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SUSTAINABLE POVERTY ESCAPES: SPOTLIGHT ON MULTIDIMENSIONAL POVERTY

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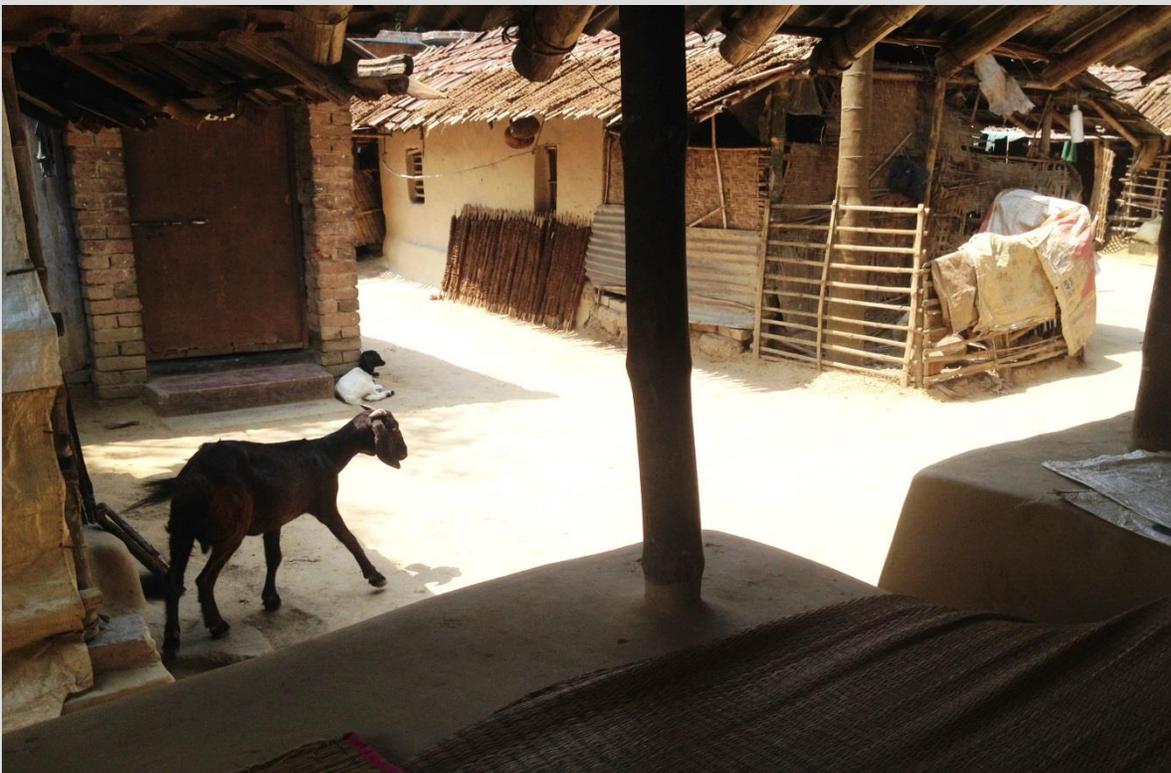


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DISCLAIMER

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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ACRONYMS

DHS	Demographic and Health Surveys
ERHS	Ethiopia Rural Household Survey
FTF	Feed the Future
LEO	Leveraging Economic Opportunities
MDG	Millennium Development Goals
MICS	Multiple Indicator Cluster Survey
MPI	Multidimensional Poverty Index
ODI	Overseas Development Institute
OPHI	Oxford Poverty and Human Development Initiative
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

This report focuses on multidimensional poverty, as measured by household deprivations in health, education, and living standards. Multidimensional measures of poverty are meant to complement monetary measures, and so provide a more holistic understanding of what it means to live in poverty. A multidimensional perspective on poverty can also provide useful insights into the variety of resilience capacities (e.g. absorptive, adaptive, transformative) that households and communities need to respond to shocks and stressors and to sustain positive poverty reduction trajectories over time.

In investigating multidimensional poverty, this report undertakes new analysis of panel datasets for Uganda, rural Ethiopia, and rural Bangladesh. All three countries have experienced substantial reductions in monetary poverty. For example, in Bangladesh, the proportion of the population living below the national poverty line has reduced from 57% in 1991 to 32% percent in 2010, while Uganda witnessed a decrease from 56% to 20% between 1992 and 2012, and Ethiopia saw a decline from 46% to 30% between 1995 and 2010. Economic growth, sound macroeconomic management, increased non-farm employment, international migration, and investments to improve human development outcomes have all contributed to this success to varying degrees across countries.

However, multidimensional poverty reductions, while also exhibiting a decline in recent decades, reveal nuances to these success stories. They indicate, for example, that households which have sustainably escaped monetary poverty are rarely those that also sustainably escape multidimensional poverty. The same holds true amongst households experiencing monetary chronic poverty, impoverishment, and transitory poverty escapes (common poverty trajectories which are further explored in the body of the report and defined in Box 1, below). In other words, a household experiencing one of these poverty trajectories in monetary terms has rarely experienced the same poverty trajectory when this is measured in multidimensional terms.

This report therefore examines why some households are able to escape poverty and remain out of it—that is, they experience sustained escapes from poverty—while others escape poverty only to return to living in it again, and yet others remain trapped in chronic poverty. In particular, the report investigates the contextual drivers of households that build their resilience capacities, enabling them to escape multidimensional poverty sustainably and minimize the likelihood of remaining in poverty, returning to living in poverty after an escape, or becoming impoverished.

Specific findings of the report, derived from the research into Uganda, rural Ethiopia, and rural Bangladesh, include the following:

- **Across countries, education matters.** Benefits in multidimensional poverty reduction accrue through the improved presence of public education facilities. That being said, the poorest often continue to miss out on this critical human development service.
 - In **Uganda**, poor quality of education is reflected in a high education deprivation incidence in rural areas.
 - In rural **Ethiopia**, while primary education access has drastically improved since the 1990s, secondary education has not kept pace (Mariotti and Diwakar, 2016).
 - In rural **Bangladesh**, education needs to be relevant to the labour market, bringing in the need for technical training and skills development (Scott and Diwakar, 2016).
- **In the health sector, we see mixed results stemming from the provision of services as measured by distance to the nearest public facility or number of such facilities.**
 - In **Uganda**, households benefit from proximity to public hospitals and clinics.
 - Poor provision and quality of healthcare, combined with drought, food price inflation, and other detriments worsened health shocks and conditions of the rural populace in **Ethiopia**.

Many households turn to traditional healers as an alternative to the public healthcare system, as these offer flexible payment schemes and low service charges.

- In rural **Bangladesh**, chronic illness and poverty are strongly intertwined. Health insurance and financing needs to be more accessible, especially in the event of health shocks when families continue to find it difficult to pay for the treatments they require.
- **Living standards deprivations affect Uganda and Ethiopia to a larger extent than in Bangladesh.**
 - In **Uganda**, inefficiencies in the power sector result in high deprivation rates in electricity and cooking fuel. In terms of contextual determinants, paved roads are important in reducing the effective time to services and so are associated with reductions in multidimensional and monetary poverty in Uganda where data availability allows this to be measured.
 - Presence of credit facilities are associated with reductions in multidimensional poverty trajectories in rural **Bangladesh**, though this must be tempered with its detrimental effects on immediate poverty incidence – possibly a reflection of the difficulties of loan repayment.
 - Agriculture extension services and daily markets are beneficial in monetary outcomes in rural **Ethiopia**. However, there exist opportunities to enhance service provision especially with regards to ensuring equitable and wider-reaching provision of extension services.

What can be done? Reflections on key findings include the following:

- **Programs and policies to reduce poverty should incorporate an understanding of both the incidence and trajectories of multidimensional deprivations and poverty.** Our results indicate the importance of examining contextual drivers in undertaking analysis of multidimensional poverty. This is because the varied dimensions of poverty are intrinsically tied to access to particular services.
- **Disaggregating deprivations helps to prioritise interventions to address poverty amongst specific target groups such as the chronic poor.** This is particularly important as we find that, for example, amongst multidimensional transitory escapers, the range of deprivations varies.
- **Program and policy responses should coordinate across sectors.** Results suggest there are synergies to be found between certain sectors.
- **There remains a pressing need for more research into the nature and extent of deprivations and their contextual determinants.** Results pointed to the need of a wider coverage of data on health, living standards, and contextual variables, as well as that this data be collected in a systematic and consistent manner.

I. INTRODUCTION

Poverty is typically measured in monetary terms, with the poor in a given country identified as those whose per capita income or expenditures fall below a certain threshold. However, it is increasingly recognised that this **monetary conception of poverty does not adequately capture the varied facets of deprivation amongst the poor**. To better understand poverty and its dynamics and drivers, the human development approach posits instead that “we must look at impoverished lives and not just at depleted wallets” (Sen, 2000, p. 3). In 2010, reflecting growing international recognition of the need to better understand the lives of the impoverished, the UNDP’s Human Development Report introduced the **Multidimensional Poverty Index (MPI)**. The MPI measures household deprivations in health, education, and living standards. It is meant to complement monetary measures of poverty, and so provides a more holistic understanding of what it means to live in poverty. In this way, it is also consistent with USAID’s [vision for ending extreme poverty](#)¹ and the diversity of capacities (absorptive, adaptive, and transformative) that collectively contribute to increased resilience.

Unfortunately, while multidimensional tools like the MPI may have gained eminence in recent years, dynamic assessments of multidimensional poverty remain scarce. Such assessments are a necessary step in designing effective policies and programs to achieve Sustainable Development Goal (SDG) 1’s aim to “end poverty in all its forms everywhere”. This reports attempts to fill a knowledge gap. In particular, we ask the following questions:

- 1) To what extent do multidimensional and monetary poverty incidence coincide?
- 2) Do poverty dynamics yield different narratives and outcomes when using multidimensional indicators as opposed to national consumption-based measures?
- 3) How and to what extent do contextual drivers affect multidimensional poverty dynamics?

It answers these questions by first presenting an overview of the MPI and its dimensions of deprivations. It then examines whether multidimensional poor households overlap with monetary poor households (Section II). Section III assesses the extent of multidimensional poverty in Uganda, Ethiopia, and Bangladesh by first investigating the incidence of multidimensional poverty and then trajectories thereof. Both are compared to their monetary comparator groups. In Section IV, regression-based methods are used to examine what services may be effective in reducing multidimensional poverty and to what extent. Finally, Section V discusses what results may be drawn from the data analysis, and concludes.

In answering these questions, this study brings together:

- New analysis of recent household panel surveys:

¹ For more on USAID’s vision for ending extreme poverty, visit www.usaid.gov/ending-extreme-poverty/vision. See Box 1 for more on USAID’s approach to resilience and the set of resilience capacities.

RESOURCES ON POVERTY DYNAMICS

This report is part of a suite of products produced by the USAID-funded [Leveraging Economic Opportunities](#) project to explore sustainable poverty escapes. Country-specific research findings were published for rural [Bangladesh](#), rural [Ethiopia](#) and [Uganda](#), along with a [synthesis](#) of findings across all three case studies, a [methodological note](#) on conducting poverty dynamics research, a brief on key [policy and program implications](#), and an [infographic](#). This research, led by the Overseas Development Institute, involved analysis of panel data with at least three waves for each country, field work to conduct qualitative life history interviews and focus group discussions across multiple target rural areas, as well as extensive engagement from relevant USAID missions and the Center for Resilience at USAID. To access these publications, visit www.microlinks.org/leopovertydynamics.

Household panel dataset	Years covered in analysis	N analysed
Uganda National Panel Survey	2005/06, 2009/10, 2010/11, and 2011/12	1,174
Ethiopia Rural Household Survey	1997, 1999, 2004, 2009	818
Bangladesh Chronic Poverty and Long Term Impact Study	1997/2000, 2006, 2010	1,193

- Analysis of multidimensional poverty using the framework provided by MPI.
- Wider literature on the extent and nature of multidimensional poverty dynamics and its contextual dimensions. An overview of how this analysis fits into USAID’s resilience agenda is given in Box 1.

BOX 1: POVERTY DYNAMICS AND THE RESILIENCE AGENDA

For the purposes of this work, we view **resilience** as a set of capacities enabling households to remain out of poverty over the long term, even in the face of shocks and stresses. (USAID, 2012). In other words, the capacity to be resilient means an individual or household is ultimately able to avoid being in *chronic poverty*, becoming *impoverished* or to experience a *transitory poverty escape*. These terms are clarified below.

Chronic poverty is poverty that is experienced over many years and often over a lifetime. Chronically poor individuals and households commonly pass on their state of poverty to offspring, resulting in its intergenerational transmission.

Impoverishment refers to the process whereby a poor person or household becomes poorer, or where somebody who is non-poor slips into poverty.

Transitory poverty escapes refer to individuals or households that used to live in poverty, succeeded in escaping poverty, and then subsequently fell back into poverty i.e. they became re-impoverished.

Resilience capacities are often conceived of in three categories: absorptive – risk management capacity, particularly in the face of shocks and stressors; adaptive – learning, flexibility, adaption, and proactively adjusting on one’s conditions as a strategy for managing shocks and stressors; and transformative – the institutional, political, and systemic factors that represent the necessary conditions for sustainable resilience building.

II. MULTIDIMENSIONAL POVERTY: A PRIMER

This provides a brief overview of multidimensional poverty, presents a justification for why we rely on the MPI to frame our findings, and examines the literature that compares multidimensional poverty dynamics with monetary poverty dynamics. We do so to situate our subsequent analysis of multidimensional poverty in Uganda, Ethiopia, and Bangladesh in a research context.

WHY DO WE NEED A MULTIDIMENSIONAL LENS IN POVERTY ANALYSIS?

The drivers of poverty dynamics vary according to country context and level of analysis.² These drivers have generally relied on a monetary measure of poverty derived from comparing a poverty line to per capita income or consumption expenditures. This conception is subject to measurement errors due to the fluctuation of monetary indicators and the recall error from survey questionnaires which manifest across panel waves (Dinkelman, 2004). In addition, there is also increasing recognition that monetary poverty

² For a discussion of drivers of monetary poverty in: Uganda, see Scott et al., 2016; Bangladesh, see Scott and Diwakar, 2016; in Ethiopia, see Mariotti and Diwakar, 2016. www.microlinks.org/leopovertydynamics.

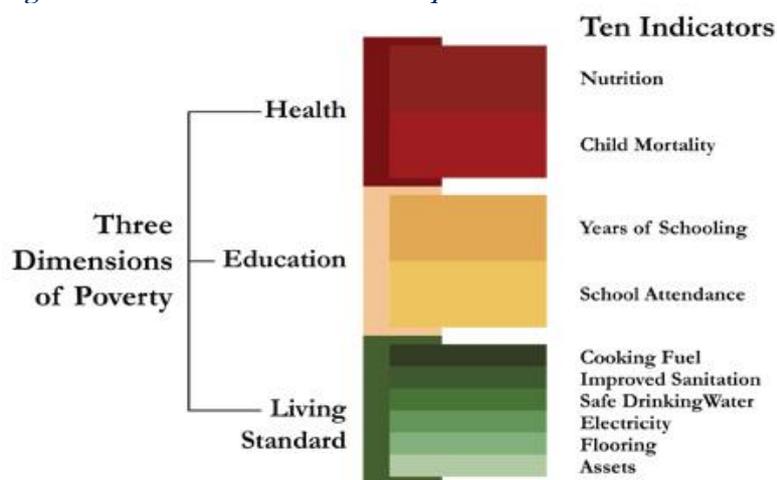
assessments alone cannot adequately identify or analyse the determinants of poverty. Part of the reason behind this is that there are multi-dimensional determinants of monetary poverty, but also determinants of each multi-dimensional deprivation indicator. Stemming from this recognition, Sen's (1985) reconceptualization of poverty as a lack of capability marked a shift in the discourse around poverty measurement and led to the introduction of asset and multidimensional based approaches to measuring poverty. Even today, the human development approach argues that we must acknowledge that poverty is determined in part by capabilities and functioning. Defining poverty through a multidimensional lens helps capture these capabilities and functioning and so provides a more holistic understanding of what it means to be poor and what drives poverty dynamics (Hulme and Shepherd, 2003).

In recent years, various organisations have proposed multidimensional poverty measures that built upon Sen's early foundations (see, for example, EU-2020 official poverty measure, the Bristol methodology, UNICEF's Multiple Overlapping Deprivation Analysis, IFAD's Multidimensional Poverty Assessment Tool, and IPA's Progress out of Poverty Index). To date, none has been as widely accepted as the MPI.

WHAT IS THE MPI AND WHY SHOULD WE USE IT?

The MPI is a poverty measurement tool which includes information on incidence - the proportion of households that are deprived across health, education, and living standards dimensions (see Figure 1 and Annex 1)- and the intensity of interlocking deprivations, which is the average number of deprivations that a poor household experiences at the same time. This paper employs the household as the unit of analysis so as to allow comparability to monetary poverty measures which also typically rely on household per capita expenditures.³

Figure 1: The Global MPI and its component indicators



Source: OPHI, Global MPI

The indicators of the MPI are largely mirrored across the various Millennium Development Goal (MDG) indicators. MPI's nutrition indicator corresponds to MDG 1, child mortality to MDG 4, access to drinking water to MDG 7, access to sanitation to MDG 7, and use of an improved source of cooking fuel to MDG 9 (OPHI, n.d.). The MPI allows for sub-group decomposition (into health, education, and living standards) and even within this for a further breakdown of indicators. Its ability to capture a wide-ranging conceptualisation of poverty with transparent indicators that can be targeted to improve the overall poverty rate render it a good governance tool. As such, the MPI can be used to help policymakers target

³ Note that although the identification of the poor is done at the household level, the Global MPI is reported in terms of proportion of individuals (all individuals in a poor household are considered poor). For the Global MPI, the household is the unit of identification, but the individual is the unit of analysis. One of the reasons for this is that because poor households tend to be larger, reporting the percentage of households is likely to under-represent poverty incidence.

resources and develop more effective policies and programs adhering to international development targets. Already, Mexico and Colombia have followed this route and used their national MPIs in poverty targeting and reduction efforts (OPHI, n.d.). Indeed, the MPI boasts flexibility and transparency, allowing for it to be adapted on a country level to specific contexts. In addition, its reliance on indicators that are readily available in large-scale household surveys such as the DHS and MICS, allows for ease of analysis. Its explicit links to SDGs also make it an attractive option for policy purposes.

WHAT ARE ITS LIMITATIONS?

Like most poverty measures, the MPI, too, is not without critique. For example, the indicators comprise both outputs, such as years of schooling, as well as inputs, such as the type of cooking fuel used. Moreover, in the model specification of multidimensional poverty, similar to that of monetary poverty, intra-household inequalities are not captured. Another limitation as identified by OPHI is in its inadequate coverage of other elements of poverty such as quality of work, empowerment, physical safety, social connectedness, or psychological wellbeing. In our study, there is the further limitation that the lack of panel data questions relating to the MDP's indicators leads us to drop certain indicators or find proxies for other variables (see Annex 1 for more). This limits cross-country comparisons that may be drawn from the data.

Moreover, while a multidimensional approach allows for a more holistic view of poverty relative to sole reliance on monetary measures, it may also conceptually cause some confusion particularly between the definition and determinants of poverty. As stated earlier, there are multidimensional determinants of monetary poverty and determinants of each multidimensional deprivation indicator. The MPI captures a multidimensional definition of wellbeing and deprivation. Even within the application of this definition, there are technical issues that must be considered. For example, some indicators change slowly, others quickly. Moreover, the choice of indicators itself is to a large extent driven by data availability as we experience in our study. Ultimately, though limitations do exist, the MPI's transparency, simplicity, and accessibility make it a key tool used by policy makers and other stakeholders to develop effective poverty reduction strategies.

This section has given an overview of multidimensional poverty and the MPI.⁴ We next examine how this has been adapted in policy research to date. We do so by examining the literature on poverty dynamics with a focus on multidimensional poverty dynamics as identified largely through the MPI's dimensions of wellbeing.

ARE THE MULTIDIMENSIONAL POOR DIFFERENT FROM THE MONETARY POOR?

Since the shift in poverty discourse marked by Sen's introduction of the capabilities approach, studies have begun to emerge that adopt non-monetary measures of poverty and compare it to their consumption counterparts (see, for example, Chambers, 1997; Stewart et al., 2007; Davis and Baulch, 2011). Findings from these studies indicate limited overlap between the two measures. However, most of this literature has been restricted to analysis of cross-section data. It is only in more recent years that studies on multidimensional poverty using longitudinal data in developing countries have begun to emerge. Wardhana (2010) finds that while Indonesia has made progress in reducing income poverty and other social indicators, challenges in multidimensional poverty remain when considering the intensity of poverty - that is, the joint distribution of deprivations. In particular, while the head count ratio of those living in multidimensional poverty reduced between 1993 and 2007, the intensity of poverty amongst those who remained poor has remained relatively constant. Disentangling the components of this poverty and using panel data, the author finds that housing and assets are the categories which contribute most to

⁴ For more information, see Alkire and Foster (2011) for details on methodology, and Alkire and Santos (2014) for details on the Global MPI.

chronic and multidimensional poverty in the country. In another study, Tran et al. (2015) examine panel surveys in Vietnam between 2007 and 2010 to find that the overlap between the monetary and multidimensional poor is weak; for example, only a third of the sample of monetary poor is also multidimensional poor. In addition, their analysis reveals that monetary poverty reduction proceeds at a faster rate and with higher volatility than multidimensional poverty. They attribute this to the rapid economic growth in the country which they posit has a larger and more immediate effect on monetary poverty than on multidimensional poverty.

In Africa, Neubourg et al. (2010) use retrospective data in Senegal to find that income deprivation has increased in the three decades since 1978, but education deprivation has declined. Overall, they find support for the intergenerational transmission of poverty, which in the country has a large effect on those in rural areas and large households. Their study investigates drivers of multidimensional trajectories, with results indicating that ethnicity affects poverty incidence, as does region of residence. More recently, Bruck and Kebede (2013) confirm the existence of different trends between multidimensional and consumption poverty in Ethiopia. Their analysis of the ERHS based on its 1994, 2004, and 2009 rounds reinforces that indicators beyond consumption poverty are useful in deriving household wellbeing trajectories. In particular, they find morbidity, education, and asset indicators to be short-term and subject to fluctuations. This is likely due to households taking children out of school or engaging in a distress sale of assets in response to shocks. In contrast, child mortality, access to drinking water, and housing are persistent indicators without much change over the period, with the latter two likely reflective of structural poverty. Like Tran et al. (2015), they, too, find consumption poverty to display higher mobility in poverty transitions relative to the MPI, which can be explained by the construction of the MPI on more long-term indicators.

In addition to the demographic determinants of multidimensional poverty examined in these studies, contextual forces also play a role in driving multidimensional poverty trajectories. While a variety of contextual factors may affect the presence and degree of multidimensional deprivations and so the poverty status of households, in this paper we restrict our analysis to the indicators described in Box 2. Our choice is guided by the types of service provisions that are likely to have an effect on the dimensions outlined in the MPI, as well as practical considerations of data availability in our panel surveys.

BOX 2: WHY CONTEXT MATTERS IN MULTIDIMENSIONAL ANALYSIS

Better infrastructure and access to credit can improve living standards by increasing earnings and easing access to markets beyond a community (Khandker and Koolwal, 2009). In infrastructure, the presence of public health facilities and other services like schools could help improve human development outcomes. Improved access to credit can also improve living standards beyond acting as a source of liquidity. For example, through their loans, small credit or microfinance institutions sometimes also provide health services, for example, which lead to positive health impacts in undernutrition, maternal and child health, and infectious disease (Leatherman and Dunford, 2009).

A high concentration of chronic poverty tends to exist in remote areas with poor connectivity (CPRC, 2005). **Improving rural living standards often requires improvements in agriculture efficiency; extension services and markets could be particularly effective in these situations.** By improving choice of goods and services, and encouraging investments aimed at better connectivity with surrounding areas, markets could help reduce chronic poverty, as evidenced in our results. To this end, improved road infrastructure has also contributed to inclusiveness of growth in the country by linking rural areas to markets and other opportunities (Dercon et al., 2007; Seid et al., 2015).

Indeed, **services such as markets, agriculture extension offices, and credit institutions are useful insofar as they are of adequate quality and accessible.** On this latter point, in the market sector, for example, roads improve accessibility and so are beneficial by reducing the costs of inputs, reducing output price margins between the village and nearby towns, reducing the effect of shocks, and allowing for increased economic diversification (Dercon et al., 2007). Indeed, the literature on accessibility as a driver of poverty reduction is wide-ranging (see, for example, Bird and Shepherd, 2003; Shinyekwa et al., 2003).

This section explored the literature on multidimensional poverty dynamics and the contextual factors which may affect these trajectories. In the next section, we examine multidimensional poverty and its trajectories across Uganda, Ethiopia, and Bangladesh. We do so to develop our understanding of the nature of the problem, before investigating its specific drivers.

III. EXTENT OF MULTIDIMENSIONAL POVERTY IN UGANDA, ETHIOPIA, AND BANGLADESH

The remainder of this paper examines multidimensional poverty incidence and trajectories in Uganda, Ethiopia, and Bangladesh, and investigates which contextual drivers are responsible for these wellbeing outcomes. The objective is to identify what policy areas conducive to poverty reduction should be prioritised if we are to adopt a more holistic conceptualisation of poverty beyond its usual monetary assessment.

This section descriptively explores multidimensional poverty by first parsing the global MPI into its components, next comparing multidimensional poverty incidence to its monetary equivalent, and finally by examining multidimensional poverty trajectories again in a comparative framework. We restrict our analysis to the subset of households for which there exists data on monetary and multidimensional poverty across the waves.

BOX 3: A NOTE ON IDENTIFYING THE MULTIDimensionALLY POOR

A common identification tool of multidimensionally poor households are those that are deprived in a certain percentage of the weighted indicators simultaneously (Alkire and Foster, 2011). This is commonly referred to as a dual cut-off approach to identifying the poor which comprises a within-dimension cut-off to assess deprivation by indicator, as well as an across-dimension cut-off to identify poverty according to the number of deprivations. Use of a dual multidimensional approach derives from an understanding that the presence of one deprivation alone does not necessarily constitute poverty. In the Global MPI, households that are deprived in 20-33% of indicators are identified as vulnerable to poverty, those deprived in at least one third of indicators are multidimensionally poor, while deprivation in over half of the indicators constitutes severe poverty.

MULTIDIMENSIONAL POVERTY INCIDENCE

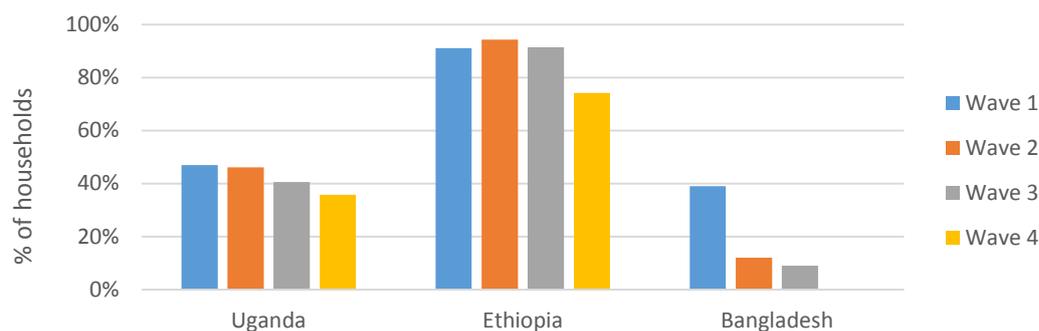
In this sub-section, we examine multidimensional poverty ratios in Bangladesh, Uganda, and Ethiopia, and deconstruct the MPI into its components across our countries of study. We do so to provide groundwork for us to examine, in section IV, whether improvements in service provision in infrastructure, health, and education have translated into progress in and lower rates of multidimensional deprivations and poverty.

The analysis of multidimensional poverty in this paper is based on the indicators used in the Global MPI. However, in some instances, indicators identical to the Global MPI do not exist in the panel datasets; in these instances, comparable proxies are employed or the weight of indicators are readjusted such that the dimension itself (education, health, and living standards) accounts for a third of weightage towards the overall MPI. These substitutions limit the extent of comparability across country case studies. Details on the specification of the multidimensional measure considered for each country are given in Annex 1.

Analysis of panel data indicates that the multidimensional poverty ratio at the household level declined across countries during their respective survey periods, resting at around 36% of households by 2012 in Uganda, 74% in 2009 in Ethiopia, and just 9% in 2010 in Bangladesh (Figure 2).⁵ The high share of multidimensionally poor in Ethiopia is in part due to limitations in data coverage. The living standards dimension for the country captures just two living standards indicators, assets and roof material. To assess the degree by which this may affect the share of multidimensionally poor, we calculate the multidimensional poverty headcount in Uganda using this subset of indicators for the living standards dimension. This exercise increased the household multidimensional poverty ratio by around 10 percentage points across survey years in Uganda. We thus posit that the limited indicators in Ethiopia may also be likely to bias results upwards. Nevertheless, the flexibility offered through the MPI allows for this recategorisation to take place, and remains an appropriate reflection of the state of multidimensional poverty in the country.

⁵ Note that the headcount ratios differ from those reported by OPHI in the Global MPI (Alkire et al., 2016). This is likely on account of different datasets used for the measure and, in some instances, the use of proxies to the Global MPI indicators. Moreover, in our study, we report household level ratios only on the subset of households with information available across panel survey years, while the Global MPI conveys individual headcount ratios and employs cross-section data for one point in time.

Figure 2: Decline in multidimensional poverty incidence at the household level across countries

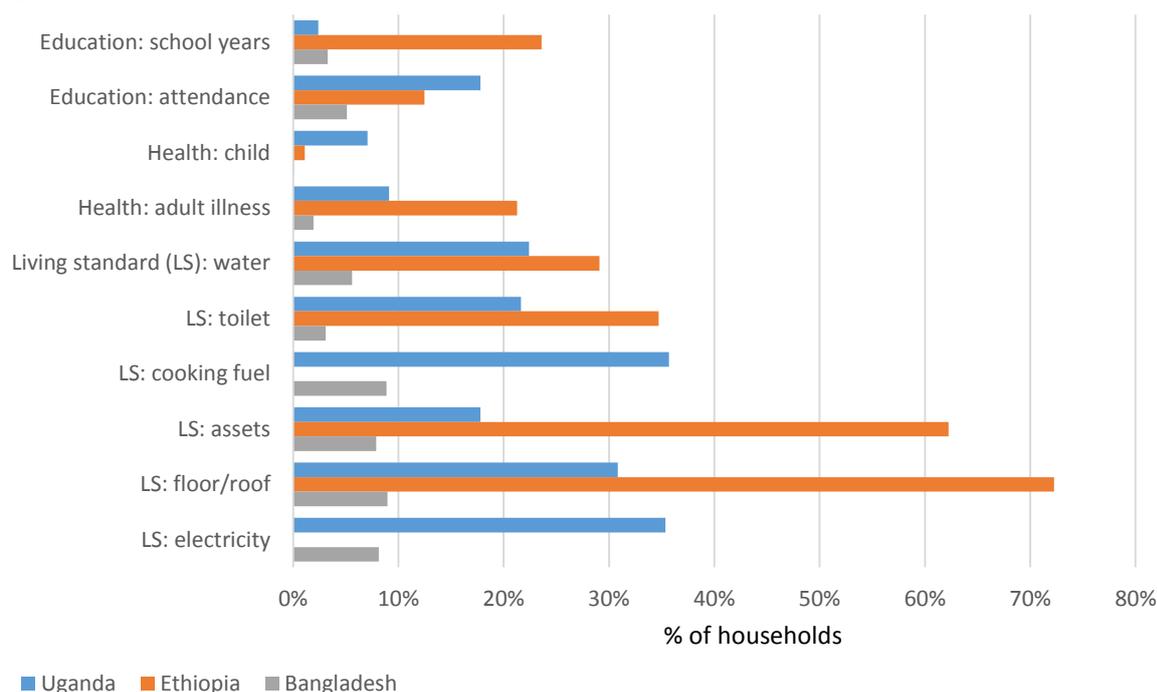


Note: First wave= 2005 in Uganda, 1997 in Ethiopia, 1997/2000 in Bangladesh. Second wave= 2009/10 in Uganda, 1999 in Ethiopia, 2006 in Bangladesh. Third wave= 2010/11 in Uganda, 2004 in Ethiopia, 2010 in Bangladesh. Fourth wave= 2011/12 in Uganda, 2009 in Ethiopia.

Examining the rate of change in Figure 2, we note that the absolute rate of decline over the survey period was fastest in Bangladesh (1997-2010), at around 2.6 percentage points per year, compared to a 1.6 percentage point decline in Uganda (2005-2012) and a 1.5 percentage point decline in Ethiopia (1997-2009). This reflects the Bangladeshi government's success in poverty reduction and meeting a host of the Millennium Development Goals (MDGs) over the period (Khandker et al., 2009). Indeed, across countries, national efforts to improve access to services in line with the MDGs resulted in stark reductions in multidimensional poverty. In Ethiopia, however, the decline was not linear, with the country experiencing a slight increase in multidimensional poverty incidence between 1997 and 1999 survey before reducing its incidence again in subsequent years. This could be a reflection of increased political risk in the form of the border conflict with Eritrea, as well as weather factors which increased vulnerability of households during the period (Hagos and Holden, 2003).

To assess whether national efforts aimed at improving infrastructure, education, and health have affected the extent of deprivations experienced in relevant poverty dimensions, in the next sub-section we compare censored headcount ratios at the household level of each indicator of multidimensional poverty. The censored headcount ratio of an indicator is the proportion of households that are multidimensionally poor and are simultaneously deprived in that indicator. This allows us to assess the deprivations affecting the subset of poor. So, for example, the share of individual deprivations depicted in Figure 3 for rural Ethiopia represent the sample of 74% of households that were multidimensionally poor in 2009, while in Bangladesh it covers the 9% of multidimensionally poor households in 2010.

Figure 3: Censored multidimensional poverty ratios, latest survey year



Note: electricity and cooking fuel indicators were not available for the last survey year in Ethiopia.⁶ See Annex 1 for more information on the structure of the measure (i.e. the specific indicators used) and their comparability across countries.

LIVING STANDARDS

- In Uganda and particularly Ethiopia, living standards deprivations remain high.
- In Ethiopia, the infrastructure of rural areas continues to lag behind, leading to a discrepancy between national poverty reduction successes and a grimmer poverty reduction story in rural and remote areas.
- In Uganda, power inefficiencies contribute to continued electricity and cooking fuel deprivations.
- In Bangladesh, structural poverty was originally a concern for multidimensional poverty alleviation, but the gap in deprivations has narrowed since then as a result of MDG successes.

Examining the contribution of each dimension and indicator to the overall MPI, we note that the asset indicator has made the most progress in Bangladesh. While 37% of households were asset deprived in the first survey wave, slightly over a decade later, this share dropped to just 8% of households. In contrast to the lower share and progress in Uganda and Bangladesh, respectively, asset deprivation in Ethiopia contributes to almost a quarter of the unweighted multidimensional poverty ratio.⁷ Over three in five households living in multidimensional poverty were asset deprived in Ethiopia in the latest survey year. Other living standards indicators are also weak in rural areas of the country. Indeed, while on a national scale improvements have been strikingly visible, **the infrastructure of rural areas continues to lag**

⁶ In addition, data on water, toilet, electricity, and cooking fuel was not available consistently across survey years in Ethiopia and so was dropped from the analysis. The same was done with adult illness and cooking fuel in Bangladesh. The remaining indicators were given equal weights within their respective dimensions.

⁷ Note that asset deprivation does not include land. Refer to Annex 1 for a list of dimensions, indicators, and deprivation cut-offs of the MPI.

behind, leading to a discrepancy between national poverty reduction successes and a grimmer picture in rural and remote areas (Mariotti and Diwakar, 2016).

In Uganda, **electricity and cooking fuel are the indicators in which most households are deprived in the first and last survey year.**⁸ This reflects an inefficient power sector in the country, where high distribution losses and under-pricing continues to sap resources without desired results (Ranganathan and Foster, 2012). **In Bangladesh, in contrast, it is the structural poverty elements measured by assets and material of the floor of the home in which the country fared worst at the start of the survey period.** By the end of the period, however, the range in deprivation affectedness had considerably narrowed, largely as a result of government efforts in reaching the MDGs. Indeed, in the early 2000s, the government engaged in a range of initiatives including building roads, bridges, and expanding commercial banks and microfinance institutions (Amin et al., 2003; Khandker et al., 2009).

EDUCATION

- **In Ethiopia, we observe a dramatic improvement in child school attendance between the late 1990s and 2009, while in Bangladesh the human capital improvement is most visible in years of schooling.**
- **Disaggregating education dimensions reveals that schooling accumulation deprivation amongst the multidimensionally poor is prevalent only in rural areas of Uganda.**

These findings reflect government efforts to improve public education. For example, Ethiopia's improvements in primary education stem in part from its construction of classrooms. For example, of the 16,000 classrooms built in 2004 and 25,000 built in 2008/09, around 80% were located in rural areas (AFDB, 2011b). Partly as a result of these investments, the participation rate in primary education has skyrocketed; while four in five children of primary school age did not attend school in 1992, this figure is now less than one in five (Lenhardt et al., 2015).

In Uganda, too, we observe a reduction in deprivation as measured by years of schooling. However, in both rural and urban regions, there is a slight increase in school attendance deprivation across survey years. This may be explained by the deteriorating quality of education across recent years. While the country has increased access to primary education since the early 2000s, this has come at the quality of instruction (Winkler and Sondergaard, 2008). The introduction of new teachers and administration in recent years has brought with it an influx of students which in turn has demolished the system, weakened its perceived quality, and led to families losing faith in public schooling. High household costs for education are another issue (World Bank, 2013). As a result of the deteriorating quality of education, we see high levels of absenteeism from teachers, headmasters, and students across the country (Winkler and Sondergaard, 2008).

This problem is especially severe in rural areas. **Disaggregating education dimensions reveals that schooling accumulation deprivation amongst the multidimensionally poor is prevalent only in rural areas of Uganda,** where it is also the case that over twice as many households are likely to have children not enrolled in school relative to urban areas. Part of the problem lies in continued infrastructure challenges across a range of service provisions. For example, there is chronic under-investment in road maintenance, which results in lower rural connectivity and inadequate road safety (Ranganathan and Foster, 2012). Recognising the challenges faced by the sector and the need for improvements therein, the last National Development Plan identified social and human development as engines of growth and enablers of poverty reduction (AFDB, 2011a).

⁸ Note that these indicators were not available in the Ethiopia dataset consistently across years.

HEALTH

- **Child health indicators vary across surveys and survey years; as such, it is measured by child disability in Uganda, mortality in Ethiopia, and undernutrition in Bangladesh.**
- **Morbidity in rural Ethiopia reflects the poor quality of healthcare and other factors such as drought and food price inflation which has worsened health conditions of the rural populace.**

Health indicators in our study differ from those presented in the global MPI. We focus on child and adult health separately, whereas the global MPI looks at child mortality and nutrition of both children and adults. **Moreover, in child health, our indicators are not comparable across countries due to the absence of survey data consistently captured across years.** Child health is thus measured by disability in Uganda, mortality in Ethiopia, and undernutrition in Bangladesh (see Annex 1 for a detailed breakdown of indicators by country). To examine adult health, we rely on adult illness in the weeks preceding the survey. In particular, we specify that the illness has to prevent the usual activity of the household member from taking place. While this morbidity indicator may potentially not be an accurate reflection of the achievements enjoyed by each individual and household across the relevant period of analysis, we adopt it as a proxy in the absence of adequate health data. Moreover, Sen (1996) argues that the functions and capabilities that measure poverty should be the focus in situations of extreme poverty, as exists in many developing countries. A household's capability to escape avoidable morbidity would fall within this realm, thus providing justification for our choice of proxy (Brück and Kebede, 2013).

Across our countries of study, only a small share of households are deprived on health indicators (Figure 3).⁹ **Morbidity affects households in rural Ethiopia to a larger extent than in Uganda, even after restricting the analysis to the subset of rural Ugandan households.** Moreover, in Ethiopia, adult illness worsened slightly over the period to affect one in five households by the latest survey year. This reflects both the poor quality of healthcare and other factors such as drought and food price inflation which has worsened health conditions of the rural populace (Brück and Kebede, 2013). In healthcare, inefficient use of resources and poor government spending is amongst the challenges cited for the public provision system which has resulted in its poor quality and access in the country (EPHI, 2014). In Bangladesh, our ability to comment on health deprivations is limited. Specifically, an absence of illness data consistently across years means that the health coverage in our multidimensional ratio adopts a purely child-centric dimension and so it is likely that our multidimensional ratio understates the true extent of poverty in Bangladesh.

In this sub-section, we calculated multidimensional poverty rates and reduction across Uganda, rural Ethiopia, and rural Bangladesh, and examined types of deprivations amongst the multidimensionally poor. We next compare this snapshot of multidimensional poverty with its monetary comparator group to assess whether similarities or overlaps exist.

COMPARISONS WITH MONETARY POVERTY INCIDENCE

- **There is an absence of correspondence between monetary and multidimensional incidence across our countries of study. This likely reflects differences in the quality of public services, the ability of households to translate income increases into human development improvements, and the relative successes and failures of inclusive growth.**

⁹ Note that data limitations across our surveys restrict the type of health indicator coverage in our multidimensional poverty measure. In particular, and in contrast to the Global MPI, we rely on chronic illness of adults, and child health as measured by disability in Uganda, mortality in Ethiopia, and weight for age in Bangladesh. As such, child health indicators are not comparable across countries.

- **The share of households experiencing multidimensional poverty is highest in Ethiopia in the latest survey year (84% in 2009).**
- **The share of households that are monetary poor and multidimensionally non-poor increases over time in Ethiopia and Uganda, suggesting that human development is more consistently improving than monetary poverty. In contrast, multidimensional and monetary poverty reduction was fastest in Bangladesh.**

While a theoretical relationship exists between the MPI and monetary poverty¹⁰ as defined by World Bank thresholds, actual empirical findings are mixed. There are in fact many countries wherein the shares of poor do differ by measure (Alkire and Santos, 2010). **This absence of correspondence is observed in our datasets, where only a fraction of households across countries are poor according to both measures in the latest survey year.** This share is lowest in Bangladesh (5% in 2010) and highest in Ethiopia (44% in 2009). As mentioned earlier, this is likely at least in part due to differences in quality of public services leading to varied multidimensional deprivations, as well as differential abilities of states and households to ensure that improvements in income necessarily or immediately yield improvements in more long-term indicators such as child mortality or years of schooling. Relatedly, perhaps the biggest difference stems from whether growth is pro-poor. That it is found to be pro-poor in Bangladesh, but with ambiguous results in Ethiopia, lends some credence to this hypothesis (Shepherd et al., 2016a, forthcoming).

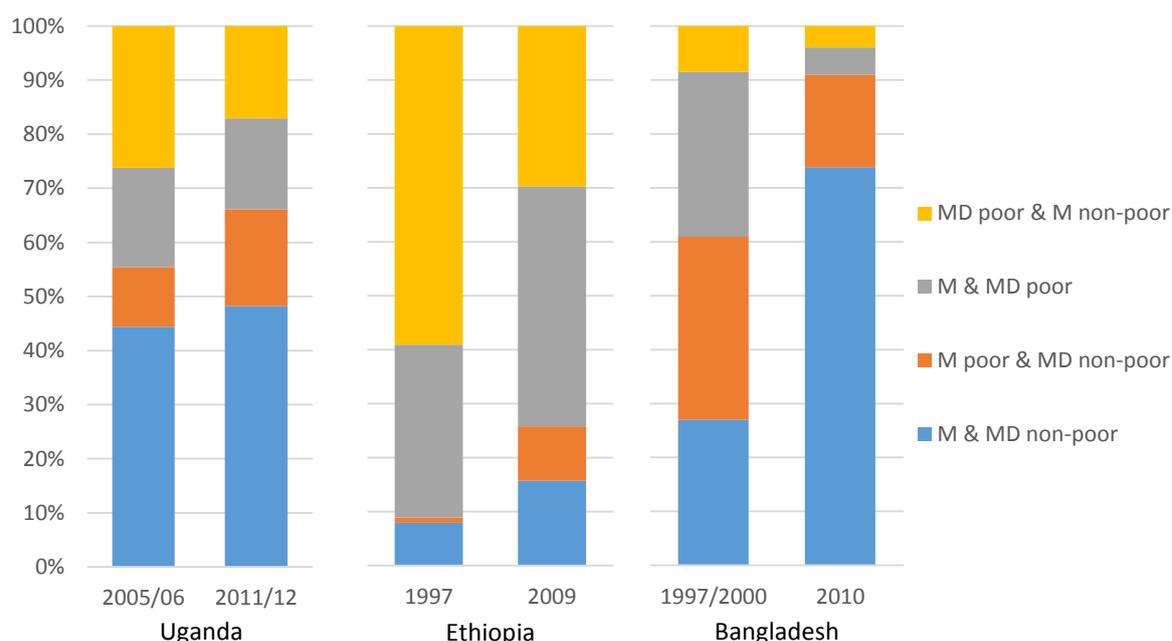
In rural Ethiopia, the share of households that experience monetary or multidimensional poverty is also much higher than in the other two countries. For example, 84% of households experience one of the two forms of poverty in the latest survey year, and almost 44% of households experience *both* forms of poverty. This contrasts with Uganda and Bangladesh, where 52% and 26% households, respectively, experience monetary or multidimensional poverty, and 17% and 5% experience *both* forms of poverty, also respectively. However, as stated earlier, the high share of multidimensionally poor in Ethiopia is partly a function of limitations in data coverage of the living standards indicators for the country which is likely to bias the results upwards.

Another observation from Figure 4 is that **the share of households that are monetary poor and multidimensionally non-poor expands in Ethiopia and Uganda.** This confirms other poverty trend analysis that reveals human development is more consistently improving than monetary poverty (Shepherd et al., 2016b, forthcoming). Only in Bangladesh does this category shrink, reflecting not any lack of improvements in multidimensional poverty, but rather the large reductions in monetary poverty over the survey years.

Figure 4 also reveals that the largest relative change in the share of monetary or multidimensionally poor households across years occurred in Bangladesh, where almost three in four households began the period in poverty but only around one in four households were left in poverty by the latest survey year. The largest decrease within this trend came from households that were both monetary and multidimensionally poor between the first and last survey years. **That Bangladesh managed to so considerably reduce both forms of poverty over the period further confirms the country's successes in achieving a host of MDGs and sustaining poverty escapes by promoting pro-poor growth.** Indeed, Figure 4 reflects the improvements Bangladesh has made across a range of multidimensional indicators other than income poverty, compared to Ethiopia and Uganda, as reflected by its lower multidimensional poverty headcount in the latest survey year (9% in Bangladesh, compared to 36% in Uganda and 74% in Ethiopia).

¹⁰ For example, monetary poverty is one of the factors considered in multidimensional poverty, alongside other indicators of living standards, as well as health and education.

Figure 4: *Overlap between multidimensional and monetary poverty incidence*



EXAMINING MULTIDIMENSIONAL POVERTY TRAJECTORIES

Having explored multidimensional and monetary poverty incidence, in this next sub-section, we proceed to undertake a dynamic analysis of poverty trajectories (see box 4 for some of these categories). An improved understanding of which deprivations are strongest amongst the various multidimensional and monetary poverty trajectories allows us to work towards policies and programs that specifically target root deprivations and in doing so can comprehensively contribute to sustained poverty reduction.

BOX 4: MULTIDIMENSIONAL POVERTY TRAJECTORIES INVESTIGATED

As introduced in Box 1, in this study we investigate the following multidimensional trajectories:

Transitory poverty escapes: Households which were initially multidimensionally poor, subsequently escaped poverty, but ultimately fell back into poverty by the last survey wave.

Impoverishment: Households that began the survey period not in multidimensional poverty, but subsequently fell into poverty and remained there.

Churning: Households with “mean expenditures over all periods close to the poverty line but sometimes poor and sometimes non-poor in different periods” (Hulme, Shepherd, and Moore, 2001).

Chronic poor: Households that were in multidimensional poverty across all survey waves.

Sustained poverty escapes: Households that were multidimensionally poor in the initial survey waves, but then became non-poor and remained there for the last two waves.

DEPRIVATIONS BY MULTIDIMENSIONAL TRAJECTORY

- The multidimensional chronic poor tend to be at least equally and often more deprived than other poverty trajectory groups with regards to living standards and years of schooling.
- Multidimensional impoverished households deprived in school attendance in Ethiopia and Bangladesh reflect the reality of poverty descents which cause many families to take children out of school to cope with their states of reduced well-being.

- **Multidimensional transitory escapes are not consistently driven by a certain dimension, but rather can occur based on a number of different deprivations.**
- **Multidimensional sustained escapes generally have lower incidence of deprivations compared to the other poverty trajectories.**

By trajectory, we analyse the deprivations' raw headcount ratios at the household level (Figure 6). As stated earlier, censored headcount ratios represents the proportion of households in the population that are both multidimensionally poor and deprived in that indicator.¹¹

In Figure 6, we observe that the **multidimensional chronic poor** across countries tend to be at least equally and often more deprived than the other poverty trajectory groups with regards to living standards in the last survey year. The difference is especially pronounced in sanitation across the three countries, and in asset deprivation in Uganda. Intuitively, it is logical that the chronic poor would have fewer assets compared to households that at some period were non-poor. We also note that the multidimensional chronic poor have higher education deprivation, as measured by years of schooling, compared to the multidimensional impoverished and transitory poor. Lower per capita expenditures amongst the chronically poor could explain this finding. The years of school indicator employs a stricter cut-off, where *no* household member over 10 years of age has completed five years of schooling, compared to attendance which requires *any* school-aged child to not be attending school up to the age at which he or she would complete class 8.

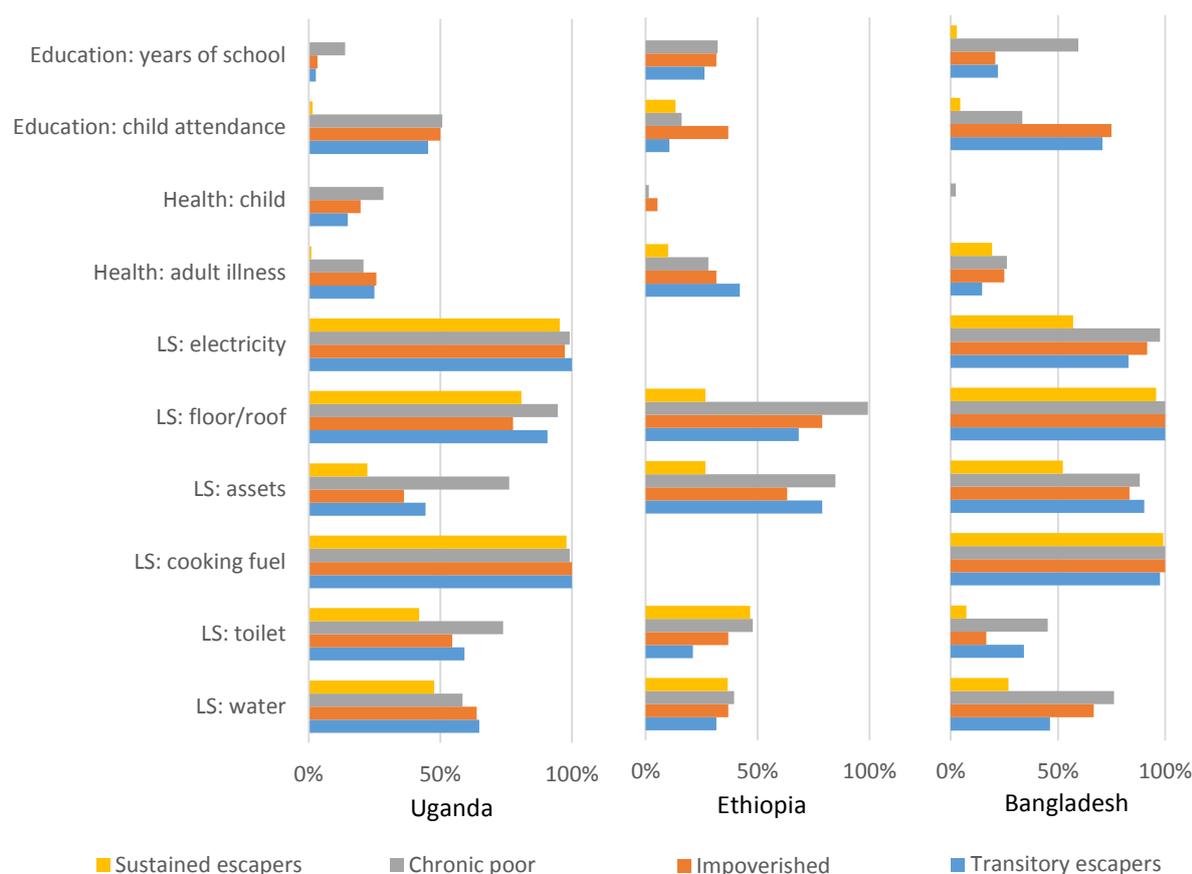
The high share of **multidimensional impoverished** households that is deprived in school attendance across countries, and moreover in Ethiopia and Bangladesh relative to the chronically poor and transitory poverty escapers, reflects the reality of poverty descents which cause many families to take children out of school to cope with their states of reduced well-being. Indeed, this is a direct reflection of a higher opportunity cost of continuing education, especially in rural areas where the importance of agriculture income would require more hands on deck (Cockburn, 2001).

Also from Figure 6, **multidimensional transitory escapers** show varied deprivations. In Ethiopia, 42% of multidimensionally poor households had at least one member with an episode of illness that prevented his or her usual activity from taking place. This compares to under a third of households amongst the multidimensional impoverished and chronic poor. In the case of assets, across countries, we also note that transitory escapers are more likely to be asset deprived relative to the impoverished. Figure 6 thus suggests that multidimensional transitory escapes are not consistently driven by a certain dimension, but rather can occur based on any of a number of different deprivations.

Finally, across countries as would be expected, **multidimensional sustained escapers** generally have a lower incidence of deprivations compared to the other poverty trajectories. This is partly by definition, since the group is no longer multidimensionally poor in the latest survey period. However, it is nevertheless an interesting feature that this subgroup is especially unlikely to experience health and education deprivations, suggesting that these dimensions may have a role to play in promoting a sustained escape, though living standards need not necessarily improve.

¹¹ Note that here, since we are looking at the deprivations of these three groups in the last survey year, all our sample is actually poor at that point in time. So, the censored headcount ratios are equal to the raw headcount ratios.

Figure 6: Incidence of deprivations (raw headcount ratios at the household level), latest survey year

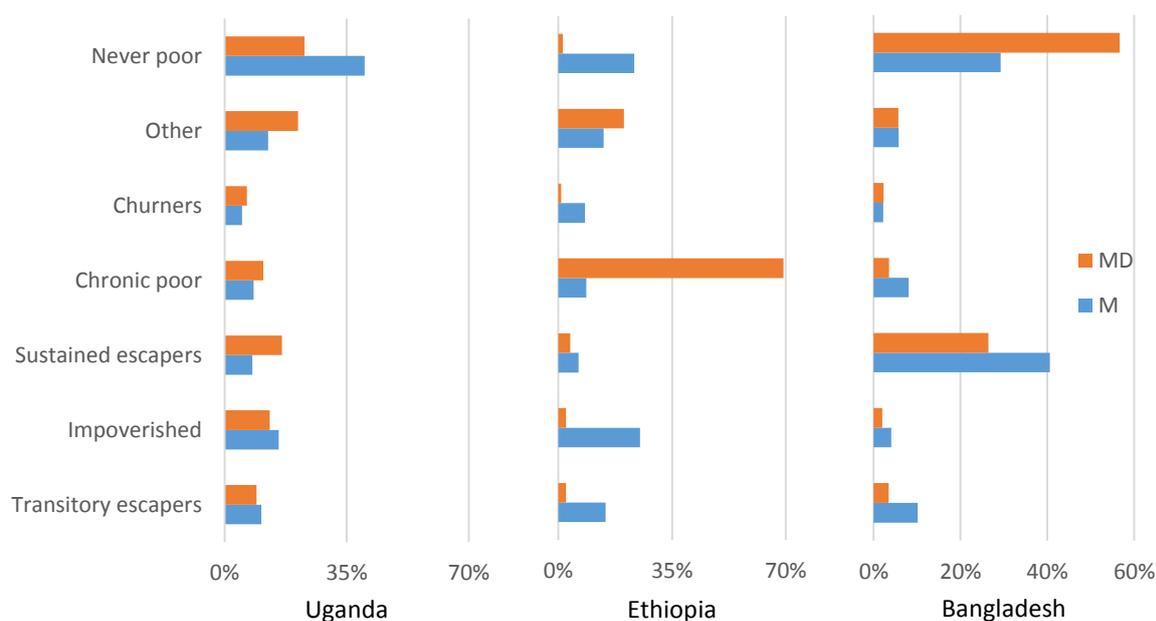


COMPARISONS WITH MONETARY POVERTY TRAJECTORIES

Multidimensional poverty trajectories also contrast with their monetary comparator groups (Figure 5). The graphs reveal several points of interest:

- Across countries, the share of impoverished and transitory escapers is slightly lower when relying on multidimensional relative to monetary measures.** This difference is especially pronounced in Ethiopia amongst the impoverished, where one in four households are impoverished according to monetary measures, compared to just 2% in multidimensional terms. Rather than a credit to Ethiopia's non-income based programs and services, however, this low share of impoverished is more a function of the higher share of chronically poor households in the country.
- Second, amongst the chronic poor, a static trajectory, there is a large range of outcomes across countries.** While just 4% of the multidimensional sample is chronically poor in Bangladesh, over two in three households experience this form of multidimensional poverty in Ethiopia. This is in contrast to the relatively constant share of monetary chronically poor households (8%) across countries. The high share of multidimensional chronically poor households in Ethiopia suggests that human development programs in the country continue to exclude this group.
- We also observe a large range (just over 1% in Ethiopia, 23% in Uganda, and 57% in Bangladesh) of households that are never poor according to multidimensional measures, and a large share according to monetary measures.** In Ethiopia, almost all households have experienced poverty at some point during the survey years, and it is likely that this poverty experience was of a multidimensional nature.

Figure 5: Multidimensional and monetary poverty trajectories at the household level



Finally, we also compare the average intensity of poverty amongst multidimensional poverty trajectory groups, and note that across countries, the intensity of poverty is highest amongst the group of chronically poor. The intensity of poverty reflects the percentage of dimensions in which poor households are deprived. Again, the interlocking deprivations endured by chronically poor households reinforce the exclusion of this group in spite of ongoing human development programs across our countries of study.

In this sub-section, we compared multidimensional poverty trajectories with monetary poverty trajectories. We next examine the subset of monetary poverty trajectories, and investigate the overlap of multidimensional poverty trajectories within this subset.

OVERLAP WITH MONETARY POVERTY TRAJECTORIES

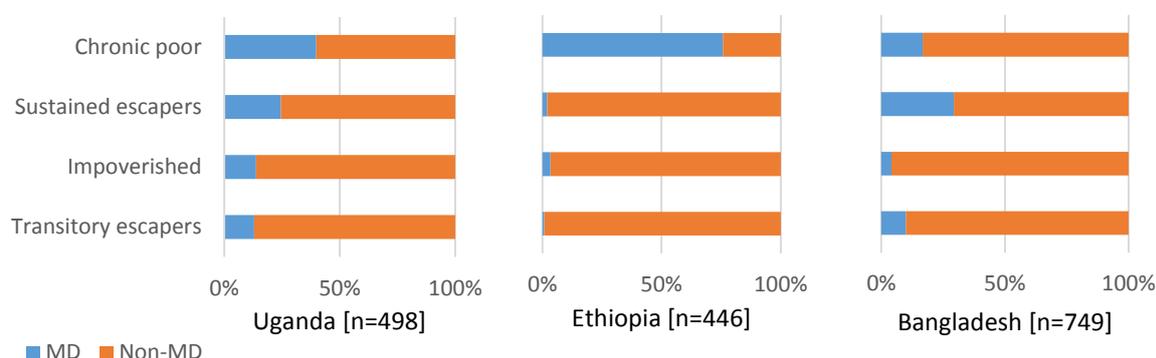
- **Around a quarter or more of monetary sustained escapers have also experienced sustained multidimensional escapes in Uganda and Bangladesh. That the share is highest in Bangladesh reflects its impressive human development gains during the MDG era. In Ethiopia, in contrast, only a handful of households that are monetary sustained escapers are also multidimensional escapers.**
- **Of the negative poverty trajectories (chronic poverty, impoverishment, and transitory poverty escapes) across countries, the largest overlap exists in chronic poverty. This overlap is much stronger in Uganda and rural Ethiopia.**

Figure 7 builds on these poverty trajectory comparisons by looking at the incidence of multidimensional poverty trajectories amongst households that are identified to be poor following monetary poverty trajectories. It is worth stressing that the overall headcounts of households in monetary poverty vary considerably across countries and per trajectory. For example, of the monetary poverty trajectories listed in Figure 7, less than one in five are sustained escapers in Uganda and Ethiopia, compared to over three in five in Bangladesh. Exploring these success stories in more detail, around a quarter of monetary sustained escapers have also experienced sustained multidimensional escapes in Uganda and a slightly higher share in Bangladesh. That the share is highest in Bangladesh reflects its impressive human

development gains during the MDG era. In Ethiopia, in contrast, only a handful of households that are monetary sustained escapers are also multidimensional escapers.

In Uganda and Ethiopia, we note that households experiencing multidimensional poverty trajectories generally do not overlap with those experiencing monetary poverty trajectories such as impoverishment, transitory escapes, or sustained escapes.¹² Across countries, the largest overlap in negative poverty trajectories exists in chronic poverty. This overlap is much stronger in both East African countries (Uganda and rural Ethiopia). This is intuitively sound, as it is likely that those individuals that are persistently below the monetary poverty line may be unable to afford education costs, be more susceptible to chronic illness, and live with fewer assets and other living standards variables typically associated with multidimensional deprivations and poverty.

Figure 7: Incidence of multidimensional poverty trajectories amongst monetary poor trajectories of households¹³



This section assessed multidimensional poverty incidence and trajectories and compared it to its monetary comparator groups. It confirmed that multidimensional poverty reduction in Bangladesh was faster than that in Uganda and Ethiopia. In comparisons, it found an absence of correspondence between monetary and multidimensional incidence, which may be attributable to differences in the quality of public services, the ability of households to translate income increases into human development improvements, and the relative successes and failures of pro-poorest growth. In terms of poverty dynamics, chronic poverty showed the most overlap between monetary and multidimensional measures amongst negative poverty trajectory and across countries, with the extent of this overlap larger in Uganda and Ethiopia compared to Bangladesh.

Having identified trends and gained insights into differences in multidimensional and monetary poverty trajectories, the next section turns to regression-based methods to identify which contextual factors have an effect on multidimensional poverty incidence and trajectory, and to what extent.

¹² The same is true when we compare severe multidimensional poverty trajectories with monetary poverty trajectories in Uganda, which we do on the basis of evidence that the national poverty line in Uganda most closely represents an ‘extreme’ poverty line.

¹³ Note: The “n” refers to the number of households that experience the listed monetary poverty trajectories, while the graph indicates the presence of multidimensional poverty trajectories amongst the sample of “n” monetary poverty trajectories.

IV. CONTEXTUAL DRIVERS OF MULTIDIMENSIONAL POVERTY

We proceed in this section to investigate which contextual factors may be responsible for multidimensional poverty. We examine context because recent research suggests that analysing poverty at the individual level alone is insufficient to derive a comprehensive understanding of the causes of poverty. Specifically, social and contextual factors can influence poverty directly or moderate the effects of individual behaviours, choices, and characteristics on poverty (see, for example, Brady et al., 2009; Kim et al., 2010; Arpino and Aassve, 2013). Understanding the role of these contextual factors is thus an important step in developing targeted policy interventions¹⁴.

The first sub-section explores changes in our context variables and sees how this is associated with changes in poverty incidence, while the next sub-section compares which contextual variables are associated with reduced risks of negative multidimensional poverty trajectories. Examining both incidence and trajectories allows for a better understanding of the types of policies that would be effective both in reducing multidimensional poverty and in preventing short-lived escapes from multidimensional poverty.

This section employs 1) fixed effects regressions to assess whether increases in contextual variables are significantly associated with *incidence* of monetary or multidimensional poverty, and 2) multinomial logit regressions to examine what contextual factors may be associated with an increased risk of negative poverty *trajectories* (transitory poverty escapes, impoverishment, and chronic poverty) relative to that of sustaining a poverty escape. In Ethiopia, the high share of chronically poor households and low numbers of other trajectories cause us to examine chronic poverty outcomes relative to a first episode of poverty descent in a household. We only report on statistically significant findings in our analysis.¹⁵

We investigate contextual drivers across countries through variables relating to the presence of public primary and secondary schools and public hospitals and clinics. The Uganda and Bangladesh datasets also allow us to construct information around the presence of formal credit institutions, while in Uganda we also have a variable on distance to a paved road. In Ethiopia, we also exploit data on the presence of agriculture extension offices and daily markets in the village. Finally, the contextual variables are measured by distance to the service facility in Uganda. In Ethiopia and Bangladesh, however, distance variables are not consistently employed across waves. We do have information on the number of facilities, and so we employ these as our contextual variables.

¹⁴ While shocks are included as controls in our regressions, we do not analyse them in any considerable detail. It is beyond the scope of this report, which limits an otherwise expansive field of analysis to focus on assessing contextual drivers as our variables of interest.

¹⁵ Results are statistically significant if $p < 0.01$, $p < 0.05$ or $p < 0.1$. The actual level of significance of each finding is given in Annex 3.

BOX 5: EMPIRICAL ANALYSIS APPROACH

In our analysis, we rely on fixed effects logit regressions to assess the drivers of poverty incidence, and multinomial logit estimators to assess the drivers of poverty trajectories. Fixed effects estimations examine changes within the variable between the survey rounds, with analysis conducted only on the subset of households that has experienced a change in their poverty status. Multinomial logit regressions allow us to examine what contextual factors may be associated with an increased risk of negative poverty trajectories relative to that of sustaining a poverty escape. The negative trajectories we focus on are transitory poverty escapes, impoverishment, and chronic poverty. Our results employ characteristics of the households in the round directly preceding their poverty descent or ascent. In the case of chronic poverty, baseline attributes are used. In our multinomial specifications, we also rely on the presence of shocks that happened in the round in which the change in poverty status was recorded¹⁴.

Finally, across our equations, we control for contextual, demographic, and socio-economic characteristics of households such as household size, presence of household shocks, and number of or distance to various services in health, education, and infrastructure. In our fixed effects logistic equation:

$$(1) \text{Log}(\text{Poverty}_{i,t}) = \beta_0 + \beta_1 \text{Context}_{i,t} + \beta_2 R_{i,t} + \beta_3 H_{i,t}$$

where in equation (1) Poverty_i is defined as the multidimensional poverty status of household i , or the per capita income or expenditure of household i in the case of monetary poverty.

In our multinomial logistic equation:

$$(2) \text{Pr}(\text{Poverty Trajectory}_{i,t} = 1 \mid \beta, v_{i,t}) = \beta_0 + \beta_1 \text{Context}_{i,t} + \beta_2 \text{Region}_{i,t} + \beta_3 H_{i,t}$$

where in equation (2) for $v_i = (1, \text{Context}_i, \text{Region}_i, H_i)$, we have $\text{Poverty Trajectory}_i$ as the probability of the household i being chronically poor, becoming impoverished, or escaping poverty according to multidimensional and monetary measures separately.

For other variables in both equations,

Region is a vector of dummy variables communicating the state or zone the household resides in (and whether it is located in an urban or rural area in the case of Uganda), and

H is a vector of household specific controls¹.

The interpretation of the variables varies by regression. Specifically, in the fixed effects logistic regression, an increase in the distance to a public health facility, for example, refers to a *change* experienced by a household and how it is associated with a *change* in the outcome (incidence of poverty). In the multinomial logistic regression, the results are presented as relative risk ratios, wherein a variable coefficient greater than one indicates a higher risk of the outcome (transitory escape, impoverishment, or chronic poverty) for a household relative to the base category of experiencing a sustained escape. Moreover, in the multinomial logistic regression, we interpret the variable coefficient as an increase in the *level* and specifically compare households with each other (rather than the change experienced within each household).

LIVING STANDARDS

Across countries, provision of different services is investigated depending on data availability across survey years in the dataset questionnaire and the theoretical presence of causal links to living standard deprivations as outlined in Section 2. Specifically, we examine the effects on multidimensional poverty of: agriculture extension offices and daily markets in Ethiopia, banks in Bangladesh, and banks as well as distance to paved roads in Uganda. We also investigate whether our contextual findings significantly

change if we focus on the subset of rural Ugandan households. While different contextual variables are explored in different countries, this is not to say that comparable issues do not exist in countries for which the data is not present. Unfortunately, data limitations preclude us from exploring these variables in a comparative framework.

BANKS IN BANGLADESH

An increase in the number of banks in rural Bangladesh is associated with...

- a **lower risk of multidimensional chronic poverty, monetary transitory escapes, and both multidimensional and monetary impoverishment**, potentially by improving access to credit that can in turn provide opportunities for schooling, cover medical costs, and contribute more generally to improved living standards.
- an **increase in multidimensional poverty incidence**, due possibly to a better palette of services that can provide households with liquidity and temporary reprieve in the face of shocks.

An increase in the number of banks in Bangladesh is associated with a lower risk of multidimensional chronic poverty, monetary transitory escapes, and both multidimensional and monetary impoverishment relative to a sustained escape. This reduced risk could stem from the use of banks to help provide opportunities for schooling, cover medical costs, and contribute more generally to improved living standards. Indeed, more banks make the credit system as a whole more competitive and so are likely to provide a better palette of services and at least temporarily meet the needs of households that may otherwise face a poverty descent. The complementary services that sometimes may be offered by credit institutions alongside their loans could also indirectly result in improved wellbeing outcomes (Leatherman and Dunford, 2010). Over time, the ability to more easily secure loans through a larger supply of banks, coupled with the complementary informational services provided, could help a household reduce its risk of impoverishment, chronic poverty, and transitory escapes.

However, the immediate consequences of **an increase in bank presence may be detrimental. In fact, we note that an increase in the presence of banks is associated with an increased risk of multidimensional poverty incidence** in Bangladesh. As Scott and Diwakar (2016) have found, the profusion of loans in the country has created difficulties in loan repayment. If loans rely on collateral in the form of assets, or repayment necessitates temporarily pulling children out of school, dimensions of deprivation could worsen and result in multidimensional poverty incidence. This finding reinforces the need to disentangle the longer-term benefits that may come from an increase in bank presence with the short-term pitfalls that may derive from difficult repayment schedules or loan sharks.

AGRICULTURE EXTENSION OFFICES IN ETHIOPIA

An increase in the number of agriculture extension offices in rural Ethiopia is associated with...

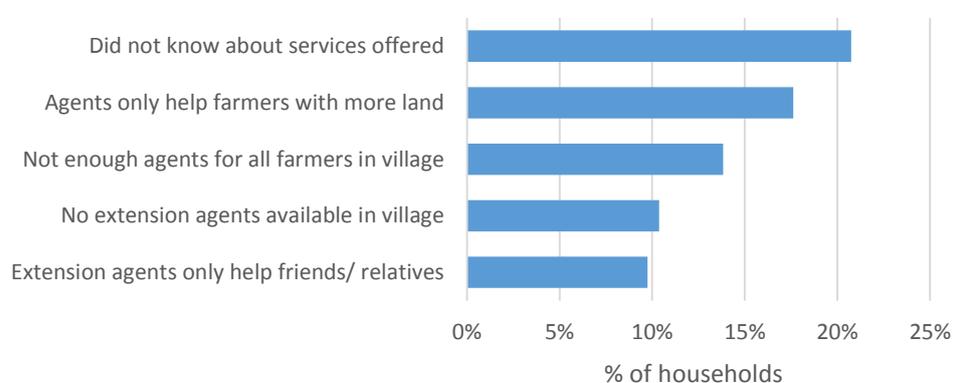
- a **reduced risk of monetary chronic poverty** in the country, possibly due to the improved profits and agriculture yields that could stem from the advice provided through these services in an economy heavily reliant on agriculture labour and outputs.
- an **increase in multidimensional poverty incidence**, with successful farms potentially leading to an increase in the demand for family labour and so reducing school attendance.

Almost half of households during the season in Ethiopia preceding their interview were visited by an agriculture extension officer. Households that were visited generally received two such visits over the period. The main services offered were the introduction of new inputs (37%) and new cultivation methods (36%). Officers also helped farmers obtain fertiliser and improved seeds, and introduced them to new crops. The role played by these officers thus appears largely positive and conducive to improved profits and agriculture yields. In fact, it could be for this reason that we observe that an **increase in the**

number of agriculture extension officers is associated with a reduction in monetary chronic poverty in the country.

In spite of the positive result on monetary chronic poverty, accessibility of these services remain low. The main reason behind households not receiving a visit in the latest survey year was that households were simply unaware of the services offered (Figure 8). Around one in ten households that had not been visited also believed that extension agents were not available in their village, despite all villages having at least one such office by the latest survey year. The concentration of lack of awareness was highest in Imdibir, though respondents who were unaware of the existence of these offices were located in 10 out of the 18 villages surveyed. Finally, around one in ten households also expressed a belief that they did not receive a visit because agents only helped friends and relatives who were farmers. These findings point to the improvements in accessibility that could be made in agriculture service provision and particularly in ensuring equitable provision of these services.

Figure 8: Top five perceived reasons for lack of visit by extension officers in rural Ethiopia, 2009



Exploring multidimensional outcomes, in our results, we also observe that a **higher number of extension offices are associated with an increase in multidimensional poverty incidence**. The increase in incidence could stem from households shifting resources towards agriculture-related labour in the presence of improved monetary outcomes from extension services. In other words, demand for family labour could increase with more successful farms and as a result, schooling deprivation outcomes could worsen. Past analysis of the ERHS from its 1994-1997 rounds has found that an increase in land ownership or certain types of assets such as small animals and permanent crops acted to increase child work and so reduce schooling (Cockburn, 2001). In our dataset, we observe that almost a third of households were attendance deprived in villages which had an extension office in 2004, compared to just over one in five amongst villages without such an office. We also run a separate set of regressions, wherein if we increase the p-value to a slightly higher threshold (0.15 as opposed to the conventional 0.10), we observe that an increase in extension offices is associated with an increase in attendance deprivation amongst the multidimensionally poor (see Table 3.2C in Annex 3). This then lends credence to our hypothesis that the presence of extension offices has created a behavioural change away from education that has unwittingly contributed to multidimensional poverty.

DAILY MARKETS IN ETHIOPIA

An increase in the number of daily markets in rural Ethiopia is associated with...

- **a reduced risk of multidimensional chronic poverty and a reduction in the household incidence of monetary poverty, likely on account of the economic diversification that emerges from an improved selection of venues for producers to sell their varied outputs.**

- **an increase in the incidence of multidimensional poverty, possibly due to a reallocation of time and resources towards labour stemming from perceived low returns to education.**

In Ethiopia, an increase in the number of daily markets in a community is associated with a reduced risk of multidimensional chronic poverty and a reduction in the household incidence of monetary poverty, but an increase in multidimensional poverty incidence. Descriptive statistics indicate that a majority of households which have a daily market in their village have just one such market. An increase in the number of daily markets would be beneficial in rural areas as it reduces travel time to markets and provides an improved selection of venues for producers to sell their outputs and in doing so can contribute to diversified economies and a decreased incidence of monetary poverty as we observe. Similarly, the reduction in multidimensional chronic poverty could exist in villages with an improved selection of goods and services.

The **increase in the incidence of multidimensional poverty that an increase in daily markets is associated with** seems, however, counter-intuitive. In our dataset, we disaggregate deprivations by market presence to investigate this further. We note that in 2004, deprivations in water and sanitation, and school attendance, is higher amongst areas without markets, but deprivations in other dimensions (schooling, morbidity, assets, and roof material) is markedly higher for households that live in villages with at least one market. The higher schooling deprivation in villages with a market could manifest if there is a prioritisation of labour over education, due to the perceived lower returns from continuing schooling in an environment without strong education to labour market transitions. In this situation, the opportunity cost of continuing education would be high and there would accordingly be low education levels and higher education deprivation. In fact, in our dataset, while 22% of households are schooling-deprived in villages with at least one daily market, these figures drop to 19% amongst villages without a daily market.

ROADS IN UGANDA

An increase in the distance to a paved road in Uganda is associated with...an increase in the risk of multidimensional impoverishment, and of monetary chronic poverty.

Both results may potentially be attributed to the reduced accessibility to services that emerge through an increased distance to this means of transport.

As mentioned in Section 2, services are useful insofar as they are of adequate quality and accessible. This accessibility may be captured by distance to a paved road. Paved roads can help reduce the effective time it takes to travel and thus facilitate access to schools, hospitals, and other such services. Regression results indicate that **an increase in the distance to a paved road is associated with an increase in the risk of multidimensional impoverishment and of monetary chronic poverty**, both relative to their comparator group of sustained escapes. Recognising this pitfall, the Ugandan government has in the past singled out accessibility as one of the key causes of poverty (Government of Uganda, 2002). Other research on Uganda also confirms this relationship between inadequate roads and poor accessibility to and development of social services and agricultural markets across various districts in the country. As a result, consumers from beyond a village were sometimes unable to buy certain produce such as maize from the village, and suppliers' means of delivering goods were limited, ultimately resulting in higher levels of poverty (Proudlock, 2007). Though the government has made huge investments in feeder roads since then, households wishing to access *paved* roads have only witnessed slight improvements over the survey period (the average distance to a paved road in 2005 was 26 kilometres, but only 22 kilometres by 2011/12).

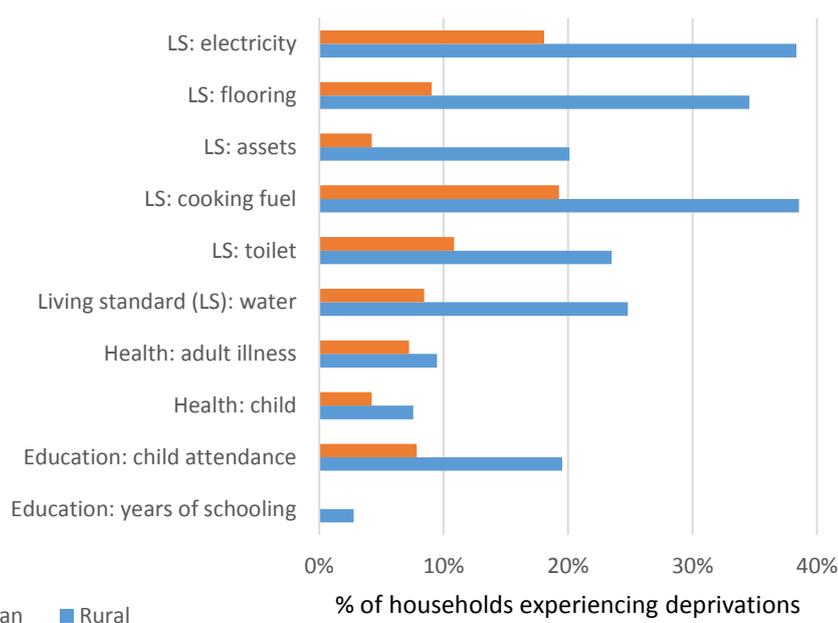
While we are not able to empirically test the associated effect of paved roads on multidimensional poverty in other countries due to data limitations, there is evidence to suggest that this would also be a key factor in other countries, particularly Ethiopia. For example, there has been a long recognized role of rural roads in the country, wherein road expansion between 1999 and 2004 has been hypothesised to result in an improvement in living standards for the chronic poor in subsequent years (Dercon et al., 2009).

RURAL-URBAN DIVIDE IN UGANDA

- **Deprivation rates are higher amongst households living in rural areas, especially in living standards indicators, but also in education.**

The presence of a nationwide panel in Uganda allows us to disaggregate deprivations by rural versus urban areas of residence. (Figure 9). **Across all indicators we observe that deprivation rates are much higher amongst households living in rural areas.** For example, over a third of rural households are deprived in electricity and cooking indicators, compared to fewer than one in five such households in urban areas. Regression analysis on the subset of rural households reveals largely comparable results in the effects of contextual variables of interest. In this second set of regressions, we do however note that an increase in the distance to a bank is associated with an increase in the likelihood of multidimensional poverty.

Figure 9: Rural-urban differential in multidimensional deprivations in Uganda, 2011/12



HEALTH

An improvement in the provision of public hospitals and clinics is associated with...

- Uganda:
- a reduced risk of multidimensional impoverishment.
- Bangladesh:
- a reduction in monetary poverty incidence, and a reduced risk of monetary impoverishment, multidimensional chronic poverty, and transitory escapes.
 - a higher risk of monetary chronic poverty, reflecting high health-related costs and the overlap between extreme/chronic poverty and chronic illness.

- Ethiopia:**
- an **increased incidence of monetary poverty, and an increased risk of multidimensional chronic poverty, which could reflect poor quality of public healthcare in the country.**
 - a **reduced risk of monetary chronic poverty in Ethiopia, possibly due to a decline in out-of-pocket health expenditures through use of public facilities.**

In the health sector, we observe benefits in Uganda and Bangladesh, but negative outcomes in Ethiopia. In Uganda, an increase in the distance to public hospitals and clinics is associated with an increased risk of multidimensional impoverishment. In Bangladesh, an increase in the number of public health facilities is associated with a reduced risk of monetary poverty incidence as well as monetary impoverishment, multidimensional chronic poverty, and both types of transitory escapes. Multidimensional sustained escapes would be more likely in the presence of adequate facilities that act to reduce health deprivations. Similarly, it may reduce the risk of monetary impoverishment or incidence amongst the non-poor by preventing further illness that may otherwise precipitate poverty declines.

However, we also note that greater access to health facilities is associated with a higher risk of monetary chronic poverty in Bangladesh. Evidence suggests that the extreme or chronic poor in Bangladesh are more likely to be disabled and also often suffer from severe chronic illnesses that perpetuate their state of poverty (Davis, 2016; Diwakar, 2016). Unfortunately, health insurance is largely uncommon, and health financing in the event of shocks remains difficult to access (Scott and Diwakar, 2016). Thus, poor households that may increase their visits and incur more health-related costs as a result of the improved presence of health facilities could find their conditions of monetary distress being perpetuated into chronic poverty as observed in the regression results.

In Ethiopia, public health presence is generally associated with negative poverty outcomes.

Specifically, an increase in the number of public health facilities is associated with an increased incidence of monetary poverty, and an increased risk of multidimensional chronic poverty. The increased poverty incidence and multidimensional chronic poverty in spite of improved access to facilities could be a reflection of the poor quality of public healthcare, resulting in many rural households turning to private or traditional health care institutions that offer flexible payment schemes and low service charges (Lemma and Rao, 2013). For example, Sirbana Godeti had 15 traditional healers in 1997, the highest amongst surveyed villages. Though this figure had decreased to three by the latest survey year, the continued presence of traditional healers remains a feature of the healthcare system in Ethiopia.

In contrast to these negative outcomes, we also observe that improved presence of public health facilities is associated with a reduced risk of monetary chronic poverty in the country. This improvement in number of public as opposed to private healthcare facilities may allow for a decline in out-of-pocket health expenditures over time and so reduce the risk of monetary chronic poverty. This result is thus indicative of the gains that can be made in reducing monetary chronic poverty in spite of continued multidimensional chronic poverty and an increase in morbidity-related deprivations over the survey years in the country. These deprivations are likely to stem from poor quality of healthcare services, but also poor nutritional outcomes, population growth especially amongst the poor, or a lack of access to family planning.

EDUCATION

- **Across the three countries, improvements in public school provision are generally associated with improved wellbeing outcomes, reinforcing the value of continued investment in education. Two exceptions are as follows:**
 1. **Ethiopia: improved provision of secondary schools is associated with an increased incidence of monetary poverty.**

2. Bangladesh: improved provision of primary schools is associated with an increased risk of multidimensional impoverishment.

Across countries, improvements in public school provision are generally associated with improved wellbeing outcomes. In multidimensional results, for example, we note that improved public primary schools are associated with a reduction in chronic poverty in Uganda, and chronic and transitory poverty in Bangladesh. However, while a higher presence of public schools tends to be associated with improved wellbeing outcomes at large, there are two exceptions: 1) in Ethiopia, an increase in the number of secondary schools is associated with an increased incidence of monetary poverty, and 2) in Bangladesh with an increased risk of multidimensional impoverishment. We examine each of these in turn.

In rural Ethiopia, there was a high incidence of monetary poverty in spite of an increase in secondary school supply. Descriptively examining education demand, we observe that only nine household heads in the ERHS had completed secondary school in the latest survey year. Poor education quality coupled with weak labour market transitions in an economy characterised largely by agriculture means that there are limited gains and potentially even disadvantages in opportunity costs through reduced earnings to be had from continuing secondary schooling. Moreover, more secondary schools could result in higher enrolment, which in turn generates higher costs for families through spending on books and transport, less income through child labour and so on, which in turn could yield a higher incidence of monetary poverty.

Even in these situations, however, the effect of secondary schools on multidimensional poverty can be and is beneficial. In fact, in rural Ethiopia, we observe a reduced risk of multidimensional chronic poverty in the country stemming from an increase in secondary schools. This likely reflects the fact that while household heads and children may not complete secondary school, they are still completing more schooling in recent years, so reducing their education deprivation and reducing their risk of multidimensional chronic poverty. Part of this is attributable to the improvements made in primary education as noted earlier, while part of it is also that higher levels of education access are likely to lead to lower multidimensional deprivation given that education is part of the multidimensional poverty measure.

In Bangladesh, public primary school presence increases the risk of multidimensional impoverishment but reduces that of transitory escapes and chronic poverty. In other words, public education is useful for households that have escaped poverty to sustain their escape, but not useful in preventing poverty descents. This then raises questions around the quality of public education in the country, though data limitations preclude us from testing these mechanisms in more detail.

This section analysed the contextual drivers of multidimensional and monetary poverty. It found that provision of public services were often, but not always, linked with reduced poverty incidence and a lower risk of negative poverty trajectories. In the next section, we summarise and reflect on these results and those from the previous sections, and conclude.

V. DISCUSSION AND CONCLUSION

This section discusses some commonalities and key findings that emerged from the descriptive and empirical analysis of previous sections and concludes.

REFLECTIONS ON KEY FINDINGS

Several key findings emerged from the above analysis. These are listed and reflected upon below:

- **Programs and policies to reduce poverty should incorporate an understanding of both the incidence and trajectories of multidimensional deprivations and poverty.** As with monetary poverty, program designers and researchers should explore the drivers of poverty descents, and develop a better understanding of the factors which maintain the multidimensionally poor in poverty. To this end, our results indicate the importance of examining contextual drivers in undertaking analysis of multidimensional poverty. This is because the varied dimensions of poverty are intrinsically tied to access to particular services.¹⁶
- **Disaggregating deprivations helps to prioritise interventions to address poverty amongst specific target groups such as the chronic poor.** For example, in Ethiopia, where multidimensional chronic poverty is widespread, asset creation and distribution should be stressed, in addition to providing physical and human capital infrastructure (Brück and Kebede, 2013). Across countries, the multidimensional chronic poor also have higher education deprivation relative to the impoverished and transitory poverty escapers due to the higher real and opportunity costs of education. Moreover, we note that the multidimensional chronically poor across countries tend to be at least equally and often more deprived than the other poverty trajectory groups with regards to living standards. In this group and negative poverty trajectories more generally, electricity, cooking fuel, and inadequate floor or roof material constitute the most common deprivations to affect households across countries.
- **Amongst multidimensional transitory escapers, the range of deprivations varies.** For example, results from the latest survey year indicated that school attendance deprivation¹⁷ affected almost 50% of multidimensional transitory escaper households in Uganda, and almost 75% of households in rural Bangladesh, but just 10% of such households in Ethiopia. It is worth noting that this relationship may not be causal, but rather result from the transitory nature of the poverty escape. In Ethiopia, asset deprivations affected 79% of multidimensional transitory escaper households but under half of such households in Uganda.
- **Program and policy responses should coordinate across sectors.** For example, our findings on particular education deprivations indicate that an increase in the distance to a paved road or government primary school in Uganda is associated with an increase in school attendance deprivation, while an increase in the number of public primary schools in Ethiopia is associated with a decrease in deprivation as measured by years of schooling. This indicates the synergies to be had between certain sectors; here road infrastructure and schooling, in creating positive outcomes for education deprivation that in turn will reduce multidimensional poverty.
- **There remains a pressing need for more research into the nature and extent of deprivations and their contextual determinants.** To this end, data improvements are necessary. In particular, the need to create proxies for health indicators highlights data limitations in health coverage across our panel datasets. Even in instances where a health-related variable did exist, it was often the case that this was not adopted in a consistent manner across survey years. This was also true of living standard indicators in the Ethiopia dataset and to a lesser extent in the Bangladesh dataset. Our results pointed

¹⁶ That said, there are also other possible factors that have not been examined in the study on account of data limitations. These include, for example, psychosocial factors, macro-economic and political stability, the vibrancy of agriculture and the non-farm economy, and the quality of implementation and governance more generally. Improvements in these factors would also help propel reductions in multidimensional poverty.

¹⁷ School attendance deprivation is defined as households with any school-aged child not attending school up to the age at which he or she would complete class 8.

to the need of a wider coverage of data on health, living standards, and contextual variables, as well as that this data be collected in a systematic and consistent manner.

CONTEXTUAL DETERMINANTS: WHAT MATTERS

Finally, exploring contextual factors specific to each dimension of deprivation, we found certain similarities across countries (see Table 1).

Table 1: Summary of results

	POVERTY	Bank	Paved road	Agri. ext. office	Daily market	Public hospital or clinic	Public primary school	Public secondary school
Uganda	Incidence		MD - M -					M -
	Transitory escape		MD -					
	Impoverish		MD -			MD -	M -	
	Chronic poverty		M -				MD -	
Ethiopia	Incidence			MD +	MD + M -	M +		M +
	Transitory escape							
	Impoverish							
	Chronic poverty			M -	MD -	MD + M -		MD -
Bangladesh	Incidence	MD +				M -		
	Transitory escape	M -				MD - M -	MD -	
	Impoverish	MD - M -				M -	MD +	M -
	Chronic poverty	MD -				MD - M +	MD -	

Grey cells: variables do not exist (either at all or consistently across survey years) so were excluded from the analysis; Blank cells: variables were not statistically significant at conventional levels so results are excluded from the table;

MD= multidimensional poverty, M= monetary poverty

Note: a negative (positive) indicates the variable is associated with a reduction (increase) in poverty

Our findings indicate that across countries, education matters. Moreover, our results on school attendance deprivation confirm that enrolment ratios are insufficient in capturing actual attendance at primary schools and beyond. It is the poorest who often continue to miss out on this critical human development service. This is in spite of our evidence which points to the benefits in multidimensional poverty reduction accruing through the improved presence of public education facilities. Unfortunately, in Uganda, poor quality of education has especially severe deprivation outcomes in rural areas. In rural Ethiopia, while primary education access has drastically improved since the 1990s, secondary education has not kept pace (Mariotti and Diwakar, 2016). In Bangladesh, it has been found that education needs to

be relevant to the labour market, bringing in the need for technical training and skills development (Scott and Diwakar, 2016).

In the health sector, we see mixed results stemming from the provision of services as measured by distance to the nearest public facility or number of such facilities. Poor provision and quality of healthcare, combined with drought, food price inflation, and other detriments worsened health shocks and conditions of the rural populace in Ethiopia. Many households in rural parts of the country turn to traditional healers as an alternative to the public healthcare system, as these offer flexible payment schemes and low service charges. In Bangladesh, chronic illness and poverty are strongly intertwined. Health insurance and financing needs to be more accessible, especially in the event of health shocks when families continue to find it difficult to pay for the treatments they require.

Living standards deprivations affect Uganda and Ethiopia to a larger extent than in Bangladesh.

In Uganda, inefficiencies in the power sector result in high deprivation rates in electricity and cooking fuel. In terms of contextual determinants, paved roads are important in reducing the effective time to services and so are associated with reductions in multidimensional and monetary poverty in Uganda where data availability allows this to be measured. Presence of credit facilities is associated with reductions in multidimensional poverty trajectories in Bangladesh, though this must be tempered with its detrimental effects on poverty incidence – possibly stemming from difficulties of loan repayment. Agriculture extension services and daily markets are beneficial in monetary outcomes in rural Ethiopia. However, there exist opportunities to enhance service provision especially with regards to ensuring equitable and wider-reaching provision of extension services. That being said, these opportunities must be tempered, taking into account a potential transfer of household labour resources away from education which could inadvertently contribute to multidimensional poverty incidence in rural Ethiopia.

CONCLUDING REMARKS

SDG 1 calls to “end poverty in all its forms everywhere”. The inherent recognition of the multiple facets of poverty in its phrasing requires that we adopt a multifaceted response in our efforts to work towards achieving the new set of global targets. Part of this response needs to recognize the integral role of context and service provision in perpetuating poverty dynamics.

Unfortunately, in Uganda, even where this infrastructure may exist, its quality is largely inadequate to respond to the needs of the poorest. And in Bangladesh, which has made considerable improvements in multidimensional and monetary poverty over the last two decades, there remains a small group of monetary and multidimensionally poor that continues to suffer extreme income poverty and are faced with interlocking deprivations. In order to effectively target these groups, we need to better understand the type and extent of deprivations they face, as well as the contextual factors that reduce or exacerbate these poverties.

This study provided an initial investigation into these issues. It found that poverty dynamics yield very different outcomes when using multidimensional indicators as opposed to usual consumption-based measures, and moreover, that improving provision of key services in health, education, and living standards were associated with changes in multidimensional and also monetary poverty incidence and dynamics. This paper thus offers evidence that multidimensional deprivations and the contextual forces that drive them cannot be ignored.

Indeed, there are certainly benefits to be gained from employing a multidimensional analysis. From a policy perspective, the MPI outlines specific indicators around which policymakers can develop targets to improve areas of wellbeing for the poor. However, in using the index, care must be taken to ensure that escapes from poverty as identified through the MPI do not automatically equate with overall improvements in wellbeing. Elements such as empowerment or psychological wellbeing are not covered

in the MPI (as their authors have noted), which limit its usefulness as a holistic measure of wellbeing. Moreover, analysis of multidimensional poverty trajectories relies on regular data collection across a host of variables in a consistent manner across years, which may not always take place. Ultimately, these drawbacks should render us cautious in overreliance on multidimensional poverty, but by no means should be a reason to avoid its use. As the results of this study indicate, there are striking differences in household identification based on multidimensional compared to monetary poverty trajectories. A marriage of the two in research and policy would go a long way in promoting poverty reduction and ensuring that poverty escapes are truly sustained.

REFERENCES

- AFDB. (2011a). Project Appraisal Report: Improvement of health services delivery at Mulago Hospital and in the city of Kampala. Retrieved from http://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/UGANDA_-_Improvement_of_Health_services_delivery-_eng_.pdf
- AFDB. (2011b). “Section II: Tracking Progress”. In *Assessing Progress in Africa toward the Millennium Development Goals, 2011*. Retrieved from <http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Goal2%20Eng.pdf>
- Alkire, S. and Foster, J. E. (2011). ‘Counting and Multidimensional Poverty Measurement’, *Journal of Public Economics*, Vol. 95, 476-487.
- Alkire, S. and Santos, M. E. (2014). “Measuring Acute Poverty in the Developing World: Robustness and Scope of the Multidimensional Poverty Index.” *World Development*, 59: 251–274.
- Alkire, S., and Santos, E., (2010). *Multidimensional Poverty Index Research Brief*. Oxford.
- Alkire, S., Jindra, C., Robles, G., Vaz, A. (2016). “Multidimensional Poverty Index 2016: Brief methodological note and results.” *OPHI Briefing 42*, University of Oxford.
- Amin, S., Rai, A.S. and Topa, G. (2003) Does microcredit reach the poor and vulnerable? Evidence from Northern Bangladesh. *Journal of Development Economics*, 70(1), pp. 59–82.
- Arpino, B., and Aassve, A. (2013). Estimation of causal effects of fertility on economic wellbeing: data requirements, identifying assumptions and estimation methods. *Empir. Econ.* 44(1): 355–385.
- Bird, K and Shepherd, A, 2003. Livelihoods and chronic poverty in semi-arid Zimbabwe. *World Development* 31, No 3, pp: 591–61.
- Bird, K. McKay, A. and Shinyekwa, I. (2007). Isolation and poverty: the relationship between spatially differentiated access to goods and services and poverty. Paper presented at the International Workshop “Understanding and addressing spatial poverty traps”. Stellenbosch, South Africa, 29 March 2007.
- Brady, D., and Fullerton, A.S., Cross, J.M. (2009). Putting poverty in political context: a multi-level analysis of adult poverty across 18 affluent democracies. *Soc. Forces* 88(1): 271–299.
- Brück, T., and Kebede, S. (2013). Dynamics and Drivers of Consumption and Multidimensional Poverty: Evidence from Rural Ethiopia. IZA DP No. 7364.
- Cockburn, J. (2001). Child Labour Versus Education: Poverty Constraints or Income Opportunities? CSAE working paper. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.197.4562&rep=rep1&type=pdf>
- CPRC. (2005). *The chronic poverty report 2004-05*. Manchester: Chronic Poverty Research Center.
- Dercon, S., D.Gilligan, J.Hoddinott and T. Woldehanna. 2009, “The impact of roads and agricultural extension on consumption growth and poverty in fifteen Ethiopian villages,” *American Journal of Agricultural Economics* 91(4): 1007-1021.

- Dercon, S., Hoddinott, J. and Woldehanna, T. (2007). Growth and Poverty in Rural Ethiopia: Evidence from 15 Communities 1994-2004. Background Paper for the Chronic Poverty Report 2008-09. Manchester: Chronic Poverty Advisory Network.
- EPHI. (2014). An evidence brief for policy: improving health care financing in Ethiopia. Retrieved from <http://www.who.int/evidence/sure/esimprovinghealthcarefinancingethiopia.pdf>
- Government of Uganda, Ministry of Finance, Planning and Economic Development (MFPED), 2002. Deepening the understanding of poverty; Second Participatory Poverty Assessment Report. Kampala, December 2002.
- Green, D. (2016, June 3). The 2016 Multidimensional Poverty Index was launched yesterday. What does it say? Retrieved from Oxfam blogs website: <https://oxfamblogs.org/fp2p/the-2016-multidimensional-poverty-index-was-launched-yesterday-what-does-it-say/>
- Hagos, F. and Holden, S. (2003). Rural Household Poverty Dynamics in Northern Ethiopia 1997-2000: Analysis of Determinants of Poverty. Chronic Poverty Research Centre Working Paper.
- Headey, D. D.; Bachewe, F. N.; Worku, I. Dereje, M.; Taffesse, A. S. (2012). 'Urban wage behavior and food price inflation: the case of Ethiopia'. ESSP II Working Paper NO. 41. International Food Policy Research Institute (IFPRI) Ethiopian Development Research Institute (EDRI).
- Khandker, S. R., Bakht, Z., and Koolwal, G. (2009). The poverty impact of rural roads: Evidence from Bangladesh. *Economic Development and Cultural Change* 57 (4): 685-722.
- Kim, K., Lee, Y., and Lee, Y. (2010). A multilevel analysis of factors related to poverty in welfare states. *Soc. Indic. Res.* 99: 391-404.
- Leatherman, S., and Dunford, C. (2010). Linking health to microfinance to reduce poverty. *Bulletin of the World Health Organization* 88:470-471.
- Lemma, T., and Rao, M. (2013). Demand for Traditional Health Care Services in Rural Ethiopia. Middle-East Journal of Scientific Research 13: 1-10.
- Lenhardt, Amanda, Andrew Rogerson, Francesca Guadagno, Tom Berliner, Mulu Gebreeyesus, Alebel Bayru (2015) 'One foot on the ground, one foot in the air Ethiopia's delivery on an ambitious development agenda'. Development Progress Case Study, September 2015. London: Overseas Development Institute
- Mariotti, C., and Diwakar, V. (2016). Ensuring Escapes from Poverty are Sustained in Rural Ethiopia. *USAID Leo Report 36*.
- Neubourg, C., Drabing, V., Hilger, A., and Bluhm, R. (2010). An Assessment of Multidimensional Poverty, Poverty Dynamics and Patterns of Deprivations. Retrieved from [http://www.unicef.org/equity/files/HQ-MultidimensionalPovertyinSenegal\(FinalReport\).pdf](http://www.unicef.org/equity/files/HQ-MultidimensionalPovertyinSenegal(FinalReport).pdf)
- OPHI. (n.d). Global MPI Frequently Asked Questions. Retrieved from <http://www.ophi.org.uk/multidimensional-poverty-index/mpi-faqs/>
- Proudlock, K. (2007). The Impact of Isolation on Poverty in Uganda: A Review of Selected Uganda District PPA II Reports. Overseas Development Institute report.
- Ranganathan, R. and Foster, V. (2012). Uganda's Infrastructure: A Continental Perspective. Country report. The World Bank. Retrieved from <http://infrastructureafrica.org/system/files/library/2012/02/CR%20Uganda.pdf>

- Scott, L., and Diwakar, V. (2016). Ensuring Escapes from Poverty are Sustained in Rural Bangladesh. *USAID Leo Report 32*.
- Scott, L., Diwakar, V., and Okech, M. (2016). Ensuring escapes from poverty are sustained in Uganda. *USAID Leo Report 25*.
- Seid, Y., Taffesse, A.Seyoum & Ali, S.Nuru (2015) Ethiopia—an agrarian economy in transition. 2015/154. Helsinki: UNU-WIDER.
- Shepherd, A., Mariotti, C., and Rodriguez-Takeuchi, L. (2016b). What policy lessons can be learnt from cases of pro-poorest growth? CPAN Challenge Paper.
- Shepherd, A., Samman, E., Gavas, M., and Faure, R. (2016a). Trends in poverty and inequality and further clustering of developing countries: Challenges and opportunities for development policy. European Commission Report.
- Tran, V. Q., Alkire, S., and Klasen S. (2015). “Static and Dynamic Disparities between Monetary and Multidimensional Poverty Measurement: Evidence from Vietnam.” *OPHI Working Paper 97*, University of Oxford.
- Wardhana, D. (2010). Multidimensional Poverty Dynamics in Indonesia (1993 - 2007). Dissertation retrieved from:
http://www.rand.org/content/dam/rand/www/external/labor/FLS/IFLS/papers/2010_wardhana.pdf
- Winkler, D. and Sondergaard, S. (2008). The efficiency of public education in Uganda. Retrieved from World Bank website:
<http://info.worldbank.org/etools/docs/library/244476/day7Uganda%20Efficiency%20Study.pdf>
- World Bank. (2013). Quality of Uganda’s Education and Health Services Poses Serious Risk to Long-Term Economic Progress. Retrieved from World Bank website:
<http://www.worldbank.org/en/news/press-release/2013/11/19/quality-uganda-education-and-health-services-poses-serious-risk-long-term-economic-progress>

ANNEX I: MULTIDIMENSIONAL INDICATORS

... per dataset:

DIMENSION	INDICATOR	DEPRIVED IF...	Indicator consistently exists in...		
			Uganda	Ethiopia	Bangladesh
Education (1/3 weight)	Years of schooling	No household member aged at least 10 years or older has completed 5 years of schooling	Yes	Yes	Yes
	Child school attendance	Any school-aged child is not attending school up to age at which would complete class 8	Yes	Yes	Yes
Health (1/3 weight)	Child health*	CH1: Any child died in family in years preceding survey;	Yes-	Yes-	Yes-
		CH2: disability of child; CH3: Child with nutritional info (z-score of weight for age is less than 2 standard deviations from median of reference population) undernourished	CH2	CH1	CH3
	Adult illness*	Any adult illness in four weeks prior to survey suffered more than 25% of days, preventing usual activity from taking place	Yes	Yes	No
Living standard (1/3 weight)	Electricity	Household has no electricity	Yes	No	Yes
	Cooking fuel	Household cooks with dung, wood, or charcoal	Yes	No	No
	Improved sanitation	Household sanitation facility not improved (no flush toilet/ latrine/ ventilated improved pit or composting toilet), or is improved but shared with other household	Yes	No	No
	Improved drinking water	Household no access to improved drinking water (= piped, public tap, borehole/ pump, protected well/ spring/ rainwater; or the distance to the improved source of water is at least 30min walk round trip)	Yes	No	Yes
	Flooring/roof	Household has dirt, sand, dung, or 'other' (unspecified) type of floor/ roof	Yes- Floor	Yes- Roof	Yes- Floor
	Assets	Household not own more than one of radio, TV, phone, bicycle, motorbike, or refrigerator; and does not own car/truck	Yes	Yes	Yes

*Proxy different from MPI due to data limitations in panel survey.

Note: Per country, each indicator available across years was given equal weightage within that dimension, and then each dimension was weighted equally.

... used in the Global MPI:

Dimensions of poverty	Indicator	Deprived if...	Weight
Education	Years of Schooling	No household member aged 10 years or older has completed five years of schooling.	1/6
	Child School Attendance	Any school-aged child ⁺ is not attending school up to the age at which he/she would complete class 8.	1/6
Health	Child Mortality	Any child has died in the family in the five-year period preceding the survey	1/6
	Nutrition	Any adult under 70 years of age, or any child for whom there is nutritional information is undernourished in terms of weight for age*.	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**.	1/18
	Improved Drinking Water	The household does not have access to improved drinking water (according to MDG guidelines) or safe drinking water is at least a 30-minute walk from home, roundtrip***.	1/18
	Flooring	The household has a dirt, sand, dung or 'other' (unspecified) type of floor.	1/18
	Cooking Fuel	The household cooks with dung, wood or charcoal.	1/18
	Assets ownership	The household does not own more than one radio, TV, telephone, bicycle, motorbike or refrigerator and does not own a car or truck.	1/18

Source: Alkire et al., 2016

ANNEX 2: SUMMARY STATISTICS

Table 2A Uganda, summary statistics for latest survey year (2011/12)

	Chronic poverty		Transitory escapes		Impoverished		Sustained escapes	
	Obs	Mean	Obs	Mean	Obs	Mean	Obs	Mean
Contextual variables, public								
Distance to bank	130	22.57	106	22.16	149	19.53	193	15.76
Distance to paved road	123	64.69	104	23.85	147	17.82	190	16.92
Distance to health facility	130	5.29	108	5.06	152	4.42	193	4.32
Distance to primary school	130	3.29	108	1.56	152	4.05	193	2.47
Distance to secondary school	130	8.93	106	7.21	149	6.19	193	5.99
Other controls								
Household size	130	8.35	108	8.81	152	9.12	193	8.69
Age of household head	130	48.07	108	46.69	152	46.78	193	49.18
Age-squared	130	2538.92	108	2376.87	152	2379.96	193	2587.75
Sex of head	130	1.37	108	1.30	152	1.29	193	1.32
Number of shocks	130	0.67	108	0.58	152	0.53	193	0.49
Presence of shock	130	0.50	108	0.37	152	0.41	193	0.38
Head is employed	130	0.92	108	0.93	152	0.91	193	0.93
Non-farm employment	130	0.47	108	0.35	152	0.39	193	0.45
Household received assistance	130	0.35	108	0.18	152	0.29	193	0.31
Area of cultivable land	130	1.76	108	1.90	152	2.20	193	2.21
Livestock > median	130	0.22	108	0.24	152	0.24	193	0.31

Table 2B Ethiopia, summary statistics for latest survey year (2009)

	Chronic poverty		Transitory escapes		Impoverished		Sustained escapes	
	Obs	Mean	Obs	Mean	Obs	Mean	Obs	Mean
Contextual variables, public								
Number of extension services	567	1.00	19	1.00	19	1.00	30	1.00
Number of daily markets	567	0.18	19	0.37	19	0.16	30	0.33
Number of health facilities	567	1.02	19	1.11	19	0.74	30	0.90
Number of primary schools	567	1.64	19	1.89	19	1.84	30	2.17
Number of secondary schools	482	0.60	14	0.71	19	0.79	22	0.32
Other controls								
Household size	567	5.39	19	5.42	19	6.63	30	6.43
Age of household head	567	52.99	19	59.58	19	54.16	30	57.17
Age-squared	567	3024.87	19	3840.00	19	3186.26	30	3409.43
Sex of head	567	1.33	19	1.05	19	1.37	30	1.37
Number of shocks	567	2.46	19	2.95	19	2.53	30	2.43
Presence of shock	567	0.90	19	0.89	19	0.89	30	0.97
Head is employed	567	0.75	19	0.79	19	0.79	30	0.80
Non-farm employment	567	0.05	19	0.00	19	0.05	30	0.07
Household received assistance	567	0.59	19	0.58	19	0.58	30	0.50
Area of cultivable land	567	3.50	19	1.44	19	1.79	30	2.38
Livestock > median	567	0.32	19	0.37	19	0.42	30	0.50

Table 2C Bangladesh, summary statistics for latest survey year (2010)

	Chronic poverty		Transitory escapes		Impoverished		Sustained escapes	
	Obs	Mean	Obs	Mean	Obs	Mean	Obs	Mean
Contextual variables, public								
Number of banks	42	0.00	41	0.05	24	0.04	315	0.08
Number of health facilities	42	0.21	41	0.34	24	0.46	315	0.24
Number of primary schools	42	0.90	41	0.71	24	0.63	315	0.60
Number of secondary schools	42	0.24	41	0.37	24	0.21	315	0.11

Other controls								
Household size	42	4.40	41	4.90	24	4.79	315	4.49
Age of household head	42	48.69	41	48.02	24	51.04	315	48.77
Age-squared	42	2464.02	41	2409.10	24	2798.38	315	2490.72
Sex of head	42	1.19	41	1.10	24	1.21	315	1.13
Number of shocks	42	0.19	41	0.24	24	0.21	315	0.23
Presence of shock	42	0.43	41	0.44	24	0.33	315	0.43
Head is employed	42	0.79	41	0.90	24	0.75	315	0.87
Non-farm employment	42	0.45	41	0.59	24	0.33	315	0.59
Household received assistance	42	0.57	41	0.54	24	0.50	315	0.40
Area of cultivable land	42	3.33	41	20.22	24	41.22	315	45.31
Livestock > median	42	0.19	41	0.20	24	0.25	315	0.36

Table 2D Censored headcount ratios at the household level, first and last survey year

	Uganda		Ethiopia		Bangladesh	
	2005/06	2011/12	1997	2009	1997/2000	2010
Education: years of schooling	9.88%	2.39%	15.65%	23.59%	31.77%	3.27%
Education: child attendance	15.93%	17.80%	55.26%	12.47%	8.72%	5.11%
Health: adult illness	14.65%	9.11%	16.63%	21.27%	N/A	1.93%
Health: child	8.77%	7.07%	1.47%	1.10%	0.92%	0.08%
Living standard (LS): water	38.25%	22.40%	N/A	29.10%	12.74%	5.62%
LS: toilet	29.47%	21.64%	N/A	34.72%	32.69%	3.10%
LS: cooking fuel	46.85%	35.69%	N/A	N/A	N/A	8.89%
LS: assets	30.83%	17.80%	87.65%	62.22%	36.55%	7.88%
LS: floor/ roof	43.36%	30.83%	83.01%	72.25%	38.56%	8.97%
LS: electricity	46.68%	35.35%	N/A	N/A	20.79%	8.13%

ANNEX 3: REGRESSION RESULTS

3.1 UGANDA

Table 3.1A Incidence of poverty, logistic regression, fixed effects

VARIABLES	Overall		Rural subset	
	Multidimensional poverty	Monetary poverty	Multidimensional poverty	Monetary poverty
Distance to road	0.996 (0.00537)	1.000 (0.00582)	0.997 (0.00544)	1.001 (0.00587)
Public health facility	1.012 (0.0150)	0.988 (0.0185)	1.017 (0.0155)	0.980 (0.0188)
Public primary school	1.004 (0.00422)	1.001 (0.00421)	1.004 (0.00422)	1.000 (0.00422)
Public secondary school	1.000 (0.000926)	1.003** (0.00129)	1.000 (0.000927)	1.003* (0.00129)
Bank	1.005 (0.00436)	0.998 (0.00485)	1.009* (0.00481)	0.997 (0.00512)
Other controls	Yes	Yes	Yes	Yes
Constant				
Observations	2,932	2,932	2,283	2,283
Number of HHID	734	734	571	571

See form in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 3.1B Risk of multidimensional poverty trajectory relative to multidimensional sustained poverty escape, multinomial logit

VARIABLES	Transitory escapes		Impoverishment		Chronic poverty	
	Multidimensional poverty	Monetary poverty	Multidimensional poverty	Monetary poverty	Multidimensional poverty	Monetary poverty
Distance to road	1.007 (0.00481)	0.995 (0.00560)	1.017*** (0.00403)	1.003 (0.00462)	0.994 (0.00500)	1.016*** (0.00443)
Public health facility	0.992 (0.0303)	0.989 (0.0273)	1.066** (0.0322)	1.039 (0.0481)	1.065 (0.0430)	1.073 (0.0530)
Public primary school	1.014 (0.0420)	1.026 (0.0395)	0.904 (0.0995)	1.256* (0.162)	1.263* (0.160)	1.236 (0.172)
Public secondary school	1.019 (0.0173)	1.017 (0.0174)	1.017 (0.0174)	0.982 (0.0241)	1.000 (0.00375)	0.998 (0.0117)
Bank	0.998 (0.00745)	1.005 (0.00752)	0.995 (0.00778)	0.996 (0.00763)	0.996 (0.00735)	0.990 (0.00826)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Constant	2.494 (3.385)	6.226 (7.280)	0.588 (0.836)	3.489 (5.015)	1.779 (2.436)	0.0328* (0.0590)
Observations	551	551	551	466	466	466

See form in parentheses; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

3.2 ETHIOPIA

Table 3.2A Incidence of poverty, logistic regression, fixed and random effects

VARIABLES	Multidimensional poverty	Monetary poverty
Agricultural extension	1.930** (0.629)	0.886 (0.0991)
Daily market	2.679* (1.382)	0.887* (0.0642)
Public health facility	0.976 (0.108)	1.211*** (0.0681)
Public primary school	0.981 (0.160)	0.945 (0.0698)
Public secondary school	1.756 (0.677)	1.603** (0.294)
Other controls	Yes	Yes
Observations	892	1,918
Number of UID	233	508

See form in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 3.2B Risk of multidimensional poverty trajectory relative to multidimensional sustained poverty escape, multinomial logit

VARIABLES	Chronic poverty	
	Multidimensional poverty	Monetary poverty
Agricultural extension	1.187 (0.366)	0.109*** (0.0878)
Daily market	0.247*** (0.129)	0.288 (0.376)
Public health facility	2.305*** (0.387)	0.155** (0.122)
Public primary school	0.917 (0.169)	1.198 (0.836)
Public secondary school	0.317*** (0.119)	0.241 (0.229)
Other controls	Yes	Yes
Constant	1,678*** (3,493)	2.159e+11 (2.800e+14)
Observations	701	133

See form in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 3.2C Education deprivations, logistic regression, fixed effects

VARIABLES	Deprivation in education (either indicator of schooling)	Deprivation in schooling indicator	Deprivation in attendance indicator
Agricultural extension	1.100 (0.117)	0.991 (0.121)	1.149 (0.183)
Daily market	0.984 (0.0669)	0.947 (0.0771)	1.065 (0.0898)
Public health facility	1.066 (0.0590)	1.119 (0.0768)	1.120 (0.0976)
Public primary school	1.093 (0.0759)	1.050 (0.0852)	1.055 (0.118)
Public secondary school	0.951 (0.160)	0.623** (0.134)	1.306 (0.323)
Other controls	Yes	Yes	Yes
Observations	2,451	1,384	2,423
Number of UID	655	370	652

See form in parentheses; *** p<0.01, ** p<0.05, * p<0.1

3.3 BANGLADESH

Table 3.2A Incidence of poverty, logistic regression, fixed and random effects

VARIABLES	Multidimensional poverty	Monetary poverty
Public health facility	1.190 (0.167)	0.705** (0.101)
Public primary school	0.941 (0.0743)	0.969 (0.0630)
Public secondary school	1.250 (0.215)	0.971 (0.126)
Bank	1.474* (0.299)	0.897 (0.135)
Other controls	Yes	Yes
Observations	1,425	2,242
Number of HHID	475	748

See form in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 3.3B Risk of multidimensional poverty trajectory relative to multidimensional sustained poverty escape, multinomial logit

VARIABLES	Transitory escapes		Impoverishment		Chronic poverty	
	Multidimensional poverty	Monetary poverty	Multidimensional poverty	Monetary poverty	Multidimensional poverty	Monetary poverty
Public health facility	0.00432*** (0.00875)	0.0870** (0.0992)	0.661 (0.225)	0.131*** (0.103)	0.152** (0.115)	1.644** (0.363)
Public primary school	0.221** (0.133)	0.806 (0.291)	1.308* (0.191)	0.631 (0.185)	0.352*** (0.123)	0.989 (0.0752)
Public secondary school	0.288 (0.287)	0.636 (0.393)	0.611 (0.218)	0.311** (0.150)	1.130 (0.440)	0.934 (0.172)
Bank	0.158 (0.181)	0.0872** (0.108)	0.125*** (0.0984)	0.238*** (0.117)	0.114*** (0.0668)	0.812 (0.202)
Other controls	11.18	1.534	0.00151	137.7	11.65	7.792
Constant	(82.96)	(6.649)	(0.00641)	(427.2)	(42.15)	(18.22)
Observations	422	422	422	749	749	749
	11.18	1.534	0.00151	137.7	11.65	7.792

See form in parentheses; *** p<0.01, ** p<0.05, * p

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