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Beyond Income Poverty

Nonmonetary Dimensions of Poverty in Uganda

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Abstract

The proportion of Ugandan households living in poverty reduced by more than half between 1993 and 2013. Using household survey data, this paper analyzes nonmonetary dimensions of poverty in Uganda for levels and trends, to explore whether the observed reduction in monetary-based poverty are reflected in the nonmonetary indicators of poverty. The results show that Uganda's progress in reducing poverty is strongly reflected in several nonmonetary indicators of poverty. The analysis finds that the trends in many nonmonetary indicators are consistent with the trend of

monetary-based measure of poverty. The paper also examines whether progress has been as fast as would be expected, given Uganda's impressive performance in reducing poverty. Overall, the evidence indicates that progress on nonmonetary poverty was consistent with expectations, and faster than what would be expected, for some indicators, based on other countries' experiences. This finding is similar to Uganda's progress on reducing monetary poverty, which is also at the expected level based on experience in other countries.

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Beyond Income Poverty: Nonmonetary Dimensions of Poverty in Uganda

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I. Introduction

“...while poverty, expressed narrowly in terms of low income, can form part of the social policy agenda of government, it needs to be accompanied by other frameworks and indicators that enable the consequences of low income to be better understood and in ways that highlight what needs to be done, beyond raising social benefits.”

(*Saunders, 2008, p.9*)

The World Bank Group’s Twin Goals and the Sustainable Development Goals (SDGs) require the elimination of extreme poverty (with US\$1.90 per day as the poverty line) by 2030. Uganda’s rapid and sustained growth in the past two decades translated into substantial decline in poverty levels. Poverty estimates based on data from a series of six Uganda National Household Surveys (UNHS) conducted in 1992/93, 1999/2000, 2002/03, 2005/06, 2009/10 and 2012/13 show that Uganda was successful in reducing poverty considerably over this 20year period. Whether measured using the national poverty line or the international extreme poverty line, the proportion of Ugandans living in poverty reduced by more than half between 1993 and 2013. The proportion of the population living under the national poverty line declined from more than half (56.4 percent) in 1992/93 to slightly less than one-fifth (19.7 percent) in 2012/13.² Between 2005/06 and 2012/13, the period of analysis of this paper, the share of Ugandans living under the national poverty line declined from 31.1 percent in 2005/06 to 24.5 percent in 2009/10, before reducing further to 19.7 percent in 2012/13 (see Table 1). This represents a 36 percent reduction in poverty between 2005/06 and 2012/13. The substantial decline in poverty was observed in both rural and urban areas, and the rate of reduction between 2005/06 and 2012/13 was similar in the two areas (33 percent and 32 percent in rural and urban areas, respectively).

Likewise, all four regions of Uganda experienced considerable decline in poverty between 2005/06 and 2012/13. Poverty reduced by 71 percent in the Central region, 57 percent in the Western region, 31 percent in the Eastern region, and 28 percent in the Northern region during this period. There are stark differences across regions, with most of the poor concentrated in the Northern and Eastern regions. Although poverty rates have declined across all regions, progress in poverty

² The national poverty line ranges from 0.88-1.04 USD PPP 2005 per capita depending on the region.

reduction, as captured by consumption rates, has been much faster in the Central and Western regions. One plausible explanation for the large spatial differences in poverty is that the Central and Western regions, unlike the Northern and Eastern regions, were not coming out from extensive conflict and violence. The conflict resulted in loss of lives and assets and had long-lasting damaging effects on communities. Further, the Central and Western regions benefited from the boom in Kampala and trade with Kenya, as well as the global markets (Uganda Systematic Country Diagnostic Report, 2015). These results have implications for poverty reduction. Efforts to reduce poverty in the Northern and Eastern regions are key to eliminate extreme poverty in Uganda.

Table 1: Poverty Trends between the period 2005/06 and 2012/13

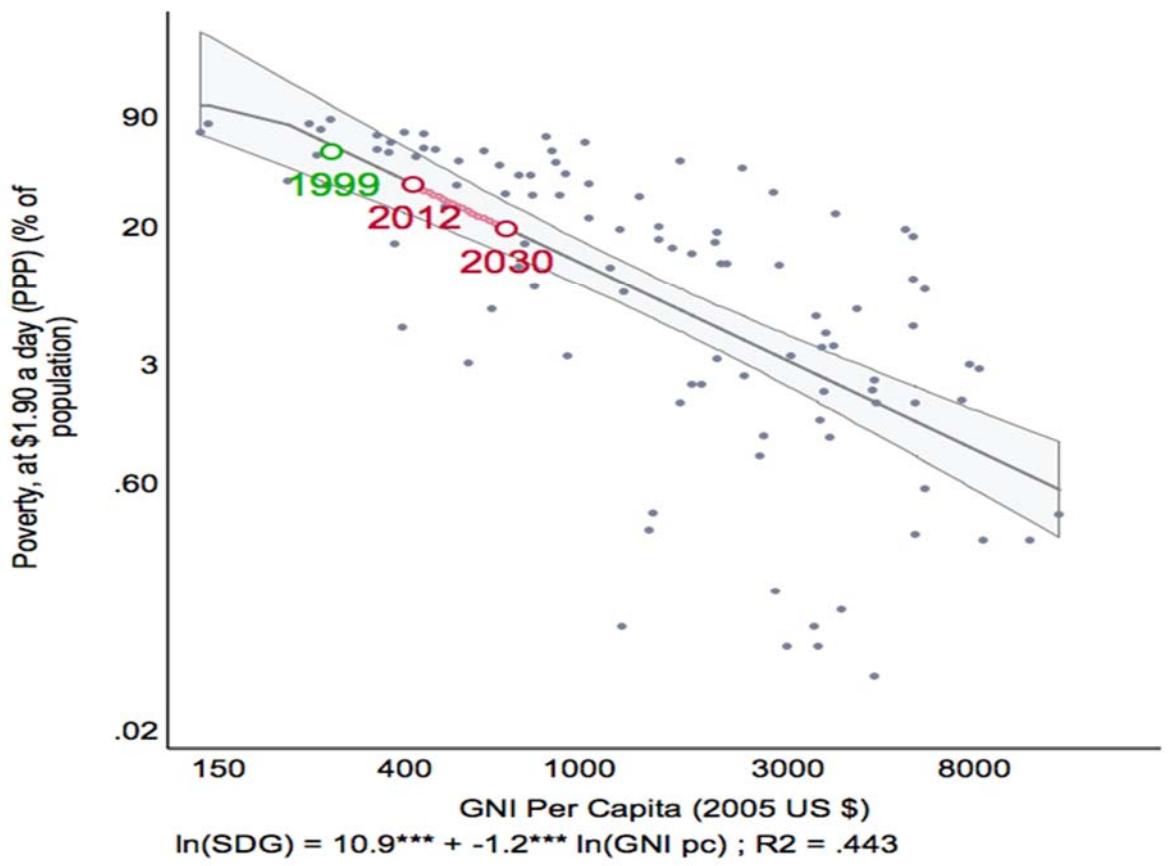
	Poverty Headcount (%)		
	2005/06	2009/10	2012/13
Rural	34.2	27.2	22.8
Urban	13.7	9.1	9.3
National	31.1	24.5	19.7

Source: UBOS Reports based on UNHS 2005/06, 2009/10 and 2012/13.

In a similar manner, the poverty headcount in Uganda, measured by the international poverty line of \$1.90/day, declined from 53.2 percent in 2005/06 to 41.5 percent in 2009/10 and then to 33.2 percent in 2012/13. The evidence indicates that Uganda's current extreme poverty based on \$1.90/day is high but within the expected range, based on other countries' experience, and further progress on poverty reduction is expected by 2030 (Figure 1).

The declining trend in poverty reflects consumption growth across the consumption distribution. The very impressive progress in reducing poverty allowed Uganda to be one of the few countries in Sub-Saharan Africa to have achieved the first Millennium Development Goal (MDG1) target of halving the proportion of the population living in extreme poverty (as measured against the national poverty line) by 2015, well ahead of the deadline. Uganda reduced poverty faster than any other country in Sub-Saharan Africa for which there were data over the last 10 years (Uganda Systematic Country Diagnostic Report, 2015), and seems to be on track to achieve the Vision 2040 poverty target of 5 percent. Other countries in Africa that have been less successful in reducing poverty could learn important lessons from Uganda's experience in this regard.

Figure 1: Poverty Headcount rate vs. GNI per capita



Source: Gable *et al.* (2015)

The above analysis of well-being in Uganda relied on consumption information to capture household living standards and identify those who are in poverty. This is the common practice in poverty measurement for policy-making purposes in developing countries. However, the limitations of relying solely on the monetary poverty measure (consumption or income-based) have been well documented, with the general view that well-being is a broad description of the state of people's living conditions (for example, Saunders, 2005; McGillivray, 2006). This issue is even more important when there are concerns about monetary poverty measurement. There is a general belief that the poverty line used for tracking changes in poverty in Uganda is problematic. The poverty line is set from a basket defined in 1992. The 1992 basket may not accurately capture

consumption spending in later years. Poverty has gone down in Uganda, but by how much? The exact answer to this question remains unclear.

As the international community works toward ending poverty and boosting shared prosperity in developing countries, it becomes very important to not only improve traditional poverty data collection approaches as well as improve poverty measurement and monitoring, but also to have a more comprehensive understanding of the multiple deprivations that the poor and vulnerable face in their everyday lives. Socioeconomic indicators of well-being, access and quality of basic services, and other nonmonetary dimensions of poverty can provide a valuable complement to existing monetary measures of poverty, and this would allow to better target programs and policies to reach those who need them the most. It is probably not surprising that interest in exploring how nonmonetary aspects of well-being can complement the monetary measure has been growing in recent years. Indeed, the notion of well-being has received recent attention from poverty experts and policy makers who argue that measuring poverty effectively needs to move beyond income and consumption, and include other dimensions of human welfare (Addison, Hulme, and Kanbur, 2009). A single indicator that captures the broad concept of well-being does not exist; but various measurements are used to provide a “snap-shot” of a population’s welfare.

Measures of multidimensional poverty have become increasingly popular among policy makers and researchers, complementing traditional monetary poverty estimates. There is a large and growing literature on multidimensional poverty. One of the most well-known of these, the Multidimensional Poverty Index (Alkire and Santos, 2010), was featured prominently in the 2010 Human Development Report (UNDP, 2010) and has gained a lot of interest in recent years.³ Alkire and Santos (2010) argue that monetary-based measures of poverty provide important but incomplete guidance to redress multidimensional poverty. Many others have acknowledged that poverty is a multifaceted and complex phenomenon, intricately linked to deprivations in various dimensions of welfare (for example, Sen, 1998; Klasen, 2000; Boreham *et al.*; 2013; Bourguignon

³ A person is identified as multidimensionally poor (or ‘MPI poor’) if they are deprived in at least one-third of the weighted education, health and standard of living indicators (see details in Alkire and Santos, 2010); in other words, the cutoff for poverty (k) is 33.33%.

and Chakravarty, 2003; Alkire and Foster, 2011; Ravallion, 2011; Klasen, Lange, and LoBue, 2012; Levine *et al.*, 2012; Dotter and Klasen, 2013; Gaddis and Klasen, 2013; Oxford Poverty and Human Development Initiative, 2015). These studies have proposed to measure multidimensional well-being and poverty similar to the quote at the opening of this introduction.

Since poverty is multidimensional, and not solely about consumption deficits, it is important to also assess well-being in Uganda based on nonmonetary indicators of poverty. Furthermore, in order to validate the monetary poverty results discussed above, it is paramount to assess changes in nonmonetary indicators of poverty. This is what this paper does. The current paper examines whether the observed improvements in living standards (based on the monetary indicator of poverty) have been accompanied by improvements in nonmonetary dimensions of well-being.

The paper proceeds as follows. Section II discusses which nonmonetary indicators of poverty were selected for the analysis and why they were selected. In addition, we provide a description of the main sources of data used for the analysis in this paper. Using household survey data, Sections III, IV, V and VI present evidence for the selected nonmonetary indicators (levels and trends), with each section focusing on a broad dimension of poverty. Section VI concludes. The main finding is that monetary and nonmonetary measures of poverty have improved over the last decade in Uganda. A question that naturally arises is the following. Have nonmonetary indicators of poverty improved over time at the expected pace (at least) as did the monetary indicator? In addition to documenting progress in a number of nonmonetary dimensions of well-being, this paper also assesses whether progress has been as fast as we would expect given the impressive performance of Uganda in securing reductions in poverty. To do this, the paper examines how Uganda compares to other countries with similar income levels in terms of nonmonetary measures of poverty. We use cross-country comparisons, drawing from a very comprehensive diagnostics analysis for Uganda that was recently conducted applying a framework called Country Development Diagnostics (Gable *et al.*, 2014; 2015). This analysis cuts across the paper. The evidence indicates that progress on nonmonetary poverty was generally at the expected levels or faster than what would be expected based on other countries' experience.

II. Selection of Nonmonetary Indicators of Poverty

The selection of nonmonetary indicators analyzed in this paper was guided by the literature on multidimensional poverty (including Alkire and Santos, 2010; Klasen, 2000; Alkire and Foster, 2011; Oxford Poverty and Human Development Initiative, 2015) and previous literature on the determinants/correlates of poverty (including Plamer-Jones and Sen, 2003; Anyanwu, 2005 and 2013; Tilak, 2007). Although very comprehensive, the list of nonmonetary indicators analyzed in this paper is not exhaustive. The indicators used are categorized into four broad dimensions: (a) housing conditions, (b) infrastructure services, (c) physical capital, and (d) human capital. We analyze the levels and progress of the nonmonetary indicators individually, rather than estimate a multidimensional poverty index (MPI). The advantage of this is that we have a more extensive list of indicators, including other aspects that are relevant for Uganda (for example, maternal mortality rate), without using predetermined weights that may not correctly reflect the context of Ugandan households.

(a) Housing conditions

The various materials used for the construction of a dwelling are usually seen as a proxy measure of the quality of housing and as an indicator of the household's well-being. It has been documented that poor housing conditions are associated with a wide range of health conditions, including respiratory infections, asthma, lead poisoning, injuries, and mental health (Krieger and Higgins, 2002). The type of materials used for construction is therefore not only an indicator of the economic situation of households, but also an indicator of potential exposure of household members to these health conditions. Housing quality has also been associated with child development. According to Jaramillo (2014), basic infrastructure related to housing quality is crucial for achieving child development with regard to health, nutrition and education outcomes in the long run. We assess changes in housing quality using three indicators: improved roof, improved wall, and improved floor (defined in the next section).

(b) Infrastructure services

Access to basic infrastructure services is paramount for meeting basic needs and improving human capital indicators related to health and education. Given that it has direct linkages with other dimensions of well-being, access to improved sources of drinking water and sanitation services is

very crucial, particularly for the poor. The quality of water, particularly water used for drinking or food production, has a direct impact on health and unimproved water sources can cause disease and disrupt socioeconomic development (WHO, 2013). Drinking water from unimproved sources and poor sanitation conditions may result to illness (for example, waterborne diseases such as diarrhea), which can put households under financial stress when in need of medical treatment. This can also have a negative impact on children's education if they stay out of school due to illness, which may have a long-term effect on health and poverty. It is also worth noting that improved health is a key aspect of well-being in itself, not just because it brings higher incomes. Millions of diarrhea-related deaths are recorded each year, most of which are linked to unsafe water supply and poor sanitation hygiene conditions. Thus, access to safe water and adequate sanitation would help to reduce infant and child mortality, morbidity, and malnutrition (Esrey, 1996; Jalan and Ravallion, 2003; Dillingham and Guerrant, 2004; Fay *et al.*, 2005; Moe and Rheingans, 2006; Zwane and Kremer, 2007; Alderman *et al.*, 2013). Schuster-Wallace *et al.* (2008) argue that access to clean water could reduce diarrhea and waterborne diseases by 25 percent. In many African countries, women and girls are most likely to fetch water for their households (Tsimpo and Wodon, forthcoming). In this situation, access to safe water would improve productivity as household members (especially girls and women) will use time that they would spend to fetch water on other things (Ilahi and Franque, 2000; Blackden and Wodon, 2006). For women and girls, access to improved water may also help to minimize the risk of crime against them. Bbaale and Buyinza (2012) argue that primary school absenteeism in Uganda is in part due to time use within households where school-age children are sent to fetch and firewood. So, access to improved water would be useful in cutting down absenteeism in primary school.

Access to electricity is important in its own right, but it is also crucial for other forms of production and in achieving development goals (such as the recently completed Millennium Development Goals - MDGs) in areas such as health and education (for example, children may not be able to study at night when there are power outages). Several studies (Khandker, 1996; Martins, 2005; Srivastava and Rehman, 2005; World Bank, 2008; Khandker *et al.*, 2013) point to the role of rural electrification in improving welfare, quality of life and schooling. In South Africa, Dinkelman (2008) suggests that electricity roll-outs increase women's employment rate by 14 points, whereas men's employment was not significantly affected. In Guatemala, Grogan and Sadanand (2008)

show that women's earnings increased by 60 percent with improved access to electricity thanks to an increase in market work. The relationship between electricity and poverty could run from either direction. On one hand, it could be that some households do not use electricity because they are poor and cannot afford the cost of getting electricity connection. On the other hand, low access to electricity can hinder poverty reduction efforts. It has been documented that electricity reduces poverty in Uganda through shifts in time use towards productive work, particularly for women (Tsimpo and Wodon, 2014). The authors argue that access to electricity by previously unconnected households in areas with electricity coverage allows women to increase market work by two hours. This in turn reduces the share of the population living in poverty in those areas by one percentage point. As some home-based enterprises and small and medium size enterprises need electricity for their business, little or no electricity coverage would affect such enterprises and the economy as a whole. In this regard, low residential coverage of electricity may constrain the acceleration of economic development and poverty reduction efforts.

Progress in infrastructure services is important as these services provide inputs to production across the economy and may also help in achieving other Sustainable Development Goals (SDGs). In this paper, we analyze changes in infrastructure services using three indicators: access to improved water and sanitation facilities (MDG 7 and SDG6), as well as access to electricity (defined in the next section).

(c) Physical capital

Household assets are among the measures of economic welfare. There is a general belief that access to productive assets (including land, human capital, livestock, and farm equipment) is important for enhancing the well-being of rural households (Tatwangire, 2011). Many studies show that an increase in access to land and non-land assets, when combined with the diversification of enterprises, can improve household (particularly rural households) incomes and their abilities to have better living standards (de Janvry *et al.* 2001; Riethmuller 2003; Ellis and Freeman 2004; Kristjanson *et al.* 2004; Pender *et al.* 2004; Otsuka *et al.* 2007). On the other hand, insufficient access to land and low productivity of land are regarded as the main causes of rural poverty and food insecurity (Melmed-Sanjak and Lastarria-Cornhiel 1998; Holden *et al.*, 2008). The ability of

a household to generate sufficient economic livelihood may depend on land endowment, with access to a small amount of land able to permit the mobilization of family assets to create large income gains, even among the poor (Finan *et al.*, 2005). It is probably not surprising that access to assets has long attracted the attention of development practitioners, especially in developing countries. In this paper we observe changes, or the lack thereof, in the ownership of household assets including mobile phones, bicycles, motor cycles, land, and household appliances.

(d) Human capital

The human capital dimension includes education, health and nutrition indicators, which are described in the following paragraphs.

Education

The link between education, well-being, and social development is not a new phenomenon. Human capital theory suggests that education raises incomes by increasing the productivity of workers. The accumulation of human capital can improve the efficiency of labor input in terms of quality, and can also enhance overall technical efficiency in production and allocative efficiency of the household (Jolliffe 2002; Kurosaki and Khan 2006). Past studies conducted in Uganda and other developing countries indicate mixed empirical evidence on the impact of education on the welfare of households (Appleton and Balihuta 1996; Fafchamps and Quisumbing 1999; Appleton 2001; Bigsten and Kayizzi- Mugerwa 1995; Appleton and Balihuta 1996). Investment in human capital is important, not only for economic growth but also, more directly, for poverty reduction (Hughes and Irfan, 2007). The literature suggests that education increases the stock of human capital, which in turn increases skills, labor productivity and wages. Since labor is by far the most important asset of the poor, increasing the education of the poor will tend to reduce poverty. Plamer-Jones and Sen (2003) and Anyanwu (2005, 2013) found rural households in India and Nigeria, respectively, whose main earning member does not have formal education or has attended only up to primary school, are more likely to be poor than households whose earning members have attended secondary school and beyond. According to Tilak (2007), literacy and primary education are positively correlated with the poverty ratio. The educational indicators analyzed in this paper include literacy rates among adults and youths, primary enrollments, and completion and dropout rates (related to MDG2 and SDG4).

Health

Being sick can reduce labor productivity, which in turn can reduce the household income level and consumption. A measure of child survival, the infant mortality rate is considered to be one of the main indicators of a country's well-being (i.e. social progress and economic development), since it reflects social, economic and environmental conditions in which children (and others in society) live, including their health care. Infant mortality reveals a society's overall ability and willingness to care for its most vulnerable members (Eberstadt, 1995; Sen, 1998; Waldmann, 1992; WHO, 1999). As with many other countries, improving the well-being of mothers, infants, and children is an important public health goal for Uganda. Their well-being may determine the health of the next generation. Healthy birth outcomes and early identification and treatment of health conditions among infants can prevent death or disability and enable children to reach their full potential (Centers for Disease Control and Prevention, 2004). Country-level analyses have found mortality is correlated with per capita income (Preston, 1975; Pritchett and Summers, 1996). Four main indicators of health are examined in this paper to monitor child and maternal health under SDG3: the under-five mortality rate, infant mortality rate, child mortality rate (MDG 4), and maternal mortality rate (MDG5).

Nutrition

Nutrition is a very important issue for Uganda as malnutrition contributes to poor health, aggravates disease, and reduces productivity while compounding poverty and its after-effects. According to the Uganda Nutrition Action Plan, 2011-2016 (2011), high malnutrition reduces agricultural productivity, contributes to poverty, and affects the education and intellectual potential of schoolchildren (for example, stunting causes children to start school late because they look too small for their age, and will also be a cause of absenteeism and repetition of school years). Yoweri Kaguta Museveni (President of Uganda) and the Government of Uganda acknowledged that adequate nutrition is a prerequisite for human capital and socioeconomic well-being, and launched the Uganda Nutrition Action Plan in 2011.⁴ The UNAP was formulated within the context of the

⁴ UNAP 2011 was signed on August 12, 2011, by the Prime Minister; the Ministries of Agriculture, Animal Industry and Fisheries; Health; Trade and Cooperatives; Education; Gender, Labour and Social Development; Local Government; Public Service; Finance, Planning and Economic Development; National Planning Authority.

National Development Plan, which is the overall vision for Uganda: transforming Uganda into a modern and prosperous country. The goal of the Plan is to improve the nutrition status of all Ugandans, with special emphasis on women of reproductive age, infants, and young children. It would be useful to see how well the Plan has contributed to reducing malnutrition.

This paper analyzes three main indicators, which are used to monitor malnutrition in children 6-59 months (i.e. under-five malnutrition): stunting or low height-for-age; underweight or low weight-for-age; and wasting or low weight-for-height. To be more specific, these measures reflect children whose height-for-age, weight-for-age, and weight-for-height fall more than two standard deviations below the median of internationally accepted growth standards.⁵ Under-five malnutrition is a complex phenomenon and its eradication depends on more than simply increasing caloric intake. Each indicator conveys unique information about a child or population and monitoring trends over time provides invaluable insight for shaping policy and developing targeted interventions.

Much of the evidence covers the period from 2005/06 to 2012/13. The evidence provided in this paper is drawn from several sources. The main sources of evidence include the following: (a) the Uganda National Household Surveys (UNHS), particularly those conducted in 2005/06, 2009/10 and 2012/13, and (b) a diagnostic analysis for Uganda (Gable *et al.*, 2014; 2015), a report on a comprehensive diagnostics analysis using the so-called Country Development Diagnostics framework, which also include trajectories for Sustainable Development Goals. The evolution of the selected indicators for Uganda is tracked over a long period, comparing the most recent data to expected values. Cross-country constant-elasticity regressions are used to assess whether a country is over- or under-performing for a nonmonetary indicator relative to its GNI per capita (Gable *et al.*, 2014).⁶ Thus, for any given country, deviations from *predicted* nonmonetary indicator values may be viewed as an indication of how well the country does relative to its capacity to achieve outcomes and provide inputs (determinants).

⁵ WHO Child Growth Standards is the internationally accepted growth standards, launched in 2006. The standards are based on a Multi-Growth Reference Study from sample populations in Brazil, Ghana, India, Norway, Oman, and the United States.

⁶ As Gable *et al.* (2014) acknowledge, these simplified regressions are useful for current purposes (benchmarking and projections). Nevertheless, they do not claim to sort out interactions between different indicators, a difficult task given high degrees of correlation, lagged effects, complex time- and space-specific relationships, and data limitations.

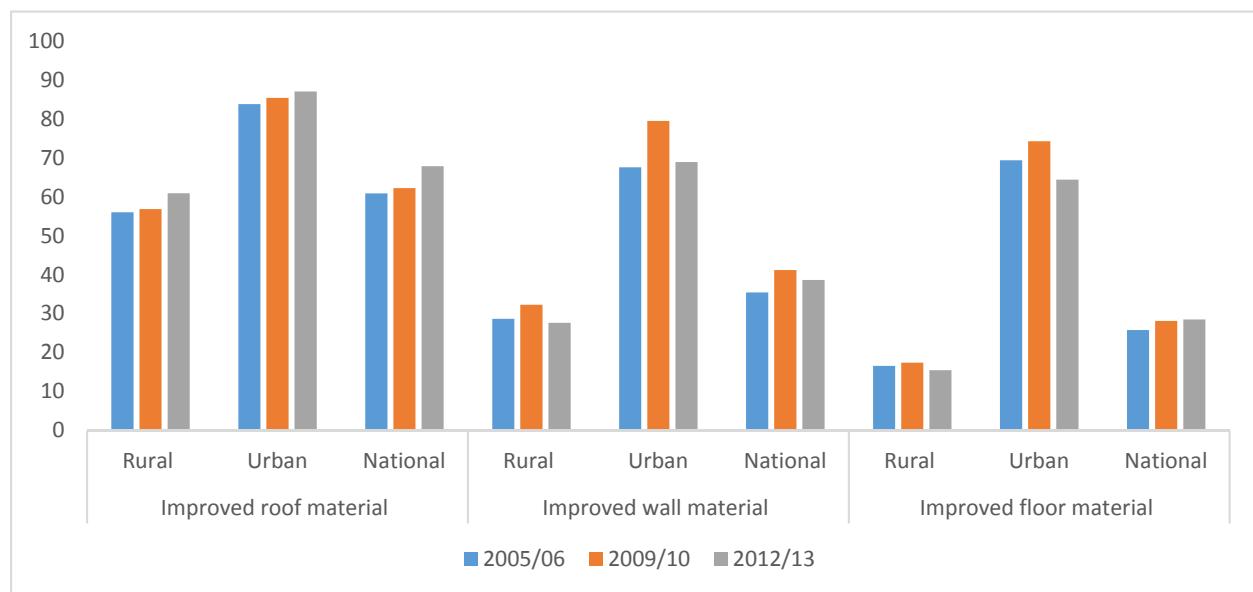
The multidimensional approach to poverty analysis imposes a challenge in terms of policy design because it requires the delivery of a bundle of services that goes beyond housing and health, for example, and requires the coordination of agencies of different sectors. However, the main strength of this multidimensional approach is that it provides the opportunity for comprehensive understanding of well-being in Uganda to see where issues lie and what needs to be addressed, rather than focusing solely on the monetary poverty measure. It presents a great opportunity to better understand the changes in key outcome indicators of the different sectors of the country. The results presented in this paper are useful for informing the social and economic transformation, as well as human capital in Uganda, thereby guiding government programs and interventions.

III. Housing Conditions

The share of households using improved roof materials has expanded, but improvements in wall and floor materials have stalled. Overall, roof materials have improved slightly between 2005/06 and 2012/13, providing evidence for rising living standards, including for rural households (Figure 2a). At the national level, the share of households with improved roof material went up by 7 percentage points, from 61 percent in 2005/06 to 68 percent in 2012/13. Improved wall material went up by 2 percentage points at the national level and improved floor material by only 1 percentage point. Interestingly, the slight rise in improved housing conditions between 2005/06 and 2012/13 seems to have occurred mainly for the roof of the house,⁷ and a bit more so for households in the rural areas (by 5 percentage points) than in the urban areas (3 percentage points). The floor material shows stark differences between rural and urban households, with the majority of urban households having floors made out of cement, with less than 20 percent of rural households having cement floors between 2005/06 and 2012/13. The fact that the majority of rural households continue to live in dwellings with earth (mud) floors, and the share of households with improved floor (and wall) material fell between 2005/06 and 2012/13 mainly in the urban areas (but not at the national level where it remains unchanged) is a concern as this can pose health risks.

⁷ The type of roof is often used in developing countries as a proxy-indicator for poverty, among other for targeting purposes of unconditional cash transfer programs.

Figure 2a: Trends in Dwelling Materials, 2005/06–2012/13 (%)

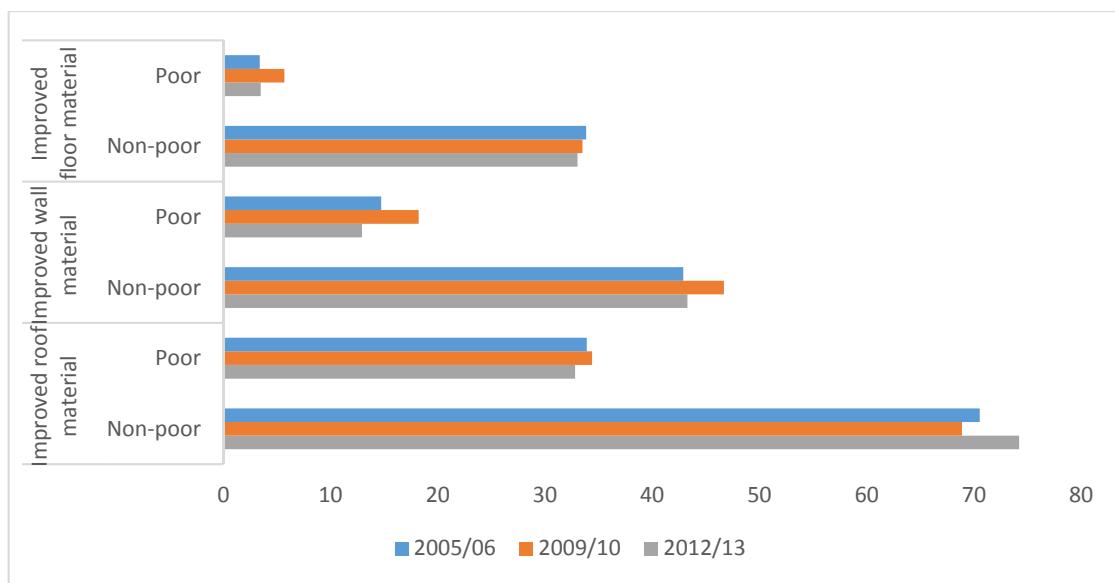


Source: Uganda National Household Surveys (UNHS) 2005/06, 2009/10 and 2012/13.

Notes: The definition of improved roof material includes iron sheets and tiles. Improved wall material includes burnt bricks with mud, burnt bricks with cement, cement blocks and stones. Improved floor includes cement and mosaic or tiles.

Stark differences persist between poor and nonpoor households (based on the monetary measure of poverty) regarding housing construction materials in 2005/06, 2009/10 and 2012/13. The most visible distinction between the poor and nonpoor was the materials used to roof the house (Figure 2b). The share of households with improved roof material was substantially (at least 35 percentage points) higher among the nonpoor for each of the three years. The materials used for the walls and floor also show significant variations between poor and nonpoor households. The share of households with improved wall and floor materials was 28-30 percentage points higher among the nonpoor across 2005/06 and 2012/13. An important point worthy of note is that the gap between poor and nonpoor households increased slightly between 2005/06 and 2012/13 with regard to improved roof and wall materials, although stable in terms of improved floor materials.

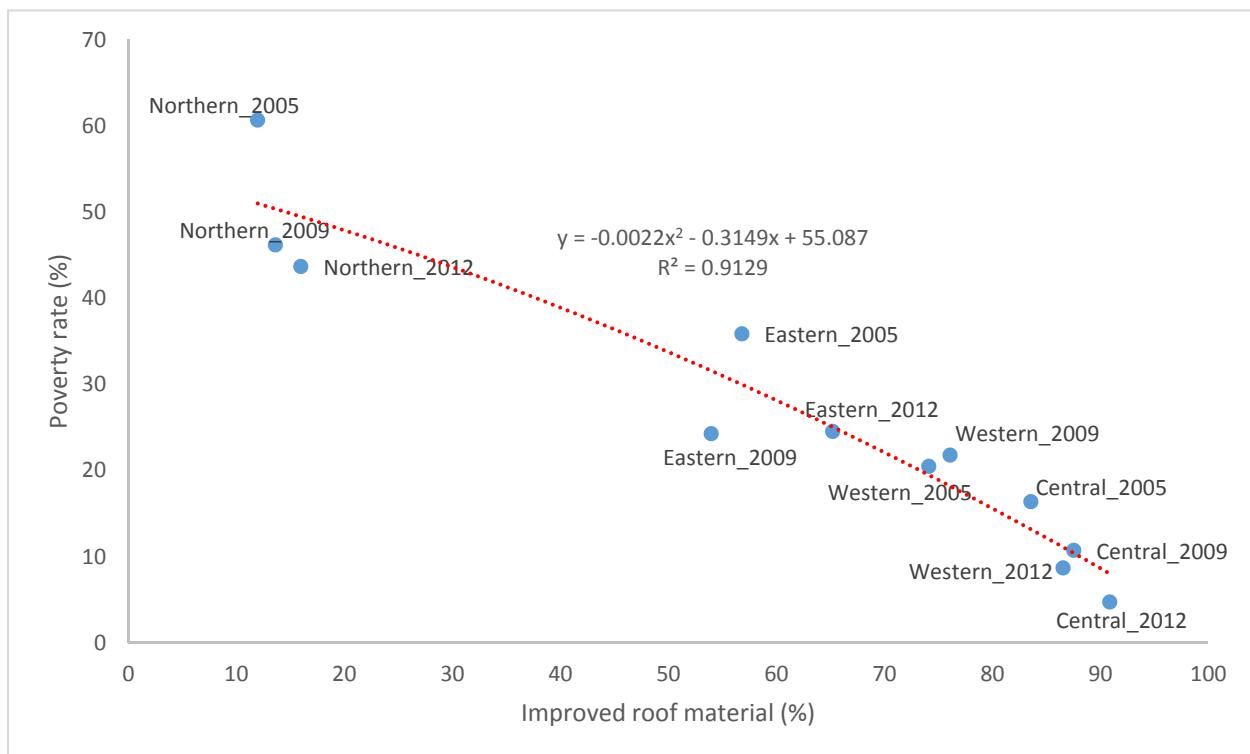
Figure 2b: Distribution of Households by main Type of Construction Materials, by Poverty Status (%)



Source: Uganda National Household Surveys (UNHS) 2005/06, 2009/10 and 2012/3

Regional variations exist with regard to housing construction materials and there is a strong correlation between monetary poverty and living in a dwelling with improved roof material. We plot the correlation between monetary poverty and improved roof material, using data for three years (2005/06, 2009/10 and 2012/13) by region to see how the correlations changed over time. As Figure 3 illustrates clearly, increases in poverty rate are associated with decreases in the use of improved roof material, and vice versa. The Northern region with the highest poverty rates in 2005/06, 2009/10 and 2012/13 was also the region with low use of improved roof material during the same periods. The opposite is true for the Central region with high levels of improved roof material and low poverty rates in all three years. We also plotted change in poverty against change in improved roof materials by region (i.e. differences between 2012/13 and 2005/06) in order to show how this correlation has changed over time (graphs not reported here). The results show no clear pattern. The Central region reduced poverty the most between 2005/06 and 2012/13 (by 71 percent), but use of improved roof materials increased by only 9 percent. On the other hand, the Northern experienced the least poverty reduction during this period (28 percent), but improved roof materials increased by 33 percent.

Figure 3: Correlation between Poverty and Improved Roof Material, by Region (2005/06 - 2012/13)



Source: Uganda National Household Surveys (UNHS) 2005/06, 2009/10 and 2012/13

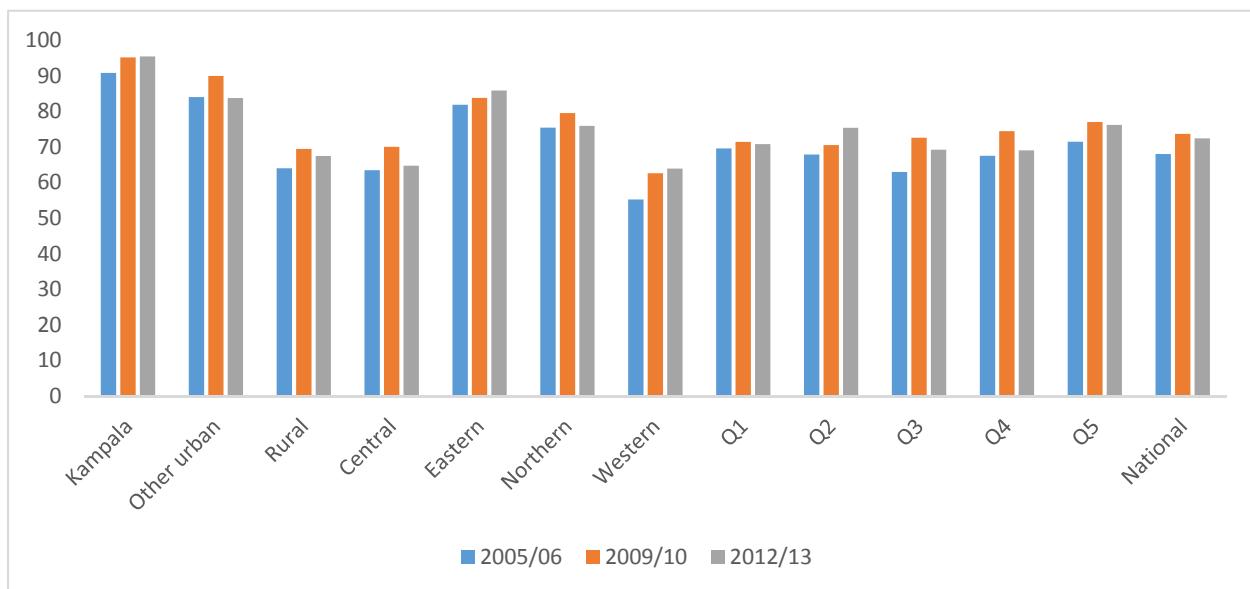
IV. Infrastructure Services

Access to improved water and sanitation has expanded overall during the past decade, but regional and socioeconomic inequities in access persist. Improved water sources are broadly available, with access having increased modestly over the last decade.⁸ Figure 4 presents the

⁸ The World Health Organization (WHO/UNICEF Joint Monitoring Programme) defines “improved” sources of drinking water as including piped water into the dwelling, piped water into a yard/plot, a public tap or standpipe, a tubewell or borehole, a protected dug well, a protected spring, bottled water, and rain water. “Unimproved” sources of drinking water include an unprotected spring, an unprotected dug well, a cart with small tank/drum, a tanker-truck, and surface water (WHO and UNICEF, 2006).

findings from UNHS 2005/06, 2009/10 and 2013/13. At the national level, the share of households with access to improved sources of drinking water increased by 4 percentage points between 2005/06 and 2012/13. Overall, 72 percent of households in Uganda had access to improved sources of drinking water in 2012/13. When compared with the previous survey year (2009/10), it is observed that the share of households with such access remained almost the same. While nearly three-quarters of households in Uganda had access to improved water sources of drinking water in 2012/13, many households still lacked access to this basic need. The results further show variations in access to improved sources of drinking water by place of residence. Access among residents of Kampala is almost universal (95 percent). 84 percent of households in other urban areas having access to improved water sources in 2012/13, compared to 67 percent in rural areas. However, the rural/urban differences were slightly lower in 2012/13 (16 percentage points) compared to either 2005/06 or 2009/10 when the difference was 20 percentage points in favor of urban households. One observation is that access to improved water increased between 2005/06 and 2012/13 across all regions and consumption quintiles. The Western and the Eastern regions recorded the most improvement over this period. The same is true for the second, third and fifth consumption quintiles.

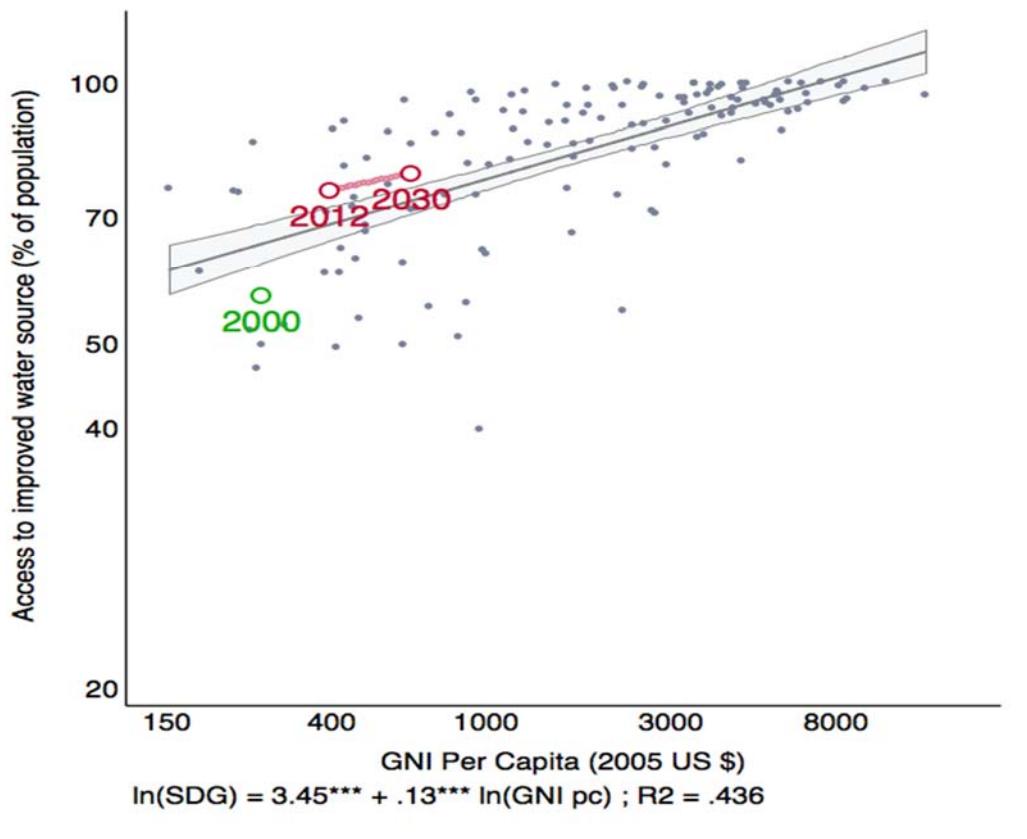
Figure 4: Trends in Access to Improved Water Sources, 2002/03–2012/13 (%)



Source: Uganda National Household Surveys (UNHS) 2005/06, 2009/10 and 2012/13

Ugandans' access to an improved source of drinking water was slightly above expected levels and progress over time was faster than the expected level. Access to improved sources of drinking water was relatively high by international standards. Also, Uganda performs better than the average country in Sub-Saharan Africa, and better than its East African Community counterparts in 2012. In terms of the pace of progress over time, cross-country correlations with GNI per capita indicate that progress in access to improved water source was faster than we would expect given the change in GNI during 2000-2012. The fact that access to improved water source increased as poverty declined during the past decade is probably not surprising given a high correlation between the two, according to cross-country data for low and middle-income countries (Figure 5). Access to improved sources of drinking water is associated with increases in income (GNI per capita).

Figure 5: Access to Improved Water Source vs. GNI per capita

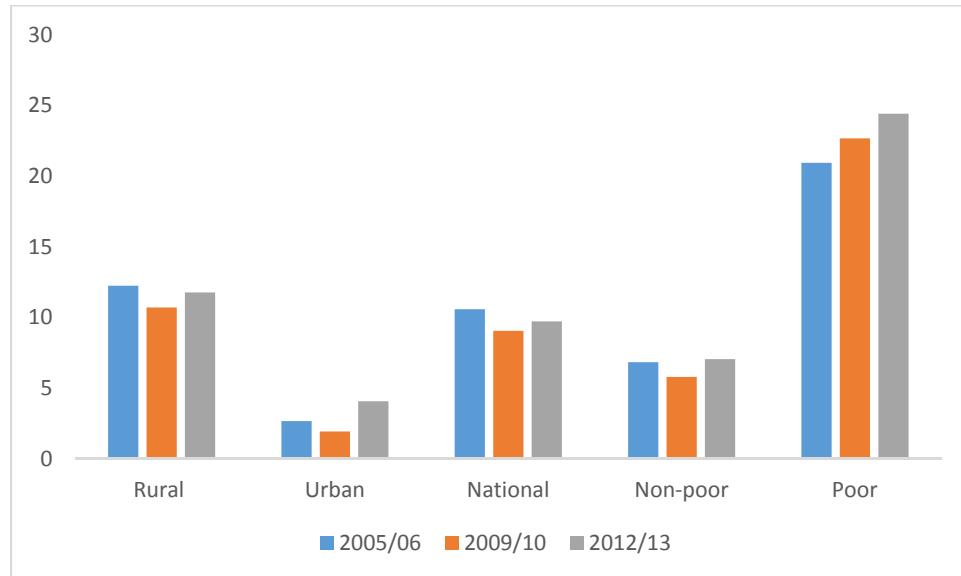


Source: Gable *et al.* (2015)

Sanitation remains a serious issue as only a small minority of households has adequate sanitation. Trends in improved latrine coverage are difficult to assess due to changes in questionnaires across surveys. Nonetheless, survey data on usage of toilet facilities provide a good indicator of sanitation levels across Uganda. The share of households in Uganda that did not use any toilet facility at all remained fairly stable across 2005/06, 2009/10 and 2012/13 at 10 percent (Figure 6). This is consistent with WDI data, showing that the proportion of the Ugandan population having access to improved sanitation facilities has remain unchanged between 2005 and 2012, ranging between 17-18 percent. A breakdown of the analysis reveals huge rural/urban differences in terms of access to toilet facilities. The share of households that did not use any toilet facility in 2009/10 was generally higher in the rural areas (11 percent) compared to the urban areas (2 percent). The situation deteriorated slightly between 2009/10 and 2012/13, with the latter period experiencing a

small increase in the share of households not using toilet facilities. This is mainly caused by the urban areas where the share of non-toilet users increased.

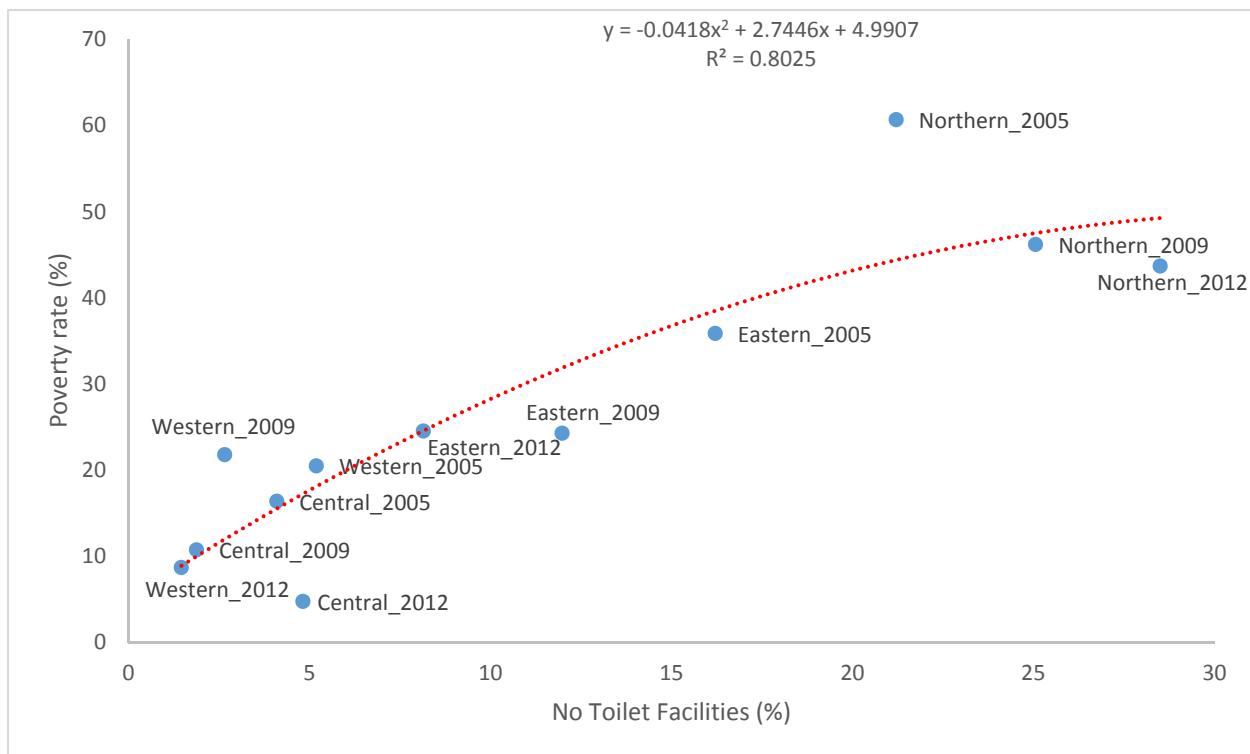
Figure 6: Trends in the Percentage of Households with No Toilet Facilities, 2005/06-2012/13



Source: Uganda National Household Surveys (UNHS) 2005/06, 2009/10 and 2012/13

Poor households are mostly those without a toilet facility, with 24 percent of them lacking access to a toilet in 2012/13. In fact, a strong relationship exists between poverty and lack of toilet facilities. The share of households without access to toilet facilities is lowest in regions with the lowest poverty rates, and vice versa (Figure 7). However, it is not necessarily the case that the regions with the highest poverty reductions were also the best performers in terms of resolving the issue of lack of toilet facilities.

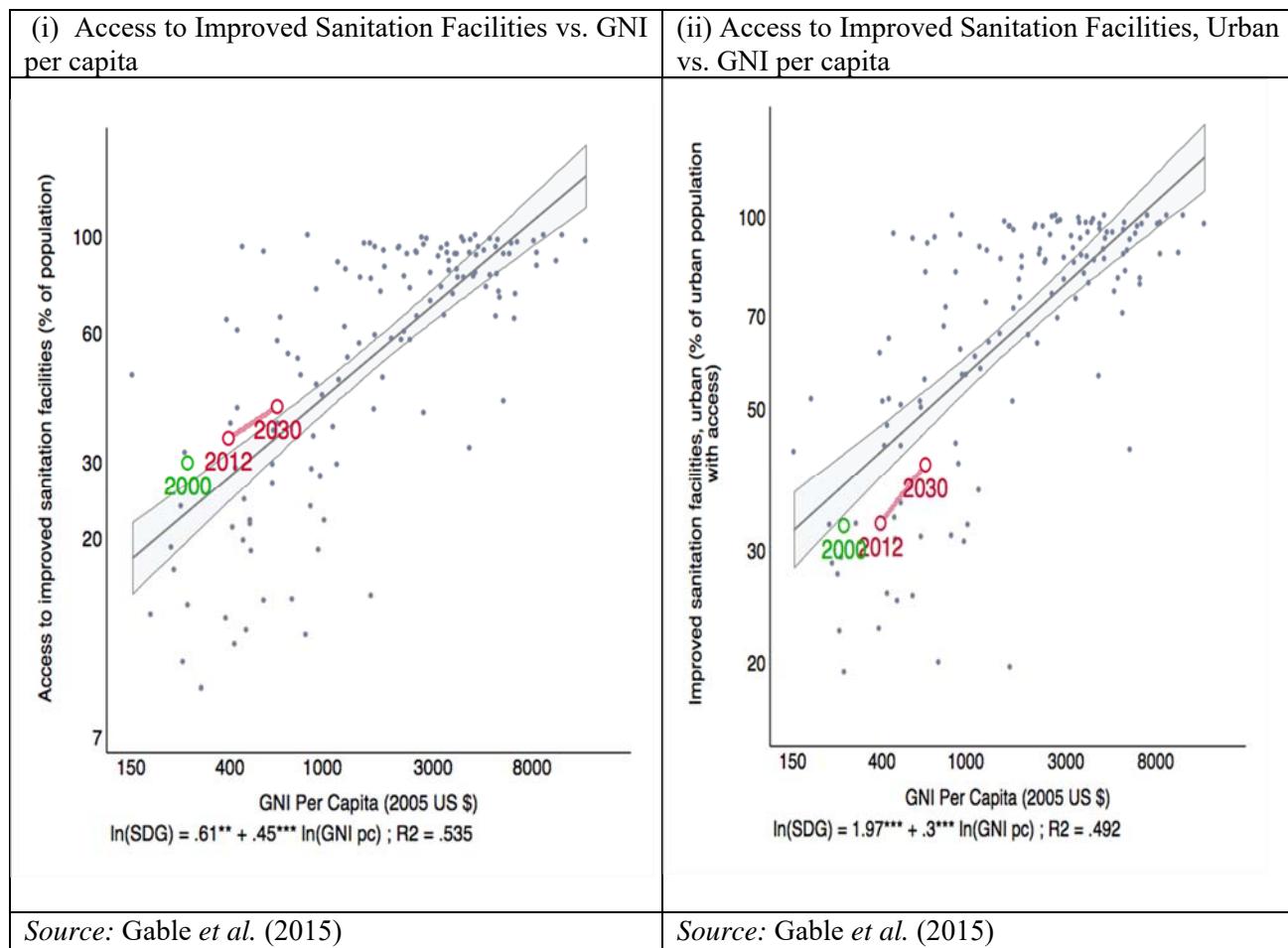
Figure 7: Correlation between Poverty and Lack of Toilet Facilities, by Region (2005/06 – 2012/13)



Source: Uganda National Household Surveys (UNHS) 2005/06, 2009/10 and 2012/13

In 2011, Ugandans' access to improved sanitation was slightly above expected levels. Overall, Uganda performs slightly better given the level of GNI. However, access to improved sanitation facilities remains low by international standards for those in urban areas. A big challenge remains in terms of access to improved sanitation facilities in urban areas where Uganda is performing below expectation compared to other countries (as shown in Figure 8).

Figure 8: Access to Improved Sanitation Facilities vs. GNI per capita



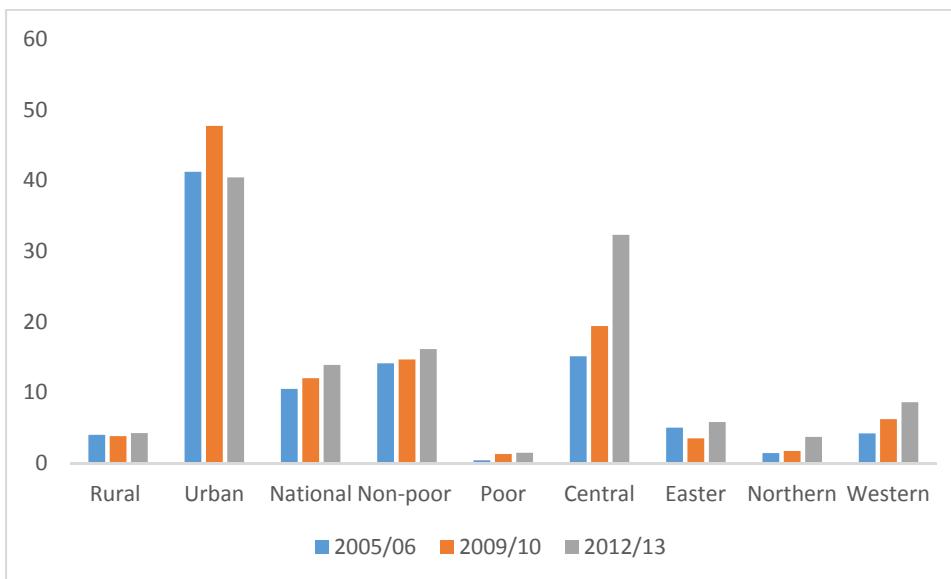
Residential coverage of electricity remains very low. Only one in seven households used electricity for lighting in 2012/13. At the national level, 14 percent⁹ of households in Uganda use electricity for lighting.¹⁰ The distribution of households using electricity as main sources of fuel for lighting by rural/urban residence and region, over the three survey periods (2005/06, 2009/10 and 2012/13) is presented in Figure 9. Overall, there was a slight increase in the percentage of households across Uganda that used electricity as the main source of fuel for lighting over the survey periods from 10 percent in 2005/06 to 12 percent in 2009/10 and then to 14 percent in 2012/13, resulting in 4 percentage points increase in electricity use between 2005/06 and 2012/13. While UMEME's distribution network has grown over the last few years, residential coverage rates remain very low due to limited access rates at the neighborhood or village level, and limited

⁹ This number is based on the UNHS 2012/13 survey and is consistent with findings of the Energy for Rural Transformation (ERT) Survey 2012 and the Uganda Demographic and Health Survey 2012 which found that electricity is used for lighting by about 15 percent of households (UBOS, 2014, UNHS 2012/2013 Report).

¹⁰ Electricity sources include national grid, solar, personal generator or community/thermal plant.

take-up by households of the service when access is (at least in principle) available in the area where they live (Tsimpo and Wodon, 2014). There has been a recent increase in alternative forms of electricity coverage, especially through solar generation, but overall coverage rates still remain very low.

Figure 9: Percentage of Households Using Electricity as the main source of fuel used for lighting, by Residence and Region



Source: Uganda National Household Surveys (UNHS) 2005/06, 2009/10 and 2012/13

There exist stark differences in electricity usage across rural and urban households. During the last decade, more than 40 percent of urban households used electricity for lighting compared to a mere 4 percent in rural areas. For the rural households, the number has remained fairly stable over the last decade. However, a notable finding is a large increase and then decrease in electricity use in urban areas between 2009/10 and 2012/13. During this period, the share of urban households that used electricity for lighting fell by 8 percentage points from 48 percent in 2009/10 to 40 percent in 2012/13.

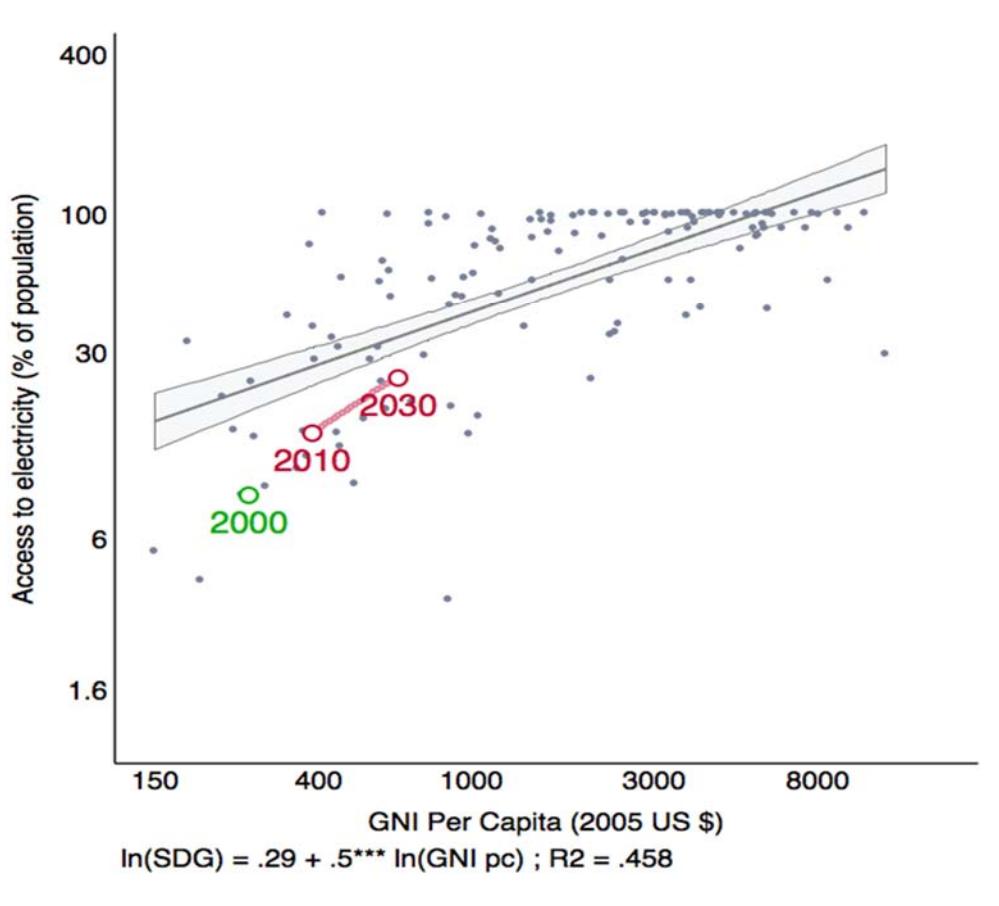
Regional differences also exist, with very low electricity usage in the Northern, Eastern and Western regions. Data disaggregation by region shows that all four regions of Uganda experienced a rise in the share of households that use electricity for lighting between 2005/06 and 2009/10 (except for a slight decline in the Eastern region) as well as between 2009/10 and 2012/13.

Nevertheless, regional differences still persist. The Central region has the highest percentage of households that used electricity for lighting (32 percent) in the 2012/13 while the numbers remained very low in the other regions (about 9 percent, 6 percent and 4 percent in the Western, Eastern and Northern regions, respectively). Furthermore, the increase in electricity use between 2005/06 and 2012/13 was mainly observed in the Central region (17 percentage points between the two periods).

Although the share of Uganda's population with electricity access has improved slightly during the last decade, it is still far below what is expected.¹¹ Access to electricity in Uganda is one of the lowest in the world (Figure 10). Access to electricity remains very low even by regional standards, with only 18 percent of the population having access in 2012. This is half the average for Sub-Saharan Africa and almost a fifth of the world average. Tsimpo and Wodon (2014) document that about 72 percent of the total grid-based electricity is consumed by only 12 percent of the domestic population within the major load centers of Kampala, Jinja and Entebbe. As a result, Uganda has a very low per capita electricity consumption, which, at 80 kWh/year, is far below its peers - Kenya at 155 kWh/year and Ghana at 300 kWh/year; and not comparable to industrialized economies such as South Africa at 4,694 kWh/year, or the Republic of Korea at 8,502 kWh/year. This conclusion is similar to Ranganathan and Foster (2012), who argue that Uganda's electricity production of 70.8 kWh per 1,000,000 people in 2010 that covered power consumption of 64.5 kWh, is lower than expected (103 kWh for production and 104 kWh for consumption) compared to other countries at the same income per capita level.

Figure 10: Access to electricity (% of population)

¹¹ Data on electricity access are provided by the IEA (International Energy Association). The access indicator refers to the population share with access to electricity in their homes. While this definition leaves out access to production sectors, an indicator based on a broader definition would paint a similar picture.



Source: Gable *et al.* (2015)

Uganda's access to electricity is higher in urban than in rural areas. This pattern is observed in many other countries. Nevertheless, as Figure 10 shows, Uganda is under-performing in terms of access to electricity compared to other countries, particularly in rural areas (Figure 11), although urban electrification is almost at the expected level. This is a serious problem as it has direct implications on business activities. Gable *et al.* (2014) argue that firms rely on generators to self-supply as much as 30 percent of their power needs, yet 10 percent of their sales are still lost because of inadequate power supply. According to Ranganathan and Foster (2012), the cost of self-supply using generator (at US\$0.46-US\$1.44 per kilowatt-hour, kWh) is two to six times more expensive than grid-based electricity because of high diesel price. Thus, access to grid-based electricity is more cost effective, at least from a business perspective. For firms with access to electricity, power outages are quite common, although they remain at the expected level during the last decade

(Figure 12). The Government of Uganda needs to improve investment in power generation, which would not only be a basic service for its citizens but would also have positive impact on productivity, boosting business and the overall economy.

Figure 11: Rural and Urban electrification (% of population)

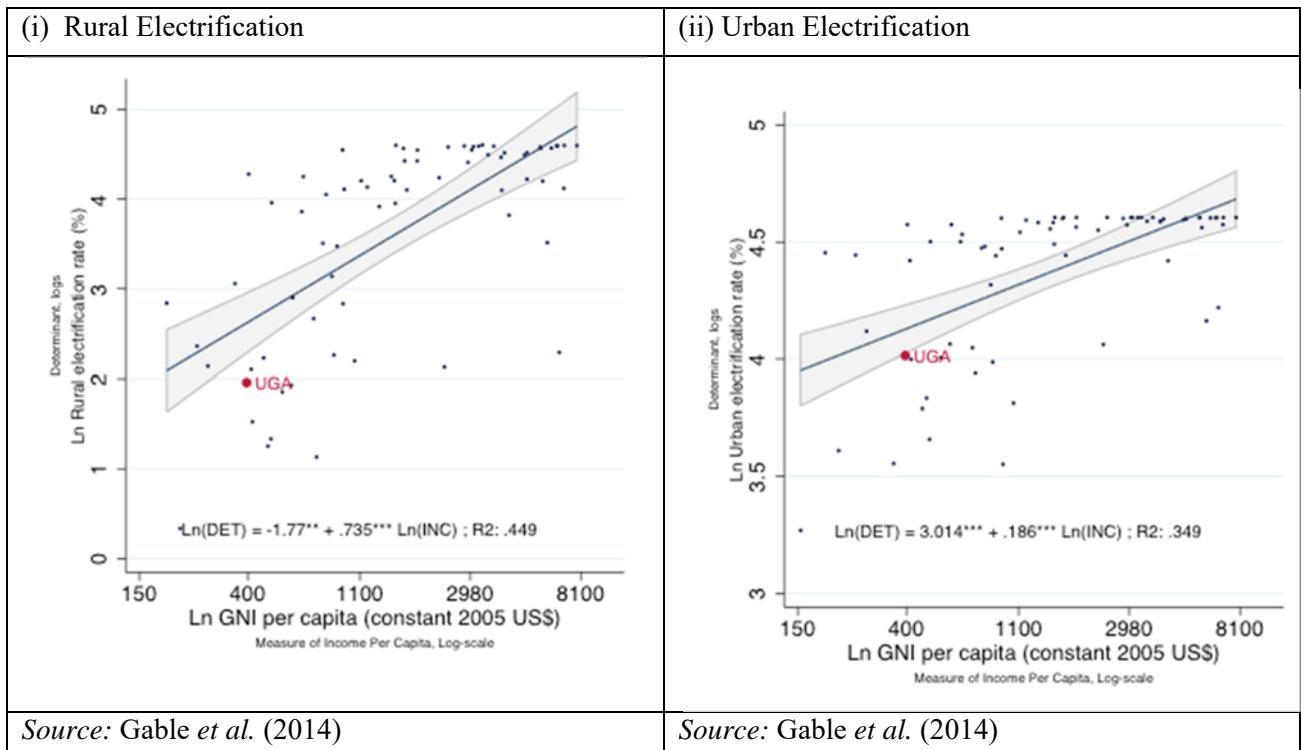
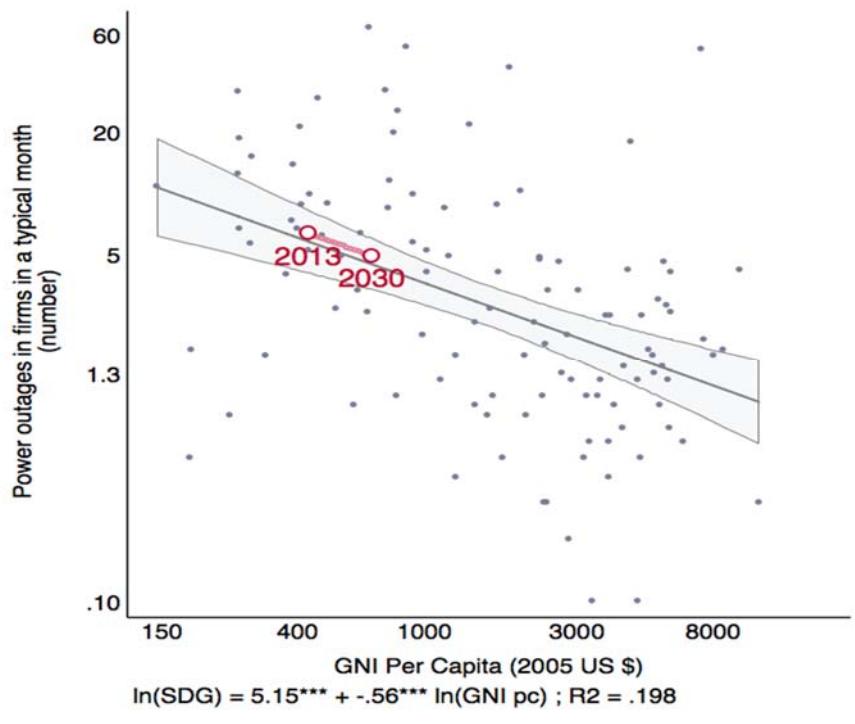


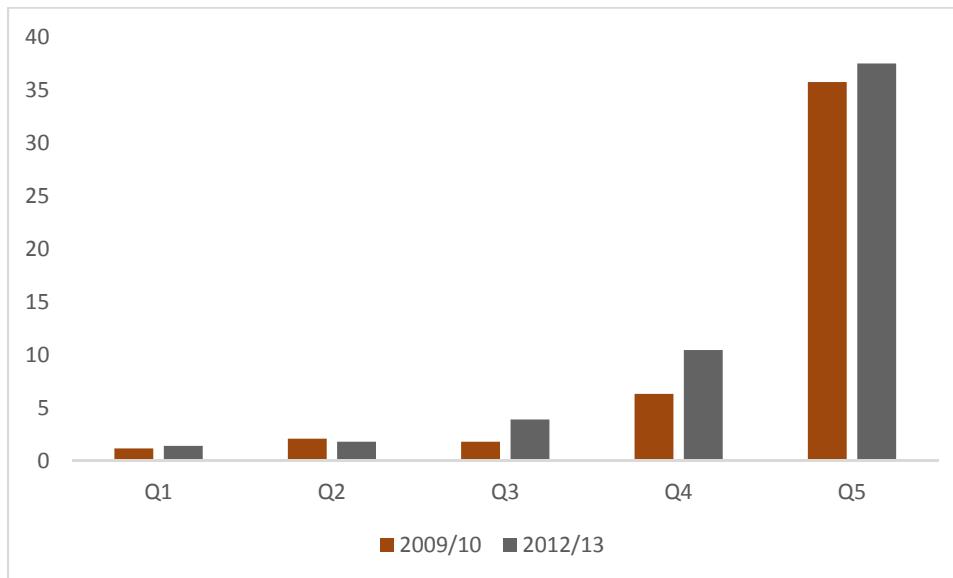
Figure 12: Power Outages in Firms



Source: Gable *et al.* (2015)

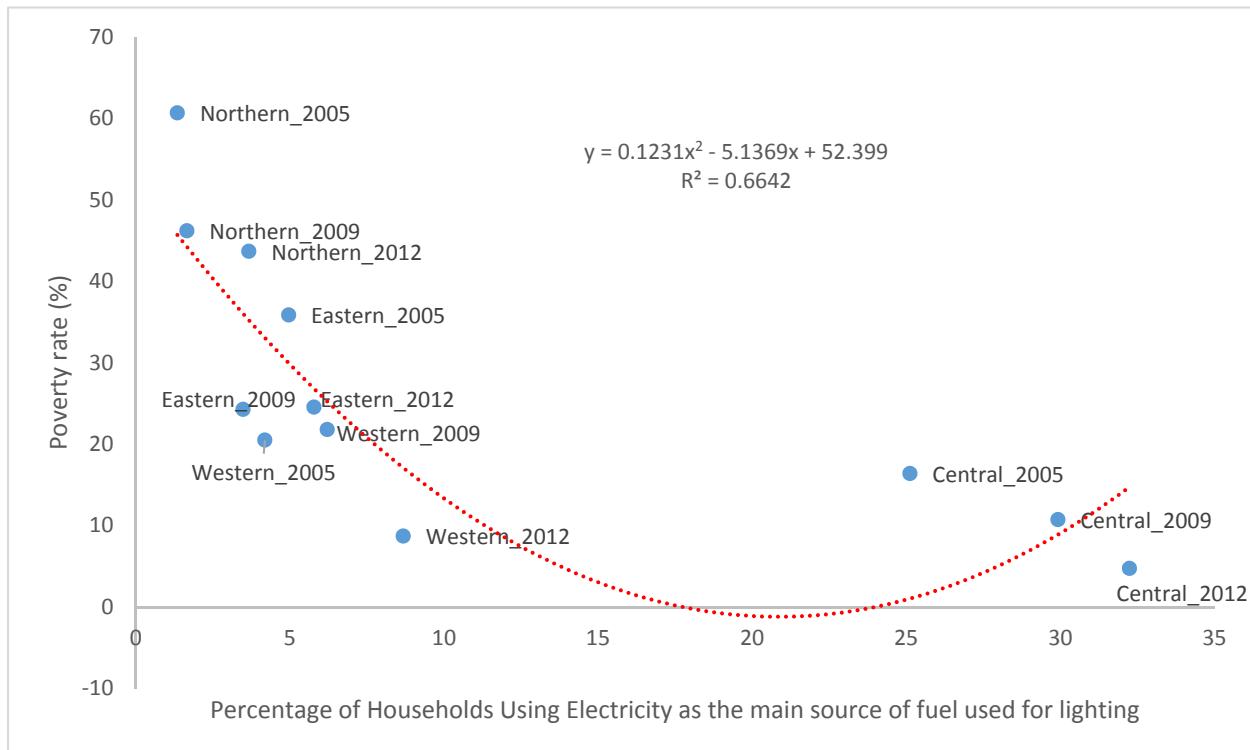
There is a strong correlation between poverty and use of electricity, and connection rates are virtually nonexistent in the bottom 40 percent. As Figure 13 shows, access to electricity decreases with poverty. Not surprisingly, electricity coverage rates are much higher among households in the top 60 percent of the distribution than among those in the bottom 40 percent. About 17 percent households on average for the top 60 percent of the distribution use electricity for lighting, whereas connection rates are virtually nonexistent among the bottom 40 percent. The finding that poverty and access to electricity are strongly correlated is confirmed as one compares the reported regional poverty rates with regional electricity coverage. Monetary poverty was lowest in the Central region followed by the Western, Eastern and Northern regions. This ranking is consistent across the three surveys (2005/06, 2009/10 and 2012/13), and it is similar to the ranking in terms of increase in access to electricity (Figure 14).

Figure 13: Percentage of Households Using Electricity as the main source of fuel used for lighting, by Consumption Quintile



Source: Uganda National Household Surveys (UNHS) 2009/10 and 2012/13

Figure 14: Correlation between Poverty and Electricity use, by Region (2005/06 -2012/13)



Source: Uganda National Household Surveys (UNHS) 2005/06, 2009/10 and 2012/13

Given the importance of access to electricity discussed earlier, the very low residential coverage of electricity in Uganda may be constraining acceleration of economic development and poverty reduction efforts. At the same time, the ample water resources and hydro potential that Uganda has means that electricity could practically be generated and supplied at fairly low cost to a large share of the population (Tsimpo and Wodon, 2014).

V. Physical Capital

Ownership of modern assets increased while ownership of traditional assets deteriorated.

As stated earlier, estimates of well-being as quantified through estimates of consumption expenditure may not be comprehensive in that they may fail to account for growth in nonmarket goods and household assets. We take a closer look at asset ownership even though consumption from assets is included in the consumption aggregate. We observe changes, or the lack thereof, in the ownership of household assets including mobile phones, bicycles, motor cycles, land, and household appliances. Table 2 presents the distribution of households by ownership of some of the key assets. More households own land, mobile phones and motorcycles, at the expense of pedal cycles. Land ownership information was not collected in 2005/06. Nationally, the proportion of households who owned a piece of land appears to remain stable between UNHS 2009/10 and UNHS 2012/13 (75 and 77 percent, respectively). Finding that about three-quarters of households own land is very important for Uganda since the work force is dominated by those whose primary activity is agriculture (particularly the case for those in the bottom 40 percent), and need land for cultivation. In fact, between 2009/10 and 2012/13, the increase in land ownership in the bottom 40 percent households (by 4 percentage points) doubled that in the top 60 percent. The difference in land ownership between the bottom 40 percent and top 60 percent in 2012/13 is statistically significant at 1 percent.

The increase in land ownership, particularly for the poor who are mostly involved in agriculture, can be considered as a positive as it can potentially contribute to improvement of their productivity and living standards. Even if the land was not directly used for agriculture, land ownership allows households to access credit that could be used to improve their welfare. It has been argued that

most farmers in Uganda are able to use land at their disposal as collateral to access credit and also use it for livestock rearing as a way to increase their incomes (DRT, 2012).

Mobile phones are the most commonly owned items in Uganda. There was a notable increase in the proportion of households who own a mobile phone, with about 170 percent more households owning a mobile phone in 2009/10 than in between 2005/06, and 30 percent more households having a mobile phone in 2012/13 compared to 2009/10. This is probably not surprising given that mobile phone ownership has increased substantially across Africa. In addition, although the share of households owing a motorcycle is low, the trend shows that this share is increasing over time.

Further, the ownership of mobile phones and motorcycles appears to have improved substantially more among the well-off (top 60 percent) between 2005/06 and 2012/13 (Figure 15). The proportion of bottom 40 percent households having a mobile phone has grown substantially by 35 percentage points, on average, compared to 46 percentage points for the top 60 percent households.¹² With regard to motorcycles, increase in ownership between 2005/06 and 2012/13 remained fairly stable among the bottom 40 percent household while it increased by 5 percentage points among the top 60 percent.

Conversely, ownership of more traditional assets such as bicycles has declined. Bicycle ownership is prevalent in many countries, but is becoming less desirable in Uganda, both urban and rural areas alike. It seems that households have replaced these items by more modern ones, as can be seen from the decline of bicycles and increase of motorcycles. This is consistent with Seff *et al.* (2014) who, using Tanzania National Panel Survey data, show that households tend to replace traditional devices such as radio and bicycle by more upgraded goods, such as TVs or motorcycles. Thus, the declining levels of bicycle ownership observed are not necessarily an indicator of declining levels of wealth. Rather, the rise in motorcycle ownership, coupled with the decline in bicycle ownership, supports the notion that these goods are substitutes of each other.

¹² Asset ownership growth could also be shown in terms of percent change. But we think it would be more informative to show in percentage point terms rather than percent change, since a large relative increase from a very small base may not be very meaningful in an absolute sense.

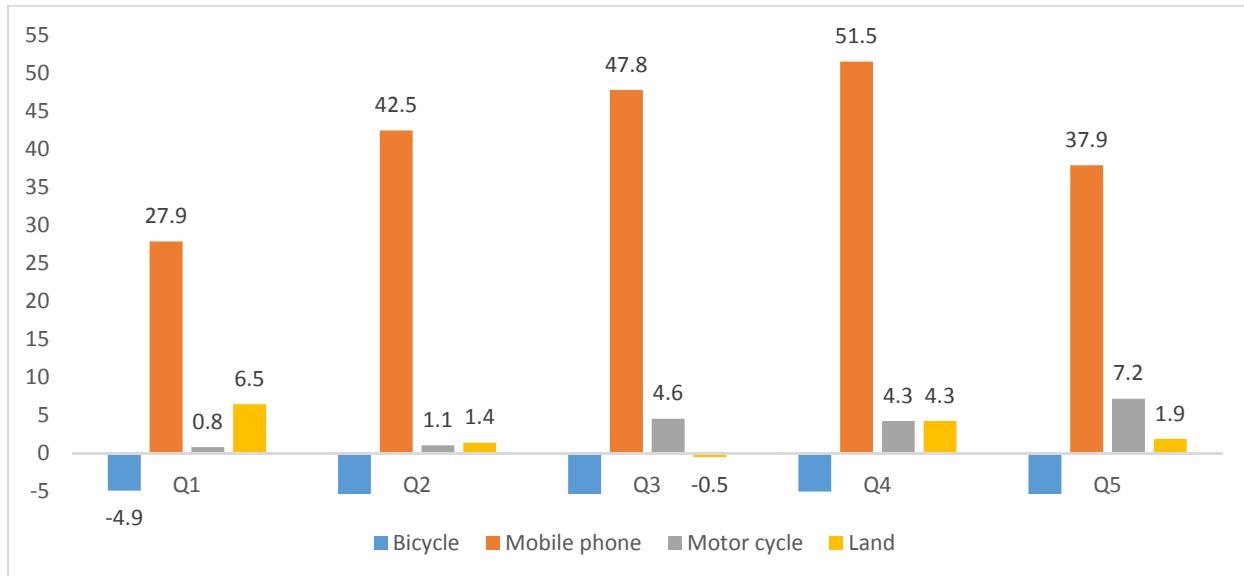
Table 2: Household Asset Ownership by Location and Consumption Quintile (%)

	Location			Region				Consumption quintile					Total
	Kampala	Other Urban	Rural	Central	Eastern	Northern	Western	Q1	Q2	Q3	Q4	Q5	
2005/06													
Bicycle	9.2	31.7	42.7	32.9	49.7	44.5	33.4	32.6	44.0	44.1	39.1	36.6	39.2
Motor cycle	1.8	3.7	2.5	4.3	1.3	0.9	2.9	0.4	1.8	1.0	2.6	5.8	2.6
Mobile phone	57.6	38.1	10.5	30.9	11.4	5.4	12.3	0.8	2.1	7.2	16.0	45.9	16.7
Household appliances	66.1	54.0	34.1	61.0	35.7	33.4	16.1	25.6	30.5	32.1	40.0	56.2	38.4
2009/10													
Bicycle	10.0	22.4	41.1	30.4	46.6	40.5	31.2	34.3	37.5	41.2	40.5	31.7	36.7
Motor cycle	5.6	5.4	4.9	7.2	2.7	2.1	6.8	1.0	1.8	3.2	6.6	9.2	5.0
Mobile phone	88.7	76.3	38.3	67.5	38.7	26.7	42.1	16.4	30.1	35.8	51.2	76.6	46.3
Household appliances	65.7	40.2	12.7	34.3	14.2	10.1	13.8	6.0	8.2	11.6	17.9	41.2	19.7
Land	40.9	50.5	81.2	58.6	81.7	78.5	85.4	77.3	82.2	81.9	73.3	65.0	74.8
2012/13													
Bicycle	3.6	24.5	34.6	26.2	32.7	39.7	27.1	27.7	33.4	35.0	34.1	26.0	30.9
Motor cycle	4.9	9.0	6.2	10.8	3.4	3.9	7.9	1.2	2.9	5.5	6.9	12.9	6.7
Mobile phone	94.7	78.6	51.8	79.6	49.0	41.6	62.3	28.7	44.6	55.0	67.5	83.8	59.7
Household appliances	63.2	31.0	11.0	37.5	6.9	13.5	9.6	7.3	7.1	10.2	16.7	36.7	18.0
Land	36.3	63.3	84.2	62.8	79.0	86.1	86.1	83.7	83.6	81.4	77.6	66.9	77.3

Source: Uganda National Household Surveys (UNHS) 2005/06, 2009/10 and 2012/13.

Notes: Household Appliances include Kettle, Flat iron, etc. Land ownership information was not collected during UNHS 2005/06.

**Figure 15: Changes in Asset Ownership, by Consumption Quintile, 2005/06 - 2012/13
(Absolute numbers)**



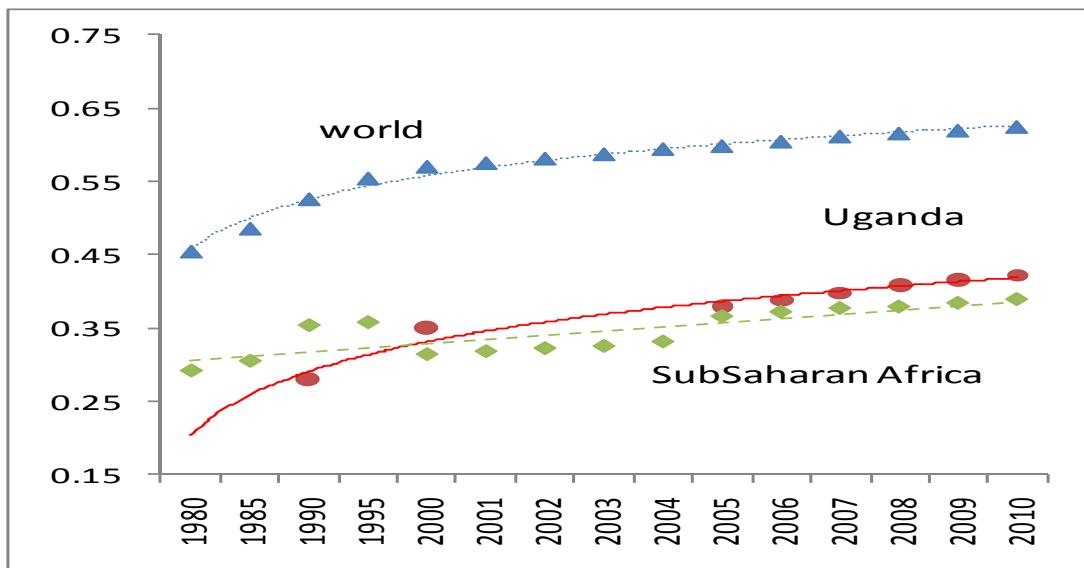
Source: Uganda National Household Surveys (UNHS) 2005/06 and 2012/13.

Notes: Changes are calculated between 2005/06 and 2012/13, except for land which is between 2009/10 and 2012/13 since land ownership data was not collected in 2005/06.

VI. Human Capital Outcomes

Human capital accumulation in Uganda is higher than the average in Sub-Saharan Africa since the mid-2000s, and Uganda maintained its advantage over the past decade (Figure 16). Nevertheless, it should be noted that Uganda started from a low base and many working-age adults have low levels of education.

Figure 16: Higher human development index than the average in sub-Saharan Africa



Source: Uganda Systematic Country Diagnostic Report (2015), underlying data from Human Development Index

Education

We look at both stock variables such as adult literacy rates and flow variables such as school enrollment. While stock variables should not be expected to change much with increases in income, flow variables should. Adult literacy rates remained almost flat between 2005/06 and 2012/13, and are substantially higher among males than females. The role of education as an engine for empowerment, economic growth and general improvements in welfare has been widely acknowledged. Empirical studies have established a strong correlation between educational attainment and income and welfare.

The national adult literacy rate (for those aged 18 years and above) stands at 68 percent, and has been fairly stable between 2005/06 and 2012/13 as one might expect (Figure 17).¹³ We also look

¹³ Adult literacy rate: the percentage of the population age 18 and above who can, with understanding, read and write a short, simple statement on their everyday life. Generally, ‘literacy’ also encompasses ‘numeracy’, the ability to make simple arithmetic calculations. This indicator is calculated by dividing the number of literates aged 18 years and over by the corresponding age group population and multiplying the result by 100.

at literacy rate among young adults where one might expect to see more rapid change. The youth literacy rate has improved over time, and this is the case for both youth males and females 15-24 years old. It is found that male and female youths have similar levels of literacy (see Figure 18). Uganda seems to have relatively high youth literacy rates compared to many of its income peers, performing better than expected. Slight progress was made during the period 2010-2010.

Figure 17: Trends in Adult Literacy Rates (%)

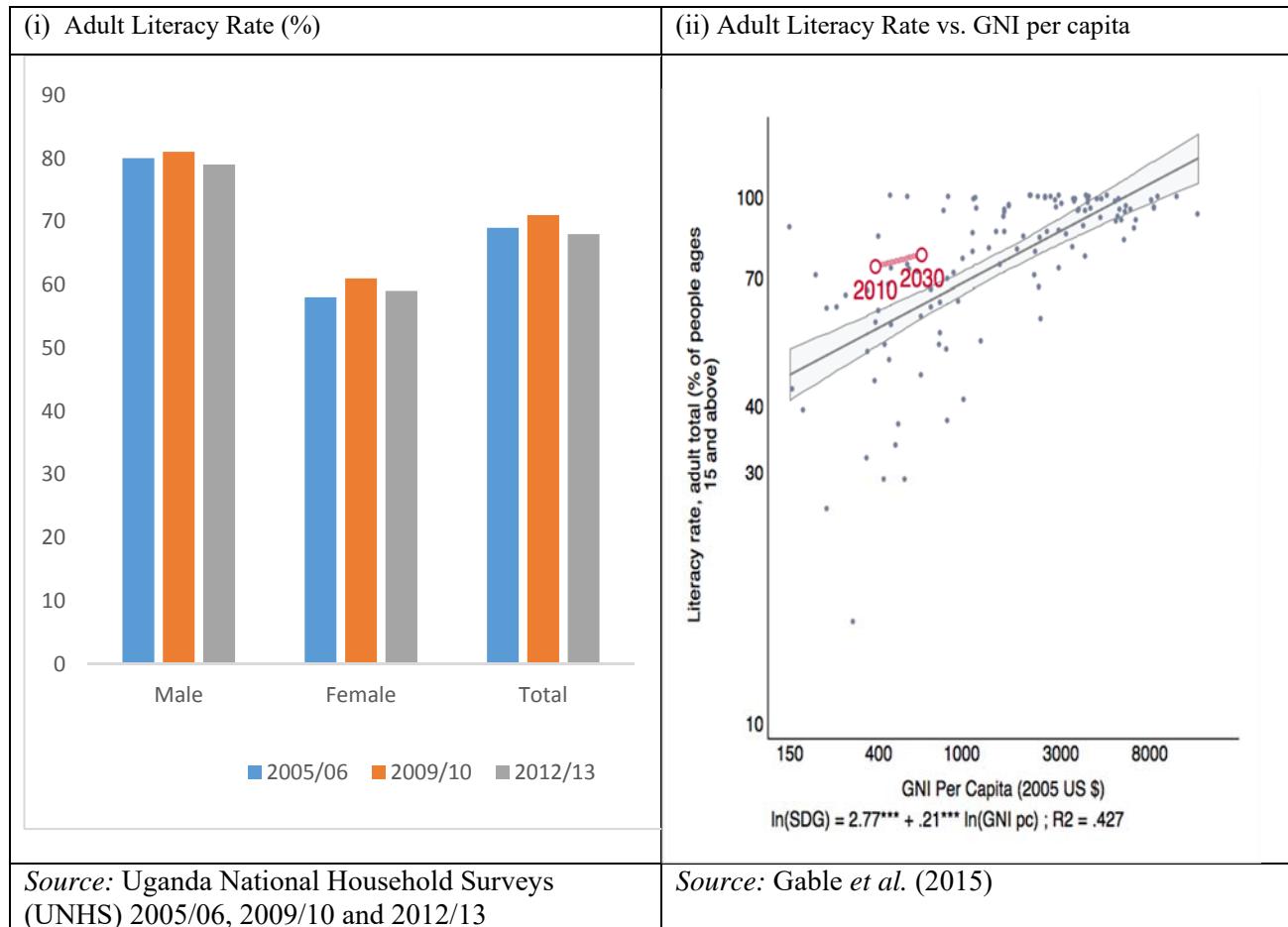
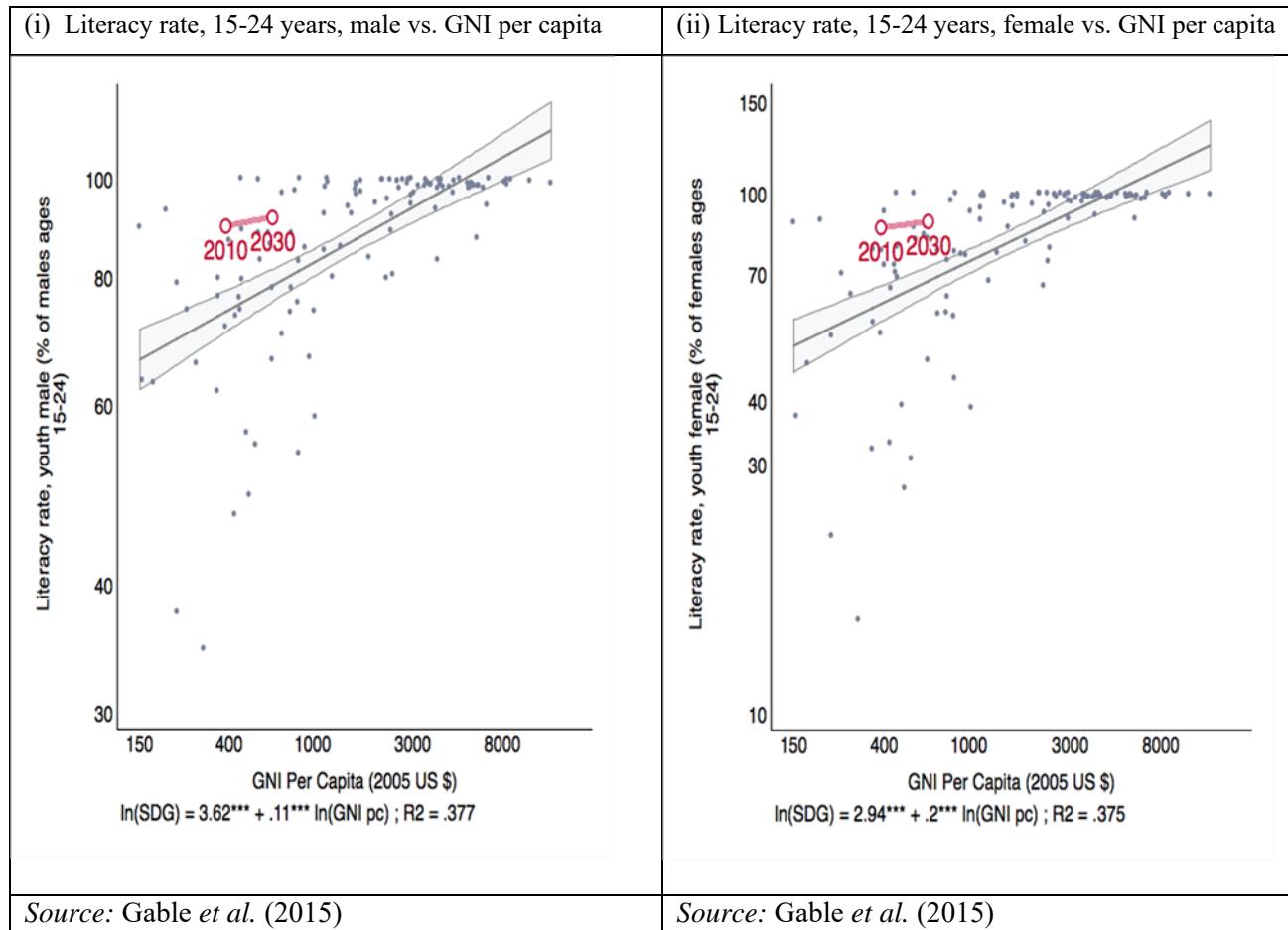


Figure 18: Literacy rates in Uganda and International Comparison, and pace of progress



Net enrollment in primary schools is high and has increased over time.

Primary school enrollments (6-12 years) increased slightly between 2005/06 and 2012/13. According to UNHS data the primary net enrollment rate increased from 84 percent in 2005/06 to 86 percent in 2012/13 (Table 3). This is up from 67 percent in 1995 and 79 percent in 2000. Interestingly, primary net enrollment deteriorated in 2009/10 before recovering in 2012/13. The same holds for a number of indicators analyzed in this paper, and there might be a common explanation for the oscillation. One possible explanation is that the global financial crisis in 2009 hit Uganda badly, with the effects trickling down to households. Also, the changes between the two most recent UNHS surveys (2009/10 and 2012/13) might have been driven by the high inflation that was experienced during the period from 2009/10 to 2011/12, which affected household welfare. Exogenous shocks affecting incomes often have negative impact on schooling,

especially the young girls. For instance, Nyqvist (2012) demonstrates that in Uganda, households respond to income shocks by varying the amount of schooling and resources provided to girls while boys are to a large extent sheltered.

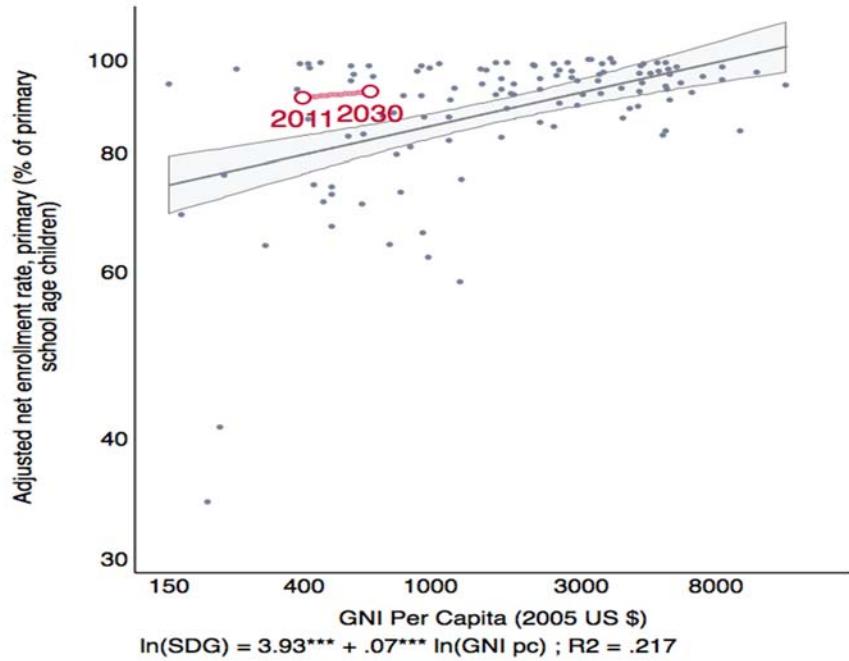
Table 3: Trends in Net Enrollment Rates in Primary Schools (%)

	Boys	Girls	Total
2005/06	84	85	84
2009/10	82	83	83
2012/13	85	87	86

Source: UBOS Reports based on Uganda National Household Surveys (UNHS) 2005/06, 2009/10 and 2012/13.

The expansion of enrollment in primary schools was observed for both males and females. The magnitude of increase in net primary enrollments for boys and girls was similar. The high primary school enrollment rates among both poor and rich children reflects the benefits of the Universal Primary Education (UPE) program that was introduced by the Government of Uganda in 1997. Under the UPE program, all tuition fees and Parents and Teachers Association (PTA) charges for primary education were abolished, in order to ensure that by 2015, children everywhere, boys and girls alike will be able to complete a full course of primary schooling. According to cross-country regression analysis, Uganda's net primary enrollment rates are above the expected level when compared to other countries with similar incomes. Primary school enrollment rates are on the rise, and higher than expectations given the GNI level (Figure 19).

Figure 19: Net Enrollment in Primary vs. GNI per capita

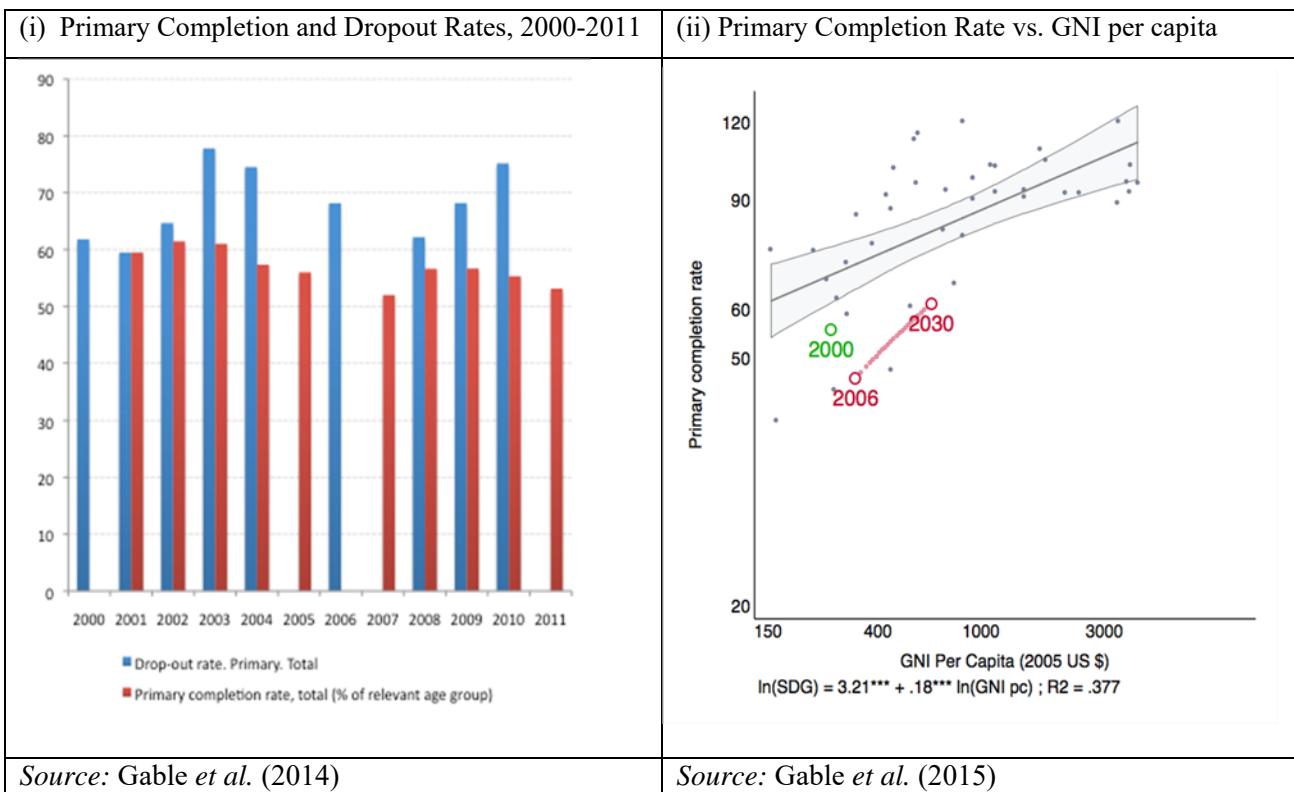


Source: Gable *et al.* (2015)

Primary completion rates in Uganda are lower than expected, and the trends show that the situation deteriorated over the last decade.

The primary completion rate has generally fallen since the beginning of the 2000s (Figure 20). Ideally, completion should be timely. This means that most of the population in the targeted age group (12 years old) should complete the last grade at the age of 12 years. Uganda's gross primary completion rate was 53 percent in 2011. This is mainly due to a very high primary school drop-out rate of 75.2 percent. When compared with its income peers (GNI per capita), Uganda's primary completion rate is very low. Overall, the results suggest that Uganda has been successful in enrolling children in primary school but unsuccessful in bringing them to full and timely primary completion.

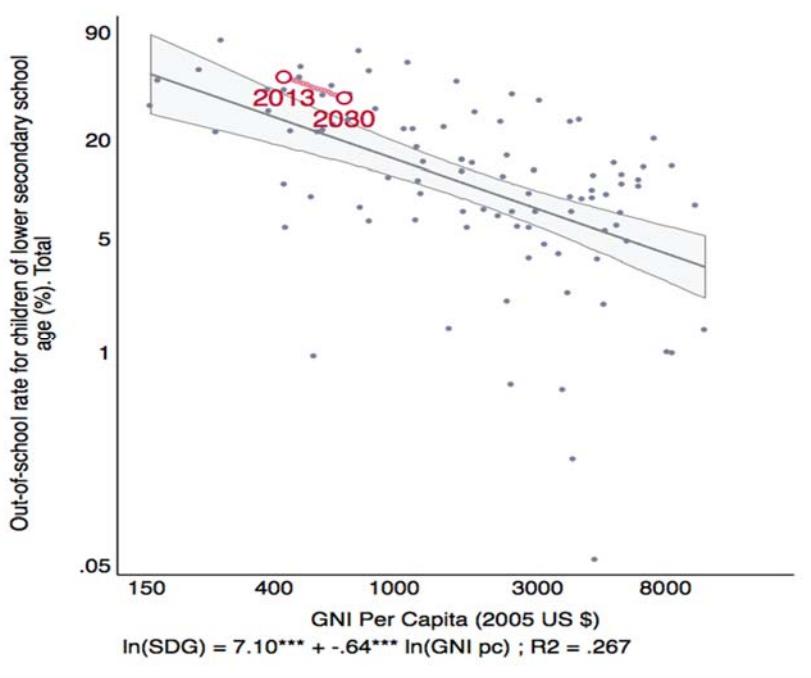
Figure 20: Primary Completion and Dropout Rates



Enrollment in secondary schools remains very low, meaning that the increase in primary school enrollment has yet to translate at the higher level. Data on net enrollment in lower secondary school in Uganda are scarce. But the out-of-school rate (i.e., the inverse of net enrollment) gives an idea about net secondary enrollments.¹⁴ Out-of-school rate stands at 23 percent in 2011. This is within the expected level when compared to other countries with similar incomes (Figure 21). Secondary enrollment rates remain low, regardless of the Universal Secondary Education (USE) program that was introduced by the Government of Uganda in 2007. Although secondary schools' tuition fees were abolished, students still have to pay boarding fees, uniforms, school materials, and medical care among others costs. This is reflected in the estimated share of monthly expenditure on education, which decreased from 9.6% in 2005/06 through 8.5% in 2009/10 to 7.5% in 2012/13.

¹⁴ The out-of-school rate for children of lower secondary school age is defined as the number of children of official lower secondary school age who are not enrolled in lower secondary school expressed as a percentage of the population of official lower secondary school age (Gable *et al.*, 2014).

Figure 21: Out-of-School Rate for Lower Secondary vs. GNI per capita



Source: Gable *et al.* (2015)

The low secondary enrollment rates are due to several factors. First, not enough children complete primary school. As shown above, primary completion rates are very low in Uganda. Uganda is under performing in this regard among countries with similar incomes. Perhaps the low completion rates are because parents cannot continue investment (e.g. when a shock occurs), or they do not see the investment being worthwhile (either due to perceived low returns, child's poor performance, and so on). Second, cost seems to be a very important factor preventing many children from attending secondary school, and it is also the main reason for dropping out (regardless of the child's wealth quintile). For about 40 percent of children aged 13-18 who had dropped out of secondary school during the UNHS 2012/13 survey, the main was that school was too expensive (Figure 22). Consistent with expectations, the cost issue is more serious among children in the bottom quintiles. On the other hand, almost no child stated that the reason was because the school was too far away (i.e. distance) or that further schooling was not available. This suggests that the main reason for the high secondary school dropouts is *affordability* (i.e. *cost*) rather than *availability* of a school.

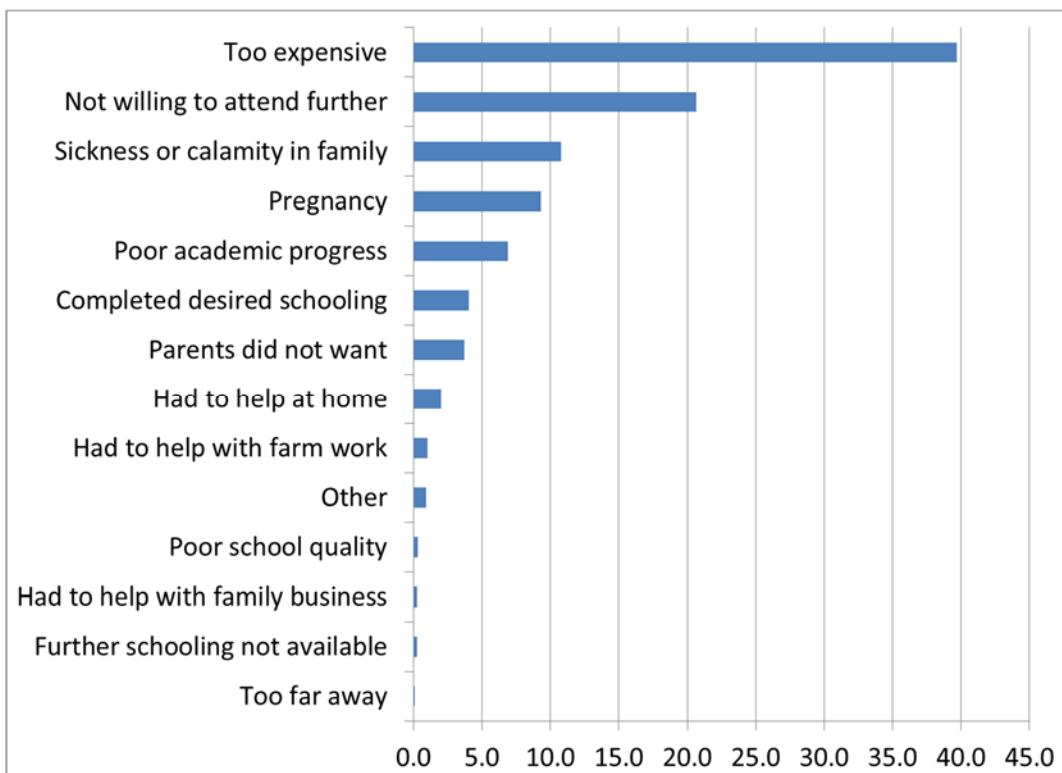
Third, the other major reasons are related to attitude towards education. These include child not willing to attend, pregnancy and poor academic progress, and parents not wanting the child to continue school. It is not clear why a child is unwilling to continue with secondary school. This negative attitude towards education is mostly seen among children in the bottom 40 percent. Finally, shock is the other main reason for dropping out of secondary school, with about 11 percent of dropouts citing sickness/calamity in family as the most important factor preventing them from attending school.

Child marriage and early pregnancy have a large negative impact on education attainment, especially for girls. As documented by Wodon *et al.* (2016), child marriage and early pregnancy appeared to be one of the main reasons why girls drop out of school prematurely. The issue of early pregnancy is mentioned by 16.2 percent of parents as the main reason for girls dropping out.

These results have policy implications. Obviously, free tuition alone is not enough for primary completion rates and secondary enrollment rates. Efforts to improve secondary school enrollments must start with programs that would boost primary school completions. In addition, social protection programs that can enable households to cope with negative shocks would enable their children to stay in secondary school when a shock hits. Various types of interventions can be also considered to delay marriage, and support girls who marry early.¹⁵ Curbing early marriage and pregnancy will also help reduce the fertility rate, and subsequently the dependency ratio, thus impacting welfare positively.

¹⁵ Such interventions will include: (1) Empowering girls with information, skills, and support networks; (2) Educating and mobilizing parents and community members; (3) Enhancing the accessibility and quality of formal schooling for girls; (4) Offering economic support and incentives for girls and their families; and (5) Fostering an enabling legal and policy framework. See Wodon *et al.* (2016) for more details.

Figure 22: Main reasons for dropping out of school, children aged 13-18



Source: Authors' calculation, based on UNHS 2012/13 data

Educational attainment rates

We also examine educational attainment rates before looking at the critical link between education and earnings (wages). Table 4 shows trends in educational attainment between 2005/06 and 2012/13 for persons 15 years old and above. The share of people acquiring some or completing primary school fell between 2005/06 and 2009/10 by 6 percentage points and then increased between 2009/10 and 2012/13 by 5 percentage points. This trend holds for all households regardless of area of residence and gender. Conversely, the percentage of people who have completed either secondary education or post-secondary education increased between 2005/06 and 2009/10 and then decreased between 2009/10 and 2012/13. This is generally the case across regions of Uganda. On the other hand, about 17 percent of the people had no formal education in 2009/10 and 2012/13. This has declined compared to 20 percent in 2005/06. The oscillation in educational attainment between 2005/06, 2009/10 and 2012/13 remains a puzzle. The 2007 Universal Secondary Education (USE) program might have helped to improve secondary school

attendance and completion rates, as well as post-secondary attainments in 2009/10, but these improvements were lost in 2012/13.

Table 4: Trends in Educational Attainment Rate by Sex and Location, 2005/06-2012/13, for Persons 15 Years and Above (%)

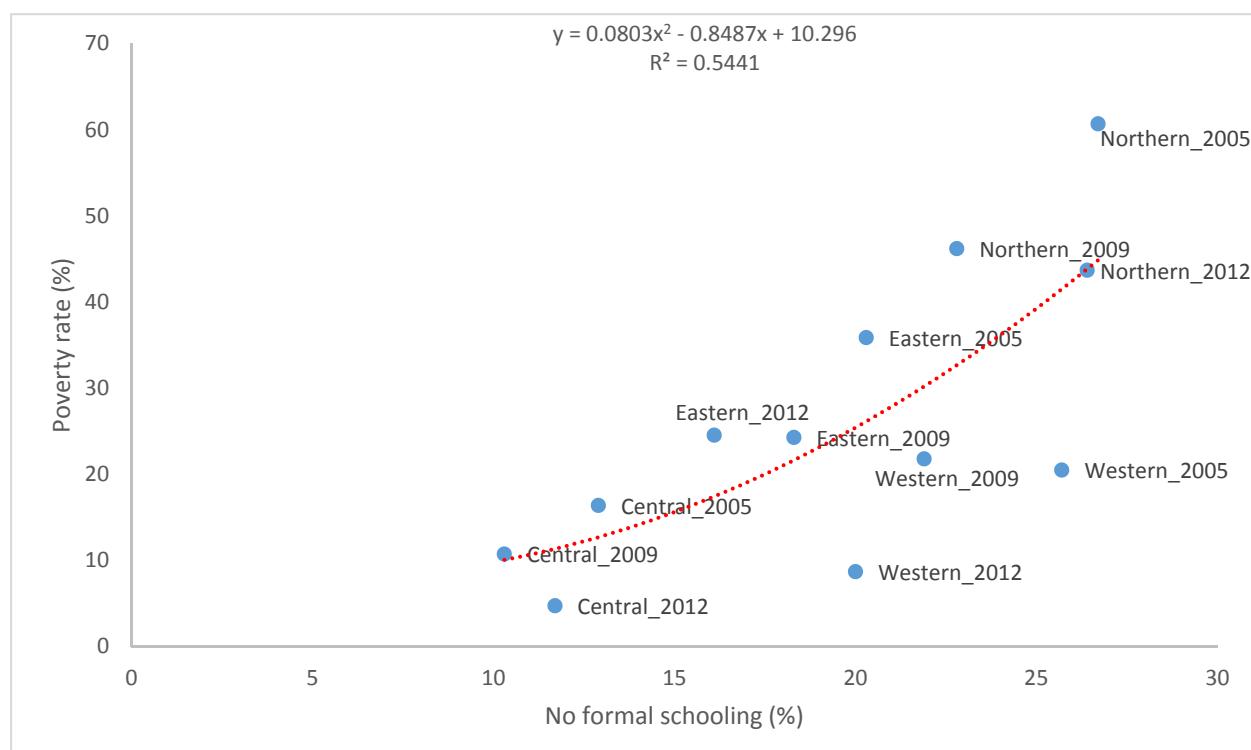
	2005/06				2009/10			
	No formal schooling	Some or Completed primary	Some or Completed secondary	Above Secondary	No formal schooling	Some or Completed primary	Some or Completed secondary	Above Secondary
Sex								
Male	10.5	61.1	23.7	4.7	9.8	53.8	29.1	7.3
Female	28.2	54.2	15.2	2.2	24.1	49.3	21.9	4.7
Residence								
Urban	8.6	44.9	36.9	9.7	6.6	30.5	44.8	18.1
Rural	22.5	59.9	15.5	2.1	19.7	56.0	21.1	3.3
Region								
Central	12.9	58.6	24.9	3.6	10.3	47.1	33.4	9.1
Eastern	20.3	59.7	17.6	2.5	18.3	56.1	23.1	2.5
Northern	26.7	58.6	12.8	1.8	22.8	54.7	18.2	4.4
Western	25.7	57.5	13.8	3.0	21.9	54.1	20.4	3.7
National	20.1	57.4	19.2	3.4	17.3	51.4	25.3	5.9
2012/13								
Sex								
Male	10.2	60.0	24.2	5.6				
Female	24.7	53.7	18.4	3.2				
Residence								
Urban	10.4	42.8	35.5	11.3				
Rural	20.4	61.2	16.4	2.0				
Region								
Central	11.7	49.8	30.3	8.2				
Eastern	16.1	61.0	20.7	2.3				
Northern	26.4	57.6	12.9	3.1				
Western	20.0	58.6	18.0	3.4				
National	17.9	56.7	21.6	4.3				

Source: UBOS Reports based on Uganda National Household Surveys (UNHS) 2005/06, 2009/10 and 2012/13.

There is a strong correlation between poverty and education. Figure 23 shows that poverty rates increase with no formal schooling. The graph clearly illustrates that Central region with the lowest percentage of persons with no formal schooling also has the lowest poverty rate. On the other hand, the high share of people with no formal education in the Northern region is associated strongly with high poverty rates in the region.

Finding that poverty is strongly correlated with education has policy implications. Promoting policies and programs to achieve universal primary education as well as promoting transition from primary to secondary, and subsequently tertiary education will be important for poverty reduction. Education equips people with the needed skills to transition from subsistence agriculture to more productive activities. Furthermore, a better educated population would likely be more productive, participating more efficiently in promoting economic growth and poverty reduction.

Figure 23: Correlation between Poverty and No formal schooling, by Region (2005/06 - 2012/13)



Source: Uganda National Household Surveys (UNHS) 2005/06, 2009/10 and 2012/13.

Health and Nutrition

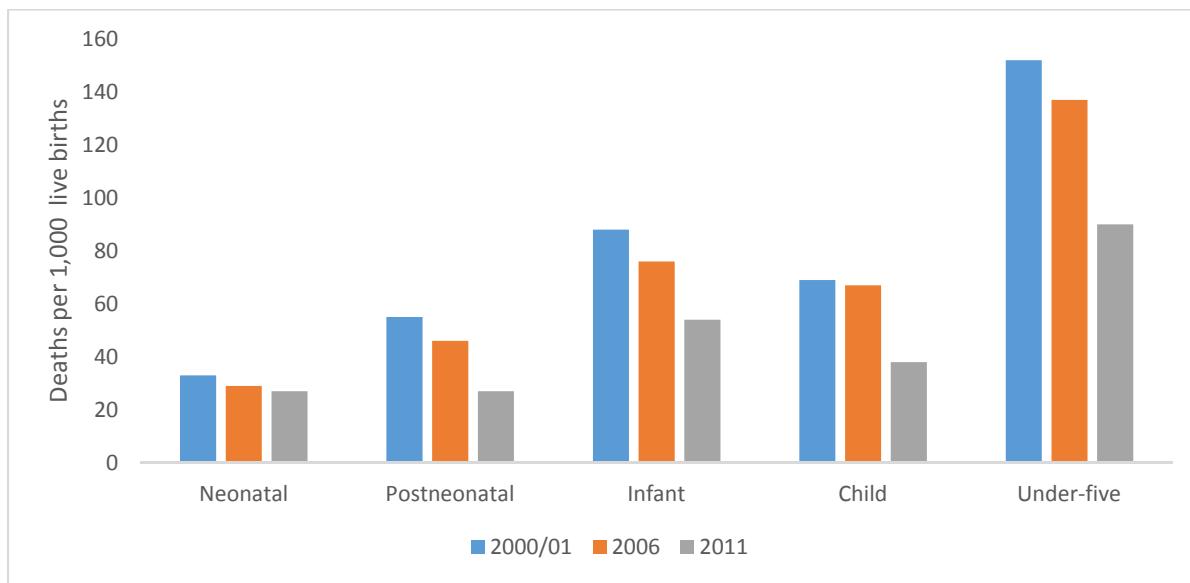
According to cross-country regression analysis, Uganda's under-five mortality rates seems to be exactly at the expected level. There has been a remarkable decline in all components of early childhood mortality over the 15-year period preceding the 2011 UDHS survey. There have been substantial decreases in early childhood mortality rates. Using Uganda Demographic and Health Survey, we analyze early childhood mortality rates for levels and trends. Figure 24 presents neonatal, post-neonatal, infant, child, and under-five mortality rates for successive five-year periods before the survey. Infant mortality (which measures the probability of infants dying before their first birthday per 1,000 live births) dropped from 88 in 2000/01 to 76 in 2006 and 54 in 2011. For the five years preceding the 2011 survey, the child mortality rate was 38 per 1,000 live births. This implies that one in every 26 children, who survived the first birthday, does not live to the fifth birthday.

Under-five mortality, which measures the probability of children dying between birth and the fifth birthday, stood at 90 in 2011, having declined from 152 in 2000/01 to 137 in 2006. Declining trends were also observed for neonatal and post-neonatal rates. It is positive to find that all these indicators are on a declining trend since 2000. Uganda achieved the MDG target of reducing child mortality by two-thirds by 2015 before the target date (compared with 1990).

Under-five mortality is significantly higher in rural areas than in urban areas, and maternal mortality has declined over time. By region, the mortality rates were lowest in Kampala and highest in the Mid-North (Figure 25). This shows that there is a relation between child mortality and poverty, with Kampala having the lowest poverty rates and the Mid-North one of regions with high poverty levels. Indeed, under-five mortality rates were lowest among the top 60 percent.

Comparing Under-five and maternal mortality rates among countries with similar GNI per capita, (Figure 26), Uganda seems to be at the expected level. Uganda has also made considerable progress to reduce maternal mortality over the past two decades. Uganda's maternal mortality rate declined from 600 to 440 deaths per 100,000 live births between 1990 and 2011 (Figure 25).

Figure 24: Trends in childhood mortality, 2000/01 - 2011



Source: UBOS DHS Reports 2000/01, 2006 and 2011.

Notes: According to UBOS (2012) age-specific mortality rates are categorized and defined as follows: (i) Neonatal mortality: the probability of dying within the first month of life. (ii) Postneonatal mortality: the arithmetic difference between neonatal and infant mortality. (iii) Infant mortality: the probability of dying before the first birthday. (iv) Child mortality: the probability of dying between the first and the fifth birthday. (v) Under-5 mortality: the probability of dying between birth and the fifth birthday. All rates are expressed per 1,000 live births except for child mortality, which is expressed per 1,000 children surviving to 12 months of age.

Figure 25: Under-five mortality by Region and Maternal Mortality rates

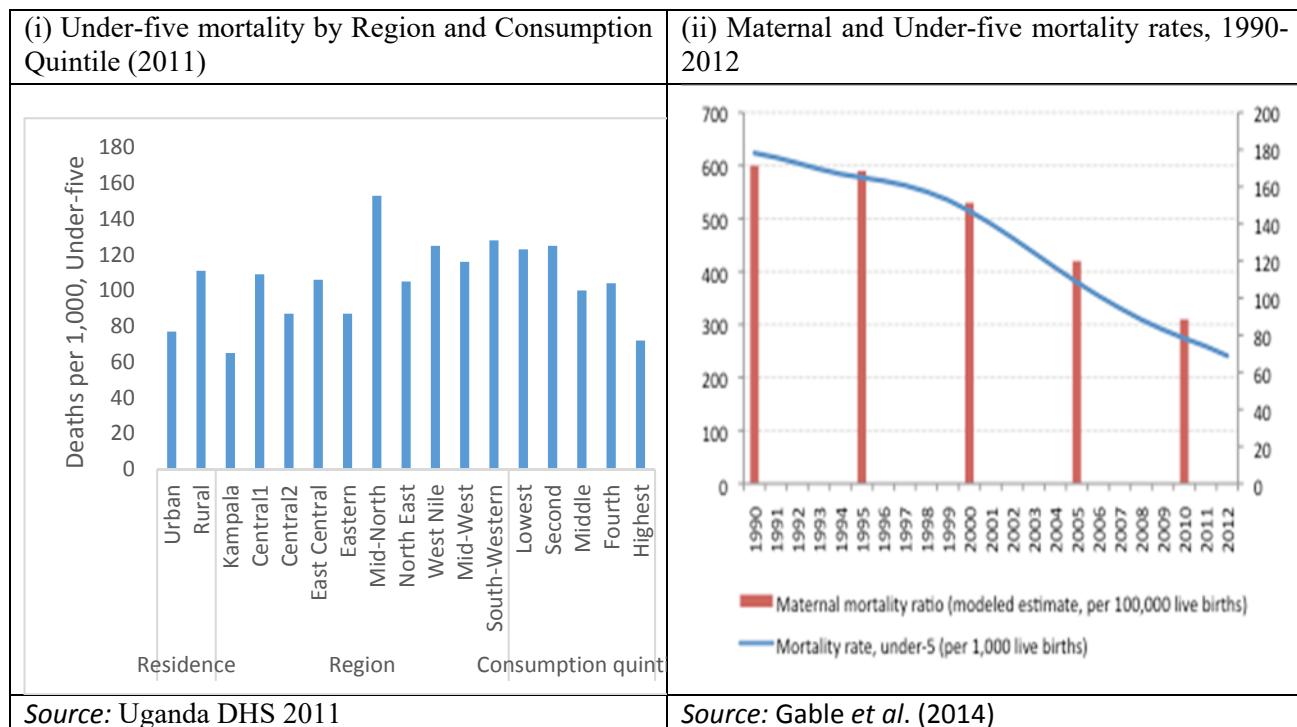
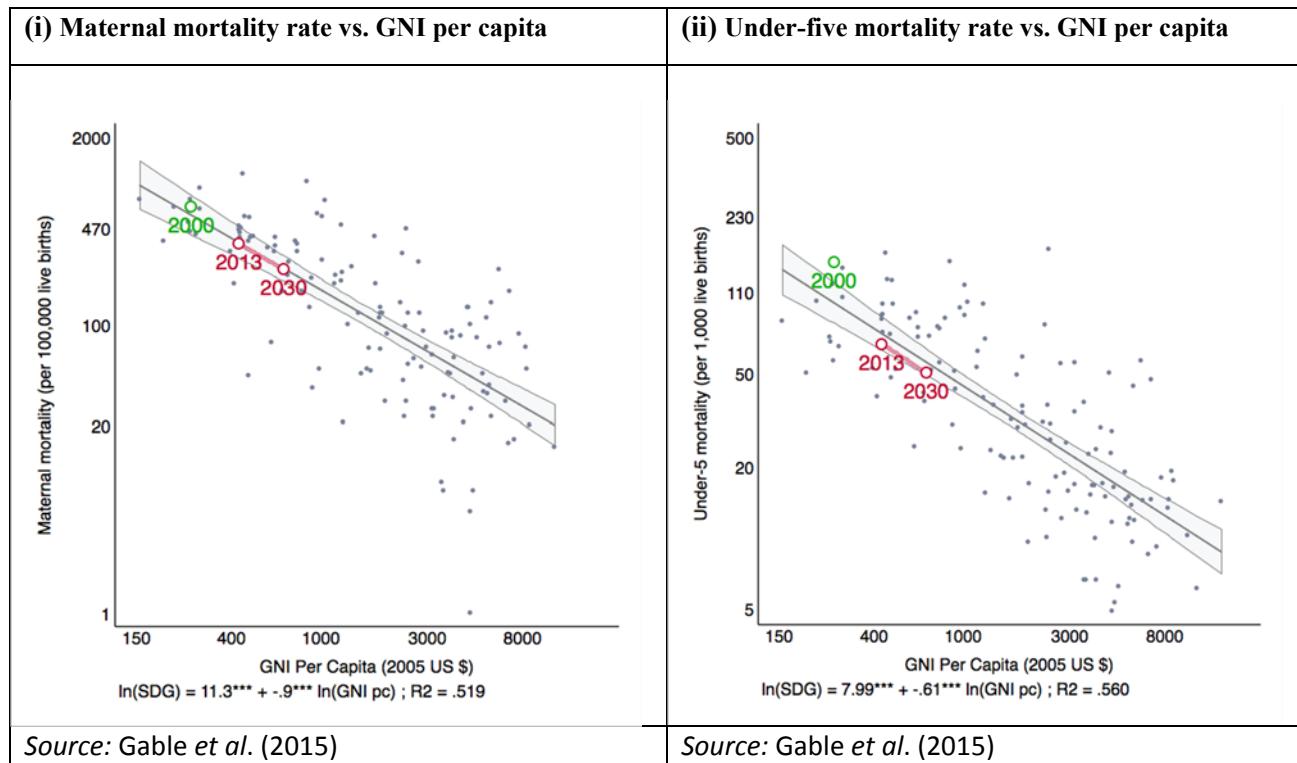


Figure 26: Maternal and Under-five mortality rates in Uganda and International Comparison



Anthropometric indicators for young children show some improvement since 1995, but the trends are uneven and malnutrition continues to be widespread. The analysis of children malnutrition is not only essential in its own right to monitor the sustainable development goals, but malnutrition also has direct impact on health and educational outcomes, including the ability to learn. Trends in the nutritional status of children under five years for the period 1995 through 2011 are shown in Figure 27. Stunting, defined as low height for age and an indicator of chronic malnutrition, was consistently high between the 1995 and 2001 DHS (at 45 percent). It came down to 38 percent in the DHS 2006 and dropped further in 2011 (at 33 percent). Nevertheless, the level of stunting remains quite high. This is associated with many long-term factors including deficiencies in nutrition (chronically inadequate levels of protein and energy and/or micronutrient deficiencies), frequent infections, as well as inappropriate feeding practices over a sustained period (Seff et al., 2014). Childhood stunting has long term effects that are long-term and often irreversible. It can cause delayed motor function and diminished cognitive ability; and children with low height-for-age in their early years may exhibit poor academic performance later in life

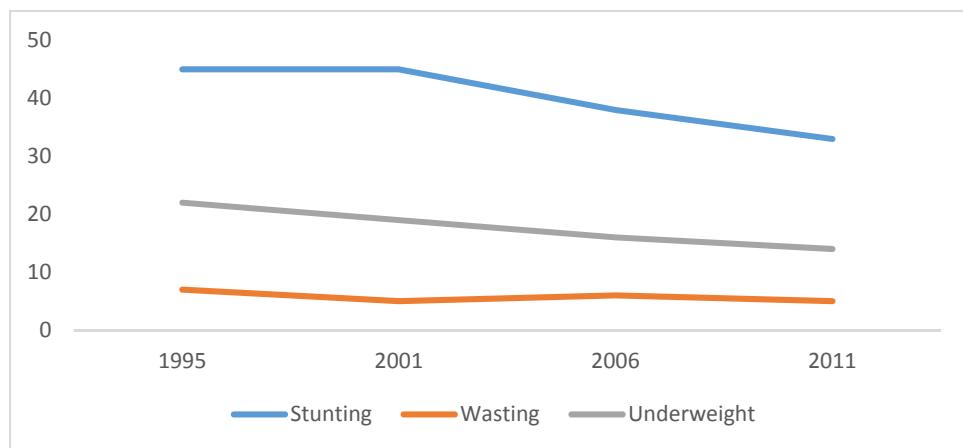
(UNICEF, 2007). This can adversely affect their economic outcomes, and the country's productivity and growth.

Wasting (low weight for height) is a measurement of acute malnutrition characterized by considerable weight loss or failure to gain weight, resulting in a child having a weight substantially below what would be expected of a healthy child of the same height (Seff *et al.*, 2014). Wasting is an indicator of current malnutrition and can change quickly over time; even showing seasonal patterns associated with changes in food availability and disease prevalence. Wasting poses a particularly imminent danger for under-5s and can be a strong predictor of child mortality (Seff *et al.*, 2014). In Uganda, wasting decreased slightly from 7 percent in 1995 to 5 percent in 2001, but has remained fairly unchanged since then.

Underweight (low weight for age) is a composite measurement of stunting and wasting as it is influenced by both height and weight. Underweight reflects both chronic and acute malnutrition and is a good indicator for assessing changes in malnutrition over time. The incidence of underweight in Uganda stands at 14 percent in 2011, decreasing by 8 percentage points since 1995, and has been declining gradually over the period from 1995 through 2001 and 2006 to 2011.

The nutritional status of children under five years of age is an important outcome measure of children's health. The outlook seems positive, particularly for stunting and underweight. The results show a downward trend in the percentage of children stunted and underweight over the last two Uganda DHS surveys, but the percentage of children who are wasted has remained stable.

Figure 27: Trends in nutritional status of children under 5 years (%)



Source: Uganda DHS 1995, 2001, 2006 and 2011

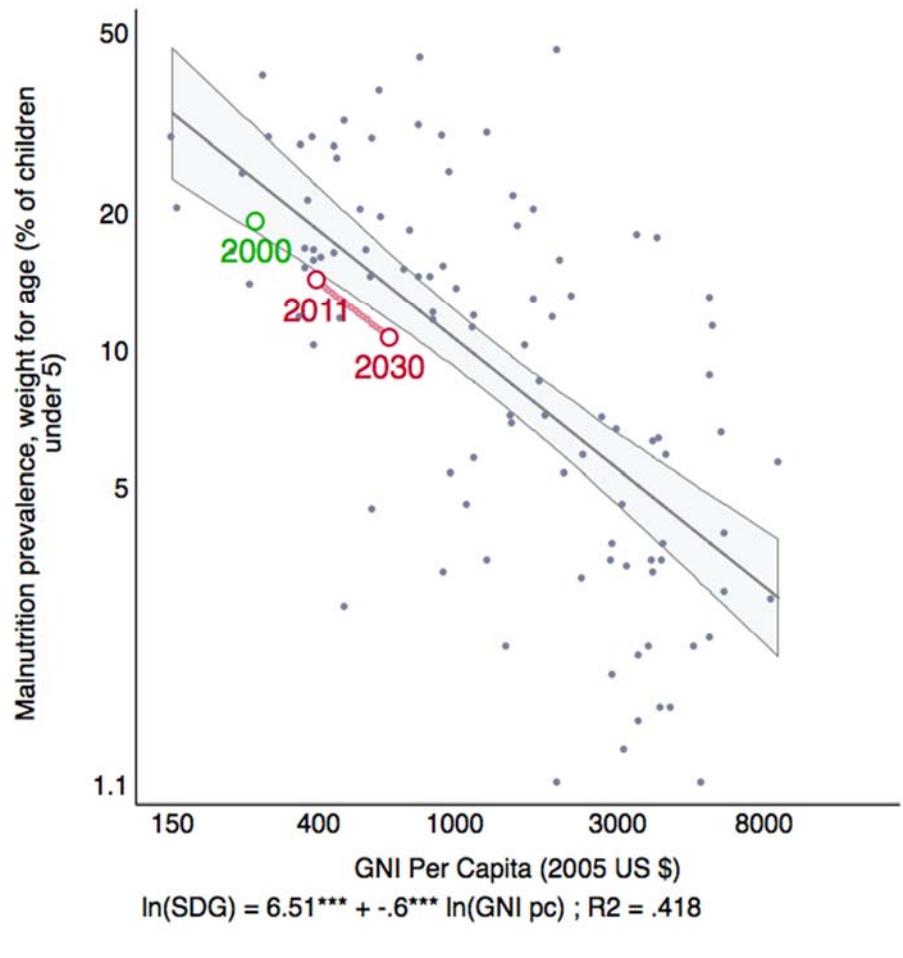
Uganda has a lower underweight rate compared to other low-income countries, and progress was recorded over the last decade

According to cross-country data for low- and middle-income countries, there is a strong correlation between poverty and malnutrition (Figure 28).¹⁶ Thus, it is not surprising to find that both poverty and malnutrition have declined during the recent decades of strong growth in Uganda. The expected number is 19.6 percent for a country with Uganda's income per capita (Gable *et al.*, 2014).¹⁷ Uganda's underweight rate is 14.1 percent of children under five years of age, is slightly below the expected value. This means that incidences of underweight in Uganda are fewer than in comparable countries. Perhaps this progress was partly due to the benefits of the Uganda Nutrition Action Plan that was launched in 2011 (discussed in Section II).

¹⁶ The correlation coefficient between the two variables is 0.60 in non-log form and 0.72 in log form.

¹⁷ The under-five underweight rate is defined as the percentage of children under the age of five years whose weight for age is more than two standard deviations below the median for the international reference population ages 0-59 months (WDI).

Figure 28: Malnutrition prevalence, Underweight (% of children under five years) versus Income per capita

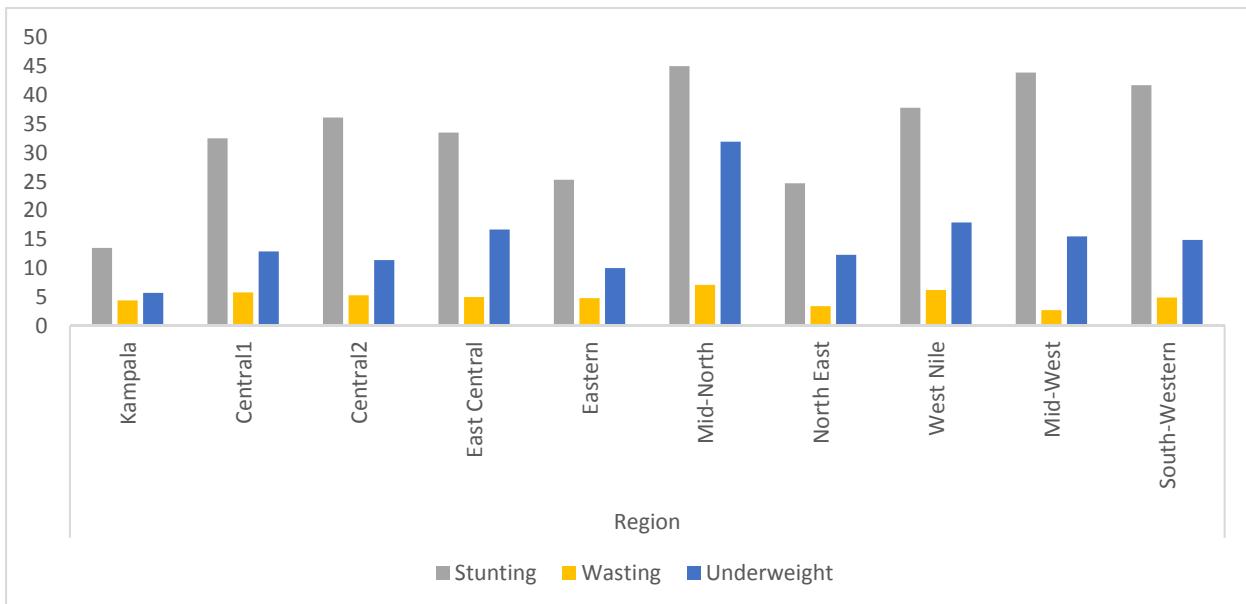


Source: Gable *et al.* (2014)

However, the puzzle revealed by this analysis is that the patterns of the nutritional outcomes are not as expected across regions and welfare. Stunting levels are higher in rural areas. Stunting incidences are lowest in Kampala, followed by the North-East and Eastern regions (Figure 29). Finding that North-East and Eastern regions outperform other regions in terms of stunting levels (with the exception of Kampala) is surprising and not as expected. The North-East is the poorest region and Eastern region is one of the poorest regions of Uganda. This might be related to the diverse possible causes of malnutrition including not enough nutrients in available staple foods, lack of knowledge of adequate feeding, lack of safe water and sanitation, etc. Malnutrition is not just a problem of poverty. As Figure 29 shows, one-fifth of the children in even the wealthiest

quintile are stunted. Western and south-Western regions, arguably regions that are wealthier, are noted for high malnutrition.

Figure 29: Nutritional status of children under 5 years, by Region, 2011 (in percent)



Source: Uganda DHS 2011

Wasting rates are similar for urban and rural areas. Similar to stunting, the North East and the Eastern regions are among the regions with the lowest incidence of wasting. Again, this is contrary to expectations given that these are one of the poorest regions of Uganda. Surprisingly, the poorest quintile observed lower incidence of wasting than the second, middle and fourth quintiles. Other than that, the pattern is clear as wasting rates fall as one goes up the wealth quintile. As with stunting, underweight levels are significantly higher in rural areas. Across regions, Kampala recorded the lowest underweight rate. Again, it is puzzling to see that the North East and Eastern regions, which are among the poorest regions, experienced lower incidences of underweight than many of the less poor regions.

VII. Conclusion

Uganda's progress in reducing income poverty over the last 20 years has been impressive – MDG1 was achieved more than five years ahead of the 2015 deadline. This paper analyzes nonmonetary dimensions of poverty in Uganda for levels and trends, to explore whether the marked reduction in income-based poverty are reflected on the nonmonetary dimensions of poverty. Uganda's progress in reducing income poverty is strongly reflected in some nonmonetary indicators of welfare. We show that physical asset accumulation has increased. Ownership of modern assets increased while ownership of traditional assets deteriorated. This is consistent with the view that the items are substitutes of each other (for example, the declining levels of bicycle ownership and the rise in motorcycle ownership).

With regard to housing conditions, the results show that the share of households using improved roof materials has expanded, and there seems to be a strong correlation between poverty and improved roof material. But improvements in wall and floor materials stalled between 2009/10 and 2012/13. And variations exist between poor and nonpoor households, and across regions of Uganda with regard to housing materials.

Although access to basic infrastructure services has improved overall over the last decade, it remains abysmally low, particularly for the poor. Access to improved sources of drinking water increased modestly over the last decade, access to improved sanitation facilities (which has health benefits) remains very low by regional and international standards, while access to electricity in Uganda is one of the lowest in the world. Regional and socioeconomic inequities in access persist.

The evidence presented in this paper shows that human capital outcomes have generally improved over time. Uganda has a higher Human Development Index than the average in Sub-Saharan Africa. In particular, Ugandan households have more education now than in the past, but education levels remain low and particularly so among poorer households. Adult literacy rates remained almost flat between 2005/06 and 2012/13, and are substantially higher among males than females. Youth literacy rates are high, with gender parity. There has been a significant increase in primary enrollment rates, but secondary enrollment remains very low, meaning that the increase in primary

school enrollment has yet to translate at the higher level. The net secondary enrollment rate is low mainly because of low primary completion rates, but cost of school, shocks and attitudes towards education also play a role in this. The secondary drop-out rate is very high. Overall, the results suggest that Uganda has been successful in enrolling children in primary school but unsuccessful in bringing them to full and timely primary completion. This implies that free tuition alone (offered by the Universal Primary Education and Universal Secondary Education programs) is not enough for primary completion rates and secondary enrollment rates. Efforts to improve secondary school enrollments must start with programs that would boost primary school completions. Further, the government should consider social protection programs that can enable households to cope with negative shocks, as this would enable children to stay in secondary school when a shock hits.

In terms of health, we find a substantial decline in all components of early childhood health (including under-five mortality, infant mortality, and child mortality rates) and maternal mortality over the last decade. Similarly, nutrition (anthropometric) indicators for young children (stunting, wasting and underweight) show some improvement in the last decade, but malnutrition continues to be widespread.

For many of the indicators regional differences exist. As with the monetary-based poverty measure, the Northern and Eastern regions generally lag behind the Central and Western regions. This is probably because unlike the Northern and Eastern regions, the Central and Western regions, were not coming out from extensive violence, which led to loss of human lives and assets, with long-lasting damaging effects on communities. Also, the Central and Western regions benefited from the boom in Kampala, as well as trade with Kenya and the global markets. Efforts to reduce extreme poverty in Uganda need to pay special attention on the poor in the Northern and Eastern regions of the country who are lagging behind on several indicators of poverty.

The paper also examines whether progress has been as fast as we would expect given the impressive performance of Uganda in reducing poverty. Cross-country regressions are used to compare Uganda to other countries. According to the evidence, Uganda under-performed on two of the 11 indicators analyzed - access to electricity and primary completion rates compared to other countries. In other words, this suggests that poverty reduction was slower than what would be

expected based on other countries' experience. For the remaining nine indicators -- improved water, improved sanitation, power outages in firms, youth literacy rates, net primary enrollment, secondary out-of-school rate, under-five mortality rate, maternal mortality rate, and underweight, Uganda's poverty reduction was either at the expected level or faster than what would be expected based on other countries' experience. Overall, the evidence indicates that progress on nonmonetary poverty was consistent with expectations, and even faster than what would be expected - for some indicators, based on other countries' experience. This is similar to Uganda's progress on reducing monetary poverty, which is also at the expected level based on experience in other countries.

These results have implications for policy. The evidence presented in this paper points to areas where the country is performing less than expected and which require special attention: access to electricity, improved sanitation and education. The Government of Uganda needs to improve investment in power generation so as to improve access to electricity. This would not only be a basic service for its citizens but would also have positive impact on productivity, boosting businesses and the economy of Uganda, given that improved access to electricity would strengthen the functioning of other sectors such as health facilities and schools. Usage of improved sanitation is very low, and improving access to this facility will be important for the population's well-being. There is also a need to increase primary education completion rates, as well as secondary education enrollment and completion rates, especially for girls, by addressing issues related to early marriage/pregnancy. There is no doubt that improved educational outcomes are important for improving people's income generation capacity, which can lift many out of poverty.

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