The Ethical Poverty Line: a moral quantification of absolute poverty

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ABSTRACT *Responding to the Millennium Development Goal challenge to halve 'extreme' poverty by 2015, it has been argued that we have a moral duty to ensure that economic growth benefits the world's poorest. However, this morality is only partial if absolute poverty is defined by the somewhat arbitrary $1-a-day poverty line. If this moral duty exists, then we need to develop a morally defensible poverty line. Drawing on established health literature, this paper innovates by linking an analysis of world consumption to life outcome data, all from current World Bank datasets, to derive such a poverty line, termed here the Ethical Poverty Line (EPL). The EPL is comparable to the $2-a-day poverty line increasingly quoted by the World Bank. At this level, the EPL not only quantifies the substantial scale of socioeconomic change needed to eliminate absolute poverty but also raises challenging questions about the scale of over-consumption in the developed world.*

In early 2005 Gordon Brown, UK Chancellor of the Exchequer, advocated a 'Marshall Plan' for the world's poor. Setting out his ideological standpoint, Brown invoked global interdependence and duty, stating that:

> We are one moral universe. And the shared moral sense common to us all makes us recognise our duty to others.[1]

It was a call that embodied much of the sentiment of the original Millennium Declaration of 2000, recognising that the problems of poverty, inequality and economic growth need to be understood as interdependent facets of the global economy and that at present globalisation's 'benefits are very unevenly shared, while its costs are unevenly distributed' (UN General Assembly, 2000: Clause 5). However, Brown's pleas, and those in the Millennium Declaration (UNGA, 2000: Clause 2) for the acceptance of such a moral duty to remove poverty can be criticised. On one hand, they invoke morality to create an obligation on the rich to reduce poverty. On the other, though, the implicit understanding of the extent of global poverty seems to be based not on a moral assessment but merely on the $1-a-day poverty line, the threshold used for the first Millennium Development Goal (MDG) that aims to halve extreme poverty by 2015.

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Whether this 'moral duty' really is recognised by the developed world is debatable but, if we accept the arguments for such a duty, then we also need to accept that we cannot, or at least should not, be selective in our morality. Partial morality hardly qualifies as morality. Here, the weakness of the methodological link between the $1-a-day poverty line and actual well-being outcomes becomes problematic.

As an alternative to the $1-a-day line, this paper draws on established health literature to derive a morally defensible poverty line. The approach is based on findings established in health literature that below a certain consumption threshold, life-expectancy falls rapidly with falling consumption, whereas above this threshold life-expectancy rises only very slightly with rising consumption. I quantify this threshold and then invoke the Golden Rule ('Do to others as you would have them do to you') to argue that this threshold should form what I call the Ethical Poverty Line (EPL).

Having established the EPL, the paper then demonstrates that fulfilling 'our shared moral duty' to remove this level of absolute poverty would entail a very substantial adjustment to global inequality. It is an adjustment which would cut deeply into the consumption patterns of people in the developed world, making it extremely challenging politically: a fact which the $1-a-day poverty line disguises. But the analysis also reveals *how much consumption should be enough* to live a full lifespan and this turns out to be far lower than average consumption levels in the developed world. So the EPL not only raises issues about the difficulty of removing global poverty but also calls into question the global benefits, or disbenefits, of developed world over-consumption. In doing so, the EPL indicates that we ought to frame our attack on poverty not only in opposition to the under-development of the Third World but also, and with equal vigour possibly, in opposition to the over-development of the developed world.

Consumption distribution and inequality—a global view

At the core of this analysis is a model of global consumption distribution and of the trends in that distribution during the 1990s, years dominated by pro-growth approaches to poverty reduction. The analysis is based almost exclusively on World Bank data, and particularly on the national income and consumption survey data available since mid-2004 from the World Bank's PovcalNet website.[2] The model covers the period from 1993 to 2001 and builds a picture of global consumption distribution for more than 150 countries covering more than 95% of both global population and global economic product, as measured by Gross National Income at Purchasing Power Parity (PPP) rates.

A number of other independent analyses of poverty numbers published in recent years, notably those by Bhalla (2002) and Sala-i-Martin (2002), have used assumptions that differ from those of the World Bank. This leads them to conclude that the World Bank substantially overestimates global poverty levels. These were contentious conclusions since the experience of workers in

development is that if anything the $1-a-day poverty line is too low and therefore underestimates, rather than overestimates, poverty levels.

The inequality analysis used in this paper to derive the EPL has been deliberately designed to avoid these contentious pitfalls by reproducing more closely the World Bank approaches, assumptions and datasets. Not unsurprisingly then, this analysis broadly confirms the World Bank's poverty estimates (see Table 1). So the results presented in this paper, and in particular the value of the EPL, arise not from differences between this analysis and the World Bank's analysis but rather from looking with a different perspective at essentially the same analysis.

The analysis builds a picture of global consumption distribution that calculates how many people there are living at any and every consumption level. The results are most readily presented as a density-curve (Figure 1) illustrating who gained from the globalised growth of the 1990s and who lost out. In this graph consumption levels per person per annum (pp pa in $2002 PPP) are plotted on a log-scale along the x-axis. The curves above the x-axis represent population, with the height of the curve being proportional to the number of people living at that consumption level. The curves below the x-axis represent consumption with the (negative) height of the curve representing the total value consumed by all the people living at that consumption level. The areas under the 1993 curves equal unity, while the areas under the 2001 curves are increased in proportion to global population or consumption growth from 1993 to 2001.[3]

Plotting the analysis in this way means that at any given consumption point the number of people living below that level is represented by the area below the population curve (upper curve) and to the left of that consumption level. So the area under the population curve and to the left of the vertical $1-a-day line represents the number of people in extreme poverty. If poverty

TABLE 1. Comparison of World Bank and this paper's $1-a-day poverty estimates

|	1993		2001		Change ('93 to '00)	
	WB	This paper	WB	This paper	WB	This paper
East Asia	415	387	271	252	−144	−135
of which China	334	324	212	216	−122	−108
Eastern Europe and Central Asia	17	18	18	19	1	1
Latin America and Caribbean	52	43	50	44	−2	1
Middle East and North Africa	4	3	7	5	3	2
South Asia	476	465	431	446	−45	−19
of which India	380	376	359	376	−21	0
Sub-Saharan Africa	242	223	316	289	74	66
Total	**1208**	**1139**	**1093**	**1054**	**−115**	**−85**

Source: Chen & Ravallion (2004: Table 3).

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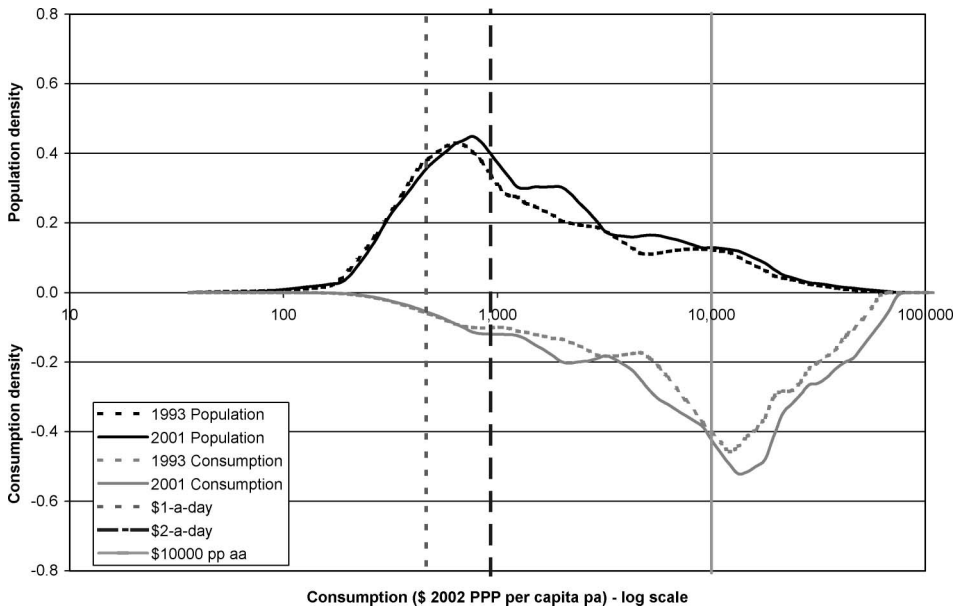
FIGURE 1. World consumption distribution density curves.

head-counts are falling, this area will reduce over time. The plot also shows the $2-a-day line, increasingly used by the World Bank, and a higher reference line at $10 000 PPP pp pa. This higher line is close to the 1993 median consumption level for the high-income countries.[4]

While the population curves tell us how many people live at each consumption level, the consumption curves (lower curves) tell us how much those people spend in aggregate. What these consumption curves show, predominantly, is the size and location of the 'buying-power' in the economy and where the main consumer markets are growing. Differences between these consumption-density curves illustrate which consumption levels 'captured' the benefits of global growth of the 1990s. Consumption rises just above the poverty line can be seen as a sign of poverty reduction, as long as they are combined with falling populations below the line, representing people moving up out of poverty. However, rises at higher consumption levels represent economic growth that has benefited the non-poor.

In summary, it seems that the most significant effect of global growth in the 1990s was the emergence of a global middle class, as illustrated by the two emerging population peaks between the $2-a-day and $10 000 pp pa vertical lines. This emergent middle-class, almost all of whom live in China, has reduced global inequality by filling somewhat the large gap that used to exist between the rich developed world populations living on around $10 000 pp pa consumption and the larger underdeveloped world populations centred around the $2-a-day level. Forty percent of the economic growth of the 1990s went to this newly emerging middle-class. The rest of the economic growth of

the 1990s went to the rich, chiefly those consuming more than $10 000 pp pa. These are the richest 50% of the developed country inhabitants plus a small number of global elites elsewhere.

For the poor, especially the $1-a-day poor, the most notable factor is how little impact all this growth had on them. Growth may, or may not, be good for the poor but it certainly does not look like a very effective way of reducing poverty. Indeed, if we adopt the higher $2-a-day poverty line, we find that poverty levels actually increased in the 1990s (for a fuller discussion of these trends and the ways that they challenge the idea that growth is good for the poor, see Edward, forthcoming).

If we really are serious about reducing global poverty, it seems that, as Gordon Brown's plan recognises, we need to do more than just rely on economic growth. But 'doing more' implies intervening in the global economy to effect a more equitable (ie pro-poor) redistribution of global consumption. This then raises the question 'how much redistribution do we need to achieve?' or 'how much is enough?'. To answer this we need to have a robust and morally defensible poverty line.

$1-a-day: a flawed concept

This is where the $1-a-day line becomes problematic. If we define poverty as a lack of well-being, then poverty is clearly a multidimensional phenomenon. The $1-a-day poverty line can therefore rightly be criticised for being an insufficient and mono-dimensional (ie purely income-based) measure of the phenomenon that is poverty. Hence, the UN Millennium Project (2005: 1) argues for a broader, multidimensional definition of extreme poverty when it states that the MDGs are 'quantified targets for addressing *extreme poverty in its many dimensions*—income poverty, hunger, disease, lack of adequate shelter, and exclusion' (emphasis added).

While few would dispute that poverty is multidimensional, the concept of 'extreme poverty' (as used in the MDGs) nevertheless remains subtly contested, at the highest policy-making levels, between mono-dimensional and multidimensional definitions. Thus the first MDG goal—to 'eradicate extreme poverty and hunger'—is clearly associated with simplistic income and consumption targets of halving the proportion of people whose income is less than $1-a-day and the proportion who suffer hunger (UN Millennium Project, 2005: xviii). That this essentially mono-dimensional conception of 'extreme poverty' (as lack of income or consumption) is still deeply ingrained in high-level policy making is illustrated in the outcome resolution of the September 2005 UN General Assembly World Summit (the MDG Summit). Throughout that resolution, the concept of poverty is linked strongly to financial issues. Of 23 instances of the term 'poverty', 10 clearly position it with a financial or economic growth connotation. Four further instances explicitly separate poverty from the other (ie non-income) development goals. The remaining instances are ambiguous in their use of the term poverty so that, while they could be construed as eliding the other MDGs into a multidimensional conception of poverty, they could

equally, and with more integrity to the use of the term elsewhere in the resolution, be read with a more limited, mono-dimensional income/consumption conception of poverty. This latter reading is further reinforced by Clause 25(b) of the resolution, where investment in the areas of the 'other' MDGs is notably not linked to ideas of poverty reduction—surely a missed opportunity if the document's authors did conceive poverty as being multidimensional:

> We will put into place policies to ensure adequate investment in a sustainable manner in health, clean water and sanitation, housing and education and in the provision of public goods and social safety nets to protect vulnerable and disadvantaged sectors of society. (UN General Assembly, 2005: 7)

If the MDG Summit resolution *implies* a mono-dimensional perception of extreme poverty, the World Bank's poverty head-count estimates clearly *adopt* a mono-dimensional approach by defining extreme poverty simply as living on less than $1-a-day. While we may criticise the limitations of such an approach, we nevertheless have to acknowledge that the World Bank headcount is still one of the best established and most widely recognised poverty estimates in use today. The objective of this article, then, is not to argue that the Bank's method is seriously limited because of its mono-dimensional assumptions (although the author would concur with such arguments) but rather to demonstrate that, even if we accept those limiting assumptions, the method still embodies an unrealistically low poverty line (the $1-a-day line) which seriously misleads policy makers, politicians and the public on both the extent of global poverty and the scale of socioeconomic change needed to remove absolute poverty.[5]

To demonstrate this, it is necessary first to look more closely at the origins of the $1-a-day poverty line. The basis for the $1-a-day poverty line is simply that it is the median of 10 of the lowest national poverty lines in the world. It is not derived from any more sophisticated consideration of well-being outcomes or bundles of goods for basic needs satisfaction. It is rightly called 'extreme', setting an international poverty level that, in theory, is currently equivalent, after allowing for inflation, to living in the USA with just $1.3 dollars to spend each day to meet all your survival needs. Chen and Ravallion, the two World Bank economists most involved in this area, recently called it 'frugal', stating that it 'must be deemed a conservative estimate whereby aggregate poverty in the developing world is defined by the perceptions of poverty found in the poorest countries'. The implication is that the $1-a-day poverty line is unreasonably low. Almost certainly it is lower than developed world populations would consider morally justifiable. Indeed, the World Bank does increasingly quote poverty indices for a $2-a-day line. Although this is considered to be 'more typical of middle-income countries', its derivation seems to be simply that it is a rather arbitrary doubling of the $1-a-day line (Chen & Ravallion, 2004).

Developing a morally defensible poverty line

So, if $1-a-day is too low, what would be the value of a reasonable poverty line to apply to the World Bank's inequality data? Is the $2-a-day line too high, too low or about right? A glance back at Figure 1 reveals that the poverty head-count is very sensitive to changes in the poverty line, especially in the $1-a-day to $2-a-day region, since the peak of the population curve is bracketed by these lines. Therefore, if we want the public and policy makers to recognise just how much poverty there is in the world, and how large a price the rich world needs to pay to remove absolute poverty, it becomes essential that we have a clear, relevant and morally justifiable basis for setting the poverty line.

Since the $1-a-day and $2-a-day lines do not meet these requirements, how might we go about deriving a morally justifiable poverty line? Some writers have proposed that the poverty line needs to be grounded more directly in an assessment of basic human needs. For example, Pogge and Reddy (2003) argue that it should be 'straightforward' to develop a poverty line derived directly from basic needs requirements. However, others such as Streeten (1984) pointed out long ago that it is actually extremely difficult to define an internationally standardised basic-needs bundle of goods. To this we might add the observation that access to basic needs (ie to livelihood inputs) does not necessarily translate into improved well-being outcomes.

The ethical poverty line proposed here takes a different approach, avoiding such difficulties by deriving a global poverty line not from the complexities of basic needs inputs but instead directly from globally standardised and ethically justifiable well-being outcomes for which sufficient data already exist in the World Development Indicators (WDIs). The EPL does not overcome the inherent problem of all income poverty lines, namely that they oversimplify and reduce the complexity of global poverty to a mono-dimensional monetary measure. However, if we have to use an international poverty line, at least the EPL provides a morally defensible basis for setting the line.

The intellectual background to the EPL draws on two specific areas of research. The first is work among development economists on well-being measures and their determinants. The second is work in health literature relating individual life-expectancy, as a well-being outcome, to individual income levels. The innovation in this paper is to show how these two areas can be combined, through the consumption distribution model described earlier, to derive an international poverty line directly from aggregate life-expectancy (ie well-being) outcomes.

Among development economists work in the 1990s drew increasing attention to the fact that individual income was not in fact a very good determinant of whether a person was poor. As Sen (1973) recognised in his early work on inequality, income is a means for needs satisfaction but it is not in itself a measure of well-being. For Sen low income 'is only *instrumentally* significant' and true measures of poverty and inequality should concentrate on 'deprivations that are *intrinsically* important' (1999: 87, emphasis in the original). This is a viewpoint that fundamentally argues against the narrow

sort of monetary-focused measurement of poverty that poverty lines presume. However, Sen does not reject income measurement, for example seeing it as playing 'an important part in making the HDI a broad indicator' and 'as an *indirect* indicator of some capabilities not well reflected, directly or indirectly, in the measures of longevity and education' (Anand & Sen, 2000: emphasis in the original).

Dasgupta, another development economist, focuses on ways to use socioeconomic indicators as objective measures of well-being outcomes. He investigated correlations between various well-being rankings of nations using indicators of life-expectancy, infant mortality, income, adult literacy, political rights and civil rights, and concluded that:

> If we had to choose a single, ordinal measure of general well-being, life-expectancy at birth would seem to be the best. At the same time, national income per head is not far behind indices of health.

> Recent suggestions that national income per head is a vastly misleading index is [sic] not borne out by our exercise. We can do better than merely rely on national income, but we wouldn't have been wildly off the mark as regards an ordinal comparison of countries had we relied exclusively on national income per head. (Dasgupta, 1993: 115)

The second of these two quotes was used by the World Bank (1997: 3) to justify a focus on income growth as the route to well-being improvements. Taken out of context, however, it lost Dasgupta's key point—that, if we were to look for a single ordinal measure of well-being, we would do best to use life-expectancy at birth, rather than income per capita.

But Dasgupta's conclusion also indicates that there is an association between life-expectancy and income. In the health economics literature, Preston (1975) first identified this, producing curves that dramatically show how national average life-expectancy falls rapidly when income levels fall (see Figure 2). In the 1990s research into this relationship between income and life-expectancy led to much debate as to whether individual health is a function of individual income—the absolute income hypothesis— or whether it is community income inequality *per se* which affects life-expectancy—the relative income hypothesis (Wildman, 2003). Today the balance of opinion is that, while there might be a modest relative income effect in the developed world, the predominant association, particularly in developing countries, is between absolute income and health outcomes. In the developing world absolute poverty is a much stronger determinant of subsequent mortality than is social inequality (Deaton, 2003; Fiscella & Franks, 1997).

In a 1979 paper that is still relevant today, Rodgers (reprinted 2002) looked beyond the Preston curve to investigate this relationship between individual income and life-expectancy. He found that there appears to be a maximum life-expectancy beyond which increases in income have no further effect and calculated this maximum to be around 73 to 75 years.
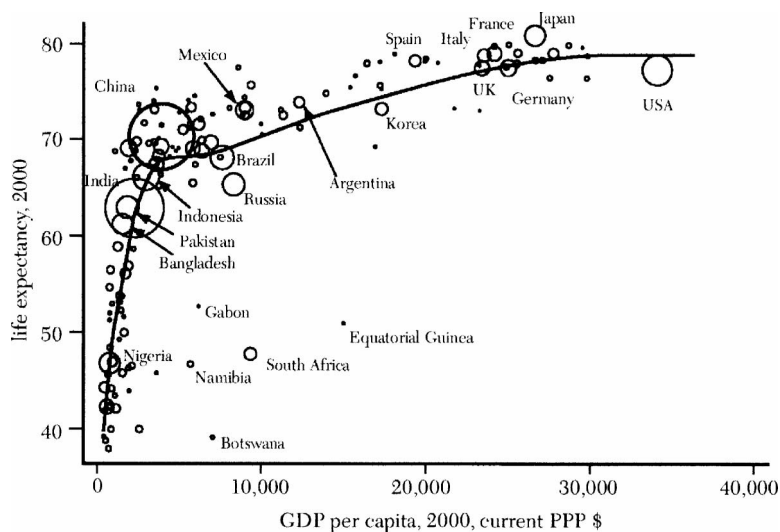
FIGURE 2. The Preston curve: life-expectancy versus GDP per capita.
Note: Circles are proportional to population. The solid line is a plot of population-weighted non-parametric regression. Luxembourg, with per capita GDP of $50 061 and life expectancy of 77.04 years, is excluded.
Source: Deaton (2003). (Original data source: *World Development Indicators 2002*.)

So Sen shows that, although income is important, we would do better to define our poverty line in terms of well-being outcomes rather than of income—ie of ends not means. Dasgupta demonstrates that, if we must use a single socioeconomic outcome measure as an indicator of well-being, the best one to use is life-expectancy at birth. Finally, the health economics literature shows that relationships which Preston recognised at the national level, between average income and life-expectancy, are the aggregate manifestation of relationships at the individual level between absolute income, or consumption, and mortality. Taken together, these writings point to a way that an ethical poverty line can be developed by relating national average life-expectancy outcomes to their underlying source in individual absolute poverty levels.

Deriving the Ethical Poverty Line

The global consumption distribution described earlier becomes central here because it allows the circumstances of individuals (the relationship between their consumption and their individual life-expectancy) to be related to the macro-data on national average life-expectancy. This is done in the following way. From the Preston curve and the observation that a similar relationship exists at the individual level, it is assumed that a model of individual consumption vs life-expectancy would follow a broadly similar shape. The Preston curve illustrates that a 'kink' point exists below which life-expectancy

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falls rapidly, and relatively linearly, as consumption falls. Above the kink, increasing consumption has only very slight impact on life-expectancy. The EPL analysis assumes an ideal-type model (Figure 3) in which a kink exists at a given consumption:life-expectancy point (x_k, y_k). Above this point life-expectancy is assumed to be unaffected by changes in individual consumption. Below this point life-expectancy reduces in a mathematical relationship to the intercept (y_0) at zero consumption. Applying this model to national populations disaggregated by consumption level, the three variables $(y_0, x_k$ and $y_k)$ can be optimised to give the best correlation between modelled life-expectancies and the actual life-expectancies published in WDIs.[6]

This is an averaging model and does not imply that the consumption:life-expectancy relationship is standard across all countries. Demographers would doubtless be quick to identify national and sub-national divergences from this ideal-type model. What the model does say, however, is that, as a global average, people living on consumption levels above the 'kink' (x_k) live a full lifespan (y_k) not prematurely curtailed by lack of consumption. It does not say that everyone with consumption above the 'kink' can automatically achieve this. National performances will differ so that some countries and communities will do better, others worse.[7]

Initial analysis (Figure 4) was less than convincing, with a number of outliers where actual life expectancy was more than 15 years lower than predicted by the model. On inspection, however, these were all sub-Saharan Africa countries in the grip of the AIDS epidemic. Once these outliers were omitted, a much better fit was found between the model and actual results (see Figure 5).[8]

A number of common mathematical functions was investigated for the model, including linear, parabolic, hyperbolic, semi-log and double-log functions. Similar correlations were achieved from the best of these functions (see Table 2).[9] However, while the maximum life-expectancy was not very sensitive to the choice of function, the kink-point consumption level (x_k) was influenced somewhat by the function used.
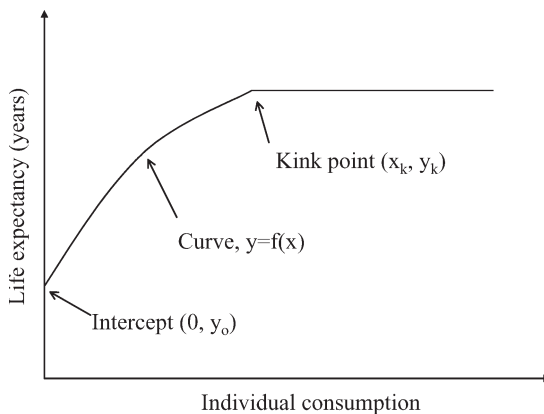

FIGURE 3. Idealised consumption vs life-expectancy model.

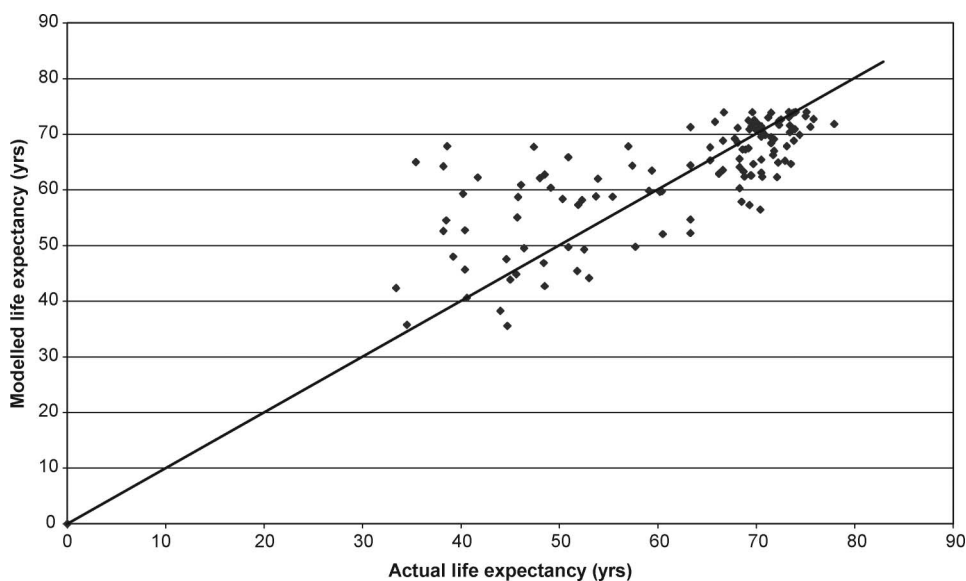FIGURE 4. Deriving the Ethical Poverty Line, actual vs modelled life-expectancy.
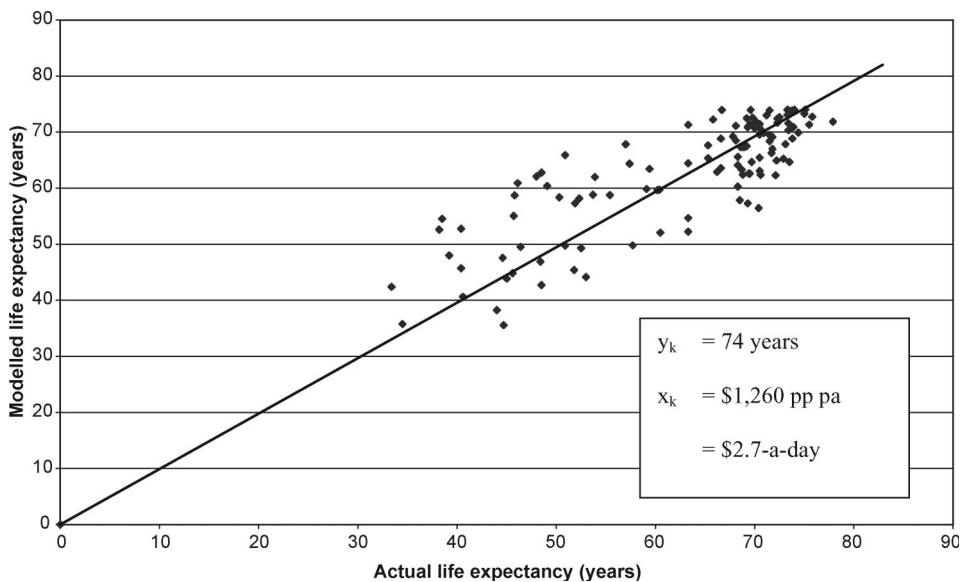

y_k = 74 years

x_k = \$1,260 pp pa

= \$2.7-a-day

FIGURE 5. Deriving the Ethical Poverty Line, actual vs modelled life expectancy (sub-Saharan Africa outliers omitted).

Collectively these results set the kink consumption at between \$2.7-a-day and \$3.9-a-day, and probably around \$3-a-day. However, so as to err on the side of caution, the consideration of the results that follows is entirely based

TABLE 2. Optimisation results for best-fit mathematical functions

Function type	Equation	Kink consumption (x_k $ pp pa)	Kink consumption (x_k $-a-day)	Max life-expectancy (y_k years)
Parabolic A	$y^2 = a.x$	1260	2.7	74
Parabolic B	$y^2 = a.x + b$	1420	3.1	75
Double-log	$\ln(y) = a.\ln(x) + b$	1520	3.3	75
Semi-log	$y = a.\ln(x) + b$	1830	3.9	75

Note: Kink consumption figures in $ pp pa are quoted in 2002 PPP dollars. Kink consumption figures in a $-a-day terms are quoted as multiples of the World Bank's $1-a-day poverty line which is in fact $1.08-a-day in 1993 PPP dollars, equivalent to $465 pp pa in 2002 PPP dollars.

on the 'Parabolic A' function, since this sets kink-consumption at its lowest and hence least challenging level, namely $2.7-a-day.

The results can be interpreted as showing that, given the current state of world development, it is reasonable to expect to live to 74 years (remarkably similar to Rodgers' findings of 73 to 75 years) providing you have 'adequate' consumption. Based on average performance across the world (excluding the worst distorting effect of AIDS in Africa), $2.7-a-day (in 1993 PPP prices) should be 'adequate'. Consumption above this level adds only nominal years to expected lifespan. Consumption below this level reduces expected lifespan dramatically.

This analysis does not create an argument that we should monitor international poverty in terms of life-expectancy rather than income or consumption. But what it does do is relate consumption levels to measurable life outcomes. Because the model is grounded in these outcomes, a normative argument can add an ethical, and hence contestable, dimension to it. Contestation implies the need for some level of plausibility and Sen advocates that, for an ethical approach to have general social plausibility, it needs to extend equal consideration to all at some level (1992: 4). Effectively this calls for the application of the Golden Rule—'Do to others as you would have them do to you'. Applying such an ethical dimension to the kink model assumes that none of us would wish to be born into such a low consumption level that our lifespan risked dramatic shortening solely as a result of that poverty. Invoking the Golden Rule, we might argue that every community should be entitled to achieve a minimum consumption level sufficient for all individuals to expect to live a reasonably full lifespan. On this basis 74 years could be considered to be a reasonable lifespan and $2.7-a-day would be the global ethical poverty line (Global EPL). In this sense the kink consumption becomes not only an absolute poverty line but also an Ethical Poverty Line (EPL).

This Global EPL is obviously significantly higher than the established $1-a-day line. However, it is not unreasonable. It has already been noted that the World Bank increasingly uses a $2-a-day poverty line which is considered to be more representative of the poverty lines of middle-income countries. Elsewhere Bhalla notes that the average national poverty line in

the developing world is $2.02 per day (2004) and argues that 'the time has come to *raise* the international poverty line [to] $2 a day, at 1993 prices' (2002: 140). Sala-i-Martin (2002) also observes that the UN uses poverty lines as high as $4-a-day, considerably more than the EPL. Evidently the development community is already raising its sights to the fact that the $1-a-day line may be too low to be justifiable in terms of ethics and equity.

However, this analysis still includes a significant number of countries in sub-Saharan Africa, where problems such as AIDS and civil war lead to premature death. While these problems are undoubtedly associated with poverty, they are not directly caused by a lack of consumption and they certainly cannot be resolved merely by increasing the consumption of the poor. Consequently their inclusion in the analysis introduces an upward bias into the EPL calculation that some might argue was unreasonable. Recognising this, the EPL has been recalculated (as a Minimum EPL) separating out all of sub-Saharan Africa (see Table 3).

The results are striking. As expected, the Minimum EPL is lower than the Global EPL at around $1.9-a-day. The kink lifespan (72 years) is little altered and stands in stark contrast to sub-Saharan Africa. There, the kink lifespan falls to 48 years, while the very low poverty line ($0.6-a-day) may well indicate that, only for those in the most extreme poverty, do the risks of premature death from lack of consumption outweigh the very high risks of death from other causes. This may well be striking evidence of the dramatic impact of AIDS in the region.

The price of making poverty history

What then are the implications of using the EPL to define absolute poverty? The analysis of the distribution of the benefits of growth in the 1990s, briefly presented earlier in this paper, allows us to consider the implications of removing absolute poverty as defined by various poverty lines. Table 4 summarises a number of poverty indicators for the $1-a-day poverty line, the $1.9-a-day Minimum EPL and the $2.7-a-day Global EPL.

Compared with the $1-a-day line, the Minimum EPL more than doubles the number of people considered to be in poverty to 2.5 billion, or 40% of

TABLE 3. Ethical Poverty Line values

		Max lifespan (years)	EPL ($PPP)	EPL as proportion of $1-a-day line
All low and medium income countries		73	1295	2.8
– Excluding countries where actual lifespan is >15yrs below model	Global EPL	74	1260	2.7
– Excluding SS Africa	Minimum EPL	72	880	1.9
– SS Africa only		48	270	*0.6*

TABLE 4. Indicators from poverty lines

Poverty Line	World Bank $1-a-day	Minimum EPL $1.9-a-day	Global EPL $2.7-a-day
Counting the poor			
Poverty head-count (millions)	1050	2500	3100
Poverty rate (head-count as % of global population)	17%	41%	51%
Poverty gap ($ billions PPP)	140	900	1980
Poverty gap as % of global GNI	0.7%	4.7%	10.4%
Redistribution without growth: Estimate of tax burden required to remove absolute poverty today			
Tax rate assumed	30%	30%	30%
Tax threshold (all consumption above this taxed at assumed rate)	$30 700	$12 500	$6200
Global population required to pay tax (million)	59	380	934
Proportion of population required to pay tax:			
in USA	11%	47%	80%
in UK	≈5%	30%	71%

Notes: Some figures are approximate as they fall in the upper quintile, where data is inadequate to allow accurate modelling.

the world's population, while the Global EPL lifts this to 3 billion, or 50% of the world's population. To remove poverty at the Minimum EPL level we would need to increase by 70% the share of the world's output that these poor consume. Yet this is still only a poverty gap of 5% of global consumption.

This may look like a fairly small proportion of global consumption. It is put more clearly into perspective, however, by estimating the extent of redistribution that would be required if we wanted to eliminate global poverty today. For example, the cost of 'merely' removing *$1-a-day* poverty would be equivalent to a 30% global tax on the consumption of roughly the richest 1% of world population, affecting one in 10 people in the USA and one in 20 in the UK. In other words, $1-a-day poverty allows the citizens of the developed world to imagine that poverty is a problem inflicted on the most disadvantaged by the greed of only the most affluent. This is a common misrepresentation of the problem of poverty. When reinforced with doubtless true but slightly misleading statements (eg 'The three richest people in the world control more wealth than all the 600 million people in the world's poorest countries' (Bedell, 2005) or 'The world's richest 500 individuals have a combined income greater than the poorest 416 million' (UNDP, 2005: 4)), the effect is to make it seem that the price to be paid to remove poverty will largely be confined to the very rich.

Raising the poverty line to the EPL bursts this illusion. It puts more people in poverty while also raising the threshold that each of those people has to climb over to get out of poverty. So the redistribution implications of the EPL are very different from those of $1-a-day poverty. For example, the cost of removing ethical poverty today (conservatively based on the Minimum EPL line) would be comparable to an additional global tax of 30% on all

consumption above US median levels. As a tax levied on anyone, anywhere in the world, it would affect 6% of world population, including (of course) half the US population and one in three people in the UK. If we wanted to remove ethical poverty at the higher Global EPL level, this tax would extend to four-fifths of the US population and almost three-quarters of the UK population. The EPL, therefore, reveals that the price to be paid for accepting a moral duty to remove poverty today is one that would cut deeply into the pockets of developed world populations. In doing so, the EPL challenges the populations of the developed world to reconsider the depth of their complicity in the creation of global poverty.

This dramatically illustrates the extent of socioeconomic change that would be needed to create an 'equitable' world free from poverty in the near future. Fully accepting a moral duty to make poverty history today would not merely be a matter of taking money from the very rich and giving aid to the very poor. Rather it would require changes in the workings of the global economy such that there was a substantial loss of income not only by the rich but also by the middle-class in developed countries and a concomitant rise to a more ethical subsistence income for the poorest in the world.

The EPL therefore shows that removing poverty within the MDG timescale will require us to attack the deep structural inequalities that exist between the developed and under-developed countries—a central issue that the $1-a-day poverty line largely allows us to ignore, although one that encouragingly the *Human Development Report 2005* (UNDP, 2005), clearly focuses on. Redistributive proposals, such as 'fair trade' and 'ethical globalisation', thus become concepts that are not just about increasing incomes for poor producers in the developing world. If they are really to address the problem of global poverty, then they carry with them the corollary that they are also about substantially reducing the consumption power of the developed world populations, as Table 4 illustrates. Given the size of this sacrifice to be made by the developed country populations, it must be highly questionable whether we live in a world that really is prepared to recognise fully its moral duty to remove poverty. However, at least here in the EPL is a realistic quantification of the price of removing poverty. It will be a matter for the political economy of the 21st century to see whether this price will be willingly paid, stubbornly resisted or aggressively denied.[10]

How much is enough? The challenge of 'catch-down'

But the EPL has another challenge for us. If $1260 pp pa (the Global EPL) is, on average, sufficient for a person today to live a full 74-year lifespan, then why do citizens of the developed world find they use, and seemingly need, so much more in order to live? The developed world's population actually consumes ten times this amount. If we deem consumption above the $1260 level as 'over-consumption', 53% of global consumption is expended in this 'over-consumption' in the developed world alone?[11] What real benefit does the world gain from this? Is this a measure of the inefficiency of life in the developed world? Should we be looking to societies where people do live a full

lifespan on consumption levels of only a few thousand dollars-a-year not as economic systems that need to be developed but as exemplars of a more efficient type of living?[12]

These are uncomfortable questions for those of us in the developed world. Presumably there are quality-of-life benefits, not captured in life-expectancy, that derive from this 'over-consumption'. The EPL does not automatically imply that we should give these benefits up. What it does suggest, however, is that, rather than framing poverty solely in terms of how to lift people up to a poverty line, we should also—and with equal vigour probably—be calling on the developed world to justify its excesses. Perhaps the time has come to stop talking about the developed and developing worlds. Maybe the EPL can help us recognise the 'right' level of development to aspire to—to recognise how much is enough not just for the poor but also for the rich. Then we could start to see the world as consisting of under-developed, appropriately developed and over-developed countries. Then, rather than framing the problem solely as one of catch-up for the developing world, we could ask how the over-developed world can justify not being expected to 'catch-down' to lower levels of consumption.[13] The challenge is implicit, but unacknowledged and unrecognised, in Gordon Brown's expression of a 'moral duty' to tackle global poverty. Society may choose to ignore it but should we, as individuals, allow ourselves to also?

Notes

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1 L Elliott & M White, 'Brown's Marshall plan for world poor', *Guardian*, 7 January 2005, p 2.
2 PovcalNet is available at http://iresearch.worldbank.org/PovcalNet/jsp/index.jsp.
3 Note that, since these curves are both standardised on 1993 levels, they differ somewhat from those presented, for example, by Dikhanov and Ward (2002) which are normalised so that the area under each curve equals unity. Standardising the curves to a single year, rather than normalising each curve, makes it easier to identify the locations of the true beneficiaries of global income growth.
4 The high-income median consumption level in 1993 was $8300 pp pa in 2002 PPP prices. Fifty-three percent of high-income country populations had consumption less than the $10 000 level in 1993 (55% in 2001).
5 For the authors of the *Social Watch Report 2005* (Third World Institute, 2005: 14) this is no accident. They see the $1-a-day line as ideologically and politically motivated by allowing World Bank researchers to claim that the proportion of people living in poverty in the world as a whole is declining and hence that globalisation is good for the poor.
6 World Development Indicators are available on-line at http://www.worldbank.org/data/.
7 In line with World Bank practice when calculating poverty head-counts, the optimisation excludes high-income countries where $1-a-day, and even $2-a-day poverty, are essentially non-existent. One consequence of this is that any distorting effect of the simplifying assumption of constant life-expectancy at consumption levels above the kink-point is minimised. The optimisation was not population weighted, which would have led the analysis to be dominated by China and India rather than representing a meaningful global averaging of national consumption:life-expectancy outcomes.
8 The countries omitted were Angola (18 years), Cote d'Ivoire (19 years), Lesotho (28 years), Namibia (19 years), Swaziland (25 years) and Zimbabwe (28 years). Figures in parentheses are number of years difference between the actual life-expectancy and the modelled life expectancy.
9 On mis-specification tests the Parabolic A and Semi-log functions listed in Table 2 were found to give the best specification matches. Mis-specification test statistics were essentially the same for these two functions. The Parabolic B and Double-log functions gave marginally worse mis-specification test statistics.

10 One of the anonymous reviewers rightly points out that a rich literature already exists on this theme of the implications of 'ethical globalisation' or 'fair globalisation', including policy proposals on global trade reform, intellectual property rights, global taxes for planetary survival, global economic governance, new financial architecture, debt relief, debt arbitration, etc. The EPL brings into focus just how much such reforms need to challenge and unpick the inequalities of existing global structures if they are to succeed in removing global absolute poverty.

11 If we adopt the rather more generous figure of $3.9-a-day (the highest kink consumption in Table 2) then we find that the developed world consumes seven times this level. This still implies that over 50% of global consumption is expended in developed world 'over-consumption'.

12 The following low- and middle-income countries are those that perform notably better than the model predicts (with years difference in parentheses): El Salvador (10 years), Venezuela (8 years), Costa Rica (7 years), Dominica (6 years), Armenia (6 years), Uzbekistan (6 years), St Lucia (6 years), Moldova (6 years).

13 I am indebted to Peter Rooney for introducing me to the phrase 'catch-down'.

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