after n years, the achievement of the k^{th} region approaches the achievement of the reference group. This will lead to $f_{kn} = f_{0n}$ as well as

$$n = \frac{(f_0 - f_k)}{\hat{\beta}(\gamma_k - \gamma_0)}, \quad (13)$$

which is obtained from equations (11) and (12). The n in equation (13) is the number of years it will take for the standard of living in the k^{th} region to approach that of the reference group, i.e., the industrialized countries. Note that n should always be positive. Since $f_0 > f_k$ for all k regions, n will be positive if $\gamma_k > \gamma_0$.

The results in Table 9, which presents the values of n for the five indicators of living standards considered in this study by region, suggest that convergence in standards of living will take longer than convergence in per capita GDP. Sub-Saharan Africa will take 273 years to catch up with the reference group in life expectancy at birth while South Asia will take only 79 years.

This regional picture, however, hides the challenges faced by individual countries. Table 10 shows a more detailed picture through the results for selected Asian countries. For instance, Pakistan and Bangladesh would take 187 and 141 years, respectively, to catch up with industrialized countries' achievement on life expectancy at birth. The results also show that Nepal would not be able to catch up because its average growth rate of 1.1 percent during 2000–2007 falls short of the 1.5 percent achieved by industrialized countries during the same period. This suggests that for Nepal to catch up would require a substantially higher growth rate in per capita income and/or public policies that can promote greater efficiencies and effective delivery mechanisms, with a focus on improved health and education outcomes.

Table 10. Years Required for Selected Asian Countries to Catch Up with Industrialized Countries

Economy	GDP Per Capita at 2005 PPP	Life Expectancy at Birth	Adult Literacy Rate	Net Primary Enrollment Rate	Under-5 Survival Rate	Births Attended by Skilled Personnel
Bangladesh	153	141	184	112	138	178
India	62	68	81	60	71	81
Nepal	*	*	*	*	*	*
Pakistan	173	187	259	285	216	246
Sri Lanka	78	47	58	-6	40	43
China, People's Rep. of	29	26	2	...	25	13
Indonesia	110	121	13	0	106	146
Lao People's Dem. Rep.	92	99	110	110	100	123
Philippines	175	151	132	133	155	241
Thailand	59	84	29	96	23	17
Viet Nam	61	47	...	46	34	55
Industrialized countries	0	0	0	0	0	0
World	40	66	57	57	62	60

... indicates data not available; * indicates unable to catch up.

Source: Author's calculations.

In calculating n , it was assumed that while per capita GDP changes over time, other factors that may influence standards of living remain constant. This means that income is assumed to be a major contributor to improving standards of living. Yet results suggest that if growth is the only channel, it will take an exceptionally long time—perhaps unrealistically so—to improve living standards. Policies other than those aimed at increasing growth alone are required to achieve this objective.

VIII. PUBLIC SPENDING AND STANDARDS OF LIVING

This study has demonstrated that per capita GDP is an important determinant of a country's living standards; the richer a country, the higher the expected standard of living. An implication of this observation is that a country can enhance its living standards by promoting economic growth. This study, however, finds that countries' relative performance in standards of living varies widely in relation to their per capita GDP. This finding suggests that a one-to-one relationship between a country's material prosperity and its living standards does not exist. There are factors other than income that have an impact on a country's standard of living, including the basic services provided by governments in health and education, and access to these services by the population, which determines health and education outcomes. Countries whose performance on standards of living is inferior in relation to their per capita GDP do not have systems that promote the efficient delivery of services in health and education. While economic growth is essential, it is not enough to improve citizens' well being.

If growth is not enough, then what else can governments do to improve standards of living?⁵ One approach would be to increase public spending. This can be crucial in promoting improvements in health and education outcomes. For instance, policy interventions to reduce mortality may require increased public spending or, similarly, it may be necessary to spend more on educational programs that aim to increase primary completion rates. However, what matters is not only how much was spent but also how effectively this money was spent.

A handful of countries suggest an inconsistent relationship between changes in public spending and outcomes. For example, Thailand has increased public spending on primary schooling more than Peru, yet primary school completion fell in Thailand and increased in Peru. Likewise, an analysis of Malaysia over the late 1980s found little association between public spending on

⁵Governments often see improving health and education outcomes as a public responsibility. There are two economic rationales for this. The first is market failure; more specifically, if there is no government intervention, the amount of services produced and consumed would be less than optimal from society's point of view. As there is no market incentive to produce public goods, government intervention is required. The other rationale is related to equity concerns. Issues such as improving outcomes in health and education for poor people or reducing the gaps in outcomes between the poor and the better-off are often considered a government responsibility.

doctors and infant or maternal mortality, while the increased construction of public schools in Indonesia in the 1970s did not have a significant positive impact on school enrollment. The multi-country association between public spending and outcomes, after controlling for national income, is found to be statistically and substantively weak. The message is not that public funding cannot be successful; rather, it is commitment and appropriate policies, backed by effective public spending, that can achieve these goals.

Most poor people do not get their fair share of government spending on public services in health and education. Benefit incidence analysis on public expenditure provides a clearer picture of who benefits from government spending. Evidence largely suggests that the poorest fifth of the population receives less than a fifth of education and health expenditures, while the richest fifth gets more: 46 percent of education spending in Nepal goes to the richest fifth, and the poorest fifth receives only 11 percent (Filmer 2003). Similarly, in India the richest fifth receives three times the curative health care subsidy of the poorest fifth. One reason for this imbalance is that spending is biased toward services that are used mainly by richer people; another reason is that while channeling public spending toward services used by the poor helps, such services may not be reaching the targeted beneficiaries.

Indeed, public spending is not always effective in providing quality services and reaching the intended beneficiaries, who are often the poor; this partly explains why spending has a weak relationship with outcomes. Another reason is the interaction between the private and public sectors. Increasing public provision may simply crowd out, in part or in whole, equally effective services offered by non-government providers. Unless resources support services that work for poor people, the public resources spent on these services will not produce the optimal outcome.

If more public money is spent on services and more of that money is spent on services used by the poor, the spending pattern will determine the efficacy of spending. For instance, wages and salaries of teachers on average account for 75 percent of recurrent public expenditure on education. There is no doubt that teachers play a critical role in the schooling process and giving them adequate incentives is important; however, spending on other vital inputs (such as textbooks) is also important. Too much spending on one input will have a negative impact on the quality of learning. To address this issue, governments must tackle not only the technical or managerial questions of how much to spend on one input relative to another, but also the institutional and political contexts that generate these decisions.

IX. CONCLUDING REMARKS

There are numerous cases in which a country's rapid economic growth has not generated strong improvements in human development. Countries with high per capita incomes can have poor records on human development, while those with low per capita incomes or growth rates can nevertheless do well on this front. The lack of a systematic relationship between progress in human development and economic growth suggests that in order to achieve social progress, patterns of investment in human development matter more than economic growth per se. Empirical evidence suggests that growth in per capita GDP does not necessarily translate into progress in human development, and similar results were found in this study on multi-country variations in standards of living. However, more work on causality is required to explain the major findings here.

Several important implications have emerged. First, bridging the gap in indicators of living standards between low-income and industrialized economies appears to be a more feasible goal than closing the gap in per capita incomes. Second, bridging the gap in per capita incomes is not a necessary condition for bridging the gap in standards of living reflected by life expectancy, child mortality, births attended by skilled health personnel, and education. Third, adequate resources must flow into human development in health and education to bridge the gap in standards of living between developing and developed economies. While increased public spending is essential, it is not enough to improve standards of living. Rather, governments' planning, delivery, and management of public services are major factors that determine progress in human development.

It should be noted that this study does not call for de-emphasizing economic growth. On the contrary, it finds that per capita income is an important explanatory variable for standard of living, and that standard of living is more responsive to growth in per capita income in lower-income countries than in higher-income countries. However, it also finds that there are countries that have comparable per capita incomes but are poles apart with respect to standards of living. For the countries with inferior achievement, public policies and institutions that enable better delivery of quality basic services can play a more important role than growth in per capita GDP alone in improving life expectancy and education, as well as in reducing child and maternal mortality.

APPENDIX: RESULTS BY COUNTRY

Table A.1. Standards of Living by Country, 2000–2007

Economy	GDP Per Capita at 2005 PPP (US\$)	Life Expectancy at Birth (years)	Adult Literacy Rate (%)	Net Primary Enrollment Rate (%)	Under-5 Survival Rate (per 1,000 births)	Births Attended by Skilled Personnel (%)
East Asia and the Pacific						
Brunei Darussalam	47,938	76.7	98.9	96.9	991	99.8
Cambodia	1,299	57.6	83.4	91.1	909	37.8
China, People's Rep. of	3,683	71.2	98.9	...	971	97.0
Fiji Islands	4,152	68.1	...	97.6	982	99.0
Hong Kong, China	33,450	81.4	...	97.0	...	100.0
Indonesia	3,064	67.1	98.7	98.0	961	67.3
Kiribati	1,374	62.3	...	99.7	934	88.9
Korea, Rep. of	20,228	77.3	...	97.1	995	100.0
Lao People's Dem. Rep.	1,706	62.5	78.5	79.8	915	19.4
Macau, China	33,196	80.0	99.6	88.5	...	100.0
Malaysia	11,201	73.4	97.2	96.8	987	97.3
Micronesia, Fed. States of	2,899	67.8	...	92.3	957	87.7
Mongolia	2,428	66.1	97.7	91.1	950	98.3
Myanmar	735	60.7	94.5	97.7	894	62.3
Papua New Guinea	1,899	57.1	66.7	74.9	924	41.5
Philippines	2,852	70.6	95.1	93.2	965	58.9
Samoa	3,477	70.5	99.3	97.1	970	100.0
Singapore	40,965	79.1	99.5	...	996	99.9
Solomon Islands	1,464	62.6	...	63.3	921	...
Thailand	6,623	69.3	98.0	88.7	990	98.3
Timor-Leste	746	55.8	...	68.1	926	21.0
Tonga	3,391	72.5	...	96.6	975	96.7
Vanuatu	3,254	68.9	...	95.2	959	88.0
Viet Nam	1,979	70.1	...	91.8	978	82.8
South Asia						
Bangladesh	1,019	62.5	63.6	89.5	922	14.2
Bhutan	3,498	63.8	...	65.3	918	43.6
India	2,070	63.7	76.4	88.4	919	44.6
Maldives	4,071	66.4	98.2	98.6	961	77.2
Nepal	940	61.9	70.1	77.3	930	14.7
Pakistan	2,089	64.5	65.1	61.9	899	25.7
Sri Lanka	3,378	74.3	95.6	98.2	985	96.0
Central Asia						
Armenia	3,612	71.3	99.8	86.4	971	97.3
Azerbaijan	4,076	72.1	...	83.7	910	90.6
Georgia	3,180	70.5	...	82.5	966	95.7
Kazakhstan	7,763	65.9	...	97.9	966	99.6
Kyrgyz Republic	1,672	68.2	...	93.7	955	98.6
Tajikistan	1,331	66.0	99.9	96.9	923	77.3
Uzbekistan	1,890	67.4	...	...	949	97.8

Continued

Table A.1—Continued

Economy	GDP Per Capita at 2005 PPP (US\$)	Life Expectancy at Birth (years)	Adult Literacy Rate (%)	Net Primary Enrollment Rate (%)	Under-5 Survival Rate (per 1,000 births)	Births Attended by Skilled Personnel (%)
Eastern Europe						
Albania	5,120	75.7	99.4	92.8	980	99.0
Belarus	7,660	68.4	...	91.6	985	99.9
Bosnia and Herzegovina	5,880	74.2	99.8	...	984	99.6
Bulgaria	8,607	72.1	98.2	96.6	985	99.3
Croatia	12,430	74.7	99.7	92.7	993	99.9
Cyprus	24,157	78.9	99.8	98.5	995	99.0
Czech Republic	19,158	75.6	...	92.5	995	99.9
Estonia	15,007	71.5	99.8	98.1	992	99.7
Hungary	15,896	72.4	...	96.4	992	99.6
Latvia	11,945	70.7	99.8	92.2	989	100.0
Lithuania	12,674	71.6	99.7	95.1	991	100.0
Macedonia	7,174	73.6	98.7	97.6	984	98.0
Moldova	1,940	68.0	99.7	90.3	979	99.5
Montenegro	7,721	74.4	...	...	989	98.8
Poland	13,026	74.5	...	97.6	992	99.9
Romania	8,686	71.4	97.8	94.3	980	98.5
Russia	10,901	65.3	99.7	89.4	981	99.4
Serbia	8,010	72.4	...	...	990	99.0
Slovak Republic	15,157	73.7	...	92.1	991	99.5
Slovenia	22,014	76.8	99.9	96.4	995	99.8
Turkey	9,615	70.9	95.6	90.2	967	83.0
Ukraine	5,050	68.1	99.8	88.0	977	99.9
Latin America and Caribbean						
Antigua and Barbuda	15,372	75.2	...	...	987	99.9
Argentina	10,353	74.5	98.9	99.3	983	98.8
Belize	6,101	71.9	...	98.0	981	89.3
Bolivia	3,691	64.2	97.3	96.4	930	66.9
Brazil	8,302	71.3	95.5	93.5	976	96.6
Chile	11,578	77.8	99.0	94.1	990	99.9
Colombia	5,737	71.9	98.0	91.5	977	91.4
Costa Rica	8,747	78.3	97.6	...	987	98.0
Dominica	6,526	76.5	...	93.2	984	100.0
Dominican Republic	5,360	71.3	94.2	85.9	967	97.0
Ecuador	6,271	74.3	96.4	99.4	973	74.7
El Salvador	5,131	70.9	88.5	94.1	971	92.4
Grenada	6,743	72.7	...	90.9	978	100.0
Guatemala	4,069	69.1	82.2	90.5	954	41.4
Guyana	2,607	64.6	...	...	935	89.8
Haiti	1,113	58.9	...	...	909	25.0
Honduras	3,168	69.1	88.9	92.5	968	63.2
Jamaica	6,012	70.9	...	90.9	969	97.0
Mexico	11,240	74.3	97.4	99.6	963	89.2
Nicaragua	2,238	71.3	86.2	89.6	961	66.9
Panama	8,882	74.9	96.1	99.0	976	91.9

Continued

Table A.1—Continued

Economy	GDP Per Capita at 2005 PPP (US\$)	Life Expectancy at Birth (years)	Adult Literacy Rate (%)	Net Primary Enrollment Rate (%)	Under-5 Survival Rate (per 1,000 births)	Births Attended by Skilled Personnel (%)
Paraguay	3,798	71.1	95.9	94.5	976	77.1
Peru	6,200	70.3	96.9	99.6	969	73.2
St. Kitts and Nevis	12,592	71.1	...	97.0	979	99.8
St. Lucia	8,599	73.5	...	98.5	985	99.7
St. Vincent and the Grenadines	6,232	70.9	...	93.3	979	100.0
Suriname	6,226	69.5	94.9	94.3	960	84.5
Trinidad and Tobago	16,949	69.3	99.5	91.3	964	96.8
Uruguay	8,905	75.1	...	97.3	986	99.4
Venezuela	9,646	73.8	97.2	92.3	978	94.5
Middle East and North Africa						
Algeria	6,736	71.2	90.1	97.0	960	94.4
Bahrain	30,186	75.2	97.0	98.9	989	99.0
Djibouti	1,824	53.8	...	31.0	863	76.8
Egypt	4,497	70.1	84.9	96.8	959	68.2
Iran	8,861	69.8	97.4	86.5	962	89.6
Israel	22,494	79.5	...	97.9	994	...
Jordan	4,095	71.5	99.1	96.4	973	99.5
Kuwait	38,632	77.3	99.7	88.5	989	100.0
Lebanon	9,107	71.3	...	86.5	970	95.5
Libya	12,397	73.3	98.0	...	980	...
Malta	20,280	78.6	...	94.8	994	100.0
Morocco	3,423	69.8	70.5	84.0	956	62.6
Oman	18,631	74.7	97.3	81.1	987	96.4
Qatar	64,681	74.7	95.9	97.3	979	100.0
Saudi Arabia	20,371	72.0	95.9	86.5	973	94.5
Syria	3,940	73.3	93.8	96.9	984	84.2
Tunisia	6,157	73.1	94.3	97.1	974	89.9
United Arab Emirates	43,316	78.7	97.0	85.9	991	100.0
Yemen	2,139	60.9	75.2	67.8	896	26.8
Sub-Saharan Africa						
Angola	3,442	41.6	72.2	...	740	45.9
Benin	1,212	55.2	45.3	73.8	847	73.1
Botswana	11,299	48.6	94.0	86.1	885	94.2
Burkina Faso	985	51.1	32.1	38.6	800	45.7
Burundi	329	47.8	73.3	52.1	819	29.4
Cameroon	1,929	50.3	...	...	850	61.6
Cape Verde	2,530	70.2	96.3	94.8	963	...
Central African Republic	678	44.0	58.5	...	821	48.8
Chad	1,199	50.6	37.6	56.7	793	15.4
Comoros	1,111	62.2	...	55.5	926	61.8
Congo, Dem. Rep.	259	45.2	70.4	...	795	67.4
Congo, Rep.	3,190	53.7	97.4	54.4	877	86.2
Cote d'Ivoire	1,647	47.5	60.7	56.2	869	62.5
Equatorial Guinea	22,248	50.0	94.9	91.6	796	64.6
Eritrea	535	55.9	...	44.4	917	28.3

Continued

Table A.1—Continued

Economy	GDP Per Capita at 2005 PPP (US\$)	Life Expectancy at Birth (years)	Adult Literacy Rate (%)	Net Primary Enrollment Rate (%)	Under-5 Survival Rate (per 1,000 births)	Births Attended by Skilled Personnel (%)
Ethiopia	596	51.3	49.9	48.4	867	5.7
Gabon	13,816	57.1	96.2	89.5	909	85.5
Gambia, The	1,070	58.3	...	70.2	879	55.8
Ghana	1,116	59.0	70.7	60.7	883	48.4
Guinea	1,058	54.2	46.6	60.4	830	46.8
Guinea-Bissau	479	45.7	...	45.4	793	36.8
Kenya	1,328	52.4	80.3	71.3	881	41.6
Lesotho	1,289	44.9	...	77.4	876	57.6
Liberia	364	44.3	67.4	66.2	765	50.9
Madagascar	835	57.8	70.2	76.4	876	48.8
Malawi	661	46.4	...	94.0	866	56.5
Mali	968	52.4	...	55.2	780	40.6
Mauritania	1,668	62.7	61.3	71.5	875	56.9
Mauritius	9,532	72.3	94.5	94.1	984	99.0
Mozambique	629	43.5	...	64.3	846	47.7
Namibia	4,353	52.6	92.3	77.1	936	75.5
Niger	582	55.0	36.6	35.9	740	16.7
Nigeria	1,625	46.8	84.2	63.3	803	36.3
Rwanda	732	43.6	77.6	72.1	831	35.0
Sao Tome and Principe	1,359	64.6	95.4	99.1	904	78.6
Senegal	1,482	62.0	49.1	62.2	878	56.5
Seychelles	14,916	72.2	99.1	95.6	986	...
Sierra Leone	536	41.4	47.9	...	727	42.5
South Africa	8,156	47.2	...	95.0	933	92.0
Sudan	1,622	57.0	77.2	44.0	908	68.1
Swaziland	4,448	42.8	88.4	75.9	845	72.0
Tanzania	993	50.5	78.4	78.3	873	43.4
Togo	767	57.9	74.4	80.0	886	57.3
Uganda	816	48.7	76.6	...	862	40.6
Zambia	1,138	40.4	...	76.7	818	43.4
Industrialized countries						
Australia	30,773	80.2	...	95.8	994	99.7
Austria	33,729	78.9	...	96.9	995	...
Belgium	31,328	78.6	...	98.9	995	...
Canada	34,114	79.8	...	99.5	994	99.2
Denmark	33,032	77.4	...	98.8	995	...
Finland	29,696	78.4	...	99.5	996	99.9
France	30,167	79.6	...	99.6	995	...
Germany	30,396	78.5	...	...	995	100.0
Greece	27,716	78.7	98.9	98.6	995	...
Iceland	33,087	80.1	...	98.9	997	...
Ireland	36,276	78.0	...	94.3	994	100.0
Italy	27,966	80.1	99.8	99.6	995	99.0
Japan	29,665	81.7	...	99.9	996	99.8
Luxembourg	67,689	78.4	...	97.8	995	99.9
Netherlands	34,342	78.7	...	98.9	994	100.0

Continued

Table A.1—*Continued*

Economy	GDP Per Capita at 2005 PPP (US\$)	Life Expectancy at Birth (years)	Adult Literacy Rate (%)	Net Primary Enrollment Rate (%)	Under-5 Survival Rate (per 1,000 births)	Births Attended by Skilled Personnel (%)
New Zealand	23,928	79.2	...	99.1	993	96.6
Norway	46,361	79.4	...	99.3	996	...
Portugal	20,044	77.4	99.6	99.2	994	99.8
Spain	26,595	79.7	...	99.8	995	...
Sweden	31,025	80.2	...	99.1	996	...
Switzerland	35,095	80.6	...	97.0	995	100.0
United Kingdom	30,518	78.4	...	99.9	994	...
United States	40,665	77.3	...	94.4	992	...

... indicates data not available.

GDP = gross domestic product; PPP = purchasing power parity.

Source: Author's calculations based on *World Development Indicators*.

Table A.2. **Relative Achievement in Standards of Living, 2000–2007**

Economy	GDP Per Capita at 2005 PPP	Life Expectancy at Birth	Adult Literacy Rate	Net Primary Enrollment Rate	Under-5 Survival Rate	Births Attended by Skilled Personnel
East Asia and the Pacific						
Brunei Darussalam	566	149.5	154.4	131.9	140	197.5
Cambodia	15	51.4	61.5	91.7	71	20.4
China, People's Rep. of	43	109.0	153.5	...	105	150.4
Fiji Islands	49	91.9	...	141.0	119	197.5
Hong Kong, China	395	212.3	...	132.8		197.5
Indonesia	36	87.1	149.2	148.0	96	48.0
Kiribati	16	67.5	...	174.9	80	94.3
Korea, Rep. of	239	155.4	...	134.2	156	197.5
Lao People's Dem. Rep.	20	68.1	52.7	60.7	73	9.3
Macau, China	392	188.1	157.9	82.1		197.5
Malaysia	132	122.9	123.1	130.7	130	154.9
Micronesia, Fed. States of	34	90.7	...	97.4	93	89.9
Mongolia	29	82.9	129.5	91.7	89	175.8
Myanmar	9	61.7	99.6	143.9	66	41.8
Papua New Guinea	22	49.8	37.7	52.5	76	23.0
Philippines	34	105.2	103.4	102.2	99	38.1
Samoa	41	104.9	157.9	134.6	103	197.5
Singapore	484	175.2	157.9	...	167	197.5
Solomon Islands	17	68.5	...	38.0	75	...
Thailand	78	98.0	134.2	82.8	137	174.8
Timor-Leste	9	46.1	...	43.4	77	10.1
Tonga	40	116.7	...	127.9	110	145.7
Vanuatu	38	96.0	...	114.9	95	90.9
Viet Nam	23	102.2	...	95.1	113	75.4
South Asia						
Bangladesh	12	68.0	34.7	85.6	75	6.6
Bhutan	41	73.2	...	40.2	74	24.5
India	24	72.9	49.6	81.6	74	25.3
Maldives	48	84.1	137.2	161.0	96	63.3
Nepal	11	66.0	41.4	56.4	79	6.8
Pakistan	25	75.8	36.1	36.6	68	12.7
Sri Lanka	40	129.3	107.1	152.3	123	138.1
Central Asia						
Armenia	43	109.2	157.9	75.6	105	154.9
Azerbaijan	48	114.5	...	68.8	71	101.4
Georgia	38	104.7	...	66.2	100	135.0
Kazakhstan	92	81.8	...	145.8	100	197.5
Kyrgyz Republic	20	92.6	...	105.1	92	182.6
Tajikistan	16	82.3	157.9	131.9	76	63.5
Uzbekistan	22	88.8	...	...	88	162.7
Eastern Europe						
Albania	60	140.7	157.9	99.9	116	196.1
Belarus	90	93.6	...	94.0	125	197.5
Bosnia and Herzegovina	69	128.3	157.9	...	123	197.5

Continued

Table A.2—Continued

Economy	GDP Per Capita at 2005 PPP	Life Expectancy at Birth	Adult Literacy Rate	Net Primary Enrollment Rate	Under-5 Survival Rate	Births Attended by Skilled Personnel
Bulgaria	102	114.5	138.0	128.4	123	197.5
Croatia	147	132.9	157.9	99.3	147	197.5
Cyprus	285	172.9	157.9	160.2	156	197.5
Czech Republic	226	139.4	...	98.4	159	197.5
Estonia	177	110.8	157.9	150.1	141	197.5
Hungary	188	116.0	...	126.4	144	197.5
Latvia	141	105.9	157.9	96.9	134	197.5
Lithuania	150	111.4	157.9	114.1	138	197.5
Macedonia	85	124.2	150.0	141.0	122	167.8
Moldova	23	91.5	157.9	88.5	114	197.5
Montenegro	91	129.9	...	...	133	189.7
Poland	154	131.1	...	141.5	143	197.5
Romania	103	110.1	130.3	108.5	116	180.1
Russia	129	79.4	157.9	85.1	117	197.5
Serbia	95	116.4	...	...	136	197.5
Slovak Republic	179	125.4	...	96.4	140	197.5
Slovenia	260	150.9	157.9	126.0	159	197.5
Turkey	114	107.2	107.1	88.3	101	76.0
Ukraine	60	92.1	157.9	80.6	111	197.5
Latin American and Caribbean						
Antigua and Barbuda	182	136.2	...	...	129	197.5
Argentina	122	130.9	155.3	174.9	120	190.9
Belize	72	112.9	...	148.3	118	95.9
Bolivia	44	74.9	124.1	126.2	79	47.4
Brazil	98	109.4	106.4	103.7	111	144.8
Chile	137	160.4	157.6	107.7	137	197.5
Colombia	68	113.1	133.7	93.6	112	105.2
Costa Rica	103	165.9	128.1	...	129	167.8
Dominica	77	147.4	...	101.9	123	197.5
Dominican Republic	63	109.5	97.8	74.5	101	149.9
Ecuador	74	129.3	114.4	174.9	107	59.0
El Salvador	61	107.0	74.1	107.5	105	110.5
Grenada	80	118.4	...	91.0	112	197.5
Guatemala	48	97.1	59.2	89.5	91	22.9
Guyana	31	76.2	...	...	81	97.9
Haiti	13	55.7	...	...	71	12.3
Honduras	37	97.0	75.5	98.6	102	42.8
Jamaica	71	107.2	...	91.0	102	150.4
Mexico	133	129.6	124.5	174.9	98	95.3
Nicaragua	26	109.4	68.0	86.0	96	47.4
Panama	105	134.3	111.1	173.7	110	107.8
Paraguay	45	108.0	109.6	110.2	110	63.2
Peru	73	103.5	119.6	174.9	102	56.5
St. Kitts and Nevis	149	108.0	...	132.6	114	197.5
St. Lucia	102	123.4	...	159.7	124	197.5
St. Vincent and the Grenadines	74	106.9	...	102.7	114	197.5
Suriname	74	99.2	101.9	108.8	96	80.0

Continued

Table A.2—Continued

Economy	GDP Per Capita at 2005 PPP	Life Expectancy at Birth	Adult Literacy Rate	Net Primary Enrollment Rate	Under-5 Survival Rate	Births Attended by Skilled Personnel
Trinidad and Tobago	200	97.9	157.9	92.6	98	147.6
Uruguay	105	136.0	...	137.6	127	197.5
Venezuela	114	125.9	122.6	97.5	113	124.4
Middle East and North Africa						
Algeria	80	108.8	79.5	133.1	95	123.4
Bahrain	356	136.3	120.5	169.5	133	197.5
Djibouti	22	40.5	...	14.1	59	62.6
Egypt	53	102.3	64.9	130.2	94	49.1
Iran	105	101.0	125.6	76.1	97	97.1
Israel	266	181.2	...	147.2	152	...
Jordan	48	110.8	157.9	126.4	107	197.5
Kuwait	456	155.7	157.9	82.1	132	197.5
Lebanon	108	109.2	...	75.9	103	133.0
Libya	146	122.3	134.9	...	116	...
Malta	239	170.0	...	111.9	149	197.5
Morocco	40	101.0	41.8	69.5	93	42.2
Oman	220	132.3	123.6	63.2	129	142.0
Qatar	764	132.5	109.7	137.4	114	197.5
Saudi Arabia	241	113.9	109.4	75.9	107	124.4
Syria	47	121.9	95.5	132.1	122	79.2
Tunisia	73	121.0	98.5	134.6	108	98.3
United Arab Emirates	511	170.4	119.9	74.4	139	197.5
Yemen	25	62.4	47.8	43.0	67	13.4
Sub-Saharan Africa						
Angola	41	12.1	43.9	...	40	26.4
Benin	14	44.3	20.7	50.8	56	56.3
Botswana	133	27.2	96.3	74.9	64	122.1
Burkina Faso	12	33.3	13.3	18.5	48	26.2
Burundi	4	25.5	45.3	27.9	51	14.9
Cameroon	23	31.3	...	...	56	41.0
Cape Verde	30	103.0	112.6	112.0	98	...
Central African Republic	8	17.1	30.2	...	51	28.7
Chad	14	32.2	16.2	31.7	47	7.1
Comoros	13	66.9	...	30.7	77	41.3
Congo, Dem. Rep.	3	19.6	41.8	...	47	48.0
Congo, Rep.	38	40.3	125.7	29.8	62	84.9
Cote d'Ivoire	19	24.8	32.0	31.3	60	42.1
Equatorial Guinea	263	30.6	101.8	93.8	47	44.5
Eritrea	6	46.3	...	22.3	74	14.3
Ethiopia	7	34.0	23.7	25.1	60	2.5
Gabon	163	50.0	112.5	85.5	71	82.8
Gambia, The	13	53.6	...	46.0	63	35.0
Ghana	13	55.9	42.1	35.4	63	28.4
Guinea	12	41.7	21.5	35.1	52	27.1
Guinea-Bissau	6	20.8	...	22.9	47	19.6
Kenya	16	36.7	55.8	47.4	63	23.1
Lesotho	15	18.9	...	56.5	62	36.8

Continued

Table A.2—Continued

Economy	GDP Per Capita at 2005 PPP	Life Expectancy at Birth	Adult Literacy Rate	Net Primary Enrollment Rate	Under-5 Survival Rate	Births Attended by Skilled Personnel
Liberia	4	17.6	38.4	41.2	43	30.5
Madagascar	10	52.0	41.6	54.8	62	28.7
Malawi	8	22.3	...	106.8	60	35.7
Mali	11	36.7	...	30.5	45	22.3
Mauritania	20	68.8	32.6	47.6	61	36.1
Mauritius	113	115.6	99.7	107.4	123	197.5
Mozambique	7	16.1	...	39.1	55	27.8
Namibia	51	37.3	88.1	56.0	81	60.3
Niger	7	43.9	15.6	16.9	40	7.8
Nigeria	19	23.0	63.3	38.0	48	19.3
Rwanda	9	16.2	51.4	48.4	53	18.4
Sao Tome and Principe	16	76.2	105.8	174.9	69	66.1
Senegal	17	66.1	23.2	37.0	62	35.7
Seychelles	176	115.0	157.9	118.3	127	...
Sierra Leone	6	11.8	22.4	...	38	23.7
South Africa	96	24.1	...	113.4	80	108.3
Sudan	19	49.7	50.7	22.0	71	49.0
Swaziland	53	14.5	73.9	54.0	55	54.6
Tanzania	12	31.8	52.6	58.0	61	24.4
Togo	9	52.4	46.7	61.1	64	36.5
Uganda	10	27.6	49.9	...	58	22.3
Zambia	13	9.8	...	55.4	50	24.4
Industrialized countries						
Australia	363	191.0	...	120.3	152	197.5
Austria	398	173.5	...	131.7	154	...
Belgium	370	170.0	...	172.6	156	...
Canada	403	184.7	...	174.9	152	197.5
Denmark	390	156.3	...	168.2	155	...
Finland	351	167.2	...	174.9	164	197.5
France	356	183.1	...	174.9	157	...
Germany	359	168.5	...	...	159	197.5
Greece	327	170.8	155.9	163.2	155	...
Iceland	391	189.5	...	172.6	173	...
Ireland	428	163.3	...	108.6	153	197.5
Italy	330	189.6	157.9	174.9	158	197.5
Japan	350	218.4	...	174.9	163	197.5
Luxembourg	799	166.9	...	145.4	157	197.5
Netherlands	406	170.5	...	170.9	153	197.5
New Zealand	283	177.4	...	174.9	148	145.0
Norway	547	180.2	...	174.9	161	...
Portugal	237	156.0	157.9	174.9	153	197.5
Spain	314	184.4	...	174.9	158	...
Sweden	366	190.6	...	174.9	166	...
Switzerland	414	197.8	...	133.4	154	197.5
United Kingdom	360	167.6	...	174.9	151	...
United States	480	155.9	...	109.4	143	...

... indicates data not available.

GDP = gross domestic product; PPP = purchasing power parity.

Source: Author's calculations based on *World Development Indicators*.

Table A.3. **Individual Country Performance, 2000–2007**

Economy	Life Expectancy at Birth	Adult Literacy Rate	Net Primary Enrollment Rate	Under-5 Survival Rate	Births Attended by Skilled Personnel
East Asia and the Pacific					
Brunei Darussalam	-0.91	-0.46	-0.63	-0.95	-0.49
Cambodia	-0.15	-0.13	0.67	0.04	-0.76
China, People's Rep. of	0.72	1.81	...	0.55	1.09
Fiji Islands	-0.06	...	1.29	1.16	2.04
Hong Kong, China	1.89	...	-0.36	...	-0.12
Indonesia	0.13	1.85	1.71	0.28	-1.02
Kiribati	0.38	...	3.09	0.48	0.84
Korea, Rep. of	0.37	...	0.02	1.12	0.40
Lao People's Dem. Rep.	0.14	-0.65	-0.39	-0.22	-1.30
Macau, China	0.99	-0.02	-1.82	...	-0.11
Malaysia	-0.12	-0.13	0.32	0.43	0.05
Micronesia, Fed. States of	0.33	...	0.29	0.20	-0.03
Mongolia	0.26	1.43	0.25	0.20	2.11
Myanmar	0.93	1.58	2.61	0.54	0.30
Papua New Guinea	-0.67	-1.21	-0.70	-0.18	-1.10
Philippines	0.89	0.47	0.44	0.57	-1.17
Samoa	0.64	2.00*	1.23	0.53	2.23*
Singapore	0.25	-0.20	...	0.77	-0.33
Solomon Islands	0.34	...	-0.94	0.12	...
Thailand	-0.40	0.67	-0.68	1.57	1.03
Timor-Leste	0.33	...	-0.33	1.12	-0.42
Tonga	1.11	...	1.06	0.91	1.06
Vanuatu	0.39	...	0.71	0.14	-0.12
Viet Nam	1.23	...	0.49	1.84*	0.04
South Asia					
Bangladesh	0.76	-0.75	0.67	0.62	-0.83
Bhutan	-0.55	...	-1.47	-1.12	-1.69*
India	0.08	-0.91	0.07	-0.40	-1.13
Maldives	-0.33	1.20	1.89*	-0.11	-0.97
Nepal	0.79	-0.47	-0.11	0.92	-0.74
Pakistan	0.18	-1.35	-1.22	-0.78	-1.43
Sri Lanka	1.59	0.43	1.77*	1.70*	0.90
Central Asia					
Armenia	0.75	1.98	-0.47	0.58	1.21
Azerbaijan	0.80	...	-0.75	-1.49	-0.12
Georgia	0.74	...	-0.66	0.47	0.89
Kazakhstan	-1.20	...	1.00	-0.75	1.38
Kyrgyz Republic	1.07	...	0.89	0.87	2.67
Tajikistan	0.97	2.95*	1.82*	0.27	0.18
Uzbekistan	0.78	...	...	0.51	2.07*
Eastern Europe					
Albania	1.50	1.65*	-0.02	0.71	1.78*
Belarus	-0.74	...	-0.46	0.66	1.40
Bosnia and Herzegovina	0.87	1.53	...	0.94	1.67*
Bulgaria	-0.11	0.56	0.44	0.44	1.28
Croatia	0.12	0.86	-0.64	1.28	0.90
Cyprus	0.80	0.27	0.65	0.87	0.21

Continued

Table A.3—Continued

Economy	Life Expectancy at Birth	Adult Literacy Rate	Net Primary Enrollment Rate	Under-5 Survival Rate	Births Attended by Skilled Personnel
Czech Republic	-0.16	...	-0.96	1.38	0.45
Estonia	-0.93	0.69	0.68	0.68	0.70
Hungary	-0.80	...	-0.03	0.74	0.64
Latvia	-0.83	0.89	-0.68	0.61	0.94
Lithuania	-0.70	0.84	-0.23	0.76	0.88
Macedonia	0.47	1.10	0.92	0.58	0.79
Moldova	0.85	2.57*	0.31	1.94*	2.87
Montenegro	0.59	...	...	1.13	1.21
Poland	0.00	...	0.53	0.99	0.85
Romania	-0.28	0.31	-0.13	0.01	0.87
Russia	-1.71*	0.97	-0.95	-0.22	1.03
Serbia	0.05	...	...	1.24	1.35
Slovak Republic	-0.40	...	-0.86	0.59	0.69
Slovenia	0.10	0.35	-0.27	1.18	0.31
Turkey	-0.52	-0.49	-0.78	-0.97	-1.58
Ukraine	-0.29	1.67*	-0.56	0.46	1.83*
Latin America and Caribbean					
Antigua and Barbuda	-0.01	...	...	-0.03	0.68
Argentina	0.27	0.94	1.65*	-0.01	0.93
Belize	0.25	...	1.24	0.57	-0.65
Bolivia	-0.55	0.88	0.95	-0.93	-1.23
Brazil	-0.25	-0.38	-0.24	-0.22	0.13
Chile	1.24	0.91	-0.35	0.79	0.97
Colombia	0.33	0.79	-0.28	0.34	-0.38
Costa Rica	1.79	0.24	...	0.74	0.59
Dominica	1.46	...	-0.13	0.78	1.56
Dominican Republic	0.28	-0.26	-0.77	-0.21	0.69
Ecuador	0.82	0.11	1.99	-0.06	-1.52
El Salvador	0.24	-0.96	0.19	0.08	-0.15
Grenada	0.33	...	-0.46	0.15	1.53
Guatemala	0.15	-1.22	-0.16	-0.36	-1.89*
Guyana	-0.08	...	...	-0.34	0.26
Haiti	0.20	...	...	0.24	-0.79
Honduras	0.46	-0.48	0.26	0.58	-1.17
Jamaica	0.06	...	-0.38	-0.26	0.58
Mexico	0.12	-0.09	1.59	-1.36	-1.30
Nicaragua	1.35	-0.41	0.14	0.73	-0.71
Panama	0.59	-0.30	1.72	-0.34	-0.77
Paraguay	0.64	0.40	0.47	0.80	-0.90
Peru	-0.12	0.28	2.00	-0.29	-1.56
St. Kitts and Nevis	-0.81	...	0.30	-0.61	0.88
St. Lucia	0.22	...	1.33	0.49	1.28
St. Vincent and Grenadines	0.00	...	-0.07	0.34	1.61
Suriname	-0.28	-0.27	0.10	-0.69	-1.03
Trinidad and Tobago	-1.56	0.58	-1.04	-1.91*	-0.54
Uruguay	0.65	...	0.68	0.58	1.24
Venezuela	0.18	-0.01	-0.52	-0.32	-0.48

Continued

Table A.3—Continued

Economy	Life Expectancy at Birth	Adult Literacy Rate	Net Primary Enrollment Rate	Under-5 Survival Rate	Births Attended by Skilled Personnel
Middle East and North Africa					
Algeria	-0.02	-1.03	0.74	-0.83	-0.14
Bahrain	-0.83	-1.11	0.76	-0.70	-0.02
Djibouti	-0.97	...	-1.78*	-1.10	-0.16
Egypt	0.23	-1.13	0.93	-0.31	-1.40
Iran	-0.64	0.15	-1.07	-1.10	-1.01
Israel	1.20	...	0.32	0.76	...
Jordan	0.65	1.86	0.88	0.50	2.05
Kuwait	-0.41	-0.15	-1.92*	-1.09	-0.27
Lebanon	-0.37	...	-1.09	-0.76	-0.23
Libya	-0.26	0.14	...	-0.47	...
Malta	0.91	...	-0.61	0.74	0.39
Morocco	0.51	-1.61	-0.61	-0.05	-1.27
Oman	-0.39	-0.57	-1.96*	-0.28	-0.77
Qatar	-1.93*	-2.19*	-0.68	-2.90*	-0.81
Saudi Arabia	-1.19	-1.10	-1.65	-1.65	-1.26
Syria	1.12	-0.06	1.07	1.43	-0.58
Tunisia	0.54	-0.36	0.84	0.03	-0.61
United Arab Emirates	-0.00	-1.46	-2.24*	-0.85	-0.39
Yemen	-0.35	-1.00	-1.05	-0.86	-1.44
Sub-Saharan Africa					
Angola	-2.85*	-1.55	...	-3.09*	-1.64
Benin	-0.33	-1.34	-0.44	-0.73	0.11
Botswana	-3.83*	-0.97	-1.27	-3.36*	-0.70
Burkina Faso	-0.49	-1.39	-1.23	-0.90	-0.35
Burundi	0.56	0.60	-0.22	0.75	0.53
Cameroon	-1.39	...	...	-1.32	-0.70
Cape Verde	0.95	0.86	0.80	0.64	...
Central African Republic	-0.64	-0.53	...	-0.21	0.09
Chad	-0.77	-1.48	-0.98	-1.23	-0.98
Comoros	0.62	...	-0.96	0.58	-0.13
Congo, Dem. Republic	0.64	0.70	...	0.87	1.54
Congo, Rep.	-1.67*	1.06	-1.71*	-1.68*	-0.23
Cote d'Ivoire	-1.44	-1.26	-1.21	-0.88	-0.52
Equatorial Guinea	-4.65*	-1.42	-1.19	-5.56*	-3.24*
Eritrea	0.75	...	-0.71	1.39	0.01
Ethiopia	0.15	-0.62	-0.70	0.45	-0.37
Gabon	-3.17*	-0.65	-1.11	-3.23*	-1.80*
Gambia, The	0.17	...	-0.50	-0.17	-0.24
Ghana	0.20	-0.60	-0.83	-0.18	-0.43
Guinea	-0.26	-1.20	-0.80	-0.73	-0.40
Guinea-Bissau	-0.07	...	-0.61	0.02	0.25
Kenya	-0.73	-0.33	-0.60	-0.44	-0.73
Lesotho	-1.36	...	-0.32	-0.47	-0.39
Liberia	0.14	0.29	0.10	0.17	0.78
Madagascar	0.41	-0.36	-0.08	0.12	-0.12
Malawi	-0.41	...	1.58	0.31	0.27
Mali	-0.34	...	-0.87	-1.03	-0.42

Continued

Table A.3—Continued

Economy	Life Expectancy at Birth	Adult Literacy Rate	Net Primary Enrollment Rate	Under-5 Survival Rate	Births Attended by Skilled Personnel
Mauritania	0.19	-1.25	-0.75	-0.83	-0.67
Mauritius	-0.19	-0.71	-0.23	0.26	1.17
Mozambique	-0.58	...	-0.33	0.14	0.15
Namibia	-2.17*	-0.38	-1.16	-1.00	-1.11
Niger	0.55	-0.85	-0.92	-0.63	-0.22
Nigeria	-1.49	-0.27	-1.01	-1.56	-1.02
Rwanda	-0.76	0.06	-0.17	-0.22	-0.22
Sao Tome and Principe	0.72	1.21	3.10*	-0.12	0.22
Senegal	0.24	-1.45	-0.98	-0.63	-0.55
Seychelles	-0.76	0.69	-0.22	-0.10	...
Sierra Leone	-0.55	-0.56	...	-0.60	0.22
South Africa	-3.51*	...	0.05	-1.93*	-0.67
Sudan	-0.49	-0.66	-1.47	-0.28	-0.35
Swaziland	-3.09*	-0.83	-1.23	-2.54*	-1.26
Tanzania	-0.55	-0.17	-0.10	-0.16	-0.40
Togo	0.53	-0.12	0.16	0.37	0.14
Uganda	-0.47	-0.08	...	-0.03	-0.24
Zambia	-1.55	...	-0.27	-0.94	-0.54
Industrialized countries					
Australia	1.19	...	-0.66	0.34	-0.04
Austria	0.42	...	-0.39	0.33	...
Belgium	0.38	...	0.83	0.55	...
Canada	0.83	...	0.83	0.16	-0.14
Denmark	-0.20	...	0.67	0.39	...
Finland	0.34	...	0.93	1.05	0.00
France	0.92	...	0.92	0.62	...
Germany	0.36	...	...	0.71	-0.02
Greece	0.56	0.08	0.64	0.66	...
Iceland	1.04	...	0.79	1.42	...
Ireland	-0.05	...	-1.11	0.16	-0.20
Italy	1.25	0.14	0.97	0.78	0.06
Japan	2.28*	...	0.93	0.99	0.00
Luxembourg	-0.68	...	-0.48	-0.43	-0.85
Netherlands	0.29	...	0.72	0.22	-0.15
New Zealand	0.98	...	1.07	0.44	-0.96
Norway	0.28	...	0.63	0.27	...
Portugal	0.40	0.43	1.19	0.95	0.41
Spain	1.12	...	1.00	0.84	...
Sweden	1.16	...	0.90	1.12	...
Switzerland	1.28	...	-0.37	0.29	-0.17
United Kingdom	0.32	...	0.91	0.31	...
United States	-0.46	...	-1.16	-0.53	-0.32
World	0	0	0	0	0

... indicate data not available; * indicates statistically significant at the 5 percent level.

Source: Author's calculations.

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