How resilient are escapes out of poverty?

Challenge Paper 2

Lucy Scott, Katharina Hanifnia, Andrew Shepherd, Milu Muyanga and Elsa Valli
Chronic Poverty Advisory Network, Overseas Development Institute, London

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Summary

Once a household has escaped poverty it is far from guaranteed that its members will continue to live at a level above the poverty line. Evidence from nine three-wave panel datasets (surveys which returned to interview the same household at three points in time) shows that at least 15% of households that escape poverty return to it in the future. In one case this proportion is 60%. Even if a household escapes poverty and remains out of it, this does not mean that its living standards continue to improve. Education, and particularly having the second four years of primary education or more, emerges as extremely important to sustain poverty escapes, as does land. The paper discusses a range of policies, including life-cycle investments in education, policies to secure access to land by the poorest people and local economic development policies all which can promote resilient poverty escapes and improve the quality of those escapes.

Acknowledgements

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Introduction

There have been great strides in the reduction of extreme poverty in recent years. The poverty headcount ratio halved between 1990 and 2010 from 42% to 21%; a decline in the absolute number of people living in extreme poverty, as measured by living below $1.25 a day purchasing power parity, from 1.9 to 1.2 billion. The Millennium Development Goals (MDGs) cemented an international norm and provided a yardstick for halving extreme poverty. The success of poverty reduction since 1990 means that 'eradicating extreme poverty is no longer a pipe dream'.[1] It is highly likely that the post-2015 development agenda, the successor to the MDGs, will advocate an agenda of 'getting to zero', for the eradication of extreme poverty. This would be an admirable aim. To-date though, success in the reduction of extreme poverty has been concentrated in China, East and Southeast Asia and to a certain extent South Asia. 'Getting to zero' involves ensuring that the policies, institutions and politics are right for the poorest people to escape extreme poverty in all contexts.

We know little about what happens to individuals and households after they escape extreme poverty. Do they continue on an upwards trajectory, improving their situation, perhaps even entering the burgeoning middle-class of South Asia and sub-Saharan Africa? Or, do their living conditions stagnate at a level just above the extreme poverty line? Alternatively, after a period out of poverty do these individuals and households return to living in their former situation? These questions about poverty dynamics are not just academic; they have implications both for the targets of the post-2015 agenda and more broadly for poverty reduction strategies.

Effective poverty reduction strategies involve both promoting the poorest people out of extreme poverty, as well as preventing people who are currently not living in extreme poverty from falling into it. The aim therefore, is not just 'getting to zero' but 'getting to zero and staying there'. Potentially effective instruments preventing people from slipping into poverty include old-age pensions, insurance, effective and affordable primary healthcare, disaster early warning systems and conflict prevention. Many interventions though, such as education, can both help to move people out of poverty and to prevent them from falling into it. The balance between policies and programmes which promote people out of poverty and those which prevent descent into poverty is likely to vary according to context.

The purpose of this paper is to investigate the factors which enable households not just to escape poverty; but to escape poverty, remain out of it and ideally to continue on a trajectory of improvement.

The extent of different poverty trajectories

Increasingly there is evidence about the extent and nature of different poverty trajectories; of who escapes, and why, as well as what drives other households or individuals into poverty. This evidence comes both from panel surveys - surveys which track the same individuals or households over time - as well as qualitative research methods including life histories and the stage of progress methodology.[2] Ideally a combination of panel survey analysis and qualitative investigation are needed both to describe and to explain poverty dynamics.

For instance, in his analysis of 293 life histories from rural Bangladesh, Davis (2011) finds that 79 life histories clearly show a pattern of long-term improvement; 71 of long-term decline; while the remaining 143 show neither a trajectory of clear improvement or of clear decline. In this instance then, the number of individuals on upwards trajectories almost equals the number on a downwards trajectory. CPAN's first challenge paper compiles evidence from panel surveys with two rounds and demonstrates that in many contexts, trajectories of descent into poverty are as, or nearly as, widespread as escape from it.[3]

Panel data with three waves (surveys carried out at with the same households at three different points in time, often with a gap of 2-5 years between each, though in practice the frequency of the waves is often dependent upon funding) is increasingly available, providing an opportunity to investigate a household wealth trajectory after escaping poverty, which can help to indicate the sustainability of poverty escapes. To date though, the majority of analysis of three-wave panel data has not investigated poverty dynamics, and where it has, has examined the number of waves that a household lives in poverty and what is associated with living in poverty in all three waves, in two waves, in just one wave, or never living in poverty across the three survey waves. Very little analysis of three wave panel data, meanwhile, examines the extent and nature of particular poverty trajectories (see Figure 1 for the possible trajectories across three waves of panel data).

Figure 1: Possible poverty trajectories across three waves of panel data

Wave 1   Wave 2   Wave 3

N= not poor
P= poor
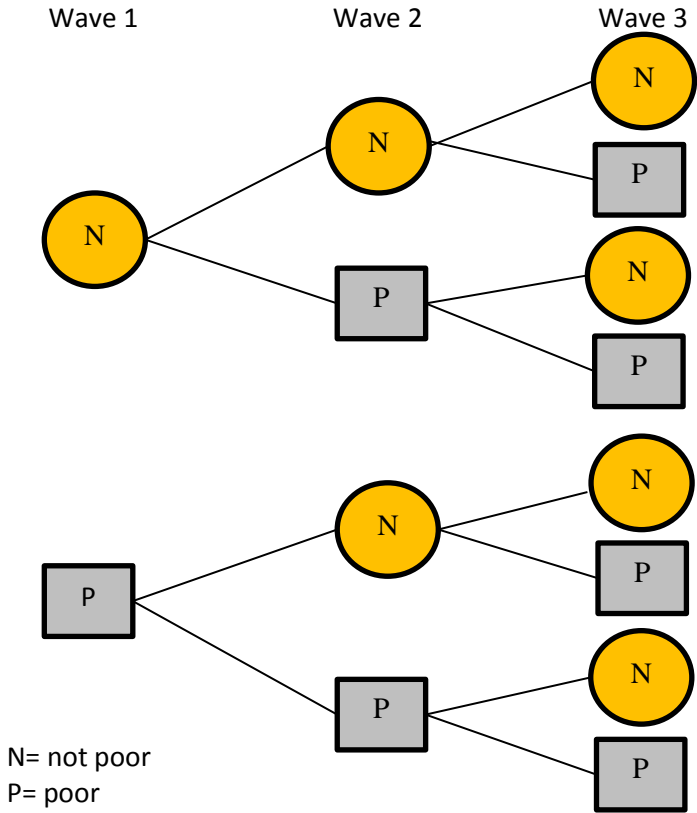
Table 1 combines new analysis for this paper and existing evidence about the extent of different poverty trajectories in three-wave panel data. Care should be taken when making direct comparison across the datasets, as the analysis of each uses national poverty lines, while the dates of survey waves and time-periods between them also varies. Further details of the surveys and the analysis undertaken for this paper are available in Box 1 and Annex 1.

Table 1: Household poverty trajectories from selected recent three-wave panels

	Ethiopian Rural Household Survey (ERHS)	Uganda National Panel Survey (UNPS)	Kagera Health and Development Survey (KHDS)	Tegemeo Agricultural Survey*	KwaZulu-Natal Income Dynamics Study (KIDS; South Africa)	South Africa's National Income Dynamics Study (NIDS)	Viet Nam Household Living Standards Survey (VHLSS)	Indonesia Family Life Survey (IFLS)	Philippines Family Income and Expenditure Survey (FIES)
Years of survey waves	1999 2004 2009	2005/06 2009/10 2010/11	1991 2004 2010	2004 2007 2010	1993 1998 2004	2008 2010 2012	2002 2004 2006	1993/94 1997/98 2000	2003 2006 2009
Years spanned by survey	10	6	19	6	11	4	4	7	6
%									
NNN	27.1	46.1	26.0	41.8	27.9	26.8	65.2	65.7	62.0
NNP	18.4	11.4	1.8	8.3	12.5	3.0	2.2	5.2	5.6
NPN	7.5	5.0	6.3	7.0	4.3	6.5	2.8	4.0	4.6
NPP	10.0	8.4	7.9	7.0	6.9	3.4	1.4	2.0	4.6
PNN	6.7	7.6	9.7	7.0	10.3	13.4	11.2	10.9	5.4
PNP	11.1	7.5	1.7	5.4	6.6	5.7	2.7	3.6	2.1
PPN	5.0	2.5	26.5	6.9	5.0	18.0	5.4	4.3	4.4
PPP	14.3	11.7	20.2	16.7	26.6	23.2	9.2	4.2	11.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
n	943	1416	654	1309	865	6508	1844	6403	6519

Based on per capita household expenditure data and using national poverty lines
*Uses income data
Sources: ERHS, Kagera, UNPS, NIDS, Tegemeo own calculations using survey data[1]
VHLSS: Baulch and Vu (2011)
KIDS: May, Woolard and Baulch (2011)
IFLS: Widyanti et al. (2009)
FIES: Reyes et al. (2011)

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[1] NIDS data available through the Southern Africa Labour and Development Research Unit. KIDS and ERHS data available from IFPRI. UNPS made available by the Uganda Bureau of Statistics on the World Bank website. KHDS data available through Economic Development Initiatives.

Box 1: The representativeness of the panel surveys referred to in this paper

Ethiopian Rural Household Survey (ERHS) is representative of households in non-pastoralist farming systems in Ethiopia. Given that only 15 communities are sampled, generalisations to the whole of rural Ethiopia can be done, but it should be noted that the survey is not truly representative of rural areas (Dercon et al., 2011; Dercon and Hoddinott, 2011).

Philippines Family Income and Expenditure Survey (FIES): provides a sample that represents the whole country and its 17 regions (RPNOS n.d.).

Indonesia Family Life Survey (IFLS) is representative of around 83% of the Indonesian population, covering 13 out of 33 Indonesian provinces (Widyanti et al., 2009).

Kagera Health and Development Survey (KHDS) is representative of the Kagera region in Tanzania.

KwaZulu-Natal Income Dynamics Study (KIDS): the initial 1993 KIDS survey was part of the World Bank Project for Statistics on Living Standards and Development and thus, was designed to be representative at the provincial level. The later 1998 and 2004 surveys excluded white and coloured households, because their sample sizes were small and clustered, making them unrepresentative of these race groups in KwaZulu-Natal. (May et al., 2006; May et al., 2011).

South Africa's National Income Dynamics Study (NIDS): cross-section samples are nationally representative (Finn and Leibbrandt, 2013).

Tegemeo Agricultural Survey is conducted nationwide and is representative of rural, non-pastoralist households in Kenya, covering all major, eight agro-ecological zones (Suri et al., 2008). It is representative of about 85% of the rural Kenyan population and about 60% of the rural areas (land surface). This is because the data set excludes the North Eastern region which is sparsely populated but constitutes about 40% of the Kenyan land.

Ugandan National Panel Survey (UNPS) covers a nationally representative sample of households (UBOS, 2010).

Viet Nam Household Living Standards Survey (VHLSS) is a nationwide survey that is representative of the whole country, its eight regions, provinces as well as urban and rural parts (GSOV 2006).

There are variations in the extent of different poverty trajectories across the nine datasets. In each survey there are households that remain consistently in poverty or out of poverty, as well as households that move into and out of poverty. In the case of the Ethiopian Rural Household Survey (ERHS), the poverty situation of the majority of households changes over the survey waves (just 14% of households are poor in all three rounds and 10% live out of poverty in each of the rounds). Roughly half the households in South Africa's National Income Dynamics Study (NIDS) move across the poverty line over the survey period (Table 1).

In some contexts households slipping into poverty outnumber those that escape poverty (Figure 2). In particular, more households fell into poverty than escaped poverty between wave 1 and wave 3 of the ERHS, Uganda National Panel Survey (UNPS) and the KwaZulu Natal Income Dynamics Study (KIDS). In contrast, South Africa's NIDS, the Kagera Health and Development Survey (KHDS, Tanzania), Indonesia Family Life Survey (IFLS) and the Viet Nam Household Living Standards Survey (VHLSS) each have more households escaping poverty between the first and third waves. The ratio of impoverishment to escape can also vary over time (as in ERHS, KHDS, KIDS and UNPS); perhaps due to the nature and timing of shocks, including those related to weather and food prices (Box 2).

Figure 2: Poverty Escapes and Descents across three Survey Waves
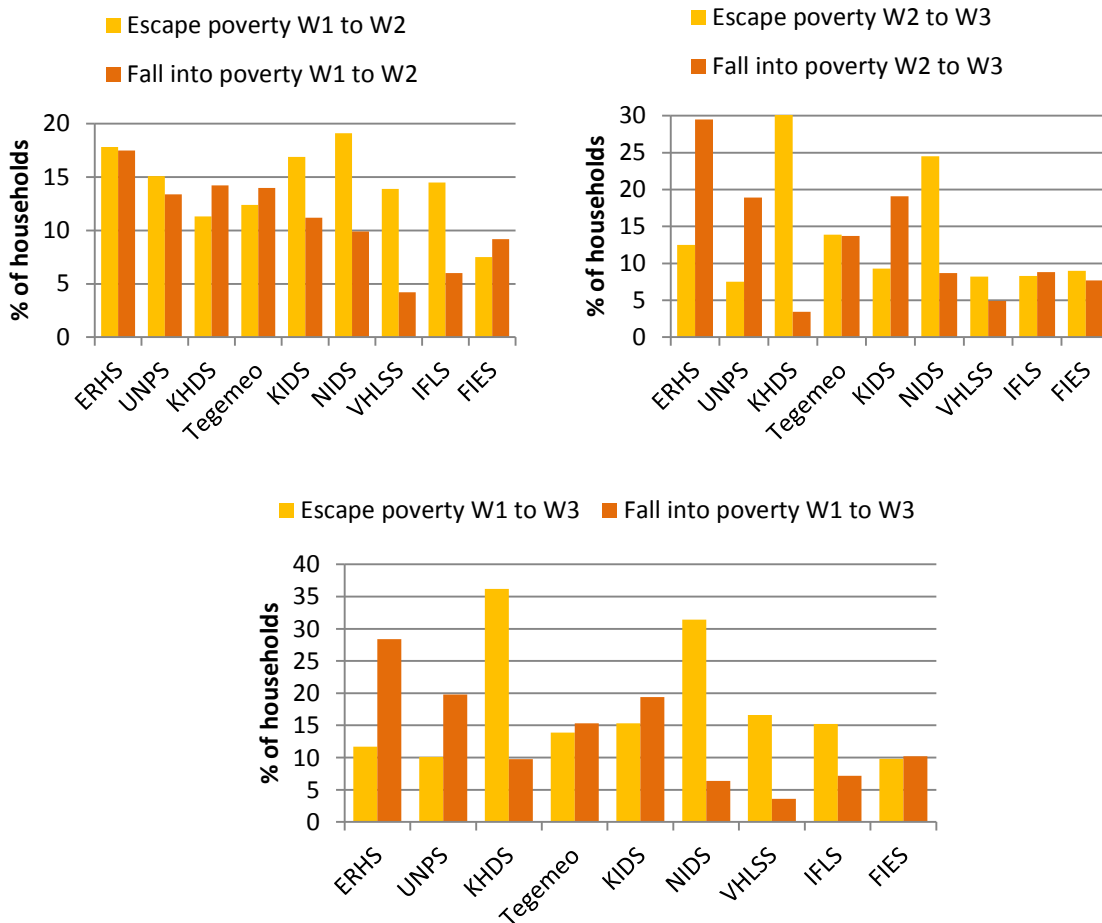
W1=Wave 1; W2=Wave 2; W3=Wave3.

Source: see Table 1, above
ERHS Ethiopian Rural Household Survey; UNPS Uganda National Panel Survey; KHDS Kagera Health and Development Survey (Tanzania); KIDS KwaZulu Natal Dynamics Study (South Africa); NIDS National Income Dynamics Study (South Africa); VHLSS Viet Nam Household Living Standards Survey; IFLS Indonesia Family Life Survey, FIES Philippines Family Income and Expenditure Survey.

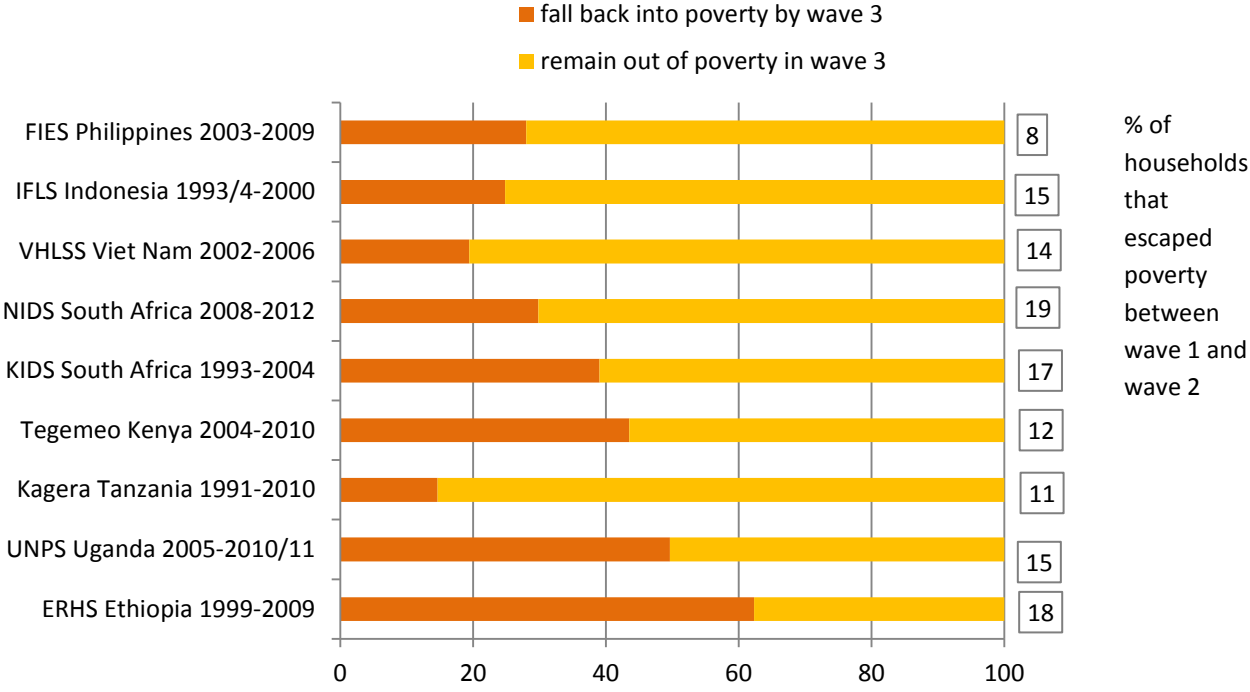**Box 2: A note on the findings from the Ethiopian Rural Household Survey**

Analysis of the 1999, 2004 and 2009 rounds of the ERHS shows an increasing poverty headcount across the ten years; from 36% in 1999, to 35% in 2004 and 52% in 2009. This reflects the fact that between 2004 and 2009 over twice as many households fell into poverty than escaped it (in contrast, marginally more households escaped poverty than fell into it between 1999 and 2004). This increase in the poverty headcount is at odds with national poverty statistics, which report that in 2004/05 39% of the population lived in poverty compared to 30% in 2010/11.

What are the reasons for this disparity?

2009 was a particularly bad year in rural Ethiopia; a year of drought during a period of rising food prices. Several villages in Tigray region and SNNPR experienced severe localised droughts. Compounding this, the ERHS was undertaken approximately six months after the 2008 harvest (there is no consistent timing for the ERHS across the rounds) and in the aftermath of the rapid food prices rises of 2008. Many households covered by the ERHS are net food purchasers and the survey round may have occurred when food stocks were depleted and households were just entering the market and, due to high prices reducing the quantities of food they consumed (Dercon et al., 2011).

Even if a household escapes poverty then its status as non-poor is not guaranteed. Figure 3 considers just those households that escaped poverty between wave 1 and wave 2 and illustrates their fortune in wave 3. With the exception of the ERHS, it shows that the majority of households that escaped poverty between wave 1 and wave 2 remained out of poverty in the third wave. This is good news. However, it also shows that in each survey at least 15% of households that escaped poverty in the first two survey waves fell back into poverty. It is the households surveyed in the Kagera region of Tanzania (KHDS) which, after escaping poverty, are the most likely to remain out of it, followed by those in Viet Nam's VHLSS and then the IFLS in Indonesia.

Figure 3: The subsequent fortune of households that escaped poverty between wave 1 and wave 2

Legend:
- ■ fall back into poverty by wave 3
- ■ remain out of poverty in wave 3

Study	% of households that escaped poverty between wave 1 and wave 2
FIES Philippines 2003-2009	8
IFLS Indonesia 1993/4-2000	15
VHLSS Viet Nam 2002-2006	14
NIDS South Africa 2008-2012	19
KIDS South Africa 1993-2004	17
Tegemeo Kenya 2004-2010	12
Kagera Tanzania 1991-2010	11
UNPS Uganda 2005-2010/11	15
ERHS Ethiopia 1999-2009	18

Sustained poverty escapes and the national context

How does the sustainability of poverty escapes relate to the country context? Figure 4 presents the ratio of escapee households that return to living in poverty (PNP) to those escapees that remain living out of poverty (PNN) for the studies where national generalisations can be made (see Annex 1 for details of the surveys). It highlights the greater sustainability of poverty escapes in Indonesia, the Philippines, South Africa and Viet Nam compared to Ethiopia and Uganda. Figure 5 the gives details of the national context for each of those surveys, including the economic growth rate, value added agricultural growth rate, public expenditure on education (a component of pro-poor public spending) and government effectiveness (Annex 2 gives more details on these measures).

Figure 4: PNP (poor-non poor-poor): PNN (poor-non poor-non poor) ratio
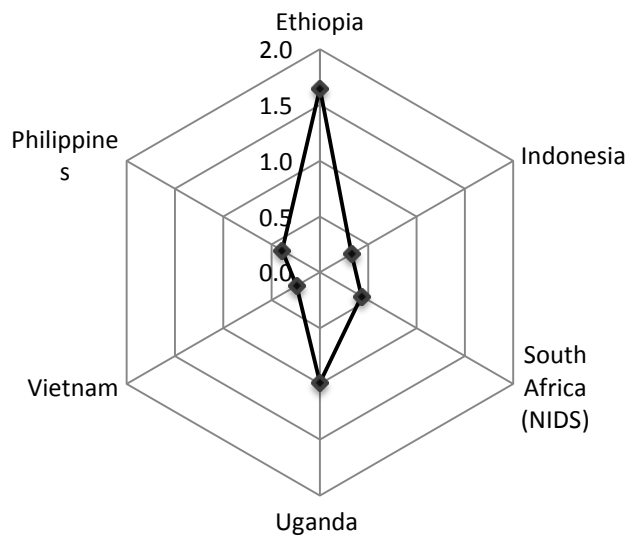
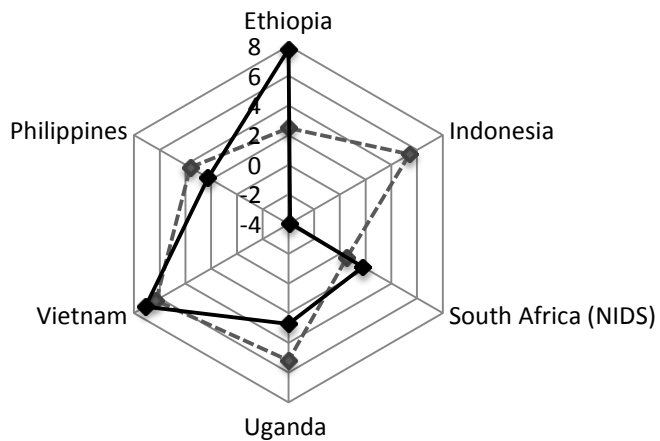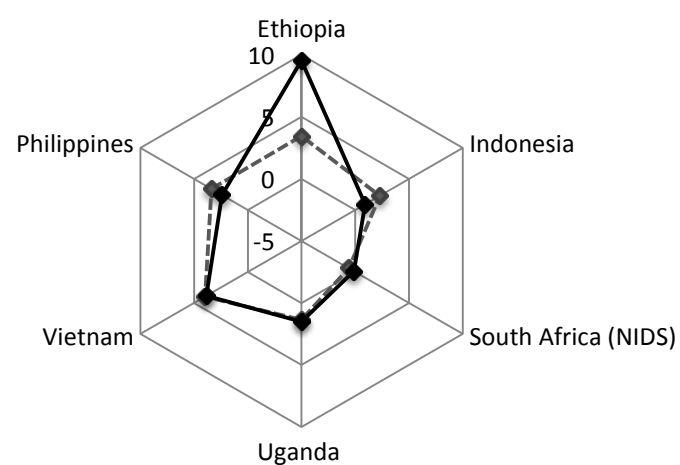PNN Normalised to 1

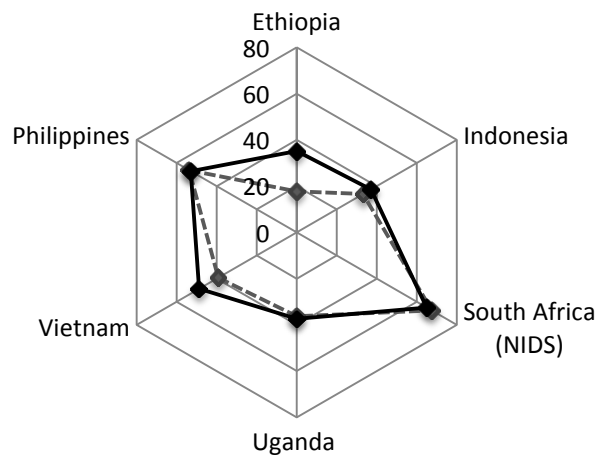**Figure 5: The National Context**

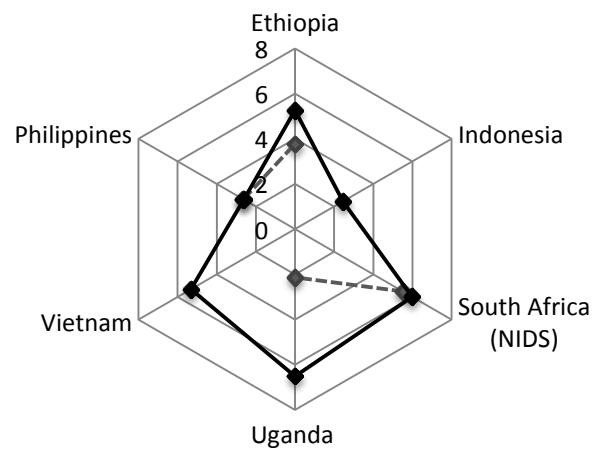Average Annual GDP per Capita Growth

Average Annual Agriculture (value added) Growth
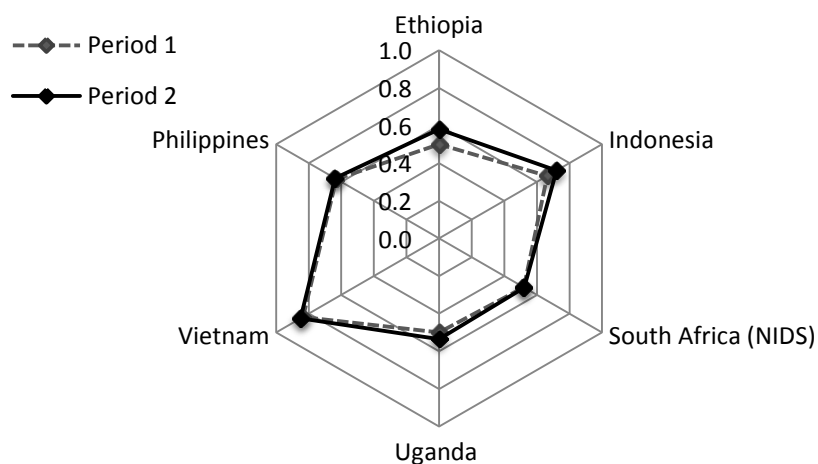

Average Government Effectiveness Percentile Rank

Average Public Expenditure on Education as % of GDP

Average Human Development Index (HDI) Value

We analyse our sample of countries in two groups – those performing above and those performing below the sample average of 0.73 PNP to one PNN household. Ethiopia and Uganda have PNP to PNN ratios above the sample average, with 1.65 and 0.99 PNP to one PNN household. Ethiopia and Uganda also have several similarities in terms of country-level indicators. Both see improvements in the average Government Effectiveness (GE) percentile rank and the average Human Development Indicator (HDI) in period two, but nonetheless rank very low on these compared to other sample countries. Moreover, both countries have below sample average public expenditures on education as percentage of GDP in period one, but experience an increase that puts them above the average in period two. Besides, average agriculture (value added) growth of both countries increases, whereby Ethiopia's growth is above and Uganda's below the sample average in both periods. Finally, country experiences with regards to average annual GDP per capita growth diverge. Ethiopia has a higher average annual growth rate over the second period than the first, while Uganda experiences the opposite. It has to be noted that Ethiopia has a higher agriculture (value added) level and Uganda a higher GDP per capita level at the start of both periods.

In contrast, Viet Nam, Indonesia, Philippines and South Africa (NIDS) have PNP to PNN ratios below the sample average with 0.24, 0.33, 0.39 and 0.43 PNP to one PNN household respectively. Hence, poverty escapes are more sustainable in these middle-income countries than in the low-income countries, Ethiopia and Uganda. Again, we can see some similarities between them, however their experiences are more variable. Interestingly, the East Asian countries, Viet Nam, Philippines and Indonesia experience increases in their average HDI values and have scores equal to or above the sample average in both periods. Similarly, the Philippines, Viet Nam and South Africa have comparatively high average percentile ranks on the GE, although the score decreases slightly for South Africa and the Philippines, while it increases for Viet Nam in period two. In terms of average public expenditure on education as percentage of GDP, both Viet Nam and South Africa have above sample average expenditures. However, data for Viet Nam and Indonesia is only available for the second period. Like for Ethiopia and Uganda, country experiences on GDP per capita growth and agriculture (value added) growth

are diverse. Viet Nam has around sample average growth in agriculture in both periods, while South Africa in turn has the lowest (negative) agriculture growth rate in our sample. Indonesia in turn has the highest total agriculture (value added) level of these four countries, however experiences very low agriculture (value added) growth. Finally, average annual GDP per capita growth rates increase for Viet Nam and South Africa in period two, while those of Indonesia and the Philippines decrease. Viet Nam's growth rates are also above average, while those of South Africa and the Philippines are below. Indonesia has an above sample average growth in the first period, which falls and becomes negative in the second period turning Indonesia into a contracting economy. Note that South Africa has the highest GDP per capita levels at the start of both periods, followed by the Philippines, Indonesia and then Viet Nam.

High average HDI and GE scores appear to be associated with low PNP to PNN ratios, as is particularly evident in the case of Viet Nam. Viet Nam performs best in terms of the PNP to PNN ratio and has high scores in both HDI and GE. Average public expenditure on education may also play a role in aiding the sustainability of escapes from poverty. The evidence on annual average growth of agriculture and GDP per capita growth is less clear and country-specific. Though slightly inconclusive, this investigation of the national context suggests that policies, particularly around human development, governance and pro-poor spending are important for resilient poverty escapes.

The quality of upwards mobility and poverty escapes

This section investigates the subsequent fortunes of households that lived in the poorest wealth quintile in the first wave and those that escaped poverty between wave 1 and wave 3. In particular, it examines the extent of upwards mobility and the quality of poverty escapes – or the distance that households escaping poverty move above the consumption poverty line.

Existing analysis of the Ethiopian Rural Household Survey presents a reasonably positive picture of the extent of economic mobility by the poorest households. While around 32% of households in the bottom consumption quintile in 1994 remained in the lowest quintile in 2004; 24% moved up one consumption quintile; 17% two quintiles and 12% moved from the bottom consumption quintile to the top one over the ten year period.[4] Analysis of panel data from rural Sindh, Pakistan, also shows substantial upward mobility for households in the poorest income quintile over the longer time period of 18 years (1987/88 to 2004/05). Here, while 22% of households in the poorest quintile were living in the same quintile 18 years later, over half had improved their situation to the extent that they were living in one of the top three income quintiles in 2004/05.[5]

Figure 6 presents new analysis of the degree of economic mobility by households across three survey waves. As the findings of the analysis presented above, it divides the population into consumption wealth quintiles and investigates the fortunes in wave 3 of households which, in wave 1, were in the poorest consumption quintile.

Figure 6: Movement across the consumption quintiles between wave 1 and wave 3 by the poorest households
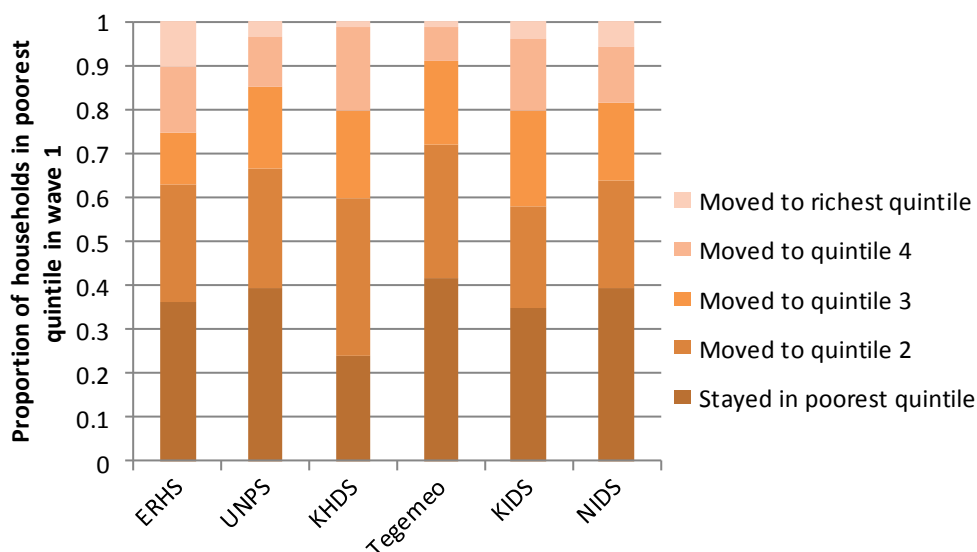
As Figure 6 shows, in each context the majority of households in the poorest wealth quintile in wave 1 lived in a different wealth quintile in wave 3. Meanwhile, the majority of households that left the poorest wealth quintile moved up just one wealth quintile. This is not to say though that

some households were not able to significantly improve their situation. In Uganda, 15% of households in the poorest wealth quintile in wave 1 lived in the wealthiest two quintiles by wave 3. Meanwhile, in the other contexts roughly 20% of households in the poorest wealth quintile in wave 1 lived in the two wealthiest quintiles in wave 3.

The degree to which a household moves above a consumption poverty line is one measure both of the quality of that escape and also of its potential future sustainability. Living at a level just above the poverty line leaves you vulnerable to falling below it in the future. The recent World Development Report shows that 75% of people in developing countries live on less than US$4 a day, arguing that they are at risk of dropping into extreme poverty when faced by shocks.[6] Other work on the role of environmental disasters in poverty dynamics, specifically in Ethiopia and Andhra Pradesh (India), shows how the probability of subsequently falling into poverty decreases as the current level of household consumption increases above the poverty line.[7]

Evidence from India, Uganda, Kenya and Peru highlights the poor quality of poverty escapes in these contexts and how the majority of households moving out of poverty see just small improvements in living conditions.[8] New analysis for this paper (Figure 7) illustrates the levels of household per capita consumption across the three survey waves by households that escaped poverty between wave 1 and wave 2. It shows that, in all four contexts, households that returned to living in poverty had, on average, lower per capita consumption in wave 2. In Uganda, rural Ethiopia and rural Kenya, households that remained out of poverty in wave 3, none-the-less saw decreases in their per capita consumption: they are not necessarily on a linear trajectory of improvement. In the case of Uganda, their consumption fell from a level of 2.2 times the poverty line in wave 2 to 1.9 times the poverty line in wave 3. For Ethiopia this decline was from 2.3 to 1.7 times the poverty line. This may say something about changing macroeconomic conditions or relative prices, for example food prices (Uganda Poverty Status Report), and potentially draws into doubt the sustainability of those poverty escapes. Meanwhile, in South Africa those households escaping poverty between wave 1 and wave 2 continue to see their consumption rising by wave 3.

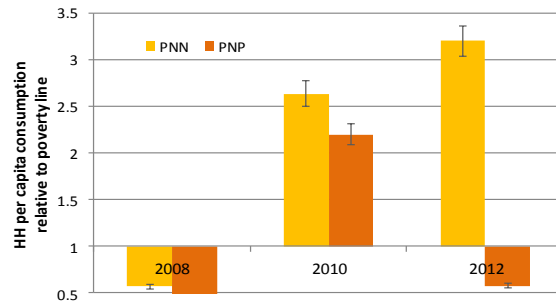**Figure 7: Household per capita consumption relative to the poverty line**
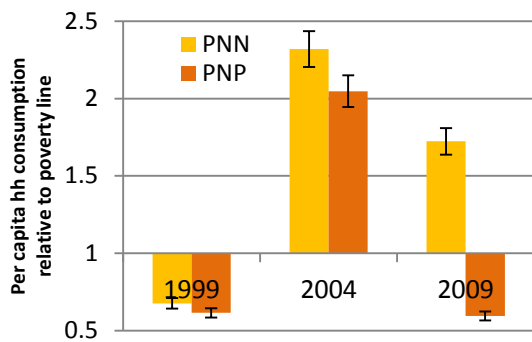
Uganda
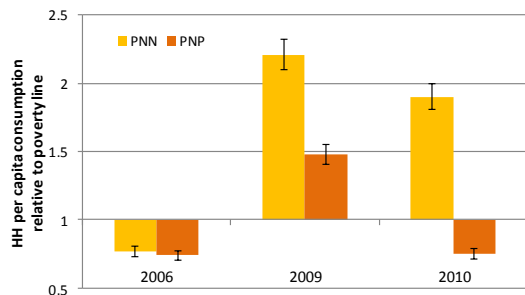
Source: Uganda National Panel Survey
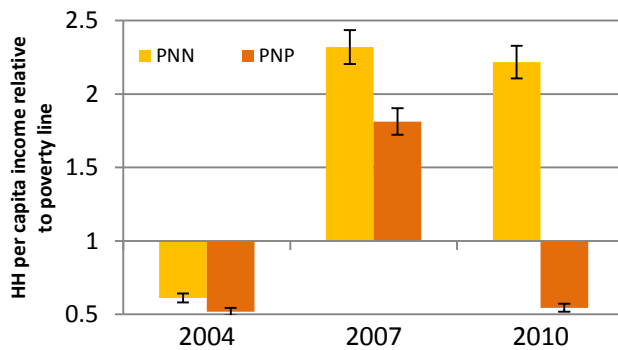
South Africa

Source: National Income Dynamics Study

Rural Ethiopia

Source: Ethiopian Rural Household Survey

Rural Kenya

Source: Tegemeo Agricultural Survey

Error bars with 5% value

PNN poor wave 1, non-poor wave 2 remain non-poor wave 3. PNP poor wave 1, non-poor wave 2 and poor wave 3.

The drivers of poverty escapes and sustained poverty escapes

Escaping poverty is a combination of both increasing assets (in the form of natural, social, physical, economic and human capital) as well as increasing returns from those assets.[9] We increasingly know more about the factors associated with upward mobility and escapes from poverty. While ultimately context specific, there are some general findings. In particular, household diversification of income sources through both agricultural and non-agricultural means, including improved earnings from the informal sector and establishing a successful non-farm business, crop diversification and livestock diversification are associated with poverty escape across a range of contexts.[10] Whether a household is able successfully to use agricultural diversification as a route out of poverty depends in-part on whether they have sufficient endowments of land and human capital.[11] However, even for those households that move out of poverty through involvement in the non-farm economy, agriculture is often an important component in enabling them to access profitable non-farm activities.[12]

Transport options, and particularly a community being connected by an all-weather road as well as having access to information, are both important to enable households living there to escape poverty.[13] Studies that track migrants highlight the importance of migration and the remittances sent back home as contributing to poverty escapes.[14]

Education, meanwhile, is argued to be the most important endowment in escaping poverty, due to its link with improved earnings[15] and educating the next generation a key component of intergenerational poverty escapes.[16] However, the link between education and increased earnings is not automatic, with information on alternative opportunities and career pathways along with social connections remaining essential for education to contribute to poverty escapes.[17] The exact level of education required for poverty escapes is context specific; in many contexts post-primary education is needed.[18] In Ethiopia, completing primary education is more effective at improving welfare in urban than in rural areas, with rural employment not being as education-intensive as that in urban areas.[19] In Pakistan, though education may be a component of poverty escapes, on its own it is insufficient to move people out of poverty.[20] Education needs to be of a good quality and provide skills relevant to the world of work if it is to be effective at contributing to poverty escapes.[21]

Similarly, it is not just one event that drives households into poverty. Rather, it is a sequence of events, or shocks, which are behind poverty descents.[22] Analysis of panel data for rural Kenya reveals that for roughly half of households experiencing a decline in asset wealth over a nine year period, this is attributable to a disparate set of shocks, including death and illness.[23] Certainly, health shocks emerge as a key driver of poverty across a range of contexts,[24] as do environmental shocks including drought[25] and floods.[26] In rural economies, agricultural shocks have important negative effects.[27] Other context-specific shocks and stresses contributing to declines into poverty include excessive alcohol consumption in Uganda[28] and dowry payments in the case of Bangladesh.[29]

However, it is not just the incidence of particular shocks that are related to poverty trajectories, but also the ability of a household or individual to manage and cope with that shock. Panel data from the Kagera region of Tanzania highlights how the richest households do not suffer negatively from illness or agricultural shocks.[30] Particularly for those richest households, shocks can be an opportunity for them to strengthen their situation,[31] purchasing cattle sold at low prices under distress conditions, for instance.

Less is known about the factors behind sustained escapes from poverty and this is what this section investigates. Why do some households that escape poverty remain out of poverty, while others fall back below the poverty line? There is currently little research that provides answers to this question. The work that is available, which is from Viet Nam, highlights the importance of education in sustaining poverty escapes.[32]

This section presents results from sequential logit models to examine the factors associated with sustained poverty escapes. This model imposes structure on poverty dynamics and, in this instance, consists of seven logit models, which are estimated in the order that households would make poverty transitions[33] (see Figure 1 for these transitions). This model incorporates the values of explanatory variables at baseline, with the exception of shocks where information is included on shocks preceding the second and third waves. Annex 3 gives the results of the sequential logit model as used for five datasets (the Ethiopian Rural Household Survey, Kwa-Zulu Natal Income Dynamics Study, South African National Income Dynamics Study, Uganda National Panel Survey and Tegemeo Agricultural Survey). Where the odds ratio is greater than one, this means that the variable increases the probability of a household escaping poverty in that transition period.

The factors associated with sustained escapes from poverty are context specific and the key messages from the results of the sequential logit models are summarised below.

In rural Ethiopia, owning more cultivable **land** is associated with escapees remaining out of poverty in wave 3. **Small households** are also more likely to remain out of poverty. Another important factor in sustaining poverty escapes is living in a community which experienced **fewer shocks** and is **closer to a town**. Meanwhile, perhaps counter-intuitively, a household where the head has informal education is more likely than one where the head has no education to return to living in poverty in wave 3.

In rural Kenya escapee households with a **smaller share of children** were more likely to remain out of poverty in wave 3. The **education** of the household head, particularly having secondary education or higher is also associated with sustained poverty escapes.

Sustained poverty escapes in Uganda are associated with receiving **remittances**. Living in the **Central region** is also an important factor. Meanwhile, escapee households which remained out of poverty in wave 3 were significantly more likely to have more rooms per person in their house and, counter-intuitively, have more elderly members, than those households that slipped back into poverty.

The Kwa-Zulu Natal Income Dynamics Study (KIDS) also reveals that the right to use arable **land** and the household head having three or more years of **education**, are significantly associated with sustained poverty escapes.

The nationally representative South African National Income Dynamics Study also highlights the importance of education of the household head in sustaining poverty escapes, in particular that the household head has attended **junior primary school or above** (grade 4 or more). Households where the head has this level of education are significantly more likely to continue living out of poverty than households where the household head has only attended the first three grades of school or less.

The factors associated with living out of poverty vary according to the transition. This means that the factors associated with sustained household escapes are not necessarily the same as those associated with moving out of poverty.

Many more explanatory variables have a significant impact on whether or not a household is poor or not in wave 1. Living in an urban location, having a smaller household, a male household-head and a smaller share of children are all associated with living out of poverty in wave 1 of KIDS; along with the years of education of the household head, the household cultivating land and household having a non-agricultural self-employed enterprise. However, these factors are not consistently significant across the two subsequent transitions. That there are more significant explanatory variables for the first transition compared to the latter two is partly a function of the smaller sample size at the last transition where households are in four different poverty dynamics groups, rather than the two of the second transition.

Variables that have a significant positive impact on living out of poverty in more than half of the transitions are; years of education of the household head (KIDS and UNPS), the household head having more than the first three grades of education – including having primary school, high school, tertiary education or more (NIDS), owning a computer (NIDS), a small household size (ERHS and NIDS), low share of children (NIDS and Tegemeo), a greater area of owned or cultivable land (ERHS and UNPS), living in the central region (UNPS) and being a member of a farmer's group (Tegemeo).

Across the transitions the significant impact of the same variable can vary in direction. This includes for remittances and share of elderly (UNPS), the age of the household head (KIDS) and area of land owned (KIDS).

Table 2 presents the variables associated with escaping poverty, or remaining out of poverty, at the final transition. This highlights the wide range of factors associated with different poverty trajectories both within, and across contexts. It is not just that a different set of factors are associated with remaining out of poverty and escaping poverty, but that these factors also vary according to the previous poverty trajectory of the household. Analysis of panel data in India also highlights that it is a diverse range of factors that are associated with poverty escapes and descent and that the context-specificity of factors calls, in a large country such as India, for sub-national policy making.[34]

Table 2: Factors significantly associated with escaping poverty or remaining out of poverty at the third transition

	ERHS, rural Ethiopia	Tegemeo, rural Kenya	UNPS, Uganda	KIDS, KwaZulu-Natal	NIDS, South Africa
N P then escape poverty	Share elderly (+) **Head second four years of primary education (-)** **Region** **Month**	**Share of children (-)** **Household head primary education (+)** **Value of cattle (+)** *Household head male (-)* *Household head occupation in farming (+)*	Household size (-) **Age head (+)** **Drought/ irregular rain 2009 (-)** Value cattle (+) **Region**	**Head secondary or post-secondary education (+)** Remittances (+) **Injury/ illness 2004 (-)** **Number cattle (+)**	Head junior primary education (+) **Head senior high, tertiary or above education (+)** Share employed members (+) **Livestock (-)** Computer (+) Death/illness 2008 (-) Region
P P and escape poverty	Head secondary and higher education (-) **Head informal education (-)** **Distance to town (-)** **Region**	**Share of children (-)** Rainfall received (-) Landholding (+)	**Share elderly (-)** **Share children (-)** *Second 3 years primary school (-)* **Remittances (+)** *Episode illness 2011 (+)* *Rooms per person (-)* Protected water (-) **Toilet (+)** **Value agriculture equip (+)** **Region**	**Urban cluster (+)** Non-agricultural self-employment (+) *Injury/ illness 2004 (+)* *Piped water (+)* **Toilet (+)**	**Share children (-)** **Household head junior high, senior high, tertiary or above education (+)** **Electricity (+)** **Death/ illness in 2012 (-)** **Region**
N N and stay out of poverty	**Area of cultivable land owned (+)** Storage of cereals and pulses (+) Community shocks (-) **Region** Month	**Share of elderly (-)** **Share of children (-)** **Number of deaths of household members (-)** **Distance to the nearest electricity supply (-)**	**Urban cluster (+)** Share children (-) Head first four years primary education (+) **Head second three years primary education, secondary or post-secondary education (+)**	Head secondary or post-secondary education (+) Remittances (-) **Electricity (+)** Access to farming land (-) **Permanent**	**Household size (-)** **Head junior primary, senior primary, junior high, senior high, tertiary or above education (+)** Computer (+) Electricity (+) Region

				road (+)	
		Distance to the nearest tarmac road (+) **Value of cattle (+)** Value of farm assets (+) **Farmers' group membership (+)**	Head works in agriculture (-) Rooms per person (+) Protected water (+) Value cattle (+) Region		
P N and stay out of poverty	**Household size (-)** Age head **Head informal education (-)** **Area of cultivable land owned (+)** Spending on housing (+) **Distance to town (-)** **Community shocks (-)**	**Share of children (-)** Household Head secondary or post-secondary education (+)	*Share elderly (+)* **Remittances (+)** *Episode illness 2009 (-)* **Rooms per person (+)** **Region**	**Head second three years primary school (+)** **Head secondary or post-secondary education (+)** *Head regular wage (-)* **Access to farming land (+)**	**Share children (-)** **Household head junior primary, senior primary, junior high, senior high, tertiary or above (+)** Region

Variables included in table when p <0.1[2]. Variables with p<0.05 in bold
 (+) the presence of this factor, or an increase in the level of this continuous variable, increases the likelihood of being out of poverty in wave 3.
(-) the presence of this factor, or an increase in the level of this continuous variable, decreases the likelihood of a household being out of poverty in wave 3.
Italics: *unexplained/ unexpected results*

Figure 8 gives a stylised interpretation of the factors that are associated with a household living in poverty in wave 1, with poverty escapes between wave 1 and wave 2 and then with sustained poverty escapes. Given that the pathways out of poverty vary according to the context, one diagram presents the results from the two South African studies, while the other gives those for rural Ethiopia and Uganda. The figures show how education is associated with both escapes and sustained escapes while land is primarily associated with sustained poverty escapes. Meanwhile, whether or not the community is either close to a town, or connected to a nearby town through an all-weather road is important for poverty escapes in South Africa and sustained poverty escapes in rural Ethiopia and Uganda.

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[2] A note on the variables present in the surveys: ERHS has no information on household electricity, water and sanitation facilities. The electricity variable in UNPS did not have enough variation to be used. NIDS has no information on land in wave 1.

Figure 8: The factors associated with living in poverty, escaping poverty and sustained poverty escape[3]

South Africa (KIDS and NIDS)

| Large household
Female household head
Head works in agriculture
Head has little education
Poor quality housing
No electricity | Small household
Older househol dhead
Head has more than 3 years of primary education
WATSAN
Community has all-weather road | Head has more than 3 years of primary education
Cultivable land |

Live in poverty in wave 1   Escape poverty in wave 2   Escape poverty in wave 2 and remain out in wave 3

| Large household
Age household head
Head works in agriculture
Head has little education
Poor quality housing
Little land owned | Head has primary or secondary education | Head has formal education
Land owned
Receive remittances
Good quality housing
Community has all-weather road |

Rural Ethiopia and Uganda (ERHS and UNPS)

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[3] The variables included here are those that have the same direction in each of the two surveys and are significant in at least one. If a variable is significant in one survey but is not present in the other survey it is also included.

Policy Implications: Investigating further the factors associated with resilient poverty escape

Land

In KwaZulu-Natal, Uganda and rural Ethiopia ownership of cultivable land, or the right to use it,[4] is significantly associated with moving out of poverty in wave 1. It is also an important component of sustained poverty escapes, or of explaining the difference in the fortunes of households in wave 3, which had escaped poverty between wave 1 and wave 2.

However, do these findings mean that the steady accumulation of land is a key route out of poverty in each of these contexts? This is difficult to disentangle. Households in Uganda which consistently live out of poverty are the least likely to own or to cultivate land while those in chronic poverty are among the most likely (Figure 9). In Uganda, 77% of rural households that always lived out of poverty owned cultivable or grazing land, while 91% of chronically poor households did. Perhaps in rural Uganda, it is limited ability to cultivate land effectively (shortages in labour and farm inputs, for instance), which poses barriers for chronically poor households to improve their situation, rather than access to land as such. Meanwhile, in KwaZulu-Natal, chronically poor households and households that returned to living in poverty had the lowest access to cultivable land while households that lived out of poverty in two rounds were more likely to have access to cultivable land.[5]

Figure 9: Owning/ having access to land by rural households on different poverty trajectories

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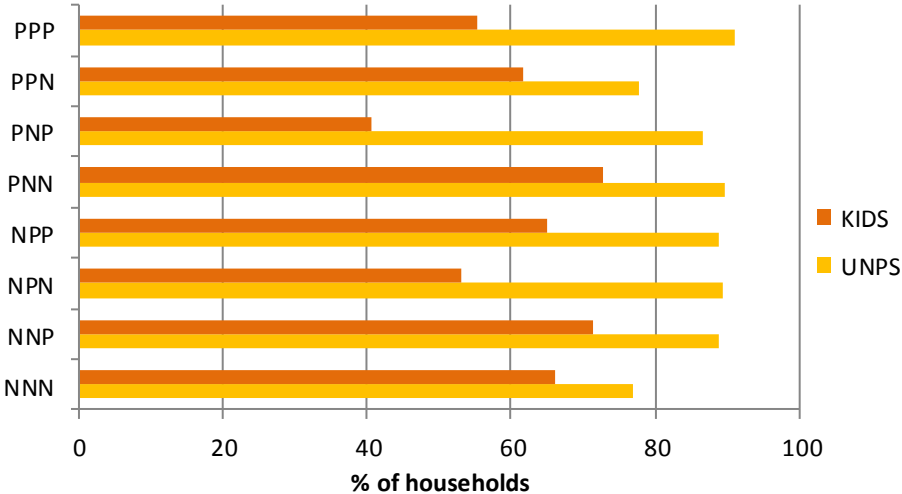
[4] The measure used varies across the surveys. ERHS it is area of cultivable land owned. UNPS it is area owned of land (including grazing and fallow land). KIDS it is right to use land for arable farming.
[5] In the ERHS around 95%, or more, households on each trajectory owned land.

Land seems to be an important component of poverty escapes, and of resilient poverty escapes, but a livelihood based around land is not the predominant livelihood of a household that consistently lives out of poverty. Meanwhile, in both rural Ethiopia and Uganda, with the exception of one of the seven transitions, having a household head who is primarily engaged in agriculture is associated with living in poverty at the next transition. This poses the question as to whether households that consistently live out of poverty used land as a means of escape or if they followed another route?

Policies enabling the accumulation of land and access to land (and, linked to it, water) – would include: land tenure policies, with special reference to (i) security of tenure, (ii) making renting and letting of land easier, and (iii) landholding fragmentation on inheritance. It is clear that the poorest people are vulnerable to losing land – though market mechanisms and through inheritance.[35]

There are several aspects of **security of tenure** that are important – reversing policies and norms which disenfranchise women on separation, divorce or widowhood; the legal protection of existing land assets of poor smallholders, especially where land is not registered or privately owned; and their physical protection through soil and water conservation and sustainable agricultural development.

The reform of inheritance systems in favour of women (and their children) is a contested political issue in several countries, and is one that requires significant social and political mobilisation to get through. As is so often the case, having legislation may only be the first step – land issues are often deeply cultural and embedded in local institutions, which effectively implement (or don't) any laws. Implementing progressive legislation therefore requires extensive follow up work with local leaders to change practice (Box 3).

Box 3: Reforming Inheritance in Africa

Inheritance systems and practices are critical at crucial points in lifetimes, including the start-up of new households, usually at the time of marriage, and the devolution of property at the time of a person's death. A marriage's dissolution may also be regarded as a critical point as divorce and separation can significantly affect inheritance rights and responsibilities. Similarly, the birth of children can have profound effects on decisions concerning the distribution of parents' accumulated assets, as does parents' aging to the point of needing to retire from productive working capacities. These critical points in lifetimes are the catalysts for transferring (or not) assets from one person or household to others. Attending to inheritance systems and practices as critical intervention points to prevent the intergenerational transmission of poverty implicates a broad and coordinated approach to legal reform and implementation as well as influencing social norms and actions.

Policy makers need to recognise that a co-operative approach is needed to implementation: a coalition of national and local actors may be essential to get changes perceived as legitimate by local powerful people. Reforms are likely to be slow and take place over many years; a coalition of actors is very helpful in seeing them through. Paralegal workers are needed at the very local

Land rental systems can be a way to increase land availability for smallholder farm households who are able to expand through renting, as well as providing an income to small landowners who want to concentrate on other occupations. However, many landowners do not happily rent out because they do not feel secure about getting their land back. And, in systems which allocate use rights rather than outright ownership, if they do it is only for very brief periods to avoid establishing any long term use rights. So establishing a secure legal basis for renting land is an action that will have significant poverty reduction potential.

Poor smallholders may not be offered long term tenancies, however, but sharecropping options, whose terms are less good. There has been much debate but little evidence on whether reforms to sharecropping tenancies generate higher productivity, with some opposition to government intervention.[36]

Inheritance systems emphasise equity – children (or male children) inherit equally. **Landholding fragmentation** is often a consequence. Inheriting land at the right moment is often a critical factor in the ability to escape poverty, but where fragmentation leaves new land holders with plots that are very small, there is a need for public debate on the merits of such inheritance systems, and discussion about avenues for consolidation. Sometimes families choose to consolidate their fragmented holdings privately, and this should be allowed for in any legal reforms. Where this does not happen it can be advantageous to put pressure on families to consolidate farming operations. This has the added advantage that families will be pushed to think more broadly about their children's futures if only some will carry on in farming. The difficulty with this strategy is that ministries of agriculture often have high and unrealistic thresholds for viable farm size, so this issue would also need to be publicly debated and technically re-studied. It should be remembered that smallholder farms are rarely full time.

Education

Education is important for poverty escapes because it is associated with working outside agriculture and also obtaining skilled work.

In Uganda, with more years of education, the household head is significantly less likely to work in agriculture. In both KwaZulu-Natal and Uganda with more years of education the household head is also significantly more likely to have a skilled job (Figure 10 for Uganda). Meanwhile, NIDS highlights the importance, in South Africa, of the household head being educated to a level above the first three years of primary school for education to contribute significantly to sustained poverty escapes. In rural Kenya having secondary education or higher is needed to sustain poverty escapes.

However, having a certain level of education does not guarantee having skilled work while a lack of education does not preclude having skilled work. This is perhaps a reflection of both the quality and relevance of education for skilled work and the importance of having social connections and information on potential job openings to acquire skilled work in a competitive labour market.[37]

Figure 10: Education of the household head and their main occupation
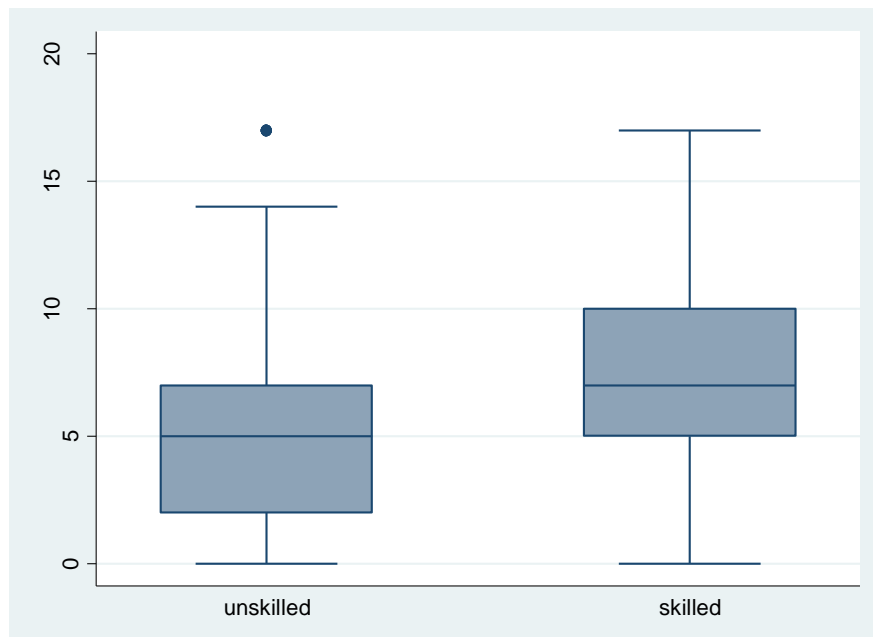
Source: analysis of Uganda National Household Survey, 2005-06
Unskilled includes subsistence farmer, unskilled wage labourer and supervisor
Skilled includes professional work, tailor, driver and carpenter

The Ethiopian Rural Household Survey highlights though, that not just any education will do. Indeed, when a head has informal education a household is more likely to be living in poverty in the next round than if the head has no education. Informal education here includes adult literacy programmes, NGO and religious schools. It may be that the most important role for the private sector in strengthening the public education is through helping to steer and design Technical, Vocational Education and Training (TVET) in a way that is relevant for the needs of the labour market rather than being a direct provider of primary and secondary education.

CPAN's Education Policy Guide emphasises a life-cycle approach to education. [38] This compares with the current pre-occupation with enrolling all children in primary schools. At the very least children need to progress to complete primary and minimum levels of literacy and numeracy if education is to stand them in good stead. There is evidence in many societies that several years of post-primary education are needed if children are to have sufficiently good life chances to pull their families out of extreme poverty.[39]

A life-cycle approach starts with pre-school, continues through primary and post-primary education, and finishes with skills that are useful in the labour market. As these skills may

change over a lifetime, adult refresher education is likely to become more important than it has been in enabling people to stay out of poverty through their lives. The policy implications of this are that governments need to make significant additional investments of money and human resources to give good access to enough education to poor children.

What should be prioritised? Clearly it depends on what happens to poor children in education now in any given system – so information on this is the first requirement. It may be that the poorest children drop out early in primary because they can't keep up with others, in which case targeted pre-school scholarships or universal provision could be the priority. It may be that the transition from primary to post-primary is the real challenge. The policy response could be a massive investment in free education for the first few years of post-primary. In almost all situations, the transition from school to work is highly problematic. TVET is in a sorry state in most developing countries[40] and unable to give advantages to poor children or young adults. Schools are often still producing academically trained but practically skill-less students; there is much scope to enhance skills based education.

In addition, and as is widely recognised, the quality of education needs improving, often massively, if children are really going to learn the life skills they will need. The critical ways of doing this are discussed in Box 2.

Box 2. Improving education quality

Demand for poor children's labour means that schooling must be seen to be worthwhile if poor families are going to invest; low quality education has higher opportunity costs for poorer children. Social and economic power inequalities make it harder for poor parents to hold school authorities to account to demand improvements in education provision.

Reforms to improve the quality of education are key in low income countries that have experienced rapid system expansions, and where the overall quality of schooling provided is quite low, e.g. low income sub-Saharan Africa and South Asia. Successes with improving teacher quality in poor regions in middle income countries such as Brazil have lessons for other countries. Increasing parental choice has succeeded in raising quality in high income countries with strong egalitarian traditions, but there is no strong evidence that low cost private schools or voucher schemes improve education outcomes for poor children in low or middle income countries.

Source: Hossain et al. (2012).

This agenda is exceedingly ambitious, with significant resource implications. However, education is *the* social sector which governments around the world recognise as critical to economic success, so is more likely to get the public investment required than health or social protection. The international community, by contrast, remains largely fixated on primary education alone.

Regional development

Being in an economically dynamic region provides opportunities to escapees which are not available in less dynamic regions – hence the importance of migration between them. **Regional Development** policy is attractive to policy makers who want to extend the benefits of dynamism outwards from wealthier to poorer regions. What can it accomplish? The conclusions of a recent survey of attempts to tackle the spatial dimensions of poverty concluded that success depends on: (i) balancing universal programmes with measures such as equalisation grants, which increase the capacity of local authorities in poorer areas to make use of a universal programme; and developing second round targeting (of poor households or poor locations, for example) to prevent benefits from leaking to non-poor areas; (ii) managing the integration of poor regions with their wealthier neighbours: poor forest dwellers in India, for example, need both access to conserved forest resources (tackling the cause of their disadvantage) but also opportunities outside forest regions, through education and better conditions for migration. India has passed a Forest Rights Act to do the former; but the latter remains largely unaddressed in some states. (iii) Combine investments with short term payoffs – such as transfers and employment programmes – with longer term, sectoral investment strategies in infrastructure and human development, which address the structural causes of regional underdevelopment. And (iv) disaggregate wellbeing and progress inside regions to identify where the poorest people are, so they can also be included. Not all towns and villages or people in poor regions are themselves poor (Higgins et al. 2010).

Improving the quality of poverty escapes

The degree of movement above the poverty line, or the quality of poverty escapes, is closely related to their sustainability. This section introduces the experiences of two countries, Brazil and Thailand, both of which have successfully reduced extreme deprivation between 1990 and 2010 (a measure combining reducing the $0.75 headcount ratio, increasing income share to the bottom 20% of the income distribution and seeing improvements in human development indicators), as well as the $2 a-day poverty headcount ratio. In other words, not only have they succeeded in moving people living at a level below $0.75 a day above the international $1.25 a day extreme poverty line, but they have also succeeded in moving households to a level almost twice the extreme poverty line. In doing this, they illustrate that there does not have to be a trade-off between reducing the multidimensional deprivation of the poorest households while also improving the financial situation of households to the extent that they live above the $2 a day poverty line. CPAN's Middle Income Countries Guide describes the success of Brazil and Thailand in more detail[41] while this section provides an overview of the policies that helped them to achieve their success.

The recent success of Brazil at poverty reduction is mainly attributed to a combination of social transfers (both conditional cash transfers and pensions), alongside a real increase in wages, particularly at the lower end of the wage distribution since the 1990s.

In terms of social transfers, the expansion of pension schemes during the early 1990s meant that, by 2000, households with older people were much less likely to be poor than they were during the 1980s.[42] These pensions include the BPC/LOAS - a government pension transferred to Brazilians older than 64 or to those who are disabled and cannot work and the Aposentadoria Rural - a special pension amounting to the minimum wage for elderly people living in rural areas. Meanwhile, Bolsa Família, a conditional cash transfer scheme, reaches 12.8 million people and provides monthly cash transfers to households living in poverty, conditional on improving their use of education and health facilities. Bolsa Família has been responsible for around 16% of the fall in poverty and 33% of the fall in extreme poverty since its creation in 2003. Its conditionalities are also associated with improved education and health outcomes,[43] though the impact in these areas has been limited and there are no studies evaluating whether the same results would be achieved even if there was no conditionality.

Between 2000 and 2009 the most important factor raising the income of the poorest 10% in Brazil was an increase in non-labour income per adult (which includes the social transfers of pensions and Bolsa Família). This accounted for 50% of the overall increase in incomes. Labour income was also important, accounting for nearly 40% of the income improvements achieved by the poorest 10%. Meanwhile, higher labour income was the most important factor in income improvements for households living above the lowest income decile.[44]

There are two main reasons for higher labour incomes in Brazil. The first is the greater level of education of young Brazilians, with even the very poor receiving a level of schooling which translates into higher wages.[45] In 1995 the Brazilian government launched a set of innovative policies to improve the education sector. This included a finance reform which guaranteed a

national minimum level of spending per student in primary education to all schools. A funding system, FUNDEF, was established to redistribute education funds across states and spending on basic education increased from 3.8% of GDP in 2002 to 5.8% in 2010.[46] The second reason for improved labour incomes is the expansion of economic opportunities for poor Brazilians, a direct result of economic growth. This is combined with government commitment to a minimum wage, which has risen every year since it was introduced in 1994 and can have knock-on effects on wages in the informal economy.[47]

The combination of social protection, commitment to education and improved terms of engagement in the labour market for people in all income deciles has contributed to the reduction of both extreme deprivation and $2 a-day poverty in Brazil. Success in Thailand has slightly different roots. Economic growth is argued to be the main driver of overall poverty reduction in Thailand, while the only period of economic slowdown since the 1960s, between 1997 and 1999, is associated with increased poverty incidence.[48] Meanwhile, Thailand invested heavily in post-basic educational equality from a very early stage of its development[49] which, arguably, has made the opportunities provided by economic growth, particularly better quality jobs, available to a greater proportion of the population.

While in Brazil the focus has been on transfers that include the poorest people in the development process, Thailand's social transfer system is less extensive, and has largely been ineffectively targeted to the poor.[50] Instead, key aspects of poverty reduction are policies to address regional inequalities. Thailand's new Constitution of 1997 and the subsequent Decentralization Act, specify an ambitious programme of decentralisation of government expenditure. The share of total government expenditure to be spent by local government authorities increased from around 8% in 2000 to 35% in 2006. Meanwhile, between 1988 and 2004, growth was higher for the poorest provinces – showing that regional inequalities were being reduced.[51] The adoption of the popularly known '30 Baht Health Care Scheme' in 2001, a nation-wide, low cost health-system, whereby Thais are eligible to get most types of medical treatment while only paying 30 baht each time acts as a safety net for all households.

This is not to say that either Brazil or Thailand have successfully addressed all the challenges of including the poorest people in the benefits of development. In Brazil, while inequalities are falling, they started from an extremely high base and the country has failed to address the issues of land and tax reform – ownership of land remains highly concentrated[52] and the taxation system strongly regressive.[53] Thailand meanwhile, has entered a stage of increasing inequality.[54] In both there are also concerns about the low quality of education, particularly of post-primary education and that, if these issues are not addressed, both countries could remain in a 'middle income trap', or fail to graduate to being high income countries. What their experiences do illustrate though, is that it is not necessarily a case of either/ or when it comes to reducing the poverty and deprivation of the poorest people while also improving the situation of people living just below the poverty line.

Conclusions: Sustaining poverty escapes

It is far from inevitable that a household, after it has escaped poverty, will continue either to live out of poverty, or on a trajectory of upwards improvement. Analysis of three-wave panel data for this paper shows how, across a range of contexts, at least 15% of households that escaped poverty between wave 1 and wave 2 had returned to living in poverty in wave 3. In the case of rural Ethiopia, this percentage was over 60%. Meanwhile, even if a household remains living out of poverty there is again no guarantee that their situation will continue to improve. In South Africa, households that remained out of poverty in wave 3 after having escaped it in wave 2, on average, had continued to improve their situation. This though, is not the case in rural Ethiopia or Uganda.

A combination of policies is likely to be needed to achieve *sustained* escapes from poverty, while the context specificity of the events that contribute to poverty escape and sustained escape mean that a range of different policy responses are needed. Overall, a basic pro-poorest growth package would consist of agricultural, employment, and infrastructure (especially but not only energy access and rural roads) measures, coupled with strong emphasis on basic education. These are the kinds of policies that will enable poor people to escape extreme poverty in the first place. Then, to enable people who have escaped extreme poverty to continue their upward trajectories, a more comprehensive investment in life cycle education needs to be complemented by land policies which permit smallholder land accumulation, and regional development policies and programmes which ensure that opportunities are brought closer to home. Regular social protection, which households can plan their budget around, can help to reduce the poverty gap and, alongside affordable health care, also, reduce future descents into poverty.

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Annex 1: An Overview of the Surveys

Ethiopia Rural Household Survey (ERHS)

ERHS is a longitudinal study which follows households over seven survey rounds (1989, 1994, 1995, 1997, 1999, 2004 and 2009). In our research, we concentrate on the three most recent waves.

The initial 1989 survey was conducted with households from seven Peasant Associations (PAs) in Oromiya, Amhara and the Southern Ethiopian People's Association (SNNPR), which were selected on the basis of having suffered from famine or droughts in the 1980s. Households were then randomly drawn within these PAs. This reflected the study's focus on household responses to food crises.

In 1994, six of the baseline PAs were re-sampled and a further nine were added. The sample design first used stratification on agro-ecological zones (including grain plough, enset-growing, sorghum-hoe) and sub-zones of Ethiopia. One to three PAs per stratum were randomly selected. Within these, households were stratified by gender of household head and by land ownership and then randomly selected from these strata. Households selected in 1989 were tracked based on having members from the initial household still living in the PA and attempts were made to re-randomize households in these original PAs (Dercon and Hoddinott, 2011).

The sample has been designed to be self-weighing in terms of the farming systems in Ethiopia. The total household-level sample size is 1477 (Dercon and Hoddinott, 2011). In our sample, we track 1231 households from 1999 to 2009. For our sequential logisitic regression model this sample size reduces to 943, due to missing data on variables of interest to our analysis. The poverty line in the ERHS dataset is set at 50 Ethiopian Birr per month in 1994 prices.

We have refrained from including data on remittances in the sequential logistic model that we run, as this variable has very little variation with 96.81% of our sample not receiving any remittances.

ERHS is representative of households in non-pastoralist farming systems Ethiopia in 1994. Given that only 15 communities were sampled, generalizations to the whole of rural Ethiopia can be done, but with caution. Moreover, household-level attrition over the survey rounds is low with 16.1% attrition over the 15 years period from 1994-2004. In particular, attrition in later survey periods is low with only 0.6% in 2004-2009 (Dercon et al., 2011). Dercon and Hoddinott (2011) suggest that region fixed effects take account of non-random attrition that is time invariant. We further control for seasonality, as interviews were conducted in different months, and cluster our standard errors at the village level.

Kagera Health and Development Survey (KHDS)

KHDS is an economic, longitudinal study that tracks individuals from 1991 to 2010 in six survey rounds (1991, 1992, 1993, 1994, 2004, 2010). It focuses on individual and household wealth dynamics in the context of HIV/AIDS prevalence (EDI 2013; De Weerdt et al. 2012).

The survey uses a two stage sampling design (Development Research Group 2004). In the first stage, 550 primary sampling units, which are communities defined by the 1988 Tanzanian Census, were classified into eight strata based on four agronomic zones (Tree Crop, Riverine, Annual Crop, Urban) in the Kagera region and low and high mortality within each zone. 51 household enumeration areas were randomly selected from these communities with a probability proportional to the size of the primary sampling unit. In the second stage, households within each cluster were stratified into sick and well. Sick households experienced death of a prime-age adult (aged 15-50), due to illness in the past year, had an adult member too ill to be working or both. This is used as a proxy for households that are likely to be affected by HIV/AIDS. In each enumeration area, 14 households were randomly chosen from the sick stratum and two from the well one, thus yielding a total sample of 816 households in 1991.

The follow-up surveys track individuals and thus, also include households that split off from the original 1991 ones. We define and follow core households over the survey years. These are households that contain most household members from the original baseline survey, excluding households where all original members are below the age of 15. From the initial 816 households, we are able to track 673 from 1991 to 2010, whereby consumption data on 19 households is missing, restricting us to 654 household-level observations.

This procedure allows us to apply sampling weights to our data in order to adjust for oversampling of sick households making our results more representative of Kagera region. The sampling weights used are calculated as follows: $W = \frac{1}{P_1 * P_2}$, where P_1 is the probability of selecting a primary sampling unit from the set of 550 in the region and P_2 is the probability of drawing a household given its primary sampling unit (Development Research Group 2004).

We concentrate on the survey years 1991, 2004 and 2010, given that on aggregate consumption at the household level these periods are most readily comparable, as they apply the same recall periods (Kagera Health and Development Survey: Consumption Expenditure Data 2012). We calibrate the poverty line for our sample such that the percentage headcount of people living below the basic needs poverty line in 2010 reflects the percentage headcount for rural areas in Tanzania presented in the Tanzanian Household Budget Survey 2007 (Christiaensen et al. 2013; Beegle et al. 2011). Using this method, our poverty line equals to 370,024.6 Tanzanian Shillings (TZS) in 2010 TZS.

In this paper, the KHDS dataset is used to demonstrate poverty dynamics, movements across wealth quintiles and initial evidence for the resilience of escapes from poverty. However, due to the sample size restrictions for our core household panel, we do not further pursue estimation of a sequential logistics model. It has to be noted that the small sample size is of particular concern with regards to the application of a sequential logistics model, where in each

subsequent transition the sample size for estimation is reduced by definition. Thus, given our initially small sample, estimation of many important parameters in our model is not possible. The sample size and exclusion of important variables may cause small sample biases and endogeneity.

The specific sampling design – yielding a non-random, initial sample – and the presence of some sample attrition have implications for the representativeness of the KHDS dataset for the Kagera region. In our analysis, the issue of non-random sampling is diminished through the application of sampling weights. Attrition at the household level from 1991 to 2010 is small with only 8%, excluding households, where all initial members had deceased (Christiaensen et al. 2013). Compared to other longitudinal studies these rates are very low (Aldermann et al., 2001 cited in Beegle et al. 2011). Christiaensen et al. (2013) also depict, based on a comparison with the Tanzanian Household Budget Survey 1991/92, that conclusions from the KHDS study are generalisable to all of rural Tanzania in that time period. Further, comparison of the KHDS dataset to the Kagera Rural CWIQ 2004, a random, cross-sectional household survey shows that the Kagera Rural sub-sample of the KHDS 2004 survey is very similar to the CWIQ data. Using the whole KHDS 2004 sample, some moderate differences arise (Beegle et al. 2006).

KwaZulu-Natal Income Dynamics Study (KIDS)

KIDS is a three-wave panel study that re-visits a random sample of households which lived in KwaZulu-Natal in 1993. It re-visits those households in 1998 and 2004 (May et al. 2006).

The initial 1993 KIDS survey was part of the World Bank Project for Statistics on Living Standards and Development and thus, was designed to be representative at the provincial level. The later 1998 and 2004 surveys excluded white and coloured households, due to their small numbers and high concentration in few clusters (May et al. 2006). The sample design is a two-stage self-weighting design. In the first stage, clusters were chosen with probability proportional to size from census enumerator subdistricts (ESD). In the second stage, all households in each chosen cluster were enumerated and a random sample of them selected (Carter et al. 2001). ESDs were used to cluster during the sequential logit analysis.

The analysis here is of the 864 'core' households that were successfully tracked throughout the three rounds. Core households are those which contain a 'core household member', either: the household head from 1993; their spouse/ partner; or, in the case of a three generation household, all of the following apply: child, son/daughter-in-law, niece/nephew of the household head, at least 30 years old, have at least one child living in the household and the spouse of that person also meets those criteria (May 2006). Previous analysis of the survey finds that, while attrition is not entirely random it is not of sufficient concern to require re-weighting of the data (May et al. 2011) and so corrections are not made for attrition here.

Household per capita monthly consumption was deflated to 2000 prices and the poverty line set at R 322 per person per month (deflators and value for the poverty line taken from Aguero et al., 2007).

South Africa's National Income Dynamics Study (NIDS)

NIDS is a longitudinal study and tracks households and individuals in three rounds in 2008, 2010 and 2012 respectively. The study's focus is on understanding poverty and well-being and assessing the effectiveness of related social policies.

NIDS employs a two-stage, stratified cluster design for sampling. In the first stage, 400 Primary Sampling Units (PSUs) were drawn from a pool of 3000 PSUs previously used by Stats SA's Master Sample 2003. The Master Sample originally had 8 non-overlapping, randomly selected clusters of households in each PSUs. In the second stage, NIDS data is based on two clusters per PSU that have not been used by Stats SA before.

In NIDS Wave 1, a total of 7,305 households and around 26,776 people participated in the surveyed. The attrition rate for individuals, excluding household members that died or moved, is 19% between round one and two of the survey and 16% between round 2 and 3. It is worth noting that in round three, more of the original households from round one were re-visited than in round two (De Villiers et al. 2013). However, accurate usage of panel weights provided account for attrition and survey design at the same time (Baigrie and Eyal, 2013).

Overall, NIDS cross-section samples are nationally representative and the application of panel weights using longitudinal samples ensures further national representativeness of the longitudinal sample (Finn and Leibbrandt, 2013).

Tegemeo-Egerton University Panel Data-Kenya

This nationwide Tegemeo Institute of Agricultural Policy and Development (Egerton University) panel dataset tracks roughly 1,300 households in 5 survey waves over the 13-year period from 1997 to 2010. The sampling frame for the panel was prepared in consultation with the Kenya National Bureau of Statistics (KNBS) in 1997. 24 districts were purposively chosen to represent the broad range of agro-ecological zones (AEZs) and agricultural production systems in Kenya. Next, all non-urban divisions in the selected districts were assigned to one or more AEZs. Third, proportional to population across AEZs, divisions were selected from each AEZ. Fourth, within each division, villages and households in that order were randomly selected. In the initial 1997 survey, a total of 1,500 households were surveyed in 109 villages spread across all major agro-ecological zones in the country. Subsequent surveys were conducted in June of 2000, 2004, 2007 and 2010. This study uses the 2004, 2007 and 2010 surveys data. In this period 1,309 households were consistently surveyed. The surveys collect information on household demographics members' incomes from both farm and non-farm sources among other information.

Attrition bias is a potential problem in panel data estimations. The average attrition rate between any two consecutive rounds is about five per cent. While longitudinal survey data may be random and representative in the initial survey wave, successive waves may be less representative because of attrition. Re-interview models similar to those estimated in Jin and Jayne (2011) indicate that observed attrition is largely random, and hence selection bias caused by attrition is not likely to be a problem.

Uganda National Panel Survey (UNPS)

The UNPS covers a nationally representative sample of households – originally sampled from the 2005/06 Uganda National Household Survey (UNHS).

The UNPS includes 322 of the original 783 enumeration areas covered by the national household survey. The sample design first includes stratification by region. Within each stratum, enumeration areas were selected with equal probability and with implicit stratification by rural/urban and by district (UBOS 2010). The UNPS interviews each household twice a year, six months apart, in order to incorporate seasonal variations in income and expenditure (UBOS 2010).

In 2009/10, the UNPS set out to re-interview 3,123 households that were previously interviewed for the UNHS 2005/06. In 2009/10, the final UNPS sample consisted of 2,975 households following the attrition among the original households from the 2005/06 sample and new split-off households tracked and interviewed during the 2009/10 field work. In 2010/11, the UNPS successfully re-interviewed 2,716 households (UBOS 2011).

The final household expenditure datasets are deflated to 2005/06. The datasets also include weights to correct for attrition in the three-wave panel and these are incorporated in the analysis.

Annex 2: Investigating the National Context

Average Annual GDP per capita growth rates and Average Annual Agriculture (Value Added) growth rates have been calculated from the World Development Indicators (WDI) for "GDP per capita growth (annual %)" and "Agriculture, Value added (annual % growth)". Likewise, average annual public expenditure on education has been derived using the "Public spending on education, total (% of GDP)" variable in the WDI. "Government effectiveness captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies." (WGI 2012)

http://databank.worldbank.org/data/views/variableSelection/selectvariables.aspx?source=world-development-indicators

Averages of Government Effectiveness have been obtained from the Government Effectiveness Indicator component of the Worldwide Governance Indicators. In our analysis we use the average percentile rank of each country over the given time period as indicator. [online] Available at:

<http://databank.worldbank.org/data/views/variableselection/selectvariables.aspx?source=worldwide-governance-indicators> [Accessed 19 November 2013].

Average HDI values have been obtained from the overall HDI values provided by UNDP. [online] Available at: <http://hdr.undp.org/en/statistics/data/> [Accessed 19 November 2013].

Values for GDP per capita and Agricultural Value added:

Indicator	Time Periods	Ethiopia	Indonesia	Philippines	South Africa (NIDS)	Uganda	Viet Nam
Start of period GDP per capita, PPP in constant 2005 international $	R1 &R2	508.11	2466.63	2826.12	9604.82	901.77	1784.37
	R2&R3	570.36	3045.67	3143.89	9516.45	1103.70	2161.27
Start of period Annual Agriculture, Value Added in 2005 international $ (in millions)	R1 & R2	4,014	28,541	12,238	6,627	2,260	9,865
	R2 &R3	4,658	31,206	13,528	6,546	2,384	10,668

Sample Averages of all Indicators:

Indicator	Sample Average	
	Period 1	Period 2
PNP:PNP Ratio (PNN normalised to1)	0.73	
Average Annual GDP per Capita Growth	3.92	2.96
Average Annual Agriculture (value added) Growth	2.31	3.02
Average Government Effectiveness Percentile Rank	41.26	46.04
Average Public Expenditure on Education as % of GDP	3.52	4.69

Annex 3: Sequential Logit Results

Kwa-Zulu Natal Income Dynamics Study

Explanatory Variable	NvP		NvP 1993=N		NvP 1993=P		NvP 1993=N 1998=P		NvP 1993=N 1998=N		NvP 1993=P 1998=P		NvP 1993=P 1998=N	
	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value
Urban cluster	3.613***	(0.002)	2.324**	(0.050)	1.192	(0.765)	1.309	(0.734)	0.536	(0.355)	3.500**	(0.014)	3.804	(0.178)
Household size	0.752***	(0.000)	0.884*	(0.077)	0.829***	(0.007)	0.897	(0.378)	1.173	(0.216)	0.994	(0.909)	1.002	(0.983)
Share of elderly members	1.926	(0.651)	0.365	(0.383)	87.635	(0.104)	1.200	(0.936)	55.479	(0.100)	0.561	(0.739)	0.364	(0.804)
Share of children	0.159***	(0.001)	0.426	(0.176)	2.682	(0.301)	0.195	(0.254)	0.254	(0.135)	1.139	(0.890)	3.743	(0.359)
Female head	0.463***	(0.010)	0.968	(0.911)	0.841	(0.567)	1.694	(0.365)	0.884	(0.823)	1.338	(0.293)	0.779	(0.686)
No Education omitted category														
First four years of primary school	1.260	(0.252)	1.275	(0.499)	3.101***	(0.004)	0.629	(0.502)	0.921	(0.896)	1.412	(0.313)	1.187	(0.842)
Second three years of primary school	2.119***	(0.008)	2.157	(0.117)	3.132**	(0.024)	1.853	(0.394)	3.643	(0.131)	1.901	(0.184)	15.088***	(0.003)
Secondary and post-secondary education	8.391***	(0.000)	11.767***	(0.000)	31.987***	(0.000)	10.741**	(0.022)	3.987*	(0.071)	0.695	(0.734)	13.025**	(0.036)
Age of head (log)	0.629	(0.325)	3.444*	(0.074)	5.585*	(0.065)	3.417	(0.307)	1.567	(0.719)	1.084	(0.916)	3.111	(0.452)
Age of head squared (centred)	1.000	(0.366)	1.000	(1.000)	0.999	(0.171)	1.003***	(0.004)	0.998***	(0.001)	1.000	(0.477)	1.002	(0.281)
Head receives regular wage	0.834	(0.537)	1.138	(0.698)	0.587	(0.280)	2.178	(0.172)	0.734	(0.533)	1.078	(0.844)	0.249*	(0.089)
Household receives remittances	1.325	(0.346)	0.557*	(0.094)	0.922	(0.803)	4.077*	(0.051)	0.482*	(0.089)	1.145	(0.660)	0.403	(0.193)
Household in self-employment beyond agriculture	1.859**	(0.034)	0.855	(0.638)	0.882	(0.823)	2.672	(0.115)	0.857	(0.728)	1.860*	(0.071)	0.261	(0.156)

Illness or death, 1998	0.850	(0.441)	0.914	(0.736)	1.665*	(0.059)	0.581	(0.299)	0.698	(0.321)	0.939	(0.782)	0.724	(0.531)
Injury or illness, 2004	1.251	(0.253)	1.123	(0.659)	0.678	(0.289)	0.057***	(0.000)	1.737	(0.342)	1.761*	(0.052)	1.592	(0.514)
Rooms per household member (log)	4.466***	(0.000)	1.176	(0.320)	1.019	(0.968)	0.966	(0.951)	1.155	(0.557)	1.322	(0.568)	1.905	(0.465)
Electricity	1.471	(0.238)	2.742***	(0.010)	1.419	(0.426)	1.486	(0.476)	3.628**	(0.025)	1.151	(0.584)	1.044	(0.943)
Piped water	1.033	(0.912)	0.792	(0.545)	1.432	(0.256)	0.765	(0.725)	0.867	(0.851)	0.553**	(0.034)	1.616	(0.569)
Toilet	1.452	(0.450)	2.118	(0.184)	2.237	(0.308)	3.500	(0.119)	2.932	(0.278)	3.171**	(0.013)	1.001	(1.000)
Area land cultivated (log)	1.879**	(0.035)	1.742	(0.153)	1.088	(0.869)	0.205	(0.111)	0.454*	(0.071)	0.975	(0.954)	12.827**	(0.023)
Number of cattle (log)	1.233	(0.193)	1.232	(0.331)	1.238	(0.298)	2.131**	(0.026)	0.603	(0.210)	0.958	(0.854)	0.738	(0.635)
Permanent road	0.780	(0.471)	1.275	(0.540)	2.109*	(0.065)	2.477	(0.120)	4.763***	(0.003)	1.069	(0.871)	0.619	(0.569)
Daily market in cluster	1.632*	(0.087)	1.134	(0.692)	1.179	(0.654)	1.979	(0.167)	0.761	(0.559)	0.681	(0.127)	0.840	(0.813)
Observations	856		415		441		143		272		346		95	

Robust pval in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Uganda National Panel Survey	2005		2009				2011							
Explanatory Variable	NvP		NvP		NvP		NvP		NvP		NvP		NvP	
			2005=N		2005=P		2005=N		2005=N		2005=P		2005=P	
							2009=P		2009=N		2009=P		2009=N	
	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value
Urban cluster	4.794***	(0.000)	2.084**	(0.048)	0.941	(0.924)	1.055	(0.942)	2.997***	(0.008)	0.941	(0.974)	3.014	(0.238)
Household size	0.897**	(0.011)	1.052	(0.369)	1.068	(0.255)	0.771*	(0.083)	1.082	(0.211)	0.824	(0.243)	1.178	(0.101)
Share of elderly members	0.287	(0.231)	1.285	(0.891)	6.151	(0.146)	0.099	(0.304)	6.711	(0.295)	0.000**	(0.038)	159.195**	(0.037)
Share of children	0.529*	(0.096)	0.327***	(0.007)	0.347	(0.147)	0.204	(0.128)	0.483*	(0.083)	0.013**	(0.017)	0.694	(0.727)
Female head	0.953	(0.803)	1.436	(0.263)	1.063	(0.870)	0.776	(0.726)	1.355	(0.334)	0.959	(0.941)	0.989	(0.982)
No Education omitted category														
First 4 years primary school	1.486	(0.123)	0.899	(0.746)	2.629**	(0.013)	0.920	(0.909)	1.913*	(0.058)	0.483	(0.329)	0.635	(0.284)
Second 3 years primary school	2.416***	(0.000)	1.014	(0.967)	2.117**	(0.044)	1.697	(0.361)	2.814***	(0.002)	0.172**	(0.047)	1.632	(0.316)
Secondary and post-secondary education	5.979***	(0.000)	2.960***	(0.008)	2.323	(0.113)	2.787	(0.213)	4.914***	(0.000)	1.116	(0.931)	2.543	(0.205)
Age of head (log)	3.385***	(0.000)	1.747	(0.129)	0.803	(0.614)	6.403**	(0.019)	0.775	(0.563)	0.405	(0.415)	0.367	(0.118)
Age of head centred (log)	0.999**	(0.019)	0.999***	(0.010)	1.000	(0.992)	1.000	(0.789)	0.999	(0.262)	1.005**	(0.012)	0.999	(0.283)
Head works in agriculture	0.472***	(0.001)	0.562**	(0.034)	0.838	(0.625)	0.551	(0.308)	0.277***	(0.000)	1.541	(0.573)	0.628	(0.361)
Household receives remittances	1.276	(0.150)	0.668*	(0.069)	0.774	(0.340)	0.701	(0.484)	0.921	(0.721)	4.996***	(0.009)	2.263**	(0.039)
Episode of illness (2009)	0.727	(0.123)	1.019	(0.956)	1.532	(0.225)	0.735	(0.670)	1.095	(0.829)	0.317	(0.157)	0.344**	(0.013)
Episode of illness (2011)	0.982	(0.941)	1.381	(0.429)	1.369	(0.337)	1.894	(0.478)	1.497	(0.289)	14.233**	(0.022)	1.206	(0.706)
Drought/ irregular rain (2009)	0.740**	(0.038)	0.898	(0.624)	1.360	(0.236)	0.444**	(0.028)	0.714	(0.194)	0.543	(0.311)	0.612	(0.230)
Drought/ irregular rain (2011)	0.767	(0.149)	1.203	(0.407)	1.197	(0.519)	1.859	(0.191)	1.534	(0.158)	0.757	(0.727)	1.138	(0.745)
Number of rooms per person (log)	21.959***	(0.000)	1.937	(0.129)	2.196	(0.422)	0.248	(0.219)	6.098***	(0.001)	0.000***	(0.000)	79.190***	(0.001)
Toilet	1.442**	(0.045)	1.209	(0.550)	1.121	(0.695)	2.469	(0.202)	0.976	(0.944)	10.730***	(0.001)	0.549	(0.150)
Protected water	0.678*	(0.058)	1.259	(0.301)	0.874	(0.619)	1.234	(0.673)	2.066***	(0.005)	0.392*	(0.074)	1.349	(0.412)
Area land owned (log)	1.318**	(0.019)	1.426**	(0.018)	0.905	(0.497)	1.122	(0.761)	1.281	(0.117)	0.761	(0.366)	1.485	(0.112)
Value cattle (log)	1.071***	(0.000)	1.016	(0.383)	0.961	(0.104)	1.070*	(0.091)	1.074***	(0.003)	1.014	(0.727)	1.012	(0.711)
Value agricultural	0.941	(0.107)	0.958	(0.291)	1.096	(0.333)	1.038	(0.741)	1.013	(0.794)	1.484**	(0.026)	0.924	(0.495)

equipment (log)														
Value enterprise equipment (non-agricultural) (log)	1.049*	(0.055)	1.020	(0.533)	0.974	(0.583)	1.046	(0.564)	0.989	(0.739)	0.797	(0.267)	1.000	(0.994)
Permanent community access road	1.165	(0.403)	1.269	(0.314)	1.781**	(0.037)	0.536	(0.165)	1.192	(0.421)	1.316	(0.571)	1.085	(0.838)
Western – omitted category														
Central	1.511	(0.144)	5.546***	(0.000)	6.081***	(0.000)	27.229***	(0.006)	7.211***	(0.000)	142.760***	(0.000)	5.777***	(0.007)
Eastern	0.458***	(0.001)	1.477	(0.199)	3.499***	(0.002)	0.223**	(0.018)	0.548*	(0.062)	0.690	(0.602)	2.307	(0.194)
Northern	0.399***	(0.001)	1.074	(0.821)	1.584	(0.321)	0.939	(0.921)	0.866	(0.679)	0.539	(0.397)	2.010	(0.317)
Observations	1,421		990		431		175		815		202		229	
Pseudo R2	0.34													
Wald Chi2 (24)	340.4													
Prob>chi2	0.0													

Robust pval in parentheses *** p<0.01, ** p<0.05, * p<0.1

Ethiopian Rural Household Survey	1999		2004				2010							
	NvP		NvP		NvP		NvP		NvP		NvP		NvP	
			1999=P		1999=N		1999=N		1999=N		1999=P		1999=P	
Explanatory Variables					2004=P				2004=N		2004=P		2004=N	
	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value
Household Size (Log)	0.090***	(0.000)	0.210***	(0.002)	0.462***	(0.004)	2.300	(0.145)	0.704	(0.338)	3.879	(0.107)	0.142**	(0.016)
Child Dependency Ratio	0.999	(0.314)	1.003*	(0.077)	0.998	(0.144)	0.997	(0.413)	1.000	(0.923)	0.997	(0.357)	1.003	(0.331)
Old-age Dependency Ratio	0.998	(0.614)	0.994	(0.403)	1.003	(0.667)	1.017*	(0.067)	1.004	(0.358)	1.003	(0.833)	0.973	(0.165)
Female Head	0.767	(0.331)	0.756	(0.543)	0.429***	(0.002)	0.674	(0.589)	1.363	(0.436)	1.511	(0.623)	0.781	(0.810)
Age of head (Log)	1.554	(0.177)	2.210	(0.194)	0.987	(0.980)	0.349	(0.148)	0.734	(0.601)	1.311	(0.852)	1.578	(0.701)
Age of Head Squared (Centered)	1.000	(0.896)	1.000	(0.720)	1.000	(0.826)	0.999	(0.390)	1.000	(0.620)	1.001	(0.353)	1.002*	(0.079)
Head No Education omitted category														
Head First 4 Years of Primary Education	1.160	(0.643)	0.677	(0.436)	0.843	(0.567)	0.360	(0.127)	1.172	(0.721)	1.360	(0.633)	0.818	(0.832)
Head Second 4 Years of Primary Education	1.407	(0.196)	2.107*	(0.086)	1.442	(0.304)	0.124**	(0.041)	0.766	(0.471)	0.472	(0.297)	1.758	(0.565)
Head Secondary and Higher Education	1.519	(0.245)	3.699***	(0.005)	1.788	(0.111)	0.733	(0.636)	1.882	(0.319)	0.133*	(0.091)	0.979	(0.980)
Head Informal Education (Adult Literacy, Religious)	0.782	(0.345)	1.242	(0.518)	0.723	(0.313)	1.977	(0.229)	1.654	(0.153)	0.120**	(0.027)	0.019***	(0.000)
Head Working in Agriculture	0.504**	(0.030)	0.664	(0.239)	0.487**	(0.013)	0.542	(0.332)	0.670	(0.295)	0.397	(0.251)	2.470	(0.457)
Livestock Value (Log)	1.067*	(0.052)	0.979	(0.734)	1.147***	(0.000)	1.044	(0.589)	1.028	(0.599)	0.965	(0.626)	1.063	(0.628)
Cultivable Land Area (Log)	2.141***	(0.006)	6.407***	(0.001)	2.631**	(0.024)	0.972	(0.960)	2.990**	(0.021)	0.867	(0.841)	12.705***	(0.008)

	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
Amount of Cereals, Crops and Pulses stored (kg) (Log)	1.150***	(0.000)	1.034	(0.548)	0.982	(0.695)	0.884	(0.242)	1.094*	(0.078)	1.118	(0.456)	0.932	(0.512)
Total Amount (Birr) Spent on Housing (Log)	1.107***	(0.001)	1.059	(0.198)	1.034	(0.393)	1.065	(0.380)	1.008	(0.840)	1.015	(0.884)	1.431**	(0.022)
Distance to Nearest Town (Log)	0.764	(0.164)	1.145	(0.498)	1.267	(0.294)	1.234	(0.658)	0.724	(0.259)	0.239**	(0.010)	0.180**	(0.033)
Days Lost to Illness, 2004 (Log)	0.982	(0.790)	1.139	(0.146)	1.107	(0.293)	0.992	(0.947)	0.946	(0.528)	0.746	(0.184)	1.108	(0.596)
Days Lost to Illness, 2009 (Log)	0.968	(0.621)	1.030	(0.755)	0.886	(0.108)	1.010	(0.938)	0.939	(0.596)	0.685	(0.104)	1.357	(0.152)
Total Number of Negative Community Shocks 2004-2009 (Log)	1.588	(0.334)	3.363	(0.197)	1.641	(0.420)	1.461	(0.643)	0.387*	(0.058)	6.859	(0.187)	0.000**	(0.000)
Region: Tigray omitted category														
Region: Amhara	0.601	(0.378)	1.154	(0.753)	0.584	(0.272)	21.323**	(0.048)	11.168***	(0.000)	26.201**	(0.011)	0.557	(0.571)
Region: Oromya	6.828***	(0.001)	0.281*	(0.069)	0.168***	(0.000)	142.187***	(0.002)	66.598***	(0.000)	429.628***	(0.000)	7.832	(0.169)
Region: SNNPR	0.291**	(0.021)	0.173***	(0.005)	0.138***	(0.000)	60.025**	(0.014)	10.628***	(0.002)	3.324	(0.370)	0.115	(0.111)
10th Months (Ethiopian Calendar) omitted category														
1st Month (Ethiopian Calendar)	1.359	(0.524)	0.516	(0.420)	0.894	(0.866)	0.000***	(0.000)	0.478*	(0.078)	0.815	(0.916)	0.284	(0.297)
11th Month (Ethiopian Calendar)	0.303**	(0.011)	1.478	(0.659)	1.080	(0.907)	0.000***	(0.000)	0.562	(0.325)	0.242	(0.439)	0.390	(0.456)
12th Month (Ethiopian Calendar)	0.338**	(0.019)	0.186**	(0.010)	0.172***	(0.002)	0.000***	(0.000)	0.637	(0.330)	0.426	(0.604)	0.308	(0.172)
Observations	943		343		600		170		430		182		161	
Pseudo R2	0.41		.											

Robust pval in parentheses
*** p<0.01, ** p<0.05, * p<0.1

National Income Dynamics Study (South Africa)	2008		2010				2012							
Explanatory variables	NvP		NvP 2008=N		NvP 2008=P		NvP 2008=N 2010=P		NvP 2008=N 2010=N		NvP 2008=P 2010=P		NvP 2008=P 2010=N	
	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value
Rural	1.117	0.345	0.693**	0.026	0.915	0.479	1.317	0.373	1.139	0.668	1.117	0.450	0.906	0.673
Household size (log)	0.191***	0.000	0.478***	0.000	0.424***	0.000	0.825	0.358	0.625**	0.025	0.912	0.378	0.949	0.713
Share of children	0.460***	0.000	0.655	0.183	0.370***	0.000	0.623	0.378	0.522	0.176	0.278***	0.000	0.253***	0.000
Share of elderly	0.868	0.72	1.731	0.329	0.517	0.134	1.033	0.975	1.907	0.446	0.984	0.975	0.877	0.864
Female household head	0.866	0.117	0.817	0.128	0.977	0.808	1.045	0.846	0.856	0.462	1.05	0.658	0.909	0.575
Age household head (log)	4.023***	0	3.282**	0.015	1.943*	0.053	1.455	0.641	2.728	0.167	1.476	0.363	2.000	0.217
Age household head sq	1.000	0.949	1.000	0.795	1.000	0.455	1.000	0.687	1.000	0.457	1.000	0.781	1.000	0.937
Head married	1.197*	0.053	1.117	0.43	0.969	0.746	1.124	0.621	1.356	0.178	1.07	0.528	0.824	0.246
Education (no education base category)														
Junior primary	1.296**	0.024	1.047	0.797	1.431***	0.001	1.698*	0.099	2.711***	0.003	1.142	0.247	1.765***	0.004
Senior primary	2.360***	0.000	1.823***	0.000	1.602***	0.000	0.912	0.752	1.832**	0.03	1.06	0.651	1.871***	0.005
Junior high	3.556***	0.000	2.449***	0.000	2.419***	0.000	1.242	0.509	2.061***	0.009	1.640***	0.001	1.724**	0.015
Senior high	7.614***	0.000	4.678***	0.000	3.829***	0.000	3.202***	0.01	4.427***	0.000	1.835**	0.011	2.426***	0.005
Tertiary and above	19.288***	0.000	7.673***	0.000	7.181***	0.000	6.823**	0.01	7.658***	0.000	3.896***	0.009	2.937**	0.044
Share of employed	2.317***	0.000	1.019	0.893	0.949	0.631	1.620*	0.088	1.24	0.313	1.139	0.287	1.296	0.203
Share of income from remittances	0.85	0.468	1.092	0.817	1.426	0.111	1.698	0.382	0.621	0.399	1.344	0.266	1.201	0.6
Household received govt grant	0.652***	0.000	0.608***	0.000	0.873	0.183	1.097	0.682	0.735	0.1	0.842	0.151	0.800	0.205
Tropical livestock unit	1.000	0.992	1.019	0.405	1.017	0.11	0.875***	0.004	0.946	0.119	0.992	0.537	0.981	0.278
Households owns house	1.411***	0.000	1.238	0.11	1.04	0.729	1.091	0.734	0.958	0.841	0.82	0.131	0.849	0.401

Household owns computer	5.367***	0.000	2.137***	0.000	1.33	0.347	2.684*	0.091	1.737*	0.067	1.143	0.756	0.874	0.785
Clean water	1.257**	0.024	0.822	0.238	1.199*	0.071	1.078	0.778	1.15	0.644	1.002	0.984	0.875	0.446
Safe toilet facility	2.338***	0.000	1.843***	0.000	1.297**	0.048	1.304	0.397	1.651	0.111	1.222	0.195	0.97	0.891
Electricity	1.662***	0.000	1.102	0.509	1.145	0.125	1.232	0.393	1.453*	0.083	1.269**	0.012	1.114	0.513
Street light	1.410***	0.000	1.480***	0.005	1.275**	0.025	1.200	0.464	1.056	0.807	0.934	0.606	1.330	0.14
Death or illness in 2008	1.173	0.104	0.948	0.717	0.884	0.204	0.645*	0.062	0.99	0.967	0.902	0.31	1.145	0.452
Death or illness in 2010	0.885	0.218	0.993	0.964	1.081	0.422	1.002	0.996	0.742	0.219	0.912	0.391	0.815	0.243
Death or illness in 2012	0.982	0.855	0.805	0.154	0.872	0.183	1.205	0.482	1.426	0.205	0.803**	0.047	0.925	0.679
Western Cape	0.950	0.720	0.819	0.293	1.166	0.43	1.676	0.238	1.332	0.377	0.765	0.294	2.241**	0.041
Eastern Cape	0.557***	0.000	0.872	0.525	0.954	0.800	0.884	0.782	1.035	0.924	0.547**	0.012	0.792	0.471
Northern Cape	1.053	0.741	1.047	0.843	1.117	0.609	0.783	0.595	0.641	0.154	0.392***	0.001	0.675	0.276
Free State	0.517***	0.000	1.047	0.854	0.786	0.246	1.453	0.469	2.667**	0.042	0.794	0.376	0.724	0.353
KwaZulu-Natal	0.690**	0.01	1.234	0.316	1.052	0.782	0.603	0.221	0.882	0.703	0.353***	0.000	0.624	0.125
North West Gauteng (omitted category)	1.037	0.829	0.78	0.282	1.223	0.333	0.473*	0.075	0.689	0.32	0.481***	0.005	1.304	0.492
Mpumalanga	1.053	0.767	1.209	0.451	1.264	0.272	0.606	0.261	0.676	0.267	0.518**	0.015	0.725	0.37
Limpopo	0.726*	0.060	1.037	0.894	1.243	0.283	0.258***	0.003	0.677	0.322	0.376***	0.000	0.959	0.902
Number of observations	6508		2572		3936		633		1939		2678		1258	
Pseudo R2	0.286													
wald Chi2 (36)	1643.437													
Prob>chi2	0.000													

Robust pval in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Tegemeo Agricultural Survey	2004		2007				2010							
			NvP		NvP		NvP		NvP		NvP		NvP	
Explanatory variables	NvP		2004 =N		2004 =P		2004= N 2007=P		2004= N 2007= N		2004=P 2007=P		2004=P 2007= N	
	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value	Odds-Ratio	P-value
Household size	0.86***	0.00	0.92**	0.02	0.89***	0.00	1.08	0.14	0.98	0.53	1.00	0.91	0.95	0.43
Share of elderly members	0.71	0.45	0.77	0.73	0.3*	0.07	0.23	0.19	0.25**	0.04	3.31	0.32	0.97	0.97
Share of children	0.37***	0.01	0.05***	0.00	0.13***	0.00	0.02***	0.00	0.25**	0.02	0.15**	0.02	0.08**	0.02
Male household head	1.02	0.93	1.93***	0.01	1.7**	0.02	0.46*	0.10	1.37	0.28	1.18	0.60	0.99	0.99
Education level of household head (No Education omitted category)														
Primary	1.08	0.66	1.06	0.83	0.83	0.44	2.57**	0.05	0.77	0.35	1.72	0.13	1.66	0.29
Secondary and post-secondary	2.12***	0.00	2.37**	0.02	1.42	0.24	1.98	0.28	1.73	0.15	1.03	0.95	2.72*	0.10
Heads occupation in farming	0.46***	0.00	0.78	0.32	1.01	0.97	1.99*	0.09	1.09	0.75	0.95	0.87	1.34	0.50
Household receives remittances	1.03	0.88	1.31	0.27	1.01	0.96	1.02	0.96	0.72	0.22	0.88	0.66	1.43	0.41
Number of members died last one year before the survey	0.81	0.31	0.90	0.73	0.89	0.69	1.20	0.73	0.49**	0.03	1.38	0.34	0.62	0.39
Number of members chronically sick last one year before the survey	0.83*	0.10	0.93	0.69	1.07	0.70	0.66	0.18	0.89	0.54	0.71	0.17	0.70	0.21
Rainfall received (mm)	1.00***	0.00	1.00	0.66	1.00	0.42	1.00	0.11	1.00	0.16	1.00*	0.08	1.00	0.34
Distance to the nearest electricity supply (km)	1.00	0.85	1.00	0.94	0.98	0.35	1.04	0.25	0.94***	0.00	0.96	0.31	0.98	0.54
Distance to the nearest water source (km)	0.97***	0.00	0.98*	0.10	1.00	0.81	1.03	0.26	0.98	0.30	1.02	0.33	1.00	0.95
Distance to the nearest motorable road (km)	1.02	0.77	1.10	0.22	0.90	0.18	0.95	0.69	1.00	0.99	1.06	0.53	0.98	0.91
Distance to the nearest tarmac road (km)	0.99	0.58	1.01	0.63	1.02	0.34	0.95	0.11	1.06***	0.01	0.98	0.38	0.98	0.40
Toilet: bushes omitted category														

Toilet: Pit latrine	2.01*	0.10	0.59	0.29	1.18	0.76	6.94	0.08	1.04	0.95	1.06	0.93	0.69	0.68
Value of cattle owned (KSh)	1***	0.00	1.00	0.24	1.00	0.30	1.00***	0.01	1.00**	0.04	1.00	0.95	1.00	0.53
Landholding (acres)	1.01	0.65	1.05	0.20	1.05**	0.04	1.08	0.27	1.02	0.25	1.05*	0.08	1.02	0.58
Land cultivated (acres)	1.21***	0.00	1.01	0.91	0.98	0.48	0.98	0.79	0.98	0.48	0.98	0.78	0.97	0.74
Value farm asset (KSh)	1.00	0.50	1.00	0.58	1.00	0.49	1.00	0.33	1.0*	0.06	1.00	0.12	1.00	0.61
Value of non-farm asset (KSh)	1.00***	0.01	1*	0.08	1.00	0.20	1.00	0.26	1.00	0.13	1.00	0.78	1.00	0.85
Membership in Farmer's group membership	1.62***	0.00	1.51*	0.09	1.62**	0.03	2.11	0.12	2.1***	0.01	1.16	0.62	2.02	0.13
Number of observations	1309		839		471		183		656		309		162	
Pseudo R2	0.380													
wald Chi2 (22)	195.18													
Prob>chi2	0.000													

Robust pval in parentheses

*** p<0.01, ** p<0.05, * p<0.1

[1] The Economist (2013)

[2] Krishna (2010)

[3] Lenhardt and Shepherd (2013)

[4] Dercon and Porter (2011)

[5] Ram Lohano (2011)

[6] World Bank (2013)

[7] Shepherd et al. (2013)

[8] Krishna (2010)

[9] Baulch (2011)

[10] Krishna (2010)

[11] De Weerdt (2010)

[12] Higgins (2012)

[13] Krishna (2010); De Weerdt (2010)

[14] Christiansen et al. (2013); Baulch (2011)

[15] Baulch (2011)

[16] Mushonga and Scoones (2012)

[17] Krishna (2010)

[18] Hossain et al. (2012)

[19] Bigsten et al. (2003)

[20] Arif and Farooq (2012)

[21] Hossain et al. (2012)

[22] Krishna (2010); Baulch, (2011)

[23] Muyanga et al. (2010)

[24] Baulch (2011); Davis (2011); Dercon et al. (2011); Krishna (2010); Mushonga and Scoones (2012)

[25] Dercon et al. (2005)

[26] Sen (2003)

[27] De Weerdt (2010)

[28] Lawson et al. (2006)

[29] Davis (2011); Quisumbing (2011)

[30] De Weerdt (2010)

[31] World Bank (2013)

[32] Baulch and Vu (2011)

[33] Baulch and Vu (2011)

[34] Krishna and Shariff (2011)

[35] Lendhardt and Shepherd (2013)

[36] E.g. World Bank (2003)

[37] Krishna (2010)

[38] Hossain et al. (2012)

[39] Hossain et al. (2012)

[40] UNESCO (2010)

[41] Bulla et al. (2014)

[42] Menezes-Filho and Vasconcellos (2007)

[43] Soares et al. (2010); Sánchez-Ancochea and Mattei (2011)

[44] Portela de Souza (2012)

[45] Portela de Souza (2012)

[46] World Development Indicators

[47] Portela de Souza (2012)

[48] Warr (2011)

[49] Krongkawew (2013)

[50] Warr (2004)

[51] Kurosaki and Kurita (2011)

[52] Beghin (2008)

[53] IPEA (2009)

[54] Warr (2002)