

Are Low Income Countries Catching Up or Falling Further Behind?

Evidence from Income and Demographic Indicators

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Abstract

The main objective of this paper is to measure changes in living conditions in one hundred and ten countries of the World during the period 1961 to 1990. Our concern is whether the economic and social gap is narrowing or widening. We also examine in which countries has there been a consistent improvement in average living standards. The standard of living is measured in terms of (a) per capita income, (b) life expectancy at birth and (c) infant mortality rate. The justification of these indicators is provided in terms of functionings and capabilities.

1. Introduction

It is well known that there is a vast disparity in the average level of living standards of people in different countries around the world. This paper is concerned with whether the economic and social gap is narrowing or wide-

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ning. It also examines a second question: in which countries has there been a consistent improvement in average living standards? It may be that in with high and low income countries living standards have improved even though the gap has widened (or narrowed).

The gross domestic product (GDP) per head and related income measures are widely used to appraise the economic well-being of people living in different countries. These measures have been subjected to much criticism for their failure to give any indication of how the total output of a country is distributed among its people.¹ Recently, many economists, the most notable of them being Sen (1984, 1985 and 1985a), have been concerned with whether or not these income measures reflect the well-being of people. As an alternative to GDP per capita, Sen has developed a conceptual framework for defining and measuring the standard of living in terms of functionings and capabilities; this is discussed in Section 2 of this paper.

The main objective of this paper is to measure changes in living conditions in one hundred and ten countries of the world during the period 1961 to 1990. The emphasis is on a factual analysis of whether or not the gap in living conditions between countries is narrowing rather than on the causal mechanisms underlying the observed changes.

First, we use the per capita income approach to measure changes in living conditions. This approach derives aggregate welfare measures using individual incomes. It provides a measure of welfare disparity between countries which enables us to analyse whether or not, the income gap between countries is narrowing.

Secondly, up the spirit of the alternative approach of functionings and capabilities, we compare achievements (levels) and improvement (changes) in the standard of living across countries, as shown by demographic indicators. We also computed an index of disparity in standards of living between countries for various country groupings. This index suggested that the overall gap in the standard of living between countries has not decreased. A similar conclusion emerged when we measured the gap in terms of per capita GDP.

2. Functioning and Capabilities

Dissatisfaction with aggregate income measures has given rise to alternative measures of development. Social indicators, quality of life and basic needs are the new approaches which are being widely analyzed.² These approaches are evidently related to the concept of the standard of living or the well-being, but they lack a unifying conceptual framework for defining

and measuring the standard of living. It is only recently that such a framework has been developed by Sen (1984, 1985 and 1987), who defines the standard of living in terms of functionings and capabilities. We provide below only a brief discussion of this approach.

People want income because it gives them the possession of commodities which they consume. The higher the income the greater the command people have over the commodities. The possession of commodities (which also include services) provide people with the means to lead a better life. Thus, the possession of commodities or opulence is closely related to the quality of life people lead. But it is only a means to an end. As Sen (1985) points out, "ultimately, the focus has to be on what life we lead and what we can or cannot do, can or cannot be". Thus, the standard of living must be seen in terms of individual achievements and not in terms of means that individuals possess. This line of reasoning leads to the ideas of *functionings* and *capabilities*. A functioning is an achievement, whereas a capability is the ability to achieve. Thus, functionings are directly related to what life we actually lead, whereas capabilities are connected with the freedom we have in choice of life or functionings.

It may seem obvious that the higher the income people have, the greater will be their capabilities. After all, it is an observed fact that the rich countries do have a higher standard of living than the poor countries. But the relationship between the two is not as simple as it appears. For instance, consider a country which has succeeded in reducing its death rate so much that its per capita GDP falls because of the resulting increase in population; has its living standard improved or deteriorated? The answer is not clear. The fall in per capita income shows that the country has become poorer, whereas at the same time the country has extended the capability of its citizens to live a longer life. This example demonstrates the complex nature of the relationship between the income and the capabilities people possess.

Having defined the standard of living, the next step is the selection of the appropriate capabilities which should be the focus of attention. Ideally, the measurement of the standard of living should incorporate all the capabilities that enhance the human well being but from an empirical standpoint, this is not a feasible task. So, we need to select the most important capabilities which, in our judgement, affect the quality of life. The question then is: how should one arrive at such a selection?

The United Nations' Research Institute for Social Development (UNRISD) in Geneva has been concerned with the construction of the standard of living index. For such a construction, it initially compiled a set of 100 indicators of the standard of living. After applying various selection criteria including the availability of data, the number of indicators was reduced to nine:

1. Infant mortality rate;
2. Expectation of life at birth;
3. Literacy rate;
4. Primary and secondary enrolments;
5. Telephones per 100,000 population;
6. Agricultural production per male agricultural worker;
7. Steel production per capita;
8. Energy consumption per capita;
9. GDP per capita;

According to Sen's conceptualization of the living standard, our primary concern should be with individual achievements and not with the means that individuals possess. Therefore, we should select only those variables which reflect results, not inputs. The above list of nine indicators is a mixture of both inputs and results. The input indicators are, of course, important because they enhance capabilities and extend functionings, but they are not indicators of achievements. Hicks and Streeten (1979) have also argued on the same line that "in general, output measures are better indicators of the level of welfare and basic needs achievements." In this study we will focus on output measures.

The distinction between input and output indicators may not be all that clear cut. For instance, primary and secondary school enrolments are input measures because they provide the means to achieve higher literacy and other skills in the population. Can literacy itself be considered as ultimate achievement of a society or is it only a means to achieving other functionings and capabilities? Clearly, if a person is literate, he or she is open to a large number of capabilities can communicate more effectively with others, can read books, can keep track of what is going on, etc.

Even if the literacy rate can be regarded both as a means and an end, it has a strong case for being included as an indicator of the standard of living because it is a good proxy for other functionings and capabilities of importance. However, for all the countries studied there is only data on literacy rates for one year, 1985, so this indicator can not be used in comparisons between periods.

Infant mortality and life expectancy are the two most important indicators of achievement. The infant mortality is the number of infants per thousand live births in a given year, who die before reaching their first birthday. Hicks and Streeten (1979) cite infant mortality as "a good indicator of the availability of sanitation and clean water facilities because of the susceptibility of infants to water-borne diseases." Infant mortality

rate is also very sensitive to the nutritional status of the population. In this regard Bardhan (1974) cites that "maternal malnutrition often leads to the birth of premature, underweight babies; also poor nutrition reduces resistance to infection, particularly among children, and the various infections in turn reduce the nutrient absorption capacity of the body. Consequently, a child, seriously malnourished because of deficiency either in its own diet or in that of its mother during pregnancy and lactation, has a much lower chance of survival than otherwise." Besides, the fact that the infant mortality rate characterizes the fulfillment of several basic needs such as health, sanitation, clean water supply and nutrition, it is in itself an indicator of achievement because people everywhere would prefer that none of their infants die.

The life expectancy at birth indicates the number of years a newborn infant would live if patterns of mortality prevailing for all people at the time of its birth were to stay the same throughout its life. It is an index of long life which can be an outcome of several input variables such as nutrition, water supply, sanitation, and medical facilities. Sen (1987) cites that "the forces that lead to mortality, such as morbidity, ill health, hunger, etc., also tend to make the living conditions of the people more painful, precarious and unfulfilling, so that life expectancy may, to some extent, serve as a proxy for other variables of importance as well." Since most people would prefer to live longer irrespective of the quality of life, the life expectancy can be regarded as an indicator of achievement and, therefore, becomes eligible for inclusion as an important component of the standard of living.

The remaining indicators in the UNRISD study, viz, 5, 6, 7, 8 and 9, fall in the category of input variables because they relate to degree of command people have over the commodities. They are the indicators of opulence which is not the same thing as the standard of living.

In this study we would be confined to the three aggregate measures of well-being, viz, infant mortality rate, life expectancy at birth and literacy rate. We make no attempt to incorporate many other social and psychological characteristics suggested by the term "quality of life" - security, justice, freedom of choice, human rights, employment satisfaction, etc. (see Morris 1979). Our analysis which is restricted mainly because of the non-availability of the appropriate data, may appear to be too narrow in its scope but it should be realized that three indicators used are, as argued above, proxies to the large number of important capabilities that influence human well-being.

Obviously, the three indicators considered here are highly aggregated measures of well-being. Ideally we should be concerned with the well-being of individuals or group of them. Dasgupta (1990a) correctly argues that

we should as well be interested in the distribution of well-being - along class, or caste, or gender or regional lines. This type of analysis cannot be carried out at an international level with a large number of countries because of the demanding data requirements. However, the methodology presented here can easily be applied to analyse the standard of living at individual or group levels.

The indicators of living standards (unlike GDP per head) generally have asymptotic limits, reflecting physical and biological maxima. Another important character is that as the standard of living reaches higher limits, incremental improvement would represent much higher levels of achievement than similar incremental improvement from a lower base.³ In other words, the relationship between achievement and values of the indicators is not linear. Consequently, the observed differences in the levels of the social indicators do not reflect their true achievement.

Using an axiomatic approach, Kakwani (1992) has derived an achievement index which accommodates the view that a further increase in the standard of living of a country when it is already at a higher level signifies an achievement greater than that of another with an equal increase but from a lower base. The improvement index is then derived as the difference between the values of achievement index in any two periods. We apply this methodology to compare the changes in the living standard in 110 countries (Section 6).

It must be emphasized that we are not attempting to construct a single index of the standard of living. Several attempts have been made in this direction (Morris 1979, UNRISD 1972 and most recently UNDP's Human Development Report 1990). It is important to have a single overall index of well-being in order to be able to rank the countries. But the construction of such an index has many pitfalls. One of the main difficulties is how to aggregate several components of well-being into a single measure, or what weights should be given to each component? Morris 1979 constructed a single index which is a simple average of the three components - (life expectancy at birth, infant mortality rate and literacy rate). This index has the virtue of being simple but is obviously arbitrary. There exists no rational economic justification for assigning the different components equal weights. An alternative approach which has been suggested in the literature is that of principal components in which the indicator weights are taken as proportional to the leading 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 three indicators.

In a forthcoming paper, Jalan and Subbarao (1992) use this methodology for analyzing inter-country variation in human resource development.

There is, however no economic justification for maximizing the variation in the component indicators. To this extent, it does not overcome the weighting problem.

In this study, we analyze the individual countries' achievement in terms of the three separate indicators of the standards of living, and refrain from combining them into one single index. This procedure may not permit us to get a complete ranking of countries but then as Sen (1989) argues, it is not necessary to convert a vector of capabilities into one scale index, reflected by one real number. According to Sen, measurement of standard of living or well-being that has inherent plurality, should not be seen as a one-dimensional measure, like that of weight or height. Thus, we adopt a partial orderings approach in which we make comparisons of living standard by ranking countries according to each of the capabilities considered.

3. Income approach to analysing cross-country welfare

The income approach derives aggregate welfare measures based on individual incomes. The aggregation is performed at three levels; (1) over individuals within a country, (2) over a group of countries, for instance, oil exporting countries and (3) over a time period. The aggregation procedure is based on the assumption of an additive social welfare function which is recognised to be highly restricted but the framework presented can easily be extended to social welfare functions which are non-additive.⁴

This approach will now be applied to analyze changes in economic welfare in 110 countries during the period from 1961 to 1990. The data were taken from the World Bank Data Files (using the Stars System). These files provided data on population and GDP at constant local prices which immediately provided us with yearly growth rates in real per capita GDP. The PPP estimates of per capita GDP for the year 1980 were obtained from Summers and Heston (1988). These estimates are available in 1980 US dollars. Given these PPP estimates for 1980 and the yearly growth rates, it is possible to compute the PPP estimates of per capita GDP for the other years.

Table 1 aggregates across countries according to income; according to which the countries are divided into three groups, viz, low-income developing economies with a per capita income of \$400 or less in 1985, middle-income developing economies with a per capita income of \$401 or more and high income economies which include most of the industrial market economies and high income oil exporters. It is interesting to note that the performance of low income countries was inferior to middle and high income countries in the 1970s but this situation changed in the 1980s; the

Table 1. Welfare Levels in Low, Middle and High Income Countries

Country Groups	No of Countries	Welfare Levels			% Change in Welfare		
		1961-70	1971-80	1981-90	1961-90	1961-70 to 1971-80	1971-80 to 1981-90
Low Income	32	641	846	1198	905	32.0	41.6
Middle Income	55	1208	1775	2075	1714	46.9	16.9
High Income	23	6159	8484	10219	8227	37.7	20.5

low income countries performed much better in the 1980s. The ratio of average welfare of high income to low income countries increased from 9.6 in 1961-70 to 10.0 in 1971-80 but then it reduced to 8.5 in 1981-90. Thus, the income gap between low income and high income countries may have reduced in the 1980s.

Next we aggregated welfare across countries using several other country classifications. First, we classified the countries according to their location-forming seven mutually exclusive groups. China is included with the Indian subcontinent in South Asia, and Western Pacific countries in East Asia. According to the World Bank classification, there are 21 industrial market economies which we grouped together irrespective of their location. For instance, Japan although situated in Asia is classified as an industrial country.

The three other categories we considered are

- Oil exporters
- Exporters of manufacturers
- Primary producers

The countries in oil exporters category are these with exports of petroleum and gas, excluding re-exports, accounting for 50% of merchandise exports and the exporters of manufacturer category includes countries with exports of manufactures accounting for more than 30% of exports and their share of exports of manufactures in the developing countries trade should be greater than 2 percent. The remaining countries in the sample belonged to the primary producers category.

It is quite obvious from Table 2 that Africa is the poorest region; the average welfare was only \$523 in 1961-70 which increased by 17.8% to \$616 in 1971-80 but then declined by 9.7% to \$556 in the 1980s. The countries in Africa are not only poor in absolute per capita income, but their performance over the thirty years has been highly disappointing. A large

Table 2: Welfare Levels by Various Country Classifications

Country Groups	No of Countries	Welfare Levels				% Change in Welfare	
		1961-70	1971-80	1981-90	1961-90	1961-70 to 1971-80	1971-80 to 1981-90
Africa	36	523	616	556	566	17.8	-9.7
South Asia	6	677	918	1387	1000	35.6	51.1
East Asia	9	781	1213	1752	1258	55.3	44.4
Middle East & Europe	15	1382	2078	2567	2031	50	23.5
Central America	12	2004	2720	2925	2600	35.7	7.5
South America	11	1952	2863	3047	2660	46.7	6.4
Industrialized	21	6157	8455	10268	8225	37.3	21.4
Primary Producing	64	842	994	1058	979	18.1	6.4
Manufacturing							
Exporters	9	754	1077	1636	1157	42.8	51.9
Oil Exporters	15	850	1273	1515	1238	49.8	19
All Countries	110	1242	1620	2036	1651	30.4	25.7

number of them suffered a severe decline in per capita GDP in the 1980s. Since most of the poorest countries in the world are situated in Africa, this suggests that the gap between the very poorest and the rich countries increased over the 1961 to 1990 period.

The countries which suffered the most in the 1980s are Ghana, Madagascar, Niger, Nigeria, Gabon, Uganda, Zaire and Zambia. Despite this overall gloomy performance, a few African countries have demonstrated an excellent performance in increasing their per capita incomes. Botswana's aggregate welfare was 149.3 percent higher in the 1970s compared to that in the 1960s and was 107 percent higher in the 1980s compared to that in the 1970s. This is the most outstanding performance among the all 110 countries of the world. The high growth is mainly based on minerals and export of diamonds. The economic growth continued to be high in the 1980s despite the drought which threatened rural incomes. Other African countries which have demonstrated substantial improvement in their welfare are Congo, Lesotho and Mauritius.

The South Asia region, although started with a low welfare level of \$677 in 1961-70, has demonstrated an excellent improvement in the 1970s and 1980s. Its average welfare level in 1981-90 was almost twice that in 1961-70. Most of this improvement is attributed to an excellent performance by China. China's average welfare level increased by 62 percent in the 1970s and 85.5 percent in the 1980s.

The performance of East Asian countries was the most outstanding in the 1970s; the average welfare level improved by 55.3% but in the 1980s the improvement fell to 44.4%, still very good but lower than those of South Asia. The countries which have had the most outstanding performance in East Asia are Korea and Singapore. The countries in the remaining regions performed very well in the 1970s but their performance fell substantially in the 1980.

To summarize the changes in the relative performance of countries over time, we calculated the average ranks of various country classifications by ranking all the countries (from low to high) by their average welfare levels in each period and also by their percentage change in average welfare for the periods; 1961-70 to 1971-80 and 1971-80 to 1981-90. Table 3 shows the result. For instance, the South Asian countries, after falling behind in the 1970s, improved their average rank from a value of 31.3 in 1961-70 to 36.2 in 1981-90, which is clearly a significant improvement. Similarly, the East Asian countries have also improved their average rank from 55.8 in 1961-70 to 65.2 in 1981-90. The countries whose average rank has declined sharply are located in central and south American region. It is interesting to note that the industrialized market economies have consistently main-

Table 3: Average Rank by Welfare Levels and Percent Change in Welfare

Country Groups	No of Countries	Welfare Levels				% Change in Welfare	
		1961-70	1971-80	1981-90	1961-90	1961-70 to 1971-80	1971-80 to 1981-90
Low Income	32	19.6	17.8	18.5	18	29.8	41.4
Middle Income	55	58.5	59.4	59.3	59.3	67.2	58.6
High Income	23	98.4	98.6	97.9	98.6	63.3	67.7
Africa	36	23.4	23.5	22.8	22.9	38.7	37.8
South Asia	6	31.3	29	36.2	32.8	37.8	83.8
East Asia	9	55.8	59.6	65.2	60.7	84.2	82
Middle East & Europe	15	66.8	71.6	72.5	70.7	81.8	70.7
Central America	12	62.8	59.4	54.8	58.4	51	36.3
South America	11	68.8	64.8	61.5	65	47.6	40.9
Industrialized	21	96.7	96.4	96.9	97	65.8	74
Primary Producing	64	39.1	37.8	37.1	37.6	43.9	44.8
Manufacturing Exporters	9	62.7	67.2	73.7	68.4	90.7	90.2
Oil Exporters	15	60.6	64	62.6	63.1	68.9	53.4
All Countries	110	55.5	55.5	55.5	55.5	55.5	55.5

tained their average rank value. The average rank of high income countries has declined slightly in the 1980s. This decline is attributed to two high income oil exporting countries, viz, Kuwait and Saudi Arabia whose average welfare declined substantially in the 1980s resulting in lower ranks.

4. Between Country Disparity of Economic Welfare

There are a number of studies which support the view that per capita GDP levels and/or levels of total factor productivity within the industrialized market economies have tended to converge over the last century and, especially, since the second world war (see, for example, Roger Kormendi and Philip Meguire, 1985; Moses Abramovitz, 1986; William Baumol, 1986; Fred Gruen 1986; Stev Dowrick and Duc-Tho Nguyen, 1987). These studies have given rise to the convergence hypothesis which states that as a country becomes richer, it becomes harder for it to grow faster.

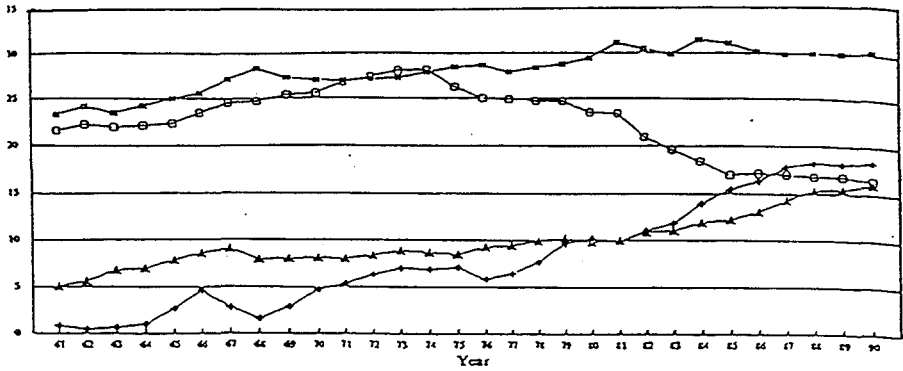
While the convergence hypothesis has found to hold for a number of industrialized countries, its validity has not been tested for the developing countries. This hypothesis is clearly important in the context of global development because it implies that the poorer countries should grow faster than the richer countries. If the hypothesis holds, the welfare disparity between the countries should decrease over time. To test the hypothesis we computed an index of welfare disparity between countries grouped by various attributes.

The results are depicted in Graph 1 and also in Table 4. It is interesting to note that the disparity index computed for the all 110 countries has more or less remained constant over the entire period of 30 years (1961-90). Thus, the convergence hypothesis does not seem to be supported or we may conclude that at a global level, there is neither a widening nor narrowing of the gap between countries. This conclusion changes somewhat if we look at various country classifications.

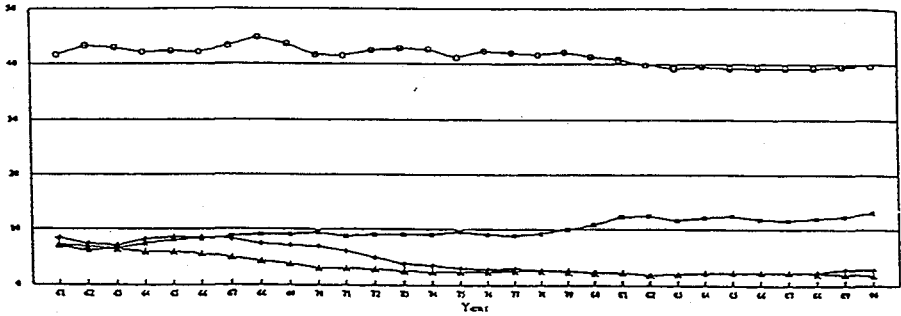
It is striking to note that the disparity index between low income countries has increased more or less monotonically over the entire period. In the 1961-70 period, its value is 3.5 which increased to 9.3 in 1971-80 and then to 19.8 in 1981-90. This represents a significant increase in the welfare disparity between low income countries. This widening of the gap has occurred because of the exceptionally good performance of four South Asian countries: China, India, Pakistan and Sri Lanka and the generally deteriorating performance in many African countries. In both middle and high income countries, the disparity index has fallen slightly.

As expected on the basis of previous studies, the disparity index between industrialized market economies has declined. It is interesting to note that

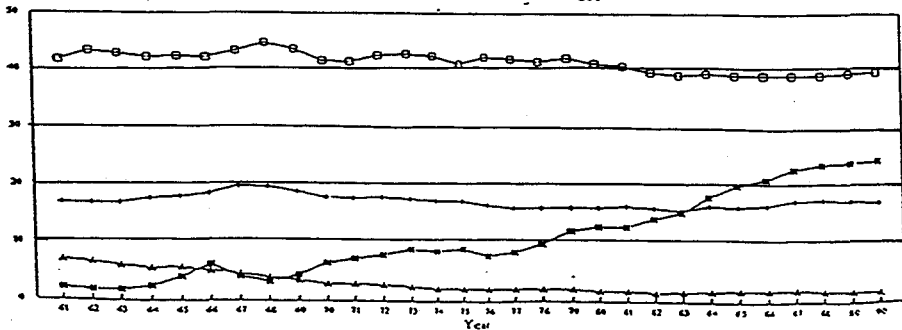
Graph 1. Welfare Disparity Indexes



Africa
 East Asia
 South Asia
 Middle East & Europe



Central America
 Industrial Countries
 South America
 All Countries



Low Income
 High Income
 Middle Income
 All Countries

Table 4: Welfare Disparity Index by Various Country Classifications

Country Groups	No of Countries	Welfare Disparity Index			1961-90
		1961-70	1971-80	1981-90	
Low Income	32	3.5	9.3	19.8	10.8
Middle Income	55	18	16.7	16.5	16
High Income	23	5	2.2	1.8	2.6
Africa	36	25.5	28	30.4	28
South Asia	6	2.2	7.3	15	8
East Asia	9	7.4	9.1	12.8	9.3
Middle East & Europe	15	23.3	25.7	17.9	20.8
Central America	12	8	9.4	12.1	10
South America	11	7.7	3.2	2.2	3
Industrialized	21	5.3	2.5	2.2	3
Primary Producing	64	23.4	27.1	28.6	26.1
Manufacturing					
Exporters	9	7.5	13.4	16.7	12.1
Oil Exporters	15	31.3	29.3	24.4	26.9
All Countries	110	42.6	41.9	39.3	40

the welfare disparity between countries in central America has increased whereas in South America it has decreased and among oil exporting countries, there is a monotonic decline in the value of the index; the most significant decline occurred in the 1980s.

Having discussed the direction of welfare disparity between countries, a question that still needs to be answered is whether a decrease in disparity between countries is good by itself. Suppose all countries are getting impoverished, disparity falls. Clearly it is not an index of progress by itself. However, if the average welfare level of countries remains constant, then any decrease in disparity can always be considered to be good. Thus, the measurement of disparity is relevant for studying economic welfare.

5. Achievement in Infant Mortality Rate and Life Expectancy at Birth

As pointed out, the indicators of standard of living such as life expectancy at birth and infant mortality rate (unlike per capita income) have asymptotic limits, reflecting physical and biological maxima. Another important characteristic is that as the standard of living reaches progressively higher limits, incremental improvement would represent much higher levels of achievement than similar incremental improvements from a lower base. Using an axiomatic approach, Kakwani (1992) derived an achievement function which accommodates these views. We computed this index for each country and every year from 1971 to 1990. Having computed all this, the next step involved aggregating achievement over time as well as across countries, using the aggregation procedures described in Kakwani and Subbarao (1993).

The empirical results on achievement in life expectancy at birth and the infant mortality rate various country classifications and the two periods, viz, 1971-80 and 1981-90, are presented in Table 5. Although not shown in the table, it is striking to note that all the countries of the world had an increase in achievement levels, although the magnitudes of increases varied sharply across the countries. The average achievement level in infant mortality rate of all the 110 countries increased from 29.5 in 1971-80 to 34.1 in 1981-90, representing an increase of 15.6%. During the same period, the achievement level in life expectancy at birth increased by 23.4 percent. The Middle East and European countries have made the most progress in infant mortality rate but in life expectancy at birth, the countries in East Asia have made the most progress. The countries in Africa have the lowest levels of achievement in all the three indicators of standard of living but the progress

Table 5: Achievement in Infant Mortality Rate and Life Expectancy at Birth

Country Groups	No of Countries	Infant Mortality Rate			Life Expectancy at Birth		
		1971-80	1981-90	% Improvement	1971-80	1981-90	% Improvement
Low Income	32	23.4	27.4	17.1	21.5	27.3	27
Middle Income	55	24	29.6	23.1	23.1	29	25.5
High Income	23	53	61.4	15.8	50.8	63.6	25.2
Africa	36	15.2	18.3	20.4	10.8	14	29.6
South Asia	6	24.4	28.8	18	22.9	29.2	27.5
East Asia	9	25.6	31.7	23.8	20.7	27.8	34.3
Middle East and Europe	15	23.4	30.6	30.8	26.4	32.3	22.3
Central America	12	26.5	32.3	21.9	27.9	35	25.4
South America	11	25.4	30.4	19.7	27.5	32.9	19.6
Industrialized	21	53.4	62.1	16.3	51.1	64.2	25.6
Primary Producing Manufacturing Exporters	64	20	24.3	21.5	17.8	22	23.6
Oil Exporters	9	25.9	30.5	17.8	24.6	31.2	26.8
	15	19.4	24.7	27.3	17.9	24.1	34.6
All Countries	110	29.5	34.1	15.6	27.8	34.3	23.4

made by them in the period from 1971-80 and 1981-90 is above average. On the other hand, industrialized market economies have made the slowest progress in infant mortality rate but in life expectancy at birth, the slowest progress is observed among the South American countries. While the poor performance of African countries is not unexpected, that of oil exporting countries may be surprising.

Table 6 presents the values of the disparity index. The disparity between countries in infant mortality rate tends to be increasing somewhat but that in life expectancy at birth, it has remained more or less constant. From these results we may conclude that the overall gap in the standard of living between countries has not decreased. A similar conclusion emerged when we measured the gap in terms of per capita GDP.

6. Concluding Remarks

The purpose of this chapter has been to know whether or not the distance between the low and middle income countries on the one hand and industrial market economies on the other hand has narrowed over the last three decades in terms of (a) per capita income, (b) life expectancy at birth, and (c) infant mortality. The justification of these indicators of standard of living has been provided in terms of functionings and capabilities.

In terms of progress of individual countries over the three decades, the direction of results is predictable: most countries in Africa did poorly in terms of per capita income, but not so poorly in terms of social indicators: most south and east Asian countries did well in terms of income as well as social indicators; most south American countries performed poorly in terms of per capita income but not in terms of social indicators presumably because most of them already reached relatively high levels at the beginning of the period of our study. Neither regional nor country disaggregation suggest a monotonic relationship between GDP per capita growth and standard of living in terms of social indicators. Clearly GDP per capita growth is important especially in very poor countries, but for achieving social progress, it appears that such countries need not wait until their incomes rise to very high levels.

The lack of systematic relationship between progress in social levels of living and (lagged) GDP growth per capita suggests that for achieving social progress, investment pattern (especially investment in human resource development) matters a lot more than per capita GDP growth per se. Moreover, technical progress especially in medicine offers tremendous scope for achieving reductions in infant mortality such as low cost immunizations in which even low income countries can afford to invest. Simi-

Table 6: Disparity Index in Infant Mortality Rate and Life Expectancy at Birth

Country Groups	No of Countries	Infant Mortality Rate			Life Expectancy at Birth		
		1971-80	1981-90	Change	1971-80	1981-90	Change
Low Income	32	12.4	14.6	2.2	2.5	2.8	0.3
Middle Income	55	9.4	11.3	1.9	2.1	1.9	-0.2
High Income	23	7.6	10.5	2.9	0.3	0.5	0.2
Africa	36	1.6	3	1.4	0.5	1	0.5
South Asia	6	12.2	14.8	2.6	2.2	2.3	0.1
East Asia	9	9.7	11.5	1.8	1.5	1.2	-0.3
Middle East and Europe	14	14.1	13.3	-0.8	2.3	1.8	-0.5
Central America	12	4.5	5.3	0.8	0.8	0.9	0.1
South America	11	4.8	6.7	1.9	0.9	0.6	-0.3
Industrialized	22	4.4	3.5	-0.9	0.1	0.3	0.2
Primary Producing	64	9.4	12.9	3.5	3	3.3	0.3
Manufacturing							
Exporters	9	12.3	14	1.7	1.8	1.6	-0.2
Oil Exporters	15	4.2	5.4	1.2	2	1.9	-0.1
All Countries	110	24.4	27.7	3.3	4.2	4.4	0.2

larly large gains in terms of reductions in fertility and infant mortality may be achieved from investments in female education. By contrast there appears to be no automaticity in GDP per capita growth and progress in human resources (see e.g. Sen (1981).) These considerations lend credibility to our results relating to inter-country variations in standard of living, although more systematic work on causality is clearly required.

Specific country experiences do underscore the role of development styles in explaining the observed differences in standard of living. For instance, some of the star performers in standard of living, viz., Botswana, China, Indonesia, Korea, Singapore, Sri Lanka, Costa Rica, have all invested heavily in education and health. By contrast, Nigeria, which benefited (in terms of GDP per capita) from the oil price shock of the early 1970s, did not invest in education and health; so her performance in the 1980s in standard of living is poor notwithstanding good performance in GDP per capita in the 1970s. The opposite is the case of Indonesia, which also benefited from the oil shock, but public revenues were devoted largely for health, education and family planning resulting in remarkable progress in social development.

One striking result of our analysis is that between-country disparity in per capita income based on all the 110 countries has remained more or less constant over the entire period of 30 years (1961-90). There is neither a widening nor a narrowing of the gap between countries. But this conclusion changes when we look at country classifications. For instance, the disparity index has increased sharply over the period among the low income countries suggesting the diversity of development experience among them, noted in the previous paragraph.

In terms of "catching up with the industrialized market economies" many low income countries narrowed the distance in terms of life expectancy and infant mortality, but could not do so in terms of per capita incomes. This paper does not explore the factors that explain this finding. Yet the finding itself is of importance. It suggests at least three implications: First, bridging the gap in social indicators between low income and the industrial market economies seems to be a more feasible goal, realizable with a generation or two, than bridging the gap in per capita incomes. Second, bridging the gap in per capita incomes is not a necessary condition for bridging the gap in "welfare" reflected by life expectancy, infant mortality and education. To this extent, the goal of development policy so popular in the 1950s, viz., "catching up with the west in per capita income growth" (and the associated emphasis on savings rate and capital output ratios to maximise physical output), not only neglected the need for improving the welfare indicators, but in fact projected a policy goal that proved to be a recipe for frustration.

Third, adequate resources must flow into human resource development (especially health and education) to help realize at least the realizable goal, viz., to bridge the gap in welfare indicators between the developed industrial market economies and the developing countries.

This does not mean that we are calling for a de-emphasis of per capita income growth. On the contrary, the estimated relationships between achievement and economic welfare given in Kakwani and Subbarao (1993) suggested that per capita income is *an important determinant* of the standard of living. We also found that the standard of living is more responsive to income in the poorer countries than in the rich countries. However, since countries similarly placed with respect to per capita GDP realized dissimilar levels of standard of living, it appears that public policy other than GDP per capita growth can play a role in improving life expectancy and education and in reducing infant mortality.

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