



Development  
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02

# Eradicating global poverty: a noble goal, but how do we measure it?

Edited by Emma Samman, with contributions from Martin Ravallion, Lant Pritchett, Stephan Klasen, Sabina Alkire, Amanda Lenhardt and Emmanuel Letouzé



## Key messages

- All agree that eradicating absolute poverty should remain at the forefront of a new goal on poverty, but opinions differ as to what constitutes extreme poverty and how we should measure it.
- Proposals to broaden the definition of poverty include incorporating relative poverty, a poverty line high enough to reflect poverty in rich countries too, and a measure of multidimensional deprivation.
- Disagreement exists over whether 'international dollars' are the best way to measure poverty, with a proposal for efforts toward internationally consistent national poverty measurement.

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## Introduction

The first Millennium Development Goal sought to 'eradicate extreme poverty and hunger', and its first target was to halve extreme poverty in 25 years. Progress notwithstanding – the target was met some five years ahead of schedule<sup>1</sup> – some one in five people today still cannot provide for their most basic needs. Amid a great deal of debate over what a post-2015 framework should encompass, there is widespread support for a continued poverty focus. The UN Secretary General's High-Level Panel report on post-2015 recommends that, 'eradicating extreme

poverty from the face of the earth by 2030' should lie at the core of a new agreement: 'This is something that leaders have promised time and time again throughout history. Today, it can actually be done.'<sup>2</sup> The World Bank has endorsed this view,<sup>3</sup> as have David Cameron,<sup>4</sup> Barack Obama<sup>5</sup> and *The Economist*,<sup>6</sup> alongside several NGOs.<sup>7</sup>

This proposal rests upon a very specific understanding of extreme poverty. But is the goal ambitious enough – in terms of who it targets, and how? It is not clear that the \$1.25 a day poverty line, the measure upon which this vision of a poverty-free world rests, is necessarily the

Residents of Old Dhaka, Dhaka, Bangladesh.  
Photo: © UN Photo/Kibae Park

best way to think about and to measure poverty, or that it is sufficient.

To address these issues, we asked several experts to make proposals as to how to measure poverty in a post-2015 agreement. Their contributions show some consensus, but also several areas of contention. There are arguments that poverty is relative as well as absolute, and over whether the apt reference point is the society in which a person lives or global too. Some advocate higher international income poverty lines, arguing that they hold meaning in both rich and poor countries. Others claim that purchasing power parity adjustments may not reflect the incomes of the poor well and that internationally coordinated national poverty measurement would offer a better solution. Others still take issue with an exclusively income-based poverty metric, arguing that poverty should also be measured in a multidimensional fashion. And it is reasoned that measures ought to be disaggregated among groups of the poor in the view that not all experience poverty equally.

In our first piece, Martin Ravallion argues that a new poverty target should continue to be based on a \$1.25 a day poverty line alongside a 'weakly relative' poverty line, so that absolute poverty is given primacy but relative poverty is also taken into account. Our next contribution, by Lant Pritchett, argues for a plurality of poverty lines – a \$12.50 a day international poverty line, alongside a \$1.25 a day poverty line and national poverty lines. Stephan Klasen disagrees with this focus on international poverty lines, instead asserting a need for new efforts toward internationally coordinated national poverty measurement. Sabina Alkire departs from an income-based metric in proposing a complementary poverty measure that includes the headcount and depth of multidimensional deprivation. Amanda Lenhardt discusses a need to focus 'below the averages' regardless of the poverty measure selected. Finally, Emmanuel Letouzé reflects on what a Big Data revolution could lend to the 'statistical tragedy' posed by the dearth of traditional data on poverty in many parts of the world. In conclusion, Emma Samman sets out key areas of consensus and of debate.

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## Two goals for fighting poverty

by Martin Ravallion

*Martin Ravallion is the Edmond D. Villani Professor of Economics at Georgetown University, Washington DC, USA. Prior to taking up the Villani Chair in December 2012 he was director of the World Bank's research department.*

It is widely agreed that eliminating extreme poverty should take priority in thinking about our development goals going forward. The '\$1 a day' poverty line is a simple metric for monitoring progress toward that goal. It was chosen in 1990 as a typical line for low-income countries (as explained in *Dollar a day revisited*).<sup>8</sup> By this measure, poverty in the world as a whole is judged by a common standard anchored to the national lines found in the poorest countries. On updated data, the current value of this international line is \$1.25 a day at 2005 purchasing power parity. Today, around 1.2 billion people in the world live in households with consumption per person below this frugal line. Thankfully, the world has made progress in bringing this count down; in 1990 1.9 billion people lived below \$1.25 a day.

*Notice that I say 'consumption' not income. A standard measure of household consumption is preferable as a measure of current economic welfare than income, and is typically measured more accurately than income. Fortunately, two-thirds of developing countries now have consumption-based poverty measures, although some regions, such as Latin America, are lagging in this respect.*

But many people are asking whether this line adequately embraces current standards for defining poverty. Naturally, richer countries tend to use higher lines. The underlying nutritional requirements are similar, but the food bundles are more expensive and the allowances made for non-food needs are more generous in less poor countries.

So \$1.25 a day can be thought of as a conservative line; it would surely not be reasonable to judge poverty in the world as a whole by lower standards than are typical of the world's poorest countries. Higher standards can also be applied. For example, \$2 a day has also been popular, which is about the average line for developing countries. (The US poverty line is \$13 per person per day in 2005.)

However, any absolute line you choose will not adjust over time or across countries for differences in the costs of avoiding social exclusion and relative deprivation. And we have learnt that these costs are real for many people, and not confined to the relatively well-off. When such 'social effects' on welfare are present, where and when you live matters as to whether you should be considered poor at



A girl plays with a bicycle tire in the slum of Korogocho, one of the largest slum neighbourhoods of Nairobi, Kenya. Photo: © Gates Foundation

any given level of real consumption, as conventionally measured. Costs of avoiding social exclusion and relative deprivation are almost certainly higher in richer countries.

It is not surprising then that the consumption level deemed necessary to not be considered poor is higher in richer countries, and changing over time in rapidly developing countries. For example, China recently doubled its own national line, from a low value of \$0.90 a day to \$1.80 a day (other recent examples include Colombia, India, Mexico, Peru and Vietnam). Furthermore, when today's rich countries were poor their poverty lines were very much lower than today. For example, my calculations suggest that the line for London in the 1890s developed by Charles Booth – who is generally credited with inventing the modern idea of a 'poverty line' – was not very different from the budget of a typical Indian in the 1990s living at or near India's official poverty line. Naturally England's poverty line is far higher today.

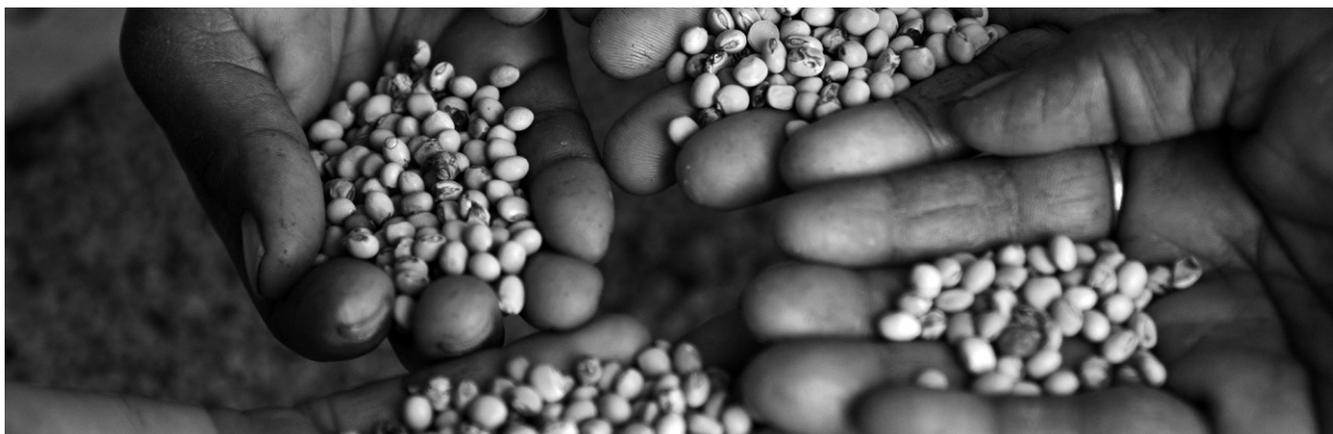
How then should we measure relative poverty at the global level? In research with Shaohua Chen at the World Bank, I have proposed a new measure of poverty that is calibrated to how poverty lines vary across countries; we dubbed this 'weakly relative poverty'.<sup>9</sup> In essence, to be deemed 'not poor' one must be neither absolutely poor by the \$1.25 a day global standard, based on poverty lines in the poorest countries, nor poor by the standards typical of the country you actually live in, given its

average consumption level. This can be thought of as a measure of 'total poverty' combining absolute poverty with purely relative poverty. In a paper to be published soon in *Global Policy*,<sup>10</sup> Shaohua and I calculate that in 2008 2.9 billion people were poor in the world as a whole by this combined measure; all but 200 million of them were in the developing world. And the total count has risen since 1990.

This new approach differs in an important way from prevailing measures of relative poverty. The standard 'strongly relative lines' used in Western Europe set the line at a constant proportion (typically around half) of the mean or median. Then a growth process that increases all consumption levels by the same proportion (leaving inequality unchanged) will do nothing to reduce the measured incidence of poverty, even though there may well be large absolute gains to poor people. By the same token, strongly relative poverty lines are far too low to be credible in poor countries.

Our new measures avoid this peculiar property of past relative measures by allowing for a minimum cost of social inclusion in poor countries.

These new weakly relative measures are not intended as an alternative to the \$1.25 a day line. Both measures are needed. Indeed, the incidence of absolute poverty by this standard can be interpreted as a lower bound to the true poverty measure while the relative measure is the



Women show their agricultural products. India. Photo: © Simone D. McCourtie / World Bank

upper bound (the bounds reflect the uncertainty about how much differences in national lines reflect social effects on welfare, as distinct from differences in the social norms used to define poverty).<sup>11</sup>

This new way of thinking about our poverty goals will influence how we prioritise policies. I have argued elsewhere that if we can succeed in containing rising inequality, a continuation of the growth rates in the developing world since 2000 would put us on a track to lifting 1 billion people out of absolute poverty by 2025–30,<sup>12</sup> bringing the poverty rate in the developing world as a whole (though not of course all countries) down to around 3%. That would be a great achievement.

However, lifting people out of relative poverty will require greater success in reducing inequality within and between countries, which will probably require higher growth rates in the poorest countries. Otherwise the best we might realistically hope for is to prevent further increases in the count of those who are both absolutely and relatively poor.

That does not, however, imply that we need a separate goal for inequality. The fact that something is instrumentally important to our development goals does not mean we need to create a new goal for that thing (by the same logic we do not need to add a new goal for economic growth, even though it too is instrumentally important to progress against poverty). As I argue in a recent post, we need to keep a clear focus on what are ‘ends’ and what are ‘means’.<sup>13</sup>

I suggest we think about monitoring two poverty goals going forward: absolute poverty by the \$1.25 a day standard, and relative poverty by the standards typical of the country one lives in. With these two indicators, we will have more complete and relevant accounting of how much progress we are making against poverty.

*If you are interested in measuring and monitoring poverty in the world yourself, it's worth learning to use the World Bank's excellent PovcalNet website,<sup>14</sup> recently updated and revamped. This provides analytic tools and access to a huge database drawing on some 1,000 household surveys.*

## Monitoring progress on poverty: the case for a high global poverty line

By Lant Pritchett

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There is an easy, simple and obvious solution to monitoring progress in reducing consumption expenditure poverty post-2015:

- a ‘low’ global poverty line,
- a ‘high’ global poverty line, *and*
- a variety of national poverty lines in between.

Everyone agrees on tracking something like a ‘dollar a day’ (or now the much less rhetorically catchy ‘buck and a quarter’) poverty line that demarcates ‘extreme poverty’. Reducing the human deprivation represented by extreme poverty is clearly one development priority.

Everyone also agrees that countries will have their own national poverty lines and that countries will track progress in poverty reduction based on their own poverty lines. Since poverty is a social construct, there is no argument for not allowing each society to construct its own poverty line for use in policy and programme formulation and in tracking its own progress.

So the question boils down to whether there should *in addition to those* be a measure of global poverty based on a ‘high’ poverty line. I think there should be.

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My argument is that for global discussions on poverty, we cannot simply ignore the fact that many OECD countries claim they have poverty too.<sup>15</sup> The USA poverty line for a family of four (two adults, two children) in 2005 was \$19,806, or \$13.56 per person per day (ppd). Most European countries use a relative standard of ‘60% of equivalised median income’ – Eurostat reports for 19 Western European countries worked that out to be \$18.33 ppd. For the lower income European countries this was \$11 ppd in Spain, \$10 in Greece and only \$7.76 in Portugal. Since the origin of the ‘dollar a day’ line was just to adopt as a global lower bound the poverty lines used by the poorest countries, it symmetrically makes sense to say that the global upper bound poverty line is based on the poverty line used in rich countries.

A good round number is \$12.50 ppd – and to monitor progress it would remain fixed (in inflation adjusted terms) over time. That is in the range of the lower poverty lines for both absolute (USA) and relative (European) poverty lines in rich countries and is a nice even ten times as high as the \$1.25 line.

### What are the arguments for a high poverty line?

First, basic fairness. There seems to be massive global inequity built into definitions of poverty that do not allow the world’s population to even aspire to the living standards of the now rich industrial world. How can it be that the USA uses one standard for its own residents but the global standard is *ten times* lower? The poverty line is about \$450 a year, while a male high school drop-out in the USA earns \$421 dollars *a week*. People might argue that high poverty lines aren’t really what people mean by poverty. To which my answer is, yes, they most certainly do mean that when they say there is poverty in the USA.

Second, with a high poverty line, 5 billion people are not ignored. Roughly speaking, about 1 billion people are in extreme poverty, about 1 billion are above a high threshold and 5 billion are in between. Why would we want to build a development agenda that did not measure how the standard of living of those 5 billion people is progressing? Currently, people speak as if the ‘poverty’ agenda and a ‘share prosperity’ agenda are two different things. But this separation is completely an artefact of using exclusively a low global line to define poverty; using a high global poverty line makes it clear that ‘shared prosperity’ is the path to reduction of both extreme poverty and global poverty.

Third, there is absolutely no defence of using exclusively low poverty lines. While below \$1.25 provides a good answer to ‘who is *for sure* poor?’, being above \$12.50 provides a good answer to ‘who is *for sure* not poor?’. No one, not even the staunchest defenders of low poverty lines, would argue that a poverty line of \$1.27 would not also be a reasonable line. Or \$1.57. What about

\$2.50? And if \$2.50, why not \$3.23? Where does this stop? It stops at the poverty definitions of rich countries.

Fourth, if one looks at the empirical relationship between other indicators of wellbeing – like health status, educational opportunity, access to water and sanitation – there is no ‘kink’ in these relationships. There is steady progress as people get richer. Goals in all of these domains are also promoted by households and individuals having more command over resources – and often in nearly proportional terms.

Fifth, the only distinction between most consumption expenditure poverty measures and standard economics is that above the threshold poverty line, more gains in income do not lead to further reductions in poverty. Therefore we should feel comfortable that we value additional gains to income at (almost) exactly zero at the poverty line. And yet certainly most people do not believe gains to their own wellbeing stop at ‘dollar a day’ or ‘two dollars a day’ levels. If the value of additional money were really zero, a lot fewer people would show up for work every day. While certainly above some threshold, command over resources for consumption becomes less important for standard of living or emotional wellbeing or life satisfaction – but that level is almost certainly more like the \$51 ppd than \$5 ppd.<sup>16</sup>

I can see good arguments against exclusively using a high poverty line. For instance, if donors wanted to concentrate resources on countries with high levels of global poverty, a high poverty line isn’t very helpful for that purpose. But that is why we need multiple indicators for multiple purposes. For some purposes ‘extreme poverty’ is very useful, whereas for others, like measuring progress in middle-income countries where ‘extreme poverty’ is very low or focusing on the continued gaps between rich countries and the rest, it is not useful at all.

A low poverty line (like a dollar a day), a high poverty line (like \$10, \$12.50 or \$15 ppd), and national lines for developing countries arrayed in between those low and high levels seems like a sensible and pragmatic approach to both emphasising the concerns about the extremes of destitution while also building a broad-based foundation for raising global living standards.

**How can it be that the USA uses one standard for its own residents but the global standard is *ten times* lower?**

## The right poverty measure for post-2015: a proposal for internationally coordinated national poverty measurement

By Stephan Klasen

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In the light of the High-Level Panel's report on the post-2015 development framework, the debate about goals, targets and indicators will surely intensify. One of the key issues will be how poverty should be considered in a world following the Millennium Development Goals (MDGs). I will argue here that there is much value in retaining an income-based poverty measure as a target (and indicator), but that we should move away from the \$1.25 a day measure, towards a process of global income poverty measurement based on internationally coordinated national poverty measurement.

### Why a separate income poverty target?

It is widely agreed by now that poverty is a multidimensional phenomenon that is imperfectly captured by incomes. The Multidimensional Poverty Index (MPI)<sup>17</sup> also now offers a measure of multidimensional poverty available for over 100 developing countries that is roughly comparable and has considerable merit. So why not make poverty reduction the central goal and use the MPI to monitor it?

In my view, one of the great successes of the current MDGs is that they reflect a multidimensional view of poverty in a disaggregated, dashboard approach. The overall goal of the MDGs was sustainable poverty reduction, but there was a dashboard of goals to capture the various dimensions of poverty separately.

This not only made the goals very easy to understand, monitor and communicate; it also largely avoided an essentially fruitless discussion about which of these goals should be more important (they are all important) and the acceptable marginal rates of substitution between goals.

Just imagine if the MDGs had included 'to increase the Human Development Index (HDI)<sup>18</sup> by 30%'. We would have spent years arguing over the precise formulation

of the HDI while most of the public would have been left wondering what this was all about. The same would apply if we made the MPI the main indicator for poverty reduction. It would divert attention from doing something about the individual components (health, education and important aspects of living standards) and instead lead to discussions about indicators, cut-offs, weights and aggregation rules.

One could also think about replacing the income poverty target of the MDGs with the MPI. But that would also not be useful. The MDGs *already* reflect a multidimensional view of poverty, including health, education, water and sanitation access, and the like. Adding these dimensions again in the poverty measure amounts to double-counting. And given the importance of income poverty in national poverty measurement in many countries of the world, it is surely justified to have one target in a multidimensional post-2015 framework focusing on that important aspect.

### So, which income poverty indicator?

Currently, income poverty measurement is based on the \$1.25 international poverty line,<sup>19</sup> adjusted for purchasing power parity (PPP)<sup>20</sup> across the world. While this method of calculating poverty using an internationally comparable line has been a significant advance, enabling global comparable poverty measurement for the first time, there are three significant problems with this approach for use in national and international poverty monitoring. First, as this is an international poverty line, it has little relation to existing national poverty lines. As a result, the resonance of the international poverty line as a tool to monitor and analyse poverty in individual countries has been limited. Instead, countries rely largely on their own income poverty lines, which have more resonance and legitimacy.

A second problem relates to the updating of the international poverty line and the associated PPP comparisons over time. With each new PPP round, the international poverty line has been updated (from \$1.02 in 1985 prices to \$1.08 in 1993 prices, which was used for the first MDG target, to \$1.25 in 2005 prices). In the case of the last update, both the country sample of national poverty lines used to estimate the international poverty line, as well as the PPPs, were changed. After updating the line, the entire time series of poverty measurement is then changed (going all the way to 1981), using the new poverty line and the new PPP exchange rates.

As has been noted by many, this update led to a substantial upward revision of the number and share of poor people in the developing world (from around 29% in 1990 using the \$1.08 line, to 41% in 1990 using the \$1.25 line, with similar discrepancies in other years). The effect on measured *trends* in poverty reduction has been small, but there is a huge uncertainty about the levels of poverty

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## It is widely agreed by now that poverty is a multidimensional phenomenon that is imperfectly captured by incomes.

in the world as well as the regional distribution. It is also not obviously clear which international poverty line and which PPP adjustment is ‘better’.

While there are good arguments to believe that the 2005 PPP process was superior compared to that used in 1993 in many regards, it had its own biases; moreover, even if it is the best way to generate comparable prices and poverty lines for 2005, it is unclear whether it generates comparable prices and poverty lines for 1990, let alone 1981. After all, the 2005 PPPs only try to ensure comparable prices across the world in 2005 but say nothing about comparable prices in the past (or future). We are now eagerly awaiting the results of the 2011 international comparison of prices,<sup>21</sup> which will generate a new international poverty line in 2011 PPPs, and also lead to recalculations of poverty across the world today and as far back as 1981. But the uncertainties generated by these procedures are immense, so it is well worth thinking about alternatives.

One plausible alternative, related to a suggestion by Sanjay Reddy,<sup>22</sup> is to define a global goal of reducing income poverty but base it on an internationally coordinated and consistent measurement of poverty at the national level. Methods to set the poverty line in each country would be coordinated internationally (for example employing the widely used ‘costs of basic needs’ method), but levels and trends of poverty would then be calculated at the national level using national currencies. Global poverty numbers (and shares) would simply be the sum of the poor in each country, calculated using an internationally comparable method.

This approach would have two immediate advantages. First, it would obviate the need to rely on PPP comparisons, with all the uncertainties and fluctuations this entails. Second, national and international poverty measurement would be closely linked, with national poverty levels and trends being reflected immediately in the international numbers.

Last, one should think harder about whether a very low absolute poverty line is still relevant for the world we live in now. The \$1.25 a day poverty line is increasingly irrelevant for the majority of people in developing countries which have poverty lines substantially above this line. Incorporating a ‘relative’ element into the setting of poverty lines across the world, either by following the proposition by Martin Ravallion and Shaohua Chen of a ‘weakly relative’ international poverty line,<sup>23</sup> or by systematically including such considerations in the setting of national poverty lines, will be a fruitful way forward for international income poverty measurement.

### Why the poorest of the poor need MPI 2.0

By Sabina Alkire

*Sabina Alkire directs the Oxford Poverty and Human Development Initiative (OPHI), a research centre within the Department of International Development, University of Oxford. In addition, she is a research associate at Harvard and vice president of the Human Development and Capability Association (HDCA).*

Beatrice is a widow who lives in a shack with a sheet-iron roof and an earth floor in the Lunga Lunga slum in Nairobi. The shack has no toilet, and she and her family must pay five Kenyan Shillings each time they use the public facility. Neither she nor her teenage sons have jobs, but she receives a little rental income from other houses in the slum. According to an income measure of poverty, Beatrice is not poor.

Research shows that Beatrice is far from unique; the mismatch between income poverty and other dimensions of poverty has long been noted and studied. For example, a study in India found that 53% of all malnourished children do not live in income-poor families. And yet, as is apparent from the first three blogs in this series, the current debate around the development agenda post-2015 largely centres on which of a number of targets should be used to measure income poverty when the Millennium Development Goals (MDGs) expire.

The idea that we have a realistic chance of ending income poverty at some level – for example, at \$1.25 a day – is certainly energising. But while declaring victory over extreme income poverty might give governments and development actors a satisfying sense of achievement, it will leave Beatrice’s life totally unchanged.

That might be why more than 120 Southern non-governmental organisations recently sent an open letter<sup>24</sup> to the High-Level Panel advising the United Nations on the content of a post-2015 development agenda. Their number one concern? ‘Poverty is multidimensional and should not be narrowly defined and measured only as a matter of income.’ A focus on an income-poverty target alone is, simply put, a backward step.

The MDGs have achieved much, although many of the goals will not be met by the target date of 2015, including

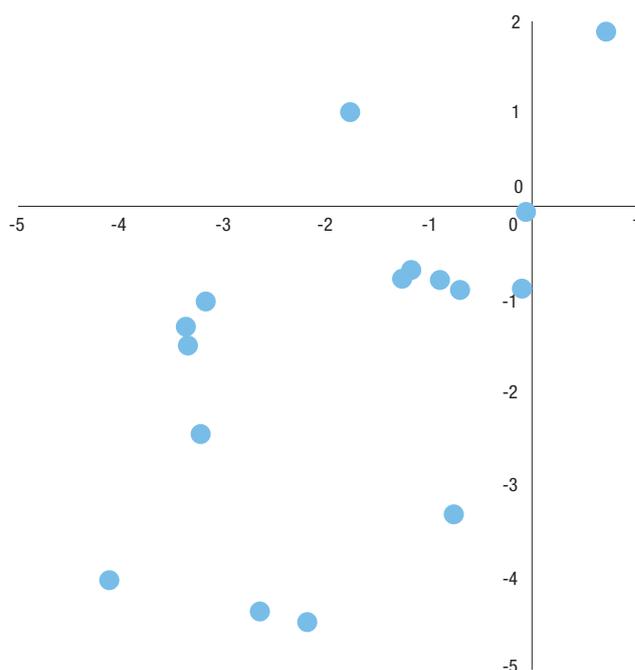
those focusing on access to health and sanitation, access to education and child mortality. So, at a minimum, a dashboard of improved indicators must continue to drive attention to these, as well as to other concerns, such as physical violence. But is an expanded dashboard the only answer?

I would like to make the case for a new measure post-2015 that will provide a ‘high-resolution lens’ on poverty that enables governments and development actors to gain a better understanding of the lived experience of poverty, and thereby design more effective policies. It should complement – not replace – an income-poverty measure. It is a Multidimensional Poverty Index (MPI) 2.0. Why would this be a step forward?

1. The dashboard of MDGs does not reveal who is suffering multiple disadvantages. The building blocks of the proposed measure are the ‘deprivation profiles’ of each person. They show the overlapping deprivations each person is experiencing. Tracking the MPI over time, we can see when some or all of the disadvantages poor people face are dismantled.
2. By showing the poorest of the poor – those deprived of many things at once – the MPI is ethically important, but it also informs efficient and cost-effective policies. What was the first key message of a 50-country study<sup>25</sup> on how to make speedy progress on the MDGs? Key deprivations are interconnected. They need to be addressed together.
3. With the MPI we can map at a glance the inequalities among different ethnic and social groups, or between different regions. We can decompose the MPI, and measure inequality among poor people using their deprivation profiles.
4. The original information from each component indicator is presented alongside the MPI, so detailed information is not drowned in one clunky composite. The information on each indicator is also reported,<sup>26</sup> so those who need to know the details can zoom in to see more. It is more Google Earth than a pixelated snapshot.
5. People who are multidimensionally poor are not necessarily income-poor, and vice versa. In an ongoing study,<sup>27</sup> authors constructed an income-poverty measure and a multidimensional poverty measure from the same dataset, then identified who was poor by both measures using several poverty lines. They found divergence: in Vietnam if 17% of people were poor in income and 17% of people were multidimensionally poor, only 6% were both MPI- and income-poor. In South Africa, if 11% of people were income and multidimensionally poor only 3% were poor in both. The MPI is needed to bring these overlooked poor into view.

6. The figure below shows that the trends in \$1.25 a day income poverty and MPI reduction do not move in lockstep, as we have documented in the case of 22 countries (Alkire and Roche 2013).<sup>28</sup> If they moved together, dots would fall on a line.

**Figure 1: Annualised rates of reduction in the percentage of people who are MPI poor and \$1.25/day poor**



The MPI 2.0 is based on the global Multidimensional Poverty Index (MPI),<sup>29</sup> an international measure of acute poverty covering over 100 developing countries. It complements traditional income-based poverty measures by capturing the severe deprivations that a person faces at the same time with respect to education, health and living standards. The global MPI was developed by the Oxford Poverty and Human Development Initiative (OPHI)<sup>30</sup> with the United Nations Development Programme (UNDP)<sup>31</sup> for inclusion in the UNDP’s flagship *Human Development Report* in 2010. It has been published in the *Human Development Report* ever since, and its indicators have been adapted by a number of countries and applied at the national level.

The global MPI was originally based on 10 indicators of education, health and living standards: for example, any child in the household has died, or the household does not have access to safe drinking water. A person is identified as multidimensionally poor if they are deprived in one-third or more of the weighted indicators. The MPI figure



Rice fields belonging to local hill tribes in Sapa, Viet Nam. Photo: © UN Photo/Kibae Park

itself is then a product of two elements: the percentage of people who are poor (the incidence) times the average intensity (the percentage of deprivations experienced) among them.

For the post-2015 context, the process of choosing the indicators and cut-offs for an MPI 2.0 should be participatory, with the voices of the poor and marginalised driving decisions. No measure is perfect, but a multidimensional measure can be built with several options: for example, the HDRO already reports values for three poverty cut-offs, and OPHI has robustness checks with different indicators (stunting versus underweight) or cut-offs (flush toilets versus ‘adequate’ sanitation).

Having an easy-to understand MPI provides greater political incentives to reduce every aspect of poverty, as changes in the intensity of poverty being experienced are not only reflected, but reflected immediately.

National MPIs are also being used, tailor-made with indicators, cut-offs and weights that reflect specific plans or goals. Colombia, Mexico and Bhutan have all implemented official multidimensional measures at the national level to underpin their targets on poverty reduction or wellbeing, while Brazil and China are

constructing regional measures. National MPIs could be developed alongside an MPI 2.0 if countries find it useful.

An MPI 2.0 would provide a ‘headline’ for some non-income deprivations. It offers a single figure that can be understood easily and gives an overview of multidimensional poverty. This enables international comparisons and incentivises governments, who can see their MPI rating improve even if they focus their efforts on reducing the deprivations of the poorest of the poor.

We need income-poverty measures, but we must also recognise that poverty is multidimensional and seek to measure and eradicate it as such. Having a little money does not, unfortunately, mean having access to a toilet or a job – as Beatrice knows only too well.

**An MPI 2.0 would provide a ‘headline’ for some non-income deprivations.**

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## Measuring poverty below the averages

By Amanda Lenhardt

*Amanda Lenhardt is a research officer for ODI's Development Progress project. Her research focuses include intersecting inequalities and discourses surrounding the inclusion of inequality on the post-2015 agenda. Prior to joining ODI, she conducted research on smallholder farmer market access in Indonesia.*

Among the achievements of the Millennium Development Goals (MDGs), the halving of extreme poverty has been celebrated as the great success. The target of reducing the number of people living on less than \$1.25 a day is expected to be reached globally,<sup>32</sup> if not surpassed, by 2015. We cannot take this figure at face value though: this progress has not been evenly distributed, and China's success boosts the average of overall global poverty reduction.<sup>33</sup> But these discrepancies aside, it is reasonably accepted that income poverty is declining, at least to some degree, in all major regions of the world.

At the national level – the standard focal point for most measures of poverty – the picture is slightly less clear, but overall we tend to see a positive trend. The classic conception of nationally distributed poverty is distorted, however, by the fact that it is no longer concentrated in low-income countries, the class of countries conventionally singled out for high rates of impoverishment. A number of high-poverty countries have graduated to middle-income status, which means it is less easy to capture poverty by measures of average income or consumption.

The changing dynamics of inequality, both across and within countries (see Milanovic, 2012 for an overview),<sup>34</sup> further complicates our view of poverty. Aggregate measures of poverty such as average consumption rates and poverty head-count statistics, while instructive of absolute poverty levels, fail to capture uneven distributions of income or uneven progress on non-income dimensions of poverty.

The distortions caused by aggregate measures of poverty have led us back to the drawing-board, to ask: what exactly do we want to measure with poverty statistics? But a more important question is: what will we use these poverty statistics for? If intended as tools for national policy-makers to make informed decisions about strategies to reduce poverty within their societies, then it makes sense to look beyond national averages and towards poverty rates among particular groups and at different income levels.

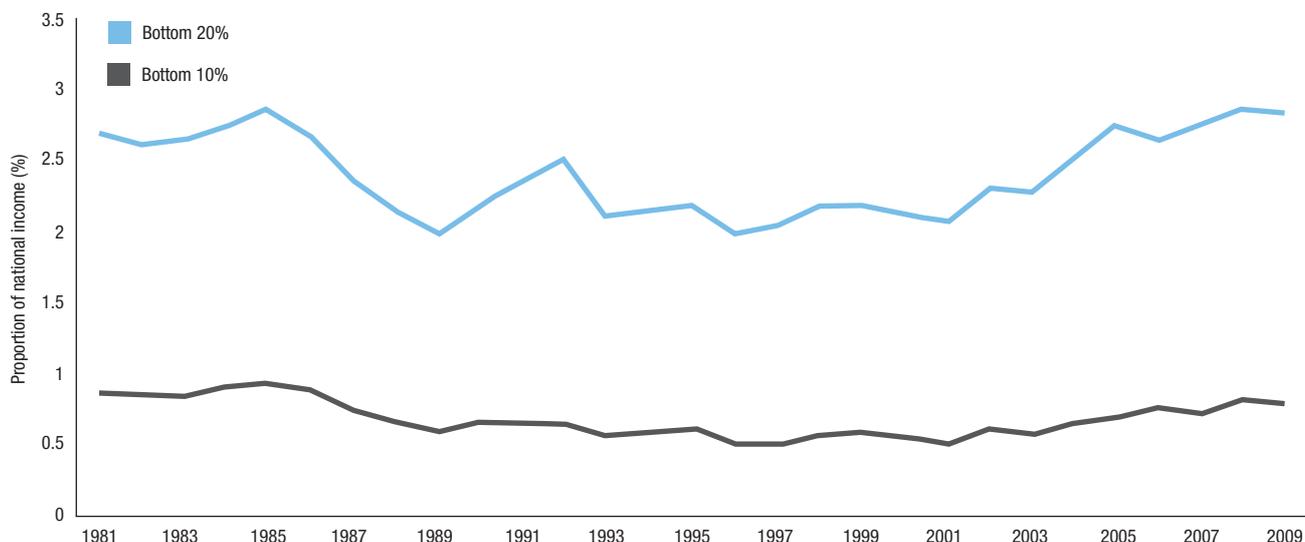
Narrowing the focus of poverty measurement to the sub-national level is challenging, not least because the data to do so is often lacking, but if we wish to address the barriers facing the remaining 50% of the world's poor who have not yet been raised out of extreme poverty, then this is where the measurement of poverty can be most effective.

There are three useful ways to look below the averages, two of which are reasonably straightforward and can be achieved with the statistics already at hand, and one of which will require more effort to measure given its context specificity. These measures are presented here as complements to, rather than replacements for, existing aggregate measures of absolute poverty, since both types of measure are instructive for the setting of national and international priorities.

1. The share of the poorest quintile in national consumption. This measure can be found in the MDG framework already, though it has not been used. An extension of this would be to look further below the poorest quintile, to consider the bottom 10% and 5% shares of national consumption. These measures capture two important elements of poverty.
  - They draw out the distributional aspects of income at a national level, thereby highlighting inequalities in income shares held by different segments of the population. We might consider this a measure of relative poverty. Poverty and inequality are not mutually exclusive, and the added appeal of this simple measure is that it can be used to examine both.
  - They allow for a disaggregation of the population into income groups relevant for policy-makers in their design of strategies to address the structures that keep people impoverished. In a recent blog<sup>35</sup> focusing on the inequality dimensions of these poverty measures, we drew upon the case of Brazil to show how aggregation can distort our view of poverty and inequality trends. As shown in figure 2, poverty and inequality have both declined over the past 20 years by most accounts, but the income share held by the bottom decile in Brazil has increased only marginally and from a very low point.<sup>36</sup>

This perspective draws our attention to situations of poverty that are likely to persist amidst wider gains in income growth. The case of Brazil points to the need for retaining absolute measures of poverty, as these are still useful in explaining the country's laudable achievements in overall poverty reduction over the past 20 years, but also the need to include measures accounting for the distribution of progress alongside them.

**Figure 2: Disaggregated income distributions in Brazil 1981–2009**



Source: Lenhardt and Shepherd, 2013<sup>37</sup>

2. A comparison of the outcomes of these disaggregated income groups on indicators of human development, such as education, health, hunger and employment. We have shown that recent gains in education access,<sup>38</sup> another highly celebrated outcome of the MDGs, have not been evenly distributed within countries when comparing across different income levels. This research showed that the poorest women were indeed reporting more years of education in the 2000s than in the 1990s, but their progress lagged behind gains made by the median income group. Progress was also slower in indicators of early marriage, women’s empowerment and child mortality.

Tracking gains across the multiple dimensions of poverty among different income groups will allow policy-makers to ensure that the policies and programmes they have introduced to tackle these issues are indeed reaching the people in greatest need of them.

3. The horizontal dimensions of inequality which result in higher rates of impoverishment among particular segments of society, including ethnic minorities, spatially disadvantaged communities and disempowered women. Marginalised groups, as identified within country contexts, could be disaggregated from national poverty statistics and their group averages on income and human development outcomes compared with the national average or median for those indicators.

In combination with absolute measures, these three simple disaggregations would highlight those segments of a given society that are most disadvantaged and would allow policy-makers to track progress on poverty reduction among those most likely to face social, political and institutional barriers to broader poverty-reduction efforts.

**The distortions caused by aggregate measures of poverty have led us back to the drawing-board, to ask: what exactly do we want to measure with poverty statistics? But a more important question is: what will we use these poverty statistics for?**

## Could Big Data provide alternative measures of poverty and welfare?

By Emmanuel Letouzé

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'Google knows more, or is in a position to know more, about France than INSEE [National Institute of Statistics and Economic Studies]',<sup>39</sup> two French scientists wrote in an op-ed published in *Le Monde* in January.<sup>40</sup> In the context of developing countries, the question raised by this bold claim is: could Big Data help us know more about poverty and welfare,<sup>41</sup> including, or perhaps *especially*, in places where the dearth of traditional data is often turning poverty monitoring and forecasting<sup>42</sup> into an exercise in guesstimation? Could the Big Data revolution<sup>43</sup> contribute to fixing part of the 'statistical tragedy'?<sup>44</sup>

The underlying argument is that these new kinds of data, stemming from individuals and communities as they go about their daily lives, contain insights into their experiences that we can mine to help them in return. This idea can be traced back to a much-cited 2009 paper, which found that light emissions picked up by satellites could track GDP growth.<sup>45</sup>

Since then, widely cited evidence that Internet-based data could be used to monitor inflation in realtime<sup>46</sup> and allow digital disease detection,<sup>47</sup> as well as construct economic indicators<sup>48</sup> to forecast the present,<sup>49</sup> and build a 'real-time growth index',<sup>50</sup> among many other applications, have given weight to the promise. Cell-phone call detail records (CDRs), which capture the time, location, recipient's location etc. of each call, have also helped model malaria spread,<sup>51</sup> unveil reciprocity giving in the aftermath of disasters<sup>52</sup> and study internal migration.<sup>53</sup>

So it seems only logical, and very appealing, to claim that the same data and tools could be deployed to monitor poverty,<sup>54</sup> and may even be conducive to a leap-frogging<sup>55</sup> of statistical systems. Although the term Big Data is absent from the report of the High-Level Panel on the post-2015 framework, it is hard not to read it between the lines of the development data revolution<sup>56</sup> it sketches.

But conceptual clarity, practical guidance, ethical considerations and innovative foresight have too often been lacking, leaving an open field for sceptics who have long stressed the risks and challenges of Big Data<sup>57</sup> or

insisted that the real revolution is small data<sup>58</sup> (or long data<sup>59</sup>). Findings that Google got flu wrong<sup>60</sup> this year in the USA have cast additional doubt on Internet-based data's reliability and representativeness,<sup>61</sup> and thus its relevance to inform policy decisions, while the revelations about PRISM<sup>62</sup> have raised concerns over privacy to a whole new level. But recent publications and debates have shed direct light on some of the specific promise, challenges and requirements of leveraging Big Data to improve current, and perhaps develop alternative, measures of poverty and welfare.

In particular, a paper showed that mobile-phone records from a major city in Latin America could help predict socioeconomic levels,<sup>63</sup> poverty's first cousins. This was done by matching CDR-inferred behavioural data and official statistics on socio-economic levels, using supervised machine-learning techniques, to unveil how differences in socioeconomic levels typically 'showed' in mobile-phone data, and back. This example illustrates a key and seemingly purpose-defeating requirement for developing models and algorithms able to translate digital data into indicators of the social world: the availability of 'ground truth' indicators of the social world (such as survey data) used to build and validate the models.

But this does not mean that Big Data is useless, or rather superfluous, in such contexts: indeed, assuming a sufficiently high and time-resistant level of accuracy (internal validity), CDR data would then provide some sense of changes in socio-economic levels that would not get captured until the next official survey.

The problem is evidently more acute in places where no such data exist, i.e. precisely where alternative indicators are most needed. One avenue would be to apply 'matching' rules developed elsewhere to local CDRs. But the resulting 'alternative' indicators will be highly conjectural because the underlying algorithm may not pass the test of external validity: applying a model matching CDRs and socio-economic levels developed using CDRs<sup>64</sup> and demographic and health surveys (DHS) data<sup>65</sup> from Côte d'Ivoire to a neighbouring country may yield misleading values because of cross-country differences. In such a case, the question is: is any data better than no data at all?

Another recent paper<sup>66</sup> studying the impact of biases in mobile-phone ownership on estimates of human mobility inferred from CDRs research is also worth mentioning for two reasons. One is its key finding: that CDR-based estimates of mobility appeared to be surprisingly robust to substantial biases in phone ownership, which may turn out to be equally true for measures of welfare. The other is its research question and method: asking how accurate a picture of the social world some Big Data streams may paint, given, or in spite of, their inherent biases, drawing (again) on survey data as 'ground truth data'.

Noteworthy investment and progress are also visible in the critical strand of research (and advocacy) on

privacy-preserving analysis. In particular, researchers, using CDRs for mobility analysis, have developed an algorithm<sup>67</sup> that uses an emerging technique known as ‘differential privacy’ that injects ‘noise’ into the model at points in order to reduce the likelihood of individual re-identification.

Although not directly concerned with poverty these papers are important because they point specifically to the methodological avenues and leads that need to be explored to develop privacy-preserving Big Data capacities that may, in time, help monitor poverty.

It is also crucial to note that Big Data is not only about data production (and analysis), but also about data consumption (and exchange). If we care about adequately monitoring human welfare, we should account for the consumption of free data.<sup>68</sup> Think of the hours spent on social media in cyber-café, and increasingly on mobile-phones, around the world, that provide a ‘consumer surplus’ not captured in any official statistics.<sup>69</sup> The caveat may not apply to the poorest of the poor, but there is no reason to consider that a problem receiving increasing attention in developed countries<sup>70</sup> is irrelevant to developing countries where Internet penetration<sup>71</sup> is growing much faster. In other words: Big Data does not stand apart from the quantities and phenomena to be measured but adds to the measurement problem.

The related, and perhaps even more critical, point here is that the rise of data-driven activities<sup>72</sup> is deemed

to render GDP (and GDP per capita) less and less relevant over time as the measure of human welfare it was never intended to be.<sup>73</sup> The argument that monetary poverty and GDP per capita are very crude indicators of human progress is not new,<sup>74</sup> but Big Data may prove instrumental in devising true alternative measures.

In particular, the growing availability of such rich individual data about people’s behaviours and desires will offer new options for communities to capture, monitor and improve their own welfare<sup>75</sup> in ways that may increase local empowerment through Big Data<sup>76</sup> – very far from the misleading notion that Big Data is about offering a 30,000 foot view of the world.

A few take-away messages emerge. First, for the purposes of poverty monitoring or development more broadly, ‘Big Data’ is not about size, but about the qualitative nature of these data trails – what some refer to as ‘digital breadcrumbs’.<sup>77</sup> Second, Big Data is not even primarily about the data<sup>78</sup> but about the carefulness of their analysis, which requires even more, not less, contextual and ethnographic grounding.<sup>79</sup> Third, Big Data is also about data consumption, not just production. Last, much more conceptual, empirical and methodological work is needed before Big Data can be leveraged concretely and safely for poverty monitoring; but Big Data may in time fundamentally change how we measure, and perhaps even fight, poverty.



Mongolian family uses solar energy to power their home. Photo: © UN Photo/Eskinder Debebe

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## Conclusion

These contributions to the debate have offered expert views on what poverty measures ought to be included in a post-2015 agreement, spurred by recent proclamations that an end to extreme poverty is in our sights. Such a focus is of course laudable, and there is logic behind harnessing global efforts and targeting resources toward this most abjectly deprived group. But equally, our contributors have voiced concerns that this goal may not be ambitious enough – in terms of who it targets, and how.

### The definition of poverty

Our contributors agree that we need a globally defined poverty measure that identifies people who cannot fulfil their basic needs – i.e., absolute deprivation. Several contributors – Martin Ravallion, Stephan Klasen and Lant Pritchett – make clear that poverty is relative as well as absolute and that a societal reference point is needed. People should be able to live not only free from starvation and disease, but in accordance with social norms – what Adam Smith labelled centuries ago, *the ability to appear in public without shame*.<sup>80</sup> For Ravallion and Klasen, an appropriate reference point is the society in which a person lives, while for Pritchett, it should also be global. Pritchett seeks to capture absolute poverty in rich and poor countries alike by proposing multiple poverty lines, including a \$1.25 a day measure – attuned to the world's poorest countries – and a \$12.50 a day measure, attuned to the richest. A plurality of measures would also deflect criticism that current poverty lines exclude a large number of people who, if not actually destitute, might be hovering precariously around that line.

Sabina Alkire's proposal is rooted in absolute deprivation. Indeed her multidimensional 'MPI 2.0', an updated MPI, is the only measure that combines the poverty 'headcount' – i.e., the number of people who are poor in several dimensions – and the 'depth' of deprivation – the number of deprivations, on average, that poor people experience.

Amanda Lenhardt argues that regardless of the measure, there is a need to account the circumstances of particular groups by monitoring 'below the averages' – e.g., the bottom quintile, decile or ventile of the population, and different social groups.

A major strand of debate is between advocates of an income poverty measure (Ravallion, Pritchett, Klasen) and those of a complementary multidimensional 'MPI 2.0' index (Alkire). Pointing to little correlation between measures of extreme income poverty and other types of deprivation, Alkire argues for focusing on multiple dimensions of wellbeing – for instance, the lack of adequate housing, improved sanitation, education and, in extreme

cases, the likelihood of survival – directly. Klasen argues that such an index may not be needed, as deprivations in education, health and other dimensions of wellbeing will be captured in an MDG 'dashboard'. The debate would appear to hinge on how important it is to identify those people who are experiencing numerous deprivations at the same time.

### How to construct an income poverty measure?

The \$1.25 measure, on which the MDG target is based, is the average poverty line among the world's 15 poorest countries, denominated in purchasing power parity (PPP), an adjustment designed to compare purchasing power across countries and over time. One dollar (PPP) in Madagascar should, in principle, have the same value as one dollar in Indonesia. Ravallion's 'weakly relative' poverty lines are derived from national poverty lines then converted into international (PPP) prices, and Pritchett's \$12.50 line is also in international dollars.

But some argue that PPP conversions don't work very well, causing uncertainties about how many poor people there are and where they live. Part of the problem is how international exchange rates are computed – but occasional methodological updates and the need to project prices 'backwards' are also issues. Stephan Klasen advocates, in place of PPP measures, moving forward 'internationally coordinated national poverty measurement' based on the basic needs of the poor.

None of these questions are easy to answer – but as the debate over post-2015 shifts from defining areas of focus to measurement and monitoring, they will warrant greater attention. Some are technical issues to do with valuation and exchange rates. But others are much more fundamental questions about what we consider to be just societies. This is much too important a debate to be left to technical experts alone. After all, it gets to the heart of who we consider to be excluded, how we try to tackle deprivation, and how ambitious a new global framework should be.

*The contributions to this working paper originally featured in a blog series hosted on the Development Progress website: [www.developmentprogress.org](http://www.developmentprogress.org)*

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