Raising the Bar:
An Inclusive Global Poverty Line[1]

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Abstract. The first of the United Nations 2015 Sustainable Development Goals is: "End poverty in all its forms everywhere." An implication of this broad goal is the existence of an array of poverty lines, which raises the question of a lower-bound and an upper-bound to poverty lines. The 'dollar-a-day' poverty line (updated for inflation to P$2.15 in 2017 PPP) defines extreme poverty and is widely accepted as a global lower-bound poverty line (GLBPL). However, while different countries, organizations, and authors use higher poverty lines, there is no consensus on a global upper-bound poverty line (GUBPL). We estimate a GUBPL using two conceptually distinct approaches, both grounded in the tension between the focus axiom for poverty measures and standard economic social welfare measures, setting the GUBPL either at: (i) the consumption consistent with the achievement of adequate material wellbeing" or (ii) the consumption "near enough consumption satiation." Using either approach empirical results demonstrate *ad hoc* poverty lines, such as small multiples of 'dollar-a-day' or the World Bank's highest reported poverty line of P$6.85, are far too low to be a plausible GUBPL. Empirical analysis using the two approaches across four distinct indicators of wellbeing all suggest a GUBPL of *at least* P$21.5, *ten times* higher than the P$2.15 GLBPL. The use of both a lower bound and upper bound global poverty line balances the radically *exclusive* nature of the 'dollar-a-day' standard, which classifies people with very low levels of material wellbeing and very high marginal utility of income from as "not poor" with a (perhaps excessively) *inclusive* GUBPL which counts only those with high material achievement and low(ish) marginal utility of income as "not poor."

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I don't mind poverty analysis, as long as the poverty line is infinity

Angus Deaton (oral tradition)

Natura non saltum facit (Nature doesn't jump)

Epigraph to Alfred Marhsall's Principle of Economics, 1890

Introduction

The tension between Sen's (1976) focus-axiom for poverty measures and the Pareto Principle for social welfare measures is well known. The focus axiom holds that changes in the income/consumption[4] of those who are not poor do not affect a poverty measure. In focus axiom compliant poverty measures with a poverty line, such as the widely reported Foster, Greer, Thorbecke (1984) class, gains to households at consumption PL+ε count for exactly zero in reducing poverty. This exclusion of the non-poor creates two tensions between a focus axiom poverty measure and any social welfare measure that follows the Pareto Principle and has the standard features of continuity, inequality aversion, and non-satiation. One, welfare is higher if a household at consumption PL+ε increases their consumption whereas poverty does not decline. Two, the gain to welfare is larger for a marginal consumption gain for a household at PL+ε than at PL+ε+X. These are deep differences in normative evaluation as standard social welfare measures treat "likes like likes" (continuity implies gains to households at PL-ε and PL+ε are treated similarly) and "unlikes like unlikes" (inequality aversion implies the gains to a household at PL+ε and PL+ε+X, X large are treated differently). In contrast, focus axiom compliant poverty line measures, by treating all gains to households above PL as zero, treat "likes like unlikes" and "unlikes like likes."

As Angus Deaton's epigraphic quip illustrates, this tension asymptotes to zero as a poverty line goes to infinity. In contrast, the widely used 'dollar-a-day' poverty line makes the normatively problematic aspects of exclusion of the non-poor in poverty measures severe. The dollar-a-day poverty line implies the consumption gains of Indonesian households at the 3rd percentile count for zero in reducing (extreme) poverty (Table 4) even though any social welfare measure would value highly gains to the 3rd percentile. Moreover, poverty measures imply the gains to 3rd percentile Indonesian households count the same in reducing extreme poverty as gains to the median Danish household with income levels 30 times higher—or, for that matter, the global rich—as gains to households at any of these levels all count for zero. Any reasonable social welfare function would put very different weights to the consumption gains of the Indonesian 3rd percentile and the globally well-off.

The 'dollar a day' poverty line was never intended to be 'the' global poverty line, just the *lowest plausible* global poverty line. The 'dollar-a-day' poverty line, first used in the 1990 World Development Report on Poverty (World Bank 1990) was based on the observation that the relationship between GDP per capita and national poverty lines was non-linear and appeared

[4] Henceforth we use consumption for convenience, as most poverty measures in the poorest countries are based on consumption surveys, whereas only in richer countries they are based on income.

to have lower asymptote (Ravallion, Datt and van de Walle 1991). Using the average of the poverty lines of the poorest countries was just an argument for the *lowest* a global poverty line could be not an argument it should be "the" or the dominant poverty. Using only the poverty lines of the poorest countries necessarily implies that nearly all developing countries have a higher national poverty line than this global lower bound.

The 'dollar-a-day' poverty line, updated for inflation to P$2.15 per person per day in 2017 PPP units, became widely accepted as a global lower bound poverty line (GLBPL). At the same time, it is widely accepted this defines not poverty generally but only "extreme" poverty. At this penurious poverty line nearly everyone in many large developing countries is "not poor." In the February 2025 World Bank poverty data less than, 1.5 percent of Egyptians, 2 percent of Indonesians, 2 percent of Bolivians, 3 percent of Filipinos, and 5 percent of Pakistanis. This is a strikingly exclusionary normative goal.

The acceptance that the 'dollar-a-day' standard is too low to be the *only* global poverty line has led to a wide variety of alternative higher poverty lines. Most of these are *ad hoc* in that they use a small multiple of the 'dollar-a-day' (twice or three times 'dollar a day'), or use the national poverty lines of other sets of countries besides the poorest, or some alternative threshold of material wellbeing. Until June of 2025 the World Bank reported country and global poverty at the $2.15 ('dollar-a-day'), P$3.85, and P$6.85 poverty lines, implying P$6.85 was the "highest" global poverty line.

Is there is a GUBPL between 'dollar-a-day' and infinity, that balances the virtues of a simple headcount measure of global poverty against the normatively problematic features of the focus axiom? As "poverty" is fundamentally a political and social construct there is no way to avoid what are essentially subjective value judgments. We choose to base our search for an acceptable GUBPL by focusing directly on the normative challenges created by the exclusionary aspect of focus axiom compliant measures of poverty and adopt two different criteria in the estimation of a GUBPL.

The first criterion is "material wellbeing achievement" and sets the poverty line at the level of consumption at which a given standard of living is achieved. Instead of using a very low level of material wellbeing, such as achieving food consumption with caloric adequacy, we choose a level of material wellbeing such that a person above that level could be considered globally prosperous as the category above GUBPL poor.

The second criterion is "near enough satiation." While there is little empirical evidence for individual households actually achieving satiation ($MU_c \approx 0$) at levels of consumption near a global poverty line, one can choose a GUBPL such $MU_c(GUBPL+\varepsilon)$ is "near enough" to zero that the problem of treating likes unlike across the poverty line is limited. Or one can choose a GUBPL such that the marginal utility of the just non-poor is "near enough" the marginal utility of the globally prosperous ($MU_c(GUBPL+\varepsilon)$/ MU_c('Typical globally prosperous household')) that it limits the error of treating households very unlike in consumption as exactly alike (both zero).

We apply these two criteria to four measures of material wellbeing: (i) a parameterized iso-elastic utility function, (ii) food shares in consumption, (iii) household achievement of a set of six indicators of minimal conditions of prosperity, (iv) country level of achievement of an index of basics.

Based on our two criteria and four potential measures of wellbeing we propose a GUBPL of P$21.5 per person per day in 2017 PPP. This GUBPL has (i) the attractive focal point feature of being 10 times the current GLBPL of P$2.15[5], (ii) is in the range of the estimated GUBPL by most of the approaches, although getting "near enough satiation" criterion often leads to very high estimates of the GUBPL, and (iii) is consistent with the social poverty lines (Joliffe et al 2024) of the "just developed" countries.

A GUBPL of P$21.5 is a radically more inclusive definition of global poverty. This high poverty line, used with poverty measures that give importance to the depth of poverty, mitigates the most severe of the normative problems with low-bar poverty lines while maintaining a focus of development and development economics on improving the wellbeing of those in the world for whom gains in material wellbeing are most important.

I) Setting a global upper-bound poverty line: Challenge and two criteria

I.A) Global distribution versus country

Figure 1 shows the distribution of consumption per person per day (in 2017 PPP) generated by a simulated log-normal distribution for each of four countries[6] in different World Bank classifications by GDP per capita: Ethiopia (low income), Pakistan (lower-middle income), Indonesia (upper-middle income), and Denmark (high). The x-axis in Figure 1 consumption per person per day in P$, not log units.

This graph (and ancillary calculations) highlights two points relevant to setting a global poverty line. One, the "poor of the rich" have much higher incomes than the "rich of the poor." [7] This implies that setting a global poverty line that results in any substantial degree of poverty in

[5] After all, one suspects the 'dollar-a-day' standard itself enjoyed such wide adoption because *one* (dollar-a-day) is a focal point.

[6] The Simulation Appendix details the simulation of a log-normal distribution with the two parameters set to replicate key summary statistics of the actual distribution.

[7] We emphasize this point because Dani Rodrik (2007) has shown this fact is not well known and, when asked, most people, even students of development, in rich countries get this wrong. Moreover, when people are told the facts about income differences between "poor of the rich" and "rich of the poor" rather than accept the facts, they often doubt the data rather than their opinion. People have a sense the "rich of the poor" have higher standards of living because labor (and hence prices) are cheap—but that is precisely what the adjustments for purchasing power parity (PPP) are meant to do, adjust for different costs so that P$ are comparing the ability to achieve equivalent consumption. But Pritchett and Spivack (2013) show that indicators of standard of living that do not rely on either national account estimates or PPP adjustments produce nearly identical differences in estimates of the gap between the "rich of the poor" and the "poor of the rich."

rich countries will necessarily imply very high poverty rates in nearly all other countries. Two, the variance of the distribution of consumption in poor countries in small in absolute terms. This implies that poverty rates will be very sensitive to small absolute changes in poverty lines.

While some citizens in poor countries are among the "global super-rich" lists of millionaires or billionaires (in 2025 Indonesia had 33 billionaires), statistically the "poor of the rich" (10^{th} percentile of rich countries) have much higher incomes than the "rich(er) of the poor" (90^{th} percentile of poorer countries). The 10^{th} percentile of income in Denmark is P$35.17. This is two and half times higher than the consumption at the 90^{th} percentile of consumption in Indonesia (=35.17/13.5) and four times that of Pakistan (=35.17/8.9).

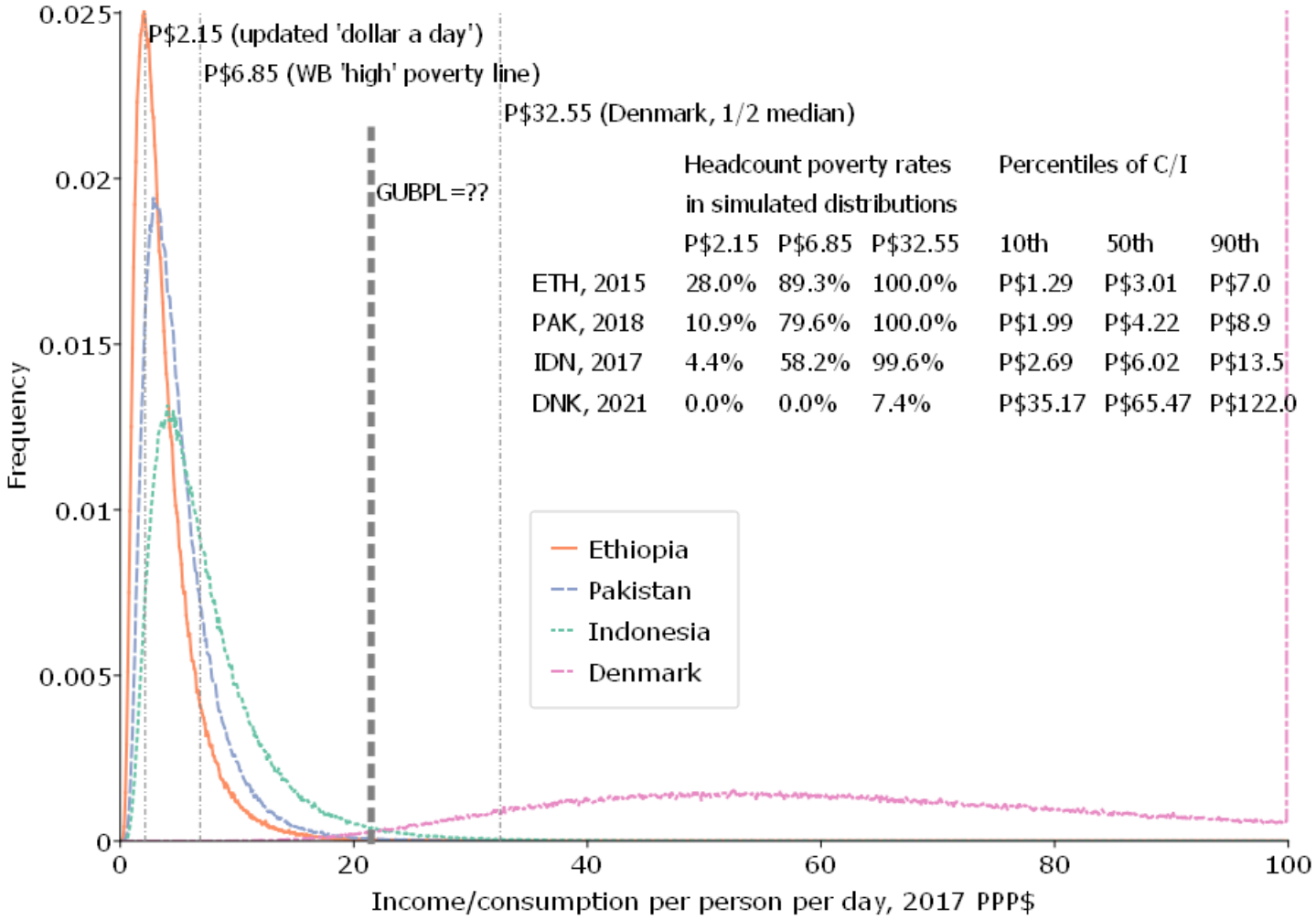
This massive inequality in income across countries of the world implies that at the national poverty line of an advanced industrial country nearly everyone in a typical developing country is poor. If we take Denmark's poverty line to be half the Danish median consumption of P$65.47 at P$32.55[8] then only 7.4 percent of Danes are poor. But, even in World Bank Upper Middle Income" Indonesia, 99.6 percent of the population is poor at the Danish poverty line.

Labeling a rich(er) household in a poor country as globally poor seems counter-intuitive, but exclusively country driven intuition cannot guide global thinking. It seems counter-intuitive because nearly all economic statistics are reported only at the country level and this encourages comparisons of wellbeing only across people living in the same country[9]. This implicitly encourages the idea that only relative consumption within countries matter, that Pakistanis are only permitted to compare their outcomes to other Pakistanis. Limiting comparisons to within countries is adequate for most purposes, including setting a national poverty line, but setting a global poverty line has to normatively "imagine there's no countries" (Bhalla 2002) and compare people. Since a poverty line is a social construct, a global poverty line has to acknowledge that what is means to be globally "not poor" is dependent on the existence of many countries in the world in which, like Denmark, the median (typical) household has consumption that is more than ten times higher than the typical household even in an upper middle-income country like Indonesia.

[8] The actual poverty line in Denmark is set based on a more sophisticated measure of household consumption, based on equivalized consumption accounting for differential weights by demography and economies of scale, not just household per capita consumption, so this is just using the same relative standard of half of the median.

[9] As Clemens and Pritchett (2008) emphasize, country level statistics don't even reflect the wellbeing of "nationals" as the income of Haitian nationals (people born in Haiti), for instance, is much higher than the income of people living in Haiti.

Figure 1: Illustration of the distribution of consumption/income across countries and the implications of various poverty lines for estimates of headcount poverty rates



Source: Author's calculations with World Bank PIP data.

Notes: Each country distribution is a simulated log normal distribution of 500,000 observations with log normal parameters chosen as described in Section II.B.

Figure 1 also illustrates that the absolute differences in consumption within countries are small compared to the absolute gaps across countries. The absolute magnitude by which the "richer of poor" lag the "poor of the rich" is larger than the magnitude by which the consumption of the richer of the poor countries exceed their own country's poorest. The 90th-10th gap in household consumption in Pakistan is only P$6.9 (=P$8.9-P$1.9) whereas the 90th percentile in Pakistan of P$8.9 is P$23.8 below that of the 10th percentile in Denmark (=P$32.7-P$8.9).

This implies that setting a GUBPL by multiplying the 'dollar-a-day' by a small integer (a common *ad hoc* practice) will change many countries headcount poverty rate dramatically, but this, in itself, does not imply that 2*GLBPL or 3*GLBPL is an adequate GUBPL. At 'dollar-a-day' almost no one is poor, except in the very poorest countries. In our simulated log-normal distribution extreme poverty is only 10.9% in Pakistan (WB: 4.9 percent) and only 4.4 percent in Indonesia (WB:.26 percent). Only in a very poor country like Ethiopia are even a quarter of the population poor: 28 percent (WB: 26.9 percent) at the GLBPL.

Whether differences are "big" or "small" depends on the frame of reference. Since the P$2.15 poverty line is so low, raising it by a factor of 2 or 3 is a large relative move but only a small absolute amount, especially compared to the global distribution of income. The WB "high" poverty line of P$6.85 is 3.2 times higher than P$2.15 with an absolute gap of P$4.7. This is both "big" relative to country distributions, for instance the gap between the Indonesian 10th percentile and 50th percentile is only P$3.33 (=6.02-2.69) but, at the same time, very "small" relative to the gap between the Indonesian median and the Danish median of P$59.5 (=65.47-6.02).

Even though changes in the poverty line that are absolutely small do produce large changes in estimated poverty for many countries. Changing of raising the poverty line by P$4.70, from P$2.15 to P$6.85 changes estimated poverty in Pakistan from 10.9 percent to nearly 80 percent. In Indonesia poverty rises from 4.4 percent to 58.2 percent.

In *Factfulness* (Rosling, Rosling, and Ronnlund, 2019) the world's population is grouped into four levels of income by purchasing power per adult equivalent (and hence not directly comparable to per person): level 1, below P$2/day (close to the current dollar-a-day); level 2, above P$2/day but below P$8/day; level 3, above P$8/day but below P$32 per day; and level 4, above P$32/day. They estimate that, as the time of their calculations, five of seven billion people live in level 2 and level 3, as only roughly a billion are in level 1 and roughly a billion in level 4. That these bounds on the groups by "similar" level of wellbeing are increasingly large: category 2 ranges from P$2 to P$8 (larger than the gap between P$2.15 and P$6.85) and category 3 ranges from P$8 per adult to P$32. This just illustrates identifying households as "globally prosperous" (level 4) cannot rely on the tyranny of small differences created by exclusively within country comparisons[10].

[10] The "100 Homes" project in India illustrates this point of large differences across percentiles of the distribution are still relatively small differences in living conditions. This endeavor used the results of a standard household survey in India (India Human Development Survey 2012) and chose one house at each percentile of the survey's distribution of expenditures per person to produce 100 homes ranked from the 1st to 100th percentile. The

I.B) Achievement based poverty lines

A straightforward economic definition of a money metric poverty line is that it is the consumption expenditures needed by the i[th] household to attain a given level of material wellbeing for its members at the prices faced by the household (eqn. 1). These prices, at least conceptually, reflect not just the money price but the all-in cost to the household accounting for physical access, subsidies, public provision, etc.

$$1)\ PL^i(X^i) = \exp\ (p^i, U^{Poverty})$$

This makes it clear a poverty line depends on the specification of a level of human wellbeing below which a household is deemed poor. As "utility" is unobservable, poverty lines are often set by costing what it takes to achieve some threshold in specific dimensions of consumption (e.g. food, shelter). For instance, the widely used "food energy intake" approach estimates the food poverty line as the expenditures needed to achieve adequate nutrition or just a given caloric intake for members of the household from consumption of a specific bundle of food items (Rowntree 1901, Orshansky 1965, Greer and Thorbecke 1986). The "indirect" method then adds an allowance for non-food expenditures based on an Engel relationship to arrive at a poverty line (e.g. Ravallion 1998, Pradhan *et al* 2001). The "direct" method for a "cost of basic needs" approach adds to the food poverty line allowances for specific elements of "basics."

National poverty lines increase with country GDP per capita because the level of material achievement expected to be "not poor" increases.

The material wellbeing achievement level for a GUBPL can be plausibly set as some fraction of the highest levels of wellbeing observed.

I.C) Balancing the normative tensions of poverty measures with "near enough to satiation" GUBPL

The economic evaluation of actions to promote development, such as cost-benefit analysis, did not ignore inequality in the distribution of benefits before the advent of poverty measures. Squire and van de Tak's (1975) *Economic Analysis of Projects* recommended the use of distributional weights in cost-benefit analysis. This approach was grounded in standard welfare economics, published by the World Bank, and widely accepted in principle, if not practice. A simple, easily parameterized, version of a distributionally sensitive approach to cost-

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project took pictures and 360-degree videos of these households. including the interior, exterior, kitchen, toilet, and household possessions. One section of the 100 Homes project's website allows viewers to guess from their visual inspection of the household's housing and possessions which has higher and lower measured expenditures per person. The result is that households across a large range of the income distribution are, to most viewers, "observationally equivalent" as guesses about the relative ranking from direct observation is rarely better than random.

benefit analysis (e.g. Acland and Greenberg 2023) assigns different "utility weights" to the gains to households at different levels of income based on an iso-elastic utility function (eq. 2):

$$2)\ U(y) = k * \frac{y^{1-\rho}}{1-\rho}\ if\ \rho \neq 1, else\ U(y) = \ln(y)$$

Iso-elastic utility functions produce declining marginal utility of income at a rate which depends on the parameter ρ (eq. 3):

$$3)\ \frac{\partial U}{\partial y} = k * \frac{1}{y^{\rho}}$$

The utility weight on gains to the i^{th} household relative to a reference level of income (e.g. the median of the population) is therefore (eq. 4):

$$4)\ w_i = \left(\frac{y_{reference}}{y_i}\right)^{\rho}$$

Focus axiom compliant poverty measures produce very different results than standard welfare economics. As major development organizations report poverty measures in the Foster, Greer, Thorbecke (1984) class, which depends on a poverty line and a parameter weighting poverty intensity, we will use this as an illustration. Defined on continuous distribution of consumption, f(c), an FGT poverty measure is the integral over the consumption distribution of the weighted gap between consumption and the poverty line (eq. 5).

$$5)\ FGT(PL, \alpha) = \int_{-\infty}^{PL} ((PL - c)/PL)^{\alpha} f(c) dc$$

The FGT parameter α measures the "intensity" of the contribution to poverty at any given level of y. At α=0 everyone below the poverty line counts equally and hence this is the "headcount" poverty (and if divided by the population, the headcount poverty rate, or percent in poverty). If α=1 equation 1 produces the "poverty gap" as the proportionate distance of the income of those below the poverty line from the poverty line. At α=2 this is the "severity" or "squared gap" measure of poverty which puts increasing weight in the poverty measure on those further below the poverty line.

The FGT class satisfies the focus axiom as the derivative of FGT(PL,α) from consumption gains to households above the poverty line is zero at all poverty intensity weights α (eq. 6).

$$6)\ \left.\frac{dFGT(PL,\alpha)}{dc}\right|_{c} = 0, \forall\ c > PL, \forall\ \alpha \geq 0$$

There are two obvious tensions between the normative evaluations using the FGT poverty measures versus the utility weights approach.

First, the FGT measure treats "unlikes like likes" as gains to all those above the poverty line equally—they all count for zero (which is the focus axiom) whereas the iso-elastic utility weights are a continuous declining function of income.

Second, an FGT measure treats "likes like unlikes" as households incrementally above the poverty line get exactly zero weight whereas those above the poverty line count in a poverty measure in way that depends on the poverty intensity parameter, α. The iso-elastic utility weights, in contrast, are continuous in consumption and hence households at PL-ε and PL+ε have similar utility weights.

The normative tensions between social welfare measures and poverty measures can be reconciled if there really is a discontinuity in the household's normative evaluations of their wellbeing with respect to consumption and the "poverty line" is set at that discontinuity. That is, if there were a satiation point in income ($MU_y(y)=0$ if $y>SP$) then setting GUBPL=SP would reconcile the tension between utility weight and poverty measures as both would give weight zero to gains to those over the satiation point.

However, the empirical evidence is very strong that, if there is a satiation point, which is itself debatable, it isn't anywhere near P$6.85 (an annual income for a household of four of roughly P$10,000)[11]. Stevenson and Wolfers (2013) strongly reject the satiation-in-income hypothesis with both cross-country and individual data. In cross national data they show the gains to country average self-reported wellbeing from a given (log) change in national income are actually *higher* in richer countries. Using individual data from the 25 largest population countries in the Gallup survey data they find the relationship between individually self-reported life satisfaction and income is linear (in natural log) up to total household income as high as $64,000 (roughly the top-code of their data). Deaton and Kahneman (2010) use Gallup data asking households about their daily experiences and conditions in the USA in 2008 and 2009 to show that there is no satiation in "life evaluation" even at the very high levels of income. While Deaton and Kahneman (2010) found satiation in "emotional wellbeing" at a household income around Killingsworth (2021) found the relationship was log-linear with no satiation. Killingsworth, Kahneman, and Mellers 2023 in a paper based on "adversarial collaboration" to reconcile the findings found that relationship of emotional wellbeing and income was complex with income satiation among the least happy (bottom 20 percent) but, that among the happiest 30 percent, there was no satiation and, if anything, the relationship was stronger as income increased. Layard, Mayraz and Nickell (2008) in estimating the marginal utility income using subjectively reported data on happiness from a wide variety of surveys find an iso-elastic specification has an excellent fit up to the highest 5 percent of the observations.

A GUBPL can balance the normative tension between focus axiom poverty measures and utility weights be setting a poverty that is "near enough" to satiation. We define that in two ways. One, in the illustrative iso-elastic utility case the marginal utility of income at the GUBPL is very low relative to the marginal utility of a household at 'dollar-a-day' poverty line:

[11] On a more causal basis, the hypothesis of satiation of wellbeing with respect to income would produce a huge range of counter-factual predictions about a broad range of phenomena: labor supply (why do non-intrinsically rewarding work beyond the SP), bargaining for higher pay, altruistic giving (why doesn't altruistic giving increase sharply beyond the SP), opposition to higher taxes (should be limited to those below the SP), concern about inflation (why worry about real income reductions above the SP), migration (within and across countries) for higher real wages would be limited to those below the SP, etc. etc.

$$7)\ \frac{MU_c(GUBPL)}{MU_c('dollar-a-day')} = \left(\frac{P\$2.15}{GUBPL}\right)^{\rho}\ \ 'near\ enough'\ to\ 0$$

Two, the ratio of marginal utility of the just-non-poor at the GUBPL and a reference group that is globally prosperous should be "near enough" to equal.

$$8)\ \frac{MU_c(GUBPL)}{MU_c(Globally\ Prosperous)} = \left(\frac{Globally\ Prosperous}{GUBPL}\right)^{\rho}\ close\ enough\ to\ 1$$

II) Four Empirical Estimates of a Global Upper-Bound Poverty Line

We use the two criteria applied to four empirical approaches to estimating a GUBPL. First, we use an iso-elastic utility curve. Second, we use a globally estimated Engel curve. Third, we specify a bundle of six basics of wellbeing that are included in the Demographic and Health Survey data and estimate the level of the asset index (Pritchett and Filmer 2001) at which these basics are reliably reached and then map that into a consumption per person per day measure. Fourth, we use cross-national data on the achievement of basics.

II.A) GUBPL using iso-elastic utility

The iso-elastic approach requires a key parameter: the elasticity of the marginal utility of income. Fortunately, as this parameter is key to the wide use of "utility weights" in cost-benefit analysis there are many estimates, from many different countries and using a variety of techniques. Acland and Greenberg (2023) review estimates of the parameter ρ from 168 studies resulting in 1711 distinct estimates using seven different methods (though predominantly lifetime consumption models). The meta-analysis estimate of ρ was 1.61 with a confidence interval range of 1.18 to 2.05. Evans (2005) estimates ρ for 20 OECD countries using personal income tax structure and finds a median of 1.5. Layard, Mayraz, and Nickell (2008) use surveys of subjectively reported happiness/life satisfaction from six different surveys and covering over 50 countries and produce an overall maximum likelihood estimate of ρ of 1.26, with a range from 1.19 to 1.34. There are few developing country specific estimates. Lopez (2008) uses the tax structure method to estimate the parameter in nine Latin American countries and produces an average estimate of 1.5 with a range from 1.1 to 1.9. Bergstrom and Dodds (2023) use well identified estimates of demand functions from Mexico's *Progresa* experience to estimate ρ at 1.6. We use ρ=1.5 as our base case, while exploring robustness.

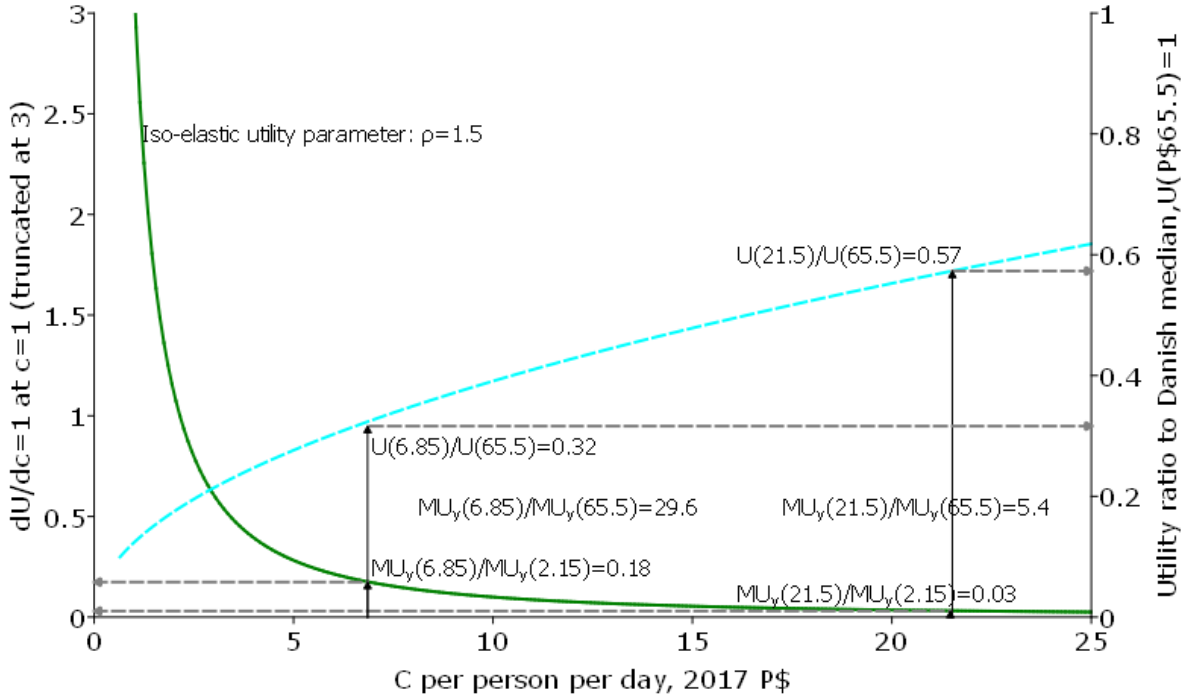
Figure 2 shows the marginal utility (left axis), which is normed to equal 1 at the GLBPL of P$2.15 and the total utility (right axis), which is normed to 1 at the Danish median of P$65.45.

Is P$6.85 a viable candidate as the GUBPL? The "near satiation" approach asks whether "likes are treated like likes" and whether "unlikes are treated like likes." The marginal utility of

income at P$6.85 is 18 percent of that of households at P$2.15. As the P$2.15 is chosen precisely because marginal utility of households at or below that poverty line is agreed to be very high,.18 of that is not inconsequentially small. This implies the just excluded non-poor at P$6.86 are treated as having zero impact on poverty even though their marginal utility is high.

The P$6.85 poverty line also implies that gains to the wellbeing of those at P$6.86 is treated exactly the same as all households above that line. But marginal utility at P$6.85 is nearly 30 times higher than marginal utility at the Danish median of P$65.5 so utility is not "near enough" satiation to justify treating gains to the income of all the non-poor at P$6.85 as exactly alike.

Figure 2: Iso-elastic utility approach to setting a global upper-bound poverty line



Source: Authors' calculations

The "achievement" criteria for a GUBPL using the level of utility asks whether at P$6.85 is sufficiently high these households are not poor by a reasonable standard of global poverty. The utility level at P$6.85 is only .32 that of the median Danish household.

Alternatively, at a potential GUBPL of P$21.5 the marginal utility is only .032 of that at P$2.15. While "near enough" to satiation is necessarily in the eye of the beholder, 3 percent is much closer to zero than is to 18 percent: the just non-poor at P$21.6 have much lower marginal utility.

Marginal utility is 5.5 higher at P$21.5 than the median Danish household. Even at this candidate GUBPL households that are very "unlike" in marginal utility are treated as likes.

We know from simple math and Angus Deaton the tension between focus axiom poverty measures and continuous, non-satiation, social welfare measures only asymptotes to zero, but even without going to infinity, this approach could justify an even higher GUBPL. At a GUBPL of half the Danish median and ρ=1.5 the $MU_y(32.55)/MU_y(2.15)$ is only .017, near-ish to zero and $MU_y(32.55)/MU_y(65.5)$ is 2.8, which is only near-ish to 1.

This method is dependent on the value of ρ, the elasticity of marginal utility. Pushing ρ higher, to ρ=1.9, hence greater inequality aversion, has opposing effects on setting a GUBPL. It does cause the ratio of MU_y(GUBPL)/ MU_y(GLBPL) to fall faster, so that at P$6.85 the ratio is only .11 and for P$21.55 is only .01, so the marginal utility of the "just excluded" by a GUBPL relative to the marginal utility at the GLBPL is lower and hence the cost of the exclusion error is lower at any given GUBPL. But a higher ρ also causes the MU_y(GUBPL)/ MU_y(Danish median) ratio to, so that at P$6.85 the "just excluded" had 73 times higher marginal utility than the globally prosperous so the cost of treating "unlikes" like "likes" is larger. A higher ρ reduces the total utility achievement relative to the globally prosperous (Danish median) lower, so that at P$6.85 the "just excluded" are only at 13 percent of the wellbeing of the Danish median. Defending a low high bar, like P$6.85 is easier (the marginal utility of the "just excluded" is lower) and also harder as the relative wellbeing achievement is lower and the marginal utility of the "just excluded" is much lower compared to the globally prosperous.

Table 1: GUBPL calculations with iso-elastic utility across values of the key parameter

Value of ρ (elasticity of marginal utility)	MU(PL)/MU(P$2.15) "treating likes like unlikes"		MU(PL)/MU(P$65.55) "treating unlikes like likes"		U(PL)/U(p$65.55) Achievement relative to Danish median	
	P$6.85	P$21.5	P$6.85	P$21.5	P$6.85	P$21.5
1.1	0.28	0.08	12.0	3.4	0.80	0.89
1.5	0.18	0.03	29.6	5.3	0.32	0.57
1.9	0.11	0.01	73.1	8.3	0.13	0.37

Pushing to ρ=1.1, intuitively, reverses these trade-offs as the marginal utility of the "just excluded" at P$6.85 is quite high relative to the P$2.15, 28 percent but the ratio of marginal utility to the Danish median is lower (though still high, at 12) and the achievement higher relative to the Danish median much higher.

The intuition of why a GUBPL using this approach gets pushed to high levels. The second derivative of an iso-elastic utility function is negative and hence with empirically estimated values of ρ the decline in MU_y very fast starting from very low levels of income (as consumption approaches zero MU_y asymptotes to infinity) and then falls, but at a decreasing rate. This implies that the GUBPL by a substantial amount in order to reach levels of MU_y are "near enough" satiation. Any poverty line that is an *ad hoc* small factor multiple of the 'dollar-a-day' standard (P$2.15) is not assured of reach either "near enough" satiation levels of marginal utility nor to high levels of achievement at modal values of estimated ρ.

II.B) A GUBPL using Engel's Law

> *The poorer is a family, the greater is the proportion of the total outgo which must be used for food*.
>
> *The proportion of the outgo used for food, other things being equal, is the best measure of the material standard of living of a population.*
>
> Ernst Engel (1857)

Engel's Law is one of the most widely replicated facts in economics and illustrates the non-linearity of the budget expansion path for basics, like food. We use semi-parametric estimates of the Engel relationship to calculate both "achievement" and "near enough" satiation approaches to a GUBPL.

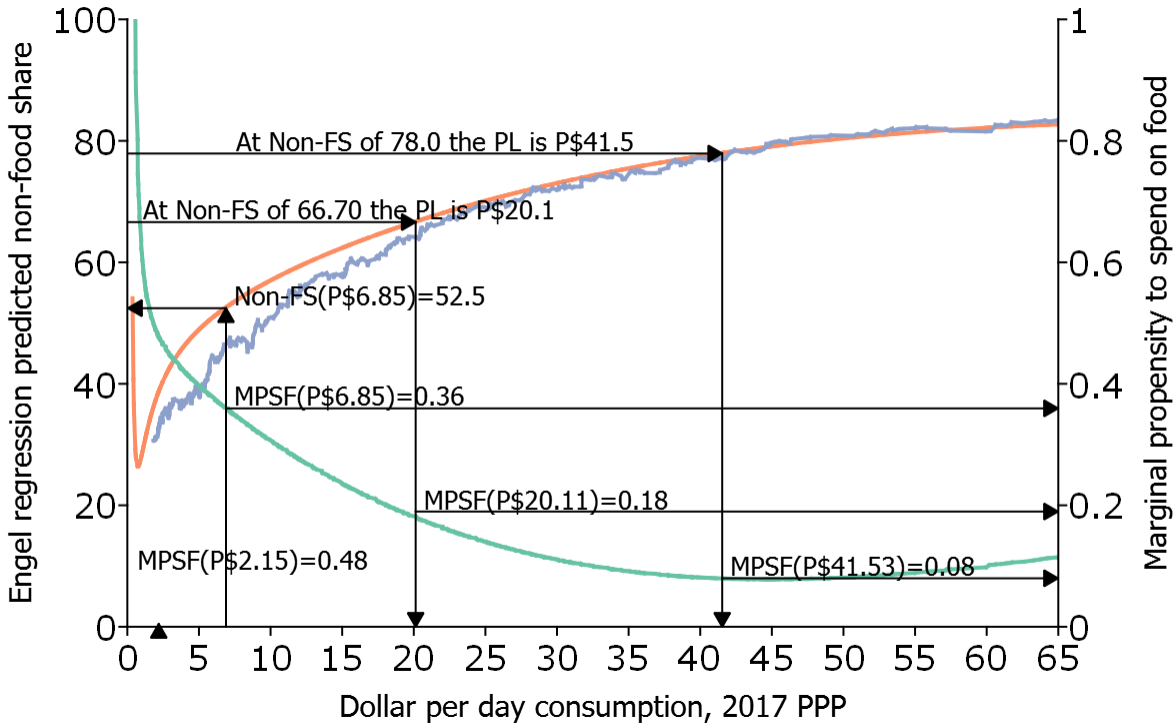
We estimate an Engel relationship using data on food shares groups of households by consumption (e.g. percentiles) for a large number of countries and years (see the Data Appendix: Food Shares). A dummy variable for each country/year survey implies parameters are identified off within survey country/year differences[12]. We minimize constraints of functional form by estimating a polynomial with powers from -2 to 4 and a non-parametric rolling median of food share by consumption. Results Appendix: Engel, which includes the flexible polynomial and a standard log of food share on consumption and Engel curves identified off within country differences and cross-national estimates. Our estimates produce a very tight fit and the parameter estimates consistent with the previous literature (e.g. Pritchett and Spivack 2013).

In order to be consistent with other graphs in the paper Figure 3 shows the predicted non-food share (left axis) as an "achievement of wellbeing" proxy and the marginal propensity to spend on food (right axis) as a (crude) proxy for marginal utility of income.

Is P$6.85 "near enough" satiation to be a candidate for GUBPL? At $P6.85 the predicted non-food expenditure share is just over one-half (52.5%). As an "achievement" standard it is hard to claim a household spending half its budget on food is not suffering material deprivation. The marginal propensity to spend on food is 36 cents of the additional dollar, which is near the 48 cents marginal propensity at P$2.15. A household spending more than a third of an additional dollar on food has MU_c that is neither "near enough" to zero that their exclusion is justified, nor is their MU_c is "like" the globally prosperous, whose MPSF is around 8 cents.

[12] This reduces noise from a variety of sources: (i) different survey techniques (e.g. recall periods), (ii) definitions of food share (e.g. whether the measure includes food away from home)), iii) conversion from local currency units to PPP for the country/year, etc.

Figure 3: At a non-food share of expenditures of 66 percent (1960s US poverty line) the GUBPL is P$20.1, at the actual food share of the European poor (22 percent) the GUBPL is P$41.5



Source: Author's calculations with data described and estimation results presented in the Results Appendix: Engel.

What could be a plausible "achievement" standard to define a GUBPL? Two candidates: the food share of US 1960s poverty lines or food shares of the European poor.

USA money metric poverty lines for non-farm households were developed in the 1960s by Mollie Orshansky, when US GDP per capita was around the level of Mexico's currently. She used the "food energy intake" method and calculated the food expenditures needed to reach a nutritionally adequate diet for households of various sizes and composition based on the cheapest of the food plans created by the US Department of Agriculture (Orshanksy 1965). The total poverty line assumed that the non-food share of expenditures was two-thirds.

A non-food share of 2/3 as an achievement threshold implies a GUBPL of P$20.1. At P$20.1 the MPSF is 18 cents for each dollar, about half of the MPSF at P$6.85, but still more than twice that of the globally prosperous.

Table 2: Engel curve, food share, marginal propensity to spend, and poverty lines			
Direction of the calculation	Poverty Line	Percent non-food expenditures	Marginal propensity to spend on food
World Bank poverty lines taken as fixed, average food shares and MPS on food estimated	P$2.15 (poverty line exogenous)	**61.5**	**38.3**
	P$6.85 (poverty line exogenous)	**46.6**	**31.8**
GUBPL poverty lines calculated with a fixed food share	**P$20.11 (endogenous)**	66.6 (Fixed to value use in 1960s USA Poverty Line construction)	**18.25**
	P$41.53 (endogenous)	22.0 (Food share exogenous, Estimated food share of bottom quintile in Europe)	**7.9**
Source: Calculations based on the estimated Engel regressions using distributional data and country and year dummies (Column 2) in the Results Appendix: Engel.			

European poverty thresholds are, in general, relative. A commonly used measure is that a household is "at risk of poverty" if their post-tax and transfer income is less than 60% of equivalized (for household size and composition) median income. Using those poverty lines about 17% of Europe's population as "at risk of poverty" in 2017. The food share of the bottom quintile of income of households in Europe is 22%.

Using a non-food share of 78 percent implies GUBPL of P$41.5. The MPSF at P$41.5 roughly 8 cents on the dollar.

II.C) GUBPL using household achievement of minimal conditions of prosperity in five countries

A third approach to setting a GUBPL using a higher level of material achievement is to estimate the empirical relationship between a household asset index and household achievement of six basic living conditions. We use the Demographic and Health Survey (DHS) data for five large developing countries: Bangladesh, Ethiopia, Indonesia, Nigeria, Pakistan. We estimate the relationship between whether household's achievement of these conditions and a cubic in the DHS wealth index, controlling for household size and rurality and calculate the wealth index at which the predicted probability of achieving all six conditions is .9. We this level of the wealth index into a consumption per person per day poverty line by matching percentiles of the wealth and consumption distributions.

Using the DHS data, we compute a binary variable for each of six living conditions:

- *Electricity*: household has electricity,
- *Improved sanitation*: household has access to improved sanitation not shared with other households,
- *Safe water*: household has access to an improved source of drinking water,
- *Completed primary*: children in the household (i.e., son/daughter of household head) who are 12 years old or older have completed at least primary schooling,
- *Child survival:* No child born died under the age of 5,
- *Child malnutrition*: No child in the household less than 5 has weight for age less than -2 standard deviations of the reference group.

We consider each a minimal condition of being out of global poverty (MCP). Guiding our choice was the question: "would it make sense to say 'a household is not in global poverty by any definition but does not achieve X'? Statements like: "This household is not globally poor but has a malnourished child" or "This household is not globally poor but doesn't have improved sanitation" do not seem to us plausible.

This approach is similar to the multidimensional poverty index (MPI) pioneered by Sabina Alkire (Alkire and Foster 2011, Alkire, Kanagaratnam, and Suppa 2021) which, calculates household poverty status on direct measures of health, education, and household living conditions, including asset ownership. We calculate from our estimates the consumption level at which households are reliably not poor to create a money metric poverty line.

Three technical points about the data. One, for those household living conditions that involve children of certain ages, we count households without children in those age groups as meeting the criteria. A household with no children, or only children above 5, is counted as having no malnourished children under 5. This obviously biases the MCP index upwards, but excluding all households without children in the relevant ages produces a smaller and selected subset of households from the original nationally representative sample. Two, certain of these criteria could be met, by random, sad, chance, even in a very wealthy household—like losing a child or having a child that is small. For that reason, we use a probability threshold of .9 of reaching all six MCP, not 1. Three, the DHS data for Indonesia do not include child anthropometrics and hence do not have a measure of child malnutrition and hence all references to "all six" or "sum of the six" indicators are "all five" or "sum of five" for Indonesia.

Our dependent variable is either: (i) a binary indicator that is 1 if the household meets all six MCP and zero otherwise or (ii) the sum of the six binary MCP indicators.

We regress these two dependent variables on the DHS asset index, household size, and rural residence. The DHS household asset index is the first principal component of a set of asset ownership variables (e.g. does the household own a bicycle?) and housing conditions (e.g. does the house have a separate kitchen?) collected in the survey instrument. Filmer and Pritchett (2001) show this asset index is an excellent proxy for household wealth and works at least as well as (and usually much better than) consumption per capita as an indicator of long-run

household economic status. Since the DHS asset index is normed to have mean zero and standard deviation one, we shift the wealth index by a adding constant such that the minimum wealth index is zero. The asset index can only be constructed for the household and not per person in the household and hence we include household size as a regressor to allow for household economies of scale[13]. We also include a binary variable for rurality as some material conditions may be harder to meet in rural areas.

The regression for both "all six" and "sum of six" are plain vanilla OLS even though the dependent variables are limited (to 0/1 or integers 0 to 6). While limited dependent variable estimators might have been more efficient, OLS estimates are consistent and we don't want the predicted values at the upper tail affected by the constraint that the probability cannot be greater than one or specific assumptions about distributions. Given our large samples, our estimates are sufficiently precise that estimator efficiency is not a key issue. The regression results for the five countries are in Results Appendix: MCP Regressions.

Figure 4a explicates the procedure and results using Bangladesh, using the estimates in to calculate in both directions: poverty line to predicted achievement and achievement to poverty lines.

From any given poverty line we can compute headcount poverty rate, which is a percentile of the consumption distribution, then map to that same percentile in the wealth index distribution, then to a value of the wealth index, and then, via the regression coefficients to the predicted probability a household at that wealth index reaches all six living conditions (equation 7):

$$7)\ Poverty\ Line \rightarrow Percent\ in\ poverty \rightarrow Wealth\ Index\ at\ that\ percentile \rightarrow Predicted\ Probability\ of\ All\ Six\ at\ that\ Wealth\ Index$$

At P$2.15 Bangladesh's poverty rate in our simulated log-normal consumption distribution is 14.62%. The (right shifted) wealth index of the 14.62nd percentile of the DHS sample is .71. The predicted value of a household reaching all six minimal conditions of global prosperity at the wealth index of .71 is 8 percent. As expected, at the lower-bound poverty line 92 percent of households are not achieving a high level of material wellbeing.

Is the P$6.85 poverty line high enough to be a GUBPL? At P$6.85 86.9 percent of Bangladeshi households are poor. The 86.9th percentile of the (right shifted) wealth index is 2.98. At that wealth index only 51 percent of households reach all six MCP. Even at the WB high poverty line nearly half of households in Bangladesh do not reach the MCP.

[13] Of course the use of per capita consumption as a household indicator itself makes very strong and empirically dubious assumptions about economies of scale at the household level and is just an accepted convention rather than an evidence based choice.

We can also ask the question of "near satiation" by examining the elasticity of MCP achievement to the wealth index and, somewhat surprisingly to us, the elasticity is not near zero and is rising at the 87th percentile.

The estimated MCP-wealth index relationship can estimate a GUBPL (equation 8):

8) $Predicted\ probability\ of\ all\ six\ MCP\ reaches\ high\ threshold \rightarrow Wealth\ Index$
$\rightarrow Wealth\ Index\ percentile \rightarrow Consumption\ percentile$
$\rightarrow "X\ dollars\ a\ day"\ \ GUBPL$

A wealth index of 4.66 in Bangladesh gives the predicted probability of .9 for reaching all six MCP. The DHS wealth index is normalized to a standard deviation of 1 and this is 3.04 standard deviations above the (right shifted) average wealth index. Because the predicted wealth index is so far into the right tail of the wealth distribution we calculate the percentile of the wealth index in two ways. One, we assume the wealth index is Gaussian Normal and calculate the percentile of a z-score of 3.04, which is the 99.88th percentile. Alternatively, we can calculate the percentile of a wealth index of 4.66 in the actual (right shifted) DHS sample and that gives the 99.65th percentile.

We then take the simulated values of the two parameters of the log normal distribution of consumption using parameters that best fit four summary statistics of Bangladesh's actual consumption distribution: the mean, the Gini, the ratio of median to mean, and the average consumption of the 10th decile, which is included alongside the standard summary statistics of mean and inequality to better fit the upper tail (see Simulations Appendix: Log-Normal Simulation).

The 99.88th percentile of the simulated consumption per person per day distribution is P$29.2. The puzzling feature of these estimates is that the elasticity of MCP wrt to the asset index is increasing over the entire range of the asset index so "near satiation" in the sense that increased wealth is not increasing consumption of basics is not evident.

Figure 4b: Calculating a GUBPL using six minimal conditions of prosperity (MCP), illustrated with Pakistan

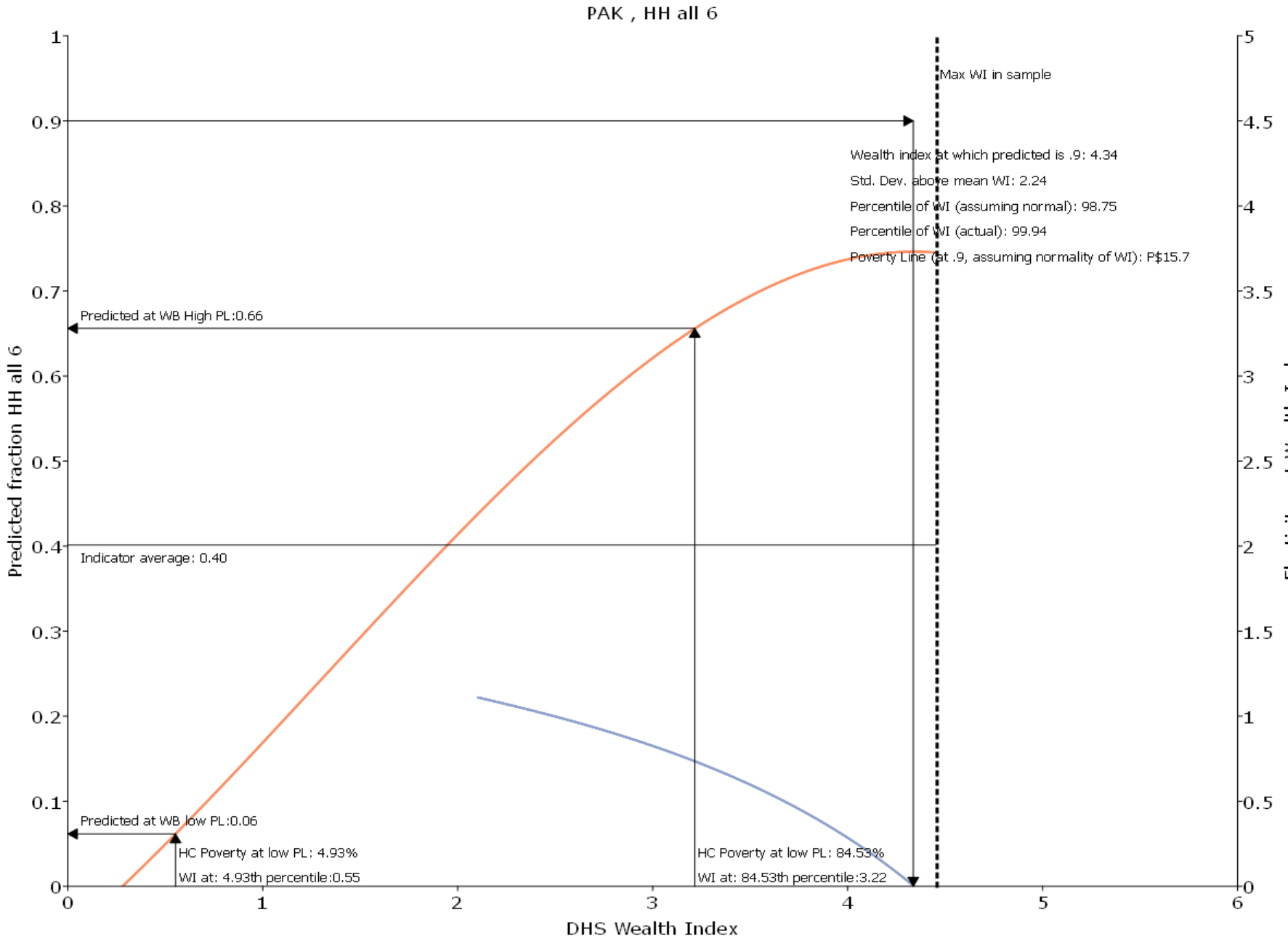
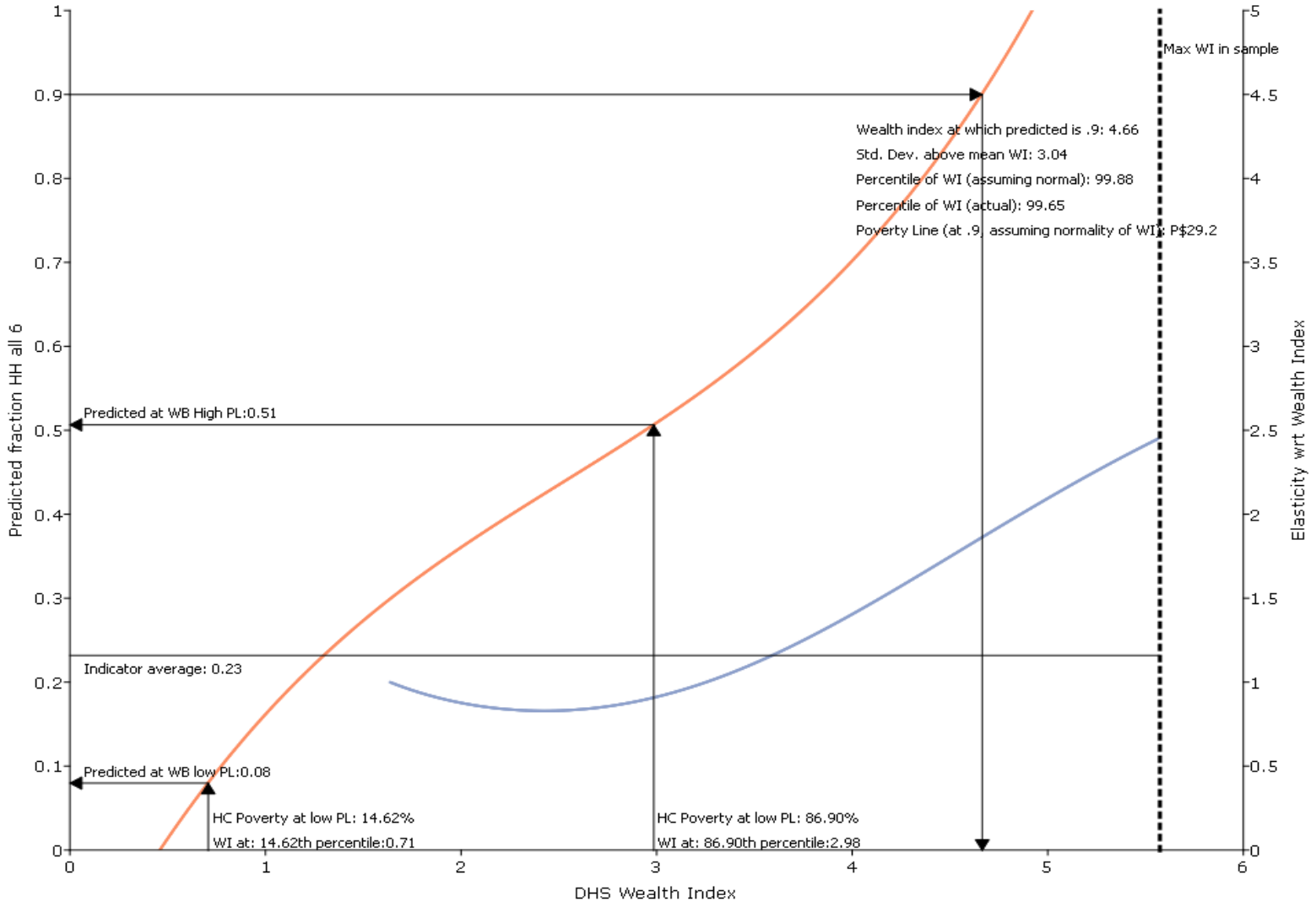


Figure 4a: Calculating a GUBPL using six minimal conditions of prosperity (MCP), illustrated with Bangladesh



Source: Author's calculations with DHS regressions (Results Appendix: MCP Regressions) and World Bank PIP data, as described in text.

Table 3 presents the estimates of a GUBPL using various probabilities of reaching all six MCP or a predicted value of six, across the five countries. The results in Column I are quite similar across four of the five countries. The MCP(.9) poverty lines are P$21.1 in Ethiopia, P$27.7 in Indonesia, and P$29.2 in Bangladesh. In Nigeria the predicted value at the highest wealth index in the sample was only .65 but the relationship was upward sloping (Appendix MCP Graphs 6) and we predicted out of sample and .9 was reached at P$23.5 (assuming the wealth index was Gaussian). In Pakistan the estimated probability reaches a peak and turns down (strangely, we admit, but we only have a fitted cubic so this is likely an artefact) at the highest predicted all six MCP attainment (.74) the consumption is P$15.7.

Naturally the median GUBPL estimate is higher at when $\hat{p}$=1 at P$33.5 (Column II) and lower when $\hat{p}$=.8 (Column III) is lower, P$20.2. Our focal point proposed GUBPL of P$21.5 occurs at $\hat{p}\approx$.84 (between .8 and .9). As there is nothing sacrosanct about any specific predicted value implying households "reliably" reach all six MCP our modest claim that a GUBPL of P$21.5 is consistent with the MCP approach, but could be higher or modestly lower.

Column IV illustrates the technical problems of using the actual reported wealth index values. Since the wealth index is a principal-components-weighted average of binary indicators, it reaches a maximum value (censored above). This implies the DHS wealth index cannot accurately estimate the upper tail of wealth. This can push the estimated wealth index for achieving the threshold above the maximum of the wealth index in the sample, which mapped to the maximum (100^{th} percentile) of a simulated log normal consumption data, produces a very high value, for instance, P$53.8 in Indonesia.

Column V reports the estimated poverty lines using the "sum of the six" dependent variable and calculating wealth index which predicts the value of six. In this case the median poverty line is P$24.8. Nothing vital hinges on econometric details of binary ("all six"=1) versus integer values ("sum of six").

Table 3: Estimates of a Global Upper Bar Poverty Line (Prosperity Line) using household data of achievement of six basic household living conditions					
Dependent variable:	All six indicators (binary)				Sum of the Six
Column	I	II	III	IV	V
Predicted probability threshold	0.9	1	.8	.9	6
Assumption about Wealth Index:	Wealth Index Assumed to have a Normal Distribution			Using actual DHS sample Wealth Index	Wealth Index Assumed Normal
Country:					
Bangladesh	29.2	34.6	23.9	23.2	25.8
Ethiopia	21.1	23.0	19.8	26.6	26.4
Nigeria	23.8	26.60	20.2	48.1	NR
Pakistan	15.7 (.74)	15.7 (.74)	15.7 (.74)	NR	16.6
Indonesia	27.7	33.5	21.9	53.8	23.8
Median	**23.8**	**33.5**	**20.20**	**40.2**	**24.8**
Notes: NR: Not reached. The "all six" regressions for Pakistan never reach the predicted value of .9 (the maximum is .74) and then turns concave. So P$15.7 is where the predicted value reaches .74 and hence is the same for any probability above .74. In Nigeria the "all six" predicted value at the Wealth Index maximum is only .65 but the slope is positive so the predicted wealth index to attain higher probabilities can be calculated.					

II.D) GUBPL with cross-national consumption and achievement of basics

A fourth approach to setting a GUBPL is the cross-national counterpart of the previous section's household approach: (i) at what level of aggregate HH consumption are the basics of material wellbeing achieved? (ii) at what level of consumption does the marginal gain in basics fall to "near enough" satiation?

A country level index of "basics" needs to choose indicators and weights. We follow the approach of Pritchett and Lewis (2023) by (i) starting from 22 indicators of wellbeing from the Legatum Prosperity Index, each scaled from 1 (lowest country value) to 100 (highest country value), (ii) choosing which of those 22 are 'basic' using the notion that basics should share a common budget expansion path and hence choosing 14 of those 22 as "basic" indicators based on which had a median correlation with the all other indicators above .6[14], and (iii) using the first principal component of the 14 indicators. While each of these steps in the creation of a cross-national measure of the achievement of "basics" could be debated, a main finding of Pritchett

[14] The 14 are 5 indicators of living conditions (nutrition, shelter, connectedness, basic services, protection from harm), 5 indicators of schooling and education (pre-primary, primary, secondary, and tertiary enrollment, adult skills), and 4 indicators of health status (life expectancy, health care services, preventive interventions, physical health).

and Lewis (2023) measures of the achievement of the basics of material wellbeing are very robust, as nearly all plausible procedures produce very highly correlated measures.

Our measure of consumption starts with the household and government consumption measure (CCON) from the Penn World Tables 10.1 (Feenstra, Inklaar and Timmer 2015). We use the estimated association between this measure, in dollars a day, and the World Bank reported mean household consumption/income measures from the poverty data to scale the national accounts consumption to be consistent with the household measure. We divide CCON by the estimated coefficient of .577 to produce a consumption estimate consistent with the household consumption measures used in poverty calculations.

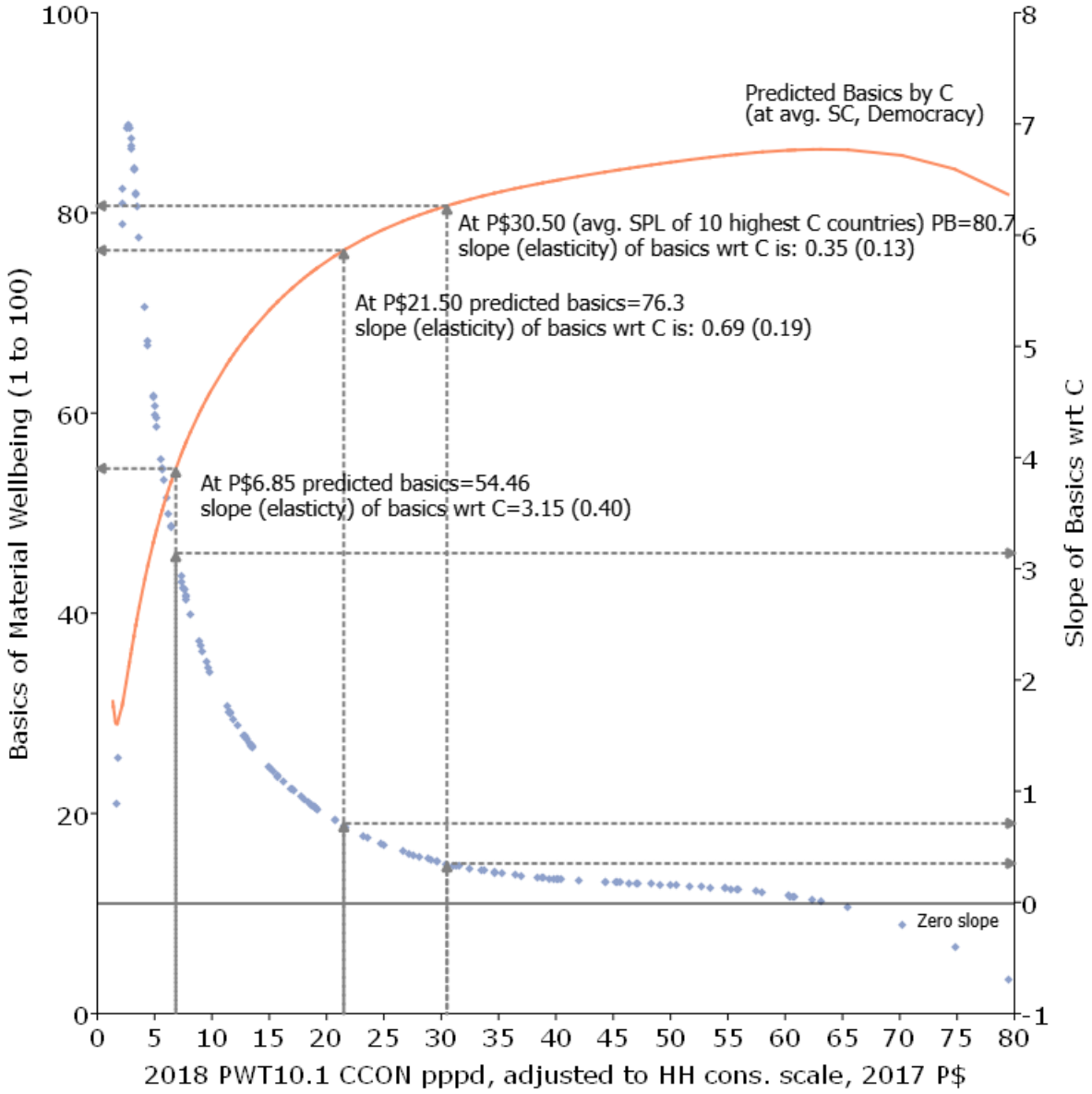
As the index of basics is normed from 1 (worst) to 100 (best) country we allow for a very flexible polynomial functional form with powers of consumption per person per day from -2 to 4. We also include controls for two other potential correlates of material wellbeing: state capability and democracy (Pritchett 2022) and also include a dummy for Equatorial Guinea which is a terrible (in a both positive and normative sense) outlier. The estimates are reported in Results Appendix: Cross Country Basics and show a very strong non-linear association of basics with adjusted consumption.

Figure 5 shows that when a country's adjusted average consumption pppd is P$6.85 (and state capability and democracy are at their cross-national average level) the predicted level of basics is 54.5 (about the level of India or Ghana). The slope is still quite high (3.15) and the estimated elasticity of basics wrt to consumption is .40. As with the other methods, P$6.85 is a dubious candidate for a GUBPL on either the "achievement" or "near enough" satiation criteria.

At P$21.5 the predicted basics index is 76.5, about the level of Thailand, Colombia and Turkey. Hence a GUBPL of P$21.5 would imply a household with that level of income should achieve the level basics of material wellbeing of the average in these countries to be counted as globally "not poor." The slope at P$21.5 is .69 and elasticity of basics is .19, which is not "near" to zero in a mathematical sense but might be considered "near enough" satiation as it is only about one tenth of the highest slope of 6.9.

At a GUBPL set at the average Social Poverty Lines of the ten highest consumption countries in 2019 (symmetric to the GLBPL at the lowest 10) of P$30.5 the predicted achievement of basics is 80.7, around the level of Serbia or Kazakhstan. This is well below the level of the lower achievers among the traditionally defined developing countries (e.g. Greece at 88.5). The slope is only .35 and the elasticity .13. The basics achievement plateaus and the slope gradually declines to zero at P$65, which, as shown above, is near the median consumption in Denmark (a typical high income country).

Figure 5: Association between basics of material wellbeing and consumption per person, levels and elasticities



Source: Author's calculations.

II.E) Cross-national societal poverty lines

Max Roser (2021, 2025), starting from Pritchett (2006)[15] makes the case for calculating global poverty at rich country poverty lines and Our World in Data reports on poverty at rich country poverty lines in addition to extreme poverty, and other poverty lines. There are two powerful arguments in favor of using rich country poverty lines to set a GUBPL.

One, using rich country poverty lines is exactly symmetric to the method used for creating the dollar-a-day standard in 1990 (Ravallion, Datt, Van de Walle 1991). If it is persuasive that the poverty line in the poorest countries sets the lower-bound, setting the GUBPL based on poverty lines of the richest countries seems equally persuasive.

Two, P$6.85 as a GUBPL would imply that well less than one percent population of the four of the five largest OECD countries are poor, with only Japan above that at 1.45 percent. To deny that, even in rich countries, there are significant absolute deprivations of material wellbeing that can legitimately be counted as global poverty illustrates just how penurious the standard is. The WB estimates at P$6.85 suggest that in Germany there are fewer people "poor" (.25 percent) than there are people homeless (.36 percent). While a GUBPL can be less than a rich country's poverty line there is no reason for Germany, for instance, to agree to a global poverty line of P$6.85 which implies there is 44 times less poverty than at is national poverty line (43.6=10.6/.25).

Table 4: The World Bank "high" poverty line P$6.85 implies there is essentially no poverty (one percent or less) in rich countries

Country	Year	Pop'l (mns)	Global poverty lines			**National measures of poverty**	**Estimates of percent homeless**
			Lower-bound global lines		GUBPL		
			P$2.15	P$6.85	P$21.5		
Column	I	II	III	IV	V	VI	VII
USA	2021	333.3	0.25%	1.00%	5.15%	11.60%	0.20%
Japan	2013	124.9	0.73%	1.45%	10.93%	16.10%	NA
Germany	2019	83.8	0.00%		5.30%	10.90%	0.36%
UK	2020	67.3	0.50%	0.74%	9.06%	11.20%	0.43%
France	2020	67.9	0.11%	0.43%	7.33%	8.40%	0.31%
Total poor in these five countries (mns)		677.3	2.15	6.14	46.4	81.2	

Source: Columns I-V: World Bank – Poverty and Inequality Platform (https://pip.worldbank.org/poverty-calculator). Estimates for P$21.5 are linear interpolations between P$20.0 and P$25.0. Column V For national poverty rates: OECD data for Germany, UK, France at a poverty line of one half median of equivalized income. US Census for the USA.

The most compelling objection to adopting some function of rich country poverty lines as the GUBPL is that poverty lines tend to have an "absolute" component based on an achievement standard and a relative component which depends on local conditions. Ravallion (1998) shows that answers to the question: "How much income does a household need to have a decent lifestyle?" have an absolute and a relative component and the relative component of poverty lines grows as countries get richer. The World Bank poverty data now reports "societal poverty lines" (Jolliffe and Prydz 2021, Tettah Bahh, et. al. 2024) that is P$1.15+.5*country median

[15] Pritchett (2006) makes the case that since the World Bank has a governance structure in which countries vote their share of paid in capital, an upper bound definition poverty line for the World Bank as an organization should be the voting power weighted average of member poverty lines. The current calculation, using national poverty lines between 2013 and 2019 and current IBRD voting shares, gives a voting share weighted poverty line of P$19.8 [check this is NPL and not SPL].

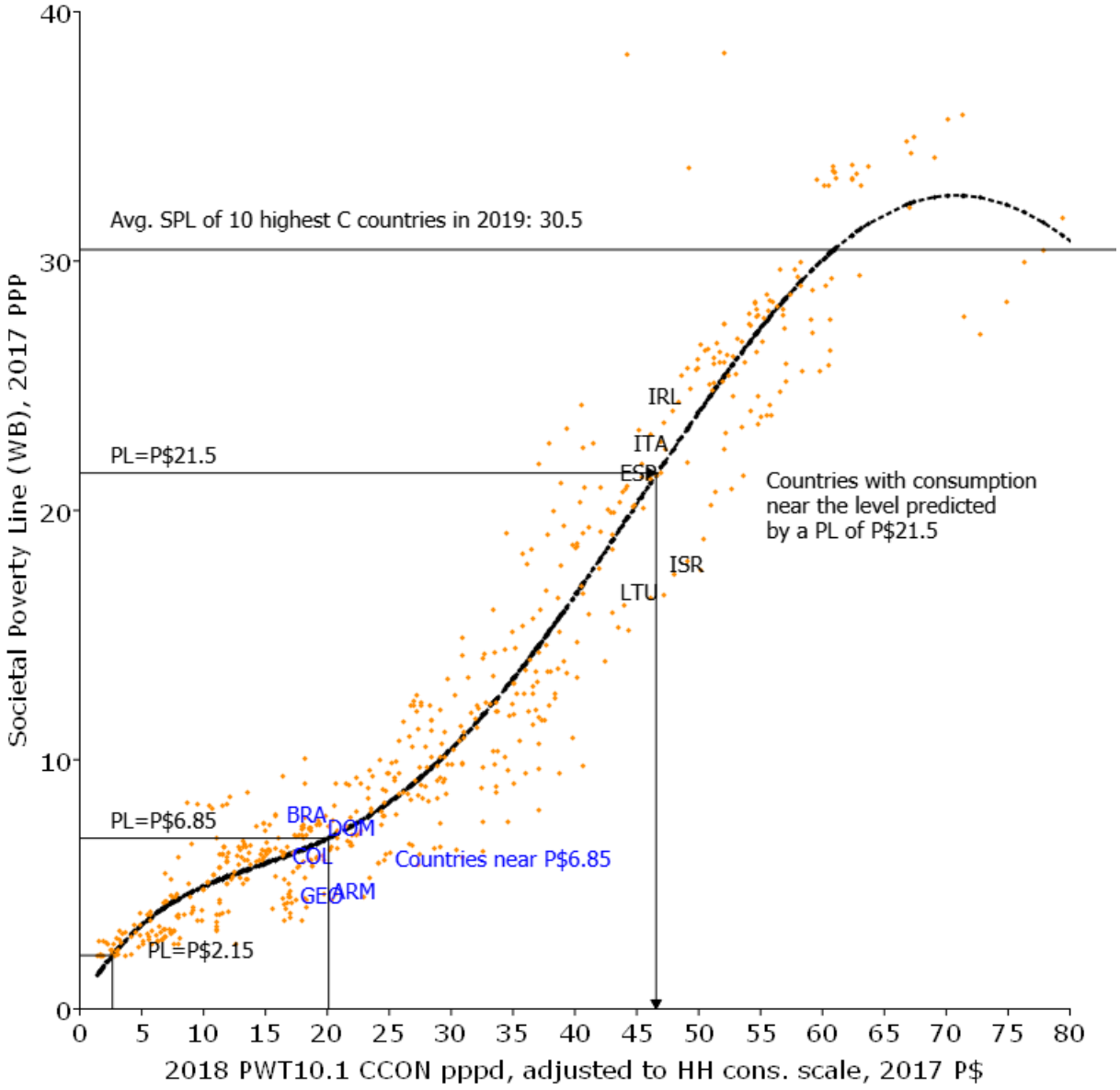
consumption (bounded below at P$2.15). This approach keeps the degree to which the poverty line depends on the country median constant across countries.

The symmetric calculation to approach for setting the 'dollar a day' poverty line as the poverty line of the poorest countries would to use the "average SPL of the 10 highest consumption countries." This average is P$30.5, which is substantially higher than P$21.5.

Figure 6 shows the PWT10.1 aggregate consumption (household and government) per person per day, divided by .577 as above to be consistent with the household consumption data, at which the predicted societal poverty line is P$21.5 is P$46.7. The five countries nearest this consumption level are (alphabetically): Ireland, Israel, Italy, Lithuania, and Spain. A GUBPL of P$21.5 would be the typical poverty line of countries nearer lower-end of the traditionally defined "developed" countries.

In contrast, the countries with national accounts consumption levels nearest those at which P$6.85 is the predicted social poverty line are (alphabetically): Armenia (ARM), Brazil (BRA), Dominican Republic (DOM), Colombia (COL), Georgia (GEO), Ukraine (UKR). While these are "upper middle income" countries by the World Bank classification, they are not widely touted as countries representing an aspirational upper-bound of development.

Figure 5: Societal Poverty Lines and Consumption per person across countries



Source: Author's calculations with World Bank PIP data and Penn World Tables 10.1

III. Implications of a GUBPL [Paper is incomplete past here]

> *'When I use a word,' Humpty Dumpty said in rather a scornful tone, 'it means just what I choose it to mean — neither more nor less.*
>
> *'The question is,' said Alice, 'whether you can make words mean so many different things.'*
>
> *'The question is,' said Humpty Dumpty, 'which is to be master — that's all."*
>
> Lewis Carroll, Through the Looking Glass

III.A) How many people are poor at a GUBPL of P$21.5?

Table 5 reports the headcount poverty rate at P$2.15, P$6.85, and P$21.5 for seven large population developing countries. Depending on whether one adopts the 'dollar-a-day' (P$2.15)poverty line or a GUBPL of P$21.5, either very few people in Pakistan are poor (as only 4.9% are below P$2.15) or almost everyone is poor (99.4% are in "global poverty" at P$21.5). This wide gap is not a contradiction, but rather emphasizes that *both* the GLBPL and GUBPL estimates reveal important facts about global poverty.

A common reaction is that a high GUBPL erodes the value of a headcount poverty measure by classifying a "too many" people as poor. And indeed, a high GUBPL is radically inclusive, but we argue this a feature, not a bug.

First, once one admits, as nearly everyone has, that 'dollar-a-day' is a penurious measure and other poverty lines are also legitimate measures, one is on a very slippery slope. In 2018 only 4.9% of Pakistan households were reported to be in "extreme poverty." But even though the "high" World Bank poverty line of P$6.85 is only a modest absolute increase of P$4.7 it implies that 84.5% of the Pakistani population is poor. The debate about the rate of "global poverty" in Pakistan at a GUBPL is not about 4.9 percent versus 99.4 percent, it is about 99.4 percent versus 84.5 percent. But, as all of our methods show there are powerful arguments *against* P$6.85 as a GUBPL.

Second, we are not saying P$2.15 and P$21.5 measure the same phenomena but rather that the concept of "global poverty" is too broad to admit of a single measure and poverty "in all its forms" requires that different "forms" of global poverty be articulated and measured.

Table 5: Estimates of headcount poverty rates at dollar-a-day (P$2.15), the World Bank "high" poverty line of P$6.85, and a GUBPL of P$21.5

Country (sorted by headcount poverty at P$2.15)	Years	Headcount poverty rate at P$2.15	Headcount poverty rate at P$6.85	**Headcount poverty rate at P$21.5**	% of population "poor" at GUBPL P$21.5 while not poor at P$6.85
Nigeria	2018	30.9	90.9	99.8	8.9
Ethiopia	2015	27.0	90.9	99.6	8.6
Bangladesh	2016	14.6	86.9	99.4	12.5
India	2019	10.0	83.8	98.4	14.6
Brazil	2021	5.8	28.4	75.2	46.9
Pakistan	2018	4.9	84.5	99.4	14.8
Indonesia	2022	2.5	60.4	95.9	35.5

Source: World Bank – Poverty and Inequality Platform - https://pip.worldbank.org/poverty-calculator. Estimates for P$21.5 are linear interpolations between P$20.0 and P$25.0.

Moreover, this wide range of estimates does not just reflect on the proposed GUBPL, it also illustrates just how counter-intuitive and, well, extreme, "extreme poverty" at 'dollar-a-day' really is (Pritchett 2024). The dollar-a-day standard has become the "norm" or the "default" definition of poverty only by repetition (and political power), not by actually having any firm analytic justification. Anyone who hasn't already been inured to the idea that dollar-a-day was *the* standard for poverty would find the claim that only 5% of Pakistan's population or only 10% of India's population was poor just ridiculous on the face of it. Somehow only 10 percent of Indian households are poor but the 2019-2021 NFHS (India's version of DHS) data report that very low living standards are still common: 32.1 percent of Indian children under 5 are malnourished by a weight-for-age, 29.8 percent of households don't use improved sanitation, 41.9 percent of households do not use a clean fuel for cooking, under five child mortality is 41.9 per thousand. This imply that the "non-poor" must have poor living conditions. Suppose that all of the poor do not use clean fuel, this implies that 31.9 percent of India's population is both "not poor" and do not use clean fuel. Believing in dollar-a-day poverty implies that in India something like one in five families are "not poor" but nevertheless have malnourished children.

Once one breaks the spell of dollar-a-day and acknowledges the need for multiple global poverty lines you quickly realize just how slippery and steep the slope is towards a high bar poverty line as the upper bound. The claim that "poverty" in Pakistan is 4.9% *and* the claim that "poverty" in Pakistan is 99.4% are *both* extreme claims, precisely as the lowest possible and a highest possible limit should be.

As a ratio of ten between the lower-bound and the upper-bound might seem "intuitively" too big, it is worth clarifying what produces such a high ratio, referring back to Figure 2 and Figure 1.

One, a large gap between lower-bound and upper-bound global poverty lines is a result of an empirical relationship between the preferred measure of wellbeing and consumption that is not sharply concave. Our basic criteria is that upper-bound poverty lines should be at a level of consumption at which either: (i) households are reliably achieving an acceptable threshold and/or (ii) the incremental contribution to wellbeing from consumption gains is "close enough" to zero. These depend on the empirical shape of the budget expansion path of the measure of wellbeing.

Two, these calculations depend on the upper thresholds that define being "non-poor" in either levels or derivatives of the measure of wellbeing. As illustrated in Figure 2b, one could produce a GUBPL that is just a small integer multiple of the dollar-a-day (as P$6.85 is roughly a factor of three higher than P$2.15) choosing a wellbeing indicator that (i) was sharply concave in consumption and/or (ii) choosing a low threshold for defining poverty in the indicator.

Three, while the *ratio* of lower-bound to upper-bound is a factor of ten, the *absolute* gap is small relative to the spread of the world distribution of income. In the simulated log-normal distributions, parameterized to give fit to the actual summary statistics the gap between the average consumption/income in Denmark and Pakistan is P$61. The range between the dollar-a-day and our proposed GUBPL is only one third as large in absolute terms as this cross-national gap between Denmark and Pakistan. The fact is poor countries have a low average/median and inequality is quite similar across countries hence the gap between the top and bottom deciles is small in absolute terms. The gap in consumption pppd between the first decile and tenth decile in Pakistan is only P$10.6.

III.B) What is development economics the economics of?

On the very off-chance we have been too subtle, or that the technical analysis was so long and tedious as to make the reader forget its purpose, let us be clear: we mean to contribute to the important debate about the normative core of development economics. From the birth of a distinct field of development economics to around 1990 the predominant (if not unanimous) belief by economists was that the normative core of development economics was about raising the material wellbeing of people who lived in developing countries, as could be captured by a suitably inequality adjusted measure of money metric social welfare.

From 1990 to 2015 there was a shift towards re-defining the normative core of development economics as about poverty defined by low-bar poverty lines ('dollar a day' or small multiples of it) and non-money metric measures of wellbeing, such direct measures of aspects of human development. Influential and popular books about development economics: Jeff Sach's *The End of Poverty* (2005), Muhammad Yunus's *Creating a World Without Poverty* (2007), Paul Collier's *The Bottom Billion* (2007), Banerjee and Duflo's *Poor Economics* (2011) all presumed that reducing poverty as defined by a low-bar poverty line (if not 'dollar a day') was the primary normative goal of development economics. This facilitated a shift in development economics towards the idea that programmatic interventions were of first order importance as they could play an important role in improving outcomes on these low-bar measures of wellbeing. This programmatic focus gave rise in turn to the question of reliable inference about the causal impact of specific, often targeted, programs, which had been a

relatively minor research focus of a development economics focused on broad and inclusive measures of wellbeing, which then gave rise to the idea that RCTs (and other rigorous methods for estimating the causal of programs) were an important tool within development economics.

However, while ending *extreme poverty* is one important normative goal, development discourse—and development economics--needs to stop the practice of conflating "global poverty" only with its *lowest plausible* standard. Our approach seeks to define the GUBPL to balance the inherent contradiction between the focus axiom and the Weak Pareto Principle. Lower-bound poverty lines gain focus on the poorest at the expense of exclusion of nearly all the world's population. Correspondingly, an upper-bound poverty line seeks to maximize inclusion by excluding from the category "global poor" only those who are prosperous.

Our empirical approach is to define a GUBPL as the level of consumption at which households reliable reach a globally modest level of material wellbeing as proxied by either (i) six indicators of household material conditions or (ii) achieving a given food share. This analysis leads to a conclusion that the GUBPL should be (at least) $P21.5 (in 2017 PPP units). This is *ten times* as high as the widely used 'dollar a day' poverty line (P$2.15 in 2017 PPP) and about three times the World Bank's "high" poverty line of P$6.85. We argue this GUBPL is a nice focal point, at ten times the 'dollar a day' poverty line and consistent with a variety of other approaches to defining an upper-bound poverty line.

This combination of a lower-bound of 'dollar a day' (2017 P$2.15) and an upper-bound global poverty line of P$21.5 does imply, as shown in Table 5, that there is a measure of global poverty (called *extreme* poverty) at which very few people (2.5 percent) in Indonesia are globally poor and another measure or "form" of global poverty (lack of prosperity) at which nearly all people in Indonesia (96 percent) are globally poor. A high GUBPL has three attractive features. One, it provides the basis for an inclusive normative core. Two, while preserving a headcount number, it forces the discussion into the weights, which is where for economists it should have been all along. Three, it follows from empirics.

Conclusion

There is a wide consensus that the 'dollar-a-day' standard, updated for inflation, serves well its original purpose of setting the threshold for the *lowest* a global poverty line could be. As a lower bound the 'dollar-a-day' measures of poverty excludes households with very standards of living and for which gains in consumption produce large gains in wellbeing by any measure.

This paper addresses the harder question of what is the global upper-bound poverty line (GUBPL), the most *inclusive* definition of global poverty, a poverty line above which a household is not "rich" but just globally prosperous. While ultimately a poverty line is a political and social construct, economics can help. Any proposed GUBPL needs to acknowledge three features of the relationship between general empirical measures of material wellbeing and consumption: (i) there is no line (no discontinuities), (ii) in the global poverty relevant ranges there is no satiation, and (iii) the relationship is concave. These three facts, true of every measure used in this paper, has implications for the criteria for GUBPL and the empirical intuition about its level.

Our proposed GUBPL puts development economics back onto an acceptable normative core and is consistent with an approach to "poverty" that emphasizes "national development" (Pritchett 2022) rather than piecemeal and focused narrowly on philanthropy to mitigate the worst consequences of a lack of national development (Pritchett 2024).

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Data Appendix: Food share data for Engel estimates

A) Distributional data (by percentiles)

The data come from four sources.

A.1) Japanese Historical Data

Data are taken from the tables for Annual Average of Monthly Receipts and Disbursements per Household that are available each year from 1951 to 2007. We use the ratio of Food Expenditure to Living Expenditure.
This is presented by quintile group for Workers Households ("workers" are non-agricultural, forestry or fishery) with households of two or more members.

Although the data are annual we only use one observation per decade, producing six observations from 1951-2001.

A.2) ILO Data

Downloaded from LABORSTA, the International Labour Organization (ILO) Labor Statistics Data Base, from the topic "Household Income and Expenditure Statistics" Table H2 "Distribution of Household Expenditure Groups" which is compiled from various sources and includes data on expenditure shares on "Food and non-alcoholic beverages" in total expenditure (consumption and non-consumption (e.g. taxes)). The expenditure groups for which food share and total expenditure was reported were deciles, quartiles, or survey specific ranges. The data was extracted in 2013 and includes data from 1998 to 2004 and data for 44 different countries.

A.3) FAO

From a publication of the FAO in 1981 we recover estimates of food expenditures and total expenditures and hence food shares from 26 countries, by various income groups (either percentiles or survey specific categories). The data are for the period between 1969 and early 1980s.

A.4) US Consumption expenditures

The data for the USA for 2017 are from the Consumer Expenditure Survey, Table 1110. Deciles of income before taxes: Annual expenditure means, shares, standard errors, and coefficients of variation.

B) Cross national data

The cross-national data is based on country averages. The data is from the FAO and ILO sources above, plus data from the LIS/Eurostat, a paper by Hoyos and Lessen (2008), data from the LSMS, and some we collected directly from national sources.

Results Appendix: Engel

Table RA-Engel: Estimates of Engel's Law: Regressions of food share on total consumption,						
	Data by income groups within countries				Cross national averages	
	Standard Engel Functional Form	Polynomial (powers -2 to 4)	Standard Engel Functional Form	Polynomial (-2 to 4)	Standard Engel Functional Form	Polynomial (-2 to 4)
Column	I	II	III	IV	V	VI
Constant	75.60	56.74	69.77	47.52	80.21	55.76
Ln(y)	-14.01		-11.91		-15.33	
c^{-2}		-11.675		-13.997		-34.959
c^{-1}		29.770		37.249		37.438
c		-1.485		-1.156		-1.068
c^2		0.017		0.014		0.000
c^3		-8.14E-05		-6.67E-05		1.78E-04
c^4		1.28E-07		1.06E-07		-1.12E-06
Country/year dummies	No	No	Yes	Yes	No	No
R-Squared	0.736	0.760	0.932	0.943	0.795	0.823
N (country, year, income group)	593	593	593	593	191	191
N country/year observations	51	51	51	51	191	191
Notes: The standard error on the estimate of ln(y) with dummy variables (column III) of -11.91 has a standard error of .331 and hence t-statistic of -35.96 and hence a p-level of essentially zero. Standard errors are not reported on the individual terms in consumption in the polynomial regressions, but all have p-levels less than .000 and the joint test of all income terms is the F-test, which is a function of the R2.						

Results Appendix: MCP Regressions

Table RA: MCP-Binary. OLS regression of binary indicator for "all six" living conditions						
Variable		Bangladesh	Ethiopia	Indonesia	Nigeria	Pakistan
Wealth Index	coeff	0.448***	0.263***	0.462***	-0.054	0.202**
	std err	0.037	0.056	0.050	0.043	0.066
Wealth Index^2	coeff	-0.121***	-0.154***	-0.093***	0.019	0.035
	std err	0.018	0.028	0.017	0.018	0.037
Wealth Index^3	coeff	0.016***	0.030***	0.009***	0.002	-0.010
	std err	0.003	0.004	0.002	0.002	0.006
Household Size	coeff	-0.021***	0.000	-0.015***	-0.002***	-0.023***
	std err	0.001	0.001	0.001	0.001	0.001
Rural	coeff	0.095***	-0.004	0.076***	0.004	-0.014
	std err	0.012	0.006	0.011	0.008	0.019
Constant	coeff	-0.182***	-0.139***	-0.380***	0.036	0.104***
	std err	0.023	0.033	0.044	0.032	0.026
R-Squared		0.172	0.332	0.100	0.150	0.212
N		19457	8663	47963	40427	14540
Notes: Indonesia lacks anthropometric data on malnutrition and so the dependent variable is "all five"						

Table RA: MCP-Sum. OLS regression of sum across binary indicator for each of six living conditions (values of integers 0 to 6).						
Variable		Bangladesh	Ethiopia	Indonesia	Nigeria	Pakistan
Wealth Index	coeff	2.756***	2.604***	1.893***	1.099***	2.834***
	std err	0.115	0.269	0.108	0.222	0.184
Wealth Index^2	coeff	-0.954***	-0.574***	-0.441***	0.032	-0.901***
	std err	0.055	0.110	0.034	0.077	0.087
Wealth Index^3	coeff	0.112***	0.054***	0.039***	-0.019*	0.101***
	std err	0.008	0.014	0.003	0.008	0.013
Household Size	coeff	-0.080***	-0.119***	-0.031***	-0.074***	-0.060***
	std err	0.003	0.005	0.002	0.003	0.004
Rural	coeff	0.155***	-0.127*	0.111***	-0.132***	-0.035
	std err	0.027	0.064	0.017	0.030	0.033
Constant	coeff	2.865***	1.009***	1.542***	1.587***	2.787***
	std err	0.070	0.200	0.107	0.202	0.159
R-Squared		0.321	0.601	0.212	0.465	0.400
N		19457	8663	47963	40427	14540
Notes: Indonesia lacks anthropometric data and so the regression is “all five”						

Simulations Appendix: Log Normal Simulations

The parameters for the log-normal simulations of consumption expenditures for each country are done with a simple grid search over the two parameters of the log-normal distribution to minimize the squared error of the simulated distribution in matching four reported statistics about the distribution from the World Bank PIP web site.

The statistics reported about the consumption distribution used are:

1) The mean (in dollars a day)
2) The Gini coefficient
3) The mean less the median, which is a summary statistic of the inequality in a log-normal distribution.
4) The mean consumption of the top decile. We include this as a key summary statistic for the log-normal simulation to replicate accurately as the estimated GUBPL are all in the top end of the distribution and hence we want the simulation to be accurate at the top end.

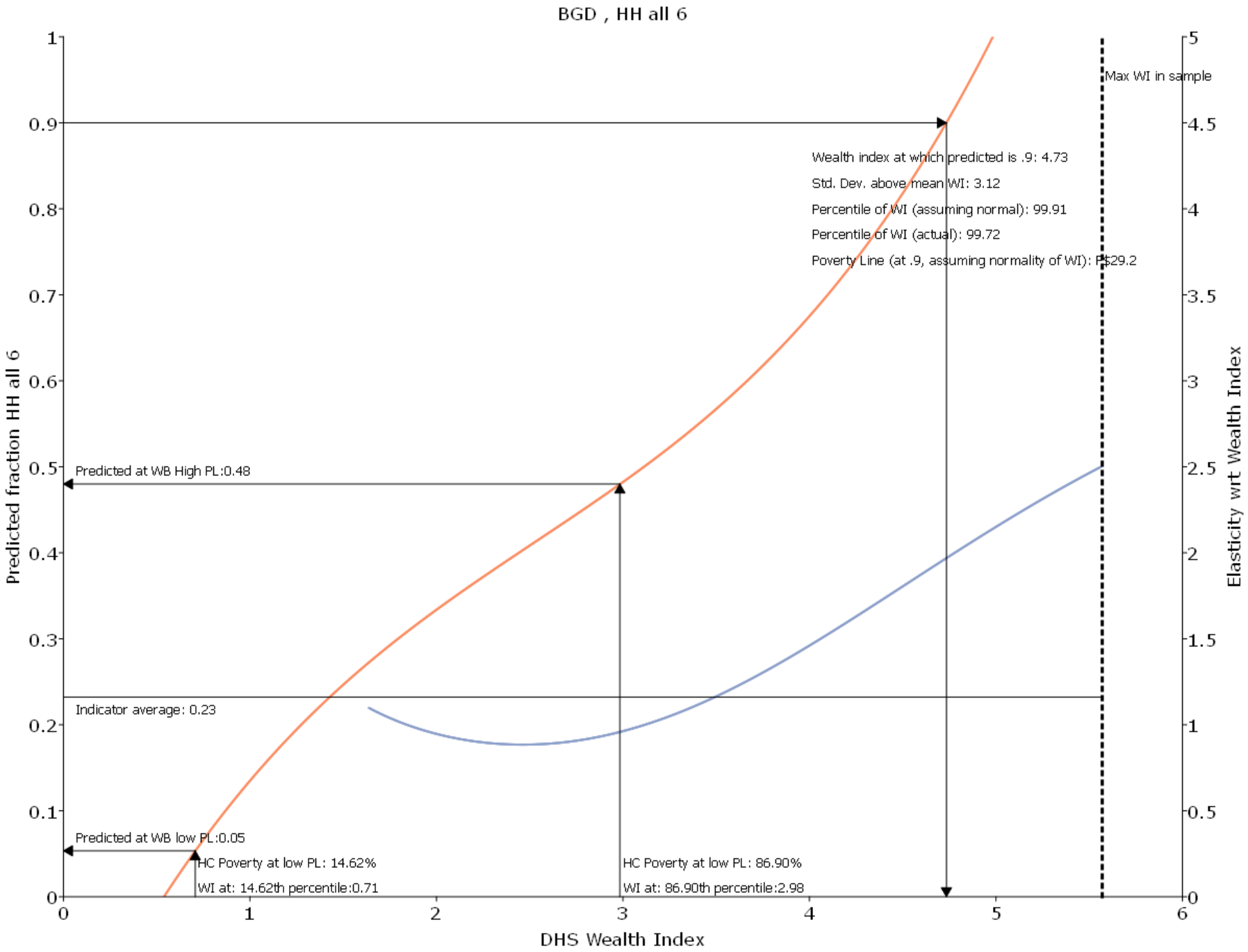
Using these four we seek to produce a log-normal that produces an accurate estimate of the central tendency (mean), inequality (Gini and mean less median), with special weight on the upper tail.

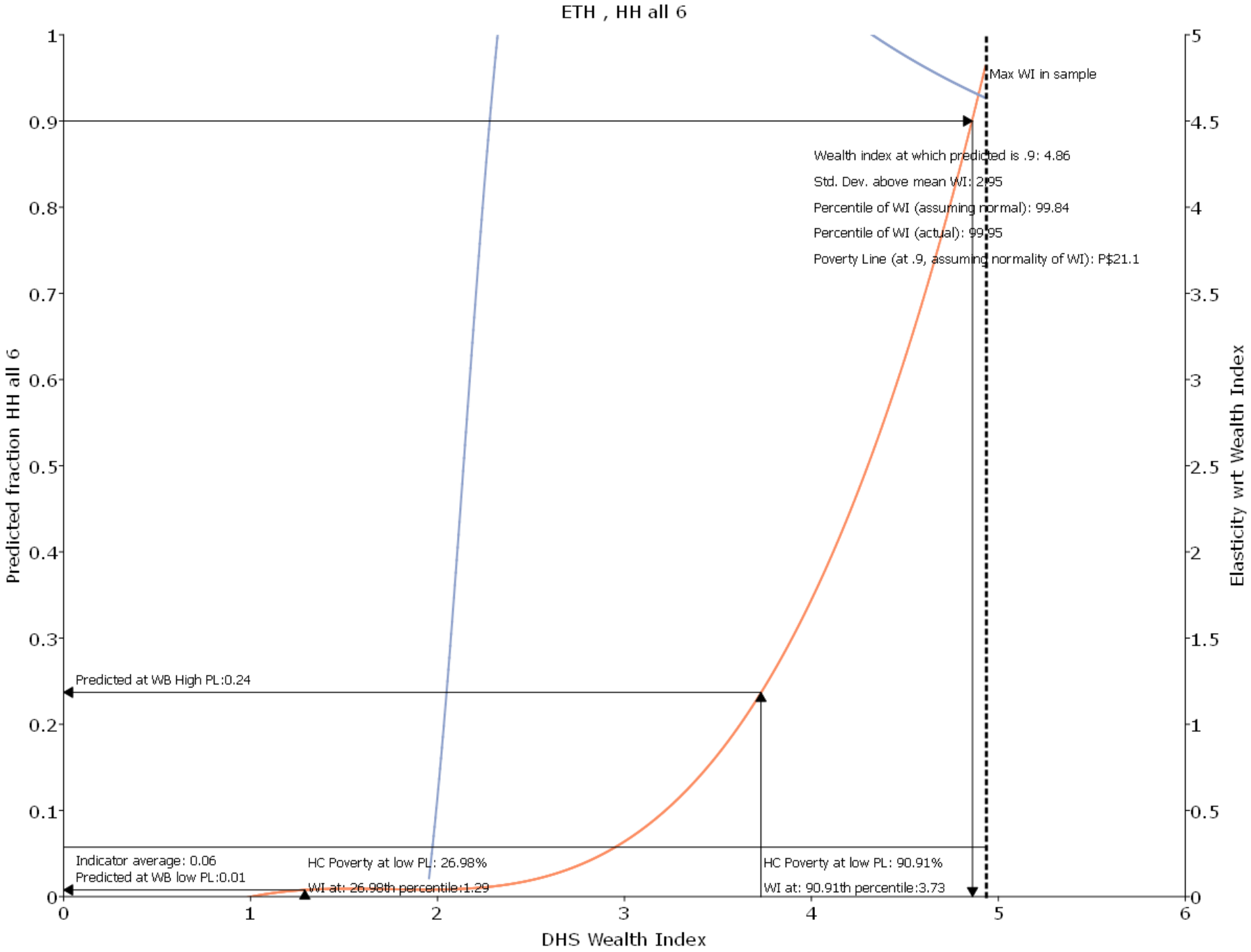
For each pair of parameters of the log-normal we simulate a log-normal distribution with 10,000 observations.

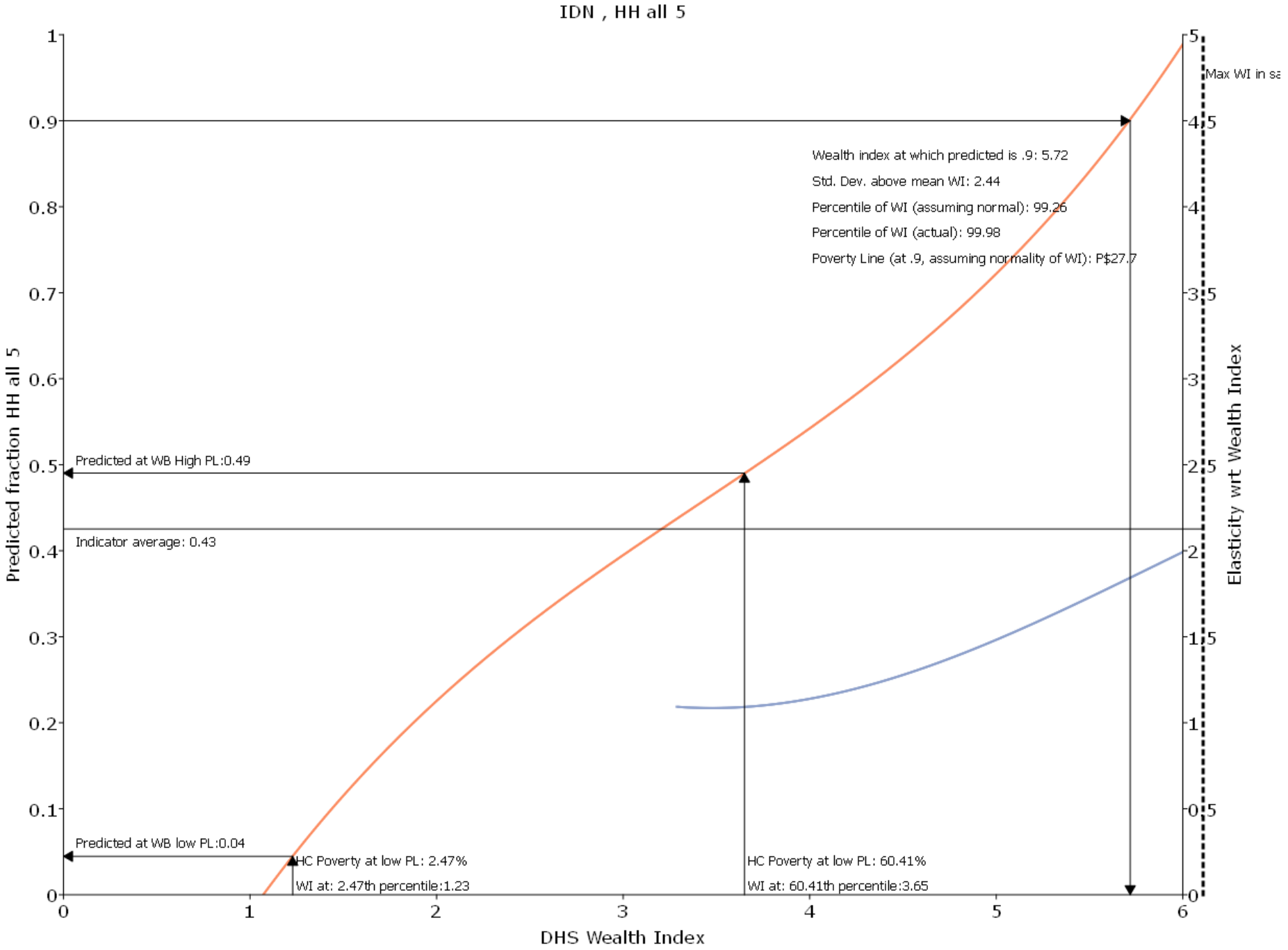
We then compute the weighted sum of the squared errors for each of the four statistics between the actual statistic and the computed value from the simulated distribution.

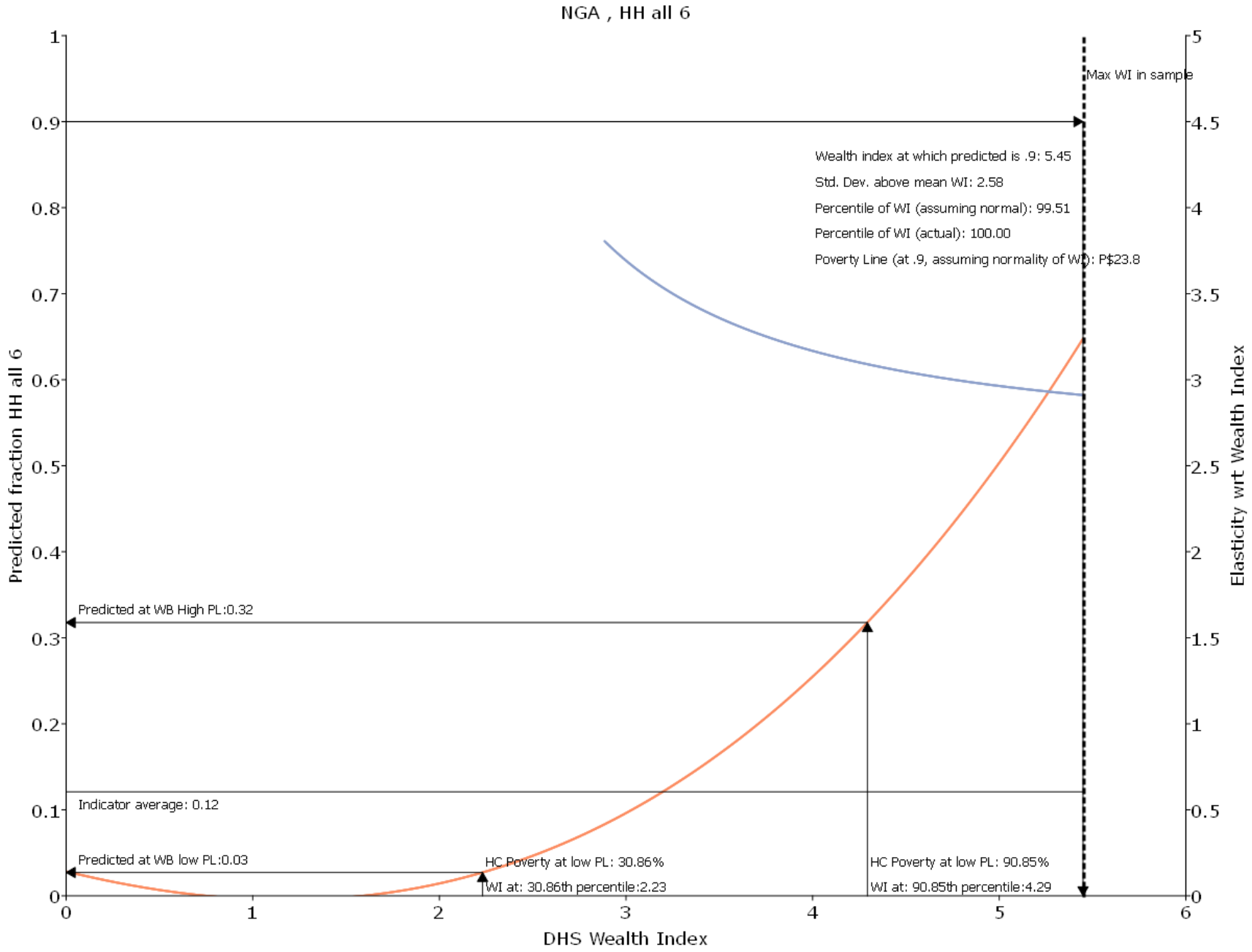
The grid search starts from parameters produced early just replicating the mean and Gini. From that starting point the grid is 15 steps in each direction, in units of 100ths for the parameters. We double check and in no case are the chosen parameters are at the edge of the search grid.

Our default to choose the parameters that produce the smaller sum of squares errors against each of the four reported distribution statistics equally. But we also iterate over giving the mean of the top decile more and more weight, adjusting the others, which gives roughly the same parameters.


BGD , HH all 6
Predicted fraction HH all 6
Elasticity wrt Wealth Index
DHS Wealth Index
Max WI in sample
Wealth index at which predicted is .9: 4.73
Std. Dev. above mean WI: 3.12
Percentile of WI (assuming normal): 99.91
Percentile of WI (actual): 99.72
Poverty Line (at .9, assuming normality of WI): PL$29.2
Predicted at WB High PL:0.48
Indicator average: 0.23
Predicted at WB low PL:0.05
HC Poverty at low PL: 14.62%
WI at: 14.62th percentile:0.71
HC Poverty at low PL: 86.90%
WI at: 86.90th percentile:2.98


ETH , HH all 6
Max WI in sample
Wealth index at which predicted is .9: 4.86
Std. Dev. above mean WI: 2.95
Percentile of WI (assuming normal): 99.84
Percentile of WI (actual): 99.95
Poverty Line (at .9, assuming normality of WI): P$21.1
Predicted at WB High PL:0.24
Indicator average: 0.06
Predicted at WB low PL:0.01
HC Poverty at low PL: 26.98%
WI at: 26.98th percentile:1.29
HC Poverty at low PL: 90.91%
WI at: 90.91th percentile:3.73
Predicted fraction HH all 6
Elasticity wrt Wealth Index
DHS Wealth Index
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
0
1
2
3
4
5
6


IDN , HH all 5
Predicted fraction HH all 5
DHS Wealth Index
Elasticity wrt Wealth Index
Max WI in sa
Wealth index at which predicted is .9: 5.72
Std. Dev. above mean WI: 2.44
Percentile of WI (assuming normal): 99.26
Percentile of WI (actual): 99.98
Poverty Line (at .9, assuming normality of WI): P$27.7
Predicted at WB High PL:0.49
Indicator average: 0.43
Predicted at WB low PL:0.04
HC Poverty at low PL: 2.47%
WI at: 2.47th percentile:1.23
HC Poverty at low PL: 60.41%
WI at: 60.41th percentile:3.65


NGA , HH all 6
Max WI in sample
Wealth index at which predicted is .9: 5.45
Std. Dev. above mean WI: 2.58
Percentile of WI (assuming normal): 99.51
Percentile of WI (actual): 100.00
Poverty Line (at .9, assuming normality of WI): P$23.8
Predicted at WB High PL:0.32
Indicator average: 0.12
Predicted at WB low PL:0.03
HC Poverty at low PL: 30.86%
WI at: 30.86th percentile:2.23
HC Poverty at low PL: 90.85%
WI at: 90.85th percentile:4.29
Predicted fraction HH all 6
Elasticity wrt Wealth Index
DHS Wealth Index
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
0
1
2
3
4
5
6

II.D.4) World Bank prosperity gap measure (don't know where to put this)

Prior to October 2023 the World Bank, via their Poverty and Inequality Platform (or its predecessors) provided data at three poverty lines, the inflation adjusted dollar-a-day line, a middle line, and a high poverty line, P$6.85. This was consistent with the 2013 adoption of two goals of extreme poverty and shared prosperity, which was defined as progress for the bottom 40 percent in each country. The goal of "shared prosperity" acknowledged that poverty measures with low bar poverty lines were not adequate to describe global goals. It was also recognized that the "bottom 40 percent" measure of "shared prosperity" was inadequate as it implicitly treated progress in all World Bank borrowing countries the same even though the bottom 40 percent in Ethiopia and in Argentina, for example, were at very different absolute levels of consumption and wellbeing (World Bank 2025).

In October 2023 a new analytical measure, the "prosperity gap" was introduced into the standard reporting on poverty (World Bank 2023). This measure (Kraay, Lakner, Ozler, Decerf, Jolliffe, Sterck, and Yonzan 2023) is "the average factor by which individuals' incomes must be multiplied to attain a prosperity standard of $25 per day for all." This prosperity gap is different from our proposal of FGT poverty with a GUBPL, but similar to what we propose in two ways.

First, the "prosperity gap" threshold at P$25 per person per day is quite close to our proposed GUBPL of P$21.5. Like dollar-a-day or P$21.5, P$25 is chosen as a focal point and Kraay et al (2023) give two loose rationales. One, the "median poverty line about high-income countries" is P$24.4, which is consistent with what Figure above that the average national poverty line for the richest countries is P$29.6 and P$21.5 is the poverty line for the lower range of high-income countries. Two, that this level is near the mean consumption in household surveys for countries at the World Bank threshold for high-income countries. As seen above some of our measures could support a P$25 GUBPL. Moreover, as seen in Figure 1 (visually) and Table 3 (numerically) since there are very few people above P$21.5 (the right tail is very thin) moving up to P$25 would make little difference to headcount poverty measures for most developing countries.

Second, the prosperity gap measure does away with a "line" altogether as the weights on the contribution of a household to the prosperity gap are continuous. As articulated in World Bank (2025) "a person with $30 contributes 0.83 (=25/30) to the Prosperity Gap, while a person with $20 contributes 1.25 (=25/20), or 1.5 times the contribution of the person with $30" hence, while the contribution of a person above the prosperity threshold is less than one but the contribution is continuous at the threshold. This implies "the selection of the $25 prosperity standard does not affect comparisons by the Prosperity Gap. That is, selecting any other threshold would yield exactly the same comparisons over time or across countries."

In practice, the difference between an FGT "poverty gap" measure with $\alpha=1$ and a poverty line of P$21.5 and a prosperity gap measure is likely small. We set a GUBPL at a level where the contribution to those above the line is "small enough." The contribution of the top 20 percent of the world's population above the prosperity threshold of P$25 contributes only 2 percent to the global prosperity gap (World Bank 2025), because the weight of their income in

the calculation is so small compared to those of those below the prosperity threshold. A person at P$6.85 contributes 3.65≈25/6.85 to the prosperity gap measure versus exactly 1 at P$25.

The main difference between our proposal and the World Bank prosperity gap measure is therefore rhetorical. The prosperity gap measure has no particular word for people with incomes above the high World Bank threshold of P$6.85 and below the prosperity gap threshold of P$25. We agree with the prosperity gap implication that expanding incomes for people above P$6.85 is an important development goal. But we reason to not refer to people who are not "globally prosperous" as "globally poor." Rather than seeing "poverty reduction" and "prosperity increase" as two goals, measured quite differently, our proposal is to stick to the idea that the over-arching goal of development is poverty reduction but shift the poverty line up to a globall decent level.