Once Poor always Poor? Exploring Consumption- and Asset-based Poverty Dynamics in Ethiopia[1]

Kashi Kafle[2], Kevin McGee[3*], Alemayehu Ambel[3], Ilana Seff[4]

Abstract

This paper examines the dynamics of wellbeing in Ethiopia by assessing changes in poverty status based on consumption and asset ownership. Using panel data from the first two waves of the Ethiopia Socioeconomic Survey (ESS), we discover that although the cross-sectional poverty remains relatively unchanged (approximately 30% in both 2012 and 2014), the proportion of the population experiencing consumption poverty at some point during this period is 47%. An asset-based measure of poverty exhibits fewer transitions in and out of poverty. Examination of the direction and magnitude of change in consumption both at aggregate and sub-group levels indicates that despite a stagnant poverty rate, consumption patterns have changed significantly. The forward movers and non-poor households have increased their share of spending on nutrient-dense foods, while the chronic poor and backward movers have increased spending shares on staples (reduced on nutrient-dense foods). Our findings indicate that availability of longitudinal data at the household level provides additional insights on the dynamics of wellbeing that would be impossible to understand using cross sectional data only.

Keywords: Wellbeing dynamics, Ethiopia, LSMS-ISA, consumption-based poverty, asset-based poverty
JEL Codes: I32, E21, O12

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[2] Kashi Kafle is with the Research and Impact Assessment Division (RIA) of the International Fund for Agricultural Development (IFAD), Rome, Italy.

[3] Kevin McGee and Alemayehu Ambel are with the Development Economics Data Group of the World Bank, Washington DC, USA

*Corresponding author (kmcgee@worldbank.org)

[4] Ilana Seff is with the Development Economics Research Group of the World Bank, Washington DC, USA

1. Introduction

In recent years Ethiopia has experienced remarkable economic growth with a per capita growth rate of approximately 8% per year (World Bank, 2015). In 2000, 44% of the population lived below the national poverty line but the number dropped to less than 30% in 2011 (Abro, Alemu, & Hanjra, 2014; World Bank, 2015). The substantial reduction in national poverty coincided with rapid economic growth driven largely by growth in the agricultural sector (Abro *et al.*, 2014; Martins, 2014; World Bank, 2015, 2016). As more than 85% of Ethiopians are engaged in agriculture (FAO, 2011; Mengistu, 2003; World Bank, 2015), and agriculture constitutes 43% of national GDP and 90% of exports (FAO, 2011), policies that affect the agricultural sector can have large ramifications on wellbeing dynamics. Despite promising growth in the economy led by agriculture, it is worrisome to policymakers that the benefits of growth and development may not be equally distributed among all residents. The disproportionate distribution of economic growth is evident in the existing literature (Barrett *et al*., 2006; Bezemer & Headey, 2008; Lipton, 1977) and empirical evidence exists in the case of Ethiopia as well (Abro *et al.*, 2014; Bogale, Hagedorn, & Korf, 2005).

Abro *et al.* (2014) assess the impact of agricultural productivity growth on household poverty dynamics and find that poor people in rural Ethiopia benefitted the least from growth in the agriculture sector; they either had limited access to assets or owned fewer productive farm assets/factors of production. One explanation is that people at the bottom of the economic ladder may be least affected by economic growth because returns to assets depend on initial wealth status (Barrett *et al.*, 2006). However, people in the neighborhood of the poverty line may see their wellbeing status change as the economy grows. This raises an obvious but rather pinpointing policy question: why have some of the poor benefited very little from economic growth, while others have benefited more? Are the same households poor at each point in time or is there movement in wellbeing status? Understanding these questions is critical for designing suitable policy instruments, but these questions are difficult to answer without examining the dynamics of wellbeing and exploring the characteristics of the transitory and chronic

poor. Answering these questions helps not only in identifying the portion of the poor population left out by cross-sectional analysis but also in designing policy instruments to best serve them.

A large body of existing literature has examined the dynamics of wellbeing in various countries, but many of these analyses ignore the multidimensional nature of poverty dynamics as they use poverty classifications based on income(Barrett, 2005; Baulch & Hoddinott, 2000; Duncan *et al.*, 1993; Woolard & Klasen, 2005), or consumption expenditures only (Dercon & Krishnan, 2000). A large body of empirical evidence suggests that poverty measures based on income or expenditures are subject to measurement error and often fail to distinguish between structural and transient poverty (Carter & Barrett, 2006a; Carter & May, 2001). There is a strong current of development literature that considers household assets as an alternative measure of wealth status and uses both consumption and asset-based measures to assess wellbeing dynamics. However, this approach is not free of criticism; while wellbeing dynamics based on asset holdings may perform better than other measures, it is not immediately clear as to how we combine multidimensional assets to form a single wealth measure. One set of studies converts all assets to monetary values and calculates an aggregated wealth measure (Liverpool-Tasie & Winter-Nelson, 2011), but others combine assets to form a weighted index using principal component analysis (Booysen, van der Berg, Burger, Maltitz, & Rand, 2008; Filmer & Scott, 2008; Moser & Felton, 2007; Sahn & Stifel, 2000). No matter how they use assets, many of these studies still miss the 'true' poverty dynamics as they lack nationally representative longitudinal data at the household level and are forced to rely on cross-sectional or pooled cross-sectional data instead (Dang & Lanjouw, 2013). The Ethiopia Socioeconomic Survey (ESS)[5] provides us a unique opportunity to further examine this issue as it comprises a wide breadth of information by integrating household and agricultural survey questions. The ESS dataset enables us to explore both

[5] The Ethiopia socioeconomic survey is a collaborative project between the Central Statistics Agency of Ethiopia (CSA) and the World Bank's Living Standards Measurement Study-Integrated Survey of Agriculture (LSMS-ISA) initiative

consumption and asset-based wellbeing dynamics simultaneously in a way that would be impossible to do with pooled cross-section data.

This paper examines the dynamics of wellbeing in Ethiopia by assessing poverty status based on both consumption expenditures and asset ownership. The paper is divided into two main parts. The first part investigates how consumption-based wellbeing and poverty status are changing over time. Availability of longitudinal data at the household level allows us to track direct changes in the wellbeing of households rather than only examining the change in average wellbeing between two cross sections. Using the first two waves of the ESS, we assess the dynamics of consumption-based poverty in rural Ethiopia and examine the extent to which this poverty is transient or chronic. As the relative shares of these two types of poverty can have important implications for poverty reduction policies, we focus on households transitioning into or out of poverty between 2012 and 2014 and examine how the level and composition of consumption has changed.

Our analysis is guided by the notion that even though the poverty prevalence is approximately the same in 2012 and 2014, at 30%, there may be significant changes in household consumption patterns. Taking advantage of the longitudinal data at the household level, we break down the consumption aggregate into food and non-food groups, and further into various food and non-food subgroups, to assess the direction and magnitude of changes in consumption. We believe that breaking down the total consumption to various food and non-food categories offers insights on how people change their dietary patterns and other expenses when they move in and out of poverty. These types of analyses could not be explored with the consumption aggregate only. We then explore characteristics of chronic vs. transitory poor households by assessing the extent of poverty dynamics by gender and education level of the household heads. Profiling demographic characteristics by poverty status helps us understand the underlying mechanism of consumption-based poverty dynamics.

In the second part of the paper, we examine wellbeing dynamics based on the socioeconomic status of the households. The socioeconomic status is

measured with a weighted index calculated using the principal component analysis (PCA) on 52 different assets. Assets are loosely defined and include all household durables, housing characteristics, livestock, and agricultural tools and equipment. Since agriculture is a key economic activity for the majority of households in rural and small town areas (Martins, 2014), including livestock and agricultural assets as a wealth measure may reveal the wellbeing dynamics not captured in the aggregate consumption. We define an asset-based poverty line such that the proportion of those that are asset-poor is equal to the proportion of those who are consumption poor in 2012. Then, holding this line fixed for 2014, we examine the dynamics of asset-based wellbeing between 2012 and 2014. Finally, to understand how consumption-based poverty fares against asset-based poverty, we compare and contrast wellbeing dynamics based on asset and consumption poverty lines.

2. Data

The data used in this study comes from the Ethiopia Socioeconomic Survey (ESS), a collaborative project between the Central Statistics Agency of Ethiopia (CSA) and the World Bank's Living Standards Measurement Study - Integrated Surveys of Agriculture (LSMS-ISA) that collects multi-topic panel data at the household level. The first wave of the survey includes only rural and small town areas and the second wave of the survey expands to also include urban areas. As our analysis is based on panel households only, the urban sample is automatically excluded. All our results are representative at the national level for rural and small town areas only. Each survey was administered over a series of three visits. In the first wave the post-planting questionnaire was administered between September and October of 2011 followed by the livestock questionnaire in November of 2011 and the household, community, and post-harvest questionnaires in January and April of 2012. A similar method was used for the second wave of data collections, which took place from September of 2013 to April of 2014.

The ESS used a stratified, two-stage sampling scheme. The regions of Ethiopia served as the strata and enumeration areas (EAs) were

proportionately selected based on regional population size. In the first wave, a total of 290 and 43 EAs were selected from rural and small town areas, respectively and a total of 12 households were chosen from each enumeration area. The non-response rate was extremely low at 0.7 percent, and the final interviewed sample included 3,969 households from rural and small town areas. In the second wave, 100 EAs were added from urban areas giving a total of 433 EAs and 5,262 households. However, because urban households were not surveyed in wave 1, they are excluded from the analysis.

Table 1 presents a detailed breakdown of exclusion criteria and corresponding sample loss. The attrition rate between waves was less than 5 percent yielding a surveyed panel sample of 3,776 rural and small town households. However, the final sample used in this analysis is 3,481 because we imposed further restrictions on our sample as follows. We drop 65 households from wave 1 and 128 households from wave 2due to missing information in the consumption aggregate construction.[6]We then exclude all households with zero total consumption (46 in wave 1 and 22 in wave 2) followed by households that subsequently do not match between waves as a result of previous exclusion criteria. Finally, we exclude 45 households whose absolute change in consumption between waves is larger than 25,000 Birr/year per adult equivalent. The threshold is identified at 25,000 Birr/year because we assume that a change in consumption larger than 25,000 Birr is purely noise in the data as it is equivalent to a presumably implausible transition from below the 1st percentile to above the 99th percentile or vice versa.

[6] Missing information refers to households reporting purchase price but no purchase records or with purchased items but no valid conversion factor to convert food items to monetary values

Table 1: Sample size and exclusion criteria

Exclude households if:	Wave 1		Wave 2	
	Total	**Excluded**	**Total**	**Excluded**
1. Lost to attrition	3969	193	3776	-
2. Missing information for consumption aggregates*	3776	65	3776	128
3. Zero total consumption	3711	46	3648	22
4. Unmatched in two waves	3665	139	3626	100
5. Absolute change in consumption >25k Birr/year	3526	45	3526	45
Sample size	3481	488	3481	295

Notes. *Missing information refers to the situation when households reported a purchase price but there is no purchase record or there are no conversion factors ('prices') for certain items the households consumed.

2.1 Characteristics of sample households

Table 2 presents demographic characteristics of sample households at baseline (2011/12) and follow-up (2013/14). The average adult equivalent household size of rural and small town Ethiopia is4.8 adults in wave 1. The adult equivalent size is calculated by multiplying household size with an adult equivalent factor which varies by age group and gender. The rest of the analysis uses adult equivalent size in lieu of household size because the latter fails to account for differences in age and gender of household members.[7] Among other variables, the dependency ratio of 1.4 indicates that, on average, each household has 40% more economically inactive members (children less than 15 and adults older than 65 years of age) than working age members. While all working age people may not have a valid source of income and therefore the real dependency ratio may be even higher, the ratio indicates that

[7] We also analyze consumption- and asset-based wellbeing dynamics using household size instead of adult equivalent size. The main results for the consumption-based wellbeing dynamics are presented in the Appendix but are not discussed in the main text because, even though the size of point estimates for per-capita consumption and other variables differ, the underlying story of wellbeing dynamics is qualitatively identical.

the majority of the Ethiopian population is economically inactive. As implied by the high dependency ratio, the number of children in Ethiopian households is quite large. In fact, households have approximately 4 children on average with 1 child below age 6 and approximately 3 children ages 6 to 18. All household characteristics remain more or less constant over time.

Table 2: Demographic characteristics for households in rural and small town areas

Characteristics	2011/12		2013/14	
	Mean	**Std error**	**Mean**	**Std error**
Household				
Adult Equivalent Size	4.8	0.05	4.9	0.05
Dependency ratio†	1.4	0.03	1.6	0.04
Number of kids below 6	1.1	0.03	1.1	0.04
Number of Kids 6-18	2.5	0.05	2.6	0.05
Rural	0.94	0.01	0.94	0.01
Household head				
Religion (1=Christian)	0.67	0.03	0.67	0.03
Religion (1=Muslim)	0.30	0.03	0.30	0.03
Religion (1=Other)	0.03	0.01	0.02	0.01
Sex (1=Female, 0=Male)	0.15	0.01	0.16	0.01
Married (1=yes, 0=No)	0.88	0.01	0.86	0.01
Age (years)	44.2	0.34	45.7	0.35
Can read and write (1=yes, 0=No)	0.47	0.02	0.46	0.02
Education (1=Never school,0=else)	0.60	0.02	0.59	0.02
Education (1=Primary, 0=else)	0.35	0.02	0.35	0.02
Education (1=Secondary, 0=else)	0.05	0.01	0.05	0.01
Observations	*3481*		*3481*	

Notes. Point estimates are population weighted means. Standard errors are adjusted for stratification and clustering.

†Dependency ratio is missing for 126 households because they have no working age members at all.

In addition to household demographics, household head characteristics such as age, gender, and education are also pivotal in understanding household's wellbeing status. Although a vast majority (87%) of household heads are

married, only 15% of households are headed by a female. On average, household heads are 44 years old in 2012 and 46 years old in 2014. Approximately 47% of household heads are literate. The low literacy rate follows from the observation that 60% of household heads have never attended school, 35% have attended primary school only (up to 8^{th} grade), and 5% have attended secondary school or higher (above 9^{th} grade). As shown in Table 1, approximately 14% of full sample households were excluded from the final analytical sample. If the excluded households are substantially different from the included households, this could introduce some selection bias into the results. In Table 3, we compare basic characteristics for the included and excluded samples at baseline (2011/12). The far right column of Table 3 also contains the results of an adjusted Wald test for the difference between the included and excluded sample means. The excluded sample does not significantly differ from the included sample on most demographic characteristics and both the excluded and included samples are identically distributed across regions. However, the samples are different on two characteristics: religion and education of the head of the household. Fewer excluded household heads were Muslim and fewer had completed primary school. Although the two samples are similar in most respects, these few differences could potentially introduce some bias and therefore the results must be interpreted with some caution.

3. Methods

This paper takes a unique approach to assess the dynamics of wellbeing in Ethiopia. First we compute a consumption-based poverty line utilizing a panel of households from the first two waves of the ESS and categorize households as chronically poor, forward movers, backward movers, and non-poor. This analysis is followed by an asset-based approach that employs identical methods to establish an asset-based poverty line and classify households into the four different poverty groups. The analysis then draws on both consumption- and asset-based approaches and compares and contrasts wellbeing dynamics based on the two dimensions.

Table 3: Demographics for included and excluded households

	Included	Excluded	Difference
Household			
Adult Equivalent Size	4.8	4.5	
Dependency ratio	1.4	1.3	
Number of kids below 6	1.1	1.0	
Number of Kids 6-18	2.5	2.3	
Rural	0.94	0.95	
Region			
Tigray	0.06	0.07	
Amhara	0.25	0.28	
Oromia	0.42	0.38	
SNNP	0.22	0.19	
Others	0.06	0.08	
Household head			
Religion (1=Christian)	0.67	0.75	
Religion (1=Muslim)	0.30	0.20	**
Religion(1=Other)	0.03	0.06	
Sex (1=Female, 0=else	0.15	0.13	
Married (1=Yes, 0=No)	0.88	0.88	
Age	44.2	43.4	
Can read and write (1=Yes, 0=No)	0.47	0.40	
Education(1=Never school, 0=else)	0.60	0.67	*
Education(1=Primary,0=else)	0.35	0.26	**
Education(1=Secondary,0=else)	0.05	0.07	
Observations	3481	488‡	

Notes: Point estimates are population weighted means. Standard errors are adjusted for stratification and clustering. Significance level: *** <0.01, ** <0.05, * <0.1

‡The number of observations for the excluded sample varies for several variables depending on data availability.

3.1 Consumption poverty line

The consumption poverty line is based on the official poverty headcount ratio of 30% in 2012 (World Bank, 2015). To adjust for inflation at the national level and make the values comparable across waves, we inflate the value of wave 1 consumption to wave 2 levels by a factor of 1.21as reported in the 2015 annual report of the Central Statistical Agency (CSA, 2015). We then set the poverty line to a value that corresponds to the 30thpercentile of total consumption in wave 1.Based on this poverty line (3246 Birr/year per adult equivalent in 2014 terms) we identify households that are descending into poverty (Backward movers), moving out of poverty (Forward movers), poor in both waves (Chronic poor), and non-poor in both waves (Always non-poor).

3.2 Asset poverty line

The asset poverty line is also determined according to the asset based poverty headcount in the wave 1 data. We use 52 total assets that include 34 household durables, 8 livestock species, and 10 variables for dwelling characteristics. Asset variables that are not in both survey waves are excluded from the analysis. Our approach in this paper is to have a more comprehensive definition of household "assets" as any store of wealth. Therefore, we elected to include some assets which could be classified as a means of production (i.e. agricultural assets and livestock). One justification for their inclusion is that the sample consists mainly of rural households with the majority involved in agricultural activities and therefore we argue that these assets are often a critical component of household welfare of these households[8].

We use principal component analysis, with the first principal component serving as scoring factors for computing a weighted index. This index is

[8]One potential criticism of this approach is that households do not derive their wellbeing directly from these productive assets, but rather they are a means to enable purchase of other assets that contribute to wellbeing.

commonly referred to as an asset index, wealth index, or socioeconomic index. In this paper, we call it an asset index. Economics status based on the asset index is sometimes referred to as wealth status or socioeconomic status. The first principal component captures the maximum variance (i.e. inequalities) in the data and therefore serves as a valid measure of wealth or socioeconomic status (Filmer & Scott, 2008; Vyas & Kumaranayake, 2006; McKenzie, 2005; Filmer & Pritchett, 2001). To make the asset index comparable across waves and equivalent to the approach we used to calculate the consumption poverty line, we pooled assets across two waves, obtained scoring factors, means, and standard deviations for the pooled data, and use the estimates to calculate period specific asset indices. If prices are viewed as weights, using pooled scoring factors for the asset index is equivalent to using the inflated prices in calculating the consumption poverty line. Our use of pooled data to obtain the scoring factors and other mean estimates is strongly supported in the literature (Booysen *et al.*, 2008; Harttgen, Klasen, & Vollmer, 2013; Sahn & Stifel, 2000, 2003).

Table 4 provides summary statistics and scoring factors for all 52 asset variables used in the analysis. The asset poverty line is established with the same method used to generate the consumption poverty line. First, we identify the asset poverty line that corresponds to the 30^{th} percentile of the wave 1 asset index. This same poverty line (asset index value of -0.963) is set in wave 2. This allows us to identify households that are falling into poverty (Backward movers), moving out of poverty (Forward movers), poor in both waves (Chronic poor), and non-poor in both waves (Always non-poor). Since asset variables are either binary (ownership) or count (number owned), the variable weights are easy to interpret. In case of binary asset variables, acquisition of a particular type of asset (one or many) changes the value of the asset index according to that asset's weight. For example, owning a car increases the asset index by 2.98 but using firewood or dung as cooking fuel decreases the asset index by 0.29. For count variables such as number of cattle, acquiring an additional unit of asset changes the value of the asset index by that asset's weight. For example, owning one more cattle decreases the asset index by 0.003 and having one more room in the house increases the asset index by 0.09.

Table 4: Summary statistics and scoring factors for asset variables

Assets ownership	Scoring factors	Mean	SD	Scoring factors/SD
Household durables†(=1 if own, 0 else)				
Kerosene stove	0.14	0.031	0.173	0.81
Butane stove	0.17	0.006	0.080	2.15
Electric stove	0.20	0.011	0.103	1.90
Blanket	0.04	0.896	0.305	0.13
Mattress, bed	0.08	0.684	0.465	0.16
Watch/clock	0.09	0.284	0.451	0.19
Telephone	0.21	0.025	0.157	1.36
Cellphone	0.13	0.356	0.479	0.27
Radio, tape	0.10	0.353	0.478	0.21
TV	0.27	0.044	0.204	1.33
CD/VCD/DVD	0.27	0.029	0.167	1.62
Dish antenna	0.27	0.023	0.151	1.80
Sofa	0.25	0.013	0.113	2.25
Bicycle	0.17	0.020	0.141	1.18
Motorbike	0.19	0.010	0.101	1.86
Cart (hand)	0.17	0.011	0.107	1.60
Animal cart	0.11	0.029	0.167	0.68
Sewing machine	0.15	0.015	0.120	1.25
Weaving equipment	0.12	0.014	0.116	1.06
Mitad-electric	0.25	0.009	0.096	2.61
Mitad-modern	0.13	0.058	0.233	0.56
Refrigerator	0.24	0.011	0.104	2.34
Car	0.22	0.005	0.073	2.98
Gold/silver	0.10	0.245	0.430	0.24
Wardrobe	0.16	0.034	0.180	0.90
Storage shelf	0.14	0.116	0.320	0.43
Biogas stove	0.18	0.006	0.080	2.27
Water storage pit	0.10	0.030	0.170	0.62
Sickle	-0.04	0.837	0.370	-0.12
Axe	0.02	0.440	0.496	0.04
Pick Axe	0.01	0.511	0.500	0.03

Plough	-0.05	0.702	0.457	-0.10
Plough (modern)	0.09	0.027	0.161	0.54
Water pump	0.20	0.025	0.157	1.30
Livestock (number)				
Cattle	-0.01	4.080	4.551	-0.003
Sheep	-0.02	1.866	4.047	-0.005
Goat	-0.02	1.835	5.341	-0.004
Horse	-0.003	0.134	0.513	-0.005
Donkey	-0.01	0.523	0.877	-0.012
Mule	-0.001	0.038	0.226	-0.004
Camel	-0.01	0.132	1.556	-0.005
Chicken	-0.02	3.441	5.340	-0.004
Housing characteristics				
Floor (1= Cement, 0 else)	0.13	0.030	0.171	0.76
Wall (1= Cement, bricks, 0 else)	0.07	0.006	0.076	0.87
Kitchen (1= Improved, 0 else)	0.06	0.644	0.479	0.13
Roof (1= CGI, tiles, 0 else)	0.08	0.491	0.500	0.16
Light source (1= Electricity, 0 else)	0.09	0.337	0.473	0.18
Toilet (1= Flush, pit, 0 else)	0.06	0.614	0.487	0.13
Number of rooms	0.10	1.879	1.020	0.09
Drinking water (1= Protected, 0 else)	0.05	0.564	0.496	0.11
Cooking fuel (1= Firewood, 0 else)	-0.05	0.972	0.166	-0.29
Own home (1=Yes, 0 No)	-0.04	0.940	0.237	-0.18

Notes: All point estimates, scoring factors, means, and standard deviation, are population weighted estimates and based on pooled data across two waves. Asset variables are sorted by their weights.

†All household durables take a value of 1 if household owns them and 0 if the household does not own.

4. Wellbeing dynamics

In this section we present the dynamics of wellbeing using consumption-and asset-based poverty lines. We present a detailed analysis of wellbeing dynamics based on consumption expenditures followed by an assessment of asset-based dynamics and a comparison between the two approaches.

4.1 Consumption expenditures

Table 5 presents consumption expenditures for the full panel sample in 2012 and 2014. The first three rows present total, food, and non-food consumption expenditures and the next two rows reflect the shares of food and non-food expenditures. Food expenditures include expenses for 25 different food items from 5 different food groups; staples, pulses, animal source foods (ASF), vegetables and fruits (veg/fruit), and other miscellaneous food items.[9] Non-food expenditures cover all other expenses not related to food. Health expenses are excluded due to data unavailability.

Table 5: Consumption expenditures of households in rural and small town areas

Expenditures	Full Sample		
	Wave 1 (2011/12)	**Wave 2 (2013/14)**	**Diff**
Total	5378	4973	-405**
	(163.0)	(141.1)	
Food	4398	3911	-487***
	(142.1)	(122.6)	
Nonfood	980	1062	81**
	(46.7)	(44.9)	
Food and nonfood shares			
Food	0.82	0.78	-0.04***
	(0.01)	(0.01)	
Nonfood	0.18	0.22	0.04***
	(0.01)	(0.01)	
Observations	3481	3481	

Notes. Point estimates are population weighted means. Standard errors adjusted for stratification and clustering are in parentheses. Significance level: *** <0.01, ** <0.05, * <0.1.

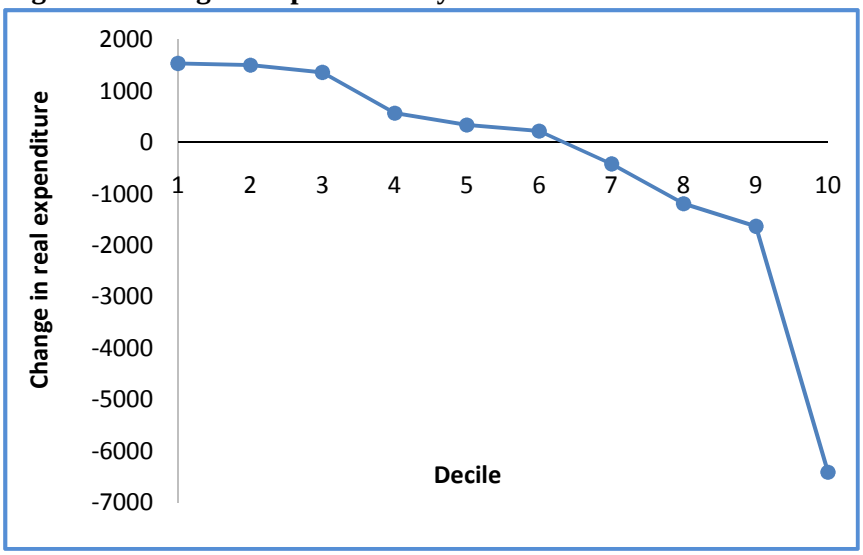
[9] Staples include teff, wheat, barley, maize, sorghum, and millet. Pulses include horse beans, chick pea, field pea, lentils, niger seed, and linseed and 'veg/fruit' includes onion, banana, potato, kocho, and bula. Similarly, ASF includes meat, milk, cheese, and eggs and 'other food' includes sugar, salt, coffee, and chat/khat.

All expenditures are expressed in 2014 levels and reflect real annual Birr per adult equivalent. Results based on per-capita expenditure are in Table A1 in Appendix. Point estimates differ but the pattern for wellbeing dynamics is qualitatively the same.

In the aggregate, total and food expenditures decreased between 2012 and 2014; nonfood expenditures increased over this same period. On average, compared to the budget shares in 2012, Ethiopian households decreased the food budget share by 4% in 2014 but increased the non-food budget share by 4%. Because total consumption has also decreased over time, improvements in the wellbeing status of rural and small town Ethiopians may be not as substantial as it has been reported previously (World Bank, 2015, 2016; Martins, 2014). One potential reason for this difference is that our results are based on rural and small town samples only and do not reflect dynamics in urban areas. It suggests that this growth has not consistently translated into improved wellbeing among households in rural and small towns in Ethiopia.

Does this drop in mean consumption translate to an increase in poverty? Despite a statistically significant drop in mean consumption from 5378 Birr/person in 2012 to 4973 Birr/person in 2014 (Table 5), we find that the change in the poverty rate was not statistically significant. Therefore, it appears that poverty has largely remained the same across the two waves. Further exploration of the data reveals that the drop in mean consumption is potentially a result of measurement error in wave 1, particularly on the upper end of the distribution. Figure 1 presents the average change in consumption for each expenditure decile in wave 1. The average change consistently and gradually decreases as one moves along the wave 1 distribution until reaching the highest wave 1 decile. At the 10^{th} decile, the change in consumption drops substantially. This drop either implies (1) that the richest households saw a large decrease in expenditures between waves or (2) that there was measurement error in wave 1 that was not present in wave 2 and registered as a large decrease for mismeasured households. Measurement error seems the more likely explanation since we wouldn't expect such wide swings in light of the fact that food consumption makes up a large portion of consumption throughout the distribution. When we exclude the 10^{th} decile, the average change in expenditure is positive (and weakly significant). The decrease in mean consumption therefore does not appear to be a robust result.

Figure 1: Change in expenditure by wave 1 decile



Even though the poverty rate did not significantly change between waves, there is still potential for significant movement into and out of poverty. Table 6 presents the poverty transition matrix between waves 1 and 2. Approximately one-third of Ethiopian households lived in poverty in each wave (30% in wave 1 and 32% in wave 2). However, nearly 47% of households were poor at some point during this period; approximately 16% of households lived below the poverty line in both waves, 15% were poor in wave 1 but moved out of poverty in wave 2, and another 16% fell back to poverty in wave 2. Similar patterns hold for both rural and small town areas although the poverty rate in small towns is much lower. In small towns,9% of individuals were chronically poor, 10% were forward movers, and 11% were backward movers, meaning that30%of small town households were poor at some point between 2012 and 2014. Although repeated cross-sectional surveys can capture the share of households that are currently poor, they cannot capture the share of households that have experienced poverty over time. Our findings indicate that even over a relatively short period (2 years), the share experiencing poverty is much larger than indicated by current poverty rates in Ethiopia.

Table 6: Proportion of poor and non-poor households based on consumption

Wave 1 (2011/12)	Wave 2 (2013/14)		Total
	Non-poor	Poor	
Full sample			
Non-poor	53.3	16.4	*69.7*
	(2.17)	(1.18)	(*1.89)*
Poor	14.6	15.7	*30.3*
	(1.25)	(1.47)	(*1.89*)
Total	*67.9*	*32.1*	*100*
	(2.01)	(*2.01*)	
Rural			
Non-poor	52.1	16.8	*68.9*
	(2.29)	(1.26)	(*1.99*)
Poor	14.9	16.2	*31.1*
	(1.33)	(1.55)	(*1.99*)
Total	*67.1*	*32.9*	*100*
	(2.12)	(*2.12*)	
Small Town			
Non-poor	70.0	11.3	*81.3*
	(3.29)	(2.09)	(*2.74*)
Poor	9.8	8.9	*18.7*
	(2.11)	(2.12)	(*2.74*)
Total	*79.9*	*20.1*	*100*
	(3.03)	(*3.03*)	

Notes: Point estimates are population weighted proportions. Standard errors adjusted for stratification and clustering are in parentheses.
Rural sample includes 3063 households and small town sample includes 418 households. Results based on per-capita expenditure are in Table A2 in Appendix. The proportion of non-poor remains the same but the proportion of chronic poor increases and the proportion of transitory poor decreases by a small percentage.

Table 7 presents consumption expenditures for households that were poor in

wave 1 and either remained poor (chronic poor) or moved out of poverty (forward movers) in wave 2. Chronically poor households exhibit no change in the amount of overall consumption and a small change in food-only consumption over time, but we find that the share of food consumption has decreased by 3%. Interestingly, the chronic poor increased both the amount and share of non-food consumption expenditures suggesting some movement in consumption pattern even though they are trapped in chronic poverty. In contrast, the forward movers increase the amount of consumption expenditure on all food and non-food items, but do not see an increase in the share of food or non-food consumption.[10]

Table 7: Consumption expenditures of households poor in baseline (2012/13)

Expenditures	Chronic poor			Forward movers		
	Wave 1	Wave 2	Diff	Wave 1	Wave 2	Diff
Total	2212	2187	-26	2510	5563	3053***
	(54.0)	(43.9)		(49.2)	(217.4)	
Food	1805	1699	-106*	1992	4553	2561***
	(52.1)	(40.4)		(46.7)	(224.5)	
Nonfood	407	487	80***	517	1010	493***
	(19.9)	(24.9)		(24.2)	(76.7)	
Food and nonfood shares						
Food	0.81	0.78	-0.03***	0.79	0.80	0.01
	(0.01)	(0.01)		(0.01)	(0.01)	
Nonfood	0.19	0.22	0.03***	0.21	0.20	-0.01
	(0.01)	(0.01)		(0.01)	(0.01)	
Observations	454	454		460	460	

Note: Point estimates are population weighted means. Standard errors adjusted for stratification and clustering are in parentheses. Significance level: *** <0.01, ** <0.05, * <0.1.

All expenditures in level are annual, real Birr per adult equivalent. Results

[10] This finding is consistent with Engel's law of food demand that states "as income rises, the proportion of income spent on food falls, even if the actual expenditure on food rises".

based on per-capita expenditure are in Table A3 in Appendix. Point estimates differ but the pattern for wellbeing dynamics is qualitatively the same.

Table 8 presents the dynamics of consumption for households that were above the poverty line in 2012. Approximately 21% of the 2,567 non-poor households fell back to poverty in 2014. The backward movers experienced declines both in their food and non-food consumption. Those who remained non-poor over time spent more on food items but, as Engel's law of food demand implies, their share of food expenditure decreased and the share of non-food expenditures increased. Results in Tables 7 and 8 indicate that the view of poverty based on cross-sectional data is unable to capture the dynamics of consumption and the change in the relative position of households over time. In addition, traditional consumption-based analyses of wellbeing typically do not examine changes in the composition of consumption which can be just as important as the level of consumption in determining wellbeing dynamics. In fact, measuring wellbeing status with consumption aggregates may miss the dynamics of consumption at food and non-food items level.

Table 8: Consumption expenditures of households non-poor in baseline (2012/13)

Expenditures	Backward movers			Always non-poor		
	Wave 1	**Wave 2**	**Diff**	**Wave 1**	**Wave 2**	**Diff**
Total	5608	2482	-3126***	7028	6400	-628***
	(193.6)	(38.0)		(181.1)	(164.5)	
Food	4811	1939	-2872***	5695	4995	-700***
	(187.3)	(38.0)		(166.9)	(147.3)	
Nonfood	797	542	-254***	1333	1405	72
	(47.7)	(21.9)		(69.2)	(59.4)	
Food and nonfood shares						
Food	0.85	0.78	-0.07***	0.81	0.78	-0.03***
	(0.01)	(0.01)		(0.01)	(0.01)	
Nonfood	0.15	0.22	0.07***	0.19	0.22	0.03***
	(0.01)	(0.01)		(0.01)	(0.01)	
Observations	543	543		2024	2024	

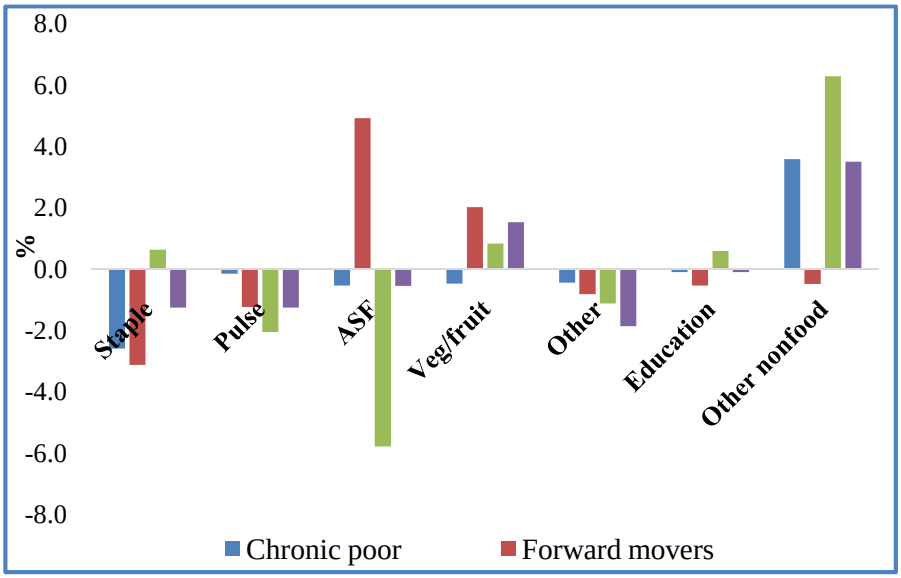
Notes. Point estimates are population weighted means. Standard errors adjusted for stratification and clustering are in parentheses. Significance level: *** <0.01, ** <0.05, * <0.1

All expenditures in level are annual, real Birr per adult equivalent. Results based on per-capita expenditure are in Table A4 in Appendix. Point estimates differ but the pattern for wellbeing dynamics is qualitatively the same.

In Figure 2, we present the change in the share of consumption expenditures on various food and non-food groups over time. A negative change in expenditure share means the household decreases the share of expenditure over time. Examining the changes in expenditure shares, we find that chronically poor households decreased their share of all food and non-food items except for 'other non-food'. As implied by Bennett's law of food demand[11], forward movers spent smaller shares on starchy staples and other foods, but more on nutritious foods like ASF and vegetable and fruits. The opposite is true for backward movers as they spend more on staples but less on nutritious foods like pulses and ASFs. For non-poor individuals, as Engel's law implies, the non-food budget share has increased over time but the food budget share has decreased for all food items, with the exception of fruit and vegetables. Overall, results in Figure 2 imply that even though consumption-based poverty has increased over time (Table 6) and overall consumption has fallen over time (Table 5), many rural Ethiopians have experienced improvements in wellbeing status as reflected in changes in the quality of diet.

[11]Bennett's law of food demand states 'As income rises the proportion of starchy staples in the diet falls

Figure 2: Change in the expenditure share of food and nonfood items by poverty status between 2012 and 2014



4.2 Consumption-based poverty and household demographics

Understanding the relationship between household demographics and poverty may provide further insights for policy design and implementation. For example, policymakers may be interested to know whether poverty status differs with the gender of the household head, the household head's education level, or the proportion of economically active members in the household. Figure 3 depicts the proportions of the population in each poverty dynamics group by gender of the household head. It suggests that wellbeing dynamics in rural Ethiopia does not differ greatly by gender of the household head. However, it does appear there were more forward movers among male headed households and more individuals who were always non-poor among female headed households.

Figure 3: Gender of household head in baseline and poverty transition

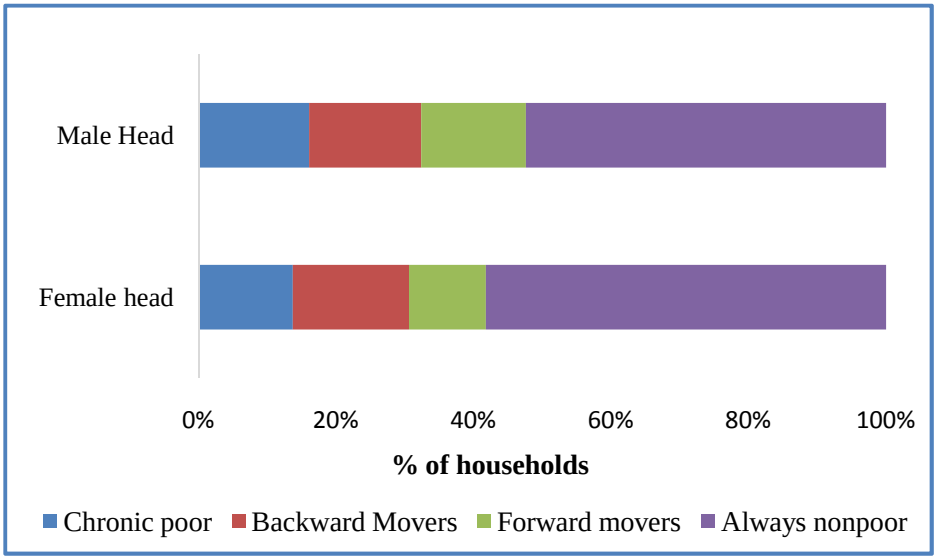
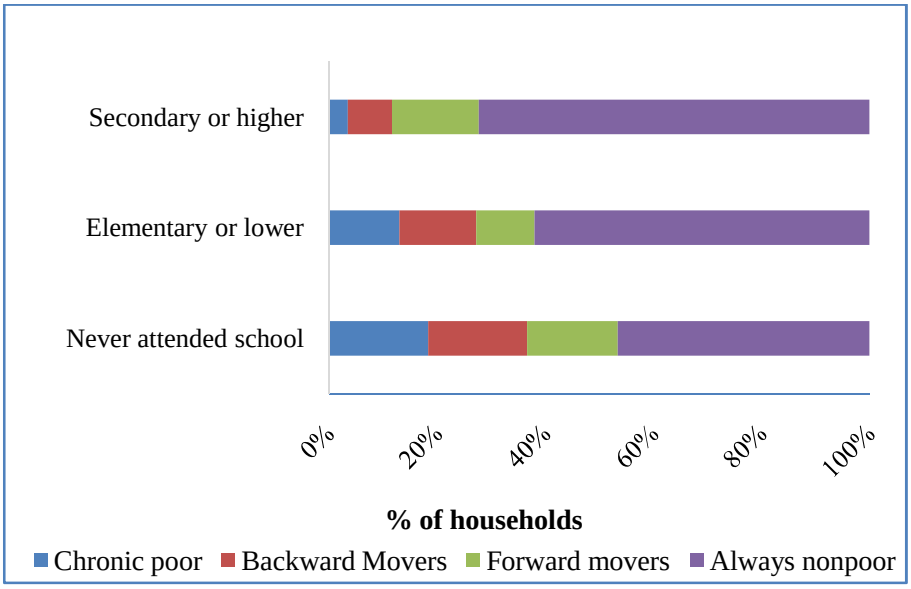


Figure 4 plots household poverty status against household head's education level. First, we classify household heads into two groups: "never attended school" and "attended school". The 'attended school' category is classified further into 'elementary school or lower' and 'secondary school or higher'. A vast majority of household heads who have attended school did not complete primary school (8^{th} grade). Figure 4 indicates that poverty status and a household head's education level have an inverse relationship. While households headed by those with the highest education have the smallest proportion of chronic poor and the largest proportion of non-poor in both waves, households with 'never attended school' heads have the largest proportion of chronic poor and the smallest proportion of non-poor. The proportion of backward movers decreases with household head's education level while there is no clear difference for forward movers. This suggests that households with less educated heads were more likely to fall into poverty but those with better educated heads were not necessarily more likely to escape poverty.

Figure 4: Household head's education level in baseline and poverty transition



In Table 9, we take a slightly different angle and compare the demographic profile of the four poverty transition groups. In order to conserve space, we only present adjusted Wald test results for differences in means between chronic poor and forward movers as well as between backward movers and always non-poor. We find that household composition in wave 1 is different between these groups. Forward movers had smaller households compared to chronic poor while backward movers had larger households than those that were always non-poor. Among household head characteristics, the strongest differences are for education. In general, those households that fell into poverty had less educated heads than those households that were able to remain non-poor. Likewise, those households that were able to escape poverty had heads that were better educated than those that remained poor, though this result was much weaker. Comparing these demographic profiles suggests that education is one important component for transitions into and out of poverty.

Table 9: Baseline demographic characteristics by poverty transition group

	Chronic Poor	Forward Movers	Diff	Backward Movers	Always non-poor	Diff
Household						
Adult Equivalent Size	5.3	4.7	***	5.2	4.5	***
Dependency ratio	1.5	1.6	**	1.3	1.3	***
Number of kids below 6	1.3	1.2	***	1.1	1.1	*
Number of Kids 6-18	2.9	2.4	***	2.9	2.2	***
Rural	0.96	0.96		0.96	0.92	***
Household head						
Religion (1=Christian)	0.71	0.68	*	0.69	0.65	
Religion (1=Muslim)	0.21	0.31		0.29	0.33	
Religion(1=Other)	0.07	0.01	***	0.02	0.02	
Sex (1=Female, 0=else	0.13	0.15		0.11	0.16	
Married (1=Yes, 0=No)	0.88	0.88		0.87	0.88	
Age	44.8	45.4		46.0	43.1	***
Can read and write (1=Yes, 0=No)	0.36	0.42	*	0.42	0.53	***
Education (1=Never school, 0=else)	0.70	0.67	*	0.69	0.52	***
Education (1=Primary, 0=else)	0.29	0.30		0.26	0.41	***
Education (1=Secondary, 0=else)	0.01	0.03	*	0.06	0.07	***
Observations	454	460		543	2024	

4.3 Asset poverty and wellbeing dynamics

In this section, we explore the dynamics of wellbeing using an alternative measure of poverty based on household asset holdings. As Carter & Barrett (2006) and Carter & May (2001) mention, dynamic asset poverty is the latest and fourth generation of poverty measurement approaches. The third generation of poverty measures, dynamic consumption poverty measure, captures what households consume over time but doesn't reflect the dynamic socioeconomic status. We argue that individuals' wellbeing status should be

defined beyond merely what they consume. A stock of durable assets owned by the household, livestock, agricultural tools and equipment, and dwelling characteristics may well reflect the components of wellbeing not captured by consumption expenditures and therefore should be taken into account in the analysis of wellbeing dynamics. Table 10 provides poverty transition matrices based on household asset holdings, for our full panel sample, rural, and small town households.

Table 10: Proportion of poor and non-poor households based on asset poverty line

Wave 1 (2011/12)	Wave 2 (2013/14)		Total
	Non-poor	Poor	
Full sample			
Non-poor	61.0	8.8	*69.8*
	(2.19)	(0.99)	*(1.92)*
Poor	13.6	16.6	*30.2*
	(1.09)	(1.60)	*(1.92)*
Total	*74.6*	*25.4*	*100*
	(1.99)	*(1.99)*	
Rural			
Non-poor	58.7	9.2	*67.9*
	(2.30)	(1.05)	*(2.03)*
Poor	14.5	17.6	*32.1*
	(1.16)	(1.71)	*(2.03)*
Total	*73.2*	*26.8*	*100*
	(2.11)	*(2.11)*	
Small Town			
Non-poor	95.0	2.7	*97.7*
	(1.79)	(1.45)	*(0.73)*
Poor	0.6	1.7	*2.3*
	(0.29)	(0.68)	*(0.73)*
Total	*95.6*	*4.4*	*100*
	(1.78)	*(1.78)*	

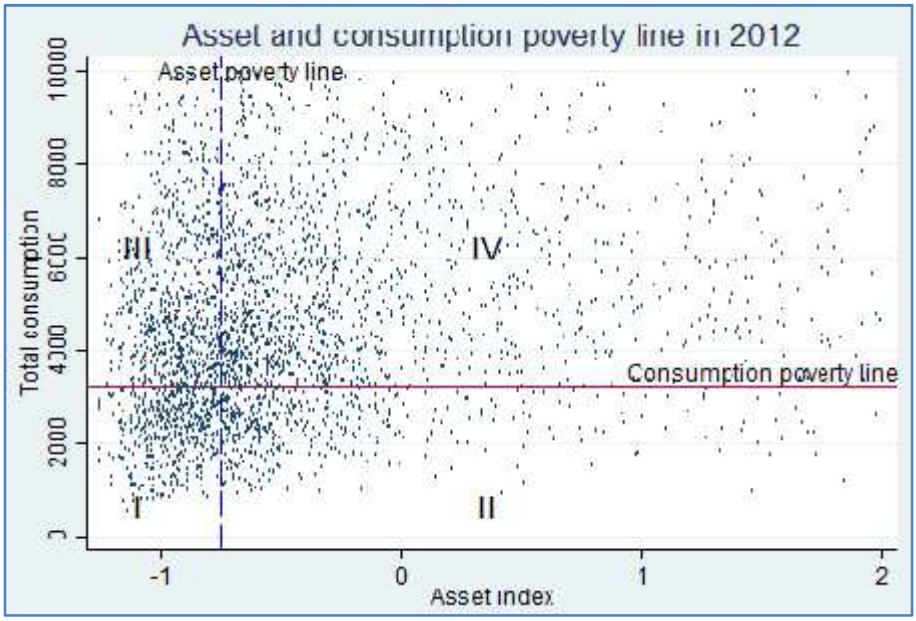
Notes. Point estimates are population weighted proportions. Standard errors adjusted for clustering and stratification are in parentheses. Rural sample includes 3063 households and small town sample includes 418 households.

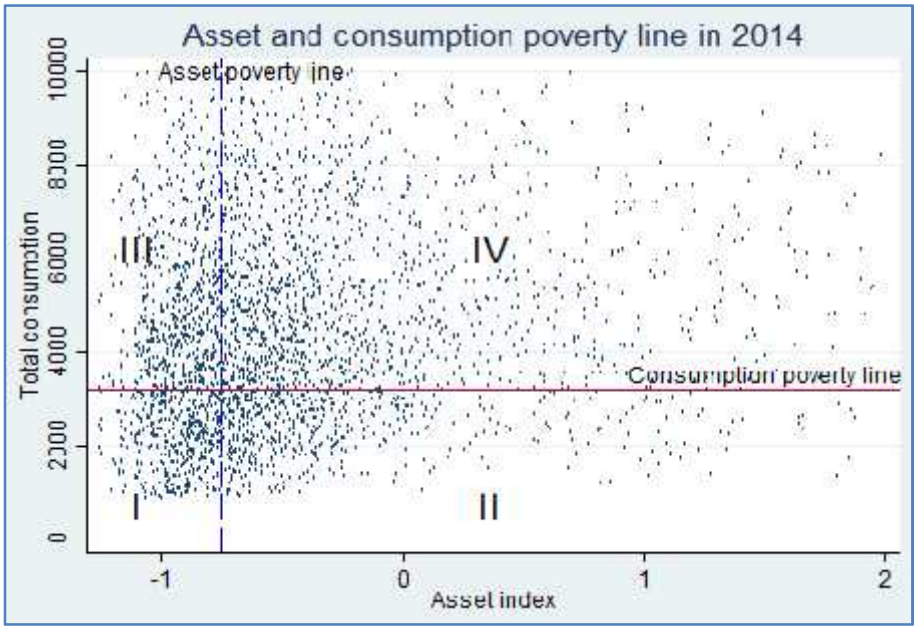
By construction, like consumption-based poverty, 30% of households are asset-poor in 2012 but, unlike consumption-based poverty, the proportion of poor people has declined over time to 25% in 2014. Once again, cross-sectional estimates of poverty underestimate the 'real' poverty prevalence as 39% of the population was 'asset-poor' in either 2012 or 2014. While a similar pattern is observed for consumption-based poverty dynamics, the asset-based dynamics exhibit less movement. Our finding that the prevalence of consumption-based poverty remained the same but the asset-based poverty decreased over time suggests that conclusions drawn from wellbeing dynamics based on consumption expenditures only may be incomplete. From a policy standpoint, it is critical to assess wellbeing dynamics in both consumption and asset spaces to be able to identify a suitable policy instrument.

Next, we compare and contrast asset- and consumption-based poverty both in the cross section and dynamically. Figure 5 depicts the distribution of the asset index and total consumption variables at each point in time. If the asset index and total consumption were highly positively correlated with each other, we would expect to see all observations accumulating around a 45-degree line. Instead, we note a scattered distribution of households both below and above the asset and consumption poverty lines.

However, even though the asset index and consumption expenditures are not strongly correlated, it is possible that poverty classifications based on the two variables may in fact exhibit a correspondence. In Figure 4, the large mass of households in region I and IV in both years implies at least some correspondence in wellbeing status based on the two variables. In both years, approximately 66% of households were classified to identical poverty status categories based on both the asset index and consumption expenditures; 53% were non-poor in both consumption and asset spaces and 13% were poor in both spaces. The remaining 34% of households were poor in one space but non-poor in the other space. This implies there is at least some correspondence between consumption- and asset-based poverty in the cross-section.

Figure 4: Asset and consumption poverty lines in rural and small town areas in 2012 and 2014





Next, we assess the extent to which these two estimates of poverty are correlated dynamically. In particular, we examine whether changes in consumption-based poverty over time tell us anything about changes in asset-based poverty over the same period. We construct two categorical variables each of which categorize households to three groups in both asset and consumption spaces – 'backward movers', 'forward movers' and 'stayed the same' – based on the change in their wellbeing status over time. Table 11presents the cross tabulation of these two variables. In the consumption space, 16% of households worsened, 69% stayed the same and about 15% improved their wellbeing status; a similar pattern holds in the asset space but only 9% households worsened and approximately 14% households improved their wellbeing status. However, among the 16% who fell into poverty in the consumption space, 71% stayed the same in the asset space and another 71% of the forward movers in the consumption space stayed the same in the asset space. Similarly, a large proportion of households that descended into or out of poverty in the asset space saw no change in their status in the consumption space. Although the one-third of the households that worsened or improved in the consumption space exhibit a different trend in the asset space, most of the 'stayers' in the consumption space remained 'stayers' in the asset space as well. In fact, a Pearson's test of independence between changes in asset- and consumption-based poverty indicators rejects the null hypothesis that the two distributions are independent. This suggests that there is at least some co-movement between asset- and consumption-based poverty.

Table 11: Contrasting changes in consumption- and asset-based wellbeing dynamics

Consumption-based poverty	**Asset-based poverty**			
	Backward movers	**Stayed the same**	**Forward movers**	***Total***
Backward movers	2.0	11.7	2.7	*16.4*
	(0.41)	(1.04)	(0.42)	*(1.18)*
Stayed the same	5.5	55.5	8.0	*69.0*
	(0.67)	(1.63)	(0.75)	*(1.50)*
Forward movers	1.3	10.4	2.9	*14.6*
	(0.32)	(0.96)	(0.52)	*(1.25)*
Total	*8.8*	*77.6*	*13.6*	*100*
	(0.99)	*(1.37)*	*(1.16)*	

Notes. Point estimates are population weighted proportions. Standard errors adjusted for clustering and stratification are in parentheses. In a Pearson's chi-squared test of independence, we reject the null hypothesis of independence, at p=0.001 and a chi-square value of 44.3

Table 12 summarizes the asset index for four different poverty transition groups in both consumption and asset spaces. The first three columns present the distribution of the asset index for four 'asset-poverty' status groups and the next three columns present the distribution for the 'consumption-poverty' status groups. If the asset index and consumption expenditures were perfectly correlated, we would expect the same values of the index for each poverty status group across the two survey waves.

Results indicate that although the values of the asset index are not the same, they do exhibit similar distributions for both asset-based and consumption-based poverty groups. The average asset index is always negative for the chronic poor and positive for 'always non-poor' in both waves. Among the transitory poor, the backward movers in the asset space have a positive asset

index in the first wave and a negative asset index in the second wave but, backward movers in the consumption space saw only a small decrease in their asset index. In contrast, the forward movers exhibit an opposing pattern; forward movers in the asset space move backward in the consumption space as their asset index decreases from 0.09 in 2012 to -0.38 in 2014. This observation suggests that asset poor households may not be consumption poor and vice versa. Overall, the results imply that even though wellbeing dynamics based on an asset index and consumption aggregates do exhibit similar trends, the two variables do not appear to be strongly correlated.

Table 12: Asset index by poverty status groups across waves

Poverty groups	Asset-based poverty			Consumption-based poverty		
	Wave 1	**Wave 2**	**N**	**Wave 1**	**Wave 2**	**N**
Chronic poor	-1.24	-1.22	653	-0.61	-0.70	454
	(0.007)	(0.006)		(0.12)	(0.05)	
Forward movers	-1.18	-0.51	486	0.09	-0.38	460
	(0.007)	(0.023)		(0.23)	(0.07)	
Backward movers	0.86	-1.16	315	-0.12	-0.50	543
	(0.37)	(0.008)		(0.15)	(0.05)	
Always non-poor	1.02	1.06	2027	0.62	0.74	2024
	(0.08)	(0.07)		(0.08)	(0.07)	
Total			3481			3481

Notes. Point estimates are the population weighted asset index obtained from the principal component analysis. Standard errors adjusted for clustering and stratification are in parentheses.

5. Conclusion

Our analysis emphasizes the notion that poverty assessments based on household level panel data provide a more complete picture of wellbeing

dynamics, as they can uniquely identify the transitory poor that are not detectable using cross-sectional data. In particular, the prevalence of poverty based on panel data is more than 55% higher than cross-sectional poverty which is around 30% in both 2012 and 2014. Panel data are crucial for assessing progress toward poverty reduction as poverty measures based solely on cross-sectional data significantly underestimate exposure to poverty at some point in time.

Our analysis further contributes to the literature on the dynamics of wellbeing in Ethiopia by looking at changes in the levels and shares of various components of household consumption. Disaggregating the consumption expenditures to various food and non-food groups, our results show that even though consumption-based poverty increased slightly over time in rural and small town areas, a large proportion of the population saw improvement in food consumption, consuming more nutritious foods and fewer staples. It is in this sense that assessing wellbeing dynamics based on aggregate consumption only may not fully capture wellbeing dynamics.

We also assess wellbeing dynamics based on household asset holdings and find that, unlike consumption-based poverty, asset poverty has decreased over time. As asset- and consumption-based poverty measures are mostly uncorrelated, a large chunk of 'consumption poor' are 'asset non-poor' and vice versa. We argue that since consumption is often temporal and does vary with season but asset accumulation is less subject to seasonal variations and reflects longer run economic status, using asset holdings to measure wellbeing dynamics may provide a more accurate view of the depth and severity of poverty dynamics.

The results also imply that policy interventions targeting poverty reduction may find it worthwhile to consider both consumption- and asset-based wellbeing dynamics in conjunction. While the chronic poor and households that are both asset and consumption poor may need policy interventions comprising immediate relief schemes, the transitory poor and households that are asset poor but consumption non-poor and vice versa may benefit more from long run poverty reduction policies.

Further research is needed to verify and expand on the findings of this study. Future studies could address the limitations from different perspectives. First, the comparison period considered in this paper (2011/12 to 2013/14) could be too short to fully explore the transitions. Future rounds of the ESS will allow for conducting these analyses over a longer time period. In addition, due to data availability, this study only analyzed poverty dynamics in rural areas. The urban context would offer a different setting. The follow-up ESS surveys would be used to address this and provide a more complete picture of poverty dynamics throughout Ethiopia.

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Appendix

Table A1: Per-capita consumption expenditures of households in rural and small town areas

Expenditures	Full Sample		
	Wave 1 (2011/12)	**Wave 2 (2013/14)**	**Diff**
Total	4324	4028	-295**
	(130.2)	(116.3)	
Food	3530	3163	-367***
	(112.6)	(100.1)	
Nonfood	793	865	72**
	(38.4)	(35.6)	
Food and nonfood shares			
Food	0.82	0.78	-0.04***
	(0.01)	(0.01)	
Nonfood	0.18	0.22	0.04***
	(0.01)	(0.01)	
Observations	3481	3481	

Notes. Point estimates are population weighted means. Standard errors adjusted for stratification and clustering are in parentheses. Significance level: *** <0.01, ** <0.05, * <0.1

All expenditures are expressed in 2014 levels and reflect real annual Birr per-capita.

Table A2: Proportion of poor and non-poor households based on per-capita consumption

Wave 1 (2011/12)	Wave 2 (2013/14)		Total
	Non-poor	Poor	
Full sample			
Non-poor	53.5	16.2	*69.7*
	(2.21)	(1.19)	(*1.91)*
Poor	13.5	16.8	*30.3*
	(1.17)	(1.48)	(*1.91*)
Total	*67.0*	*33.0*	*100*
	(2.03)	(*2.03*)	
Rural			
Non-poor	52.4	16.5	*68.9*
	(2.32)	(1.27)	(*2.02*)
Poor	13.8	17.3	*31.1*
	(1.24)	(1.56)	(*2.02*)
Total	*66.2*	*33.8*	*100*
	(2.15)	(*2.15*)	
Small Town			
Non-poor	69.5	12.3	*81.8*
	(3.69)	(2.35)	(*2.68*)
Poor	9.8	8.4	*18.2*
	(2.11)	(1.98)	(*2.68*)
Total	*79.3*	*20.7*	*100*
	(3.33)	(*3.33*)	

Notes. Point estimates are population weighted proportions. Standard errors adjusted for stratification and clustering are in parentheses.

Rural sample includes 3063 households and small town sample includes 418 households

Table A3: Per-capita consumption expenditures of households poor in baseline (2012/13)

Expenditures	Chronic poor			Forward movers		
	Wave 1	**Wave 2**	**Diff**	**Wave 1**	**Wave 2**	**Diff**
Total	1793	1779	-14	2007	4508	2501***
	(43.4)	(35.8)		(38.6)	(172.4)	
Food	1459	1404	-55	1597	3696	2099***
	(40.4)	(34.7)		(39.5)	(184.1)	
Nonfood	334	375	41***	410	812	402***
	(17.4)	(19.6)		(18.8)	(56.1)	
Food and nonfood shares						
Food	0.81	0.79	-0.02***	0.79	0.80	0.01
	(0.01)	(0.01)		(0.01)	(0.01)	
Nonfood	0.19	0.21	0.02***	0.21	0.20	-0.01
	(0.01)	(0.01)		(0.01)	(0.01)	
Observations	478	478		449	449	

Notes. Point estimates are population weighted means. Standard errors adjusted for stratification and clustering are in parentheses. Significance level: *** <0.01, ** <0.05, * <0.1.
All expenditures in level are annual, real Birr per-capita.

Table A4: Per-capita consumption expenditures of households non-poor in baseline (2012/13)

Expenditures	Backward movers			Always non-poor		
	Wave 1	**Wave 2**	**Diff**	**Wave 1**	**Wave 2**	**Diff**
Total	4554	1987	-2567***	5630	5230	-400**
	(178.7)	(30.6)		(141.8)	(132.4)	
Food	3926	1548	-2378***	4546	4069	-477***
	(167.9)	(30.3)		(129.1)	(117.6)	
Nonfood	628	439	-189***	1084	1161	77
	(41.7)	(16.7)		(56.9)	(48.6)	
Food and nonfood shares						
Food	0.86	0.78	-0.08***	0.81	0.78	-0.03***
	(0.01)	(0.01)		(0.01)	(0.01)	
Nonfood	0.14	0.22	0.08***	0.19	0.22	0.03***
	(0.01)	(0.01)		(0.01)	(0.01)	
Observations	530	530		2024	2024	

Notes. Point estimates are population weighted means. Standard errors adjusted for stratification and clustering are in parentheses. Significance level: *** <0.01, ** <0.05, * <0.1
All expenditures in level are annual, real Birr per-capita.