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Multidimensional poverty dynamics: Methodology and results for 34 countries

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Abstract

This paper analyses changes in multidimensional poverty over time for over thirty countries and 338 sub-national regions, for which we have comparable data across at least two periods of time. The paper first describes the absolute and relative changes in the multidimensional poverty index (MPI) and their significance, as well as changes in the composition of multidimensional poverty. In so doing demonstrates the core statistics of dynamic multidimensional poverty analyses. Second, the paper examines changes in the MPI and its consistent partial indices over time across over 338 sub-national regions, plus a diversity of ethnic groups. In each case it identifies regions or ethnic groups where national poverty reduction is at risk of leaving the poorest subgroups behind. This extensive body of empirical evidence points to some fundamental research questions on the study of multidimensional poverty reduction.

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1. Introduction

The aim of poverty measurement is to aid, incentivize and acknowledge successful reduction of disadvantages that blight people's lives. Comparing poverty levels in different countries across time reveals inspiring stories about how and where poverty has been reduced. Not only do these success stories illustrate what is possible, they also provide insights into bottlenecks in places where progress has been nonexistent or slow. These comparisons open the space for 'constructive competition' between regions or countries to reduce or eradicate acute deprivations.

This is a paper on how successful countries have been in reducing poverty over time. Specifically, the paper documents how multidimensional poverty has changed in 34 countries and 338 sub national regions as well as among ethnic groups in some countries. It also analyses changes in a subset of the poor who are 'destitute' in those 34 countries.

To measure multidimensional poverty, we draw on the global multidimensional poverty index (MPI) which is an internationally comparable measure of acute poverty in over hundred developing countries. It was developed by the Oxford Poverty and Human Development Initiative (OPHI) with the Human Development Report Office of the United Nations Development Programme (see for details: Alkire & Santos 2010, 2014; UNDP, 2010a,b; Alkire et al. 2011a; Alkire et al., 2013). We also draw on a new destitution measure (Alkire Conconi Seth 2014), which identifies a subset of the MPI poor who have particularly low achievements in some MPI indicators (for example, severe malnourishment, not simply malnutrition).

The MPI measures follow a direct method by assessing the extent to which people satisfy minimum international standards in social rights or valuable ends, as opposed to indirect methods that focus on income or consumption levels which are presumed sufficient for a minimum living standard (see Alkire & Santos, 2014). This builds on the counting traditions used in Latin American and Europe (Atkinson 2003). It also seeks to advance the work of Amartya Sen (1979, 1992, 1997, 2009), who has persuasively argued for more comprehensive conceptualizations and measures of human poverty by shifting attention towards the capabilities that people may have to achieve valuable ends or functionings. Drèze and Sen 2013 document why this is important, by showing empirically that the level (and change) of income per capita does not necessarily predict the levels of achieved functionings in social indicators. The MPI follows Sen's direct approach and complements global monetary measures such as the 'dollar-a-day' figures published by the World Bank Povcal dataset (see Chen & Ravallion, 2008, 2012). Although data-constrained, it adds value: it reflects simulataneous deprivations people experience in ten non-monetary indicators such as avoiding malnourishment or child mortality, being educated, or having access to safe water and adequate sanitation. It is identically formulated across rural and urban areas.

The MPI, like any internationally comparable poverty measure, is imperfect. Yet Alkire and Santos (2014) have undertaken sensitivity analysis of several of the choices implicit in the MPI. The analysis shows that the MPI was from the start robust to a wider range of deprivation cut-off, poverty cutoff, and dimensional weights. An important strength of the MPI is that the final measure reflects multiple deprivations faced at the same time, and so it is sensitive to the intensity of deprivation among the poor. Because the measure is direct, it does not require

additional adjustments for rural-urban prices, inflation, imputation, or PPPs (see Alkire, 2011; Alkire, Foster, et al., 2011). The measure can also be decomposed easily by geographical regions or ethnicities as we do in this paper.

The value-added of this paper is three-fold. First, it is the first paper to set forth the methodology to analyse multidimensional poverty dynamics associated with the Alkire-Foster Adjusted Headcount ratio and its consistent partial indices. Second it applies all of these methodologies to a multidimensional poverty measure and a linked destitution measure in 34 countries. The data are harmonized to enable definitive assessments across poverty and destitution for two or three points of time for each country. Although precise indicator definitions across countries vary, country experiences can also be compared in informative ways, as can income poverty trends for the same countries. Third, because the coverage of the surveys is considerable (the surveys cover roughly 2.5 billion people), some interesting cross-cutting trends are detected and scrutinized.

The paper is organized as follows. Section 2 presents the measurement methodology used to construct a multidimensional poverty and linked destitution index, the associated statistics used to analyse changes over time, subnational and ethnic decompositions and dimensional breakdown. Section 3 describes the DHS datasets used in this study and their harmonization, and delineates the levels of comparability that have been achieved over time and across countries. Section 4 presents key findings from the MPI estimates at the national level – the rates of change, and the dimensional composition of change. Section 5 discusses how multidimensional poverty was reduced and the different paths to poverty reduction. It analyses dynamics by regional and ethnic groups, finding disparate country patterns. Section 6 explores the dynamics of destitution. Section 7 concludes.

2. Measurement Methodology

2.1. Alkire and Foster M_0 Measure[1]

The global MPI follows the functional form of the adjusted headcount ratio, which is the simplest measure within the family of poverty measures developed by Alkire and Foster (2007, 2011a). The methodology begins at the level of the person or household, identifies the set of indicators in which they are deprived at the same time, and summarizes their poverty profile in a weighted deprivation score. If their deprivation score exceeds the poverty cutoff, they are identified as multidimensionally poor. The number of poor people and their deprivation score – which shows the 'intensity' of poverty they experience – becomes part of the final adjusted headcount ratio.

From an n x d matrix of achievements y, and a vector of deprivation cutoffs z, construct the *matrix of deprivations* associated with y, $g^0 = [g_{ij}^0]$, whose typical element g_{ij}^0 is defined by $g_{ij}^0 = w_j$ when $y_{ij} < z_j$, while $g_{ij}^0 = 0$ otherwise. Clearly, g^0 is an $n \times d$ matrix whose ij^{th} entry is w_j when person i is deprived in the jth dimension, and 0 when the person is not. The ith row vector of g^0, denoted g_i^0, is person i's *deprivation vector*. From the matrix g^0 we construct a column vector c of

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[1] The notation of this section follows Alkire and Foster (2011a).

weighted deprivation counts, whose i^{th} entry $c_i = |g_i^0|$ represents the sum of the weights for the dimensions in which i is deprived.

Identification: A second cutoff k is used to identify the poor. For $0 < k \le d$, let ϱ_k be the identification method defined by $\varrho_k(y_i;z) = 1$ whenever $c_i \ge k$, and $\varrho_k(y_i;z) = 0$ whenever $c_i < k$. In other words, ϱ_k identifies person i as poor when the count c_i is at least k; if not, i is not poor according to ϱ_k. For $k \le (\min w_j)$, we obtain the union identification case, and for $k = d$, the intersection; thus ϱ_k includes both of these methods given any w.

Censoring: Let $g^0(k)$ be the matrix obtained from g^0 by replacing its ith row g_{ij}^0 with a vector of zeros whenever $\varrho_k(y_i;z) = 0$, so that $g_{ij}^0(k) = g_{ij}^0 \varrho_k(y_i;z)$. Similarly, define the *censored vector of deprivation counts* $c(k)$ by $c_i(k) = \varrho_k(y_i;z) c_i$ for $i = 1, \ldots, n$.

Aggregation: The *adjusted headcount ratio* is the mean of the censored deprivation matrix: $M_0 = \mu(g^0(k))$. M_0 can also be expressed as the product of two intuitive partial indices: the headcount ratio and the average deprivation share across the poor. The headcount ratio or *incidence* $H = H(y;z)$ is defined by $H = q/n$, where $q = q(y;z) = \Sigma_{i=1}^{n} \rho_k(y_i, z)$ is number of persons in the set Z_k, and hence the number of the people identified as poor. The average deprivation share or *intensity* across the poor is given by $A = |c(k)|/(qd)$, and reflects the percentage of deprivations the average poor person experiences. We can equivalently express the adjusted headcount ratio as: $M_0 = HA = \mu(g^0(k))$.

Later in this paper we refer to the Adjusted Headcount ratio M_0 as the 'MPI' – the global Multidimensional Poverty Index. However in the methodological section we retain the more general term of M_0.

2.2. Changes in M₀, H and A across Two Time Periods

A strong motivation for computing multidimensional poverty is to track and analyse changes over time. This section describes how to compare M_0 and its associated partial indices over time using repeated cross-sectional data, which are the most widely available data.

The basic component of poverty comparisons is the absolute pace of change across periods. The **absolute rate of change** is the simple difference in poverty levels between two periods. Changes (increases or decreases) in poverty across two time periods can also be reported as a relative rate. The **relative rate of change** is the difference in levels across two periods as a percentage of the initial period. The analysis of absolute and relative changes together provides a clear sense of overall progress.

We denote the initial period by t^1 and the final period by t^2. The achievement matrices for period t^1 and t^2 are denoted by X_{t^1} and X_{t^2}, respectively. The same set of parameters – deprivation cutoff vector z, weight vector w and poverty cutoff k--are used in each period.

The **absolute rate of change** (Δ) is simply the difference in Adjusted Headcount Ratios between two periods and is computed as

$$\Delta M_0 = M_0(X_{t^2}) - M_0(X_{t^1}). \tag{1}$$

Similarly, for H and A:

$$\Delta H = H(X_{t^2}) - H(X_{t^1}). \tag{2}$$

$$\Delta A = A(X_{t^2}) - A(X_{t^1}). \tag{3}$$

The **relative rate of change** (δ) is the difference in poverty as a percentage of the initial poverty level and is computed for $M_0, H,$ and A (only M_0 shown) as

$$\delta M_0 = \frac{M_0(X_{t^2}) - M_0(X_{t^1})}{M_0(X_{t^1})} \times 100. \tag{4}$$

To compare the rates of poverty reduction across countries that have different period of references, annualized changes are used. The **annualized absolute rate of change** ($\overline{\Delta}$) is the difference in Adjusted Headcount Ratios between two periods divided by the difference in the two time periods ($t^2 - t^1$) and is computed for M_0 as

$$\overline{\Delta} M_0 = \frac{M_0(X_{t^2}) - M_0(X_{t^1})}{t^2 - t^1}. \tag{5}$$

The **annualized relative rate of change** ($\overline{\delta}$) is the compound rate of reduction in M_0 per year between the initial and the final periods, and is computed for M_0 as

$$\overline{\delta} M_0 = \left[\left(\frac{M_0(X_{t^2})}{M_0(X_{t^1})} \right)^{\frac{1}{t^2 - t^1}} - 1 \right] \times 100. \tag{6}$$

The same formula can be used to compute and report annualized changes in the other partial indices, namely $H, A,$ censored headcounts, or percent contributions.

Dimensional Changes (Uncensored and Censored Headcount Ratios)

The reductions in M_0, H, or A can be broken down by dimensions. The analysis of changes considers changes in both the raw or uncensored headcount ratios (h_j) and the censored headcount ratios ($h_j(k)$). These are the means of the jth column of the uncensored or censored deprivation matrix. By definition, the uncensored headcount ratio of an indicator is equal to or higher than the censored headcount of that indicator, and the changes in censored headcount ratios depict changes in deprivations among the poor. When deprivations are reduced among the poor, or when a poor person becomes non-poor, the censored deprivations change.

Of course in repeated cross-sectional data, comparisons will also be importantly affected by migration and demographic shifts.[2]

Subgroup Decomposition of Change in Poverty

One important property that the adjusted-FGT measures satisfy is population subgroup decomposability. The overall M_0 can be expressed as: $M_0 = \sum_{\ell=1}^{m} v^\ell M_0(X^\ell)$, where $M_0(X^\ell)$ denotes the Adjusted Headcount Ratio and $v^\ell = n^\ell/n$ the population share of subgroup ℓ. It is extremely useful to analyse poverty changes by population subgroups, to see if the poorest subgroups reduced poverty faster than less poor subgroups, and to see the dimensional composition of reduction across subgroups (Alkire and Seth 2013b). Population-shares for each time period must be analysed alongside subgroup trends.

To supplement the above analysis it is useful to explore the contribution of population subgroups to the overall reduction in poverty, which not only depends on the changes in subgroups' poverty but also on changes in the population composition. This can be seen by presenting the overall change in M_0 between two periods (t^1, t^2) as

$$\Delta M_0 = \sum_{\ell=1}^{m} \left(v^{\ell,t^2} M_0(X_{t^2}^\ell) - v^{\ell,t^1} M_0(X_{t^1}^\ell) \right). \tag{7}$$

Note that the overall change depends both on the changes in subgroup M_0's and the changes in population shares of the subgroups.

3. Data

The analysis on changes in MPI over time in this paper focuses on 34 countries: Armenia, Bangladesh, Benin, Bolivia, Cambodia, Cameroon, Colombia, Dominican Republic, Egypt, Ethiopia, Gabon, Ghana, Guyana, Haiti, India, Indonesia, Jordan, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Namibia, Nepal, Niger, Nigeria, Pakistan, Peru, Rwanda, Senegal, Tanzania, Uganda, Zambia and Zimbabwe. These are the countries for which there was a recent MPI estimation and comparable Demographic and Health Survey (DHS) datasets for analysis across time. The 34 countries come from every geographic region in the developing world. They contain more than 2.5 billion people,[3] which is around 37% of the world's population as per population estimates for 2010.[4] They are Low, Lower Middle, and Upper Middle Income Countries with a GNI per capita in 2012 from $320 in Malawi to $10,040 in Gabon.[5] Poverty levels range from low to high: the proportion of MPI poor[6] in the starting period ranged from

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[2] Given the extensive data in this paper, we have presented the number as well as the levels of poverty using the survey information but have not analysed the demographic shifts extensively using secondary data sources for each country.

[3] In this case, that is true using either population data from the 'closing' year of the survey or from 2010 for all countries.

[4] India alone corresponds to 1,2 billion people or 17.4% the world population. Other large countries in the analysis are: Indonesia 3.5%, Pakistan 2.5%, Bangladesh 2.2%, Nigeria 2.3% and Ethiopia 1.3%.

[5] The Income categories correspond to World Bank (2012). *World Development Indicators*. Washington DC: World Bank, accessed February 2013.

[6] The term 'MPI poor' refers to people who are in acute poverty because they are deprived in at least one-third (33%) of the weighted indicators.

1% to 94% across these countries. In three countries – Bangladesh, Ethiopia, and Peru – we have comparisons for two periods, meaning a total of 37 comparisons.

The most recent estimate in 20 out of the 37 comparisons is for 2010, 2011 or 2012; 14 countries have the most recent estimates between 2007 and 2009; and 3 countries have the most recent estimates between 2005 and 2006. The first data point ranges between 1998/9-2008. The time period ranges between 2 and 12 years depending on the frequency of data collection in each context; 30 of the periods last 4 to 7 years, for 5 countries the range is less than 4 years, for Mozambique it is 8 years and for Gabon the comparison covers 12 years. We have two periods of comparison for Ethiopia, 2000-2005 and 2005-2010, for Bangladesh, 2004-2007 and 2007-2011, and for Peru 2005-8 and 2008-12. Given the diversity in the length of period we undertake analysis based on the annualized change.[7]

To describe this sample of countries, we present some of the population aggregates for them. Just to give a very rough idea of their multidimensional poverty levels, if we aggregate the global MPI2014 estimates (not adjusted for comparability as they are in this paper) with 2010 population weights, this group of countries as a whole would be roughly as poor as Haiti.[8]
OPHI's Global MPI estimations for each country reported in Alkire Conconi and Seth (2014) and in UNDP's *Human Development Reports* the use the maximum information available in the survey on which the estimation is based. As a result, improvements in the questionnaire or survey design imply improvements in the MPI estimation. While this methodological strategy allows us to produce the most accurate estimation for a given year, it creates challenges of comparability over time. In order to compare the trends in MPI over time in this paper, we rigorously standardized the MPI parameters for those countries for which changes in the survey design may affect comparability across time. Comparable MPI values were created — which are denoted $\mathbf{MPI_T}$ as some of the actual figures in this study differ from published MPI values. This is because this particular study required strict and rigorous comparability across indicator sets. In the case of India, the indicator 'flooring' was not present in the first time period so an indicator 'housing' (having a similar headcount to flooring in the 2nd period) was used for comparison. We have information on the 10 MPI indicators for 29 countries; Guyana, Indonesia, Pakistan and Tanzania lack information on nutrition and Egypt lacks information on cooking fuel.[9]

As summarized in Table 1, the MPI uses information from ten indicators which are organized into three dimensions: health, education, and living standards, following the same three dimensions as the Human Development Index (HDI). Indicators in the dimensions health and education correspond to valuable *functionings,* while indicators in living standards are imperfect proxies for housing amenities and services which were identified as important aims by the Millennium Development Goals (MDGs) (Alkire & Santos, 2010). Naturally, data constraints are a common problem of an international comparable measure, so other dimensions that arguably are also important could not be included (remarkably employment, empowerment or being free

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[7] Note that statistical significance refers to the full period of comparison, not to the annualized change.
[8] In such a case, the illustrative aggregate MPI would be 0.249, and 47.1% of people would be poor.
[9] Details on the country-by-country MPI adjustment for comparability and differences with the published figures are available from the authors and are summarized in Alkire Conconi and Seth 2014 and Alkire Conconi and Roche 2013.

of violence.) There is no global consensus on what list of the core set of capabilities or functionings (see discussion on various sets in Alkire, 2002). The MPI indicators represent minimum international comparable standards related to the Millennium Development Goals (MDGs) and to core functionings. [10]

We compute a second measure reflecting multidimensional **Destitution**. The destitution measure – which is formally presented in Alkire, Conconi and Seth 2014, has the same indicators, weights, and poverty cutoff as the MPI. However for eight of the ten indicators, destitution deprivation cutoffs are used. These identify people as deprived if their level of achievement in an indicator is lower than the MPI cutoffs – such as severe malnutrition, or the loss of two children. If a person is deprived in more than one-third of the weighted indicators (using destitution cutoffs for eight of these), then that person is identified as destitute. The destitution adjusted headcount ratio and other consistent partial indices are constructed using the same mathematical formulations as the MPI and is denoted by a subscript D as in MPI_D.

Table 1: Multidimensional Poverty Index (MPI) and Multidimensional Destitution (MPI_D): Dimensions, indicators and deprivation cutoffs

Dimensions of poverty	Indicator	Deprived if…
Education	Years of Schooling	MPI: No household member has completed five years of schooling
		Dest: " " " " " more than one year " "
	Child School Attendance	MPI: Any school-aged child is not attending school up to class 8[+]
		Dest: No child is attending school up to class 6
Health	Child Mortality	MPI: Any child has died in the family
		Dest: Two or more children have died in the family
	Nutrition	MPI: Any adult or child for whom there is nutritional information is malnourished
		Dest: " " " *severely* malnourished.
Living Standard	Electricity	MPI & Dest: The household has no electricity
	Improved Sanitation	MPI: The household's sanitation facility is not improved (according to MDG guidelines), or it is improved but shared with other households
		Dest: The household uses open defecation
	Improved Drinking Water	MPI: The household does not have access to improved drinking water (according to MDG guidelines) or safe drinking water is more than a 30-minute walk from home, roundtrip
		Dest: The household does not have access to safe drinking water, or safe water is more than a 45-minute walk (round trip).
	Flooring	MPI & Dest: The household has a dirt, sand or dung floor
	Cooking Fuel	MPI: The household cooks with dung, wood or charcoal
		Dest: The household cooks with dung or wood.
	Assets ownership	MPI: The household does not own more than one radio, TV, telephone, bike, motorbike or refrigerator and does not own a car or truck
		Dest: The household has no assets (radio, mobile phone etc.) and no car.

Note: Further details in the Tables A.1 and A.2 in Annex.

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[10] The final list of indicators was set up based on a process of consultation which included the advisory groups for the UNDP HDRO (see Alkire & Santos, 2010). Note that country specific measures allows for setting nationally relevant indicators and thresholds. See CONEVAL (2010) for the Mexican case or Angulo, Diaz Cuervo and Pardon Pinzon (2011) for the case of Colombia.

Table 2: Level, change and statistical significance of changes in MPI$_T$

	Multidimensional Poverty		Annualized change		t-statistics for difference	
	Year 1	Year 2	Absolute	% Relative		
Armenia 2005-2010	.003 (.001)	.001 (.000)	.000	-17.7%	2.22	**
Bangladesh 2004-2007	.364 (.007)	.306 (.007)	-.020	-5.7%	5.60	***
Bangladesh 2007-2011	.306 (.007)	.245 (.006)	-.015	-5.4%	6.92	***
Benin 2001-2006	.474 (.008)	.414 (.006)	-.012	-2.7%	5.70	***
Bolivia 2003-2008	.175 (.005)	.089 (.003)	-.017	-12.6%	13.68	***
Cambodia 2005-2010	.299 (.006)	.212 (.006)	-.017	-6.7%	10.11	***
Cameroon 2004-2011	.298 (.009)	.248 (.007)	-.007	-2.6%	4.39	***
Colombia 2005-2010	.039 (.002)	.023 (.001)	-.003	-9.8%	8.04	***
Dominican Rep. 2002-2007	.040 (.002)	.020 (.001)	-.004	-13.0%	9.27	***
Egypt 2005-2008	.034 (.002)	.024 (.001)	-.003	-10.7%	4.69	***
Ethiopia 2000-2005	.677 (.004)	.604 (.006)	-.014	-2.2%	6.56	***
Ethiopia 2005-2011	.604 (.006)	.526 (.007)	-.013	-2.3%	7.83	***
Gabon 2000-2012	.161 (.006)	.075 (.004)	-.007	-6.1%	10.74	***
Ghana 2003-2008	.309 (.007)	.202 (.007)	-.021	-8.1%	10.39	***
Guyana 2005-2009	.050 (.004)	.041 (.002)	-.002	-4.5%	1.71	*
Haiti 2005/6-2012	.335 (.010)	.248 (.008)	-.013	-4.5%	6.43	***
India 1998/9-2005/6	.304 (.002)	.254 (.003)	-.007	-2.5%	12.81	***
Indonesia 2007-2012	.095 (.003)	.066 (.002)	-.006	-7.0%	8.93	***
Jordan 2007-2009	.013 (.002)	.011 (.001)	-.001	-8.9%	0.89	
Kenya 2003-2008/9	.296 (.008)	.244 (.010)	-.009	-3.5%	4.10	***
Lesotho 2004-2009	.238 (.005)	.190 (.007)	-.010	-4.4%	5.09	***
Madagascar 2004-2008/9	.374 (.015)	.414 (.007)	.009	2.3%	2.64	***
Malawi 2004-2010	.381 (.006)	.334 (.005)	-.008	-2.2%	6.06	***
Mozambique 2003-2011	.505 (.007)	.393 (.007)	-.014	-3.1%	11.86	***
Namibia 2000-2007	.194 (.008)	.154 (.005)	-.006	-3.2%	3.17	***
Nepal 2006-2011	.350 (.013)	.217 (.012)	-.027	-9.1%	7.61	***
Niger 2006-2012	.696 (.007)	.621 (.007)	-.012	-1.9%	7.80	***
Nigeria 2003-2008	.368 (.011)	.313 (.006)	-.011	-3.2%	4.04	***
Pakistan 2006/7-2012/13	.264 (.005)	.235 (.009)	-.005	-2.0%	2.86	***
Peru 2005-2008	.085 (.007)	.066 (.003)	-.006	-8.0%	1.83	*
Peru 2008-2012	.066 (.003)	.043 (.002)	-.006	-10.3%	5.47	***
Rwanda 2005-2010	.461 (.005)	.330 (.006)	-.026	-6.4%	15.65	***
Senegal 2005-2010/11	.440 (.019)	.423 (.010)	-.003	-0.7%	1.03	
Tanzania 2008-2010	.371 (.008)	.335 (.007)	-.018	-5.0%	3.48	***
Uganda 2006-2011	.420 (.007)	.343 (.009)	-.015	-3.9%	5.83	***
Zambia 2001/2-2007	.397 (.008)	.332 (.007)	-.012	-3.2%	4.59	***
Zimbabwe 2006-2010/11	.180 (.006)	.145 (.005)	-.008	-4.7%	4.61	***

Note: *** statistically significant at α=0.01, ** statistically significant at α=0.05, * statistically significant at α=0.10
Standard errors reported between brackets.

4. Overall changes: different pace to poverty reduction

4.1 Overview of poverty reduction

Table 2 presents the level, change and statistical significance of changes in the MPI.[11] The first insight in the analysis is that of the 34 countries, 30 - covering 98% of the poor people across all 34 - had statistically significant reductions in multidimensional poverty at least at α=0.05 significance level and 29 countries at α=0.01. Guyana and Peru (2005-2008) had reductions which were only significant at α=0.10. Yet, the pace of progress varied considerably across countries.

Nepal, Rwanda, Ghana and Tanzania had the largest absolute reductions in MPI poverty, greater than -0.018 per annum. Bangladesh, Cambodia, and Bolivia also proved to be strong performers, with reductions above -0.015 per year. In relative terms, Armenia, the Dominican Republic and Bolivia had an outstanding decrease in MPI, with an annualized reductions of more than 12%. Each of the top-performing countries – Nepal, Rwanda, Ghana, Tanzania, Cambodia and Bangladesh – decreased their original MPI by 5% to 9% per year relative to starting levels – making them successes in both relative and absolute terms.

Some countries stand out for their very poor performance. Madagascar had a statistically significant (at α=0.01) increase in multidimensional poverty. Jordan and Senegal had no significant reduction in poverty.

The level of success in translating the gains of growth into poverty reduction apparently varies across countries, and also sometimes across periods (see table A.5 in Appendix).[12] For instance, in the periods under analysis, Bangladesh and India registered similar rates of growth in GNI per capita, but Bangladesh reduced MPI more than twice as fast as India. On the other hand, although India has grown six times faster than Cameroon, the latter reduced MPI as fast as India. Finally, although the average growth rate in Ethiopia more than doubled between the period 2000-2005 and 2005-2008, the annualized relative change in the MPI remained practically the same.

The MPI uses a poverty cut-off of 33.33%, but the findings discussed above are robust to a range of different poverty cut-offs.[13]

4.2 Comparing evolution of MPI headcount and income poverty reduction

The previous section focused on the rate of poverty reduction in MPI. Now we focus on changes in the headcount ratio (H). The multidimensional headcount ratio and it annualized rates of change are presented in the first columns of Table 3.[14] The same 30 countries had significant changes in the headcount ratio, and those that were most successful in reducing the MPI – Nepal, Ghana, Bolivia, Cambodia, Rwanda, Tanzania and Bangladesh – also strongly reduced the incidence of multidimensional poverty, both in absolute and relative terms. Nepal reduced

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[11] In annex, Tables A3 and A4 presents the same figures for the incidence of multidimensional poverty and the average of deprivation among the poor.

[12] This topic requires far closer scrutiny and merits a separate study of its own.

[13] The next version of this paper will include the robustness results as a separate annexe.

[14] Table A3 in the appendix shows the hypothesis test results for variation in MPI poverty incidence (H).

incidence from 65% to 44% in a five year period (2006-2011), a yearly decrease of 4.1 percentage points. The other top performing countries registered annualized reductions between 2.3 and 3.4 percentage points.

The headcount ratio (H) can be seen as the multidimensional equivalent to the $1.25 a day poverty headcount. Thus, we proceed to compare the evolution of these two poverty measures. The $1.25 a day poverty headcounts and their annualized rate of change are presented in the last columns of Table 3.

This comparison is not straightforward so some caveats are necessary. The key limitation in comparing these two measures is the lack of frequently updated poverty data. For example, matching year comparisons in both the first and last period are only available for 7 of the 32 countries under analysis: Armenia, Colombia, Dominican Republic, Egypt, Ethiopia and Malawi. In the case of 8 countries the $1.25 data is older than the comparable MPI (Bangladesh,[15] Cambodia, Cameroon, Ghana, Indonesia, Mozambique, Nepal, Niger, Pakistan, Peru and Uganda); while in 9 countries there is not enough income poverty data to compute a comparable rate of income poverty reduction[16] (Benin, Gabon, Guyana, Haiti, Kenya, Lesotho, Namibia, Tanzania and Zimbabwe). Hence, we have matched data when possible. When income poverty data was not available from the same year of a survey, we used a linear interpolation between the two closest data points to estimate the level of income poverty at the year of the survey. Interpolation was employed for: Bangladesh, Bolivia, Cambodia, Jordan, Madagascar, Nigeria, Rwanda and Zambia. When interpolation was not possible (for instance, when the last year with income data was prior to the last year of the MPI-comparison period), we computed the rate of change of income poverty with reference to the periods closer to MPI-comparison period for which we had data. We used this procedure for: Cameroon, Ghana, India, Indonesia, Mozambique, Nepal, Niger, Pakistan, Peru, Senegal and Uganda. The final comparison covers 25 countries for which very roughly comparable income poverty data is available from PovCalNet (World Bank 2012a), but the conclusions may be affected by the lack of matching data points.

Multidimensional poverty incidence was larger than income poverty at the beginning of the comparison period in 19 of the 25 countries. The gap between the two figures varied between an insignificant amount for Nigeria 2003 (with an MPI headcount of 63.5% and income poverty of 63.8%)[17] and 43 percentage points for Cameroon 2004 (with and MPI and income incidence of 53.8 and 10.8, respectively).

There is no clear relationship between the reduction in multidimensional and income poverty. Figure 1 depicts the annualized absolute rates of change in MPI and $1.25/day incidence for the 22 countries that reduced the multidimensional headcount significantly and for which we have income data.[18] There are countries where income poverty outstripped MPI incidence. This

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[15] The most recent income poverty figure available for Bangladesh is for 2010, while the most recent MPI figure is for 2011. So, this affects the comparison 2007-2011.

[16] In most of these countries there is only one data point, or there is no income data after the start of the MPI-comparison period. In the case of Zimbabwe there is no information at all.

[17] In the case of Nigeria, the income poverty figure actually lies within the 95% confidence interval of the MPI headcount, which is between 60.4% and 66.7%.

[18] Relatively to the data presented in Table 3, the graph excludes Jordan and Senegal, where the reduction in the multidimensional headcount was not significant, as well as Madagascar, where multidimensional poverty incidence actually increased.

occurred, for instance, in Niger, Ethiopia, Uganda and Mozambique. In other countries the reverse happened. Bolivia, Ghana, and Rwanda cut MPI incidence two to three times faster than income poverty in absolute terms, and closed the gap to eradication faster in relative terms, too. In Nigeria and Zambia the two kinds of poverty changed in different directions: MPI incidence reduced, but income poverty increased.

Table 3: Comparison between MPI and $1.25/day Incidence Per Year

Country & Period	MPI Headcount (H)				$1.25 Headcount				Years of income information used to compute change rates	
	Level		Annualized change		Level		Annualized change			
	Year 1	Year 2	Absolute	Relative	Year 1	Year 2	Absolute	Relative	Year 1	Year 2
Armenia 2005-2010	.8 (.2)	.3 (.1)	-.1	-12.4%	4.0	2.5	-.3	-9.1%	2005	2010
Bangladesh 2004-2011 [1]	67.1 (.9)	49.6 (.9)	-2.5	-4.2%	52.1	43.3	-1.5	-3.1%	2000, 2005	2,010
Bangladesh 2004-2007	67.1 (.9)	59.0 (1.1)	-2.7	-4.2%	52.1	36.1	-1.5	-3.0%	2000, 2005	2005, 2010
Bangladesh 2007-2011	59.0 (1.1)	49.6 (.9)	-2.4	-4.2%	50.5	43.3	-1.4	-3.0%	2005	2010
Benin 2001-2006 [2]	79.1 (.9)	72.1 (.8)	-1.4	-1.8%	-	-	-	-	-	-
Bolivia 2003-2008	36.3 (.8)	20.5 (.7)	-3.2	-10.8%	20.7	15.6	-1.0	-5.5%	2002, 2005	2008
Cambodia 2005-2010	59.2 (1.1)	45.9 (1.1)	-2.7	-5.0%	35.9	18.6	-4.3	-15.1%	2004, 2007	2009
Cameroon 2004-2011	53.8 (1.3)	46.0 (1.1)	-1.1	-2.2%	10.8	9.6	-.2	-2.0%	2001	2007
Colombia 2005-2010	9.0 (.3)	5.7 (.2)	-.7	-8.9%	12.7	8.2	-.9	-8.5%	2005	2010
Dominican Rep. 2002-2007	9.3 (.4)	5.1 (.3)	-.8	-11.5%	5.7	3.8	-.4	-7.6%	2002	2007
Egypt 2005-2008	8.2 (.4)	6.0 (.3)	-.8	-10.2%	2.0	1.7	-.1	-5.3%	2005	2008
Ethiopia 2000-2011 [1]	93.6 (.4)	85.2 (.9)	-.8	-0.8%	55.6	30.7	-2.3	-5.3%	2000	2011
Ethiopia 2000-2005	93.6 (.4)	89.9 (.6)	-.7	-0.8%	55.6	39.0	-3.3	-6.9%	2000	2005
Ethiopia 2005-2011	89.9 (.6)	85.2 (.9)	-.8	-0.9%	39.0	30.7	-1.4	-3.9%	2005	2011
Gabon 2000-2012 [3]	35.4 (1.2)	17.4 (1.0)	-1.5	-5.7%	-	-	-	-	-	-
Ghana 2003-2008	58.7 (1.1)	41.9 (1.2)	-3.4	-6.5%	39.1	28.6	-1.3	-3.8%	1998	2006
Guyana 2005-2009 [4]	12.7 (1.0)	10.6 (.6)	-.5	-4.4%	-	-	-	-	-	-
Haiti 2005/6-2012 [5]	60.6 (1.5)	49.4 (1.3)	-1.7	-3.1%	-	-	-	-	-	-
India 1998/9-2005/6	57.3 (.4)	49.0 (.4)	-1.18	-2.2%	49.4	41.6	-.7	-1.5%	1994	2005
Indonesia 2007-2012	20.8 (.5)	15.5 (.4)	-1.1	-5.7%	24.2	16.2	-2.0	-9.5%	2007	2011
Jordan 2007-2009	3.6 (.6)	3.0 (.4)	-.3	-7.8%	0.2	0.1	-.1	-35.0%	2006, 2008	2008, 2010
Kenya 2003-2008/9 [6]	60.1 (1.2)	51.2 (1.6)	-1.6	-2.9%	-	-	-	-	-	-
Lesotho 2004-2009 [7]	50.8 (1.0)	42.2 (1.4)	-1.7	-3.7%	-	-	-	-	-	-
Madagascar 2004-2008/9	67.0 (2.1)	73.3 (1.1)	1.4	2.0%	70.0	77.3	1.6	2.2%	2001, 2005	2005, 2010
Malawi 2004-2010	72.1 (1.0)	66.7 (.8)	-.9	-1.3%	73.9	61.6	-2.0	-3.0%	2004	2010
Mozambique 2003-2011	82.3 (.7)	70.3 (1.0)	-1.5	-1.9%	74.7	59.6	-3.0	-4.4%	2003	2008
Namibia 2000-2007 [8]	41.3 (1.6)	33.7 (1.0)	-1.1	-2.9%	-	-	-	-	-	-
Nepal 2006-2011	64.7 (2.0)	44.2 (2.0)	-4.1	-7.4%	53.1	24.8	-4.0	-10.3%	2003	2010
Niger 2006-2012	93.5 (.5)	89.99 (.6)	-.6	-0.6%	65.9	43.6	-7.4	-12.8%	2005	2008
Nigeria 2003-2008	63.5 (1.6)	54.7 (.9)	-1.8	-3.0%	63.8	66.3	.5	0.8%	1996, 2004	2004, 2010
Pakistan 2006/7-2012/13	49.4 (.8)	45.2 (1.3)	-.7	-1.5%	22.6	21.0	-.8	-3.5%	2006	2008
Peru 2005-2012 [1]	19.5 (1.4)	10.5 (.4)	-1.3	-8.5%	8.6	4.9	-.7	-10.5%	2005	2010
Peru 2005-2008	19.5 (1.4)	15.7 (.7)	-1.3	-6.9%	8.6	6.2	-.8	-10.2%	2005	2008
Peru 2008-2012	15.7 (.7)	10.5 (.4)	-1.3	-9.6%	6.2	4.9	-.6	-11.0%	2008	2010
Rwanda 2005-2010	82.9 (.8)	66.1 (1.0)	-3.4	-4.4%	72.5	65.0	-1.5	-2.2%	2000, 2006	2006, 2011
Senegal 2005-2010/11	71.2 (2.4)	70.8 (1.5)	-.1	-0.1%	33.5	29.6	-.6	-2.0%	2005	2011
Tanzania 2008-2010 [9]	65.6 (1.2)	61.1 (1.1)	-2.3	-3.5%	-	-	-	-	-	-
Uganda 2006-2011	77.9 (1.1)	66.8 (1.5)	-2.2	-3.0%	51.5	38.0	-4.5	-9.6%	2006	2009
Zambia 2001/2-2007	72.0 (1.3)	64.8 (1.2)	-1.3	-1.9%	61.9	70.0	1.5	2.3%	1998, 2006	2006, 2010
Zimbabwe 2006-2010/11 [10]	39.7 (1.1)	33.5 (1.1)	-1.4	-3.7%	-	-	-	-	-	-

1 For Bangladesh, Ethiopia and Peru we also include a row with the overall change, i.e. with the information for the period between the first and last year for which we have information on multidimensional poverty.

2 The most recent income poverty figure available for Benin is for 2003, making impossible to compute the rate of reduction between 2001-2006.

3 In Gabon, since 1990, there is only income poverty data for 2005. Thus, it is not possible to accurately compute the poverty reduction rate between 2000-2012.

4 The most recent income poverty measure available for Guyana is for 1998 making impossible to know the rate of reduction between 2005-2009.

5 The most recent income poverty measure available for Haiti is for 2001, making impossible to know the rate of reduction between 2006-2012.

6 The most recent income poverty measures available for Kenya are for 2005 and 1997, making difficult an accurate comparison with MPI changes.

7 The most recent income poverty measure available for Lesotho is for 2003, making impossible to know the rate of reduction between 2004-2009.

8 The most recent income poverty measures available for Namibia are for 2004 and 1993, making difficult an accurate comparison with MPI changes.

Figure 1: Absolute Reduction of MPI and $1.25/day Incidence Per Year
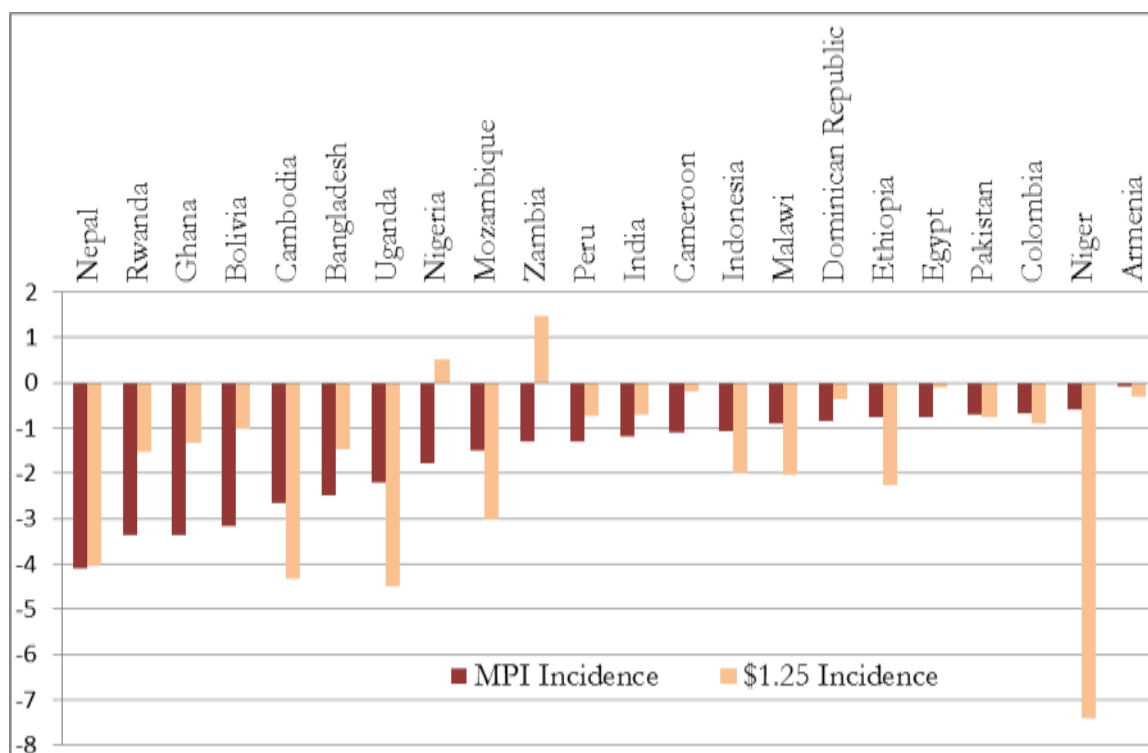
If progress was only measured by reducing income poverty, Niger, Uganda, Cambodia, Nepal, Mozambique and Ethiopia would be considered the leaders in poverty reduction, in that order. The tremendous gains of Rwanda, Ghana, and Bolivia would have been invisible.

If income and multidimensional poverty measures moved together, and if they both identified the same people as poor, there would be no need for two separate measures. While the issue of identification lies beyond the scope of this paper, we do observe significant variations between both the rates and, at times, the direction of change of these two poverty measures. This suggests that MPI trends are not tracking $1.25 trends and it is important to look at both "sister" measures at the same time.

Finally, in order to eradicate poverty, the speed of reduction in the multidimensional headcount ratio (H) has to outpace population growth (see Table A.5 in Appendix). Sadly, of the 30 countries that reduced MPI significantly, when population growth is taken into account, only 20 countries reduced the number of poor people across the periods.[19] In ten countries, population growth wiped out poverty reduction: in Benin, Cameroon, Ethiopia, Kenya, Malawi, Mozambique, Niger, Pakistan, Uganda and Zambia, the absolute number of poor people went up.

[19] This result is in terms of absolute numbers of poor people only; significance tests are pending.

5. Decomposition of changes over time: different path to poverty reduction
5.1 Incidence and intensity effects

The MPI provides incentives to reduce poverty in two ways: either to reduce **H**, the incidence of poverty, or to reduce **A**, the intensity of poverty among poor people. Countries may choose to adopt incidence-based or intensity-based poverty reduction schemes and achieve the same overall poverty reduction levels. While different pathways exist, the most balanced is one in which policymakers and civil society combine resources and efforts to simultaneously reduce incidence (H) and intensity (A) of poverty. However, in practice often countries may only reduce A or H separately, or in some cases it is possible that both measures do not improve but increase.

Figure 2: Annual Absolute Change in Incidence and Intensity
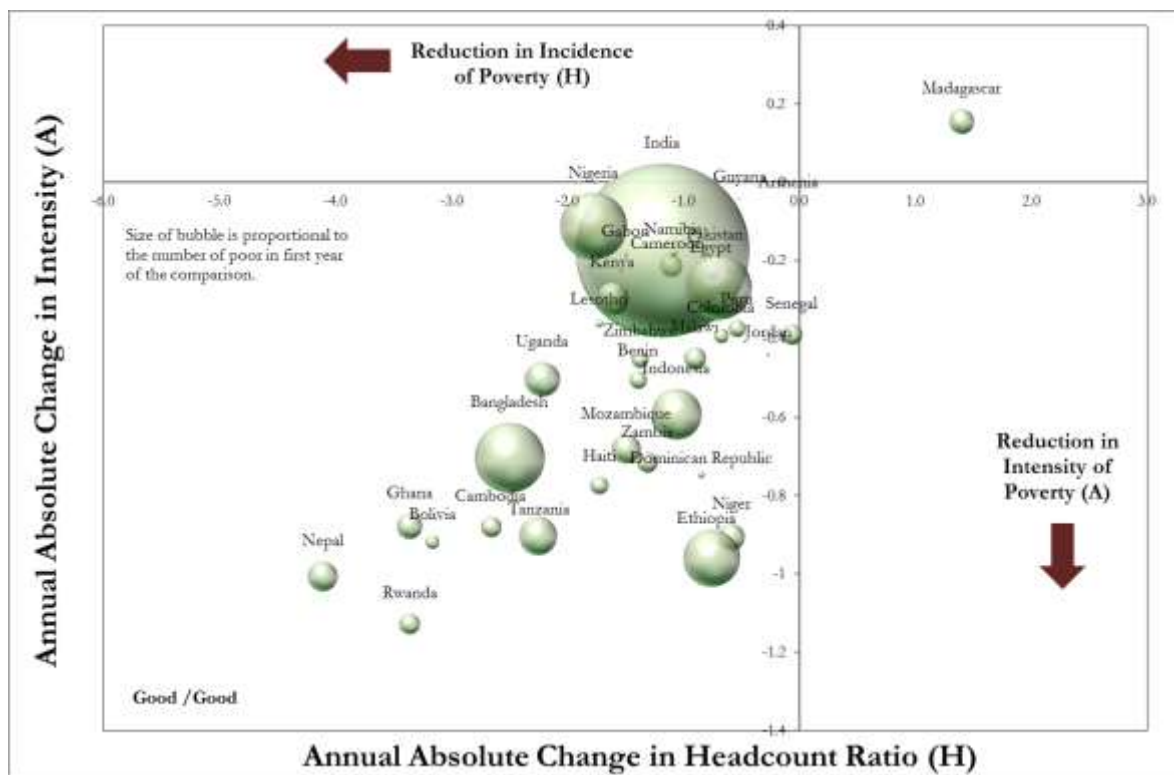
Figure 2 depicts the annualized absolute change in incidence and intensity (in percentage points) in each of the 34 countries. An overview of these figures suggests they have followed a wide range of reduction pathways. Nearly all countries reduced incidence more than intensity. The exceptions were Ethiopia, where incidence fell by around 0.8 percentage points per year, while intensity fell by 1.0; and Niger, where incidence dropped 0.6 percentage points and intensity dropped 0.9. Interestingly, the 'top performing' countries reduced both the incidence and the intensity of MPI poverty. Absolute reductions in intensity were strongest in Rwanda, Nepal, Ethiopia, Bolivia, Niger, Tanzania, Cambodia and Ghana, showing the important progress made in the poorest countries to reduce the share of hardships experienced by those who are poor.

There are some countries that have the same levels of poverty reduction, but different levels of reduction in terms of incidence and intensity. For example, Nigeria and Zambia had similar initial poverty levels (0.368 and 0.397, respectively) and have similar annualized poverty reduction rates (0.011 and 0.012 points, respectively), but attained the same level of poverty reduction in different ways. In Nigeria the reduction seems to be almost exclusively driven by a cut in incidence, the headcount has reduced 1.8 percentage points per year while intensity had no statistically significant change. Zambia, on the other hand, reduced significantly both incidence (1.3 percentage points per year) and intensity (0.7 percentage points).

5.2 How MPI changes: Reductions in each indicator

Another analysis is to look at the reduction by each indicator of the MPI index. We start by looking at changes in deprivations of all the population. In Table A.6 we present the annualized absolute change of the raw headcounts of all indicators. The progress in each dimension varies greatly across countries. Bolivia, India, Indonesia and Nepal statistically reduced deprivations in all indicators.[20] Nepal made remarkable improvements in assets and electricity coverage, the respective raw headcounts reduced 6.2 and 5.3 percentage points per year. Bolivia registered its highest advance in school attendance and sanitation, with reductions of 5.2 and 3.9 percentage points per year, respectively. The reductions in India and Indonesia were overall more modest. In India the biggest improvements were at the level of sanitation and flooring (1.6 percentage points).

As our aim is to focus on the poor, we proceed to examine the changes in deprivations among the poor, i.e. the changes in the censored headcounts (with and without weights, as mentioned above). This analysis will allow us to identify which indicators are fueling the reduction in poverty, both through slicing incidence and/or intensity. Note that a reduction in the censored headcount of an indicator may reflect two different events: (i) poor people who were deprived in such indicator became non-poor; or/and (2) poor people became, on average, less deprived in that indicator. Table A.7 displays the annualized absolute change of the censored headcounts of all indicators. When focusing exclusively on the poor, we find that, in addition to the countries listed above, Cambodia, Colombia, the Dominican Republic, Gabon, Mozambique and Rwanda also managed to significantly reduce the deprivations in all indicators. Rwanda made exceptional progress in sanitation and drinking water. The percentage of people who were poor and deprived in sanitation reduced on average 7.6 percentage points per year, between 2005 and 2010; with respect to drinking water, the reduction was 5.6 percentage points. Gabon made the highest advancements in sanitation and cooking fuel (1.4 percentage points); Colombia had the biggest improvements in cooking fuel and assets (0.5 percentage points); and the Dominican Republic made the highest reductions in school attendance and years of school.

The above refer to changes in the censored headcount ratios, which are important for monitoring purposes. A change in MPI is accelerated more by improvements in health and education indicators given the higher weights on these indicators. Recall, that although there are equal weights on each dimension, as the living standards dimension has three times more indicators than the other two dimensions (six versus two), each of its indicators carry a third of

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[20] All these reductions were significant at α=0.01 or α=0.05, with the exception of the reduction in deprivation in drinking water in Nepal that was significant only at α=0.1.

the weight of the indicators of education and health.[21] When we consider both the rate of change and the indicator weights together, we see that Bolivia's changes were strongly driven by improvements in child school attendance and child mortality, India's were slightly more influenced by nutrition and child mortality; Indonesia's gains in child school attendance and child mortality were more visible, and Nepal's progress was strongly supported by improvements in all four health and education indicators plus electricity (Table A.8).

In the large majority of the countries school attendance or child mortality was the top contributor to the MPI reduction. Looking at the most successful countries in reducing the MPI we also find a diversity of pathways. In Tanzania more than one third of the poverty cut is explained by a reduction in child mortality (34 percent). School attendance was clearly the leading indicator in Bolivia (37 percent), Ghana (32 percent) and Cambodia (22 percent). In Nepal and Bangladesh there seems to be an emphasis in nutrition. In Bangladesh, nutrition was the largest contributor in both periods of comparison, and its contribution increased from 19 percent in 2004-2007 to 20 percent in 2007-2011. Finally, in Rwanda improved sanitation was the main contributor (16%). This country has the most balanced profile of contributions, the interval between the highest and lowest contribution is only 9 percentage points.[22]

Apart from the several positive stories that this data highlighted, Madagascar's data depicted an increase in deprivation. It is interesting to see and track the changes in all the relevant indicators and notice that not one indicator remained unchanged in these analyses over time.

5.3 Sub-national MPI changes: Uneven progress in poverty reduction

Along with the eradication of extreme poverty, it is important to ensure that no group of population is left behind. A useful trait of the MPI measure is its ability to go beyond the national level and be applied to a subgroup of populations. This feature allows us to compare the progress of different groups and potentially identify those in risk of falling behind. In this section we examine the extent to which progress was evenly achieved across sub-national regions and different ethnic groups.

5.3.1 Comparing urban and rural areas

Table A.9 presents the levels and changes in MPI by rural and urban areas for each of the 34 countries studied.[23] Poverty was higher in rural than urban areas in all of the countries in both of the periods. Twenty six countries had significant reductions in urban poverty; and 30 in rural areas.

Rural areas as a whole reduced multidimensional poverty faster than urban areas. On average, rural areas reduced the headcount ratio by 1.3 percentage points per year as compared to 1

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[21] This means that, for instance, a one percentage point reduction in the censored headcount ratio of malnutrition has a three times greater impact on changes in MPI than a one percentage point reduction in the censored headcount ratio of the use of cooking fuel, everything else remaining unchanged. The weights rebalance policy incentives, so that each dimension has roughly equivalent prominence.

[22] In the complete set of countries Gabon actually has the lowest gap between the largest and smallest contributions, only 6 percentage points.

[23] The levels and changes in incidence (H) and intensity (A) by rural and urban areas can be found in http://www.ophi.org.uk/.

percentage point per year for urban areas. The annualized average rural MPI reduction was 0.009, whereas the urban MPI reduction was 0.005.[24] Naturally rural-urban migration will also have affected these rates. Rural areas had faster rates of reduction in most indicators.

5.3.2 Comparing sub-national regions

In this section we compare the MPI reduction across sub-national regions. We have data representative at the regional level for 31 countries (the exceptions are Armenia, Guyana and Peru), covering 338 regions. Table A.10 presents the percentage of regions that in each country have reduced poverty significantly at a significance level of α=0.05, as well as the percentage of poor people that lived in those regions at the initial year of the comparison period.

Eight cases – Bangladesh, between 2007-2011, Bolivia, Gabon, Ghana, Malawi, Mozambique, Niger and Rwanda – showed statistically significant reductions in each of their subnational regions. In Bangladesh (2004-2007) and Benin only one of the regions did not reduce poverty. In total, 208 regions which are home to 78% of the poor showed statistically significant reductions in MPI.

Happily, in nine countries the poorest subnational area made the biggest strides in reducing multidimensional poverty. In Bangladesh (2007-2011), Bolivia, Colombia, Egypt, Kenya, Malawi, Mozambique, Namibia and Niger, the poorest region reduced poverty the most.

When comparing only the bottom and top regions, we find that often the national MPI hides large regional disparities. The country with the largest range of subnational MPI values at the initial year was Kenya. In 2003, Nairobi, the capital, had an MPI of 0.048, while the North Eastern region, which borders Somalia, had a MPI of 0.681. But Zimbabwe was the country with the largest ratio at the initial year. In 2006, the province Matabeleland North had an MPI of 0.301, almost 30 times higher than the MPI of the small province Bulawayo. There were countries, of course, with much smaller differences. For instance, at the initial year the three regions of Jordan had a MPI between 0.01 and 0.018. In 2005, the gap in Egypt was 0.071 and it actually decreased to 0.054 in 2008. In Bangladesh, Malawi, Rwanda, Tanzania and Jordan, the MPI of the poorest region was less than twice the MPI of the richest region, at the initial year.[25] The MPI range depends upon the number and population share of the regions, but can provide some indication of geographic variation.

These findings suggest that is important to disaggregate MPI reduction across regions, since the national average may hide very different regional paths.

A powerful instrument to obtain further insights into the distribution of poverty reduction across regions is to depict the annualized absolute change in MPI against the initial MPI for all regions. As an example, Figure 3 presents this graph for all regions of Mozambique (in orange) and Nepal (in green). The size of the bubbles is proportional to the number of poor people living in the region in the initial year. In Nepal, we see a strong negative correlation between the

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[24] These figures are weighted using the population in period 2.

initial level of the MPI and the annualized absolute change in the MPI. This means that in Nepal poorer regions have tended to reduce poverty more than less poor regions and, hence, they are converging in absolute terms. In Mozambique this correlation is not as clear, the trend line is almost flat. Although the poorest region, Nampula, has the highest reduction (0.021 points), Zambezia and Cabo Delgado, other two of the poorest regions, have reduced poverty much slower. Overall, this graph suggests that in Nepal the poverty reduction strategy has favored the poorest regions, while in Mozambique it did not.

Figure 3: Poverty reduction in regions of Mozambique and Nepal
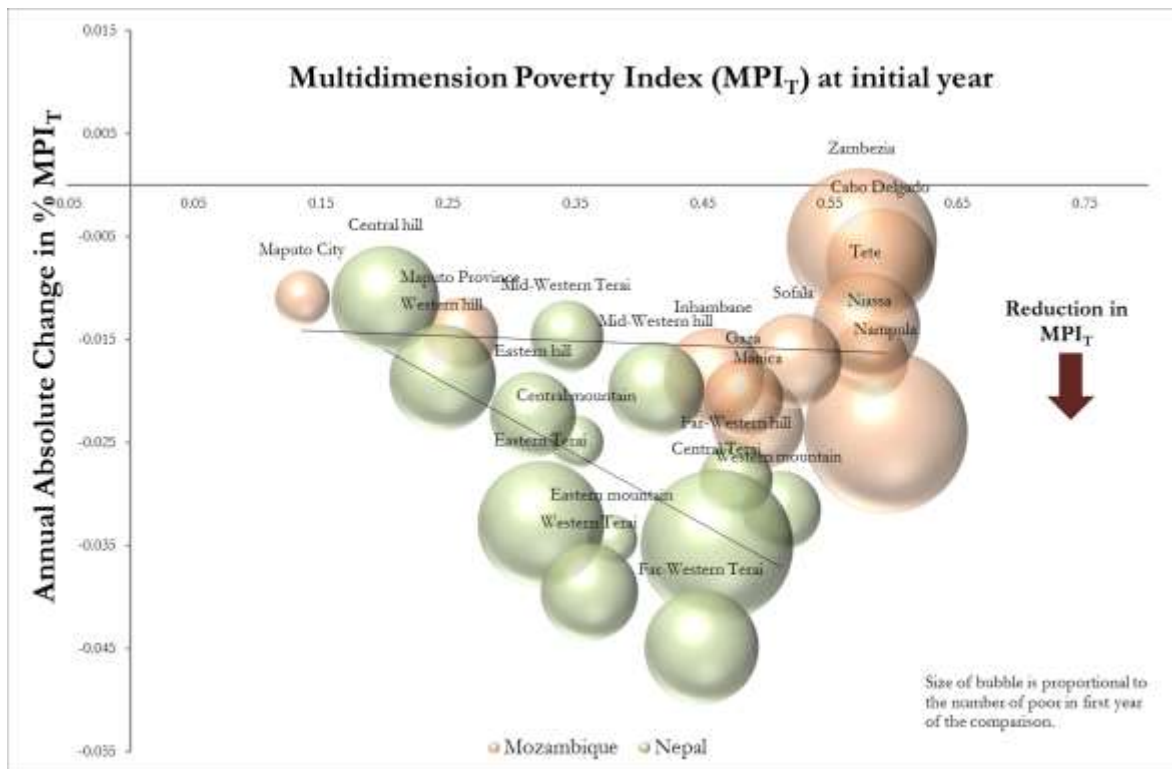
5.3.2 Comparing ethnic groups

In this section we compare changes over time across the main ethnic groups in Benin, Ghana and Kenya. In all countries we divided the population into the main ethnic groups; a group named 'other', which combines all ethnic groups with very small share of the population (generally each representing less than 3 percent of the population); and a group named 'missing', which includes all individuals for whom we have no information regarding ethnicity. We included the residual categories 'other' and 'missing' in order to ensure that the average MPI of the groups corresponded to the national MPI reported in Table 2.

The MPI levels and change by ethnic group for Benin, Ghana and Kenya are presented in the Table A.11 in annex. All three countries had statistically significant reductions in MPI. But these gains were distributed very differently across ethnic groups.

Figure 4: Poverty reduction among ethnic groups in Benin
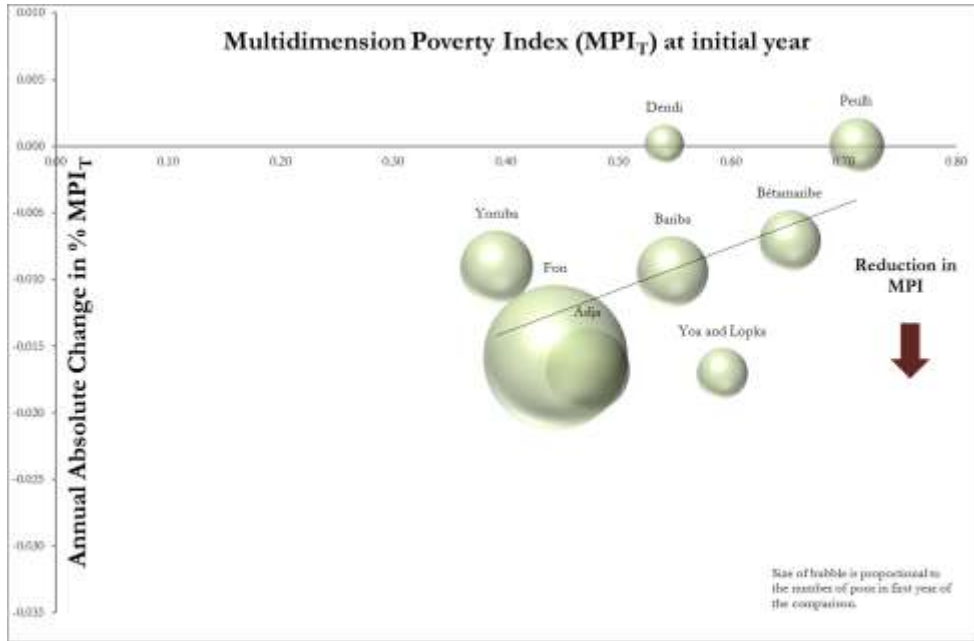
Benin reduced MPI significantly for only two out of the eight main ethnic groups, and poverty reduction was practically zero among the poorest ethnic group, the Peulh. Figure 4 shows MPI levels in 2003 and annualized absolute change in MPI for the eight main ethnic groups in Benin. There is a clear upward trend. The poorer ethnic groups tend to reduce poverty less than the 'richer' groups. For example, the gap between the MPI of the Peulh and the Yoruba, the least poor group, increased from 0.320 to 0.365 points. This kind of increase in disparity across ethnic groups reflects an increase in horizontal inequality among the poor.

Figure 5: Poverty reduction among ethnic groups in Ghana
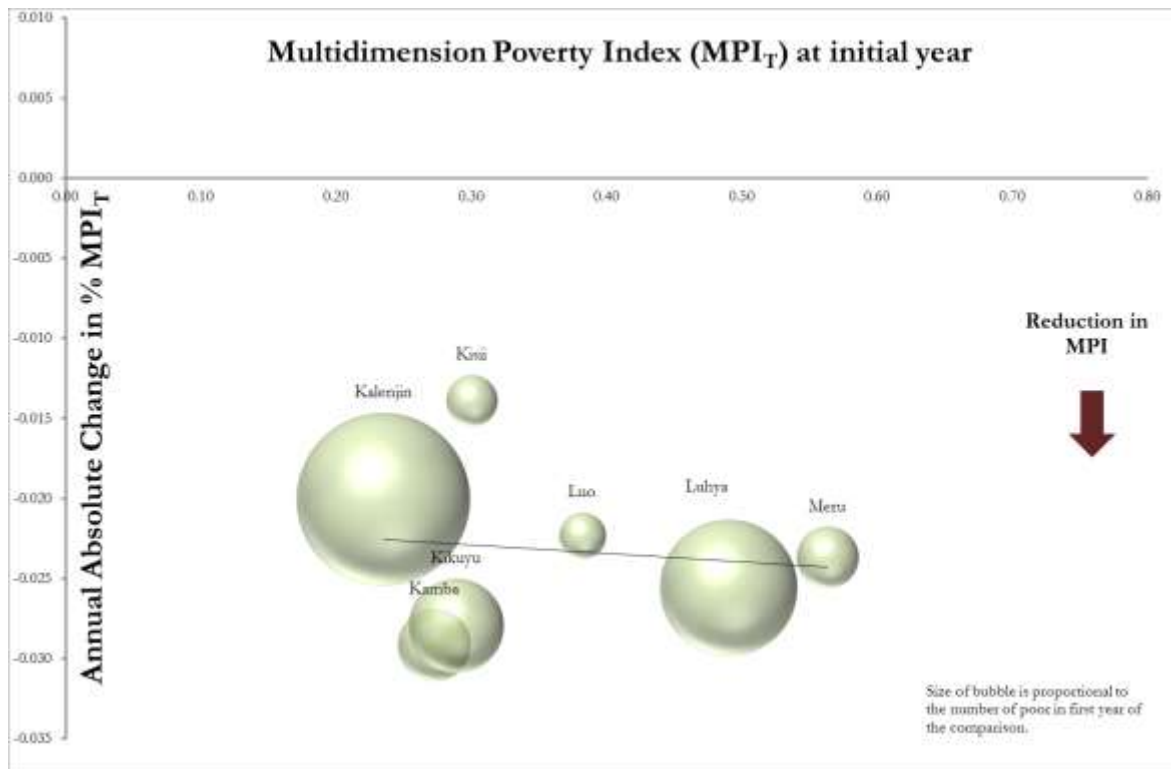
Ghana cut poverty among all ethnic groups, although the reduction was not statistically significant among the Guan. The annualized absolute change and the initial MPI for the ethnic groups in Ghana are displayed in Figure 5. Here, the poorer ethnic groups reduced MPI slightly more that less poor groups. The trend line has a smooth downward slope.

Turning to our third example, Kenya had an excellent performance in terms of reducing poverty inequality across ethnic groups. The poorest group, the Somali, had the biggest (absolute) reduction in poverty. The Somali group reduced poverty at a yearly rate of 4.6 percent, 1.1 percentage points above the national rate of 3.5 percent. The gap between this group and the top group, the Kikuyo, has reduced from 0.428 to 0.335. Figure 6 shows that the success of Kenya in reducing inequality is largely driven by the amazing performance of the Somali. In fact, poverty was significantly reduced at a level of $\alpha=0.05$ only for three, for Somali, Kikuyu and Luo, of the nine main ethnic groups.

Figure 6: Poverty reduction among ethnic groups in Kenya
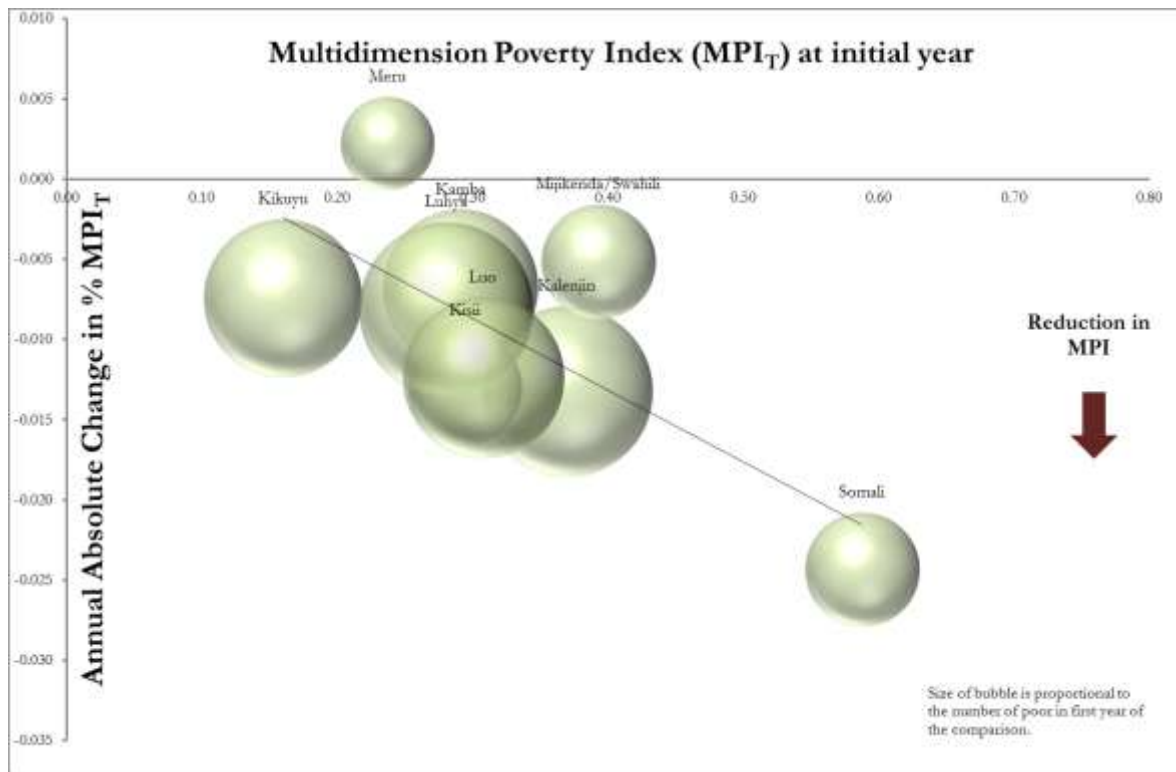
6. Changes in Destitution

In addition to studying trends in multidimensional poverty, we study trends in destitution for the same countries and periods. The destitution indicators have more extreme deprivation cut-offs: for example, severe malnutrition instead of malnutrition; losing two children; having all primary school-aged children out of school; not having anyone with at least a year of schooling in the household; practising open defecation; and so on. Only for electricity and flooring are the indicators unchanged. A person is destitute if he or she is deprived in at least a third of the weighted destitution indicators (Alkire, Conconi and Seth 2014). By definition, a destitute is always multidimensionally poor.

Table A.12 presents the levels and changes in destitution and in the headcount of destitute. Considering a significance level of $\alpha=0.05$, we find that 28 of our 34 countries reduced destitution and 29 cut the headcount of destitute. In Armenia, Egypt, Jordan, Madagascar and Pakistan there was no change in destitution.

The good news is that, in nearly all of the countries analysed, destitution is being reduced in relative annualized terms faster than multidimensional poverty. In Ethiopia, Guyana, Niger and Tanzania that is also true in absolute terms. When this happens, the poorest of the poor are being reached, and there is potential for those who are destitute to 'catch up'.

What's noticeable again is that the countries doing best at tackling destitution are mostly LICs and LDCs; the largest absolute reduction in the destitution MPI was seen in Ethiopia, followed by Niger, Ghana, Bolivia, Rwanda, Tanzania, Nepal, Haiti, Bangladesh (2004-2007) and Zambia – all of them LICS or LDCs except Ghana and Bolivia.

Between 2000 and 2011, Ethiopia reduced the percentage of the population who were destitute by a massive 30 percentage points, and reduced intensity among the destitute by 10 percentage points. That is, the average destitute person in 2011 was deprived in nearly two standard of living indicators less than the average destitute person had been in 2000. During the first five years, reduction sped forward at 3.3 percentage points each year, with significant reductions in all indicators, and the strongest gains in water, sanitation, and educational variables. From 2005 to 2011 progress slowed slightly, but the reduction was still impressive at 2.2 percentage points of the population annually.

Comparing the annualized absolute changes in the poverty headcount (Table 3) and in the destitute headcount (Table A.13), we find a few countries that performed comparatively well in the former but less well in the latter. Of course this also depends upon initial levels of Destitution. For instance Cambodia ranks 5th in cutting the poverty headcount, but only 11th in cutting destitute, although its destitution figures are also a bit lower relative to others. We also find the opposite, countries like Ethiopia that performed comparatively better in cutting destitute (ranked 3rd) than in reducing incidence (ranked in 26th). To shed some light into this issue, Figure 7 illustrates the decomposition of the change in the multidimensional headcount ratio into change in moderate poverty and change in destitute, following the methodology developed by Alkire and Seth (2013a).[26]

Figure 7: Decomposing the change in Multidimensional Headcount Ratio into change in Moderate Poverty and Change in Destitute
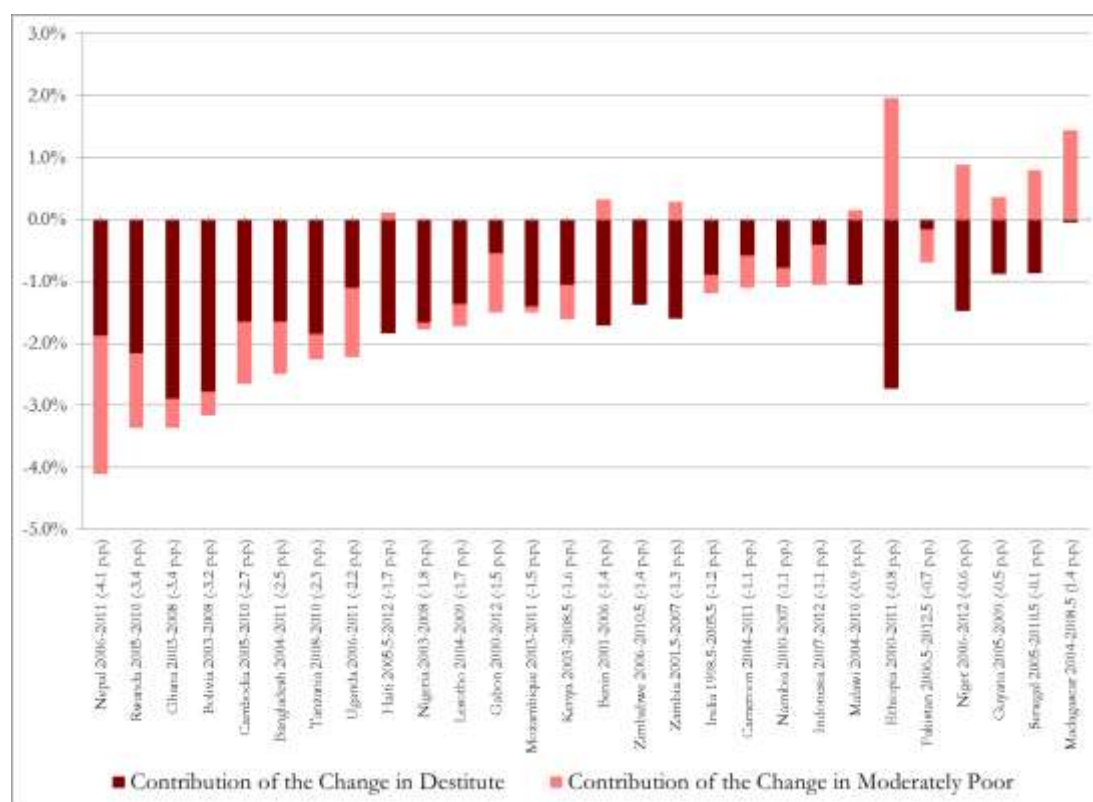
For instance Ethiopia, Pakistan and Malawi reduced the percentage of multidimensionally poor at similar rates, between 0.7 and 0.9 percentage points per year. However, they have done it in very different ways. Malawi has mostly lifted destitute out of poverty. Ethiopia has mostly reduced the deprivations of the destitute, lifting them to moderately poor. Pakistan has mostly lifted the moderately poor out of poverty.

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[26] We are grateful to Suman Seth for this graphic.

Another example is Gabon and Mozambique. These countries cut poverty incidence by 1.5 percentage points per year. But, while Gabon has predominantly lifted moderately poor out of poverty, Mozambique has focused on lifting the destitute out of poverty.

In the large majority of the countries, destitution is more prevalent in rural areas (see Table A.12 in Appendix). Fortunately, it is also in those areas that most countries have made more important progress in absolute terms. Rural reductions in destitution were statistically significant in 27 countries, whereas urban reductions were significant in only 20 countries.

In terms of indicators, the majority of the countries registered significant improvements in sanitation and child mortality, suggesting that health and sanitation policies are playing an important role in improving the lives of the poorest of the poor.

7. Concluding remarks

This paper has described how 34 countries have reduced multidimensional poverty. We have scrutinised their experiences by speed and by indicator, by subnational region, by ethnic group, by rural-urban area, and by inequality among the poor. We described that there were not regular relationships between the speed of multidimensional poverty reduction with those in reducing a complementary income-based measure of poverty, and observed varying relationships with economic growth.

Fundamentally, however, we measure poverty so we can try to eradicate it. A 'how' analysis like this could be usefully complemented by many 'why' analyses, with country-specific details on policy and context. These combined analyses – the measurement and analysis of successful poverty reduction - can be used to inform citizens, target resources, design policies and institutions, advertise strategies of success, monitor progress, and otherwise lend more energy and insight to poverty reduction. Well-communicated poverty measures can also draw other actors – from poor people and communities to the private sector, philanthropists and volunteers – to join in this work and increase its chances of success.

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Appendix - Tables

Table A.1: The dimensions, indicators, deprivation thresholds and weights of the MPI

Dimension	Indicator	Deprived if…	Related to…	Relative Weight
Education	Years of Schooling	No household member has completed five years of schooling.	MDG2	1/6
	Child School Attendance	Any school-aged child is not attending school up to class 8.	MDG2	1/6
Health	Child Mortality	Any child has died in the family.	MDG4	1/6
	Nutrition	Any adult or child for whom there is nutritional information is malnourished.*	MDG1	1/6
Living Standard	Electricity	The household has no electricity.		1/18
	Improved Sanitation	The household's sanitation facility is not improved (according to MDG guidelines), or it is improved but shared with other households.**	MDG7	1/18
	Safe Drinking Water	The household does not have access to safe drinking water (according to MDG guidelines) or safe drinking water is more than a 30-minute walk from home, roundtrip.***	MDG7	1/18
	Flooring	The household has a dirt, sand or dung floor.		1/18
	Cooking Fuel	The household cooks with dung, wood or charcoal.	MDG7	1/18
	Assets Ownership	The household does not own more than one radio, TV, telephone, bike, motorbike or refrigerator and does not own a car or truck.	MDG7	1/18

Note: MDG1 is Eradicate Extreme Poverty and Hunger; MDG2 is Achieve Universal Primary Education; MDG4 is Reduce Child Mortality; MDG7 is Ensure Environmental Sustainability.

+ Data Source for age children start school: United Nations Educational, Scientific and Cultural Organization, Institute for Statistics database, Table 1. Education systems [UIS, http://stats.uis.unesco.org/unesco/TableViewer/tableView.aspx?ReportId=163].

*Adults are considered malnourished if their BMI is below 18.5 m/kg². Children are considered malnourished if their z-score of weight-for-age is below minus two standard deviations from the median of the reference population.

**A household is considered to have access to improved sanitation if it has some type of flush toilet or latrine, or ventilated improved pit or composting toilet, provided that they are not shared.

***A household has access to clean drinking water if the water source is any of the following types: piped water, public tap, borehole or pump, protected well, protected spring or rainwater, and it is within a distance of 30 minutes' walk (roundtrip).

Source: Alkire and Santos (2010). For details on the rationale behind each indicator, please see Alkire and Santos (2010, 2013).

Table A.2: The dimensions, indicators, deprivation thresholds and weights of Destitution

Dimension	Indicator	Deprived if…	Related to…	Relative Weight
Education	Years of Schooling	No household member has completed **at least one** year of schooling (>=1).	MDG2	1/6
	Child School Attendance	**No child** is attending school up to the age at which they should finish **class 6.**	MDG2	1/6
Health	Child Mortality	**2 or more children** have died in the household	MDG4	1/6
	Nutrition	**Severe undernourishment** of any adult (**BMI<17kg/m²**) or any child (**-3 standard deviations** from the median).	MDG1	1/6
Living Standard	Electricity	The household has no electricity (**no change**).		1/18
	Improved Sanitation	There is **no facility (open defecation).**	MDG7	1/18

Source: Alkire, Conconi and Seth (2014).

Table A.3: Levels, changes and statistical significance of changes in Incidence (H$_T$)

	Multidimensional Headcount ratio (H$_T$)		Annualized change		t-statistics for difference	
	Year 1	Year 2	Absolute	% Relative		
Armenia 2005-2010	.8 (.2)	.3 (.1)	-.1	-12.4%	2.21	**
Bangladesh 2004-2007	67.1 (.9)	59.0 (1.1)	-2.7	-4.2%	5.03	***
Bangladesh 2007-2011	59.0 (1.1)	49.6 (.9)	-2.4	-4.2%	6.76	***
Benin 2001-2006	79.1 (.9)	72.1 (.8)	-1.4	-1.8%	5.63	***
Bolivia 2003-2008	36.3 (.8)	20.5 (.7)	-3.2	-10.8%	13.15	***
Cambodia 2005-2010	59.2 (1.1)	45.9 (1.1)	-2.7	-5.0%	8.57	***
Cameroon 2004-2011	53.8 (1.3)	46.0 (1.1)	-1.1	-2.2%	4.77	***
Colombia 2005-2010	9.0 (.3)	5.7 (.2)	-.7	-8.9%	8.05	***
Dominican Rep. 2002-2007	9.3 (.4)	5.1 (.3)	-.8	-11.5%	8.59	***
Egypt 2005-2008	8.2 (.4)	6.0 (.3)	-.8	-10.2%	4.69	***
Ethiopia 2000-2005	93.6 (.4)	89.9 (.6)	-.7	-0.8%	3.32	***
Ethiopia 2005-2011	89.9 (.6)	85.2 (.9)	-.8	-0.9%	4.17	***
Gabon 2000-2012	35.4 (1.2)	17.4 (1.0)	-1.5	-5.7%	10.83	***
Ghana 2003-2008	58.7 (1.1)	41.9 (1.2)	-3.4	-6.5%	9.74	***
Guyana 2005-2009	12.7 (1.0)	10.6 (.6)	-.5	-4.4%	1.76	*
Haiti 2005/6-2012	60.6 (1.5)	49.4 (1.3)	-1.7	-3.1%	5.19	***
India 1998/9-2005/6	57.3 (.4)	49.0 (.4)	-1.2	-2.2%	13.43	***
Indonesia 2007-2012	20.8 (.5)	15.5 (.4)	-1.1	-5.7%	8.15	***
Jordan 2007-2009	3.6 (.6)	3.0 (.4)	-.3	-7.8%	0.79	
Kenya 2003-2008/9	60.1 (1.2)	51.2 (1.6)	-1.6	-2.9%	4.18	***
Lesotho 2004-2009	50.8 (1.0)	42.2 (1.4)	-1.7	-3.7%	4.76	***
Madagascar 2004-2008/9	67.0 (2.1)	73.3 (1.1)	1.4	2.0%	2.87	***
Malawi 2004-2010	72.1 (1.0)	66.7 (.8)	-.9	-1.3%	4.33	***
Mozambique 2003-2011	82.3 (.7)	70.3 (1.0)	-1.5	-1.9%	9.90	***
Namibia 2000-2007	41.3 (1.6)	33.7 (1.0)	-1.1	-2.9%	3.03	***
Nepal 2006-2011	64.7 (2.0)	44.2 (2.0)	-4.1	-7.4%	7.30	***
Niger 2006-2012	93.5 (.5)	90.0 (.6)	-.6	-0.6%	4.62	***
Nigeria 2003-2008	63.5 (1.6)	54.7 (.9)	-1.8	-3.0%	4.56	***
Pakistan 2006/7-2012/13	49.4 (.8)	45.2 (1.3)	-.7	-1.5%	2.63	***
Peru 2005-2008	19.5 (1.4)	15.7 (.7)	-1.3	-6.9%	1.68	*
Peru 2008-2012	15.7 (.7)	10.5 (.4)	-1.3	-9.6%	5.55	***
Rwanda 2005-2010	82.9 (.8)	66.1 (1.0)	-3.4	-4.4%	12.60	***
Senegal 2005-2010/11	71.2 (2.4)	70.8 (1.5)	-.1	-0.1%	0.15	
Tanzania 2008-2010	65.6 (1.2)	61.1 (1.1)	-2.3	-3.5%	2.88	***
Uganda 2006-2011	77.9 (1.1)	66.8 (1.5)	-2.2	-3.0%	5.25	***
Zambia 2001/2-2007	72.0 (1.3)	64.8 (1.2)	-1.3	-1.9%	3.09	***
Zimbabwe 2006-2010/11	39.7 (1.1)	33.5 (1.1)	-1.4	-3.7%	3.98	***

Note: *** statistically significant at α=0.01, ** statistically significant at α=0.05, * statistically significant at α=0.10
Standard errors reported between brackets.

Table A.4: Levels, changes and statistical significance of changes in Intensity (A$_T$)

	Intensity of Poverty (A$_T$)		Annualized Change		t-statistics for	
	Year 1	Year 2	Absolute	% Relative	difference	
Armenia 2005-2010	35.4 (.9)	35.2 (1.7)	-.1	-0.1%	0.13	
Bangladesh 2004-2007	54.3 (.3)	51.8 (.3)	-.8	-1.6%	4.84	***
Bangladesh 2007-2011	51.8 (.3)	49.3 (.4)	-.6	-1.2%	4.69	***
Benin 2001-2006	59.9 (.6)	57.4 (.4)	-.5	-0.9%	3.61	***
Bolivia 2003-2008	48.3 (.3)	43.7 (.4)	-.9	-2.0%	8.87	***
Cambodia 2005-2010	50.5 (.4)	46.1 (.3)	-.9	-1.8%	8.68	***
Cameroon 2004-2011	55.3 (.7)	53.8 (.7)	-.2	-0.4%	1.48	
Colombia 2005-2010	42.9 (.4)	41.0 (.3)	-.4	-0.9%	4.02	***
Dominican Rep. 2002-2007	43.1 (.3)	39.4 (.3)	-.7	-1.8%	7.60	***
Egypt 2005-2008	41.4 (.4)	40.7 (.4)	-.2	-0.5%	1.17	
Ethiopia 2000-2005	72.3 (.3)	67.2 (.4)	-1.0	-1.4%	8.64	***
Ethiopia 2005-2011	67.2 (.4)	61.8 (.5)	-.9	-1.4%	8.65	***
Gabon 2000-2012	45.5 (.4)	43.3 (.4)	-.2	-0.4%	3.46	***
Ghana 2003-2008	52.5 (.4)	48.1 (.5)	-.9	-1.7%	6.53	***
Guyana 2005-2009	39.2 (.8)	39.0 (.5)	.0	-0.1%	0.18	
Haiti 2005/6-2012	55.3 (.7)	50.3 (.5)	-.8	-1.5%	6.21	***
India 1998/9-2005/6	53.1 (.1)	51.9 (.2)	-.2	-0.3%	4.90	***
Indonesia 2007-2012	45.9 (.3)	42.9 (.2)	-.6	-1.3%	8.11	***
Jordan 2007-2009	35.5 (.5)	34.6 (.5)	-.4	-1.2%	1.23	
Kenya 2003-2008/9	49.3 (.5)	47.7 (.7)	-.3	-0.6%	1.87	*
Lesotho 2004-2009	46.8 (.3)	45.0 (.4)	-.4	-0.8%	3.23	***
Madagascar 2004-2008/9	55.8 (.6)	56.5 (.4)	.2	0.3%	0.94	
Malawi 2004-2010	52.8 (.3)	50.1 (.3)	-.4	-0.9%	7.01	***
Mozambique 2003-2011	61.3 (.4)	55.9 (.4)	-.7	-1.2%	9.93	***
Namibia 2000-2007	47.1 (.6)	45.8 (.4)	-.2	-0.4%	1.67	*
Nepal 2006-2011	54.0 (.6)	49.0 (.7)	-1.0	-1.9%	5.68	***
Niger 2006-2012	74.4 (.6)	69.0 (.5)	-.9	-1.3%	7.45	***
Nigeria 2003-2008	57.9 (.7)	57.3 (.4)	-.1	-0.2%	0.57	
Pakistan 2006/7-2012/13	53.4 (.4)	51.8 (.6)	-.3	-0.5%	2.29	**
Peru 2005-2008	43.7 (.5)	42.2 (.4)	-.5	-1.1%	2.23	**
Peru 2008-2012	42.2 (.4)	41.0 (.3)	-.3	-0.7%	2.53	**
Rwanda 2005-2010	55.6 (.3)	49.9 (.3)	-1.1	-2.1%	12.98	***
Senegal 2005-2010/11	61.8 (1.0)	59.7 (.7)	-.4	-0.6%	1.94	*
Tanzania 2008-2010	56.6 (.5)	54.8 (.4)	-.9	-1.6%	3.07	***
Uganda 2006-2011	53.9 (.4)	51.4 (.5)	-.5	-0.9%	3.66	***
Zambia 2001/2-2007	55.1 (.4)	51.2 (.4)	-.7	-1.3%	6.98	***
Zimbabwe 2006-2010/11	45.3 (.3)	43.2 (.3)	-.5	-1.0%	4.51	***

Note: *** statistically significant at α=0.01, ** statistically significant at α=0.05, * statistically significant at α=0.10 Standard errors reported between brackets.

Table A.5: Multidimensional Poverty and GNI per capita growth

Countries	Multidimensional Poverty			GNI per capita[1]	
	MPI_T Year 1	Annualized absolute change in MPI_T	Annualized relative change in MPI_T	GNI per capita in Year 1, Atlas method (current US$)	Average GNI per capita growth (annual %)
Armenia 2005-2010	0.003	0.000	-17.7%	1,500	6.5%
Bangladesh 2004-2007	0.364	-0.020	-5.7%	430	5.4%
Bangladesh 2007-2011	0.306	-0.015	-5.4%	510	5.5%
Benin 2001-2006	0.474	-0.012	-2.7%	360	0.7%
Bolivia 2003-2008	0.175	-0.017	-12.6%	900	2.5%
Cambodia 2005-2010	0.299	-0.017	-6.7%	460	6.1%
Cameroon 2004-2011	0.298	-0.007	-2.6%	800	0.8%
Colombia 2005-2010	0.039	-0.003	-9.8%	2,930	2.9%
Dominican Republic 2002-2007	0.040	-0.004	-13.0%	2,780	4.3%
Egypt 2005-2008	0.034	-0.003	-10.7%	1,290	4.9%
Ethiopia 2000-2005	0.677	-0.014	-2.2%	120	3.6%
Ethiopia 2005-2011	0.604	-0.013	-2.3%	160	8.2%
Gabon 2000-2012	0.161	-0.007	-6.1%	3,100	-0.1%
Ghana 2003-2008	0.309	-0.021	-8.1%	320	4.8%
Guyana 2005-2009[3]	0.050	-0.002	-4.5%	1,070	0.0%
Haiti 2005/6-2012[2]	0.335	-0.013	-4.5%	445	0.2%
India 1998/9-2005/6[2]	0.304	-0.007	-2.5%	435	5.1%
Indonesia 2007-2012	0.095	-0.006	-7.0%	1,610	4.8%
Jordan 2007-2009	0.013	-0.001	-8.9%	3,030	4.5%
Kenya 2003-2008/9[2]	0.296	-0.009	-3.5%	410	2.0%
Lesotho 2004-2009	0.238	-0.010	-4.4%	750	-0.1%
Madagascar 2004-2008/9[2]	0.374	0.009	2.3%	290	2.0%
Malawi 2004-2010	0.381	-0.008	-2.2%	220	0.8%
Mozambique 2003-2011	0.505	-0.014	-3.1%	230	4.7%
Namibia 2000-2007	0.194	-0.006	-3.2%	1,950	3.6%
Nepal 2006-2011	0.350	-0.027	-9.1%	350	3.1%
Niger 2006-2012[4]	0.696	-0.012	-1.9%	270	0.9%
Nigeria 2003-2008[3]	0.368	-0.011	-3.2%	410	-
Pakistan 2006/7-2012/13[2]	0.264	-0.005	-2.0%	845	1.8%
Peru 2005-2008	0.085	-0.006	-8.0%	2,700	6.7%
Peru 2008-2012	0.066	-0.006	-10.3%	4,020	5.7%
Rwanda 2005-2010	0.461	-0.026	-6.4%	260	5.6%
Senegal 2005-2010/11[2]	0.440	-0.003	-0.7%	770	1.1%
Tanzania 2008-2010	0.371	-0.018	-5.0%	450	3.5%
Uganda 2006-2011	0.420	-0.015	-3.9%	330	4.5%

Zambia 2001/2-2007[2]	0.397	-0.012	-3.2%	325	-1.4%
Zimbabwe 2006-2010/11[5]	0.180	-0.008	-4.7%	420	-

(1) Data downloaded from World Development Indicators website on January 15, 2014.

(2) In the cases where the survey referred to two years, the GDP per capita presented in the Table corresponds to the average GDP per capita of those two years.

(3) There is no official data on the GNI per capita for Guyana and Nigeria.

(4) The average of the GNI per capita growth for Niger was computed based on the period 2009 and 2012, as there was no data for previous years.

(5) There is no income data for Zimbabwe.

Table A.6: Annualized absolute change in raw headcounts

	Annualized Absolute Change in Raw Headcounts (in percentage points)									
	Years of schooling	Child school attendance	Child mortality	Nutrition	Electricity	Improved sanitation	Drinking water	Flooring	Cooking fuel	Asset ownership
Armenia 2005-2010	0.0	-0.1	-0.7***	0.10	0.0	2.4***	0.2	-0.2***	-0.6***	-1.4***
Bangladesh 2004-2007	-1.0**	-1.4***	-1.6***	-1.8***	-2.3**	-7.0***	0.0	-1.4**	-0.3	-0.1
Bangladesh 2007-2011	-1.3***	-0.6***	-1.2***	-1.6***	-3.1***	-3.0***	-0.1	-1.3***	-0.9***	1.2***
Benin 2001-2006	-1.2***	-2.1***	-1.5***	-0.6***	-0.8***	-0.5***	-.3	.3	.0	-.1
Bolivia 2003-2008	-0.3**	-5.2***	-0.9***	-0.3***	-1.8***	-3.9***	-1.4***	-0.8***	-0.7**	-1.6***
Cambodia 2005-2010	-1.3***	-2.3***	-1.7***	-0.4*	-2.3***	-2.5***	-0.6	-0.3**	-0.9***	-1.8***
Cameroon 2004-2011	-0.9***	-.3	-0.2	.0	-0.9***	-2.4***	.0	-0.7***	.0	-3.2***
Colombia 2005-2010	-0.3***	-0.7***	-0.3***	-0.4***	-0.2***	-0.7***	.2	-0.4***	-0.4***	-1.1***
Dominican Rep. 2002-2007	-0.5***	-1.6***	-0.5***	-0.1***	-0.7***	-1.0***	1.7***	-0.5***	-0.3*	0.1
Egypt 2005-2008	0.0	-0.7***	-2.2***	0.1	-0.1*	-1.1***	-0.1	-0.6**		-0.3**
Ethiopia 2000-2005	-2.2***	-0.8**	-1.3***	-1.0***	-0.1	-1.0***	-6.0***	-0.2	0.1	-0.5***
Ethiopia 2005-2011	-2.3***	-2.8***	-0.7***	-0.8***	-1.2***	-0.6***	2.3***	-0.8***	0.2**	-0.6***
Gabon 2000-2012	-0.5***	-0.5***	-0.2	-0.3***	-1.6***	-0.9***	-1.0***	-1.1***	-1.9***	-0.6***
Ghana 2003-2008	-1.0***	-4.4***	-1.1***	-0.8***	-2.4***	-0.9***	-3.5***	0.6**	-0.7***	-2.2***
Guyana 2005-2009	0.2**	0.4***	-0.7***		-0.4	-1.2**	0.0	-0.1	-0.6	-1.0**
Haiti 2006-2012	-1.3***	-1.6***	-0.7***	-1.1***	-0.7	-1.5***	0.5	-0.2	0.2*	-3.3***
India 1998/9-2005/6	-0.5***	-0.2**	-0.6***	-0.6***	-0.9***	-1.6***	-1.1***	-1.6***	-0.3***	-0.8***
Indonesia 2007-2012	-0.2***	-0.4***	-0.5***		-1.0***	-2.2***	-2.1***	-0.8***	-3.1***	-3.2***
Jordan 2007-2009	0.4***	2.9***	-0.1	-2.1***	-0.5***	-1.1***	0.0	0.0	0.0	-0.1
Kenya 2003-2008/9	-0.6**	-0.4*	-0.9***	0.0	-0.9***	-2.6***	-2.8***	-0.8*	0.5*	-0.4
Lesotho 2004-2009	-0.6***	-1.1***	-0.8***	-0.2	-2.0***	-1.7***	-1.1**	-1.1***	-0.5	0.2
Madagascar 2004-2008/9	1.1**	0.0	0.8***	2.8***	0.5	-0.4***	-1.8**	-0.2	0.1***	-1.2**
Malawi 2004-2010	-0.9***	-1.1***	1.0***	-0.5***	-0.4***	-1.3***	-2.1***	-0.5*	0.1	-1.7***
Mozambique 2003-2011	-2.2***	-1.4***	-1.1***	-0.5***	-1.5***	-2.4***	-0.4*	-0.2	-0.1	-1.0***
Namibia 2000-2007	-0.2	-0.7***	0.0	-0.4**	-1.1**	-1.2***	-0.9**	-1.2**	-0.5	-1.2***
Nepal 2006-2011	-1.6***	-1.5***	-2.0***	-2.4***	-5.3***	-3.1***	-0.8*	-1.3**	-1.5***	-6.2***
Niger 2006-2012	-1.0***	-2.0***	-1.6***	-0.7**	-0.8***	-0.9***	-2.0***	-0.6**	0.0	-0.2
Nigeria 2003-2008	-0.4	-0.7**	-1.2***	-0.6**	0.7	-4.6***	-3.4***	0.4	0.3	-0.3
Pakistan 2007-2013	-0.4**	-0.9***	-0.1		-0.5*	-1.8***	-0.1	-0.7**	-0.6*	-1.9***
Peru 2005-2008	0.1	-0.2	-0.5*	-0.3*	-2.4**	-4.0***	-1.6	0.7	-0.7	-2.0**
Peru 2008-2012	-0.3***	0.0	-0.5***	0.1	-1.9***	-0.3	-1.0***	-1.1***	-1.6***	-2.8***
Rwanda 2005-2010	-1.6***	-1.7***	-1.5***	-1.6***	-1.0***	-7.4***	-4.8***	-1.0***	0.0	-1.5***
Senegal 2005-2010/11	-1.1***	0.1	-0.7	1.6***	-1.8***	-1.7***	-1.9***	-0.3	2.0***	-0.6
Tanzania 2008-2010	-0.7	0.5	-2.8***		-1.3**	-4.6***	1.5	-1.6***	-0.5*	-4.5***
Uganda 2006-2011	-0.2	-0.8***	-1.3***	-0.7*	-0.9***	-2.2***	-3.5***	-0.7	-0.1***	-4.1***
Zambia 2001/2-2007	-0.1	-2.7***	-0.2	-2.0***	-0.1	-1.6***	1.7***	0.2	0.1	-2.4***
Zimbabwe 2006-2010/11	-0.1**	-1.1***	0.2	-0.7***	0.1	1.1***	-0.7	-0.8**	0.6	-3.1***

Note: *** statistically significant at α=0.01, ** statistically significant at α=0.05, * statistically significant at α=0.10

Table A.7: Annualized absolute change in censured headcounts

	Annualized Absolute Change in Censored Headcounts (in percentage points)									
	Years of schooling	Child school attendance	Child mortality	Nutrition	Electricity	Improved sanitation	Drinking water	Flooring	Cooking fuel	Asset ownership
Armenia 2005-2010	0.0	0.0	-0.1**	0.0	0.0	-0.1**	0.0	0.0	-0.0**	-0.0**
Bangladesh 2004-2007	-1.1**	-1.4***	-1.8***	-2.2***	-2.6***	-5.8***	0.0	-2.8***	-2.6***	-2.0***
Bangladesh 2007-2011	-1.4***	-0.8***	-1.3***	-1.8***	-2.8***	-2.7***	-0.2	-2.2***	-2.3***	-1.4***
Benin 2001-2006	-1.2***	-1.9***	-1.6***	-0.7***	-1.3***	-1.5***	-0.6	0.1	-1.4***	-0.5*
Bolivia 2003-2008	-0.4***	-3.9***	-1.5***	-0.4***	-2.2***	-3.1***	-1.6***	-1.9***	-2.1***	-1.7***
Cambodia 2005-2010	-1.4***	-2.3***	-2.0***	-1.1***	-2.7***	-2.8***	-1.2***	-0.3**	-2.7***	-1.7***
Cameroon 2004-2011	-0.9***	-.3	-0.5**	.0	-1.1***	-2.1***	-0.4	-1.0***	-1.1***	-2.2***
Colombia 2005-2010	-0.3***	-0.4***	-0.2***	-0.3***	-0.2***	-0.4***	-0.1**	-0.3***	-0.5***	-0.5***
Dominican Rep. 2002-2007	-0.5***	-0.7***	-0.4***	-0.2***	-0.4***	-0.4***	-0.1**	-0.3***	-0.4***	-0.4***
Egypt 2005-2008	-0.2*	-0.6***	-0.8***	0.0	0.0	-0.3***	0.0	-0.3***		-0.2***
Ethiopia 2000-2005	-2.2***	-0.9***	-1.3***	-1.0***	-0.4	-1.4***	-5.9***	-0.5*	-0.6**	-0.8***
Ethiopia 2005-2011	-2.3***	-2.8***	-0.7***	-0.9***	-1.3***	-1.1***	2.0***	-1.1***	-0.7***	-1.0***
Gabon 2000-2012	-0.4***	-0.4***	-0.6***	-0.4***	-1.2***	-1.4***	-1.0***	-1.0***	-1.4***	-1.2***
Ghana 2003-2008	-1.1***	-4.1***	-1.5***	-1.1***	-2.8***	-3.5***	-3.2***	0.1	-3.3***	-2.5***
Guyana 2005-2009	0.1***	0.1**	-0.7**		-0.1	-0.4**	0.0	0.0	0.0	0.0
Haiti 2006-2012	-1.3***	-1.6***	-1.1***	-1.1***	-1.6***	-1.8***	-0.2	-0.7**	-1.7***	-2.8***
India 1998/9-2005/6	-0.5***	-0.3***	-0.6***	-0.7***	-0.9***	-1.5***	-0.9***	-1.3***	-1.1***	-1.0***
Indonesia 2007-2012	-0.3***	-0.5***	-0.5***		-0.5***	-1.0***	-0.8***	-0.5***	-1.2***	-1.2***
Jordan 2007-2009	0.1	0.2	-0.1	-0.7***	0.0	-0.1	-0.1	0.0	0.0	0.0
Kenya 2003-2008/9	-0.6**	-0.4*	-0.9***	-0.1	-1.7***	-2.4***	-2.6***	-1.5***	-1.5***	-1.4***
Lesotho 2004-2009	-0.6***	-0.9***	-0.7***	-0.3	-1.9***	-2.1***	-1.1***	-1.6***	-1.5***	-1.6***
Madagascar 2004-2008/9	1.1**	0.1	0.8**	2.5***	1.2***	1.2**	-0.8	-0.2	1.4***	-0.2
Malawi 2004-2010	-0.9***	-1.1***	0.8***	-0.6***	-1.1***	-1.5***	-2.1***	-1.2***	-0.9***	-1.6***
Mozambique 2003-2011	-2.2***	-1.4***	-1.3***	-0.6***	-1.7***	-2.4***	-0.9***	-1.0***	-1.5***	-1.3***
Namibia 2000-2007	-0.2	-0.7***	-0.1	-0.4***	-1.1***	-1.0***	-0.9***	-1.1***	-0.9**	-1.1***
Nepal 2006-2011	-1.8***	-1.5***	-2.3***	-3.0***	-4.7***	-3.7***	-1.1***	-3.7***	-4.1***	-5.0***
Niger 2006-2012	-1.0***	-2.0***	-1.7***	-0.9***	-0.9***	-1.1***	-2.1***	-0.8***	-0.6***	-0.4
Nigeria 2003-2008	-0.4	-0.7**	-1.6***	-0.8***	-0.1	-4.4***	-2.8***	0.2	-1.5***	-0.8**
Pakistan 2007-2013	-0.5***	-0.8***	-0.1		-0.5	-1.2***	-0.1	-0.8***	-0.7**	-1.4***
Peru 2005-2008	0.1	-0.3	-0.5*	-0.3**	-1.5***	-2.1***	-1.1*	-0.7	-1.2*	-1.3*
Peru 2008-2012	-0.4***	-0.1*	-0.5***	0.0	-1.3***	-0.9***	-1.1***	-1.3***	-1.3***	-1.6***
Rwanda 2005-2010	-1.6***	-1.7***	-1.7***	-1.7***	-3.5***	-7.6***	-5.6***	-3.3***	-3.4***	-3.7***
Senegal 2005-2010/11	-1.1***	0.2	-0.6	1.4***	-1.7***	-1.4***	-1.9***	-0.6	1.0**	-0.6
Tanzania 2008-2010	-0.7	0.3	-2.8***		-2.3***	-3.8***	-0.8	-2.1**	-2.3***	-3.5***
Uganda 2006-2011	-0.3	-0.8**	-1.6***	-0.7*	-2.2***	-3.4***	-3.9***	-1.8***	-2.2***	-3.9***
Zambia 2001/2-2007	-0.1	-2.5***	-0.5*	-1.9***	-1.1**	-1.9***	0.6	-0.5	-1.1**	-2.3***
Zimbabwe 2006-2010/11	-0.1*	-1.1***	0.0	-0.6***	-1.5***	-1.0***	-1.1***	-1.4***	-1.4***	-2.2***

Note: *** statistically significant at α=0.01, ** statistically significant at α=0.05, * statistically significant at α=0.10

Table A.8: Indicators contribution to annualized absolute change in MPI_T

	Years of schooling	Child school attendance	Child mortality	Nutrition	Electricity	Improved sanitation	Drinking water	Flooring	Cooking fuel	Asset ownership
					Decomposition of change in MPI by indicator (%)					
Armenia 2005-2010	1%	23%	48%	-4%	1%	11%	3%	3%	7%	6%
Bangladesh 2004-2007	9%	12%	15%	19%	7%	16%	0%	8%	7%	6%
Bangladesh 2007-2011	15%	8%	14%	20%	10%	10%	1%	8%	9%	5%
Benin 2001-2006	17%	26%	23%	9%	6%	7%	3%	0%	6%	2%
Bolivia 2003-2008	4%	37%	14%	4%	7%	10%	5%	6%	7%	5%
Cambodia 2005-2010	13%	22%	19%	10%	9%	9%	4%	1%	8%	5%
Cameroon 2004-2011	20%	8%	11%	0%	8%	16%	3%	8%	8%	17%
Colombia 2005-2010	16%	21%	13%	14%	3%	7%	3%	5%	9%	9%
Dominican Rep. 2002-2007	20%	31%	16%	7%	5%	5%	2%	5%	5%	5%
Egypt 2005-2008	8%	33%	39%	2%	1%	7%	0%	7%		4%
Ethiopia 2000-2005	26%	10%	16%	11%	2%	5%	23%	2%	2%	3%
Ethiopia 2005-2011	30%	35%	9%	11%	6%	5%	-9%	5%	3%	4%
Gabon 2000-2012	10%	10%	14%	10%	9%	11%	8%	8%	11%	9%
Ghana 2003-2008	9%	32%	11%	9%	7%	9%	8%	0%	9%	6%
Guyana 2005-2009	-12%	-12%	110%		3%	12%	0%	-1%	0%	0%
Haiti 2006-2012	17%	20%	14%	13%	7%	7%	1%	3%	7%	12%
India 1998/9-2005/6	12%	6%	15%	16%	7%	11%	7%	10%	8%	8%
Indonesia 2007-2012	9%	14%	27%		5%	10%	8%	5%	11%	11%
Jordan 2007-2009	-9%	-35%	19%	111%	2%	7%	5%	-1%	1%	0%
Kenya 2003-2008/9	10%	8%	16%	2%	10%	14%	15%	9%	9%	8%
Lesotho 2004-2009	11%	16%	12%	5%	11%	12%	6%	9%	9%	9%
Madagascar 2004-2008/9	20%	1%	15%	47%	8%	8%	-5%	-2%	9%	-1%
Malawi 2004-2010	20%	24%	-16%	12%	8%	11%	15%	8%	6%	11%
Mozambique 2003-2011	26%	17%	15%	7%	7%	10%	3%	4%	6%	5%
Namibia 2000-2007	5%	20%	4%	13%	11%	10%	8%	11%	9%	11%
Nepal 2006-2011	11%	9%	14%	19%	10%	8%	2%	8%	8%	10%
Niger 2006-2012	13%	27%	22%	11%	4%	5%	9%	3%	3%	2%
Nigeria 2003-2008	7%	11%	24%	11%	1%	23%	14%	-1%	7%	4%
Pakistan 2007-2013	16%	27%	3%		5%	14%	1%	9%	8%	16%
Peru 2005-2008	-1%	8%	14%	9%	14%	19%	9%	6%	11%	12%
Peru 2008-2012	11%	4%	14%	1%	12%	8%	10%	12%	13%	15%
Rwanda 2005-2010	10%	11%	11%	11%	7%	16%	12%	7%	7%	8%
Senegal 2005-2010/11	60%	-8%	29%	-75%	31%	24%	34%	11%	-17%	11%
Tanzania 2008-2010	9%	-3%	34%	0%	9%	16%	3%	9%	9%	14%
Uganda 2006-2011	4%	8%	17%	8%	8%	12%	14%	6%	8%	14%
Zambia 2001/2-2007	1%	36%	8%	26%	5%	9%	-3%	2%	5%	11%
Zimbabwe 2006-2010/11	3%	23%	0%	13%	11%	7%	8%	10%	10%	15%

Table A.9: Levels and changes in MPI_T by rural and urban areas

	Urban Areas						Rural					
	Multidimensional Poverty Index (MPI_T)		Annualized change		t-statistics for difference		Multidimensional Poverty Index (MPI_T)		Annualized change		t-statistics for difference	
	Year 1	Year 2	Absolute	% Relative			Year 1	Year 2	Absolute	% Relative		
Armenia 2005-2010	.000 (.000)	.001 (.001)	.000	27.0%	0.93		.007 (.001)	.001 (.001)	-.001	-26.5%	3.09	***
Bangladesh 2004-2007	.247 (.015)	.184 (.013)	-.021	-9.5%	3.13	***	.397 (.007)	.340 (.008)	-.019	-5.0%	5.00	***
Bangladesh 2007-2011	.184 (.013)	.121 (.007)	-.016	-10.0%	4.20	***	.340 (.008)	.284 (.007)	-.014	-4.4%	5.40	***
Benin 2001-2006	.314 (.014)	.265 (.010)	-.010	-3.3%	2.56	**	.563 (.010)	.505 (.007)	-.012	-2.2%	4.96	***
Bolivia 2003-2008	.063 (.003)	.019 (.002)	-.009	-21.2%	8.49	***	.356 (.009)	.191 (.008)	-.033	-11.7%	14.14	***
Cambodia 2005-2010	.168 (.014)	.051 (.006)	-.023	-21.2%	7.54	***	.322 (.007)	.247 (.007)	-.015	-5.2%	7.66	***
Cameroon 2004-2011	.141 (.011)	.091 (.006)	-.007	-6.2%	4.12	***	.445 (.011)	.393 (.011)	-.007	-1.8%	3.36	***
Colombia 2005-2010	.012 (.001)	.008 (.001)	-.001	-7.3%	4.37	***	.111 (.006)	.067 (.003)	-.009	-9.7%	7.30	***
Dominican Rep. 2002-2007	.022 (.002)	.010 (.001)	-.002	-14.4%	6.52	***	.073 (.004)	.042 (.002)	-.006	-10.5%	6.67	***
Egypt 2005-2008	.013 (.002)	.010 (.001)	-.001	-10.3%	1.79	*	.049 (.003)	.035 (.002)	-.004	-10.3%	4.22	***
Ethiopia 2000-2005	.318 (.018)	.184 (.018)	-.027	-10.3%	5.11	***	.736 (.003)	.661 (.006)	-.015	-2.1%	11.22	***
Ethiopia 2005-2011	.184 (.018)	.201 (.021)	.003	1.5%	0.64		.661 (.006)	.598 (.007)	-.011	-1.7%	7.06	***
Gabon 2000-2012	.096 (.007)	.048 (.004)	-.004	-5.7%	6.30	***	.316 (.012)	.221 (.013)	-.008	-2.9%	5.38	***
Ghana 2003-2008	.165 (.012)	.089 (.007)	-.015	-11.6%	5.33	***	.412 (.008)	.289 (.010)	-.025	-6.9%	9.00	***
Guyana 2005-2009	.051 (.005)	.029 (.004)	-.006	-13.2%	3.48	***	.049 (.006)	.046 (.003)	-.001	-1.6%	0.49	
Haiti 2005/6-2012	.160 (.010)	.112 (.008)	-.007	-5.3%	3.66	***	.444 (.014)	.341 (.012)	-.016	-4.0%	5.74	***
India 1998/9-2005/6	.118 (.005)	.098 (.004)	-.003	-2.6%	3.16	***	.372 (.002)	.323 (.003)	-.007	-2.0%	11.01	***
Indonesia 2007-2012	.055 (.004)	.039 (.002)	-.003	-6.3%	3.55	***	.126 (.004)	.093 (.003)	-.006	-5.8%	6.20	***
Jordan 2007-2009	.012 (.002)	.010 (.001)	-.001	-10.2%	0.82		.017 (.004)	.015 (.003)	-.001	-4.4%	0.33	
Kenya 2003-2008/9	.119 (.010)	.074 (.010)	-.008	-8.3%	3.23	***	.340 (.009)	.285 (.010)	-.010	-3.1%	3.98	***
Lesotho 2004-2009	.081 (.008)	.063 (.007)	-.004	-4.9%	1.72	*	.272 (.006)	.230 (.009)	-.008	-3.3%	3.68	***
Madagascar 2004-2008/9	.195 (.012)	.154 (.009)	-.009	-5.0%	2.41	**	.423 (.018)	.456 (.008)	.007	1.7%	1.81	*
Malawi 2004-2010	.171 (.019)	.175 (.012)	.001	0.4%	0.18		.419 (.005)	.366 (.005)	-.009	-2.2%	7.43	***
Mozambique 2003-2011	.306 (.014)	.195 (.011)	-.014	-5.5%	6.23	***	.604 (.005)	.483 (.008)	-.015	-2.8%	13.56	***
Namibia 2000-2007	.052 (.007)	.051 (.005)	.000	-0.4%	0.13		.272 (.009)	.231 (.007)	-.006	-2.3%	3.19	***
Nepal 2006-2011	.137 (.013)	.069 (.008)	-.014	-12.8%	4.52	***	.388 (.015)	.238 (.013)	-.030	-9.3%	7.68	***
Niger 2006-2012	.384 (.014)	.289 (.012)	-.016	-4.6%	5.20	***	.764 (.007)	.686 (.007)	-.013	-1.8%	8.41	***
Nigeria 2003-2008	.206 (.014)	.136 (.007)	-.014	-8.0%	4.41	***	.451 (.014)	.403 (.008)	-.010	-2.2%	2.69	***
Pakistan 2007-2012/13	.141 (.006)	.112 (.007)	-.005	-3.7%	3.33	***	.326 (.007)	.294 (.011)	-.005	-1.7%	2.45	**
Peru 2005-2008	.016 (.003)	.016 (.002)	.000	-0.5%	0.06		.199 (.014)	.169 (.008)	-.010	-5.3%	1.79	*
Peru 2008-2012	.016 (.002)	.011 (.001)	-.001	-8.9%	2.57	**	.169 (.008)	.113 (.005)	-.014	-9.6%	5.78	***
Rwanda 2005-2010	.299 (.014)	.189 (.015)	-.022	-8.8%	4.02	***	.489 (.006)	.352 (.006)	-.027	-6.4%	16.71	***
Senegal 2005-2010/11	.224 (.017)	.221 (.014)	-.001	-0.3%	0.15		.616 (.015)	.585 (.012)	-.006	-0.9%	1.67	*
Tanzania 2008-2010	.201 (.014)	.175 (.018)	-.013	-6.8%	1.20		.418 (.009)	.382 (.008)	-.018	-4.5%	3.20	***
Uganda 2006-2011	.197 (.020)	.119 (.012)	-.016	-9.6%	3.06	***	.452 (.008)	.383 (.010)	-.014	-3.3%	5.27	***
Zambia 2001/2-2007	.217 (.014)	.155 (.014)	-.011	-5.9%	3.33	***	.497 (.008)	.429 (.007)	-.012	-2.6%	6.09	***
Zimbabwe 2006-2010/11	.019 (.003)	.033 (.005)	.003	13.1%	2.51	**	.252 (.007)	.193 (.006)	-.013	-5.8%	6.35	***

Note: *** statistically significant at α=0.01, ** statistically significant at α=0.05, * statistically significant at α=0.10
Standard errors reported between brackets.

Table A.10: Indicators Contribution to Annualized Absolute Change in MPI$_T$

Country and Period	Percentage of regions that had reductions significant at α=0.05 in…			Percentage of poor in initial year that lived in regions that had reductions in…		
	MPI$_T$	H$_T$	A$_T$	MPI$_T$	H$_T$	A$_T$
Bangladesh 2004-2007	83%	33%	83%	92%	55%	70%
Bangladesh 2007-2011	100%	83%	83%	100%	91%	80%
Benin 2001-2006	83%	67%	50%	81%	66%	51%
Bolivia 2003-2008	100%	89%	89%	100%	99%	96%
Cambodia 2005-2010	68%	53%	56%	65%	49%	51%
Cameroon 2004-2011	42%	50%	50%	46%	49%	54%
Colombia 2005-2010	63%	56%	21%	67%	46%	30%
Dominican Rep. 2002-2007	66%	69%	44%	67%	69%	44%
Egypt 2005-2008	33%	33%	0%	82%	82%	0%
Ethiopia 2000-2005	55%	36%	36%	96%	67%	95%
Ethiopia 2005-2011	73%	45%	82%	99%	57%	99%
Gabon 2000-2012	100%	100%	40%	100%	100%	38%
Ghana 2003-2008	100%	100%	100%	100%	100%	100%
Haiti 2005/6-2012	70%	60%	60%	68%	61%	46%
India 1998/9-2005/6	81%	85%	42%	93%	99%	44%
Indonesia 2007-2012	42%	33%	36%	76%	71%	67%
Jordan 2007-2009	0%	0%	0%	0%	0%	0%
Kenya 2003-2008/9	63%	63%	13%	65%	65%	4%
Lesotho 2004-2009	50%	40%	20%	52%	43%	14%
Madagascar 2004-2008/9	0%	0%	0%	0%	0%	0%
Malawi 2004-2010	100%	67%	100%	100%	88%	100%
Mozambique 2003-2011	100%	91%	73%	100%	81%	67%
Namibia 2000-2007	23%	23%	23%	32%	32%	38%
Nepal 2006-2011	77%	85%	38%	79%	86%	39%
Niger 2006-2012	100%	50%	75%	100%	24%	93%
Nigeria 2003-2008	17%	17%	0%	13%	13%	0%
Pakistan 2006/7-2012/13	50%	50%	25%	43%	43%	51%
Rwanda 2005-2010	100%	100%	100%	100%	100%	100%
Senegal 2005-2010/11	18%	18%	18%	21%	21%	20%
Tanzania 2008-2010	25%	25%	38%	12%	25%	30%
Uganda 2006-2011	44%	33%	33%	48%	37%	43%
Zambia 2001/2-2007	67%	56%	78%	67%	56%	78%
Zimbabwe 2006-2010/11	30%	20%	10%	48%	23%	15%

Table A.11: Levels and Changes in MPI$_T$ by Main Ethnic Groups

	MPI		Annualized change		t-statistics for difference		Share of population	Share of poor
	Year 1	Year 2	Absolute	% Relative			Year 1	Year 1
Benin 2001-2006	**.474 (.008)**	**.414 (.006)**	**-.012**	**-2.7%**	**5.70**	*******	**100%**	**100%**
Adja	.472 (.023)	.388 (.015)	-.017	-3.8%	3.15	***	13%	13%
Bariba	.548 (.019)	.501 (.018)	-.009	-1.8%	1.70	*	8%	9%
Dendi	.540 (.055)	.541 (.056)	.000	0.0%	0.01		2%	3%
Fon	.444 (.015)	.365 (.008)	-.016	-3.8%	4.78	***	39%	38%
Yoa and Lopka	.592 (.044)	.507 (.025)	-.017	-3.1%	1.89	*	4%	5%
Bétamaribe	.652 (.033)	.616 (.023)	-.007	-1.1%	0.99		6%	7%
Peulh	.711 (.045)	.712 (.018)	.000	0.0%	0.01		4%	5%
Yoruba	.391 (.035)	.346 (.015)	-.009	-2.4%	1.20		11%	10%
Other	.406 (.035)	.494 (.063)	.018	4.0%	1.18		4%	3%
Missing	.373 (.011)	.313 (.007)	-.012	-3.5%	4.68	***	9%	9%
Ghana 2003-2008	**.309 (.007)**	**.202 (.007)**	**-.021**	**-8.1%**	**10.39**	*******	**100%**	**100%**
Akan	.235 (.010)	.134 (.009)	-.020	-10.5%	7.65	***	44%	37%
Ga and Dangme	.272 (.023)	.127 (.018)	-.029	-14.2%	4.80	***	7%	6%
Ewe	.288 (.022)	.149 (.016)	-.028	-12.4%	5.31	***	12%	11%
Guan	.300 (.028)	.231 (.051)	-.014	-5.1%	1.38		3%	3%
Mole-Dagbani	.490 (.020)	.362 (.019)	-.026	-5.9%	4.57	***	16%	23%
Grussi	.382 (.039)	.270 (.038)	-.022	-6.7%	2.53	**	2%	3%
Gruma	.563 (.038)	.445 (.053)	-.024	-4.6%	2.58	**	3%	5%
Other	.329 (.051)	.215 (.024)	-.023	-8.2%	4.41	***	6%	6%
Missing	.272 (.013)	.211 (.011)	-.012	-4.9%	3.78	***	6%	6%
Kenya 2003-2009	**.296 (.008)**	**.244 (.010)**	**-.009**	**-3.5%**	**4.10**	*******	**100%**	**100%**
Kalenjin	.369 (.054)	.297 (.030)	-.013	-3.9%	1.76	*	10%	13%
Kamba	.291 (.018)	.254 (.028)	-.007	-2.4%	1.02		11%	11%
Kikuyu	.160 (.012)	.119 (.013)	-.007	-5.2%	2.28	**	18%	11%
Kisii	.294 (.037)	.223 (.031)	-.013	-4.9%	1.80	*	5%	6%
Luhya	.280 (.015)	.236 (.019)	-.008	-3.1%	1.91	*	14%	13%
Luo	.308 (.019)	.239 (.016)	-.012	-4.5%	2.72	***	11%	12%
Meru	.237 (.027)	.249 (.050)	.002	0.9%	0.18		5%	4%
Mijikenda/Swahili	.393 (.045)	.365 (.047)	-.005	-1.3%	0.49		5%	6%
Somali	.587 (.031)	.454 (.040)	-.024	-4.6%	2.66	***	4%	6%
Others	.430 (.036)	.334 (.041)	-.017	-4.5%	1.84	*	9%	11%
Missing	.233 (.009)	.194 (.011)	-.007	-3.3%	2.70	***	10%	8%

Note: *** statistically significant at α=0.01, ** statistically significant at α=0.05, * statistically significant at α=0.10
Standard errors reported between brackets.

Table A.12: Levels and Change in Destitution and Headcount of Destitute

	Destitution Index		Annualized change		t-statistics for difference		Destitute Headcount ratio (H_T^D)		Annualized change	
	Year 1	Year 2	Absolute	% Relative			Year 1	Year 2	Absolute	% Relative
Armenia 2005-2010	.000 (.000)	.000 (.000)	.000	62.3%	0.91		.0 (.0)	.0 (.0)	.0	57.4%
Bangladesh 2004-2007	.124 (.004)	.097 (.004)	-.009	-7.9%	4.47	***	29.0 (.9)	23.1 (.8)	-2.0	-7.3%
Bangladesh 2007-2011	.097 (.004)	.071 (.003)	-.007	-7.6%	5.69	***	23.1 (.8)	17.4 (.7)	-1.4	-6.8%
Benin 2001-2006	.236 (.009)	.194 (.005)	-.008	-3.8%	4.16	***	48.6 (1.4)	40.0 (.9)	-1.7	-3.8%
Bolivia 2003-2008	.084 (.003)	.023 (.001)	-.012	-22.6%	14.83	***	19.9 (.7)	6.0 (.4)	-2.8	-21.4%
Cambodia 2005-2010	.094 (.003)	.057 (.003)	-.007	-9.3%	8.18	***	22.7 (.8)	14.5 (.7)	-1.6	-8.6%
Cameroon 2004-2011	.115 (.006)	.095 (.005)	-.003	-2.7%	2.52	**	25.3 (1.2)	21.3 (1.0)	-.6	-2.5%
Colombia 2005-2010	.004 (.000)	.002 (.000)	.000	-13.1%	4.94	***	1.0 (.1)	.5 (.1)	-.1	-12.8%
Dominican Rep. 2002-2007	.007 (.000)	.002 (.000)	-.001	-19.7%	7.35	***	1.7 (.1)	.6 (.1)	-.2	-18.7%
Egypt 2005-2008	.005 (.000)	.004 (.000)	.000	-5.6%	1.18		1.2 (.1)	1.0 (.1)	-.1	-5.1%
Ethiopia 2000-2005	.471 (.005)	.339 (.007)	-.026	-6.4%	11.40	***	82.1 (.6)	65.4 (1.1)	-3.3	-4.4%
Ethiopia 2005-2011	.339 (.007)	.248 (.006)	-.015	-5.1%	9.60	***	65.4 (1.1)	52.1 (1.2)	-2.2	-3.7%
Gabon 2000-2012	.040 (.003)	.013 (.001)	-.002	-8.7%	8.03	***	10.0 (.7)	3.4 (.4)	-.5	-8.5%
Ghana 2003-2008	.128 (.005)	.059 (.004)	-.014	-14.2%	10.51	***	28.5 (.9)	14.0 (.9)	-2.9	-13.2%
Guyana 2005-2009	.021 (.003)	.008 (.001)	-.003	-21.8%	4.65	***	5.6 (.7)	2.1 (.2)	-.9	-22.0%
Haiti 2005/6-2012	.138 (.007)	.078 (.004)	-.009	-8.5%	7.21	***	30.1 (1.3)	18.1 (1.0)	-1.8	-7.5%
India 1998/9-2005/6	.142 (.002)	.111 (.002)	-.004	-3.4%	12.92	***	31.3 (.3)	25.1 (.4)	-.9	-3.1%
Indonesia 2007-2012	.027 (.001)	.017 (.001)	-.002	-8.5%	6.44	***	6.2 (.3)	4.2 (.2)	-.4	-7.5%
Jordan 2007-2009	.000 (.000)	.001 (.000)	.000	11.0%	0.30		.1 (.1)	.2 (.1)	.0	14.0%
Kenya 2003-2008/9	.105 (.006)	.076 (.006)	-.005	-5.7%	3.33	***	23.7 (1.1)	17.9 (1.2)	-1.1	-5.0%
Lesotho 2004-2009	.085 (.004)	.056 (.004)	-.006	-7.8%	4.62	***	21.2 (1.0)	14.4 (1.0)	-1.4	-7.5%
Madagascar 2004-2008/9	.136 (.010)	.130 (.005)	-.001	-1.1%	0.59		29.4 (2.1)	29.2 (.9)	.0	-0.2%
Malawi 2004-2010	.123 (.003)	.094 (.003)	-.005	-4.5%	6.82	***	29.7 (.7)	23.4 (.7)	-1.1	-3.9%
Mozambique 2003-2011	.234 (.006)	.169 (.005)	-.008	-4.0%	7.95	***	48.5 (1.2)	37.3 (1.0)	-1.4	-3.2%
Namibia 2000-2007	.074 (.005)	.049 (.003)	-.004	-5.8%	3.25	***	17.4 (1.1)	11.9 (.7)	-.8	-5.3%
Nepal 2006-2011	.141 (.008)	.095 (.008)	-.009	-7.7%	4.11	***	31.9 (1.8)	22.6 (1.7)	-1.9	-6.7%
Niger 2006-2012	.473 (.009)	.378 (.007)	-.016	-3.7%	8.55	***	79.1 (1.1)	70.2 (1.0)	-1.5	-2.0%
Nigeria 2003-2008	.226 (.009)	.185 (.005)	-.008	-3.9%	3.54	***	44.2 (1.6)	35.8 (.8)	-1.7	-4.1%
Pakistan 2007-2012/13	.110 (.004)	.102 (.006)	-.001	-1.2%	1.12		23.2 (.7)	22.2 (1.1)	-.2	-0.7%
Peru 2005-2008	.019 (.002)	.013 (.001)	-.002	-13.5%	2.32	**	5.0 (.6)	3.3 (.2)	-.6	-13.3%
Peru 2008-2012	.013 (.001)	.008 (.000)	-.001	-12.1%	4.50	***	3.3 (.2)	2.0 (.1)	-.3	-11.7%
Rwanda 2005-2010	.151 (.004)	.096 (.003)	-.011	-8.7%	10.55	***	35.0 (.9)	24.2 (.8)	-2.2	-7.1%
Senegal 2005-2010/11	.205 (.013)	.183 (.008)	-.004	-2.0%	1.74	*	41.3 (2.3)	36.5 (1.6)	-.9	-2.2%
Tanzania 2008-2010	.130 (.006)	.108 (.005)	-.011	-8.7%	3.04	***	25.6 (1.1)	22.0 (.9)	-1.8	-7.5%
Uganda 2006-2011	.142 (.006)	.112 (.006)	-.006	-4.6%	3.46	***	33.4 (1.3)	27.9 (1.4)	-1.1	-3.6%
Zambia 2001/2-2007	.165 (.005)	.119 (.004)	-.008	-5.8%	5.51	***	36.6 (1.0)	27.8 (.9)	-1.6	-4.9%
Zimbabwe 2006-2010/11	.069 (.003)	.044 (.003)	-.006	-9.5%	5.76	***	17.6 (.8)	11.4 (.7)	-1.4	-9.2%

Note: *** statistically significant at α=0.01, ** statistically significant at α=0.05, * statistically significant at α=0.10
Standard errors reported between brackets.

Table A.13: Levels and changes in Destitution by rural and urban areas

	Urban Areas						Rural					
	Destitution Index (MPI$_T^D$)		Annualized change		t-statistics for difference		Destitution Index (MPI$_T^D$)		Annualized change		t-statistics for difference	
	Year 1	Year 2	Absolute	% Relative			Year 1	Year 2	Absolute	% Relative		
Armenia 2005-2010	.000 (.000)	.000 (.000)	.000	0.0%			.000 (.000)	.000 (.000)	.000	62.1%		
Bangladesh 2004-2007	.072 (.008)	.048 (.006)	-.008	-12.6%	2.37	**	.138 (.005)	.111 (.004)	-.009	-7.2%	3.95	***
Bangladesh 2007-2011	.048 (.006)	.026 (.003)	-.006	-14.6%	3.37	***	.111 (.004)	.085 (.004)	-.006	-6.5%	4.58	***
Benin 2001-2006	.113 (.011)	.097 (.008)	-.003	-3.0%	1.14		.306 (.012)	.254 (.007)	-.010	-3.6%	3.92	***
Bolivia 2003-2008	.022 (.002)	.002 (.000)	-.004	-40.4%	6.90	***	.183 (.007)	.054 (.003)	-.026	-21.6%	15.09	***
Cambodia 2005-2010	.047 (.006)	.009 (.002)	-.008	-27.7%	5.86	***	.102 (.004)	.068 (.003)	-.007	-7.7%	6.59	***
Cameroon 2004-2011	.038 (.005)	.021 (.003)	-.003	-8.6%	3.16	***	.186 (.010)	.163 (.009)	-.003	-1.9%	1.78	*
Colombia 2005-2010	.001 (.000)	.000 (.000)	.000	-15.7%	3.01	***	.012 (.001)	.007 (.001)	-.001	-11.8%	3.93	***
Dominican Rep. 2002-2007	.002 (.000)	.001 (.000)	.000	-21.2%	4.37	***	.015 (.001)	.006 (.001)	-.002	-17.2%	6.11	***
Egypt 2005-2008	.001 (.000)	.001 (.000)	.000	-4.9%	0.40		.007 (.001)	.006 (.001)	.000	-5.1%	1.00	
Ethiopia 2000-2005	.115 (.014)	.055 (.007)	-.012	-13.6%	3.77	***	.530 (.006)	.377 (.007)	-.031	-6.6%	15.91	***
Ethiopia 2005-2011	.055 (.007)	.054 (.010)	.000	-0.3%	0.08		.377 (.007)	.290 (.007)	-.014	-4.3%	8.49	***
Gabon 2000-2012	.015 (.002)	.005 (.001)	-.001	-8.4%	3.67	***	.098 (.007)	.055 (.006)	-.004	-4.7%	4.63	***
Ghana 2003-2008	.038 (.005)	.012 (.004)	-.005	-20.8%	3.93	***	.193 (.007)	.096 (.007)	-.019	-13.0%	9.86	***
Guyana 2005-2009	.021 (.003)	.004 (.001)	-.004	-33.6%	6.57	***	.021 (.004)	.009 (.001)	-.003	-18.4%	3.08	***
Haiti 2005/6-2012	.032 (.004)	.014 (.002)	-.003	-12.0%	3.82	***	.203 (.011)	.121 (.007)	-.013	-7.7%	6.43	***
India 1998/9-2005/6	.040 (.003)	.031 (.002)	-.001	-3.5%	2.80	***	.180 (.002)	.147 (.002)	-.005	-2.8%	10.73	***
Indonesia 2007-2012	.012 (.001)	.008 (.001)	-.001	-7.6%	2.30	**	.038 (.002)	.026 (.001)	-.002	-7.1%	4.71	***
Jordan 2007-2009	.000 (.000)	.000 (.000)	.000	57.3%	0.97		.002 (.002)	.001 (.001)	.000	-18.8%	0.39	
Kenya 2003-2008/9	.026 (.006)	.010 (.003)	-.003	-16.2%	3.05	***	.125 (.007)	.092 (.007)	-.006	-5.3%	3.10	***
Lesotho 2004-2009	.011 (.002)	.005 (.002)	-.001	-15.5%	1.96	*	.101 (.005)	.073 (.005)	-.006	-6.3%	3.67	***
Madagascar 2004-2008/9	.045 (.005)	.023 (.003)	-.005	-13.9%	3.77	***	.161 (.013)	.147 (.005)	-.003	-2.0%	1.07	
Malawi 2004-2010	.037 (.008)	.026 (.005)	-.002	-6.0%	1.26		.139 (.003)	.107 (.003)	-.005	-4.2%	6.84	***
Mozambique 2003-2011	.091 (.012)	.063 (.006)	-.004	-4.5%	2.11	**	.305 (.007)	.217 (.006)	-.011	-4.2%	9.73	***
Namibia 2000-2007	.011 (.003)	.013 (.002)	.000	1.5%	0.32		.108 (.007)	.076 (.005)	-.005	-5.0%	3.20	***
Nepal 2006-2011	.044 (.007)	.020 (.003)	-.005	-14.2%	2.98	***	.159 (.009)	.106 (.009)	-.011	-7.8%	4.13	***
Niger 2006-2012	.142 (.011)	.100 (.009)	-.007	-5.7%	2.99	***	.545 (.008)	.432 (.008)	-.019	-3.8%	9.88	***
Nigeria 2003-2008	.100 (.011)	.053 (.005)	-.009	-11.8%	4.17	***	.290 (.013)	.251 (.007)	-.008	-2.9%	2.40	**
Pakistan 2007-2012/13	.048 (.003)	.039 (.004)	-.002	-3.5%	1.78	*	.141 (.005)	.133 (.008)	-.001	-1.0%	0.89	
Peru 2005-2008	.003 (.001)	.002 (.000)	.000	-14.4%	1.22		.047 (.006)	.034 (.003)	-.004	-9.6%	1.96	*
Peru 2008-2012	.002 (.000)	.002 (.000)	.000	-2.2%	0.34		.034 (.003)	.020 (.001)	-.004	-12.5%	4.92	***
Rwanda 2005-2010	.071 (.005)	.039 (.005)	-.006	-11.4%	3.12	***	.165 (.005)	.105 (.003)	-.012	-8.7%	10.40	***
Senegal 2005-2010/11	.059 (.008)	.041 (.006)	-.003	-6.2%	1.79	*	.323 (.013)	.297 (.012)	-.005	-1.5%	1.54	
Tanzania 2008-2010	.051 (.007)	.043 (.009)	-.004	-8.3%	0.71		.152 (.007)	.128 (.005)	-.012	-8.3%	2.87	***
Uganda 2006-2011	.032 (.011)	.015 (.004)	-.004	-14.5%	1.57		.158 (.006)	.130 (.006)	-.006	-3.9%	3.06	***
Zambia 2001/2-2007	.040 (.005)	.033 (.005)	-.001	-3.4%	1.07		.235 (.006)	.166 (.005)	-.013	-6.1%	8.15	***
Zimbabwe 2006-2010/11	.002 (.001)	.004 (.001)	.000	16.9%	1.34		.099 (.005)	.061 (.004)	-.008	-10.1%	6.39	***

Note: *** statistically significant at α=0.01, ** statistically significant at α=0.05, * statistically significant at α=0.10
Standard errors reported between brackets.