

SUSTAINABLE DEVELOPMENT: PAST HOPES AND PRESENT REALIZATIONS AMONG THE WORLD'S POOR

PARTHA S. DASGUPTA

1. *Disclaimers*

The history of development economics, like the history of any other major subject, is, I would imagine, complex. Passions are strong when developmental concerns are debated. Moreover, political agenda cloud matters. For example, it is now a commonplace to suggest that concern about absolute poverty and economic inequality are relatively recent in the development literature. It is suggested too that early development economists were so single-minded in their search for policies that would generate economic growth, that they soon took economic growth to be an end in itself, not merely a means to an improved quality of life for all. Given the contemporary mood, the World Bank not surprisingly comes in for routine criticism in this regard. However, the little time I have been able to devote to reading the development literature in preparation for this article was enough to confirm (to my satisfaction at least) that the prevailing orthodoxy of what earlier writers said is untrue. For example, the first issue of the World Development Report of the World Bank, which was published in 1978, spoke at considerable length of absolute poverty and stark economic inequality, and the reasons why economic growth could be expected to reduce those evils. Moreover, the end tables of the Report offered international data, not only on gross national product, but also life expectancy at birth and literacy. The latter two are not inventions of the United Nations Development Programme!

This said, I shall in what follows stress that aspect of the development literature that focuses on aggregate economic growth. There are both

practical and intellectual reasons for doing so. The practical reason is that, to do so will enable me to keep the article to a readable length. The intellectual reason is that, by making use of social weights for different income categories, both absolute poverty and income inequality can be incorporated in the measure of gross national product (GNP). The real weakness of GNP lies not in that the measure is unable to accommodate the phenomena of absolute poverty and economic inequality, but in not being able to take the future adequately into account. As this article is about sustainable development, I focus on the distribution of the standard of living across time and generations.

2. Institutions and Policies for Economic Development

As a subject of inquiry, economic development is only half a century old. Although classical economists were much concerned with identifying the social processes that generate national wealth (recall the title of that most famous economics treatise of all, Adam Smith's "An Inquiry into the Wealth of Nations"), it was not until the 1950s that the prospects of economic development in the then newly emerging countries of Asia and Africa came to be an established subject of economics research. In order to study contemporary development processes, economists rightly considered not only the present and the near future, but the distant future too. Unfortunately, they also became enamoured of the idea that increases in gross national product (GNP) is the key to economic development. To be sure, GNP growth was recognised to be only a means to improve quality of life for everyone (claims to the contrary, I have found no evidence that anyone took it to be an end in itself), but the means in question soon took on a life of its own in policy discussions, to the extent that to ask "growth in what?" was to be informed at once of the answer, namely, "growth in GNP". With this as background, development economics rapidly acquired a central dogma, that for poor countries, raising the rate of investment is the route to sustained economic development.¹

In time, two problems with this line of thought were noted. First, raising the rate of investment is all well and good, but unless goods and services are valued at their appropriate prices, investment would be directed at the production of wrong sorts of goods. In fact, the development experience

¹ The classic on this is Lewis (1954).

soon became littered with examples of industries that managed to survive only because of protection from domestic and foreign competition. Secondly, even if the right investment projects were chosen, the returns could be abysmally low if the prevailing institutions are weak (for example, when property rights and the laws of contracts are ill-specified or unreliably enforced). If during the decade of the 1970s development economists focussed on the first of these problems and searched for ways to identify socially productive investment projects and defensible economic policies,² their focus during the past two decades has been on the second problem. This shift has come about because of a growing acknowledgement that governments in poor countries all too frequently have not functioned in the interest of their citizens. So, development economists today study institutional reform – for example, ways to increase the efficacy and reach of markets, and measures to reconstruct local communitarian institutions where they have weakened or failed.³ The emphasis on institutions as a vehicle for economic development has meant that policy analysis has to a certain extent been sidelined. But good economic policies cannot be plucked from air. A policy that is desirable in one institutional setting could well be undesirable in another. Policy choice and institutional reform are interconnected exercises and need to be seen as such.

3. *Wealth and Well-Being*

Interestingly, even if the focus of development research has changed over the years, the coin with which economic development is measured has continued to be based on that old indicator of social well-being – GNP per head –, to which the United Nations' Human Development Index (HDI) has been added in recent years.⁴ The problem is that both GNP and HDI reflect short-run concerns, while the question of whether or not contemporary patterns of development are sustainable requires of us to peer into the distant future.

² See the literature on social cost-benefit analysis (e.g., Dasgupta, Marglin, and Sen, 1972; and Little and Mirrlees, 1974).

³ See the annual *World Development Report* of the World Bank over the past several years.

⁴ HDI is a combined index of GNP per head, life expectancy at birth and literacy. Country estimates of HDI are offered annually in the *Human Development Report* of the United Nations Development Programme. Since the weaknesses that I identify below in GNP as a measure of social well-being are shared by HDI, I shall not comment on the latter here. For an account of HDI's particular weaknesses, see Dasgupta (2001).

An economy's long run prospects are shaped by its institutions, and by the size and distribution of its capital assets. Taken together, an economy's institutions and capital assets form its productive base. A society's productive base is the source of its well-being through time. It is tempting to regard institutions also as capital assets (witness that we often refer to a society's "institutional capital"). But institutions are distinct from capital assets, in that they guide the allocation of resources (among which are the capital assets themselves!).

Economists have a name for the value of an economy's capital assets: *wealth*. The notion of wealth I adopt here is a comprehensive one, and the list of assets includes not only those that are manufactured (roads and buildings; machinery and equipment; cables and ports), but also human capital (knowledge and skills), and a wide array of natural capital (oil and natural gas; fisheries and forests; ecosystem services). To say that wealth has increased is to say that, in the aggregate, there has been a net accumulation of capital assets. In what follows I shall call the net accumulation of capital assets *genuine investment*. This is to be contrasted from recorded investment. As the services of any number of capital assets are missing from national accounts, recorded investment can be positive even while genuine investment is negative.

It can be shown that wealth (or more accurately, a wealth-like index) is a measure of a society's well-being, taking both the present and the future of that society into account. In saying this I mean that, correcting for population change, the well-being of present and future generations, considered together, increases if genuine investment is positive. This means that changes in the wealth-like measure brought about by economic policies can be used to identify whether or not the policies lead to a pattern of development that is sustainable.⁵

In contrast, consider GNP. As it is the sum of aggregate consumption and *gross* investment, GNP is insensitive to the depreciation of capital assets. It is therefore possible for GNP to increase for a period of time even while the economy's genuine investment is negative and wealth declines. This can happen if, say, increases in GNP are brought about by mining cap-

⁵ For a proof of the relationship between wealth and intergenerational well-being, and for proofs of various extensions to this relationship, see Dasgupta and Mäler (2000), Dasgupta (2001), and Arrow, Dasgupta, and Mäler (2002). Arrow, Daily, *et al.* (2002) contains a wider discussion of the relationship, in that it includes the recent experience of rich countries.

ital assets – for example, degrading ecosystems and depleting oil and mineral deposits – without investing some of the proceeds in substitute forms of capital, such as human capital. So, there is little reason to expect movements in GNP to parallel those in wealth. The moral, though banal, is important: GNP cannot be used to identify sustainable development policies. As we will confirm presently, nor can HDI identify them.

4. *Nature as a Capital Asset*

The emphasis I have given to natural capital in the previous paragraph is not accidental. National accounts are highly sophisticated today, but they continue to miss not only the changes that are brought about by economic activities to the stocks of many natural resources, they also fail to record the use we make of a myriad of Nature's services. The latter include maintaining a genetic library, preserving and regenerating soil, fixing nitrogen and carbon, recycling nutrients, controlling floods, filtering pollutants, assimilating waste, pollinating crops, operating the hydrological cycle, and maintaining the gaseous composition of the atmosphere. A number of services filter into a global context, many are local.⁶ The reason such services are frequently missing in national accounts is that they most often do not come with a price tag. The reason for that is that property-rights to natural capital are often impossible to establish, let alone to enforce. And the reason for *that* is that natural capital is frequently mobile (birds, butterflies, river water, and the atmosphere are proto-typical). But none of this means that with effort it would not be possible to assign notional prices to Nature's services, prices that would go some way toward reflecting their scarcity values. As matters stand, though, the effect of the interconnectedness of various forms of natural capital often go unrecorded in economic transactions. So it can be that those who inflict damage on others (for example, destroying mangroves in order to create shrimp farms, or logging in the uplands of watersheds) are not required to compensate those who suffer the damage (local fishermen dependent on the mangroves and farmers and fishermen in the downlands of the watersheds).

Rural communities in poor countries recognised this deep underlying problem with Nature's services long ago and developed institutional mechanisms to overcome it in the case of local capital assets. Ponds, tanks, threshing grounds, grazing fields, and woodlands harbour mobile

⁶ For a fine collection of essays on the character of Nature's services, see Daily (1997).

resources, making them unsuitable as private property.⁷ In recent years anthropologists, ecologists, economists, and political scientists have identified a wide variety of non-market institutions in rural communities that mediate economic transactions in Nature's services. These institutions are frequently communitarian. Moreover, they were designed to respond to the character of the natural capital under their jurisdiction. For example, communitarian institutions for coastal fisheries have been discovered to be quite different in design from those governing local irrigation systems.⁸

Unhappily, in recent years communitarian institutions have eroded in many of the poorest regions of the world. There are a number of reasons why this has happened, among which State interferences in the way they function would appear to have been prominent, especially in sub-Saharan Africa. Ironically, the growth of marketable goods and services may have contributed as well. When decaying communitarian institutions are neither stayed nor adequately replaced by other institutions, the poorest frequently are the most to suffer, in particular because their local environmental-resource base deteriorates.⁹

When choosing economic policy, decision makers need to be sensitive to the interplay of market and non-market institutions. Any system, human or otherwise, responds when perturbed. A policy change can create all sorts of effects rippling through unnoticed by those who are unaffected, because there may be no obvious public signals accompanying them. Tracing the ripples requires an understanding of non-market interactions and of their interplay with markets. Identifying sustainable development policies involves, among other things, valuing the ripples and, therefore, valuing Nature's services. We can now appreciate in which ways the weaknesses of present-day national accounts mirror the weaknesses in the practice of contemporary policy evaluation. It is reasonable to fear that because Nature's services are typically underpriced, modern economic development has all too likely been rapacious in its use of natural capital.

5. An Application to Poor Countries

There is then a presumption that genuine investment is less than recorded investment. But by how much?

⁷ There are other reasons why they were found to be unsuitable as private property. In the text I am focussing on mobility.

⁸ The literature on this is now huge. See Dasgupta (2001) for references.

⁹ For why and how, see Dasgupta (1993; 2001).

The World Bank has provided estimates of genuine investment in a number of countries by adding net investment in human and natural capital to estimates of investment in manufactured capital.¹⁰ There is a certain awkwardness in the steps the investigators have taken to arrive at their estimates. Their accounts are also incomplete. For example, among the resources making up natural capital, only commercial forests, oil and minerals, and the atmosphere as a sink for carbon dioxide were included (not included were water resources, forests as agents of carbon sequestration, fisheries, air and water pollutants, soil, and biodiversity). So there is an undercount, possibly a serious one. Moreover, some of the methods deployed for estimating prices are dubious. Nevertheless, one has to start somewhere. It will prove instructive to use the World Bank figures and assess the character of recent economic development in the poorest regions of the world. The accompanying Table does that. It covers sub-Saharan Africa, the Indian sub-continent, and China. Taken together, the bulk of the world's 1 billion poorest live there.

The first column of figures contains the World Bank's estimates of genuine investment, as a proportion of GNP, during the period 1973-93. Notice that Bangladesh and Nepal have disinvested: aggregate capital assets declined there during the period in question. In contrast, genuine investment has been positive in China, India, Pakistan, and sub-Saharan Africa. So, the figures could suggest that the latter countries were wealthier at the end of the period than at the beginning. But when population growth is taken into account, the picture changes.

The second column of figures contains the annual rate of growth of population over the period 1965-96. All but China experienced rates of growth in excess of 2 percent per year, sub-Saharan Africa and Pakistan having grown in numbers at nearly 3 percent per year. Following the lead of the theory I sketched earlier, we next estimate the average annual change in wealth per capita during 1970-93. To do this, I have multiplied genuine investment as a proportion of GNP by the average output-wealth ratio of an economy to arrive at the investment-wealth ratio, and have then compared changes in the latter ratio to changes in population size.

Since a wide variety of capital assets (for example, human capital and various forms of natural capital) are unaccounted for in national accounts, there is a bias in published estimates of output-wealth ratios, which traditionally have been taken to be something like 0.30 per year. In what follows,

¹⁰ Hamilton and Clemens (1999).

TABLE

Genuine Investment and Wealth Accumulation in Selected Regions: 1970-93

	I/Y ^a (%)	g(L) ^b	g(W/L) ^c	g(Y/L) ^d	g(HDI) ^e
Bangladesh	-0.3	2.3	-2.40	1.0	positive
India	10.7	2.1	-0.50	2.3	positive
Nepal	-1.5	2.4	-2.60	1.0	positive
Pakistan	8.2	2.9	-1.70	2.7	positive
Sub-Saharan Africa	4.7	2.7	-2.00	-0.2	positive
China	14.4	1.7	1.09	6.7	negative

^a I/Y: genuine investment as percentage of GNP. (*Source*: Hamilton and Clemens (1999, Tables 3 and 4; and personal communication from Katie Bolt, World Bank). Genuine investment includes total health expenditure (i.e., public plus private), estimated as an average during 1983-1993, from data supplied by the World Health Organization.

^b g(L): average annual percentage rate of growth of population, 1965-96. (*Source*: World Bank (1998, Table 1.4).

^c g(W/L): average annual percentage rate of change in *per capita* wealth at constant prices.

^d g(Y/L): average annual percentage rate of change in *per capita* GNP, 1965-96. (*Source*: World Bank (1998, Table 1.4).

^e g(HDI): sign of change in UNDP's Human Development Index, 1987-97. (*Source*: UNDP [1990, 1999]).

Assumed output-wealth ratio: 0.15 per year.

I have used 0.15 per year as a check against the bias in traditional estimates for poor countries. Even these figures are almost certainly too high.

The third column of the Table contains my estimates of the annual rate of change in per capita wealth-like index I mentioned earlier. The procedure I followed in arriving at the figures was to multiply genuine investment as a proportion of GNP by the output-wealth ratio, and then subtract the population growth rate from that product. This is a crude way to adjust for population change, but more accurate adjustments would involve greater computation.

The striking message of the third column is that in all but China there has been capital *decumulation* during the past 30 years or so. This may not be a surprise in the case of sub-Saharan Africa, which is widely known to have regressed in terms of most socio-economic indicators. But the figures for Bangladesh, India, Nepal, and Pakistan should cause surprise. Even China, so greatly praised for its progressive economic policies, has just about managed to accumulate wealth in advance of population growth. In any event, a more accurate figure for the output-wealth ratio would almost surely be considerably lower than 0.15. Using a lower figure would reduce China's accumulation rate. Moreover, the estimates of genuine investment do not include soil erosion or urban pollution, both of which are thought by experts to be especially problematic in China.

How do changes in wealth per head compare with changes in conventional measures of the quality of life? The fourth column of the Table contains estimates of the rate of change of GNP per head during 1965-96; and the fifth column records whether the change in the United Nations' Human Development Index over the period 1987-1997 was positive or negative.

Notice how misleading our assessment of long-term economic development in the Indian sub-continent would be if we were to look at growth rates in GNP per head. Pakistan, for example, would be seen as a country where GNP per head grew at a healthy 2.7 percent per year, implying that the index doubled in value between 1965 and 1993. The figures imply though that the average Pakistani became poorer by a factor of about 1.5 during that same period.

Bangladesh too has decumulated capital. The country is recorded as having grown in terms of GNP per head at a rate of 1 percent per year during 1965-1996. The figures imply that at the end of the period the average Bangladeshi was about half as wealthy as she was at the beginning.

The case of sub-Saharan Africa is, of course, especially sad. At an annual rate of decline of 2 percent in wealth per head, the average person in the

region becomes poorer by a factor of two every 35 years. The ills of sub-Saharan Africa are routine reading in today's newspapers and magazines. But the ills are not depicted in terms of a decline in wealth. The Table reveals that sub-Saharan Africa has experienced an enormous decline in its capital assets per head over the past three decades.

India can be said to have avoided a steep decline in wealth per head. But the country has been at the thin edge of economic development. If the figures are taken literally, the average Indian was slightly poorer in 1993 than in 1970.

What of the Human Development Index? In fact it misleads even more than GNP per head. As the third and fifth columns show, HDI offers a picture that is the precise opposite of the one we should obtain when judging the performance of poor countries. The index for sub-Saharan Africa grew during the 1990s and it declined for China. Bangladesh and Nepal have been exemplary in terms of HDI. However, both countries have decumulated their capital assets at a high rate.

As the figures in the Table are rough and ready, we should arrive at conclusions very tentatively. But the figures show how accounting for human and natural capital can make for substantial differences in our conception of the development process. The implication should be depressing: the Indian sub-continent and sub-Saharan Africa, two of the poorest regions of the world, comprising something like a third of the world's population, have over the past decades become even poorer. In fact, some of the countries in these regions have become a good deal poorer.

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