On Measuring the Quality of Life

PARTHA DASGUPTA and MARTIN WEALE
University of Cambridge

Summary. — It is widely recognized that per capita income is not an adequate indicator of aggregate well-being. It has thus become customary to use a range of socioeconomic indices for assessing the quality of life in a society. In this article we extend measures of general well-being in current use by including ordinal indices of political and civil liberties, and we provide a ranking of the world's poorest countries on the basis of the Borda Rule. We then compare improvements in socioeconomic performance with the availability of political and civil liberties during the decade of the 1970s and observe that improvements in per capita national income, life expectancy at birth, and infant mortality are positively correlated with the extent of political and civil liberties enjoyed by citizens, while improvements in literacy are negatively correlated with these liberties.

1. PLURAL MEASURES OF WELL-BEING

Measures of the quality of life can take one of two forms: they can reflect the *constituents* of well-being, or alternatively, they can be measures of the access people have to the *determinants* of well-being. Indices of health, welfare, freedom of choice, and more broadly, basic liberties, are instances of the first; those indices which reflect the availability of food, clothing, shelter, potable water, legal aid, education facilities, health care, resources devoted to national security, and income in general, are examples of the latter.

In principle it does not matter which route we take. Changes in a suitable aggregate of either the constituents, or the determinants, can be made to serve as a measure of changes in the quality of life in a society. Along the former route we would measure the constitutents directly and aggregate them in a suitable way. Along the latter route we would need to estimate the accounting (or shadow) prices of the determinants of well-being to arrive at an all-embracing measure of real national income.[1]

In practice, neither route on its own captures what we wish to see included in any reasoned conception of the quality of life. Thus, for example, there would be far too many person-specific accounting prices to contend with were we to attempt at an overarching measure of real national income. At the same time, disposable income as customarily measured captures aspects of welfare and the extent of certain patterns of liberties, matters which are hard to come to grips with directly. For this reason, governments and

international agencies pursue both avenues at once, and it is today a commonplace to assess the quality of life by studying a heterodox collection of socioeconomic indicators. (See, for example, the World Bank's annual *World Development Report*.)

In choosing socioeconomic indicators for the purpose of cross-country comparisons, a balance has to be struck between the claims of completeness and costs. But all things considered, we would now seem to be arriving at something of a consensus that, at a very aggregate level, real national income per capita, life expectancy at birth, the child survival rate, and the adult literacy rate are, taken together, a comprehensive package of indices. To be sure, we would also be interested in the distribution of well-being along gender, caste, class, or regional lines.[2]

One weakness (there are others) with the indices of general well-being currently in use in such institutions as the World Bank and the United Nations Development Program (e.g., UNDP, 1990) is that they are restricted to the *socioeconomic* sphere of life; the *political* and *civil* spheres are for the most part kept separate. When they are mentioned at all, they are dealt with perfunctorily. Ordinal indices of political and civil liberties have been in use in the political science literature for some time. But to the best of our knowledge, they have not been combined with socioeconomic indicators for the purposes of arriving at a pluralist measure with which to

---

compare the quality of life across nations, or with which to measure changes in the quality of life over time within a nation. One of the purposes of this article is to do this.

Our aim here is to conduct a number of simple exercises with data (on national income per capita, life expectancy at birth, the infant survival rate, the adult literacy rate, and political and civil liberties) on countries which were in the early 1970s among the world's poorest in terms of income per capita.[3] Our purpose is to gain a preliminary understanding of the way the various constituents of general well-being are related in today's world. Given the context in which such discussions have recently been undertaken, our restriction to the world's poorest countries is deliberate. In Section 2 we will use the well-known Borda Rule as the aggregator of the set of six constituents being considered here to rank countries in our sample. We will then compare this new ranking with rankings based on each of the six chosen elements of general well-being. In Section 3 we will ask if poor countries are indeed faced with cruel choices among these various elements: political and civil liberties on the one hand, and socioeconomic liberties on the other.[4] Using data from the decade of the 1970s we will provide a tentative, and what we feel is an encouraging, answer to this question.

Such exercises as those conducted for this paper can only be regarded as exploratory. Cross-country data on such variables as the literacy rate and the infant mortality rate are well known to be defective. But this problem has not prevented policy makers, international agencies, and academics from using them; nor should it have prevented them from doing so. We would like to encourage the adoption of a more pluralist stance than has been customary to date in assessing the state of affairs in poor countries. Such pluralism as we are advocating may be commonly subscribed to, but it has to date not found much expression in quantitative studies of the quality of life in nations.[5]

Our purpose here in appealing to the data is purely illustrative. Many of the specific steps we will take below can be questioned. But they will not be *ad hoc*: we will provide justifications, even though alternative steps will readily suggest themselves to the reader. We emphasize the exploratory nature of our inquiry only because the matter is a delicate one. There is a great deal remaining to be done in this field.

2. INTERCOUNTRY COMPARISONS

We will consider countries which in 1970

enjoyed a per capita real national income of less than $1,500 in 1980 international dollars.[6] The idea is to look at a snapshot of the quality of life in each country. The year in question is 1979–80. As it happens, data on all the six constituents of well-being we will study here are available for only 48 countries out of the more than 55 which should be on our list.[7] Table 1 summarizes the data. The first column of figures provides estimates of national income per capita for the year 1980. The second, third and fourth columns present life expectancy at birth, infant mortality rates, and adult literacy rates, respectively, for 1980.

Of the six columns of figures in Table 1, it is the last pair which will be a novelty to economists. They represent indices of political and civil liberties in our sample, for the year 1979. They are taken from the valuable compendium of Taylor and Jodice (1983). Rights to political liberty are taken to be citizens' right to play a part in determining who governs their country, and what the laws are and will be. Countries are coded with scores ranging from one (highest degree of liberty) to seven (lowest degree of liberty). Values for this index are given in the fifth column of figures in Table 1.

Civil rights are different. They are rights the individual has *vis-à-vis* the state. Of particular importance in the construction of the index in Taylor and Jodice (1983) are freedom of the press and other media concerned with the dissemination of information, and the independence of the judiciary. The index measures the extent to which people, because they are protected by an independent judiciary, are able to openly express their opinions without fear of reprisals. Countries are coded with scores ranging from one (highest degree of liberty) to seven (lowest degree of liberty). As these indices may not be familiar, we provide their key in the appendix.

Even a glance at these columns tells us that for the most part political and civil liberties are scarce goods in poor countries. Citizens of 33 countries in our sample of 48 suffer from systems that score five or more for political rights, and those of no fewer than 40 countries from systems that score five or more for civil rights. As the appendix makes clear, these scores reflect severe deprivation of these basic liberties. There are exceptions, of course, most notably Botswana, the Gambia, India, Mauritius and Sri Lanka. But for the most part the columns make for dismal reading. When they are combined with the columns which reflect the socioeconomic sphere of life, the picture which emerges is chilling. There is nothing to commend the state of affairs in a large number of the countries in our sample.

Table 1. *Living standards' indicators in 1980*

	Y^*	$E\dagger$	$M\ddagger$	$L\S$	$R_1\|$	$R_2\P$
Bangladesh	540.0	48.0	140.0	26.0	4.0	4.0
Benin	534.0	47.0	124.0	28.0	7.0	7.0
Bolivia	1529.0	50.0	130.0	63.0	3.0	5.0
Botswana	1477.0	55.0	78.0	35.0	3.0	2.0
Burundi	333.0	46.0	126.0	25.0	6.0	7.0
Central African Republic	487.0	47.0	143.0	33.0	7.0	7.0
Chad	353.0	42.0	147.0	15.0	6.0	6.0
China	1619.0	67.0	41.0	69.0	6.0	6.0
Ecuador	2607.0	63.0	75.0	81.0	3.0	5.0
Egypt	995.0	58.0	108.0	44.0	5.0	5.0
Ethiopia	325.0	44.0	155.0	15.0	7.0	7.0
Gambia	556.0	40.0	159.0	15.0	2.0	2.0
Haiti	696.0	52.0	132.0	23.0	6.0	7.0
Honduras	1075.0	60.0	87.0	60.0	3.0	6.0
India	614.0	54.0	107.0	36.0	3.0	2.0
Indonesia	1063.0	53.0	105.0	62.0	5.0	5.0
Jordan	1885.0	62.0	58.0	70.0	6.0	6.0
Kenya	662.0	55.0	83.0	47.0	5.0	5.0
Korea, Republic of	2369.0	67.0	32.0	93.0	5.0	5.0
Lesotho	694.0	52.0	116.0	52.0	4.0	5.0
Liberia	680.0	52.0	100.0	25.0	4.0	6.0
Madagascar	589.0	51.0	146.0	50.0	5.0	5.0
Malawi	417.0	44.0	169.0	25.0	6.0	6.0
Mali	356.0	44.0	184.0	10.0	7.0	7.0
Mauritania	576.0	43.0	142.0	17.0	6.0	6.0
Mauritius	1484.0	65.4	45.2	85.0	2.0	4.0
Morocco	1199.0	57.0	102.0	28.0	4.0	3.0
Nepal	490.0	45.1	142.2	19.0	6.0	5.0
Niger	441.0	42.0	150.0	10.0	6.0	7.0
Nigeria	824.0	48.0	118.0	34.0	3.0	5.0
Pakistan	989.0	49.0	124.0	24.0	5.0	6.0
Paraguay	1979.0	66.0	47.0	84.0	5.0	5.0
Philippines	1551.0	61.0	52.0	75.0	5.0	5.0
Rwanda	379.0	45.0	127.0	50.0	5.0	6.0
Senegal	744.0	45.0	147.0	10.0	3.0	4.0
Sierra Leone	512.0	38.0	172.0	15.0	5.0	6.0
Somalia	415.0	44.0	145.0	60.0	7.0	7.0
Sri Lanka	1199.0	68.0	34.0	85.0	3.0	2.0
Sudan	652.0	46.0	123.0	32.0	5.0	5.0
Swaziland	1079.0	51.7	133.4	65.0	6.0 ·	5.0
Tanzania	353.0	50.0	119.0	79.0	6.0	6.0
Thailand	1694.0	62.0	51.0	86.0	4.0	6.0
Tunisia	1845.0	60.4	91.8	62.0	6.0	5.0
Uganda	257.0	46.0	113.0	52.0	7.0	7.0
Yemen	957.0	42.9	163.7	21.0	7.0	7.0
Zaire	224.0	49.0	111.0	55.0	6.0	7.0
Zambia	716.0	50.1	90.4	44.0	5.0	5.0
Zimbabwe	930.0	55.0	82.4	69.0	5.0	5.0

$^*Y$ — Per capita income. 1980 purchasing power parity.
$\dagger E$ — life expectancy at birth (years).
$\ddagger M$ — infant mortality rate (per 1,000).
$\S L$ — adult literacy rate (%).
$\|R_1$ — index of political rights.
$\P R_2$ — index of civil rights.

Our international comparison of the quality of life will be based on these six indices. The nature of the data being what it is for a great many of the countries, it is unwise to rely on their cardinal magnitudes. We will therefore base our comparison on ordinal measures. This way, systematic biases in claims about achievement across countries will not affect the international comparison. But first, we need an ordinal aggregator. Of the many we may devise, the one most well known and most studied is the Borda Rule. In what follows we will construct the Borda ranking of the countries in our sample.

The strengths and limitations of the Borda Rule have been investigated by Goodman and Markowitz (1952), Smith (1973), and Fine and Fine (1974), and so we will not enter into them here. In any event, our investigation is exploratory. If only for this reason, the fact that the Borda Rule is simple, and its strengths and weaknesses therefore transparent, provides an immediate justification for using it.[8]

The first column in Table 2 presents the Borda ranking of nations. The other six columns present the six constituents of our index of aggregate well-being. Rankings range from the worst (score of one) to the best (score of 48).

It is a useful exercise first to look at the best and worst-off sets of countries. From the first column of figures, we note that in *ascending* order of aggregate well-being, the 10 lowest ranked countries in 1980 were: Mali, Ethiopia, Niger, Chad, Yemen, Malawi, Sierra Leone, Burundi, Somalia, and the Central African Republic. How does this list compare with the ranking of nations based exclusively on per capita national income? To see this, we merely note from the second column of figures that, in ascending order, the 10 poorest countries in our sample in 1980 were: Zaire, Uganda, Ethiopia, Burundi, Chad and Tanzania (tied at five), Mali, Rwanda, Somalia, and Malawi. The lists are not the same, but they are strikingly similar. All countries except one (Yemen) are in sub-Saharan Africa, and the lists contain six countries in common.

Turning next to the 10 highest-ranked countries, we note first that in terms of aggregate well-being they are, in *descending* order: Mauritius, Sri Lanka, Ecuador, the Republic of Korea, Paraguay, Thailand, Botswana, the Philippines, Morocco, and China.

The presence of Sri Lanka close to the top of our list of poor countries should not come as a surprise: the remarkable achievements of Sri Lanka (at least until recently) have been much commented upon. (See Isenman, 1980a). Mauritius, however, is rarely talked about, and so its

being at the top of the list may well be news. It certainly was to us.

The relative positions of China (coming in at 10 from the top in terms of aggregate well-being) and India (coming in two places behind, at 12) deserve a brief comment. China and India have long provided commentators with a classic tension: achievements in the field of socioeconomic liberties set against those in the arena of political and civil liberties. As we see from Table 1, China beats India handsomely in each of the four socioeconomic indices in our list, while India wins over China in political and civil liberties. All this is consistent with general knowledge. The fact, however, that the two finish so close in a ranking of 48 countries means that the *ordinal distance* between them in political and civil liberties is large relative to their distance in the socioeconomic spheres. Indeed, other things remaining the same, had more countries managed to squeeze themselves between China and India in political and civil liberties, the overall ranking of these two countries would have been reversed. (Recall that the Borda Rule violates the "independence of irrelevant alternatives" axiom in Arrow, 1963.) On the other hand, had more countries squeezed themselves between China and India in the socioeconomic spheres, the Borda gap between the two countries would have been greater. Clearly then, the relative placings of China and India are sensitive to the aggregator being used. To us this is instructive.[9]

How does our list of the 10 top countries compare with the list of the 10 least poor countries? As it happens, they are very similar. The 10 least poor countries in our sample are in descending order: Ecuador, the Republic of Korea, Paraguay, Jordan, Tunisia, Thailand, China, the Philippines, Bolivia, and Mauritius. There are seven countries in common. We conclude tentatively that, among the poorest of poor nations, rankings in terms of our index of aggregate well-being are not too different from their rankings based on income per capita.

This is a qualitative claim, however, and it will be informative to get a quantitative feel for the relationship between our Borda ranking and each of the rankings based on the six constituents of well-being. Statistically, how close then is the Borda ranking to the other six? To examine this question we look at rank correlations. We are aware that our rankings may be disturbed by data inaccuracy. But it is unlikely that this would tend to do anything except depress the rank correlations below those which would be found working from accurate data. Thus, the table of rank correlations may be regarded as indicative of underlying statistical relationships.

Table 2. *Rankings of living standards data*

	Borda rank	Y^*	$E\dagger$	$M\ddagger$	$L\S$	$R_1\|$	$R_2\P$
Mali	1	7	7	1	1	1	1
Ethiopia	2	3	7	6	4	1	1
Niger	3	11	3	7	1	8	1
Chad	4	5	3	8	4	8	12
Yemen	5	30	5	4	10	1	1
Malawi	6	10	7	3	13	8	12
Sierra Leone	7	14	1	2	4	21	12
Burundi	8	4	14	20	13	8	1
Somalia	9	9	7	11	32	1	1
Central African Republic	10	12	17	12	20	1	1
Mauritania	11	18	6	14	8	8	12
Benin	12	15	17	21	17	1	1
Uganda	13	2	14	27	29	1	1
Nepal	14	13	13	13	9	8	24
Haiti	15	25	28	17	11	8	1
Zaire	15	1	21	28	31	8	1
Rwanda	17	8	11	19	27	21	12
Tanzania	18	5	23	24	42	8	12
Pakistan	19	31	21	21	12	21	12
Gambia	20	17	2	5	4	47	45
Sudan	21	21	14	23	19	21	24
Madagascar	22	19	26	10	27	21	24
Senegal	23	27	11	8	1	39	41
Bangladesh	23	16	19	15	16	34	41
Liberia	25	23	28	33	13	34	12
Swaziland	26	35	27	16	37	8	24
Zambia	27	26	25	35	24	21	24
Nigeria	28	28	19	25	21	39	24
Kenya	29	22	33	37	26	21	24
Lesotho	30	24	28	26	29	34	24
Egypt	31	32	37	29	24	21	24
Indonesia	32	33	31	31	34	21	24
Bolivia	33	40	23	18	36	39	24
Tunisia	34	44	39	34	34	8	24
Zimbabwe	34	29	33	38	38	21	24
Jordan	36	45	41	41	40	8	12
India	37	20	32	30	23	39	45
Honduras	38	34	38	36	32	39	12
China	39	42	46	46	38	8	12
Morocco	40	36	36	32	17	34	44
Philippines	41	41	40	42	41	21	24
Botswana	42	38	33	39	22	39	45
Thailand	43	43	41	43	47	34	12
Paraguay	44	46	45	44	44	21	24
Korea	45	47	46	48	48	21	24
Ecuador	46	48	43	40	43	39	24
Sri Lanka	47	36	48	47	45	39	45
Mauritius	48	39	44	45	45	47	41

$^*Y$ — Per capita income. 1980 purchasing power parity.
$\dagger E$ — life expectancy at birth (years).
$\ddagger M$ — infant mortality rate (per 1,000).
$\S L$ — adult literacy rate (%).
$\|R_1$ — index of political rights.
$\P R_2$ — index of civil rights.

Table 3 provides the (Spearman) correlation coefficient for each pair of rankings from the seven rankings of nations. The correlation coefficients between the Borda ranking and the others are: 0.84 with national income per capita; 0.91 with life expectancy at birth; 0.88 with the infant survival rate; 0.76 with the adult literacy rate; 0.68 with political rights; and 0.69 with civil rights. We were not expecting this. We had no reason to think that life expectancy at birth would be the closest to our measure of the quality of life.

Much has been written in recent years on the inadequacy of national income as a measure of aggregate well-being. We were therefore surprised at the closeness of our measure with national income per capita. Nevertheless, our findings suggest that if we had to choose a single, ordinal indicator of aggregate well-being, life expectancy at birth would seem to be the best. There must be a moral to this.

It is customary to regress national income per capita against other socioeconomic indicators to see how closely they are related. (See, for example, Kaneko and Nidaira, 1988, who have studied cross-country statistical links between per capita income and the infant mortality rate.) The second column of figures in Table 3 presents Spearman rank correlation coefficients between national income per capita and each of the other five constituents of well-being. The highest correlation (0.79) is with life expectancy at birth. Again, we were not expecting this. We also had no prior notion that correlation with the adult literacy rate (0·59) would be considerably less. Richer countries seem to enjoy greater political and civil liberties. But the correlation is not overly high (the coefficient is 0·49 with political rights and 0·51 with civil rights). Neither national income per head nor political and civil liberties should be thought of as being exogenously given. Thus any such link between them as we observe in international data should only be seen as a link, nothing more. No causal relationship can be presumed from the data. Correlation coefficients

of 0·49 and 0·51 mean that the claim that the circumstances which cause poverty are also those which make it necessary for governments to deny citizens their civil and political liberties is simply false. There are countries in the sample which are very poor and which enjoy relatively high levels of civil and political liberties.

We will note presently that the adult literacy rate is a rogue index: it stands somewhat apart from the other indices of socioeconomic freedoms. The correlation coefficients between literacy and political and civil liberties are 0·24 and 0·27 respectively. These are relatively low figures, far and away the lowest figures in Table 3.

3. ARE TRADEOFFS MANDATORY?[10]

International comparisons of well-being tell us something about the nature of differing societies. We have seen how we can determine whether, among poor countries, those which were relatively prosperous in 1979–80 were also the ones where political and civil liberties were the least constrained. But a cross-section study at one date cannot tell us anything about whether civil and political liberties are conducive to growth in the socioeconomic constituents of well-being. Or, to put it in euphemistic terms: do "authoritarian" governments achieve better "economic" results? Or, to put it bluntly: are civil and political liberties a "luxury" poor countries cannot afford, in that they act as a drag on economic performance?

It would be impertinent to suggest that this sort of question can have an air-tight answer even for a given period. But cross-section data on countries can give us some hints, and in what follows we will pursue this trail. We will ask if, on a cross-country basis among the poorest of economies, we can detect a conflict between the acknowledgement of political and civil liberties and achievements in the socioeconomic sphere. The model we are invoking is one where the

Table 3. *Correlation matrix of livng standard rankings**

	Borda	Y	E	M	L	R_1
Y	0.8407	—	—	—	—	—
E	0.9133	0.7895	—	—	—	—
M	0.8797	0.6943	0.9180	—	—	—
L	0.7597	0.5942	0.8018	0.7934	—	—
R_1	0.6842	0.4916	0.4105	0.4065	0.2420	—
R_2	0.6881	0.5135	0.4347	0.3841	0.2654	0.7871

*All correlations are statistically significant at a 5% level.

political and civil spheres provide the environment within which men and women shape their lives. Each of the three broad sets of liberties is a set of freedoms. A restriction in any one of these sets is a form of deprivation. This makes it imperative that we ask if, as a contingent matter, there is a tradeoff between them when a country is poor, so that if we want fast growth in income or rapid improvements in health and education we have to forego substantial political and civil liberties.

Toward this end we will look at data for the 1970s. Table 4 summarizes them. Since we are involved with a greater range of questions here, we will study a slightly larger pool of countries, so that we may vary the sample size as and when we need to. The criterion for inclusion is the same as before. We are interested in those countries which, in 1970, enjoyed a per capita national income less than $1,500 in 1980 international dollars. We have the information we need on 51 countries.

The first column of figures in Table 4 presents the average of the 1970 and 1980 figures for real national income. We study this average, rather than income at some given year, because growth rates varied across countries during the decade. Since we are interested mainly in performance in the socioeconomic constituents of well-being, we will also be interested in the percentage change in real income per capita during the period. This is provided in the second column of figures. Fifteen out of the 51 countries experienced a *decline* in real income per capita.

The third column of figures gives life expectancy at birth in 1970. We wish to measure changes in this index over the decade. This is not an easy matter. Equal increments are possibly of less and less ethical worth as life expectancy rises to 65 or 70 years and more. But we are measuring performance here. So it would seem that it becomes more and more commendable if, with increasing life expectancy, the index were to rise at the margin. The idea here is that it becomes more and more difficult to increase life expectancy as life expectancy itself rises. A simple index capturing this feature is the ratio of the increase in life expectancy to the short-fall of the base-year life expectancy from some target, say 80 years.[11] The fourth column of figures in Table 4 gives this index of improvement over the period 1970–80 for 51 countries. As it happens, all but two countries (*viz*. Rwanda and Uganda) recorded an improvement.

The fifth column of figures gives infant mortality rates in 1970. The construction of an index of improvement in infant mortality poses a similar problem. To be sure, the ethical issues here are

somewhat different from those concerning increases in life expectancy at birth. But we are trying to record performance in this field. A figure of 10 per 1,000 for the infant mortality rate is about as low as it is reasonable for poor countries to aspire to for a long while yet.[12] So we take the index of improvement to be the ratio of the decline in the infant mortality rate over the period in question (1970–80) to the base-year infant mortality rate minus 10. All countries in our sample have shown an improvement in infant survival rates. The sixth column of figures in Table 4 presents values for this index of improvement.

The construction of an index of improvement in literacy rates does not pose problems of the kind we faced in connection with life expectancy at birth and infant mortality rates. It is not immediately apparent why it should be a lot less or a lot more difficult to increase the literacy rate when people are more literate (except at the top and bottom ends of the range). This suggests that we should simply measure increases in adult literacy rates if we want to know what net improvements there have been in this field. Unfortunately, we have not been able to locate adult literacy rate figures for a number of countries for the year 1970. We therefore present figures for 1960 from World Bank (1983) in the seventh column. The net increase in literacy rates over 1960–80 is then provided in the eighth column of figures in Table 4. It will be noticed that all countries recorded an improvement.[13]

The ninth and tenth columns of figures in Table 4 present indices of political and civil liberties in our overall sample of 51 countries, averaged over 1973–79. (See Taylor and Jodice, 1983, Tables 2.1 and 2.2.) We have already commented upon the extent to which poor people living in poor countries are deprived of such freedoms.

We begin with an analysis of rank orders. Once again, the use of rank correlation has the advantage that it makes our results relatively insensitive to the precise transformations used to calculate the indices of improvements in infant mortality, life expectancy and adult literacy. Furthermore, it remains true that data errors will tend to reduce rather than increase the magnitude of our correlations. Table 5 consists of the 21 (Spearman) rank correlation coefficients associated with the seven columns of figures we are studying: namely, real national income per head and its percentage growth; improvements in life expectancy at birth, infant survival rates and adult literacy rates, respectively; and the extent of political and civil rights enjoyed by citizens. The correlation matrix tells us that the alleged

Table 4. *Improvements in living standards**

	Y^*	ΔY†	E‡	ΔE§	$M\|$	ΔM¶	L^{**}	ΔL††	R_1‡‡	R_2§§
Bangladesh	499.0	17.9	45.0	8.6	140.0	0.0	22.0	4.0	4.9	4.2
Benin	552.5	-6.5	40.0	17.5	155.0	21.4	5.0	23.0	7.0	6.3
Bolivia	1383.0	23.6	46.0	11.8	153.0	16.1	39.0	24.0	5.6	4.1
Botswana	1179.0	67.7	50.0	16.7	101.0	25.3	41.0	35.0	2.1	3.1
Burundi	324.0	5.7	45.0	2.9	137.0	8.7	14.0	11.0	7.0	6.4
Cameroon	789.0	24.5	49.0	12.9	126.0	17.2	19.0	**	6.1	4.4
Central African Republic	499.0	-4.7	42.0	13.2	153.0	7.0	7.0	26.0	7.0	7.0
Chad	409.5	-24.2	38.0	9.5	171.0	14.9	6.0	9.0	6.4	6.4
China	1315.5	60.0	59.0	38.1	69.0	47.5	43.0	26.0	6.7	6.7
Congo	986.5	-1.1	51.0	13.8	98.0	17.0	16.0	**	5.9	6.1
Ecuador	2005.0	85.8	58.0	22.7	100.0	27.8	68.0	13.0	6.4	3.7
Egypt	833.0	48.3	51.0	24.1	158.0	33.8	26.0	18.0	5.6	4.7
Ethiopia	333.0	-4.7	43.0	2.7	158.0	2.0	4.0	11.0	6.3	6.1
Gambia	561.0	-1.8	36.0	9.1	185.0	14.9	**	**	2.0	2.0
Ghana	494.5	-25.9	49.0	9.7	110.0	10.0	27.0	**	6.6	5.1
Haiti	623.0	26.5	48.0	12.5	162.0	19.7	15.0	8.0	6.4	6.0
Honduras	1001.0	16.0	53.0	25.9	115.0	26.7	45.0	15.0	6.1	3.0
India	595.0	6.6	48.0	18.8	139.0	24.8	28.0	8.0	2.1	3.3
Indonesia	811.0	90.2	47.0	18.2	121.0	14.4	39.0	23.0	5.0	5.0
Jordan	1653.0	32.7	55.0	28.0	90.0	40.0	32.0	38.0	6.0	6.0
Kenya	607.0	19.9	50.0	16.7	102.0	20.7	20.0	27.0	5.0	4.6
Korea, Republic of	1779.0	99.2	60.0	35.0	51.0	46.3	71.0	22.0	4.9	5.6
Lesotho	527.0	92.8	49.0	9.7	134.0	14.5	**	**	5.3	3.9
Liberia	694.0	-4.0	47.0	15.2	124.0	21.1	9.0	16.0	6.0	4.3
Madagascar	631.0	-12.5	45.0	17.1	183.0	21.4	**	**	5.1	4.4
Malawi	359.0	38.5	40.0	10.0	193.0	13.1	**	**	6.9	6.0
Mali	336.5	12.3	40.0	10.0	204.0	10.3	2.0	8.0	7.0	6.6
Mauritania	573.0	1.1	39.0	9.8	166.0	15.4	5.0	12.0	5.9	6.0
Mauritius	1254.5	44.8	62.4	17.0	61.4	31.5	**	**	2.7	2.3
Morocco	1037.5	36.9	52.0	17.9	128.0	22.0	14.0	14.0	4.6	4.4
Nepal	498.0	-3.2	41.6	9.1	157.4	10.3	9.0	10.0	6.0	5.0
Niger	421.0	10.0	38.0	9.5	170.0	12.5	1.0	9.0	6.7	6.0

Nigeria	727.0	30.8	44.0	11.1	158.0	27.0	15.0	19.0	5.7	4.0
Pakistan	893.0	24.1	46.0	8.8	142.0	13.6	15.0	9.0	4.3	4.9
Paraguay	1584.0	66.4	65.0	6.7	59.0	24.5	75.0	9.0	4.9	5.4
Philippines	1322.5	41.8	57.0	17.4	66.0	25.0	72.0	3.0	4.9	5.1
Rwanda	323.5	41.4	48.0	-9.4	135.0	6.4	16.0	34.0	6.9	5.3
Senegal	752.0	-2.1	43.0	5.4	164.0	11.0	6.0	4.0	5.6	4.4
Sierra Leone	485.5	11.5	34.0	8.7	197.0	13.4	7.0	8.0	5.6	5.0
Somalia	394.5	11.0	40.0	10.0	158.0	8.8	2.0	58.0	7.0	6.4
Sri Lanka	1108.5	17.8	64.0	25.0	52.0	42.9	75.0	10.0	2.0	3.0
Sudan	667.5	-4.5	42.0	10.5	149.0	18.7	13.0	19.0	5.9	5.7
Swaziland	911.0	45.2	46.1	16.5	145.2	8.7	**	**	5.7	3.9
Tanzania	318.0	24.7	45.0	14.3	132.0	10.7	10.0	69.0	6.0	6.0
Thailand	1378.5	59.4	58.0	18.2	73.0	34.9	68.0	18.0	5.4	4.1
Tunisia	1460.5	71.5	53.9	24.9	127.2	30.2	16.0	46.0	6.0	5.0
Uganda	304.5	-27.0	47.0	-3.0	117.0	3.7	25.0	27.0	7.0	7.0
Yemen	742.0	81.6	38.6	10.4	187.8	13.6	3.0	18.0	7.0	7.0
Zaire	291.0	-37.4	45.0	11.4	131.0	16.5	31.0	24.0	7.0	6.1
Zambia	752.5	-9.3	46.5	10.7	106.0	16.3	29.0	15.0	5.0	4.9
Zimbabwe	870.0	14.8	50.5	15.3	96.2	16.0	39.0	30.0	5.9	5.0

Sources: World Bank, *World Development Report* (1983); World Bank (1989); Taylor and Jodice (1983, Tables 2.1 and 2.2).

*Y: per capita gross national income; average of 1970 and 1980 values at 1980 international prices.
†ΔY: % change in Y over the decade 1970–80.
‡E: life expectancy at birth in 1970.
§ΔE life expectancy improvement index =

$$\frac{\text{(life expectancy at birth in 1980} - \text{life expectancy in 1970)} \times 100}{(80 - \text{life expectancy at birth in 1970)}}$$

‖M: infant mortality rate in 1970.
¶ΔM: infant mortality improvement index =

$$\frac{\text{(infant mortality rate in 1970} - \text{infant mortality rate in 1980)} \times 100}{\text{(infant mortality rate} - 10)}$$

**L: adult literacy rate in 1960.
††ΔL: adult literacy rate improvement index = (adult literacy rate in 1980 − adult literacy rate in 1960)
‡‡R₁: political rights index, averaged over 1973–79 (decreasing with increasing liberty)
§§R₂: civil rights index, averaged over 1973–79 (decreasing with increasing liberty)

tradeoff between political and civil liberties and *gains* in the socioeconomic sphere of life is a false choice, that statistically speaking, societies are not faced with this dilemma. But the matrix tells us more, and the morals which emerge from Table 5 appear to be these:[14]

(a) Political and civil liberties are positively and significantly correlated with real national income per capita and its growth, with improvements in infant survival rates and with increases in life expectancy at birth.[15]

(b) Real national income per capita and its growth are positively and significantly correlated, and they in turn are positively and significantly correlated with improvements in life expectancy at birth and infant survival rates.

(c) Improvements in life expectancy at birth and infant survival rates are, not surprisingly, highly correlated.

(d) Political and civil rights are not the same. But they are strongly correlated.

(e) Increases in the adult literacy rate are not related systematically to per capita incomes, or to their growth, or to infant survival rates. They are positively and significantly correlated to life expectancy at birth. But they are *negatively* and significantly correlated with political and civil liberties.

These observations suggest that literacy stands somewhat apart from the other "goods" in our list. It does not appear to be driven with the three other socioeconomic indicators. Furthermore, regimes which have had bad records in political and civil rights have been associated with good performances in this field. We have no compelling explanation for this finding.

These are statistical results, and they should be seen and interpreted as such. It is simply no good arguing against the force of such findings by pointing to the small number of countries where citizens have had their political and civil liberties severely restricted, and where growth in the socioeconomic sphere of life has been spectacular, and to then point by almost conditioned reflex to India as a case in contrast. There is no policy prescription flowing from such examples as Singapore and Hong Kong.[16] It is absurd to tell citizens to establish for themselves a one-party system of government, or to locate for themselves reliable and efficient dictators. "Good authoritarianism" cannot be willed by citizens, and bad authoritarian regimes are hard to get rid of. A central problem with authoritarianism is its lack of incentives for error correction. A pluralist political system has the chance of providing political competition. This is one of its chief virtues. Of course, if civil order and general civic responsibility have broken down pretty much completely, there is no prescription to be obtained either, one way or the other. To be sure also, had our main finding, as stated in (a) above, gone the other way, there would have been something really urgent to discuss and to think through. As it is, the data give us no compelling reason to question the instrumental virtues of civil and political liberties.

Correlation does not imply causation, and we should bear in mind that indices of political and civil liberties can change dramatically in a nation, following a *coup d'état*, a rebellion, an election, or whatever, and as we have used a six-year average index (1973–79) for them in Table 4, we must be careful in interpreting the statistical results.[17] But we cannot imagine that these difficulties provide reasons for ignoring civil and political liberties in judging the quality of life, even at this crude level of investigation. Subject to these obvious cautions, what the evidence seems to be telling us is that, statistically speaking, of the 51 poor countries on observation, those whose citizens enjoyed greater political and

Table 5. *Correlation matrix of indicators of improvements in living standards**

	Y	ΔY	ΔE	ΔM	ΔL	R_1
ΔY	0.5883*	—	—	—	—	—
ΔE	0.6578*	0.4113*	—	—	—	—
ΔM	0.7546*	0.4129*	0.7917*	—	—	—
ΔL	−0.0308	0.0660	0.2710*	0.0631	—	—
R_1	0.5187*	0.2956*	0.2383*	0.4058*	−0.3769*	—
R_2	0.4493*	0.2776*	0.2788*	0.3730*	−0.2806*	0.7290*

*Indicates that a correlation is significant at a 5% level. The correlations are based on 51 observations, except that those for the changes in adult literacy, ΔL, are based on 42 observations.

civil liberties also experienced larger improve-
ments in life expectancy at birth, real income per

head and infant survival rates. This seems to us to
be well worth knowing.

NOTES

1. We are assuming that there is a social well-being
function in the background consideration, and that the
appropriate technical conditions (e.g., convexity of
relevant sets) are satisfied. Otherwise, accounting
prices cannot be defined.

2. See, for example, Morris (1979), Sen (1981) and
UNDP (1990). The infant survival rate in a country is a
good index of the distribution of resource availability.
Distributional issues therefore are not totally eschewed
in this aggregate analysis.

3. Since life expectancy at birth is much influenced
by the infant survival rate (see Table 3), one can argue
we will be counting health twice. It is an easy matter to
redo all our computations by deleting data on either of
our health indices. We would have much preferred
replacing life expectancy at birth by life expectancy at
age one year, to make the measure independent of the
infant survival rate. Limitations of data prevented us
from doing so.

4. The breakdown of citizenship into its three
constitutive spheres (the socioeconomic, the civil and
the political) was the classification in Marshall (1964).
For the link between our summary measures and
notions of general well-being as articulated in modern
political philosophy, see Dasgupta (1991).

5. An exception is the pioneering work of Adelman
and Morris (1967).

6. We have worked with purchasing power parity
income per capita rather than conventional income.
This is open to the objection that it overstates the per
capita income in countries which choose to devote large
amounts of resources to social services (Isenman,
1980b). Indeed it may explain some of the results
shown in Table 2, but on balance we think that the
purchasing power parity measure is the best indicator
of income per capita currently available.

7. Data on per capita national income have been
taken from Summers and Heston (1988), those on life
expectancy at birth and infant mortality rates from
World Bank, *World Tables* (1989), and the ones on
literacy rates from World Bank, *World Development
Report* (1983). The decision to use a 1970 figure of
$1,500 at 1980 international prices as the cut-off point
is, of course, a bit arbitrary, but only a bit. Our
motivation will be clear in the Section 3, where we will
study the performance of poor nations during the
decade of the 1970s.

8. It will be recalled that the Borda Rule provides a
method of rank-order scoring, the procedure being to
award each alternative (here, country) a point equal to
its rank in each criterion of ranking (here, the criteria

being per capita income, life expectancy at birth, infant
survival rate, adult literacy rate, and indices of political
and civil rights), *adding* each alternative's scores to
obtain its aggregate score, and then ranking alterna-
tives on the basis of their aggregate scores. To
illustrate, suppose a country has the ranks i, j, k, l, m
and n, respectively, for the six criteria. Then its Borda
score is $i + j + k + l + m + n$. The rule invariably
yields a complete ordering of alternatives. It can be
viewed as a social welfare function here, since the
criteria can be thought of as "voters" and the countries
the "alternatives." Of Arrow's classic axioms, the
Borda Rule violates the one concerning the indepen-
dence of irrelevant alternatives. See Arrow (1963).

9. We persisted with the rule we chose to follow
before it became clear what the final outcome would
be. The final ranking has also been influenced by the
rule we have followed as regards ties. We have given
tied ranks a score equal to that which would be taken
by any one of the tied group had the others all been
ranked above it. We have not checked what the
outcome would have been had we followed other rules
regarding ties.

10. An earlier set of calculations concerning the
questions raised in this section was presented in
Dasgupta (1990). The weakness of the earlier work was
that national income figures adjusted for purchasing
power parity were not used. As is now well known, the
ranking of poor countries is substantially different
when international dollars are used for estimating real
national income.

11. Thus, an increase in life expectancy at birth from
35 to 40 years is less difficult to achieve than an increase
from 60 to 65 years. See Sen (1981). The mathematical
representation of the index is given in the notes to
Table 4.

12. Japan and several countries in Western Europe
have pushed the infant mortality rate below 10 per
1,000. (See World Bank, 1988.) The historical record
suggests that once the infant mortality rate is down to
some 20 per 1,000 any further reduction in the rate is
due to further improvements in pediatric care, the
"marginal productivity" of diet and hygiene being
pretty much exhausted.

13. The coverage here is smaller. Figures for adult
literacy rate are not available for a number of coun-
tries.

14. Kendall rank correlation coefficients are, as it
happens, quite similar in values, and so we do not
report them here. It should be noted that in computing
the correlation matrix, the orderings of political and
civil rights have been reversed, since the Taylor-Jodice

measure award a higher number to a country where citizens enjoy fewer rights.

15. The level of significance of these figures is 5%.

16. A number of economists in conversation have reacted to our statistical findings along the lines we are criticizing in the text. See also Stern (1991, p. 429), who muses: ". . . it would be hard to be confident from comparative history that democracy is good for growth.

Has it been democracy that has propelled Hong Kong and Singapore?" What we are suggesting in the text is that this is not the right way of asking the question.

17. As it happens, there were only a few countries in which political and civil rights indicators changed dramatically during the decade in question. For most countries, there was next to no change. See Taylor and Jodice (1983).

REFERENCES

Adelman, I., and C. T. Morris, *Society, Politics and Economic Development* (Baltimore, MD: Johns Hopkins University Press, 1967).

Arrow, K. J., *Social Choice and Individual Values*, 2nd edition (New York: John Wiley, 1963).

Banks, D. L., "Patterns of oppression: An exploratory analysis of human-rights data," *Journal of the American Statistical Association*, Vol. 84, No. 2 (1989).

Dasgupta, P., "An inquiry into well-being and destitution," Mimeo (Stanford, CA: Department of Economics, Stanford University, May 1991).

Dasgupta, P., "Well-being and the extent of its realization in poor countries," *Economic Journal*, Vol. 100, Supplement (March 1990), pp. 1–32.

Fine, B., and K. Fine, "Social choice and individual rankings, I and II," *Review of Economic Studies*, Vol. 44, Nos. 3 and 4 (July and October, 1974), pp. 303–322 and 459–476.

Gastil, R. D., *Freedom in the World: Political Rights and Civil Liberties 1985–86* (Westport, CT: Greenwood Press, 1986).

Gastil, R. D., *Freedom in the World: Political Rights and Civil Liberties 1983–84* (Westport, CT: Greenwood Press, 1983).

Goodman, L. A., and H. Markowitz, "Social welfare functions based on individual ranking," *American Journal of Sociology*, Vol. 58 (1952).

Humana, C., *World Human Rights Guide* (London: Economist Publication, 1986).

Humana, C., *World Human Rights Guide* (London: Hutchinson, 1983).

Isenman, P., "Basic needs: The case of Sri Lanka," *World Development*, Vol. 8, No. 3 (1980a), pp. 237–258.

Isenman, P., "Inter-country comparisons of 'real' (PPP) incomes; Revised estimates and unresolved questions," *World Development*, Vol. 8, No. 1 (1980b), pp. 61–72.

Kaneko, Y., and K. Nidaira, "Towards basic needs in relation to public health and nutrition," in D. E. Bell and M. R. Reich (Eds.), *Health, Nutrition and Economic Crises* (Dover, MA: Auburn House, 1988).

Marshall, T. H., *Class, Citizenship and Social Development* (Garden City, N.Y.: Doubleday & Co., 1964).

Morris, M. D., *Measuring the Condition of the World's Poor: The Physical Quality of Life Index* (Oxford: Pergamon, 1979).

Riskin, C., *China's Political Economy* (Oxford: Oxford University Press, 1987).

Sen, A. K., "Public action and the quality of life in developing countries," *Oxford Bulletin of Economics and Statistics*, Vol. 43 (1981).

Smith, J. H., "Aggregation of preferences with variable electorate," *Econometrica*, Vol. 41, No. 6 (December, 1973), pp. 1027–1042.

Stern, N. H., "Comments" in Roundtable Discussion on Development Strategies: The Roles of the State and the Private Sector, *Proceedings of the World Bank Annual Conference on Development Economics 1990* (Washington, DC: The World Bank, 1991).

Summers, R., and A. Heston, "A new set of international comparisons of real product and prices: Estimates for 130 Countries, 1950–1985," *Review of Income and Wealth*, Vol. 34 (1988), pp. 1–25.

Taylor, C. L., and D. A. Jodice, *World Handbook of Political and Social Indicators*, Vol. 1 (New Haven, CT: Yale University Press, 1983).

United Nations Development Programme (UNDP), *Human Development Report 1990* (New York: Oxford University Press, 1990).

World Bank, *World Development Report* (New York: Oxford University Press, various years).

World Bank, *World Tables 1988–89* (Washington, DC: World Bank, Internal Version, 1989).

APPENDIX

In this appendix, we discuss the political and civil liberties indices we have used in sections 2 and 3. It is perhaps unnecessary to emphasize that any such index will have a subjective element, but it is necessary to remind ourselves that there is a subjective element in the estimation of any index, even the familiar index of national income, in the construction of which it is necessary to dispense with information, to arrange

what is not dispensed with, and so forth. That economists are accustomed to dealing with economic and social statistics and are as yet unfamiliar with political and civil ones should not make us blind to this. The indices themselves, however (as opposed to their estimates), are no less objective than national income. For example, freedom from police detention without charge, or the freedom to practice any religion, or the freedom to

publish books and to read them, or the right to seek information and to teach ideas, of freedom from political press censorship, or freedom of movement within one's own country, or freedom from police searches of homes without warrants, or the right of women to equality, or freedom of radio and television broadcasts from state control, or freedom from torture or coercion by the state, are fairly concrete ideas, most especially perhaps for people who have suffered from a severe denial of any of them.

Taylor and Jodice (1983, pp. 60–61) provide an account of their scoring system for political rights. Those countries which score one enjoy political systems in which the great majority of persons and families have both the right and the opportunity to participate in the electoral process. Political parties in these countries may be formed freely for the purpose of making the right to compete for public office fairly general. Countries scoring two are those which have political systems with open access which, however, do not always work, due to extreme poverty, a feudal social structure, violence, or other limitations on potential participants and results. As with countries coded one, however, a leader or party can be voted out of office. A score of three is associated with political systems in which people may elect their leaders or representatives, but in which *coup d'état*, large-scale interference with election results, and frequent nondemocratic procedures occur. A score of four is associated with systems in which full democratic elections are blocked constitutionally or have little significance in determining power distributions. Systems in which elections are either closely controlled or limited, or in which the results have little significance are given a score of five. Countries scoring six have political systems without elections or with elections involving only a single list of candidates, in which voting is largely a matter of demonstrating support for the system; but where nevertheless there is some distribution of power. Finally, a score of seven is associated with systems that are tyrannies, without legitimacy either in tradition or in international party doctrine.

Taylor and Jodice (1983, pp. 64–65) provide an account of their scoring system for civil rights. Those countries which score one enjoy political systems in which the rule of law is unshaken. Freedom of expression is both possible and evident in a variety of news media. Countries scoring two are those with political systems that aspire to the level of civil rights, but are unable to achieve it because of violence, ignorance, or unavailability of the media, or because they have restrictive laws that seem to be greater than are needed for maintaining order. A score of three is associated with political systems that have trappings of civil liberty, and whose governments may be successfully opposed in the courts, although they may be threatened or have unresolved political deadlocks, and may have to rely often upon martial law, jailing or sedition, and suppression of publications. A score of four is awarded to political systems in which there are broad areas of freedom, but also broad areas of illegality. States recently emerging from a revolutionary situation or in transition from traditional society may easily fall into this category. Countries scoring five are those with political systems in which civil rights are often denied, but in which there is no doctrine on which the denial is based. The media are often weak, controlled by the government, and censored. Countries scoring six are those in which *no* civil rights are thought to take priority over the rights of the state, although criticism is allowed to be expressed in limited ways. Finally, countries scoring seven are those which suffer from political systems of which the outside world never hears a criticism, except when it is condemned by the state. Citizens have no rights in relation to the state.

The Taylor-Jodice rankings of countries are based on the state of human rights published regularly by Freedom House, recent publications from which are Gastil (1983, 1986). The scores themselves are awarded to countries on the basis of a wide range of information, and the indices R_1 and R_2 in our text are composites of a number of indicators of political and civil rights, respectively. Other investigators have developed indices of political and civil liberties. For example, Humana (1983, 1986) has undertaken parallel work, in which 40 specific freedoms were rated for each country in his sample and were used to assess political and civil rights. In contrast to the seven-point scale adopted in the Taylor-Jodice compilation, Humana presents a four-point scale. There is a very high correlation between Humana's scores on political and civil liberties and the scores presented here. Banks (1989) reports correlation coefficients between the two scores on civil rights and the two scores on political rights to be 0.895 and 0.900, respectively. For the moment it is pretty much of a matter of indifference which set of estimates we use.

There are a number of other exercises that can be conducted with quantitative indices on political, civil and socioeconomic liberties. Banks (1989) presents a wide-ranging statistical analysis of cross-country human rights indices, identifying clusters of nations and demonstrating that with the current data a few, identifiable human rights indicators capture most of the information we need to have on these matters.