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## ETHIOPIA POVERTY ASSESSMENT

# Harnessing Continued Growth for Accelerated Poverty Reduction



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# Abbreviations and Acronyms

|              |   |
|--------------|---|
| <b>AE</b>    | Adult equivalent                                    |
| <b>BoLSA</b> | Bureau of Labor and Social Affairs                  |
| <b>CGE</b>   | Computable General Equilibrium                      |
| <b>DHS</b>   | Demographic and Health Survey                       |
| <b>ESS</b>   | Ethiopia Socioeconomic Survey                       |
| <b>ETB</b>   | Ethiopian Birr                                      |
| <b>FDRE</b>  | Federal Democratic Republic of Ethiopia             |
| <b>GDP</b>   | Gross Domestic Product                              |
| <b>GIC</b>   | Growth Incidence Curve                              |
| <b>GoE</b>   | Government of Ethiopia                              |
| <b>GTP</b>   | Growth and Transformation Plan                      |
| <b>HCES</b>  | Household Income and Consumption Expenditure Survey |
| <b>HFA</b>   | Humanitarian Food Aid                               |
| <b>HH</b>    | Household   |
| <b>HOI</b>   | Human Opportunity Index                             |
| <b>LFS</b>   | Labor Force Survey                                  |
| <b>NDVI</b>  | Normalized Difference Vegetation Index              |
| <b>PPP</b>   | Purchasing Power Parity                             |
| <b>PSNP</b>  | Productive Safety Net Program                       |
| <b>RAI</b>   | Rural Accessibility Index                           |
| <b>RIF</b>   | Recentered Influence Functions                      |
| <b>SNNPR</b> | Southern Nations, Nationalities and People's Region |
| <b>TD</b>    | Targeting differential                              |
| <b>TFR</b>   | Total Fertility Rate                                |
| <b>UEUS</b>  | Urban Employment and Unemployment Survey            |
| <b>URRAP</b> | Universal Rural Roads Access Program                |
| <b>USD</b>   | United States Dollars                               |
| <b>WMS</b>   | Welfare Monitoring Survey                           |

# Acknowledgements

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# Executive Summary

**This poverty assessment focuses on the evolution of poverty and other social indicators in Ethiopia between 2010/11 and 2015/2016** (henceforth referred to as 2011 and 2016). Using data from a variety of sources, mainly the twinned household living standards surveys (HCES and WMS), the Ethiopia Socioeconomic Survey (ESS) and the Demographic and Health Surveys (DHS), the poverty assessment documents trends in monetary and non-monetary

dimensions of living standards and examines the drivers of observed trends, with a special focus on government programs. The aim of the poverty assessment is to provide policy makers and development partners with information and analysis that can be used to improve the effectiveness of their poverty reduction and social programs.

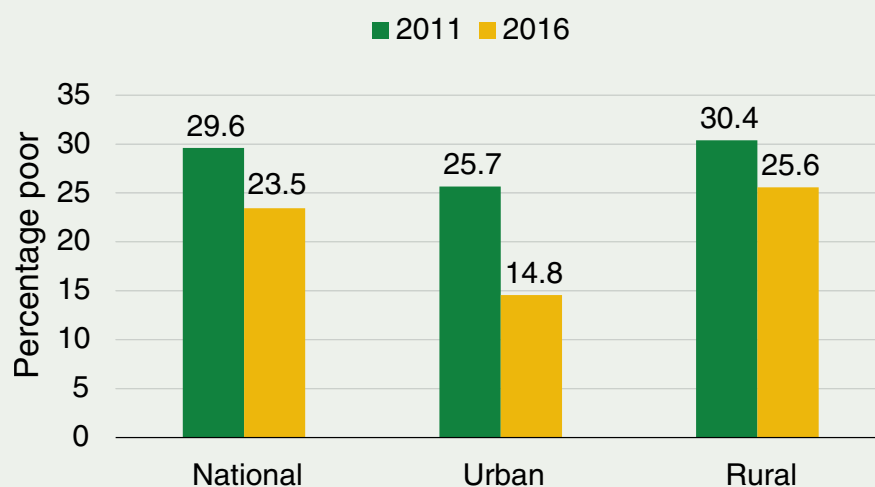
## CONTINUED CONSUMPTION GROWTH AND POVERTY REDUCTION, ESPECIALLY IN URBAN AREAS

**Between 2011 and 2016, Ethiopia's economy continued to grow rapidly, with an annual GDP growth rate in excess of 9 percent.** Fast economic growth translated into strong household consumption growth in urban areas but not in rural areas. Consumption of urban households grew at six percent per year, while the corresponding figure for rural households was less than one percent. As a result, the poverty rate, based on the national poverty line, decreased

from 26 percent in 2011 to 15 percent in 2016 in urban Ethiopia, an 11-percentage-point decrease (Figure O 1). In rural areas, poverty decreased by four percentage points, from 30 percent in 2011 to 26 percent in 2016. This reduction was achieved in spite of the fact that the 2015/16 survey was conducted during the severe El-Nino drought. The national poverty rate decreased from 30 percent in 2011 to 24 percent in 2016.

**Figure O 1 POVERTY DECREASED IN BOTH RURAL AND URBAN AREAS**

Poverty headcount rate based on the national poverty line, 2011 and 2016



Source: HCES, 2011; 2016. World Bank staff calculations.

### Human development indicators improved alongside the increase in consumption.

Delivery in a health facility increased sharply from a low base, the share of fully immunized children increased by 14 percentage points, and stunting rates decreased from 44 percent in 2011 to 38 percent in 2016 (Panel A of Figure O 2).<sup>1</sup> Infant and child mortality rates decreased accordingly. Net enrolment in primary school increased, more children are completing primary school, and gross enrolment in secondary school was higher in 2016 than in 2011 (Panel B of Figure O 2). Despite these improvements, human development indicators remained low. In 2016, only 26 percent of births took place in a health facility (in the five years preceding the survey) and less than 40 percent of children had received all basic vaccinations. Only one in three people between 15 and 24-years-old had completed primary school.

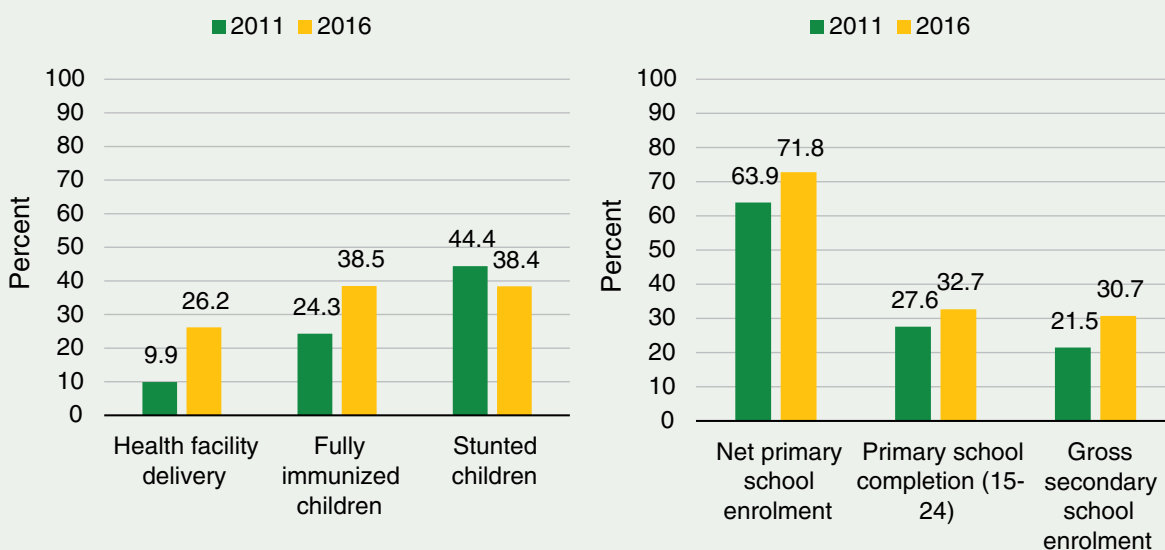
**Consumption growth was higher for the upper parts of the welfare distribution, while the poorest segment of the population did not experience real consumption growth from 2005 onwards.** Between 2011 and 2016 consumption did not grow for the bottom 15 percent of the population, in contrast to the top of the distribution where growth rates reached a maximum of just under 6 percent per

year. This pattern was driven by rural areas, where the bottom 20 percent experienced zero or negative consumption growth (Figure O 3). In contrast, growth across the urban consumption distribution was always above 3 percent, even for the poorest, and became increasingly strong towards the upper end (Figure O 4). Given the largely rural nature of the Ethiopian population, the national pattern of growth closely resembles the rural pattern presented in Figure O 3. This pattern is a continuation of the one observed between 2005 and 2011, when consumption of the bottom 15 percent of the population contracted.

**Given that the upper parts of the distribution experienced higher growth, inequality increased slightly.** The Gini coefficient rose from 0.30 in 2011 to 0.33 in 2016 but remains low in regional comparison. The increase in inequality is mainly due to the increasing disparity between rural and urban areas: Urban consumption, which was already higher than rural consumption to begin with, grew rapidly, increasing the disparity in average consumption levels with rural areas. The share of total inequality that can be explained by differences in welfare between urban and rural areas doubled to 29 percent in 2016 (Figure O 5).

**Figure O 2 CHILD HEALTH AND EDUCATION INDICATORS IMPROVED BETWEEN 2011 AND 2016**

Selected health and education variables for children in 2011 and 2016



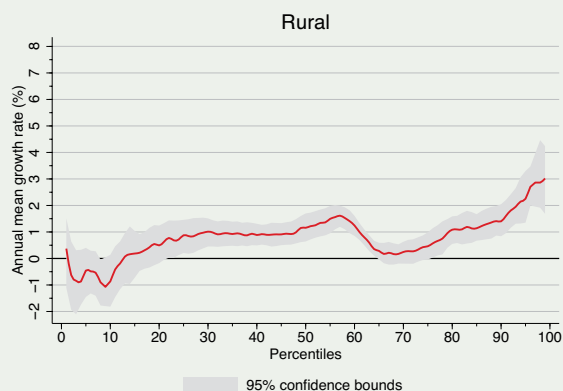
Source: DHS 2011; 2016.

<sup>1</sup> Children are fully immunized if they received all eight basic vaccinations: BCG, three doses of Polio, three doses of DPT, and one dose of MCV. This is calculated for the sample of children aged between 12 and 23 months.

Figure O 3

### WELFARE OF THE POOREST 20 PERCENT IN RURAL AREAS DID NOT INCREASE BETWEEN 2011 AND 2016...

Average annual growth rates of rural consumption by percentile between 2011 and 2016

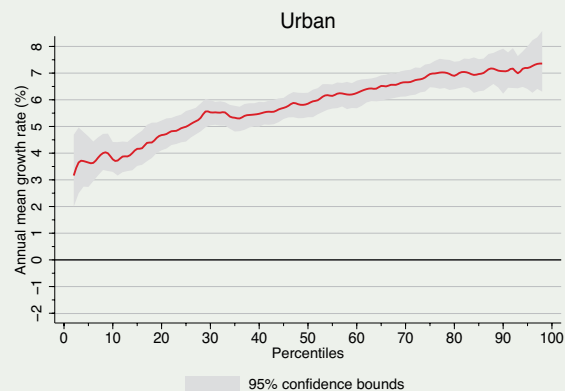


Source: HCES 2011; 2016. World Bank staff calculations.

Figure O 4

### ...WHILE GROWTH WAS STRONG ACROSS THE URBAN WELFARE DISTRIBUTION

Average annual growth rates of rural consumption by percentile between 2011 and 2016



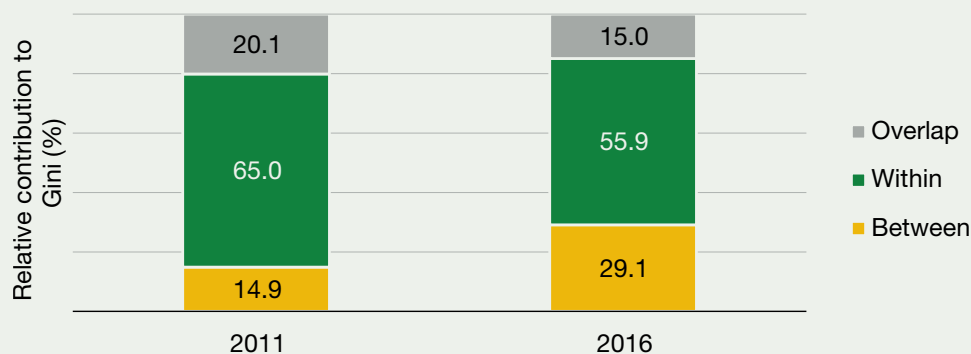
Source: HCES 2011; 2016. World Bank staff calculations.



Figure O 5

## INEQUALITY INCREASED DUE TO THE INCREASING GAP BETWEEN URBAN AND RURAL AREAS

Decomposition of the Gini coefficient into a between rural-urban component and a within-component



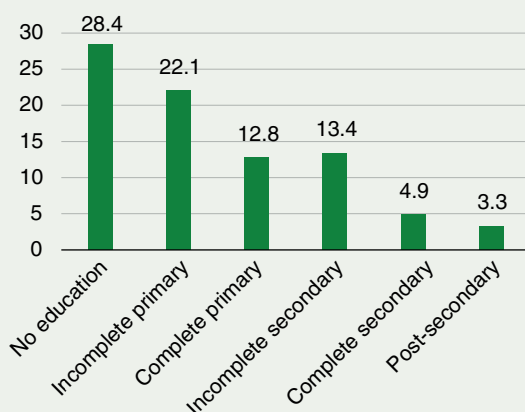
Source: HCES 2011; 2016. World Bank staff calculations.

Figure O 6

## CHARACTERISTICS OF THE POOR

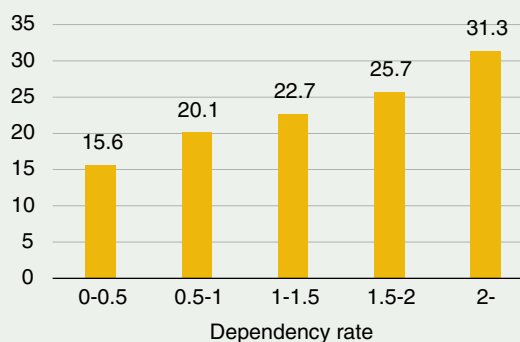
### A. The poor are largely uneducated

Poverty rate by education of household head



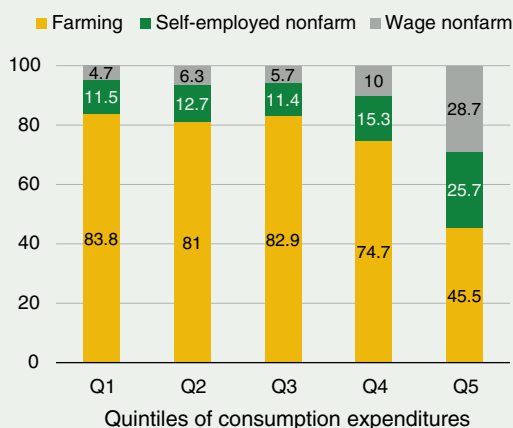
### B. Live in households with high dependency rates

Poverty rate by household dependency rate



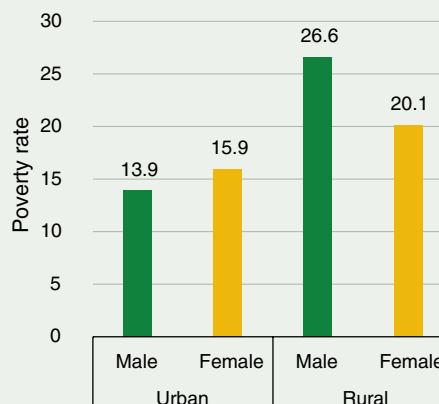
### C. Are mainly engaged in farming

Occupation of household head by consumption quintile



### B. And are more likely to be headed by a man

Poverty rate by gender of head of household



Source: HCES 2011; 2016. World Bank staff calculations.

**Rapid urban poverty reduction means that the poor are increasingly concentrated in rural areas.** Though the rural share of the population decreased by two percentage points, the rural share of poverty increased to 88 percent in 2016. The poor in Ethiopia have the following characteristics: They tend to live in rural areas, in large households with high dependency rates, headed by an older and little-educated household head. They mainly engage in agriculture and casual labor for their livelihood, and are relatively isolated from key infrastructure worse access to basic services. Poor households are less likely to be headed by a woman, and households in pastoral areas are less likely to be poor (Figure O 6)<sup>2</sup>.

**Regional disparities in consumption levels and poverty remain limited.** Differences in consumption levels across regions explained a mere two percent of total inequality in 2016. As such, the regional contributions to overall poverty

largely reflect the regional population shares, with Oromia and Amhara accounting for the bulk of the poor given their large populations (Table O 1). Disparities in poverty are higher across agro-ecological zones. Using the “five Ethiopias” classification, an agro-ecological classification based on altitude, rainfall, and predominant livelihoods, poverty is highest in the drought-prone lowlands (the lowland areas of Oromia and SNNPR and a small part of Afar – poverty rate of 32 percent) and lowest in the drought-prone highlands (the eastern parts of Tigray and Amhara and north-eastern parts of Oromia – poverty rate of 21 percent). The depth and severity of poverty is also highest in the drought-prone lowlands. It is important to note that despite popular perceptions to the contrary, the pastoral areas actually have relatively low monetary poverty rates (22 percent in 2016). People in pastoral areas however are lagging on non-monetary dimensions of welfare, such as education, health and basic infrastructure.

**Table O 1 POVERTY RATES, POVERTY SHARES, AND POPULATION SHARES BY REGION AND AGRO-ECOLOGICAL ZONE, 2016**

|                                | POVERTY RATE | POVERTY SHARE | POPULATION SHARE |
|--------------------------------|--------------|---------------|------------------|
| <b>BY REGION</b>               |              |               |                  |
| Tigray                         | 27.0%        | 6.6%          | 5.8%             |
| Afar                           | 23.6%        | 1.9%          | 1.9%             |
| Amhara                         | 26.1%        | 25.5%         | 23.0%            |
| Oromia                         | 23.9%        | 38.3%         | 37.8%            |
| Somali                         | 22.4%        | 5.5%          | 5.8%             |
| Benishangul Gumuz              | 26.5%        | 1.3%          | 1.1%             |
| SNNPR                          | 20.7%        | 17.5%         | 19.9%            |
| Gambella                       | 23.1%        | 0.4%          | 0.4%             |
| Harari                         | 7.1%         | 0.1%          | 0.3%             |
| Addis Ababa                    | 16.8%        | 2.6%          | 3.6%             |
| Dire Dawa                      | 15.4%        | 0.3%          | 0.5%             |
| <b>BY AGRO-ECOLOGICAL ZONE</b> |              |               |                  |
| Moisture-reliable highlands    | 23.6%        | 58.5%         | 58.4%            |
| Drought-prone highlands        | 20.8%        | 19.9%         | 22.5%            |
| Moisture-reliable lowlands     | 25.4%        | 4.7%          | 4.3%             |
| Drought-prone lowlands         | 31.7%        | 7.5%          | 4.7%             |
| Pastoral areas                 | 21.9%        | 6.9%          | 7.4%             |

Note: Poverty share denotes the contribution of the region to overall poverty.

Source: HCES, WMS, 2016. World bank staff calculations.

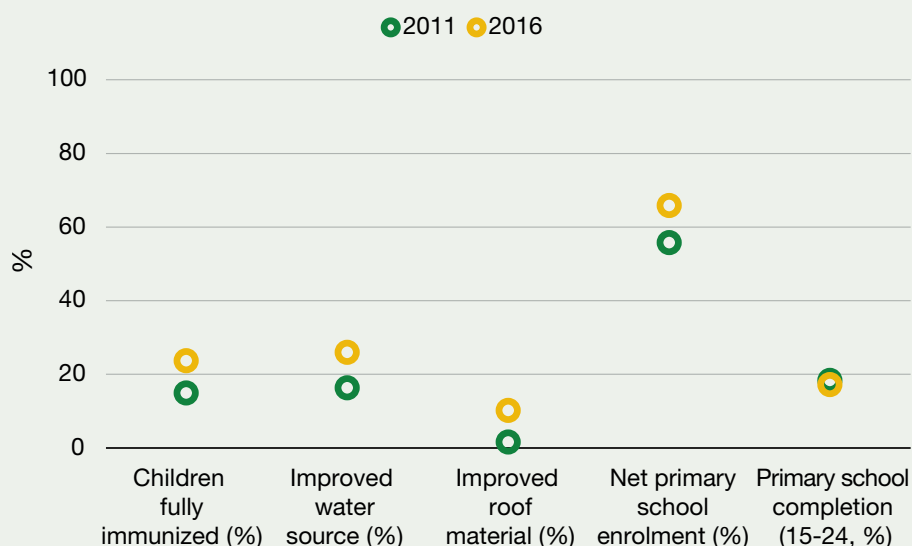
2 The pastoral population does however have far worse access to public services and basic infrastructure.

**Characteristics of the very poor – the bottom 10 percent of the population that did not experience any real consumption growth since 2005 – resemble those of the poor, only more extreme.** Whereas the poor are characterized by large households, high dependency rates, and a lack of education, the extreme poor have yet larger households, higher dependency rates, and even less education.

The extreme poor are also more likely to be rural (compared to the poor) and more isolated from markets. Geographically, the extreme poor are more likely to be located in SNNPR and Somali regions. Despite the stagnation in consumption of the extreme poor, indicators of their non-monetary living conditions improved between 2011 and 2016 but remain low (Figure O 7).

**Figure O 7** **LIVING CONDITIONS OF THE BOTTOM 10 PERCENT IMPROVED BETWEEN 2011 AND 2016**

Trends in selected indicators from the bottom 10 percent, 2011 and 2016



Source: WMS 2011, 2016; DHS, 2011, 2016. World Bank staff calculations.

## Strong Urban Poverty Reduction was Driven by Small and Medium-Sized Towns and Increased Self-Employment

**Urban areas are becoming increasingly important for poverty reduction.** One third of poverty reduction between 2011 and 2016 was attributable to urban areas, up from 15 percent in the 2005-2011 period (Figure O 8). Population shifts from rural to urban areas did not contribute to poverty reduction because rural-to-urban migration, while increasing, is still relatively low. Strong consumption growth and poverty reduction in urban Ethiopia has been very much related to strong economic growth: After a period of stagnation in per

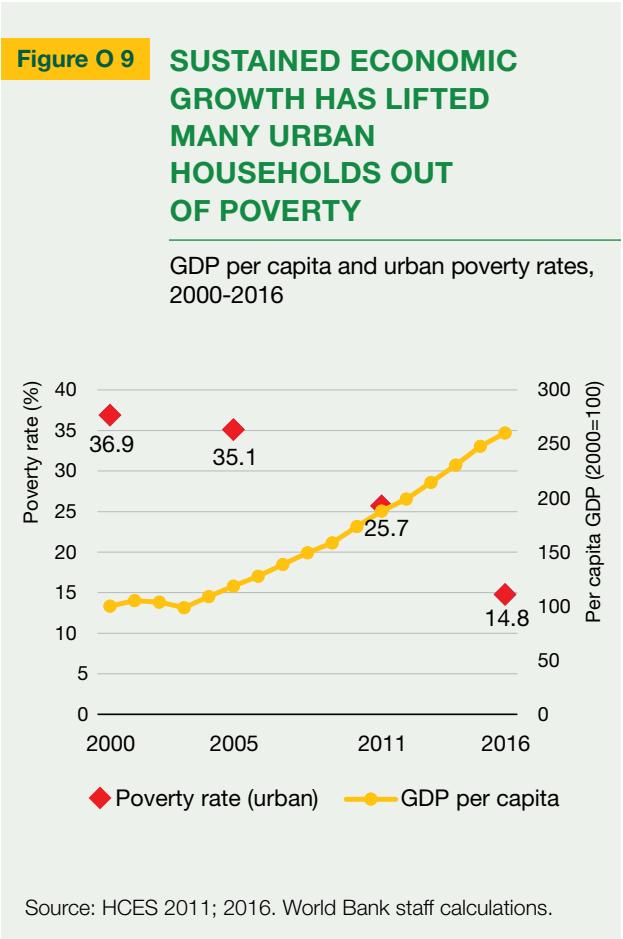
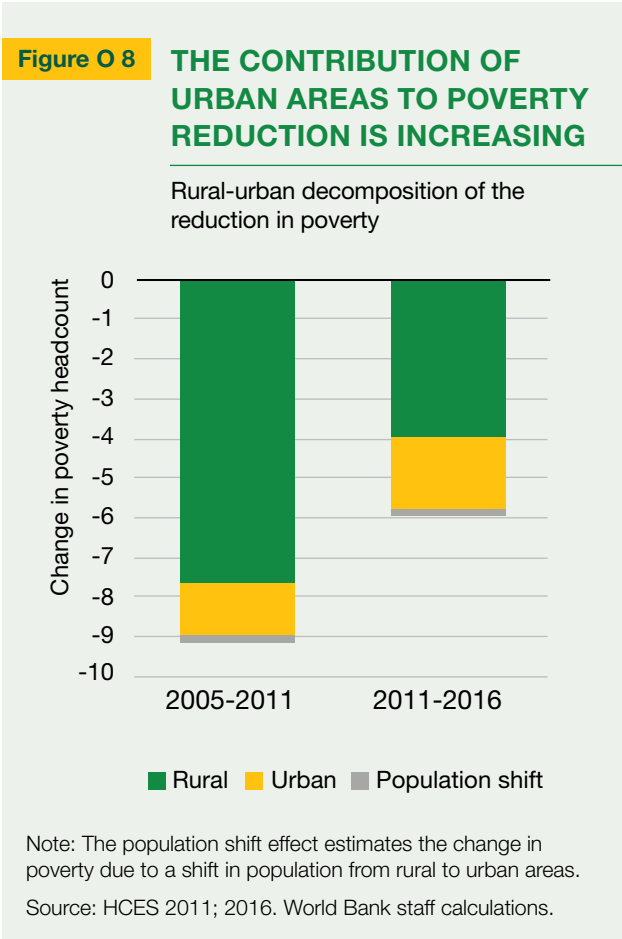
capita GDP between 2000 and 2005, when urban poverty levels also stagnated, strong and sustained economic growth translated into robust consumption growth and poverty reduction at the household level (Figure O 9). The contribution of urban areas to poverty reduction will further increase in coming years as improved rural education levels and land scarcity speed up rural-urban migration and the ongoing reforms create more job opportunities in the urban private sector.

**The strong reduction in urban poverty between 2011 and 2016 can mainly be accounted for by small and medium-sized towns, by households with an unskilled head, and by households engaged in trade, services, and urban agriculture.** Small and medium-sized towns accounted for over half of urban poverty reduction between



2011 and 2016 (Panel A of Figure O 10) and close to 60 per cent of poverty reduction happened in households that were engaged in trade and agriculture (Panel B of Figure O 10). Structural transformation and labor mobility did not contribute to poverty reduction because there was so little of it: The sectoral occupational structure in urban areas remained the

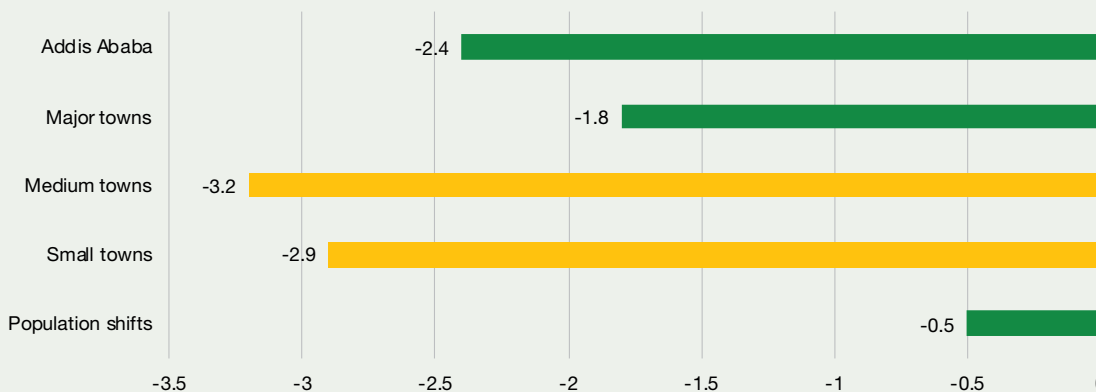
same between 2011 and 2016 and there was little movement of labor between different cities. Improvements in the education levels of the urban labor force contributed substantially, accounting for 1.8 percentage points of the 11-percentage-point reduction in urban poverty (Panel C of Figure O 10).



**Figure O 10** **SMALL AND MEDIUM TOWNS, TRADE AND AGRICULTURE, AND THE LOW-SKILLED ACCOUNTED FOR THE BULK OF URBAN POVERTY REDUCTION**

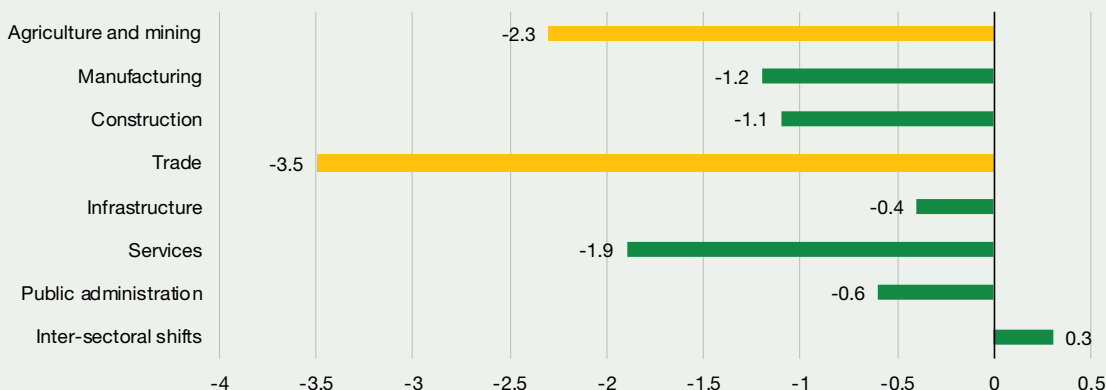
Contribution to urban poverty reduction, 2011-2016, percentage points

**A. Contribution by city size, percentage points**



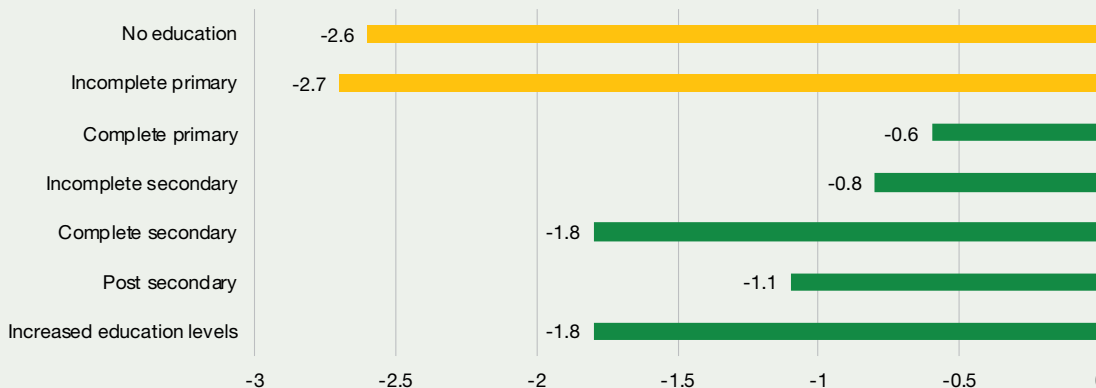
Note: the population shifts estimate the change in poverty due to a shift in population across towns (migration between towns).

**B. Contribution by economic sector of household head, percentage points**



Note: The intersectoral shifts measure the change in poverty due to a shift of workers from one sector to another.

**C. Contribution by education of household head, percentage points**



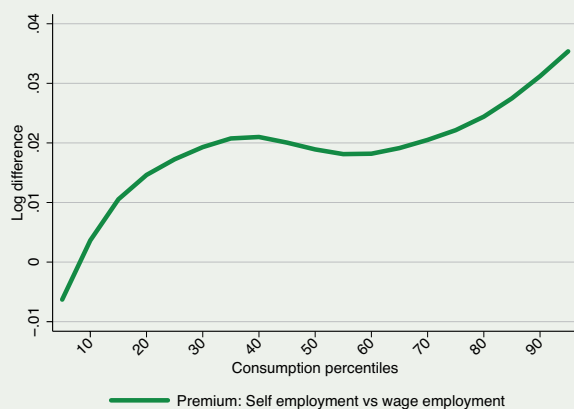
Source: HCES 2011; 2016. World Bank staff calculations.

**Increased returns to and engagement in self-employment explain a fair share of the reduction in poverty in urban Ethiopia.** Returns to self-employment (relative to wage-employment) increased across the welfare distribution between 2011 and 2016, except for the poorest (Figure O 11). Poor households benefited from an increased share of household members taking up self-employment. The share of urban households in which non-head household members

engage in self-employment increased from 13 percent in 2011 to 19 percent in 2016, and this was especially important in raising consumption levels of the poorest households (Figure O 12). Although the returns to having a self-employed household head were not particularly strong for poor urban households, take-up of self-employment by non-head household members was a strong driver of consumption changes over time.

**Figure O 11 THE PREMIUM OF SELF-EMPLOYMENT OVER WAGE EMPLOYMENT INCREASED OVER THE URBAN CONSUMPTION DISTRIBUTION**

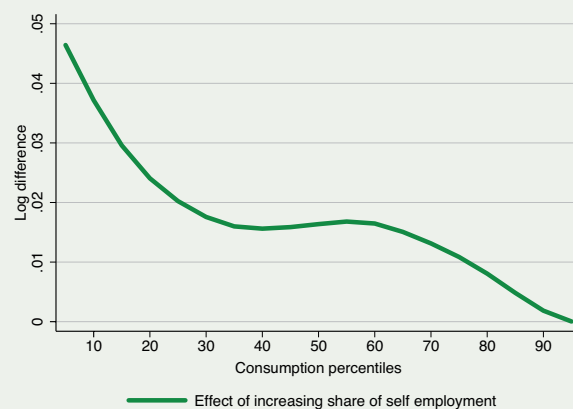
Returns to self-employment versus wage employment in urban areas 2011-2016



Source: HCES 2011, 2016. World Bank staff calculations.

**Figure O 12 TAKE-UP OF SELF-EMPLOYMENT WAS MOST IMPORTANT FOR CONSUMPTION GROWTH OF THE POOREST URBAN HOUSEHOLDS**

The effect of additional household members in self-employment in urban areas 2011 to 2016



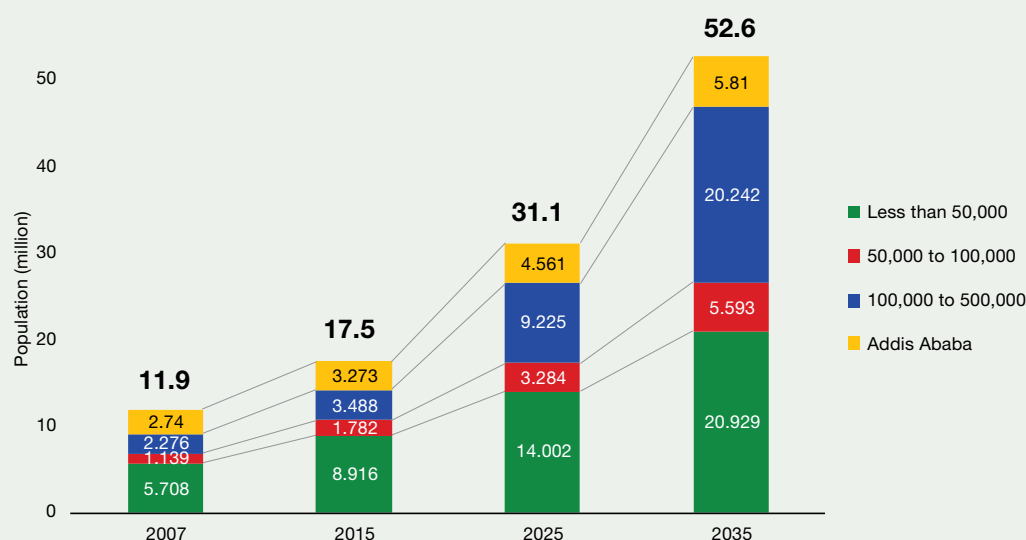
Source: HCES 2011, 2016. World Bank staff calculations.

**Though small towns experienced rapid poverty reduction, infrastructure and access to services and amenities did not keep up.** The share of substandard housing<sup>3</sup> slightly increased in small towns between 2011 and 2016, and the share of households with access to improved sanitation and an improved solid waste management system remained low at less than 10 percent of the population. Given

that small towns are expected to add much of the urban population (Figure O 13) and given their importance as local centers of demand and employment for surrounding rural areas, the large investments currently happening in urban local governments would need to be expanded to smaller towns as well.

**Figure O 13 SMALL TOWNS AND SECONDARY CITIES WILL ACCOUNT FOR THE BULK OF URBAN POPULATION GROWTH**

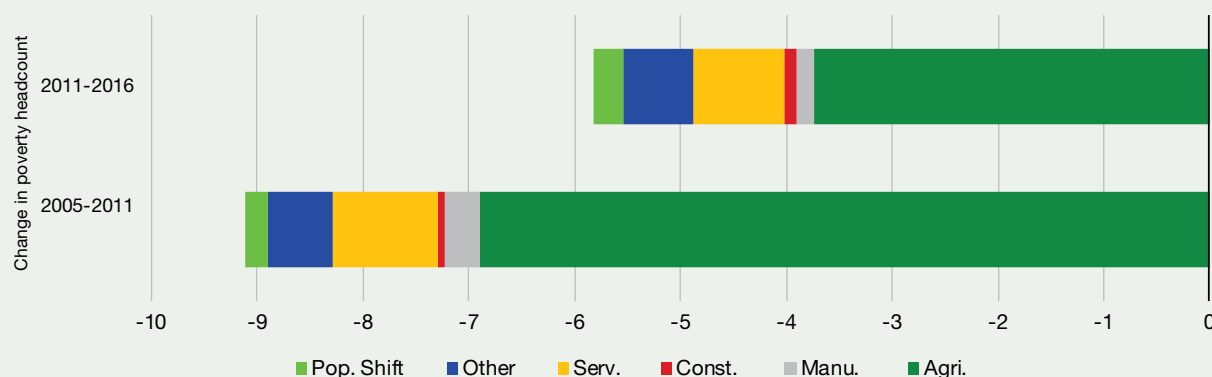
Urban population trends and projections, 2007-2035



Source: HCES 2011, 2016. World Bank staff calculations.

**Figure O 14 AGRICULTURE REMAINS THE LARGEST CONTRIBUTOR TO POVERTY REDUCTION**

Sectoral decomposition of changes 2005 to 2016



Source: HCES 2005, 2011, 2016. World Bank staff calculations.

<sup>3</sup> Defined as lack of access to piped water and improved sanitation, and overcrowding (more than three persons per room).

**Although the contribution of urban areas to overall poverty reduction is increasing, the rural nature of Ethiopia means that the agricultural sector remains crucial.** Two thirds of the reduction in poverty between 2011 and 2016 can be explained by agriculture, down from the contribution over previous period (Figure O 14). Growth of agriculture will remain critical for poverty reduction, given its share of employment and GDP. Changes within the services sector accounted for about 15 percent of poverty reduction between 2011 and 2016. The role of structural transformation – shifts in the population out of agriculture and into manufacturing or services – was very limited over the last period, reflecting the familiar growth with structural transformation narrative on Ethiopia. The role of this factor is likely to increase in the future.

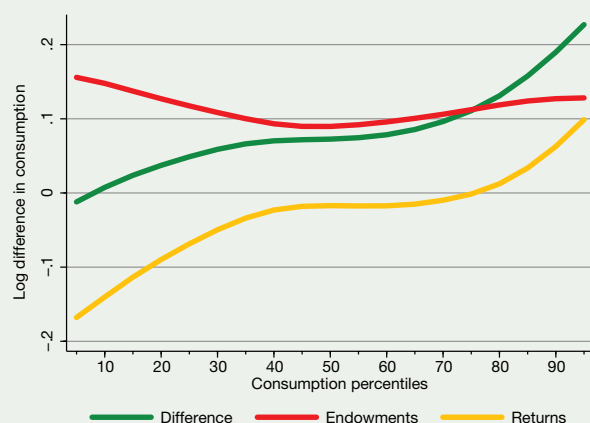
**Changes in household consumption can be decomposed into a part that is due to changes in household characteristics and a part that is due to changes in the**

**returns to characteristics.** Improvements in household characteristics – also called “endowments” – explain most of the changes in consumption between 2011 and 2016 and are particularly important for the bottom 40 percent (Figure O 15). Changes in the returns to these characteristics are only positive for the top quartile. Essentially, this means that the wealthiest households were best equipped to translate increased asset holdings into increased consumption, likely due to their higher levels of education. The endowment effect of asset accumulation between 2011 and 2016 was particularly strong for the bottom 40 percent. The assets underlying this effect include land ownership, livestock ownership, and ownership of various household durables. The effects of increasing urbanization were very muted across the entire distribution. This is because the overall share of the urban population in Ethiopia grew slowly between 2011 and 2016, even though the absolute number of people migrating to urban areas was large.

**Figure O 15**

### CHANGES IN CHARACTERISTICS OF HOUSEHOLDS EXPLAIN MOST OF THE INCREASE IN CONSUMPTION SINCE 2011

The contributions of endowments and returns to consumption growth 2011-2016

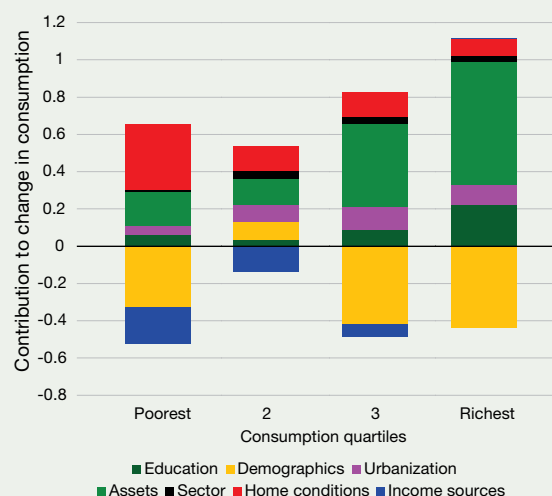


Source: HCES 2011, 2016. World Bank staff calculations.

**Figure O 16**

### ASSET ACCUMULATION EXPLAINS THE BIGGEST PART OF THE CONSUMPTION INCREASE

Characteristics' contributions to consumption changes, 2011-2016



Source: HCES 2011, 2016. World Bank staff calculations.

**The total effect (endowments plus returns) of changes in assets is prominent for all four quartiles of the distribution.** For the poorest quartile, approximately corresponding to the poor population, changes in home conditions (higher access to electricity and improved water, better dwelling materials) had an overall larger positive effect on consumption than did asset accumulation (Figure O 16). Even though the accumulation of assets was an important endowment effect for poor households, decreasing returns to those assets meant that the total effect of assets was more muted, though still positive. This means that the consumption gain associated with acquiring more assets was smaller for poor households than it was richer households. The total effect of asset accumulation is highest for the top quartile, indicating that this group also had the highest returns to asset accumulation. Improvements in educational attainment did not play an important role for poor households, mainly because the

improvements were so small for this group. In contrast, education was the second main driver of consumption growth for the wealthiest quartile of households.

**Poverty fell fastest in the zones that had the strongest agricultural growth between 2000 and 2016, highlighting the continued importance of agriculture in improving the living standards of the poorest.** Improved access to towns and urban centers, as measured through decreased travel times, was associated with strong poverty reduction, indicative of the complementary nature of agricultural and non-agricultural growth. Expansions in the use of improved seeds was an important driver of increased agricultural production and therefore poverty reduction, while the role of the expanded use of fertilizer is less clear. With improved seeds being used on only about six percent of cultivated land, there is scope for expanding its use in the future.

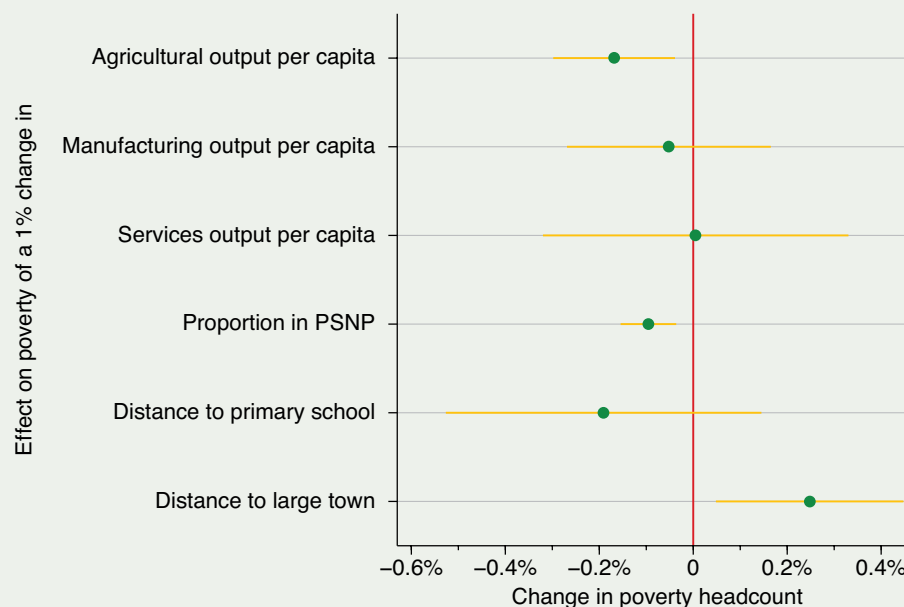




Figure O 17

## GROWTH IN AGRICULTURAL OUTPUT AND PSNP PARTICIPATION WERE ASSOCIATED WITH POVERTY REDUCTION AT THE ZONAL LEVEL

Sectoral growth, safety nets, infrastructure and poverty reduction 2000 to 2016



Source: HCES, WMS, 2000, 2005, 2011, 2016. World Bank staff calculations.

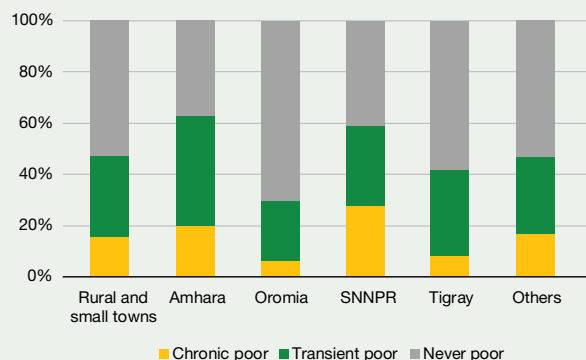
**In contrast to earlier periods, cash crops were more important for poverty reduction between 2011 and 2016 than cereals.** There was a shift away from the production of cereal crops in favor of cash crops. This shift had significant poverty-reducing effects, largely because of the rapid relative gains in the prices of cash crops over these years. Within cash crops there was a shift towards the production of *khat*, particularly in the SNNPR region. The relative price of *khat* increased sharply within the group of cash crops, likely explaining its progressive take-up. While the overall increase in crop prices helped net producers, and will likely continue to do so, there are also potential losers from these changes. Policy should be nimble enough to ensure that the effects of rising prices on vulnerable households and parts of the population are effectively mitigated.

## Poverty is Mostly Transitory, though 16 Percent of the Rural Population Was Chronically Poor Between 2012 and 2016

**Based on the longitudinal ESS surveys, most longer-term poverty in Ethiopia is transient, but there are notable shares of households trapped in chronic poverty.** Around 16 percent of the Ethiopian population in rural areas and small towns was chronically poor over the 2012-2014-2016 period. Just under one third experienced transitory poverty between 2012 and 2016 (Figure O 18). Taken together, almost half of the population experienced at least one spell of poverty between 2012 and 2016, reflecting the high extent of consumption variability and vulnerability in rural Ethiopia. Chronic poverty is mainly concentrated in SNNPR, while transitory poverty is highest in Amhara. Relative to the transitory poor, the chronic poor have larger households and dependency rates, less land and fewer assets, and less education. The chronic poor are more likely to benefit from the Government's social protection programs.

**Figure O 18** **CHRONIC POVERTY IS HIGHER IN SNNPR AND TRANSITORY POVERTY IN AMHARA**

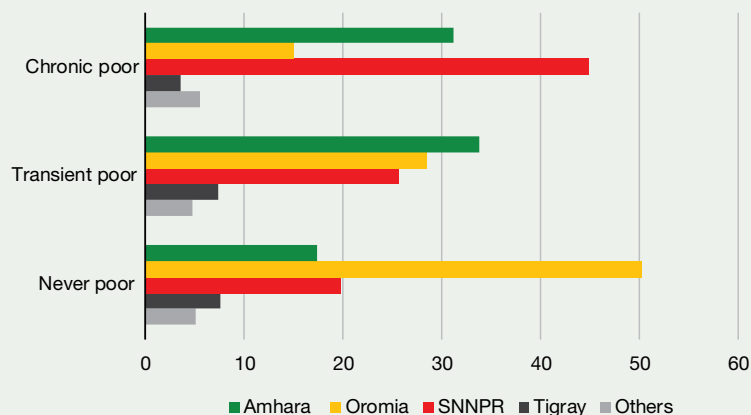
Chronic and transitory poverty over the 2012-2016 period, rural areas and small towns



Source: ESS 2012, 2014, 2016. World Bank staff calculations.

**Figure O 19** **MOST OF THE CHRONIC POOR LIVE IN SNNPR AND AMHARA**

Regional shares of each poverty category



Source: ESS 2012, 2014, 2016. World Bank staff calculations.

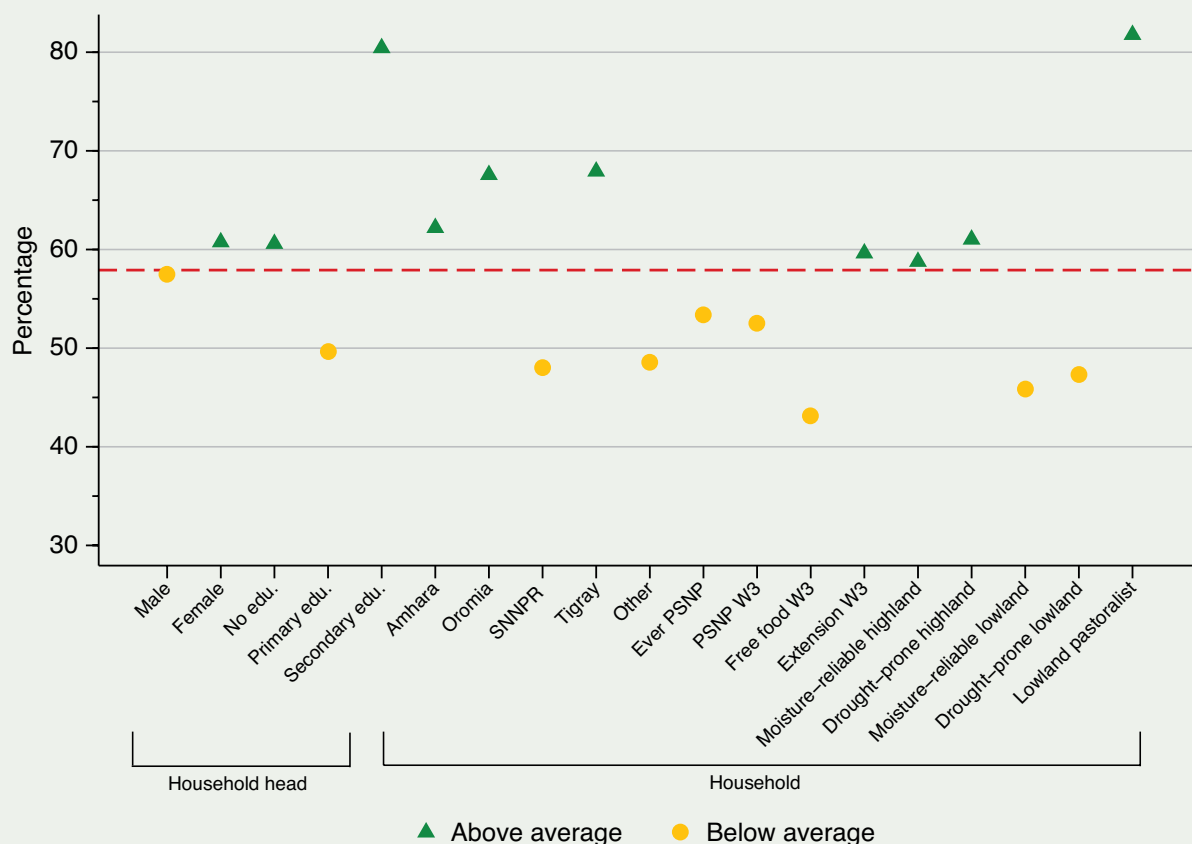
**Upward economic mobility between 2011 and 2016 was higher in towns and cities than in the rural hinterland.** Downward mobility - the risk of falling into poverty - was higher in rural areas: 26 percent of the non-poor population in rural areas had fallen into poverty by 2016, compared to 14 percent in towns and four percent in cities. Other factors associated with a higher probability of escaping poverty are a higher level of education of the household head, and location in pastoral areas. Households that had participated in the

PSNP at any stage between 2012 and 2016 were less likely to exit poverty than the overall average, as were round three food aid households. This is a finding that potentially bears out the effective targeting of the PSNP, as this is a pattern we would expect to see, especially is the baseline consumption levels of PSNP participants are very low. Male-headed households, household with large dependency rates and households living in the drought-prone lowlands were more likely to fall into poverty.

Figure O 20

## MORE EDUCATED HOUSEHOLDS, HOUSEHOLDS HEADED BY WOMEN, AND PASTORALIST HOUSEHOLDS WERE MORE LIKELY TO EXIT POVERTY

Probability of exiting poverty by baseline characteristics



Note: Dashed line is the average probability of exiting poverty of 57.91%.

Source: ESS 2012, 2014, 2016. World Bank staff calculations.

## The PSNP Contributed to Poverty Reduction, and its Contribution Could be Further Enhanced

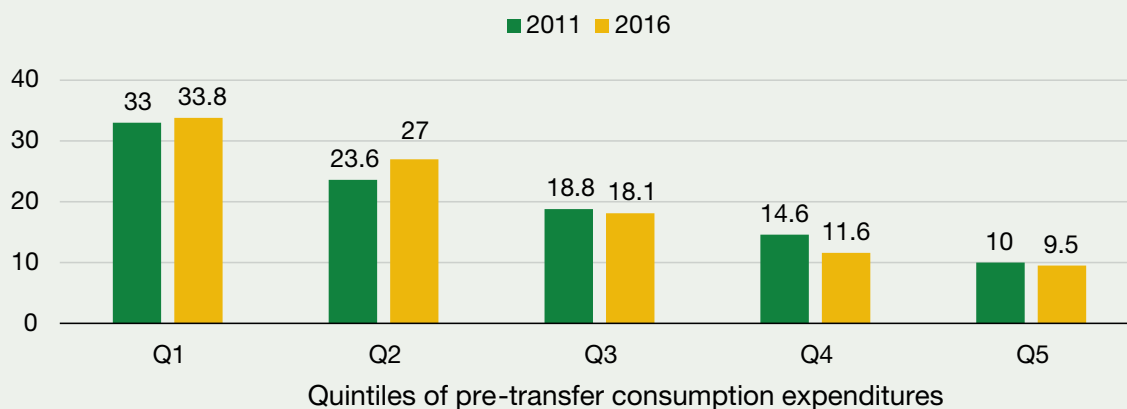
**The Productive Safety Net Program (PSNP) significantly contributed to poverty reduction.** The PSNP provides conditional (on work) or unconditional cash or food transfers to targeted poor rural households during the lean season. At the zonal level, a one percent annualized increase in PSNP coverage was associated with a 0.1 percent annualized decrease in the poverty rate (Figure O 17). This implies that the PSNP was overall well targeted. Indeed, in 2016 34 percent of PSNP beneficiaries were in the bottom welfare quintile and over 60 percent were drawn from the bottom 40 percent (Figure O 21).

**PSNP targeting is progressive both in the highlands and lowlands.** While the share of beneficiaries that is drawn from the bottom quintile is substantially higher in the highlands, the share that is drawn from the bottom 40 percent is higher in the lowlands. Inclusion of households in the top quintile is higher in the highlands. On the regional level the data show that, relative to what would be possible in case of perfect targeting, Afar obtains the best targeting performance when targeting is evaluated against consumption poverty. This counter-intuitive outcome is explained by the absence of first-stage woreda targeting: In Afar, all woredas are included in the PSNP, and hence there is no exclusion of the poor because of selection of woredas.

Figure O 21

## MOST OF PSNP BENEFICIARIES ARE IN THE LOWER CONSUMPTION QUINTILES

Share of beneficiaries by quintile, 2011 and 2016



Source: ESS 2012, 2014, 2016. World Bank staff calculations.

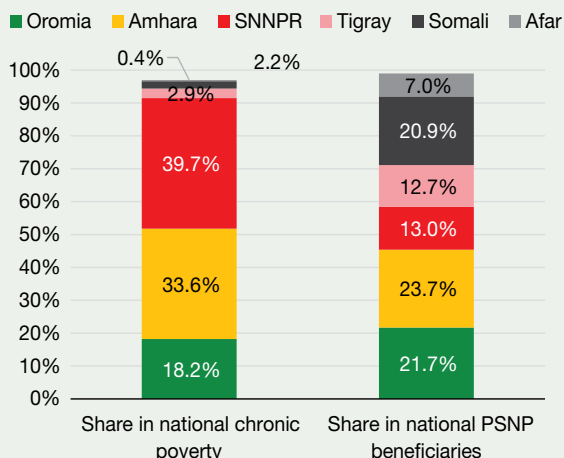
**The PSNP's contribution to poverty reduction can be further increased.** The analysis in this Poverty Assessment highlights three main issues. First, the number of beneficiaries at regional level bears little relation to the prevalence of poverty or self-reported food insecurity, with the number of beneficiaries exceeding the number of poor and food-insecure people in certain regions and falling far short in others (Figure O 22). Second, geographical targeting (selection of woredas) adds little to the PSNP's targeting performance, which is largely due to poverty and food-insecurity not being geographically concentrated in Ethiopia (Figure O 23). Third, under-coverage remains an issue, with only 13 percent of Ethiopia's poor covered by the PSNP in 2016. Better aligning regional caseloads to regional needs and expanding PSNP to more woredas but with smaller beneficiary numbers per woreda are likely to increase PSNP's coverage of the poor and its contribution to poverty reduction.

**Just like the PSNP, Humanitarian Food Aid (HFA) was reasonably well-targeted in 2016.** As per the design, PSNP and HFA reach different types of households: PSNP households share many of the typical characteristics of the poor (few assets and little livestock, remote, little education), while HFA households are similar to the average household in rural areas, with the difference that their calorie intake is substantially lower, hinting at a recent exposure to a negative shock. There are however substantial inclusion errors in HFA targeting, with 30 percent of beneficiaries in the top two consumption quintiles. These inclusion errors are due to HFA targeting in woredas where PSNP is not active. Further harmonizing the PSNP and HFA is likely to improve performance and targeting of the joint programs.

Figure O 22

### DISPARITIES BETWEEN REGIONS' SHARES IN OVERALL CHRONIC POVERTY AND REGIONS' SHARES IN OVERALL PSNP CASELOAD

Regions' contribution to national chronic poverty and national PSNP caseload, 2016



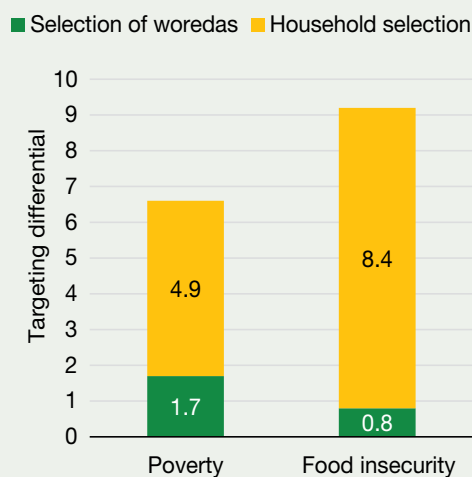
Note: Targeting differential is the difference between coverage of the poor (food-insecure) and that of the non-poor (food-secure)

Source: ESS 2012, 2014, 2016. World Bank staff calculations.

Figure O 23

### WOREDA SELECTION DOES NOT ADD MUCH TO OVERALL TARGETING PERFORMANCE

Decomposition of the targeting differential into a “woreda-selection” and a “within-woreda household selection” component



## Equitable Access to Opportunities is Increasing, but the Rural Poor are at Risk of Being Left Behind

**Inequality in welfare between households and individuals is partly the result of inequities in access to basic opportunities earlier in life.** If, for instance, education produces significant returns, an adult who had the opportunity to complete schooling when she was young will have higher welfare levels than an otherwise comparable person who did not have the opportunity to go to school. The resulting inequality can be considered unfair: It is not the result of differences in talent or hard work, though rather of circumstances early in life. In an equitable society, an individual's circumstances at birth (such as being born a girl or a boy, in a rural or an urban area, in a poor or a better-off household, etc.) should not influence the individual's access to a set of important opportunities (such as education, health care, clean water, etc.).

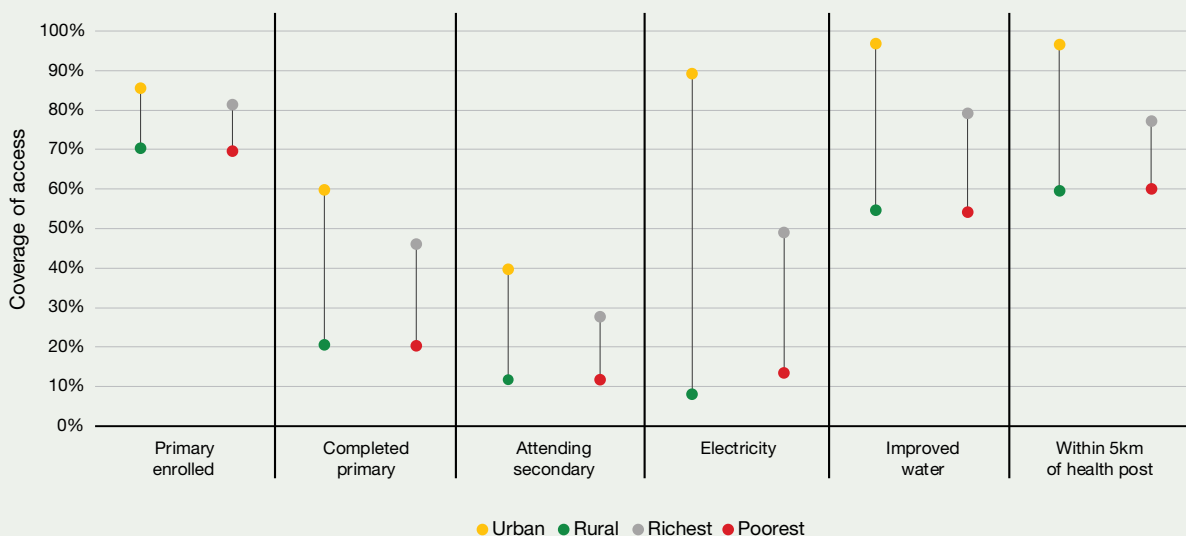
**Access to opportunities for Ethiopian children improved between 2011 and 2016 and disparities in access have narrowed, leading to an increase in the Human Opportunity Index.** Household location and household wealth, circumstances that are largely outside children's control, are the main factors determining access to key opportunities: 40 percent of children aged 15 to 18 in urban areas were enrolled in secondary school in 2016, compared to 10 percent of rural children of the same age. Half of children aged 15 to 18 in households from the top consumption quintile had completed primary school, compared to less than 20 percent of children in the bottom consumption quintile (Figure O 24).

**Education is a particularly important childhood opportunity.** The extent to which parental education influences children's education weakened between 2011 and 2016, reflecting an increase in intergenerational mobility. The probability of a child being enrolled in primary school has become less dependent on parental education, but the opposite has happened for enrolment in secondary school. Improvements

Figure O 24

## LOCATION AND HOUSEHOLD WEALTH ARE THE MAIN SOURCES OF INEQUITY IN ACCESS TO OPPORTUNITIES

Coverage of basic opportunities, urban vs rural and poorest quintile vs richest quintile, 2016



Note: Primary enrolled refers to children between 7 and 14 years of age. Completed primary and attending secondary refers to persons between 15 and 18-years-old. Access to electricity, improved water and a health post refers to children between 7 and 18-years-old.

Source: WMS, HCES 2016. World Bank staff calculations.

in access to education took place for children with poorly educated parents in urban areas and children with relatively higher educated parents in rural areas. There is a large education-effect of living in an urban area: Relative to rural children of the same age, the average urban child had completed 1.44 more grades of education in 2016.

**Household consumption levels have a large influence on whether the household's children go to school, and this has implications for poor rural children who are being left behind.** While the effect of household consumption on access to primary school did not change between 2011 and 2016, its effect on enrolment in secondary school increased (Figure O 25). The effect of household welfare levels on children's schooling is significantly stronger in rural areas, indicating greater scope for upward mobility in urban areas (where access to schooling is far less dependent on household wealth). The implication of these results is that children of poor households and poorly-educated parents in rural areas are in danger of being left behind. Breaking the intergenerational transmission of poverty will require that

children of extremely poor households in rural areas accumulate more schooling, which may require the introduction of additional policy instruments.

## Perspectives on Continued Poverty Reduction Going Forward

**Given its large share in employment and livelihoods, especially for the poor, the agricultural sector still holds the key for sustained poverty reduction in the short-to-medium term.** Bar large climatic shocks, the agricultural sector will continue to drive national poverty reduction, though its contribution will progressively decrease. The analysis presented in this Poverty Assessment suggests there is room to further increase yields, mainly through promoting the use of improved seeds and further increasing access to markets.

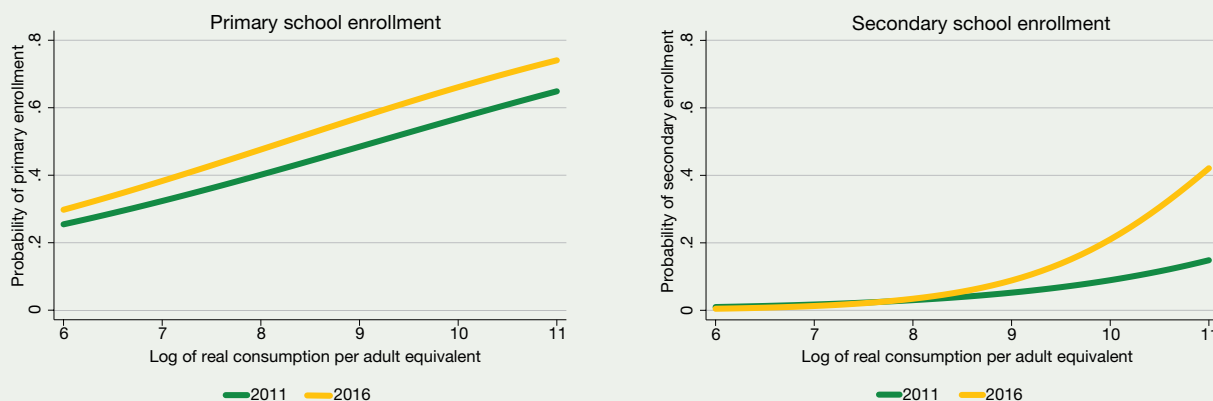
**The agricultural sector will however not be able to absorb the rapidly growing labor force, at least not in its current form.** The Ethiopian working-age population is



Figure O 25

## ENROLMENT IN SCHOOL BECAME MORE DEPENDENT ON HOUSEHOLD WELFARE BETWEEN 2011 AND 2016

School enrollment probabilities by household consumption, 2011 and 2016



Source: WMS 2011, 2016. World Bank staff calculations.

projected to grow at two million per year in the coming decade. The increasing scarcity of agricultural land in the highlands means that an ever-larger share of young people will not inherit sufficient land to make an independent living and will need to transition to livelihoods off the farm<sup>4</sup>. Given the relatively low education levels of the labor force, especially in rural areas, the bulk of the newcomers will not qualify for modern wage employment in the formal economy. This implies that most of the growing labor force will try to make a living in the informal or semi-formal sector, both in wage- and self-employment. The projected increase in the size of the agri-food sector as Ethiopia urbanizes and urban incomes grow could be a large generator of employment for young people leaving the farm<sup>5</sup>.

**The relative shift out of farming into off-farm and non-farm occupations will also require a spatial shift in the distribution of the population.** Though accurate numbers do not exist due to the outdated nature of the Population Census (2007), it is estimated that about 80 percent of the population is still rural, making Ethiopia under-urbanized given its income level. At the same time, urban areas of all sizes are growing substantially and poverty in cities and towns is falling quickly. Given the close linkages between small towns and their surrounding rural hinterland, and the lower skills requirements for jobs in small towns, investing in small towns and facilitating migration from rural areas by removing barriers

(such as the risk of losing land ownership in rural areas) holds significant promise for continued poverty reduction.

**Effective safety nets will remain essential.** Given that currently only a small share of the poor population in Ethiopia is covered by safety nets, further expanding and better targeting existing safety nets will be necessary. One option to reach more of the poor with the existing safety nets is to expand safety to all woredas in the country, though with a smaller number of beneficiaries per woreda to manage the fiscal implications. The safety net should be flexible enough to scale up and down depending on the particular state of national and local economies.

**Finally, improving the welfare of the bottom 10 percent of the population will require more investments in the human capital of children.** In an ideal scenario, children of extremely poor households would accumulate more education and be able to move out and diversify into more productive activities, breaking the intergenerational transmission of poverty. This however is not taking place: Children from poor and poorly educated parents in rural areas severely lag on education and the effect of household wealth on child education has strengthened since 2011. Devising policies or interventions to keep children from poor rural families in school for longer, potentially through income-incentives, will be crucial in any attempt to share the benefits of growth more widely.

4 This is already happening now: Expectations of land inheritance are a main driver of migration decisions and non-agricultural employment (Kosec et al, 2017).

5 Minten et al (2018).





# Introduction

**The most recent Poverty Assessment for Ethiopia was published in 2015.** This Poverty Assessment covered the period 1996-2011. As a result, this current Poverty Assessment mainly focuses on the 2011-2016 period, although certain chapters also take a longer-term view and describe trends and conduct analyses spanning a longer time period. A widely-quoted fact about Ethiopia is that growth has been strong and sustained over the last decade and a half. The recent and ongoing economic reforms in the country mean that not only is the nature of growth likely to change, but the relationship between economic growth and poverty reduction will also shift. In order to provide some broader context before getting to poverty numbers, this introduction briefly reviews the main macro-economic developments between 2011 and 2016.

**Between 2011 and 2016 Ethiopia continued its developmental state model, characterized by a strategic focus on agriculture and industrialization coupled with large public infrastructure investments facilitated by heterodox macro-financial policies.** Economic growth remained

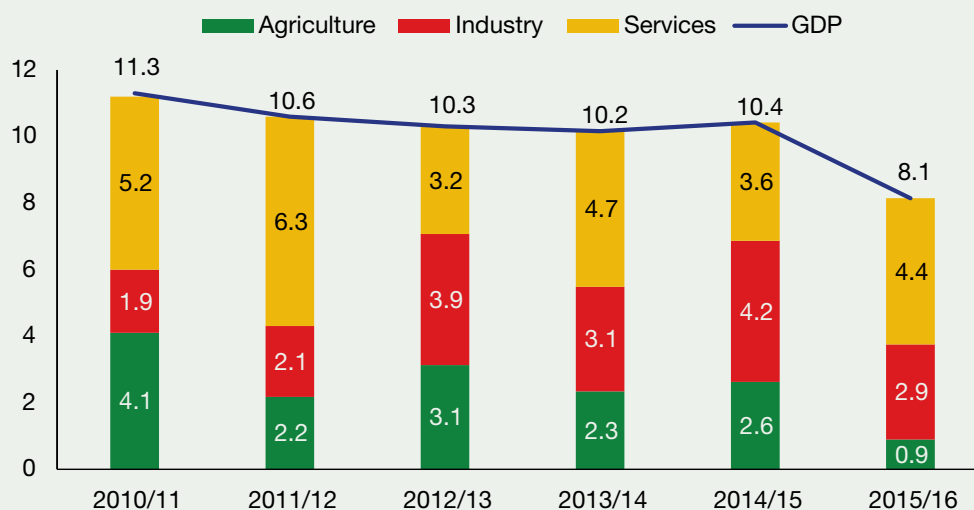
strong. GDP grew at an average rate of over nine percent per year, resulting in a 38 percent increase in per capita GDP levels. Economic growth was mainly driven by services, which explained 42 percent of the expansion in GDP between 2011 and 2016. Agriculture contributed 25 percent to the growth in GDP over the same period, while industry accounted for 34 percent (Figure 1). The growth in the industrial sector was mainly driven by the construction subsector, which accounted for 77 percent of industrial growth contribution to the real GDP. Manufacturing contributed on average 22 percent to industrial growth contribution to the real GDP. Between 2011 and 2016, the contribution of manufacturing to real GDP growth doubled from a low base, increasing from 0.5 to 1.0 percentage point.

**Economic output has shifted from agriculture to industry since 2010/11.** Agriculture's share in GDP decreased from 46 percent in 2011 to 38 percent in 2016, while the share of industry increased from 14 percent to 24 percent over the same period. Services remained fairly constant at 39 to 40 percent of GDP. Changes in sectoral employment

**Figure 1**

## SERVICES AND INDUSTRY HAVE BEEN DRIVING GROWTH

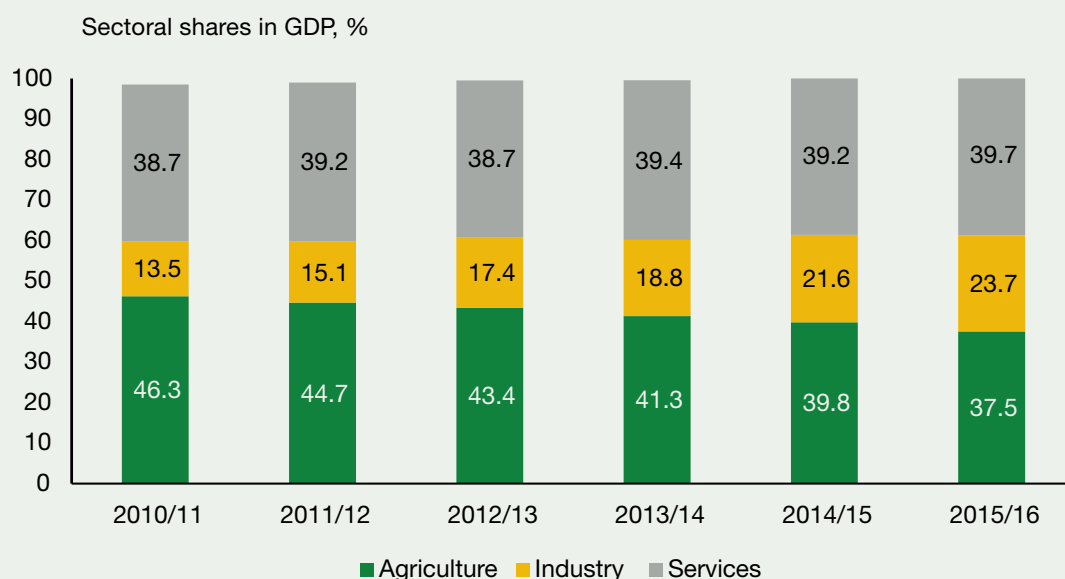
Sectoral contribution to GDP growth



Source: National Planning Commission

Figure 2

## THE SHARE OF INDUSTRY IN GDP IS INCREASING



Source: National Planning Commission

shares have been less dramatic. Agriculture's share of employment modestly decreased to 74 percent in 2013 (year of the latest Labor Force Survey), down from 78 percent in 2005. Most workers shifted towards services (employment share of 18 percent in 2013) and, to a lesser extent, industry (share of 9 percent in 2013).

**Spending on the pro-poor sectors<sup>6</sup> was maintained at around 12 percent of GDP during 2010/11 – 2015/16.**

Of the pro-poor sectors, allocation to the education sector reached 4.7 percent of GDP in 2016/17 before declining to 4 percent in 2017/18. The share spend on roads was larger at the beginning of the period than at the end, and stood at 1.8 percent in 2017/18. Spending on water and agriculture have largely shown increases through 2014/15 but declined over the past couple of years. The reallocation in government expenditures over the past couple of years affected the pro-poor sectors which declined to 11.1 percent in 2016/17 and 9.5 percent in 2017/18 (Figure 3).

**After significant spikes in 2011 and 2012, inflation moderated and was largely contained to single-digits during 2013/14 – 2016/17.**

Inflation rapidly rose in 2010/11 and 2011/12 reaching a peak of 40.7 percent in August 2011 before starting to come down and reaching single-digit levels in March 2013 at 7.7 percent. Food inflation which peaked at 51.7 percent in October 2011 was the major driver of the spike in inflation although increases in nonfood inflation also contributed. After moderating to single digits during 2013/14 – 2016/17, inflation again picked up to double digits in 2017/18 (Figure 4).

**Exports have been on a downwards trend between 2011 and 2016.**

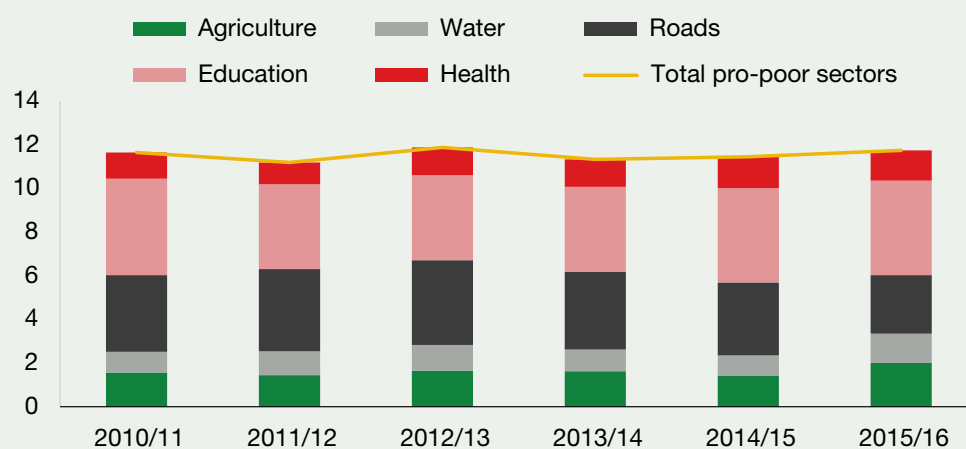
Exports as a share of GDP decreased from close to 17 percent in 2011 to eight percent by 2016. The poor performance of exports means that Ethiopia's debt levels need to be monitored carefully. While external debt levels are not unusually high at 54 percent of GDP, low export levels have led to the deterioration of two key measures of capacity to repay, the debt-to-export and debt service-to-export ratios, pointing to vulnerability to debt distress.

6 The government's definition of pro-poor sectors includes education, health, agriculture, roads and water.

**Figure 3**

## SPENDING ON PRO-POOR SECTORS STAYED LARGELY UNCHANGED BETWEEN 2011 AND 2016

Spending on pro-poor sectors, % of GDP



Source: Ministry of Finance



**Under the current reform agenda, the economic prospects for FY2019 and the medium term should remain stable.** Annual real GDP growth is projected to be around 7.9 percent in FY2019 and 8.2 percent in the medium term. The reform agenda is expected to address some macro-economic imbalances, while moderate fiscal deficits and prudent monetary policy are expected to reduce the rate of inflation and keep it in the single digits. Merchandise exports could recover in the medium term, as large investment projects, such as the railway to the Port of Djibouti and large power dams (with potential for electricity exports), become operational.

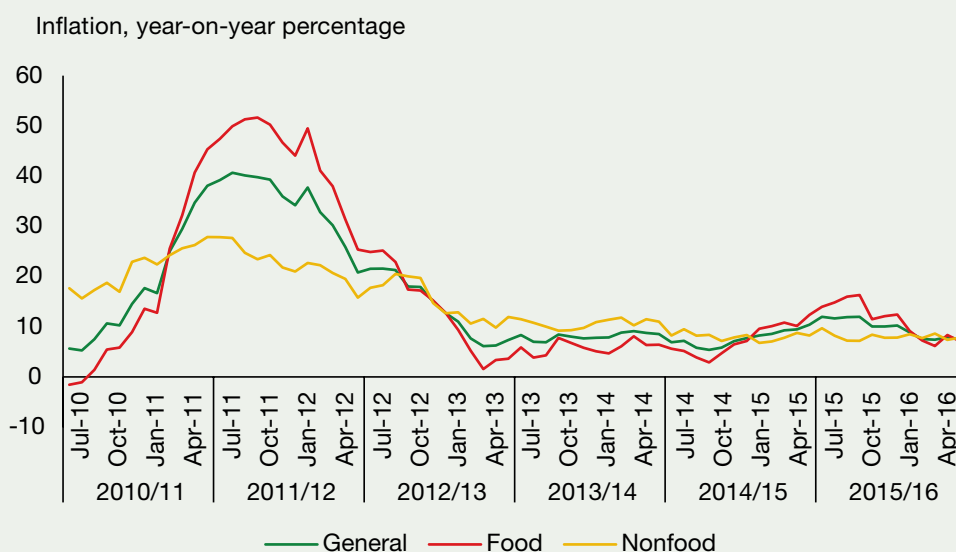
**To summarize, the period on which this Poverty Assessment focuses (2011-2016) was characterized by strong economic growth and sustained spending on pro-poor sectors.** The year during which the last poverty survey was implemented, 2015/16, was however a severe drought year, which may have influenced the pace of poverty reduction.

**This Poverty Assessment proceeds as follows:** Chapter I summarizes the trends in household consumption growth

and poverty reduction between 2011 and 2016 and assesses whether non-monetary indicators of welfare corroborate the consumption and poverty trends. Chapter II presents the poverty profile, while Chapter III examines the drivers of poverty reduction, focusing mainly though not exclusively on the most recent period (2011-2016). Chapter IV exploits the longitudinal nature of the Living Standards Measurement Study to assess household economic trajectories over time and quantify chronic and transitory poverty. The large decrease in urban poverty is dissected in Chapter V. Chapter VI focuses on targeting of the Government's two main social protection programs, the Productive Safety Net Program and Humanitarian Food Aid. Finally, Chapter 7 focuses on inequality of opportunity and intergenerational economic mobility to examine the extent to which exogenous circumstances affect access to key services and opportunities in Ethiopia.

Throughout this Poverty Assessment, when doing cross-country comparisons, we will benchmark Ethiopia based on the countries that were identified as "structural peers" in the 2016 Systematic Country Diagnostic. These countries are Rwanda, Burkina Faso, Uganda, Tanzania, Mozambique, and Myanmar.

**Figure 4 INFLATION WAS MOSTLY CONTAINED BETWEEN 2013 AND 2016**



Source: CSA



**Figure 5** EXPORTS DECLINED BETWEEN 2011 AND 2016

Exports as a share of GDP



Source: National Bank of Ethiopia







# 2011-2016: Continued Growth and Poverty Reduction

Despite adverse circumstances related to the 2015/16 El-Nino drought, poverty reduction continued between 2011 and 2016. The share of the population below the poverty line decreased from 30 percent in 2011 to 24 percent in 2016. The reduction in poverty was particularly strong in urban areas, where the poverty headcount decreased from 26 percent to 15 percent. Poverty reduction in rural areas was relatively subdued and statistically significant only in three regions. The reduction in poverty is robust to the use of alternative deflators.

Consumption growth between 2011 and 2016 was higher in the upper parts of the welfare distribution, leading to a modest increase in inequality. The increase in inequality was mainly driven by the increased welfare disparity between urban and rural areas. Consumption levels of the bottom 10 percent did not increase between 2011 and 2016, a continuation of the pattern since 2005. Given that the bottom 10 percent is mainly rural, poverty severity in rural areas was higher in 2016 than in 2005.

Trends in non-monetary dimensions of welfare confirm the positive consumption trend. Ownership of durables and housing quality improved between 2011 and 2016, as did access to an improved water source. Human development indicators increased from a low base, both for the general population and the bottom 10 percent. Human development outcomes remain however poor, as reflected by Ethiopia's low rank in the new Human Capital Index.

Contrary to popular perception, poverty reduction between 2011 and 2016 was strongest in the pastoral areas, which largely overlap with the regions of Somali and Afar. Of the five main agro-ecological zones, only the moisture-reliable lowlands (mainly overlapping with the regions of Gambella and Benishangul Gumuz) did not experience poverty reduction between 2011 and 2016. The drought-prone lowlands, mainly consisting of the lowland parts of Oromia and SNNPR, experienced a reduction in poverty but remained by far the poorest ecological zone in the country.



# Introduction

**As shown in the introduction, Ethiopia continued to post strong economic growth between 2010/11 and 2015/16.** Between 2010/11 (henceforth referred to as 2011) and 2015/16 (henceforth referred to as 2016), Ethiopia's economy grew at a rate of over 9 percent per year, resulting in a 38 percent increase in per capita GDP levels over the same period. Agricultural production grew by 31 percent. Poverty headcount followed the general trend, with the share of population living below the national poverty line dropping from 30 percent in 2011 to 24 percent in 2016. Given that the latest survey was implemented during an exceptional drought year (2015/16), this is a remarkable achievement.

**This chapter will use several sources of data to paint a detailed picture of the evolution of poverty and**

**household living standards in Ethiopia between 2011 and 2016.** The chapter has three parts. In the first part we will offer a detailed description of the evolution of poverty using data from the two most recent Household Consumption Expenditure Surveys (henceforth HCES) implemented in 2010/11 and 2015/16. In the second part we will examine whether non-monetary indicators corroborate the trend in household living standards as measured by the HCES. Data on these non-monetary indicators are provided by the Welfare Monitoring Surveys (WMS), implemented at the same time and on the same sample as the HCES surveys, and the Demographic and Health Surveys (DHS), also implemented in 2011 and 2016. The third part will discuss the practice of poverty monitoring and measurement in Ethiopia and formulate options to further strengthen that practice.

## 2. SIGNIFICANT HOUSEHOLD CONSUMPTION GROWTH AND POVERTY REDUCTION

Household consumption growth and poverty reduction continued between 2011 and 2016, despite adverse circumstances linked to the 2015/16 El-Nino drought. Poverty reduction was strong in urban areas but weak in rural areas. Growth was stronger in the upper parts of the welfare distribution, leading to a modest increase in inequality from a low base. The bottom 20 percent in rural areas and the bottom 10 percent at the national level did not experience real consumption growth, replicating a pattern that was also found in the earlier 2005-2011 period. As a result, poverty severity did not decrease much despite the reduction in the poverty headcount. The reduction in poverty is robust to the use of alternative methods of deflating, though the officially-used method tends to overestimate the reduction in poverty in the recent period.

### 2.1 Solid reduction in the poverty headcount

**Continued economic growth translated into improved living standards at the household level, particularly in urban areas.** Household consumption expenditures per adult equivalent, the welfare metric used in this Poverty Assessment (see Box 1), increased by 14 percent in real terms between 2011 and 2016, translating into an annual growth rate of 2.6 percent. The increase in household welfare was particularly strong in urban areas with an annual consumption

growth rate of 6 percent. In contrast, growth among rural households was sluggish at 1 percent per year, perhaps due to the influence of the 2015/16 El Nino drought (Table 1).

**Average household consumption increased in all regions.<sup>7</sup>** The highest consumption growth was observed in Harari (increase of 59 percent), Dire Dawa (increase of 55 percent), and Gambela (increase of 34 percent). From observing Table 1, it is clear that the increase in consumption within regions was largely driven by urban areas (except for Tigray). While the increase in urban consumption is statistically significant in all regions and cities except for urban

<sup>7</sup> The sample coverage for Afar and Somali improved in 2016 where more zones were included and the results in Table 1 and subsequent tables/figures in this chapter and other chapters that compare 2011 and 2016 don't include households from these new zones (see Box 1).

Somali, the change in rural consumption is only statistically significant in Tigray, Gambella and Harari. Rural households in other regions did not experience an increase in consumption between 2011 and 2016. Looking at median consumption

levels rather than means, we find that median consumption decreased in Amhara and Afar, pointing to different dynamics at different parts of the welfare distribution in those regions (Annex Table 1).

**Table 1**

### MEAN ANNUAL HOUSEHOLD CONSUMPTION PER ADULT IN DECEMBER 2015 PRICES, 2011 AND 2016

|                   | TOTAL  |        |          | URBAN  |        |          | RURAL  |        |          |
|-------------------|--------|--------|----------|--------|--------|----------|--------|--------|----------|
|                   | 2011   | 2016   | % CHANGE | 2011   | 2016   | % CHANGE | 2011   | 2016   | % CHANGE |
| National          | 11,009 | 12,500 | 13.5     | 13,901 | 18,649 | 34.2     | 10,434 | 11,014 | 5.6      |
| Tigray            | 11,630 | 14,108 | 21.3     | 17,691 | 20,536 | 16.1     | 10,074 | 12,038 | 19.5     |
| Afar              | 10,641 | 12,902 | 21.2     | 13,945 | 18,645 | 33.7     | 9,298  | 10,512 | 12.5     |
| Amhara            | 10,944 | 12,340 | 12.8     | 14,325 | 21,879 | 52.7     | 10,464 | 10,557 | 0.9      |
| Oromia            | 10,947 | 12,022 | 9.8      | 13,891 | 18,080 | 30.2     | 10,504 | 11,022 | 4.9      |
| Somali            | 10,565 | 11,714 | 10.9     | 12,942 | 14,470 | 11.8     | 10,004 | 9,242  | 10.6     |
| Benishangul-Gumuz | 11,435 | 13,373 | 17.0     | 15,124 | 18,524 | 22.5     | 10,832 | 12,112 | 11.8     |
| SNNPR             | 10,725 | 12,204 | 13.8     | 13,391 | 18,049 | 34.8     | 10,414 | 11,157 | 7.1      |
| Gambella          | 10,334 | 13,855 | 34.1     | 12,477 | 17,945 | 43.8     | 9,325  | 11,745 | 26.0     |
| Harari            | 13,264 | 21,059 | 58.8     | 15,344 | 24,028 | 56.6     | 11,397 | 17,479 | 53.4     |
| Addis Ababa       | 12,831 | 16,237 | 26.5     | 12,831 | 16,237 | 26.5     | -      | -      | -        |
| Gambella          | 11,268 | 17,428 | 54.7     | 11,617 | 20,718 | 78.3     | 10,532 | 11,393 | 8.2      |

Note: The increase in mean consumption is statistically significant in all regions except for Somali. For rural areas, the increase in mean consumption is statistically different from zero only in Tigray, Gambella and Harari.

Source: HCES, 2011; 2016. World Bank staff calculations.



## Consumption aggregation and poverty measurement

Most of the analysis presented in this Poverty Assessment is based on detailed consumption data included in the Household Consumption Expenditure Surveys (HCES) (2010/11 and 2015/16). All consumption of food and nonfood items is included, regardless of whether these items are purchased on the market, come from own production, or were received as gifts. For own-consumption and gifts, the quantities consumed are valued at prevailing prices in the enumeration area. Although consumption is expressed on an annual basis, the reference period used during data collection varies based on the nature of the consumption items. For example, information on food and food-related items was asked twice a week using the “last three days” and “last four days” as reference periods (households are visited twice during the HCES). For house rent, durable goods, clothing, health and education expenditures, and so forth, the “last three months” and “last 12 months” were used as references. Imputed rent is included in the consumption aggregate<sup>8</sup>. To capture the effect of seasonal variations, the data were collected over a 12-month span (Hamle 1 to Sene 30/July 8 to July 7), by randomly allocating sampled households to different months.

To adjust for price variations across time and space, spatial and temporal price deflators are used. First, nominal consumption is adjusted for price differences across reporting levels, by using the spatial deflators provided by FDRE (2012, 2017). Second, spatially-deflated consumption levels are expressed in December prices (December 2010 and December 2015), by using the food and nonfood Consumer Price Indexes provided by the Central Statistics Agency. The food and nonfood Consumer Price Indexes are also used to bring the December 2010 consumption expenditure (2010/11 HCES) to December 2015 prices. Finally, to adjust for variations in household size and composition, consumption expenditure is divided by the officially-used adult-equivalent scales, which are based on calorie requirements and vary by age and sex. This exercise should result in a consumption aggregate that can be compared through space and time. The consumption aggregates used in this Poverty Assessment are the official ones used by the National Planning Commission.

The poverty rates presented in this chapter are based on the national poverty line. The poverty line is based on a food basket that is required to achieve the minimum daily calorie requirement – 2,200 kilo-calories per adult in Ethiopia – and adjusted upwards to include non-food consumption. The food basket was determined in 1996 and has not been changed since. Accordingly, the poverty line in 1996 was 1,075 Birr per adult equivalent per year in 1996. In 2011, the poverty line was updated by costing the items in the original food basket at prevailing prices and doing a similar adjustment for non-food consumption. The updated poverty line was 3,781 Birr per adult equivalent per year (in December 2010 prices). For the most recent poverty measurement the 2011 poverty line was inflated using the GDP deflator, resulting in a poverty line of 7,184 Birr per adult equivalent per year in December 2015 prices. Given the peculiar nature of using the GDP deflator to update a poverty line, this chapter will also conduct an analysis of the sensitivity of the poverty estimates to different deflators.

All temporal comparisons in this Poverty Assessment exclude a number of zones in Somali and Afar regions. In 2011, the HCES covered only two zones in Afar and three in Somali. In 2016, the coverage was improved – five zones and eight zones were covered respectively in Afar and Somali. While the 2016 data is more representative of pastoral areas and the two regions, to maintain comparability, in this chapter (and subsequent chapters – when comparison is made between 2011 and 2016), households sampled from the new zones are excluded from the analysis.

Sources: FDRE (2012, 2017); Central Statistical Agency 2018.

8 Imputed rent was calculated by the Central Statistics Agency (CSA) and was included in the consumption aggregate that was shared with the Bank team.

**Consumption increased across the major agro-ecological zones, except in the drought-prone lowlands.**

Using a classification based on altitude and rainfall, we define five distinct agro-ecological zones: The drought-prone highlands (mainly eastern parts of Amhara and Tigray, but also north-eastern Oromia), the drought-prone lowlands (the lowland areas of Oromia and SNNPR and western parts of Afar), the moisture-reliable highlands (large parts of Oromia, SNNPR, Amhara), the moisture-reliable lowlands (overlapping

largely with Gambella and Benishangul-Gumuz), and the pastoral areas (Somali and almost all of Afar). Annex 1 plots the agro-ecological zones on a map. Average household consumption increased everywhere except in the drought-prone lowlands (increase not statistically significant). Perhaps counter-intuitive, consumption increased most in the pastoral areas and the moisture-reliable lowlands, driven by large consumption gains in the cities (Table 2).

**Table 2** MEAN ANNUAL HOUSEHOLD CONSUMPTION PER ADULT IN DECEMBER 2015 PRICES, 2011 AND 2016

|                             | NATIONAL |        |             | URBAN  |        |             | RURAL  |        |             |
|-----------------------------|----------|--------|-------------|--------|--------|-------------|--------|--------|-------------|
|                             | 2011     | 2016   | DIFF (%)    | 2011   | 2016   | DIFF (%)    | 2011   | 2016   | DIFF (%)    |
| Drought prone highlands     | 11,260   | 13,422 | <b>19.2</b> | 14,495 | 20,342 | <b>40.3</b> | 10,690 | 11,860 | <b>10.9</b> |
| Drought prone lowlands      | 10,605   | 11,128 | 4.9         | 13,973 | 20,914 | <b>49.7</b> | 10,081 | 9,310  | -7.6        |
| Moisture reliable highlands | 10,885   | 12,136 | <b>11.5</b> | 13,664 | 17,421 | <b>27.5</b> | 10,319 | 10,839 | <b>5</b>    |
| Moisture reliable lowlands  | 12,193   | 14,705 | <b>20.6</b> | 15,844 | 24,872 | <b>57</b>   | 11,410 | 12,082 | 5.9         |
| Pastoral areas              | 10,814   | 12,907 | <b>19.4</b> | 12,458 | 17,660 | <b>41.8</b> | 10,112 | 10,880 | 7.6         |

Note: Changes in bold are statistically significant.

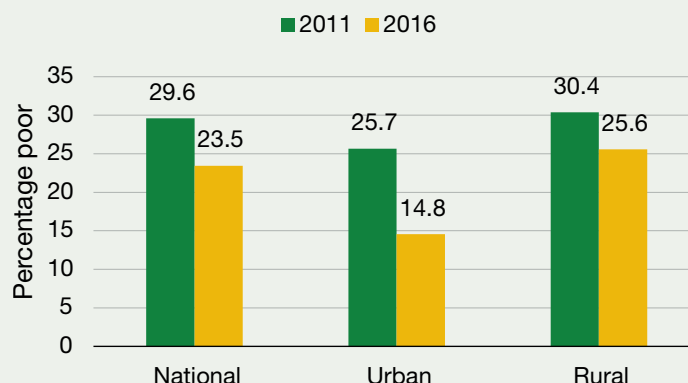
Source: HCES, 2011, 2016; World Bank staff calculations.

**Household consumption growth translated into solid poverty reduction.** At the national level, the percentage of people whose consumption was below the national poverty line (ETB 7,184 per adult equivalent per year) decreased from 29.6 percent in 2011 to 23.4 percent in 2016, a statistically significant decline of six percentage points. In urban areas, poverty decreased strongly from 25.6 percent in 2011 to 14.8 percent in 2016, while in rural areas it decreased from

30.4 percent to 25.6 percent (Figure 6). This is a departure from the pattern of poverty reduction observed between 2005 and 2011, when urban and rural areas experienced similar magnitudes of poverty reduction<sup>9</sup>. While poverty in Ethiopia is fairly low in comparison to a selection of comparator countries, the degree to which growth has translated into poverty reduction has also been fairly low (Box 2).

**Figure 6** POVERTY DECREASED IN BOTH RURAL AND URBAN AREAS

Poverty rate based on national poverty line, 2011 and 2016



Source: HCES; 2011, 2016. World Bank staff calculations.

9 See Ethiopian Poverty Assessment 2014.

**Box 2**

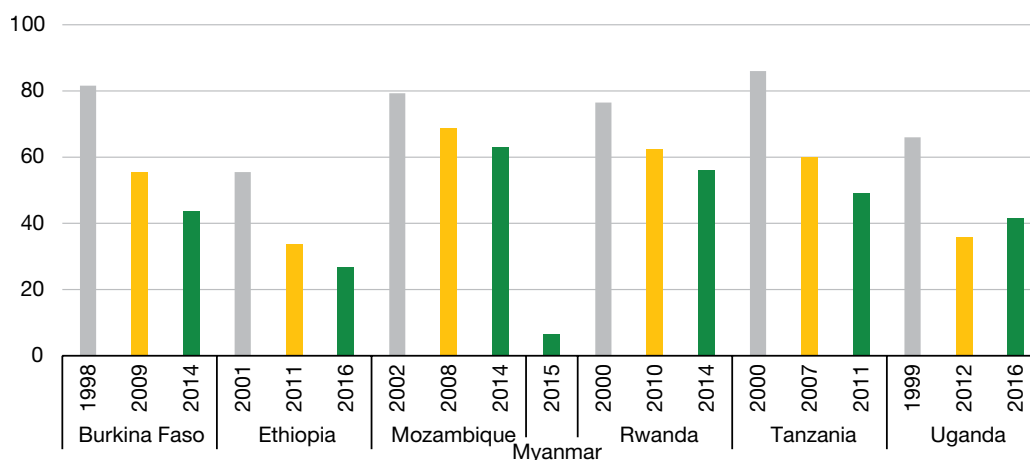
## A low poverty rate, but also a low transmission from growth to poverty reduction

Compared with its structural peers, Ethiopia has a fairly low poverty rate. With a poverty rate of 27 percent based on the international poverty line (US\$1.9 per person per day in purchasing power parity), poverty in Ethiopia is lower than all the structural peers except for Myanmar (Figure 7). However, the extent to which growth (in GDP per capita) in Ethiopia translates into poverty reduction has also been low: The “poverty-elasticity of growth”, a measure of the extent to which GDP growth decreased poverty, amounted to -0.33 between 1997 and 2016, which means that a one percent increase in per capita GDP was accompanied with a 0.33 percent decrease in poverty rates. Among the sample of comparators, Mozambique and Rwanda had a lower responsiveness of poverty to growth (Figure 8). The semi-elasticity, which measures the percentage point change in poverty for a one percent change in per capita GDP, was lowest in Ethiopia: Between 1997 and 2016, a one percent increase in per capita GDP was accompanied by a 0.19 percentage point reduction in poverty<sup>10</sup>. Tanzania’s semi-elasticity, for instance, was close to four times higher.

**Figure 7**

### ETHIOPIA HAS LOWER POVERTY THAN ALL ITS COMPARATORS EXCEPT MYANMAR

Trends in poverty in Ethiopia and its comparators using the 1.9 USD PPP poverty line: 1997 -2016



Source: HCES; 2011, 2016. World Bank staff calculations.

The reasons behind Ethiopia’s relatively low conversion rate between growth and poverty reduction are not entirely clear. Research shows that countries with low levels of initial development (high initial poverty rates) tend to have lower growth-poverty elasticities, as do countries with high levels of inequality (Bourguignon, 2003; Ravallion, 2012). While Ethiopia definitely had low levels of initial development, it also had among the lowest levels of inequality. It is possible that the baseline level of development in Ethiopia was so low that growth has increased incomes of the poor but not yet to the level of pulling them above the poverty line. If that hypothesis were true, continued economic growth could lead to much more poverty reduction in the future.

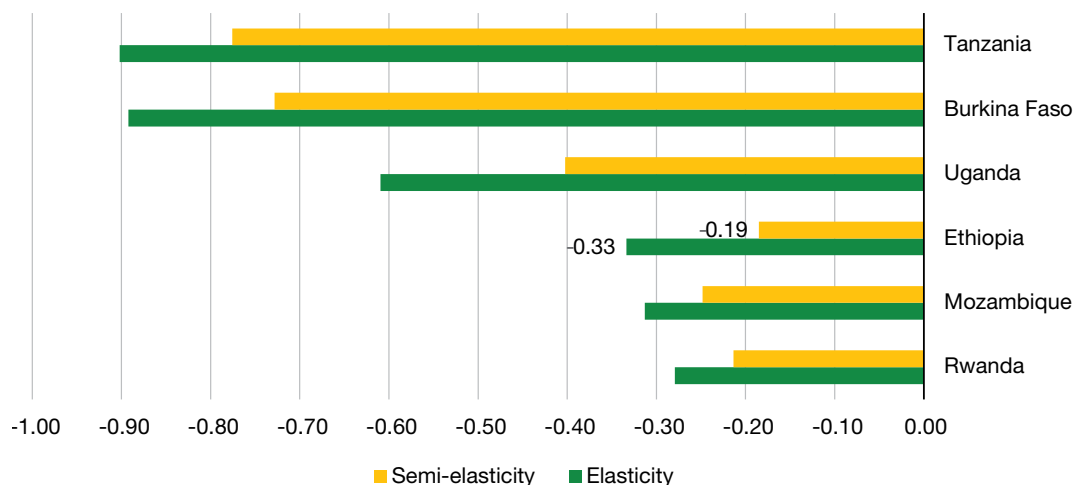
<sup>10</sup> The growth elasticity of poverty is notoriously sensitive to the baseline level of development. If initial levels of consumption are low, growth rates in consumption will be relatively high for a same absolute change, which will lead to an underestimation of the growth-elasticity of poverty. As such, growth elasticities tend to be higher in richer countries. The semi-elasticity partly avoids this pattern and does not automatically increase when a country grows richer (Klasen and Misselhorn, 2008).



**Figure 8**

## BUT THE RATE AT WHICH GROWTH HAS TRANSMITTED TO POVERTY REDUCTION IN ETHIOPIA IS AMONG THE LOWEST

Growth elasticity of poverty for Ethiopia and its comparators, 1997 - 2016



Note: The elasticities are estimated by taking the first and last years between 1997 and 2016 when data on poverty is available. Myanmar is not included because poverty data is available only for 2015.

Source: World Development Indicators. World Bank staff calculations.

**The significant decrease in the poverty rate also led to a modest decrease in the absolute number of poor people.** At national level, the number of poor people decreased from 22.5 million to 20.2 million. It decreased from 3.2 million to 2.4 million in urban areas and from 19.3 million to 17.7 million in rural areas.

**Poverty decreased in most regions, particularly in urban areas.** Poverty rates decreased significantly in all regions except for Tigray, Benishangul-Gumuz and Harari, where the decrease observed in the sample cannot be generalized to the population (Table 3). Poverty reduction was especially strong in the city administrations of Addis Ababa and Dire Dawa, and in the regions that had the highest poverty rates in 2011 (Somali and Afar – see Box 3). While the reduction in urban poverty was statistically significant in almost all regions, poverty reduction in rural areas only happened in Afar, Somali and SNNPR. Poverty rates in rural Dire Dawa

increased strongly in the sample, but is only marginally significant from a statistical point of view.

### Depth and severity of poverty also decreased between 2011 and 2016, with substantial spatial differences.

The depth of poverty, which measures how far on average the consumption of the poor is from the poverty line (also called the poverty gap), modestly dropped at the national level, reflecting a sharp decrease in urban areas and a weak one in rural areas. The severity of poverty, which measures the average poverty gap for the poor but attaches more weight to the poorest, decreased strongly in urban areas but remained constant in rural areas (Figure 9). At the regional level, poverty severity decreased strongly in Afar, Benishangul-Gumuz and Gambella, and in the city administrations (Addis Ababa and Dire Dawa), and increased sharply from a low base in Harari.

Table 3

**POVERTY DECREASED IN MOST REGIONS, ESPECIALLY IN URBAN AREAS<sup>11</sup>**

Percentage of people below the national poverty line, by region and urban vs rural

|             | TOTAL |      |              | URBAN |      |              | RURAL |      |              |
|-------------|-------|------|--------------|-------|------|--------------|-------|------|--------------|
|             | 2011  | 2016 | % CHANGE     | 2011  | 2016 | % CHANGE     | 2011  | 2016 | % CHANGE     |
| Tigray      | 31.8  | 27.0 | -4.8         | 13.7  | 14.2 | 0.5          | 36.5  | 31.1 | -5.3         |
| Afar        | 36.1  | 25.6 | <b>-10.5</b> | 23.7  | 10.6 | <b>-13.1</b> | 41.1  | 31.9 | -9.2         |
| Amhara      | 30.5  | 26.1 | <b>-4.4</b>  | 29.2  | 11.6 | <b>-17.6</b> | 30.7  | 28.8 | -1.9         |
| Oromia      | 28.7  | 23.9 | <b>-4.8</b>  | 24.8  | 15.3 | <b>-9.5</b>  | 29.3  | 25.3 | -4.0         |
| Somali      | 32.8  | 16.8 | <b>-16.0</b> | 23.1  | 19.4 | -3.7         | 35.1  | 16.3 | <b>-18.8</b> |
| Ben.-Gumuz  | 28.9  | 26.5 | -2.4         | 21.3  | 17.7 | -3.6         | 30.1  | 28.7 | -1.4         |
| SNNPR       | 29.6  | 20.7 | <b>-8.9</b>  | 25.8  | 14.4 | <b>-11.3</b> | 30.0  | 21.9 | <b>-8.1</b>  |
| Gambella    | 32.0  | 23.0 | <b>-9.0</b>  | 30.7  | 16.6 | <b>-14.1</b> | 32.5  | 26.4 | -6.1         |
| Harari      | 11.1  | 7.1  | -4.0         | 11.7  | 6.0  | <b>-5.7</b>  | 10.5  | 8.5  | -2.0         |
| Addis Ababa | 28.1  | 16.8 | <b>-11.3</b> | 28.1  | 16.8 | <b>-11.3</b> | -     | -    | -            |
| Dire Dawa   | 28.3  | 15.4 | <b>-12.9</b> | 34.9  | 11.1 | <b>-23.8</b> | 14.2  | 23.3 | 9.1          |

Note: Changes in bold are statistically significant.

Source: HCES, 2011, 2016; World Bank staff calculations.

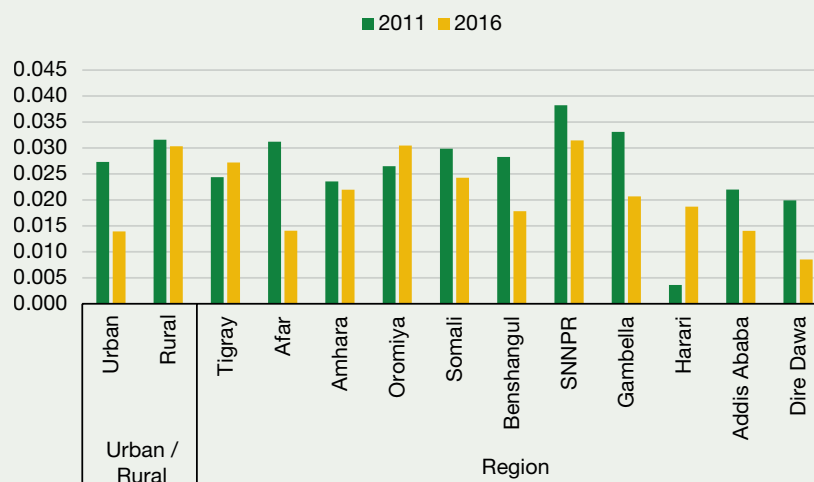
**In rural areas, the reduction in poverty headcount combined with a stagnation in poverty severity suggests that the fewer people who are poor are increasingly falling behind.** All else equal, a reduction in poverty headcount would lead to a reduction in poverty severity. The finding that

severity is remaining constant (and in some regions increasing) while headcount is falling means that whoever remained in poverty between 2011 and 2016 became ever poorer. This pattern will be explored in more detail in the next section.

Figure 9

**REGIONAL VARIATIONS IN THE TREND IN POVERTY SEVERITY**

Poverty severity based on national poverty line, 2011 and 2016



Source: HCES; 2011, 2016. World Bank staff calculations.

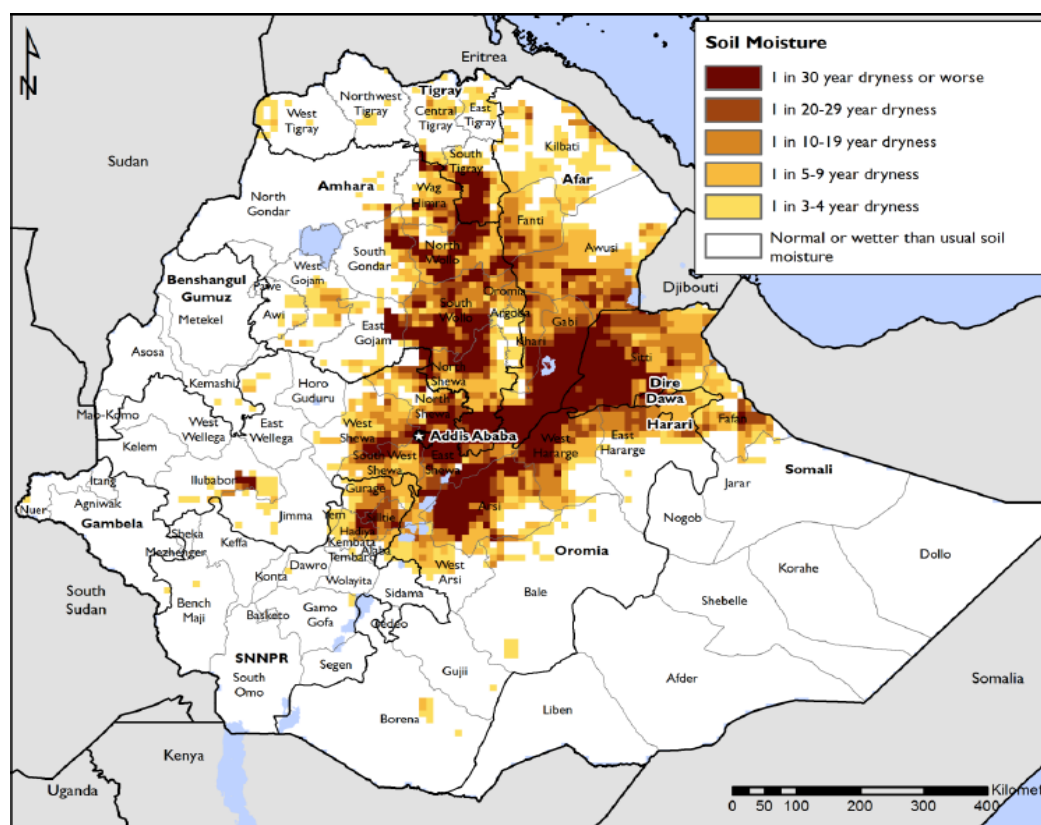
11 If households from the new zones of Afar and Somali are included in the 2016 analysis, total (urban and rural combined) poverty becomes 23.6% and 22.4% and rural poverty will be 26.5% and 22.3% in Afar and Somali, respectively. Urban poverty in Afar remains the same (10.6%) while it went up to 19.4% in Somali.

**Box 3****What's behind the strong poverty reduction in Somali and Afar?**

Somali and Afar experienced exceptionally strong poverty reduction between 2011 and 2016. Poverty in Somali dropped by 16 percentage points, while poverty in Afar decreased by 11 percentage points. This finding is at odds with the common perception of Afar and Somali, both predominantly pastoral regions, as being the most destitute regions of Ethiopia. It also seems at odds with the persistently high number of people in these regions that are deemed in need of emergency food aid. And it is also at odds with the belief that the 2015/16 El Nino drought was particularly devastating in the pastoral lowlands. Is there a way to reconcile the data with the perceptions?

**Figure 10****AFAR WAS HEAVILY AFFECTED BY THE EL-NINO DROUGHT**

Soil moisture anomalies, September 2015 vs 1981-2014



Source: FEWS NET, NASA, 2015.

*Box continue on next page.*

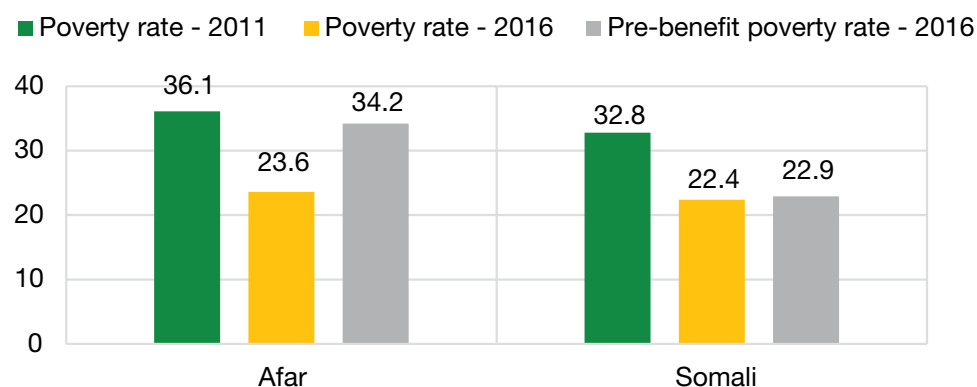
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In Afar, the answer is at least partly related to aid. According to remote sensing data on soil moisture, Afar was heavily affected by the 2015/16 drought (Figure 10). In response to the drought, the Productive Safety Net Program (PSNP) was scaled up and complemented by Humanitarian Food Aid (HFA). Overall, over half of the population of Afar was covered by either PSNP or HFA (or both) during the 2016 HCES survey. This high level of coverage translated into higher consumption expenditures and lower poverty rates. A simulation that attempts to remove benefits (both in-cash and in-kind) from the consumption aggregate suggests that poverty rates in 2016 in Afar would have been a lot higher in absence of PSNP and HFA<sup>12</sup>: 34 percent instead of the actual poverty rate of 24 percent (Figure 13). PSNP and aid in Afar were successful in alleviating the effects of the drought.

In Somali the picture is less straightforward. One zone in northern Somali (Shinile zone) was heavily affected by the drought, while the largest part of Somali had normal or wetter than usual soil moisture. Rainfall in most of Somali region was better than average during the drought, except for Shinile zone (which experienced a large rainfall deficit; FEWS NET, 2015). Coverage of PSNP and HFA in Somali remained however high, at 38 percent of the total population during the 2016 HCES. In contrast to Afar, this high level of coverage does not explain the strong poverty reduction in Somali: Simulated pre-benefit poverty rates are similar to actual post-benefit poverty rates ((Figure 11). This either means that benefits were directed to households that were already above the poverty line to begin with or that benefits went to extremely poor households who, despite the assistance, remained below the poverty line. Chapter 6 in this Poverty Assessment finds most evidence for the first explanation.

**Figure 11 PSNP AND HFA WERE HIGHLY EFFECTIVE IN AFAR**

Actual poverty rates in 2011 and 2016; simulated pre-benefit poverty rate 2016



Note: The pre-benefit poverty rate is an estimate of what poverty would have been in 2016 in the absence of PSNP and HFA.

Source: HCES; 2011, 2016. World Bank staff calculations.

12 The simulation subtracted 100 percent of PSNP and HFA benefits from the final consumption aggregate. Less extreme simulations (where only part of the benefits is subtracted-suggesting a marginal propensity to consume of lower than 1) would result in a lower effect of PSNP and aid. The marginal propensity to consume is set at 1 because PSNP and HFA are targeted to extremely poor households, who would likely consume a big part of any extra income. The reader should keep in mind that this simulation is only that: A simulation.

**Poverty decreased in all agro-ecological zones except for the moisture-reliable lowlands.** The strongest poverty reduction took place in pastoral areas, where the headcount decreased from 32 percent in 2011 to 18 percent by 2016 (Table 4). The moisture-reliable lowlands, which is mainly composed of Benishangul-Gumuz and Gambella, did not experience a reduction in poverty even though average

consumption levels significantly increased between 2011 and 2016. This points towards a highly unequal pattern of growth in these regions, with the upper parts of the distribution growing fast while the poorest segments stagnate<sup>13</sup>. The drought-prone lowlands, which include the lowlands parts of Oromia and SNNPR and parts of Afar, remain the poorest despite a significant reduction in poverty.

**Table 4**

## **POVERTY DECREASED IN ALL AGRO-ECOLOGICAL ZONES EXCEPT THE MOISTURE-RELIABLE LOWLANDS**

FGT poverty indicators by agro-ecological zone, 2011 and 2016

|                            | HEAD COUNT |      | DEPTH OF POVERTY |      | SEVERITY OF POVERTY |      |
|----------------------------|------------|------|------------------|------|---------------------|------|
|                            | 2011       | 2016 | 2011             | 2016 | 2011                | 2016 |
| Drought prone highland     | 28.0       | 20.8 | 6.1              | 5.1  | 2.1                 | 2.0  |
| Drought prone lowland      | 38.9       | 31.7 | 11.6             | 10.9 | 5.2                 | 5.0  |
| Moisture reliable highland | 29.4       | 23.6 | 8.2              | 6.8  | 3.3                 | 2.8  |
| Moisture reliable lowland  | 24.6       | 25.4 | 6.0              | 5.9  | 2.1                 | 2.0  |
| Pastoralist                | 31.8       | 17.8 | 8.5              | 5.2  | 3.2                 | 2.0  |

Source: HCES, 2011; 2016. World Bank staff calculations.

## **2.2 Consumption growth concentrated in the upper parts of the distribution**

**The patterns of consumption growth between 2011 and 2016 were different at the bottom and at the top of the distribution.** Figure 12 shows the average annual percentage change in consumption between 2011 and 2016 for each percentile of the distribution, ranging from the poorest one percent to the richest one percent. Growth for the bottom 15 percent was not statistically different from zero, in contrast to the top of the distribution where growth rates reached a maximum of just under 6 percent per year between 2011 and 2016. The overall average increased by 2.4 percent per year, while the median (50th percentile) grew at 2 percent per year.

**The absence of gains for the poorest segment of the population was driven by rural areas.** The bottom 20 percent in rural areas did not experience an increase in consumption between 2011 and 2016 (Figure 13). While growth in rural areas was higher for the upper parts of the distribution, annual growth rates did not exceed 3 percent, even for



<sup>13</sup> The growth incidence curve for the moisture-reliable lowlands is strongly upward-sloping, with annual growth rates around 10 percent for the upper percentiles and zero growth for the bottom decile.

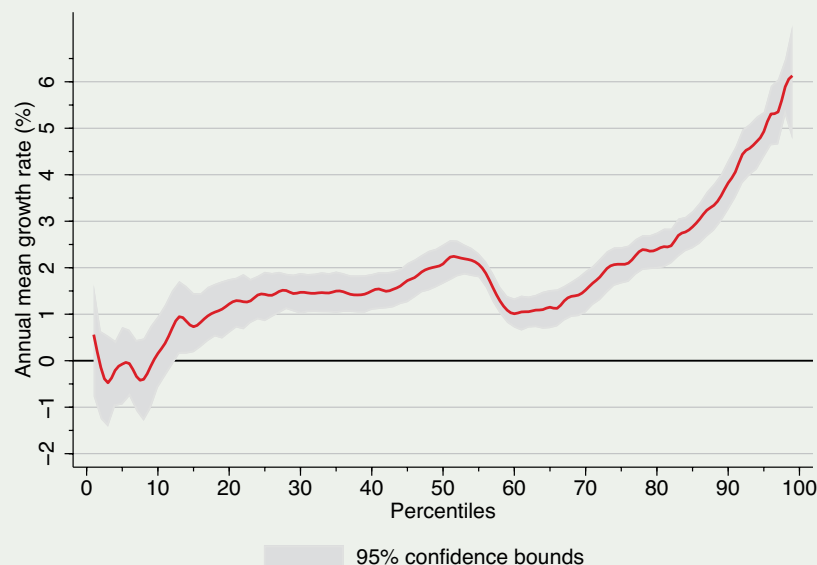
the richest percentile. In contrast, growth across the urban consumption distribution was always above 3 percent, even for the poorest, and became increasingly strong towards the upper end (left-hand panel of Figure 13). The growth rate of

the mean in urban areas was almost two-and-a-half times the national average, at 5.9 percent per year. The slight contraction in consumption for the poorest 20 percent in rural areas explains the stagnation in rural poverty severity.

**Figure 12**

## CONSUMPTION GROWTH WAS ZERO FOR THE POOREST, AND STRONGLY POSITIVE FOR THE RICHEST

Average annual growth rate of consumption by percentile between 2011 and 2016



Source: HCES 2011; 2016. World Bank staff calculations.

**Figure 13**

## GROWTH WAS STRONG AND POSITIVE IN URBAN AREAS, BUT LOWER AND VARIABLE IN RURAL AREAS

Average annual growth rates of consumption by percentile and urban/rural location between 2011 and 2016



Source: HCES 2011; 2016. World Bank staff calculations.

**The bottom 10 percent of the population has not experienced real consumption growth since 2005.** The previous poverty assessment showed that consumption of the bottom 15 percent contracted between 2005 and 2011, both in rural and urban areas. The contraction in consumption for the bottom 15 percent continued in the more recent period (2011-2016), but only in rural areas. As a result, the severity of poverty in rural areas was higher in 2016 (3.1) than in 2005 (2.7)<sup>14</sup>. It is important to understand that, given the cross-sectional nature of the HCES data, this does not necessarily imply that households who were poor to begin with (in 2005) have increasingly become more impoverished<sup>15</sup>. It means that whoever was in the bottom 15 percent of rural welfare in 2016 had lower monetary living standards than whoever was in the bottom 15 percent in 2005.

## 2.3 A small increase in inequality

**The very poor experienced zero or negative consumption growth between 2011 and 2016.** As a result, the share of total consumption accruing to the bottom 10% of the population decreased, while the share captured by the top 10% increased (Figure 14). In 2016, the poorest 10 percent

accounted for three percent of total national consumption, slightly down from 3.5 percent in 2011. At the other side, the wealthiest 10 percent accounted for 27 percent of total consumption, up from 24 percent in 2011. In other words, while the average consumption of the richest 10 percent was about seven times larger than the average consumption of the poorest 10 percent in 2011, it was nine times bigger in 2016.

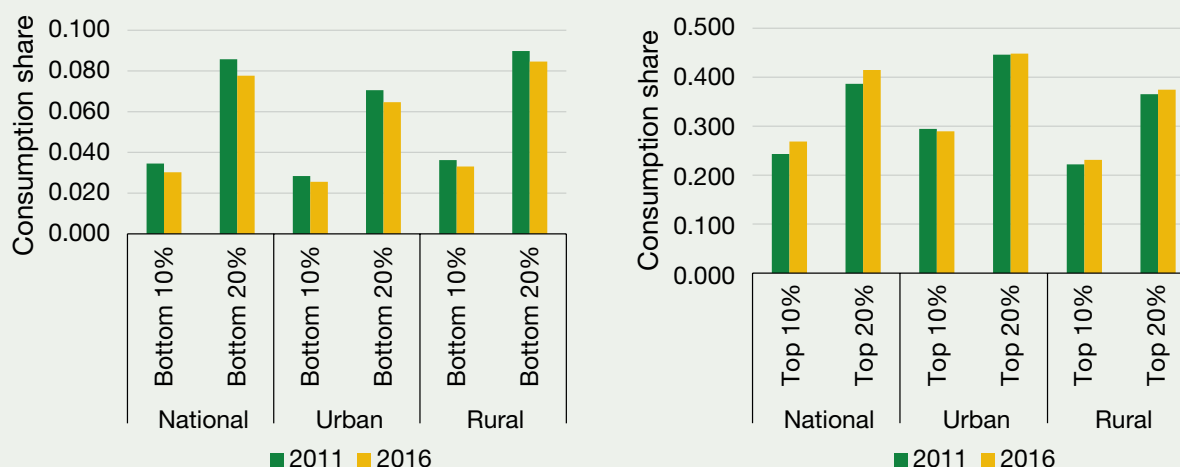
### The different consumption dynamics at both tails of the distribution led to a modest increase in inequality.

The Gini coefficient, which is especially sensitive to changes in the middle of the distribution, increased only slightly from 0.3 in 2011 to 0.33 in 2016. The Gini remains low in regional comparison (Figure 15). Other indicators of inequality show a sharper increase: The ratio of consumption at the 90th percentile and consumption at the 10th percentile increased from 3.6 in 2011 to 4.3 in 2016, reflecting strong consumption growth for the richest and stagnating consumption for the poorest (Table 5). The Atkinson index of inequality, which is more sensitive to changes at the bottom of the income distribution, increased from 0.25 in 2011 to 0.29 in 2016. Inequality remains however low in comparative perspective (Figure 15).

**Figure 14**

### THE CONSUMPTION SHARE OF THE POOREST DECLINED WHILE THAT OF THE RICHEST INCREASED BETWEEN 2011 AND 2016

Consumption share of the bottom and top 10% and 20% between 2011 -2016: national, urban and rural



Source: HCES 2011; 2016. World Bank staff calculations.

14 FDRE, 2017

15 In fact, Chapter 4 of this Poverty Assessment will show that there is a substantial amount of mobility in Ethiopia, with poor households exiting poverty and non-poor households falling back.



**Table 5****INEQUALITY INCREASED BETWEEN 2011 AND 2016**

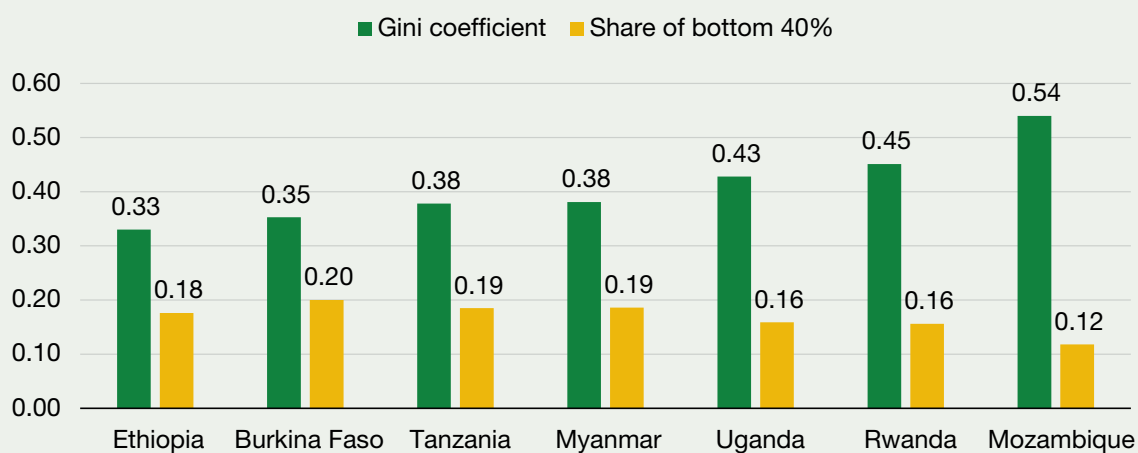
|                | 2011 | 2016 |
|----------------|------|------|
| Gini Index     | 0.30 | 0.33 |
| Atkinson Index | 0.25 | 0.29 |
| p90/p10 ratio  | 3.62 | 4.32 |

Note: Poverty share denotes the contribution of the region to overall poverty.

Source: HCES, 2011; 2016; World bank staff calculations.

**Figure 15****INEQUALITY IN ETHIOPIA REMAINS LOW IN REGIONAL COMPARISON**

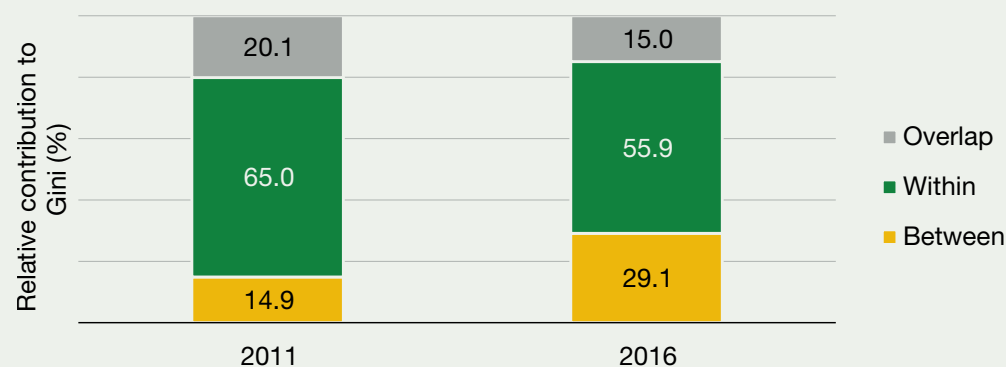
Gini coefficient and consumption share of bottom 40%, Ethiopia and comparators, latest data



Source: HCES 2011; 2016. World Bank staff calculations.

**Figure 16****INEQUALITY INCREASED DUE TO THE INCREASING GAP BETWEEN URBAN AND RURAL AREAS**

Decomposition of the Gini coefficient into a between rural-urban component and a within-component



Source: HCES 2011; 2016. World Bank staff calculations.

**The increase in inequality was mainly driven by the increasing disparity between urban and rural areas.**

Households in urban areas, who were already better-off in 2011, experienced strong consumption growth between 2011 and 2016, while households in rural areas experienced fairly weak consumption growth. As a result, the “between-share” of inequality -the part of inequality that is due to differences in average welfare levels between urban and rural areas- increased from 15 percent in 2011 to 29 percent in 2016 (Figure 16). Inequality across regions remained low in 2016, with the between-share accounting for a mere two percent of overall inequality in 2016.

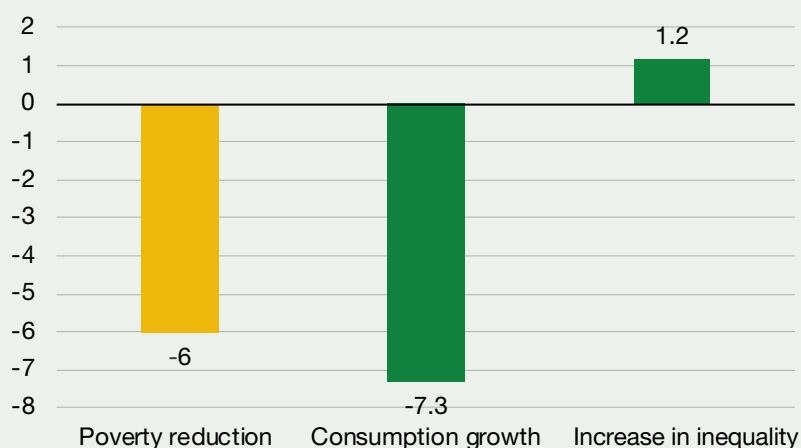
**Given the increase in inequality, all poverty reduction between 2011 and 2016 was driven by growth in household consumption.** Figure 17 decomposes the change in

poverty into a growth and redistribution component using the Datt-Ravallion decomposition technique. It shows the parts of the poverty change due to (i) the change in average consumption and (ii) the change in the distribution of consumption (changes in inequality). At country level, the growth effect is negative (poverty-reducing) while the redistribution effect is positive (poverty-increasing) offsetting part of the poverty reduction due to growth in consumption. If consumption growth would have been distribution-neutral (if inequality had not changed between 2011 and 2016), poverty would have decreased by over seven percentage points rather than the observed six percentage points. The increase in inequality however partly offset the reduction in poverty, leading to a six percentage-point poverty reduction. A similar pattern is observed in rural and urban areas, though both the growth and redistribution components were larger in urban areas.

**Figure 17**

**CONSUMPTION GROWTH DROVE POVERTY REDUCTION**

Datt-Ravallion decomposition of poverty change between 2011 and 2016



Source: HCES 2011; 2016. World Bank staff calculations.

## 2.4 No clear impact of the El-Niño drought

**Despite the severity of the 2015/16 El-Niño drought, it is hard to identify its aggregate effects in national statistics.** In 2015/16, Ethiopia was hit by the El-Niño drought, labeled the worst drought in five decades. Failure of two consecutive rainy seasons in 2015 led to a sharp increase in humanitarian requirements with more than 10 million Ethiopians in need of humanitarian food aid, on top of the chronically food-insecure PSNP caseload of eight million<sup>16</sup>. Government and development partners mounted a large-scale humanitarian response, which was credited with having averted any loss of life due to starvation. Available evidences fail to identify the effect of the drought on households' welfare as discussed below.

**Using data on a sample of Ethiopian households observed before (2014) and after/during the drought (2016), researchers fail to find a clear negative impact of the drought on household welfare (measured by consumption).** Using drought indicators based on remote sensing data, Sohnesen (2018) does not find an impact of rainfall

and/or vegetation anomalies on household consumption<sup>17</sup>. Similarly, Hirvonen and others (2018) found that the drought did not lead to a widespread increase in child undernutrition in the country, but that there was an adverse impact in areas with a limited road network. Bachewe and others (2017) found that real cereal prices decreased during the drought, consistent with a story of limited agricultural impacts of the drought.

**Chronic malnutrition decreased between 2011 and 2016, acute malnutrition remained unchanged, and overall agricultural production in 2015/16 decreased only marginally (and remained higher than overall production levels two years earlier in 2013/14)**<sup>18</sup>. The food security indicators in the Welfare Monitoring Survey (WMS) tell a largely similar story: The share of the Ethiopian population who experienced a food shortage in the 12 months prior to the survey decreased from 22 percent in 2011 to 10 percent in 2016 (Table 6). The food gap -the number of months a household experienced food shortages – remained the same, but given that the gap only refers to those households who actually experienced food shortages, it also decreased on the aggregate level. On the regional level, only Benishangul-Gumuz experienced a self-reported increase in food insecurity from a low base.

**Table 6**

### FOOD SECURITY IMPROVED BETWEEN 2011 AND 2016

Incidence of food shortages and average duration of food shortages – food gap

|                   | 2011              |                   | 2016              |                   |
|-------------------|-------------------|-------------------|-------------------|-------------------|
|                   | FOOD SHORTAGE (%) | FOOD GAP (MONTHS) | FOOD SHORTAGE (%) | FOOD GAP (MONTHS) |
| Tigray            | 13.2              | 3                 | 11.9              | 2.5               |
| Afar              | 7.7               | 5.2               | 9                 | 3.8               |
| Amhara            | 23.2              | 3.1               | 10.4              | 3                 |
| Oromia            | 16                | 3.1               | 10.5              | 3.6               |
| Somali            | 30.3              | 4.4               | 6                 | 3                 |
| Benishangul-Gumuz | 5.6               | 2.1               | 8.5               | 2.8               |
| SNNPR             | 35                | 3.4               | 12.6              | 3.2               |
| Gambella          | 31.6              | 2.6               | 3.8               | 1.2               |
| Harari            | 8                 | 3.2               | 0                 | -                 |
| Addis Ababa       | 7.8               | 4                 | 1.1               | 3.6               |
| Dire Dawa         | 13.5              | 1.6               | 7.7               | 2                 |
| <b>National</b>   | <b>21.6</b>       | <b>3.3</b>        | <b>10.2</b>       | <b>3.3</b>        |

Source: WMS, 2011; 2016. World Bank staff calculations. The food gap is only calculated for those households who reported a food shortage.

16 Based on the 2016 Humanitarian Requirements Document

17 When using a self-reported indicator of drought exposure, there is a large negative impact of (self-reported) drought exposure on consumption. This is likely due to endogeneity: People who have had a bad year are more likely to report having been exposed to shocks.

18 Based on the Ethiopian Demographic and Health Surveys (2011 and 2016) and the Agricultural Sample Surveys (2011-2016).

**Poverty rates decreased even in those areas that experienced the most severe rainfall shocks.** An analysis of poverty trends by quartiles of woreda level average rainfall shocks during the months of the main rainy season (June, July, August and September) in 2015 shows that rural poverty decreased in all the quartiles (Table 7)<sup>19</sup>. For the woredas that are in the fourth quartile – those that experienced the highest rainfall shock in 2015, rural poverty fell from 22.1 percent to 18.8 percent while it dropped from 34.4 percent

to 30.9 percent for those in the first quartile - woredas that experienced positive rainfall shocks in 2015. It is noteworthy that the areas that experienced the highest rainfall shocks during the El-Nino drought are mostly found in central Ethiopia and are not those that are dry and considered to be more vulnerable for rainfall shocks (See map in Annex I). Most of the woredas in Somali region are in the first quartile and experienced positive rainfall shocks in 2015 (more rain than usual).

**Table 7**

## **POVERTY DECREASED EVEN FOR THE AREAS THAT EXPERIENCED THE HIGHEST RAINFALL SHOCK**

Percentage of poor people in 2011 and 2016 by quartiles of 2015 rain fall shocks

| QUARTILE OF RAINFALL SHOCKS | 2011 | 2016 |
|-----------------------------|------|------|
| First (lowest shock)        | 34.4 | 30.9 |
| Second                      | 36.4 | 28.4 |
| Third                       | 29.5 | 23.7 |
| Fourth (highest shock)      | 22.1 | 18.8 |

Source: HCES, 2011; 2016; World bank staff calculations.

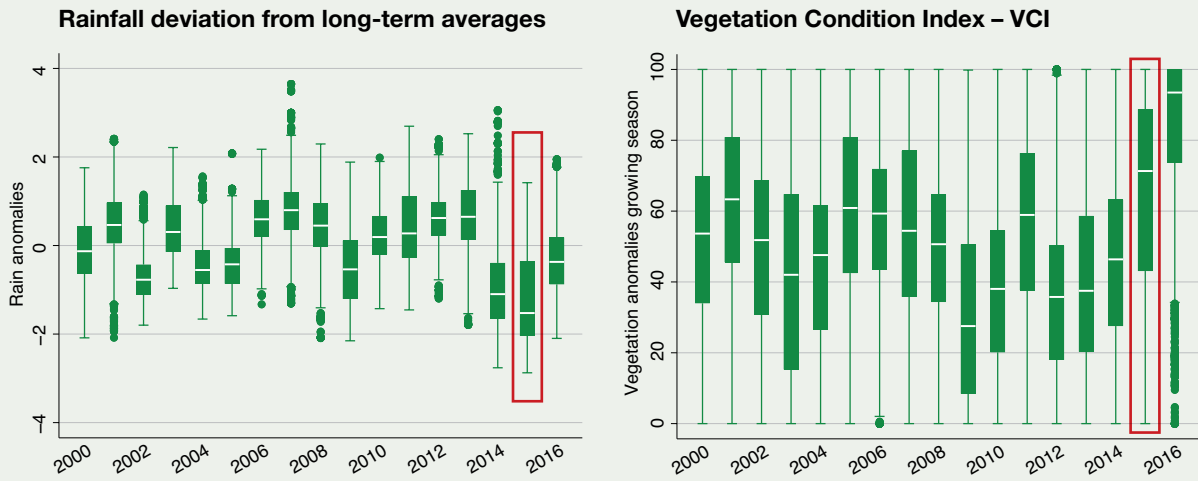
**Several explanations are possible for the apparent non-effects of such a major drought.** First, the drought mainly affected areas that contribute little to overall agricultural production, resulting in only a marginal decline of national production levels. Second, thanks to widespread land management and restoration practices, agriculture may have become more resilient to droughts: While 2015/16 was clearly a meteorological drought with rainfall levels far below average (Figure 42), vegetation conditions were actually above average during the drought – the Ethiopian landscape was greener than average (right-hand-side graph in Figure 18). Third,

humanitarian food aid drastically expanded its coverage and appears to have been well targeted to the most drought-affected areas (see Chapter 6), likely cushioning the effect of the drought on consumption levels. Finally, it is likely that the available national household survey data are not granular enough to detect localized impacts of the drought: It is likely that the drought had large negative effects confined to relatively small geographical units that are not manifested in large scale household survey datasets. Thus, while further study may be required, one of the above reasons or a combination of them might have led to an overall muted effect of the drought.



19 To construct the rainfall shocks at woreda level, deviations in rainfall from the long-run average (2000-2016) were first calculated for the months of June, July, August and September in 2015 separately and expressed as z-scores. The average z-score for the four months was then constructed and used to divide the woredas into four quartiles.

**Figure 18** **BAD RAINS, BUT GOOD VEGETATION...**



Note: z-scores below 0 mean negative rainfall deviations (less rain than normal). VCI measures the state of vegetation in a given year compared to similar periods in the previous years.

Source: Sohnesen, 2018, based on data from NASA's National Oceanic and Atmospheric Administration.





## 2.5 Testing the sensitivity of the poverty estimates

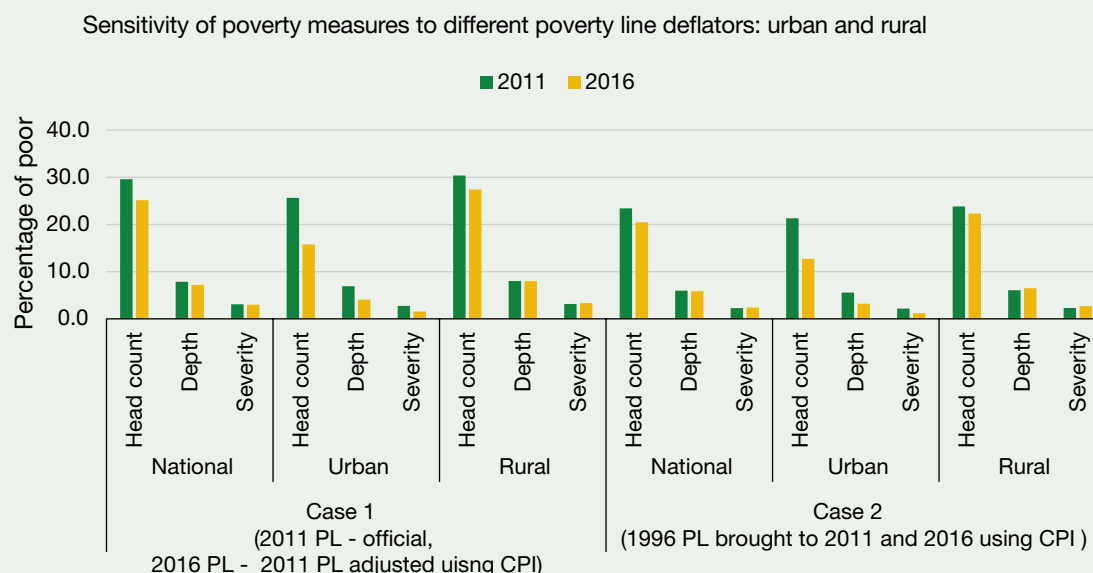
**Poverty measures can be sensitive to the way the poverty line is adjusted over time, particularly during times of inflation.** In Ethiopia, the official poverty line was set in 1996 based on a food basket that is enough to get the minimum daily calorie requirement for a healthy life (see Box 1). Different adjustment techniques have then been used to account for price changes over time. The approach followed before 2011 was to express consumption values in 1996 prices using the CPI and then use the original 1996 poverty line. But in 2011, the original basket was re-costed using current prices of each of the items in the original food basket. In 2016, the 2011 poverty line was adjusted to 2016 prices by using the GDP deflator. The choice of the GDP deflator instead of CPI is not clear and is a departure from past practices. Annex I discusses in more detail Ethiopia's poverty monitoring system and possible ways to further strengthen it.

**To assess whether the poverty trends between 2011 and 2016 are sensitive to the deflator used, we apply two alternative methods.** First, we apply the CPI instead of the GDP deflator to bring the 2011 official poverty line to 2016 prices. This gives a slightly higher poverty line than the

official (ETB7,436 versus ETB7,184 – per adult equivalent per year) – we call this Alternative 1. Second, following the official practice prior to 2011, we use the CPI deflator to express both 2011 and 2016 consumption in 1996 prices and then apply the original poverty line of ETB 1,075 – this is termed as Alternative 2. The results are discussed below.

**The national poverty rate decreased between 2011 and 2016 under the two alternative methods also, though the magnitude becomes weaker, particularly in rural areas.** Under Alternative 1, poverty at national level decreased from 29.6 percent to 25.1 percent – compared to 23.5 percent according to the official poverty line. In Alternative 2, poverty decreased from 23.4 percent in 2011 to 20.5 percent in 2016. The low poverty rate in 2011 in case the CPI deflator is used was also noted in the previous poverty assessment. In both alternative scenarios, poverty reduction is strong in urban areas and weak in rural areas (Figure 20). Poverty severity remains unchanged at the national level under the alternative scenarios. For urban areas, depth and severity of poverty fell under the two methods. In rural areas, they stayed the same under Alternative 1 and slightly rose in Alternative 2 (Figure 19). Regional patterns of poverty reduction remain largely the same under the alternative deflating scenarios (Annex Figure 2).

**Figure 19** SENSITIVITY OF POVERTY MEASURES TO DIFFERENT POVERTY LINE DEFLATORS: URBAN AND RURAL



Source: HCES 2011; 2016. World Bank staff calculations.

### 3. GAINS IN NON-MONETARY DIMENSIONS OF WELFARE AS WELL

Trends in non-monetary indicators of living standards largely confirm the reduction in poverty. Between 2011 and 2016, ownership of durables increased, housing quality modestly improved, and more people gained access to an improved water source. Human development indicators improved as well though most remain low. In 2016, only one in three youth in the 15-24 age-cohort had completed primary education.

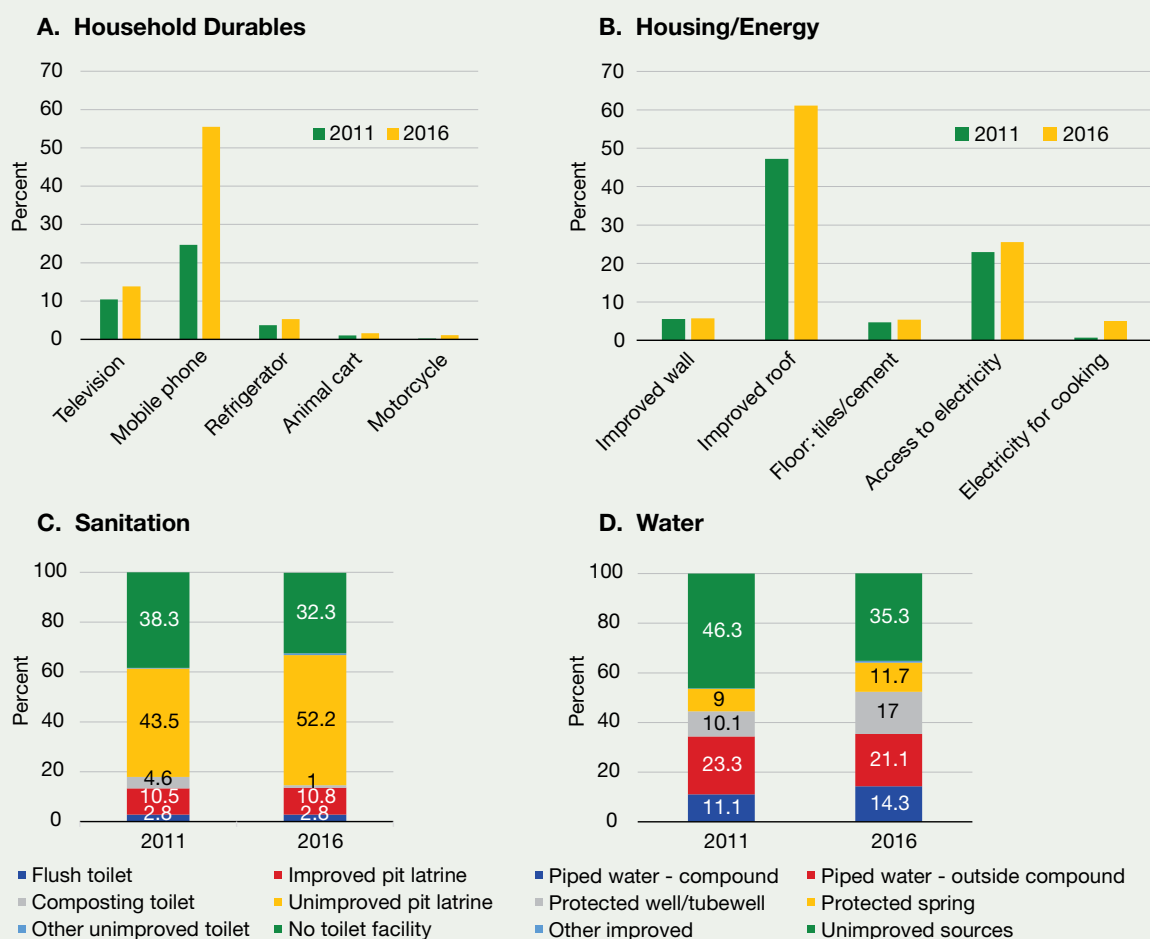
**The growth in household consumption between 2011 and 2016 was accompanied by improvements in non-monetary dimensions of welfare.** The share of households with a television, mobile phone, refrigerator, animal cart, and motorcycle increased, often from a low base, as did the use of improved housing materials and access

to electricity (Figure 20). In 2016, 61 percent of Ethiopian households lived in a house with an improved roof<sup>20</sup>, up from 47 percent in 2011. Having improved walls (cement, stone with cement, bricks, cement blocks, covered adobe, wood planks/shingles) remains however rare. Access to electricity increased from 23 percent in 2011 to 26 percent in 2016.

**Figure 20**

#### ASSET HOLDINGS AND LIVING CONDITIONS IMPROVED BETWEEN 2011 AND 2016

Selected household characteristics in 2011 and 2016, % of households with asset/characteristic



Source: DHS, 2011; 2016

20 An improved roof is defined as a finished roof: Corrugated iron, wood, cement fiber, ceramic tiles, cement, roofing shingles.



**Access to improved water improved as well.** In 2016, 35 percent of Ethiopians used an unimproved water source, down from 46 percent in 2011. The type of sanitation used changed too, though unimproved toilet facilities remain the norm (the use of improved pit latrines remained unchanged at about 11 percent). A third of households still do not use any toilet facility (Panel C of Figure 20).

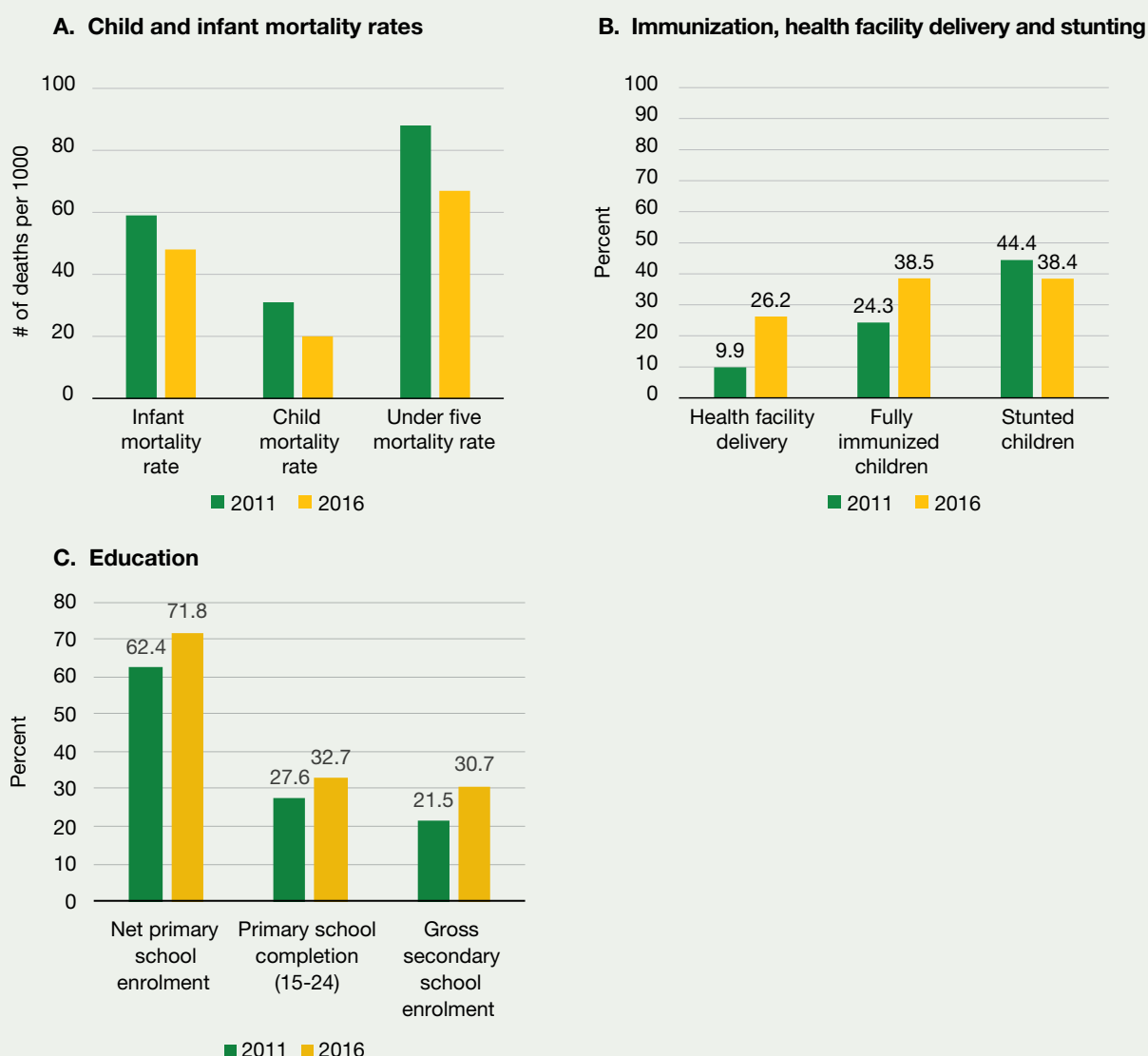
**Human development indicators followed the overall positive trend.** Delivery in a health facility sharply increased

from a low base, the share of fully immunized children increased by 14 percentage points, and stunting rates decreased from 44 percent in 2011 to 38 percent in 2016 (Panel B of Figure 21)<sup>21</sup>. Infant and child mortality rates decreased accordingly (Panel A of Figure 21). Net enrolment in primary school increased, more children are completing primary school, and gross enrolment in secondary school was higher in 2016 than in 2011 (Panel C of Figure 21).

**Figure 21**

## CHILDREN'S MORTALITY DECREASED, AND THEIR HEALTH IMPROVED BETWEEN 2011 AND 2016

Selected health and education variables for children in 2011 and 2016



Source: DHS, 2011; 2016

21 Children are fully immunized if they received all eight basic vaccinations: BCG, three doses of Polio, three doses of DPT, and one dose of MCV. This is calculated for the sample of children aged between 12 and 23 months.

**Despite the sharp improvements, human development indicators in Ethiopia remained low.** In 2016, only 26 percent of births happened in a health facility (in the five years preceding the survey) and less than 40 percent of children had received all basic vaccinations. Only one in three children 15-24-years-old had completed primary school, and over 25 percent of age-eligible children were not in school. As a result, Ethiopia ranks relatively low on the Human Capital Index (Box 4).

**To summarize, the evolution of asset and human capital indicators corroborate the poverty and consumption dynamics set out earlier.** Between 2011 and 2016, household consumption levels increased, asset holdings increased, and physical housing conditions modestly improved. Indicators of child health improved substantially and access to education broadened from a low base.

#### Box 4

### Human Capital in Ethiopia

During the October 2018 Annual Meetings, the World Bank launched the Human Capital Index. The Human Capital Index (HCI) is designed to capture the amount of human capital a child born today could expect to attain by age 18. The HCI has three components: (i) Survival, measured by the under-five mortality rate; (ii) Expected years of learning-adjusted school, measured by the quantity of education a child can expect to attain by age 18, corrected by a measure of learning quality-proxied by student achievement tests; and (iii) Health, measured by the stunting rate of children under five and the probability of a 15-year-old surviving until age 60. The health and education components of the index are combined in a way that reflects their contribution to worker productivity, based on evidence from rigorous micro-econometric empirical studies. The resulting index ranges between 0 and 1. A country in which a child born today can expect to achieve both full health (no stunting and 100 percent adult survival) and full education potential (14 years of high-quality school by age 18) will score a value of 1 on the index. Therefore, a score of, for instance, 0.5 signals that the productivity as a future worker for a child born today is 50 percent below what could have been achieved with complete education and full health.

Given the strong correlation between per capita GDP and human capital, low-income countries tend to score poorly on the HCI. Ethiopia is no exception. With a HCI of 0.38, Ethiopian children born today can expect, as future workers, to attain 38 percent of their potential productivity. With a score of 0.38, Ethiopia ranks 135th out of 157 countries. Relative to the comparator countries, Ethiopia scores at par with Uganda, better than Mozambique (0.36) and Rwanda (0.37), and worse than Tanzania (0.40) and Myanmar (0.47). Relative to its overall rank (135), Ethiopia scores lower on learning-adjusted years of school (4.5 years) and share of children not stunted (62 percent). Ethiopia however overperforms relative to its income level: Given GDP per capita, the human capital index in Ethiopia is higher what would be expected, reflecting the Government's large investments in the health and education sectors.

Source: World Bank, 2018.

## 4. HOW DID THE EXTREME POOR FARE?

Though the extreme poor, here defined as the poorest 10 percent of the population, did not experience any real growth in consumption, they have experienced some improvements in non-monetary welfare. Health and education indicators for children from extremely poor households improved from a low base, household calorie intake increased and the share of extremely-poor households that experienced food shortages decreased. The extreme poor are lagging on the fertility transition, with total fertility rates that were marginally higher in 2016 than in 2000. Children from extremely poor households face substantial barriers in school, with extremely poor 14-year-olds being more likely to be attending Grade 2 rather than Grade 8, which would be his/her age-eligible grade.

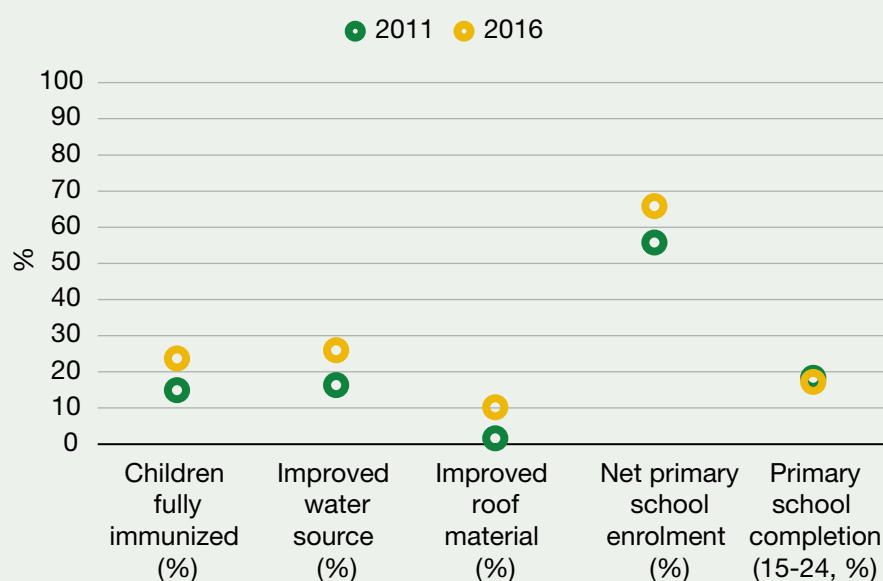
**As mentioned in Section 2, the bottom 10 percent of the population did not experience any growth in consumption between 2005 and 2016.** A logical follow-up question is then whether or not the extreme poor have been stagnating on other dimensions of welfare as well. This section will explore this question based on data from the WMS and DHS surveys.

**Living conditions of the bottom 10 percent improved from a low base between 2011 and 2016.** Figure 22 summarizes the evolution of living conditions of the bottom 10 percent along four dimensions: Housing, water, health, and education. The share of the extreme poor (here defined as the bottom 10 percent) living in a house with an improved roof increased sharply from a low base, from 1 percent in 2011 to 10 percent in 2016, while access to an improved water source<sup>22</sup> increased from 16 percent to 26 percent over

Figure 22

### LIVING CONDITIONS OF THE BOTTOM 10 PERCENT IMPROVED BETWEEN 2011 AND 2016

Trends in selected indicators from the bottom 10 percent, 2011 and 2016



Source: WMS; 2011, 2016; DHS, 2011, 2016. World Bank staff calculations.

22 Following the Joint Monitoring Programme's definition, improved water is defined as piped water (both in dwelling and public tap), protected well, protected spring, tube well, borehole, and rainwater. No distance criterion is applied.

the same period. The share of children in extremely poor households that received all basic vaccinations increased from 15 percent in 2011 to 24 percent in 2016, while net primary school enrolment reached 66 percent in 2016, up from 56 percent in 2011. Completion of primary school remained unchanged at about 17 percent of the 15-24 age-cohort, which means that while there are more children from extremely poor households in school, they are not completing primary school at higher rates than before.

**Looking at trends in other indicators shows a mixed picture of progress and stagnation.** The share of extremely poor children that were born in a health facility

sharply increased from a low base, daily per adult equivalent calorie intake increased, and the incidence of self-reported food shortages sharply decreased. Other indicators remained unchanged: The share of extremely poor children stunted or wasted remained stable at a high level, as did household size and indicators of fertility (Table 8). In general, the extreme poor are lagging on Ethiopia's fertility transition. While the Total Fertility Rate (TFR)<sup>23</sup> decreased substantially in the third, fourth, and fifth wealth quintiles, TFR decreased only modestly in the second quintile (a decrease of 0.6 in 16 years) and did not change at all in the bottom quintile (TFR of 6.4 - Figure 23).



23 The TFR is the average number of children that would be born to a woman over her lifetime if she was to experience the exact current age-specific fertility rates through her lifetime.

Table 8

## A MIXED PICTURE OF PROGRESS FOR THE EXTREME POOR

Means of selected variables for the bottom 10 percent, 2011 and 2016

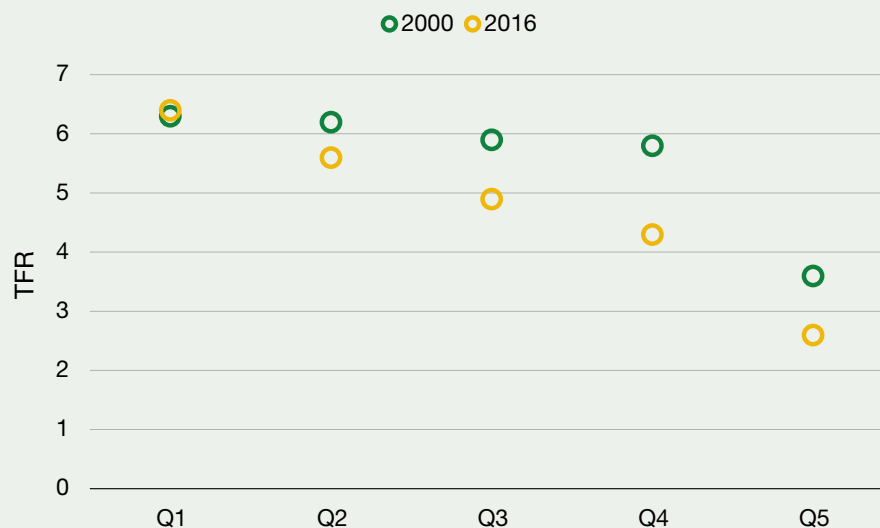
|  | 2011  | 2016  | MEAN<br>DIFFERENCE |
|--|-------|-------|--------------------|
| Household head literate (%)                              | 32.6  | 35.7  | 3.1                |
| Household size   | 7.3   | 7.2   | -0.1               |
| Dependency ratio   | 1.38  | 1.41  | 0.03               |
| Cumulative fertility                                     | 3.6   | 3.7   | 0.1                |
| Births in health facility (%)                            | 2.7   | 7     | <b>4.3</b>         |
| Children stunted (%)                                     | 47.1  | 45.2  | -1.9               |
| Children wasted (%)                                      | 13.9  | 14.4  | 0.5                |
| Average annual household expenditures per AE (2015 Birr) | 3,827 | 3,762 | -65                |
| Daily calorie intake per AE                              | 1,633 | 1,777 | <b>144</b>         |
| Food shortage (%)  | 31    | 20    | <b>-11</b>         |

Source: WMS, 2011; 2016. World Bank staff calculations. The food gap is only calculated for those households who reported a food shortage. Differences in bold are statistically significant.

Figure 23

## FERTILITY RATES AMONG THE EXTREME POOR ARE NOT DECREASING

Total fertility rate by quintile, 2000 and 2016



Source: DHS, 2000, 2016. World Bank staff calculations.

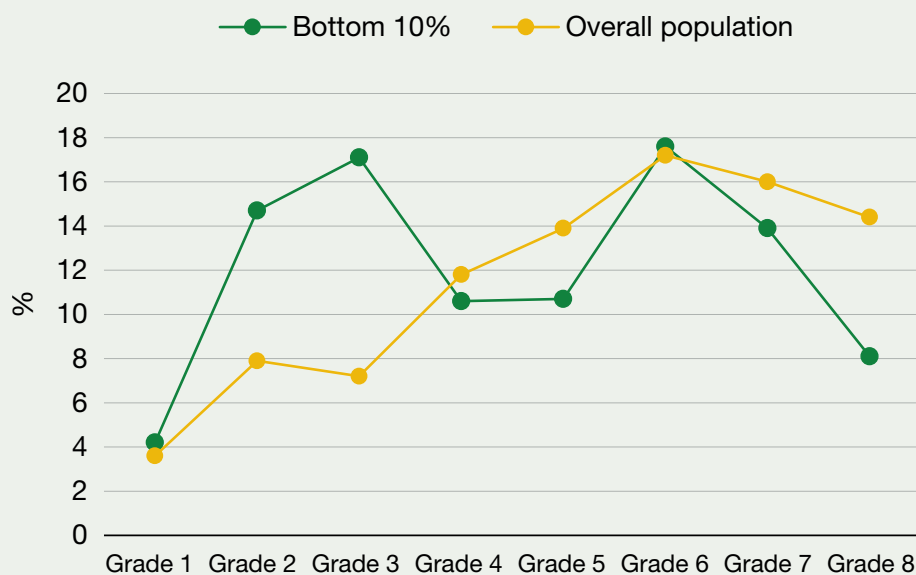
**Despite improvements, the extent to which public services reach the extreme poor remains low.** In 2016, a mere one in four extremely poor children had received all basic vaccinations, about one in four had access to an improved water source, and only seven percent of children were born in a health facility (in the five years preceding 2016). Only 17 percent of the 15-24 age cohort had completed primary school (in the bottom 10 percent). While these figures represent real progress from 2011 and earlier, they highlight the enormous efforts that lie ahead in making access to basic public services less dependent on location and wealth (Chapter 7 will expand on this).

**Access to education for the extreme poor is crucial but remains beset by challenges.** In an ideal scenario, children of extremely poor households would accumulate more education and be able to move out and diversify into more productive activities, breaking the intergenerational transmission of poverty. While access to education has improved across the board, close to 17 percent of 14 to 16-year-old children from extremely poor households never see the inside of a classroom. For those who are in school, grade progression tends to be difficult: A 14-year-old from an extremely poor household is most likely to be either in grade 3 or grade 6, and is more likely to be in grade 2 than in grade 8, the grade a 14-year-old would attend in case of perfect progression (Figure 24). In the overall population, 14-year-olds are most likely to be attending grades 6, 7, or 8.

**Figure 24**

### GRADE PROGRESSION FOR BOTTOM 10% CHILDREN IS DIFFICULT

Probability of a 14-year-old to attend any of the grades of primary school, 2016



Source: WMS, 2016. World Bank staff calculations.



## 5. CONCLUSIONS

**Despite adverse climatic circumstances, the reduction in poverty continued between 2011 and 2016.** In contrast to the earlier periods, poverty reduction was especially strong in urban areas, while rural areas experienced fairly weak poverty reduction. The increasing disparity in household welfare between rural and urban areas pushed inequality up, though inequality remains low in regional comparison. Within rural and urban areas, the better-off generally experienced faster consumption growth.

**Trends in non-monetary dimensions of welfare confirm the improvement in household living standards.** Ownership of durables increased, housing conditions modestly improved, as did access to an improved water source.

Human development indicators sharply improved from a low base. Despite the improvements in human development indicators, access to key health and education services remained low in 2016.

**One of the main findings in this chapter is the continued stagnation of the bottom 10 percent.** Between 2005 and 2016, consumption levels of the poorest 10 percent did not increase, leading to levels of rural poverty severity that were higher in 2016 than in 2005. Non-monetary welfare outcomes of the bottom 10 percent did improve, though modestly, and human development indicators for this segment remain exceptionally low. The next chapter will look more in detail at this bottom segment of the Ethiopian population.







# Who Are the Poor?

Ethiopia has a traditional poverty profile. The poor tend to live in rural areas, in large households with high dependency rates, headed by an older and little-educated household head. They mainly engage in agriculture and casual labor for their livelihood. The poor are relatively isolated from key infrastructure and have worse access to services. In contrast to conventional wisdom, poor households are less likely to be headed by a woman than non-poor households. Regional disparities in poverty are relatively low, meaning that the regional distribution of poverty largely reflects the regional distribution of the population. Differences in poverty rates are higher across agro-ecological zones, with the lowland parts of Oromia and SNNPR having the highest poverty rates. The ultra-poor, defined as the poorest 10 percent of the population, have similar characteristics as the poor, but are more likely to reside in rural Somali and SNNPR.

Education of the household head displays the strongest correlation with household consumption levels. Returns to education have increased between 2011 and 2016, both in urban and rural areas. In rural areas, completing primary school is associated with 21 percent more consumption, though only few rural Ethiopians attain that much education. In urban areas, returns to post-secondary education increased by over 40 percent. Occupation is the second main correlate of consumption, with households that engage in non-farm self-employment having the highest consumption levels.

In contrast to common perception, the pastoral areas are not the poorest in the country. Controlling for other factors, households in pastoral regions had significantly higher consumption levels in 2016. The pastoral regions are however lagging on virtually all non-monetary human development indicators, reflecting the difficulty of providing basic services to sparsely populated areas with mobile populations.



# Introduction

The previous chapter presented the poverty and welfare trends between 2011 and 2016. The aim of this chapter is to provide a poverty profile by comparing the characteristics of the poor and the non-poor and presenting the correlates of consumption. The analysis in this chapter will

mainly focus on 2016, though comparisons with 2011 will also be made. The next section summarizes the characteristics of the poor focusing on demographic, geographic, and socioeconomic characteristics. Section 3 estimates the main correlates of consumption, while the final section concludes.

## 2. THE POVERTY PROFILE

Ethiopia has a traditional poverty profile. The poor tend to live in rural areas, in large households with high dependency rates, headed by an older and little-educated household head. They mainly engage in agriculture and casual labor for their livelihood. The poor are relatively isolated from key infrastructure and have worse access to services. In contrast to conventional wisdom, poor households are less likely to be headed by a woman than non-poor households. Regional disparities in poverty are relatively low, meaning that the regional distribution of poverty largely reflects the regional distribution of the population. Differences in poverty rates are higher across agro-ecological zones, with the lowland parts of Oromia and SNNPR having the highest poverty rates.

### 2.1 Poverty increasingly concentrated in rural areas

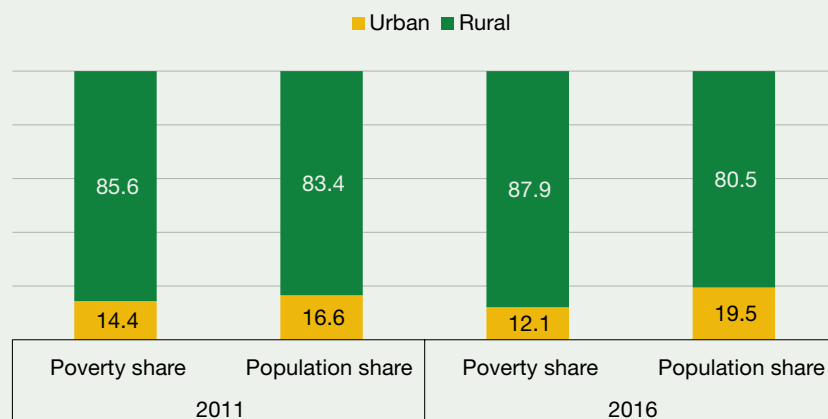
Between 2011 and 2016, poverty became more concentrated in rural areas. While the rural population share decreased by three percentage points, from 83 percent in 2011 to 80 percent in 2016, the rural share of poverty

increased by two percentage points (Figure 25). This pattern reflects the stronger poverty reduction in urban as opposed to rural areas. In 2016, close to 90 percent of the poor lived in rural areas, compared to a rural population share of 80 percent. Future poverty reduction will need to happen mainly through improvements in rural areas and through increased mobility to urban areas.

Figure 25

### THE POOR BECAME MORE CONCENTRATED IN RURAL AREAS

Population versus poverty share in 2011 and 2016: urban and rural



Source: HCES, 2011; 2016. World Bank staff calculations.

**In contrast to many countries, there is no strong regional concentration of poverty in Ethiopia.** Poverty rates among the largely rural regions vary from 21 percent in SNNPR to 27 percent in Tigray.<sup>24</sup> Poverty in the two city administrations (Addis Ababa and Dire Dawa) and the largely urban region of Harari is significantly lower, at 15 percent in Dire Dawa, 17 percent in Addis Ababa, and seven percent in Harari (Table 9). Given small regional disparities, the poverty

shares of regions largely reflect their population shares, with the most populated regions accounting for the bulk of the poor. Oromia region accounts for 38 percent of the poor in Ethiopia, Amhara for 26 percent and SNNPR for 18 percent. In contrast to conventional wisdom, the pastoral regions of Afar and Somali are not poorer than the average: Poverty rates in 2016 amounted to 22 percent in Somali and 24 percent in Afar.<sup>25</sup>

**Table 9** **POVERTY RATES, POVERTY SHARES, AND POPULATION SHARES BY REGION AND AGRO-ECOLOGICAL ZONE, 2016**

|                                | POVERTY RATE | POVERTY SHARE | POPULATION SHARE |
|--------------------------------|--------------|---------------|------------------|
| <b>BY REGION</b>               |              |               |                  |
| Tigray                         | 27.0%        | 6.6%          | 5.8%             |
| Afar                           | 23.6%        | 1.9%          | 1.9%             |
| Amhara                         | 26.1%        | 25.5%         | 23.0%            |
| Oromia                         | 23.9%        | 38.3%         | 37.8%            |
| Somali                         | 22.4%        | 5.5%          | 5.8%             |
| Benishangul Gumuz              | 26.5%        | 1.3%          | 1.1%             |
| SNNPR                          | 20.7%        | 17.5%         | 19.9%            |
| Gambella                       | 23.1%        | 0.4%          | 0.4%             |
| Harari                         | 7.1%         | 0.1%          | 0.3%             |
| Addis Ababa                    | 16.8%        | 2.6%          | 3.6%             |
| Dire Dawa                      | 15.4%        | 0.3%          | 0.5%             |
| <b>BY AGRO-ECOLOGICAL ZONE</b> |              |               |                  |
| Moisture-reliable highlands    | 23.6%        | 58.5%         | 58.4%            |
| Drought-prone highlands        | 20.8%        | 19.9%         | 22.5%            |
| Moisture-reliable lowlands     | 25.4%        | 4.7%          | 4.3%             |
| Drought-prone lowlands         | 31.7%        | 7.5%          | 4.7%             |
| Pastoral areas                 | 21.9%        | 6.9%          | 7.4%             |

Note: Poverty share denotes the contribution of the region to overall poverty.

Source: HCES, WMS, 2016; World bank staff calculations.

**Different agro-ecological zones have fairly similar poverty rates, except for the drought-prone lowlands.**

The drought-prone lowlands, which include the eastern and southern parts of Oromia and the southern parts of SNNPR (but do not include pastoral areas of Afar and Somali), had the highest poverty rate in 2016, at 32 percent. The drought-prone highlands, which include the eastern parts of Tigray and Amhara, had the lowest poverty rates (21 percent). Pastoral areas had relatively low monetary poverty rates (in contrast, access to services and human development outcomes tend to be much worse in pastoral areas).

The moisture-reliable highlands account for the bulk of the poor (close to 60 percent), not because they are particularly poor but because the population is concentrated in these highlands.

## 2.2 The poor live in large households with high dependency rates

**Both in rural and urban areas, poor households tend to be larger and have more children and higher dependency rates.** The average poor household contains about

24 The largely rural regions are Tigray, Afar, Amhara, Oromia, Somali, Benishangul-Gumuz, SNNPR, and Gambella.

25 The results for Afar and Somali include households sampled from the new zones.



1.5 more members than non-poor households, both in urban and rural areas (Table 10). The larger household sizes for the poor are mainly driven by a larger number of children (defined as less than 15-years-old). As a result, dependency ratios are far higher for poor households, both in urban and rural

areas<sup>26</sup>. In rural areas, the average poor household contains 1.4 dependents for every working-age adult, compared to 1.1 for non-poor households. The strain on household resources is significantly higher for poor households.

**Table 10 POOR HOUSEHOLDS TEND TO BE LARGER, WITH MORE CHILDREN AND WITH MORE ILLITERATE MEMBERS**

Demographic and socio-economic characteristics by poverty status: urban and rural

|                    | URBAN    |      | RURAL    |      |
|--------------------|----------|------|----------|------|
|                    | NON-POOR | POOR | NON-POOR | POOR |
| Household size     | 3.5      | 5.2  | 4.6      | 6.1  |
| Number of children | 1.1      | 2.0  | 2.1      | 3.1  |
| Dependency ratio   | 0.55     | 0.92 | 1.06     | 1.40 |

Note: \* Out of those who are 21 and above. \*\* Out of those who are 10 and above

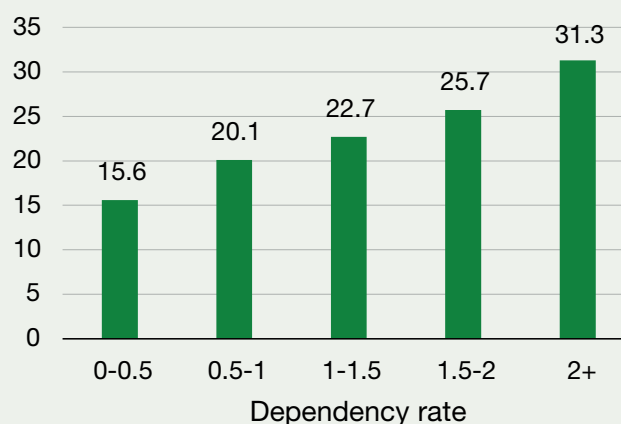
Source: HCES, WMS, 2016; World bank staff calculations.

**Dependency ratios are strongly correlated with poverty.** Households with less than 0.5 dependents per working-age adult have an average poverty rate of 16 percent, while households with 2 or more dependents for working-age adult have poverty rates in excess of 30 percent (Figure 26). 20 percent of the poor in Ethiopia live in households with dependency rates higher than 2.

**While dependency rates have decreased since 2011, the poorest are lagging.** The average dependency ratio decreased from 1.1 to 1.0 between 2011 and 2016, mainly driven by significant decreases in the upper quintiles (Figure 27). The dependency rate in the bottom quintile remained constant at 1.5 dependents per working-age adult. This reflects the persistently high fertility rates for women in the

**Figure 26 HOUSEHOLDS WITH HIGHER DEPENDENCY RATES ARE POORER**

Poverty rate by dependency ratio, 2016



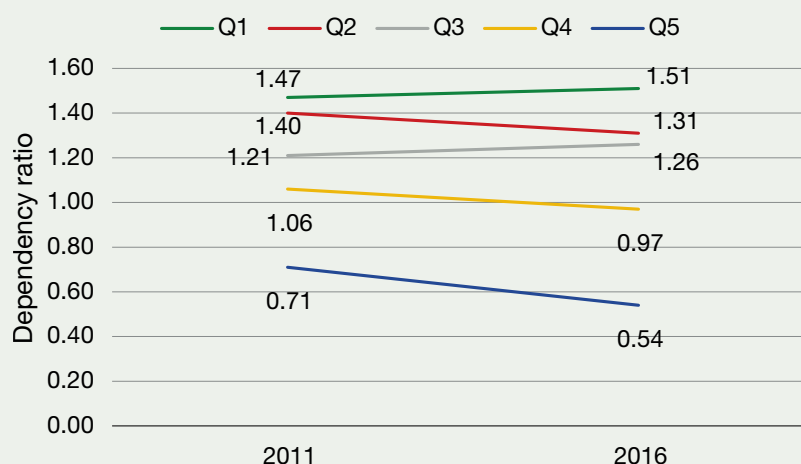
Source: WMS, HCES, 2016. World Bank staff calculations.

26 The dependency ratio is defined as the number of dependent children (younger than 15 years) and elderly persons (65 years or over) divided by the number of working-age adults (15-64 years of age). The dependency ratio indicates the number of dependents for each working-age adult in the household.

Figure 27

## DEPENDENCY RATIOS ARE STUCK AT A HIGH LEVEL IN THE BOTTOM QUINTILE

Dependency ratio by consumption quintile, 2011 and 2016



Source: WMS, HCES; 2011, 2016. World Bank staff calculations.

bottom quintile: While the total fertility rate (TFR) dropped from 5.5 children per woman in 2000 to 4.6 in 2016, TFR in the bottom quintile was the same in 2016 (6.4) as in 2000 (6.3<sup>27</sup>).

## 2.3 Younger and female-headed households less likely to be poor

**Poverty is lower for households with younger heads. In urban areas, the average age of the household head is 39 for non-poor households and over 44 for**

**poor households.** The difference in the age of the household head is relatively smaller in rural areas: 45 years for the non-poor versus 47 years for the poor. This age-effect is partly explained to natural dynamics of household formation and composition: young households usually have lower dependency rates (family formation is only just beginning) and hence low poverty rates, while households with a head aged 38-58 typically have many mouths to feed. Dependency rates decrease again, and poverty rates decrease again, for older households as their children get married and form households of their own (Figure 28).

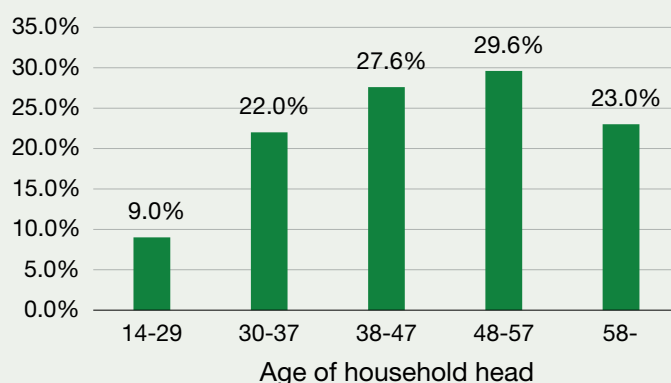


27 Based on DHS, 2000; 2016.

Figure 28

## POVERTY IS LOWEST FOR HOUSEHOLDS WITH YOUNG HEADS

Poverty rate by age of the household head, 2016



Source: HCES, 2011; 2016. World Bank staff calculations.

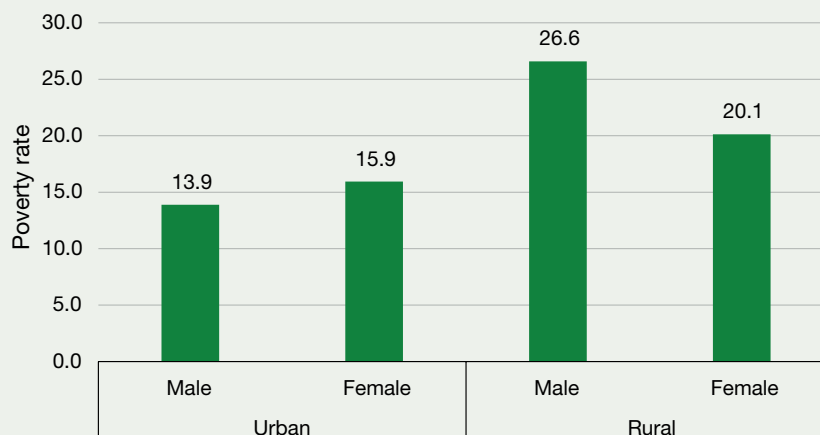
**In contrast to conventional wisdom, poverty is lower for female-headed households than for male-headed ones.** This is not a new finding but was also documented in the previous poverty assessment. Poverty for female-headed households amounted to 19 percent in 2016, significantly lower than the 25 percent for male-headed households. The lower poverty rates for female-headed households are driven by rural areas (Figure 29). In urban areas, female- and male-headed households have similar poverty rates. The poverty rates of female-headed households are however influenced by the specific reason why the household is female-headed (Box 5).

**The finding that female-headed households are less likely to be poor should not obscure the fact that women lag in many other dimensions.** The recent Ethiopia Gender Diagnostic Report of the World Bank (2019) shows that female farmers are less educated and have lower access to land and finance compared to their male counterparts. They are also less likely to attend extension programs and use agricultural inputs like fertilizers, pesticides and herbicides, and as a result agricultural productivity is lower for female farmers. In the labor market, women are less likely to be in more desirable types of employment and earn substantially lower wages for similar characteristics.

Figure 29

## FEMALE-HEADED HOUSEHOLDS IN RURAL AREAS ARE LESS LIKELY TO BE POOR

Poverty rate by sex of household head in 2016: rural and urban



Source: HCES, 2011; 2016. World Bank staff calculations.

**Box 5**

## Poverty rates for female-headed households increase if there was a man involved

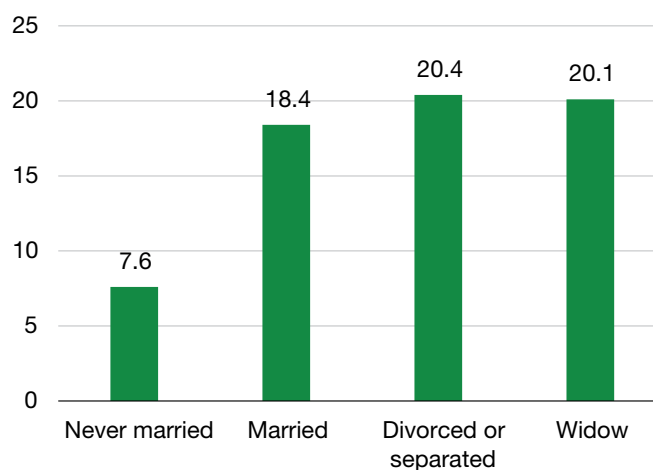
Households can be female-headed for various reasons. Of the 27 percent of households in Ethiopia that were female-headed in 2016, the bulk (44 percent) was female-headed because of the death of the husband. 26 percent were female-headed even though the female head was married (most likely due to work migration of the husband). 22 percent was because of divorce or separation while almost eight percent of female heads were never married.

Poverty rates vary depending on why a household is female-headed. Household headed by a woman who has never been married have the lowest poverty rates, while households headed by a divorced/separated or widowed woman have the highest poverty rates (within the group of female-headed households - Figure 30). Needless to say, these findings are far from causal but driven by several selection effects: Never-married female heads of household, for instance, are on average more educated, younger and live in smaller families than the average household head. They are also more likely to live in urban areas. The second part of this chapter will examine whether marital status still affects consumption when controlling for other influences.

**Figure 30**

### POVERTY THE LOWEST FOR NEVER MARRIED FEMALE HEADED HOUSEHOLDS

Poverty by for female headed households by marital status in 2016



Source: HCES, 2011; 2016. World Bank staff calculations.



## 2.4 The poor are largely uneducated

**A salient characteristic of the poor all around the world is their general lack of education and skills.** In Ethiopia, lack of education is a general characteristic of household heads, not only of the poor: 82 percent of all household heads did not complete primary education, and this increases to 94 percent for poor households. There is a strong link between education and poverty: Poverty is highest among households with a head who never went to school and decreases with each extra level of education (Figure 31). A complete cycle of primary education seems to have the biggest returns in terms of poverty reduction: Households whose head has completed primary education have poverty rates that are less than half of those of households whose head never went to

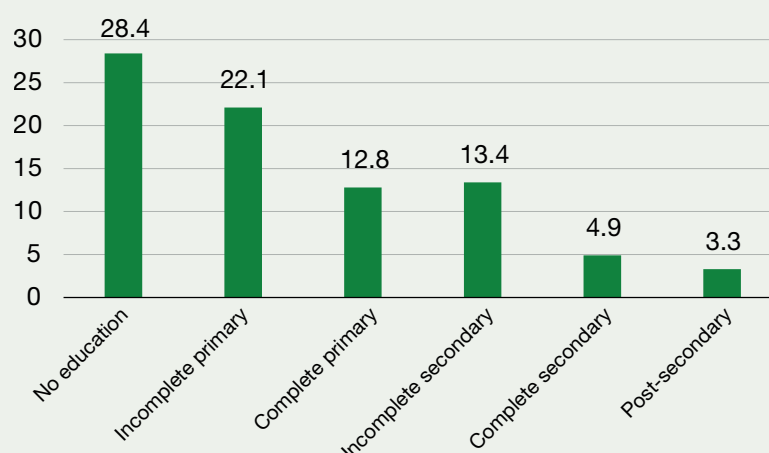
school. Households whose head have completed secondary or more have low poverty rates, though there are only few of those households.

**The low educational attainment of household heads is a legacy effect of earlier times when few people had the opportunity to gain an education.** In recent decades access to education has expanded dramatically and gross enrolment rates in primary school now exceed 100 percent (DHS, 2016). Net primary enrolment rates have increased to 71 percent in 2016. Early dropout is however rife and few young people complete a full cycle of primary school (eight grades in Ethiopia). In 2016, only one in three youth aged between 15 and 24 had completed primary education. Completion is tightly linked to household welfare and remains low for the bottom four welfare quintiles. Even in the highest

Figure 31

### EDUCATION IS A MAIN CORRELATE OF POVERTY

Poverty rates by educational attainment of the household head, 2016



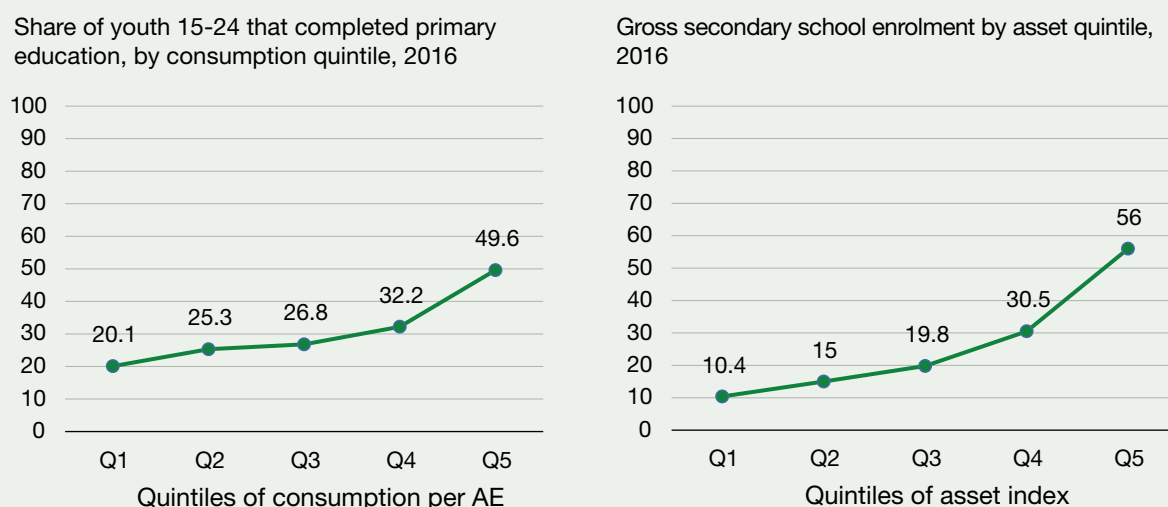
Source: HCES, 2016. World Bank staff calculations.



quintile though, only half of youth (15-24) had completed primary education in 2016 (Figure 32). Low primary completion rates of the poor result in a steep economic gradient in secondary school enrolment, with youth from the upper quintile being more than five times more likely to attend secondary school relative to youth from the bottom quintile (Figure 33). The strong link between household welfare and educational attainment of the household's youth suggests a high degree of intergenerational transmission of poverty (Chapter 7 will analyze this in more detail).

**The relatively weak relationship between consumption and education indicators up until the fifth quintile is less of a surprise when looking at expenditures in absolute terms.** Average household expenditures per capita amount to US\$1.3 a day in the poorest quintile (in PPP terms) and increase slowly to US\$3.6 per day in the fourth quintile (Figure 33). Expenditures double from the fourth to the fifth quintile. Overall, household consumption expenditures remain relatively low in the bottom four quintiles.

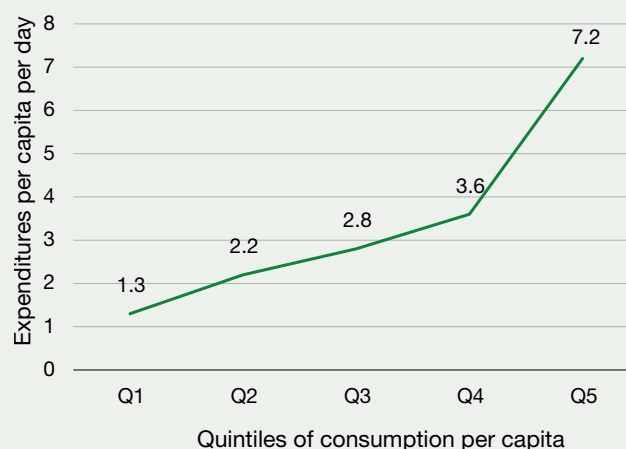
**Figure 32 EDUCATIONAL ATTAINMENT AND ENROLMENT IS LOW AND STRONGLY LINKED TO HOUSEHOLD WELFARE**



Source: HCES, WMS, DHS 2016. World bank staff calculations.

**Figure 33 HOUSEHOLD CONSUMPTION REMAINS FAIRLY LOW UNTIL THE TOP QUINTILE**

Average household expenditures per capita per day by quintile, 2016, PPP USD



Source: HCES, WMS, 2016; World bank staff calculations.

## 2.5 The poor depend on agriculture

**While agriculture is the mainstay of employment in Ethiopia as a whole, it is particularly important for the livelihoods of the poor.** Overall, 70 percent of household heads in Ethiopia have their main occupation in agriculture or livestock, but this increases to over 83 percent for poor households (Figure 28). Beyond agriculture, poor households engage in non-farm self-employment but do not have the necessarily education or skills to access non-farm wage employment. The occupational structure of the bottom 80 percent of households is fairly similar: 75 percent of households in the fourth quintile still engage in agriculture as a main occupation (Figure 34). The top quintile is structurally different: Over 70 percent of households in the top quintile have a main occupation outside agriculture and almost half is engaged in non-farm wage employment (Figure 34). In the non-farm

sector, households engaging in services have a lower poverty rate (13 percent) than households earning a livelihoods in the secondary sector (20 percent).

**Households that depend on casual labor and the primary sector for their income are most likely to be poor (Figure 8).** Households that derive their livelihood through self-employment in the services sector or through regular salaried employment have the lowest poverty rates. Households that state their main income source as donations or remittances also have below-average poverty rates (Figure 35). There are some notable differences between urban and rural areas. In urban areas, the poorest households are those who depend on casual labor, with poverty rates in excess of 30 percent, while the least poor are those who live off donations<sup>28</sup>. In rural areas, the poorest are the crop and livestock producers, while poverty rates are lowest for households who report remittances as their main source of livelihood.

**Figure 34**

### AGRICULTURE REMAINS THE MOST COMMON OCCUPATION, ESPECIALLY FOR THE POOR

Main occupation of household head, by quintile, 2016



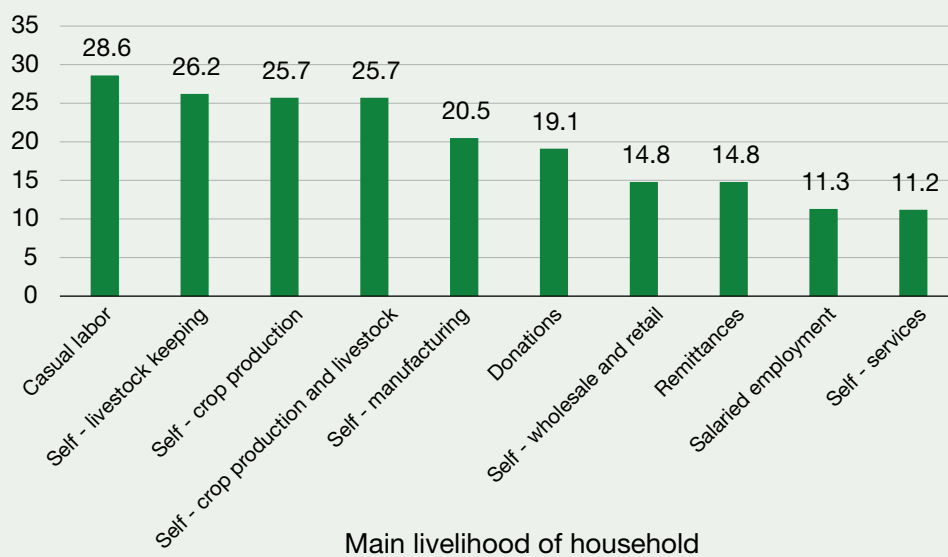
Source: HCES, WMS, 2016.

28 Overall, three percent of households report donations as their main income source. In urban areas however, this increases to seven percent.

Figure 35

## CASUAL LABORERS AND CROPS AND LIVESTOCK PRODUCERS HAVE THE HIGHEST POVERTY RATES

Poverty rates by household's main income source, 2016



Source: HCES, WMS, 2016.



## 2.6 The poor are relatively remote and have lower access to services

**The poor tend to live in more remote and poorly-connected areas.** Relative to the rural non-poor, the rural poor live further away from roads, health facilities, and urban centers (Table 11). For instance, 57 percent of the poor live more than three kilometers away from an all-weather road,

compared to 45 percent of the non-poor. Rural connectivity has improved considerably since 2010, linked to the Universal Rural Roads Access Program (URRAP), resulting in decreases in travel time and improved market access (World Bank, 2018). URRAP roads have however been constructed in places that were already less isolated to begin with, leaving the most remote and difficult-to-reach places unconnected (Box 6).

**Table 11** IN RURAL AREAS, THE POOR ARE LOCATED FURTHER FROM HEALTH FACILITIES, ROADS AND URBAN CENTERS

Distance to health facility and road connectivity by poverty status in 2016: rural areas

|   |  | NON-POOR | POOR |
|---|--|----------|------|
| Distance to health facility                   | % located less than 2 kms              | 46.3     | 38.6 |
|   | % located between 2 and 3 kms          | 19.6     | 18.3 |
|   | % located between more than 3 kms      | 34.1     | 43.1 |
|   | Average distance in km                 | 3.4      | 4.2  |
| Distance to all weather road                  | % located less than 2 kms (close)      | 43.1     | 33.2 |
|   | % located between 2 and 3 kms (far)    | 11.5     | 10.1 |
|   | % located more than 3 kms (very far)   | 45.4     | 56.7 |
|   | Average distance in km                 | 6.3      | 8.0  |
| Distance to nearest town<br>(in walking time) | % located less than 1 hr (close)       | 46.4     | 33.8 |
|   | % located between 1 hr and 2 hrs (far) | 26.4     | 29.7 |
|   | % located more than 2 hrs (very far)   | 27.2     | 36.5 |
|   | Average distance in km                 | 1.8      | 2.2  |

Source: HCES, WMS, 2016

**Better connectivity is correlated with lower poverty, the more so the better connected a place is.** The Rural Accessibility Index (RAI) measures the share of the population of a woreda that lives within two kilometers of a road in good or fair condition. As the RAI increases, poverty rates decrease, but the strong dent in poverty only happens when RAI exceeds 50 percent (when at least half of the population of the woreda lives within 2km of a road-see Figure 37). However, only a small fraction of the rural population lives in woredas where RAI exceeds 50 percent. This reflects the general point that while connectivity has increased in recent years, large parts of rural Ethiopia remain poorly connected.

**Access to key services is also lower for the poor, both in rural and urban areas.** In urban areas, 97 percent of non-poor households have access to improved water sources while the proportion for the poor is 93 percent<sup>29</sup>. Similarly,

93 percent of the urban non-poor uses electricity as a source of light while the percentage for the poor is only 82 percent. The patterns are similar for rural areas though the proportion of households who have access to these services is generally significantly lower (Figure 38).

**To summarize, the poor in Ethiopia are largely concentrated in rural areas and are likely to live in large households with high dependency rates.** Poor households are likely to be headed by uneducated and older heads of households and are more likely to have a male household head. The poor largely depend on agriculture and casual labor for their livelihood and are relatively isolated from key infrastructure such as roads and markets. While 24 percent of households fall below the poverty line, the characteristics of the bottom 60 percent of the population are remarkably similar. The ultra-poor, here defined as the bottom 10 percent

29 Improved water sources include tap water, protected well and rain water.



**Box 6****Rural Roads, Poverty, and Resilience**

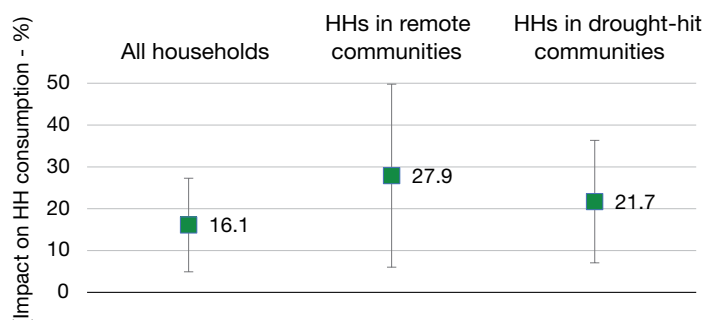
Under the umbrella of the first Growth and Transformation Plan, the government launched the Universal Rural Road Access Program (URRAP) in 2010. URRAP aims to ensure all rural communities of the country have an all-weather road connection. URRAP has led a major expansion of the rural road network, adding 56,000 kilometers of road since 2010, while an additional 29,000 kilometers were constructed by the public works under the Productive Safety Net Program (PSNP). URRAP implementation for the first five years (2010-2015) cost 28 billion Ethiopian Birr, or US\$1.4 billion.

A URRAP review study was conducted in 2018 by the World Bank and the Government of Ethiopia (World Bank, 2018). The study found that rural roads have improved connectivity and accessibility of rural communities. About six percent of rural Ethiopians (close to five million people) became newly connected to all-weather roads. The average travel time to the nearest town reduced by 30 minutes between 2010 and 2016. However, the study also found that rural roads development had so far taken place mainly in communities that were already better connected to begin with, leaving remote communities largely unconnected to the road network.

Rural roads supported welfare and resilience of rural Ethiopians amid the recent severe droughts, and its impact was highest in the more remote communities. The econometric analysis reported in the study suggests that rural roads increased household consumption by 16 percent between 2012 and 2016, increasing to 28 percent in newly connected remote communities (remote defined as more than 2 hours away from nearest town before road construction – see Figure 36). Relative to drought-affected communities where no road development took place, drought-affected communities that had been connected between 2010 and 2014 were better able to cope with the effects of the drought. Further analysis also found increased crop sales and non-farm income-generating activity in communities that benefited from rural road development.

**Figure 36****RURAL ROADS INCREASED HOUSEHOLD CONSUMPTION AND RESILIENCE**

% increase in consumption due to rural road development, 2012-2016



Source: Nakamura, Bundervoet, and Nuru (2019).

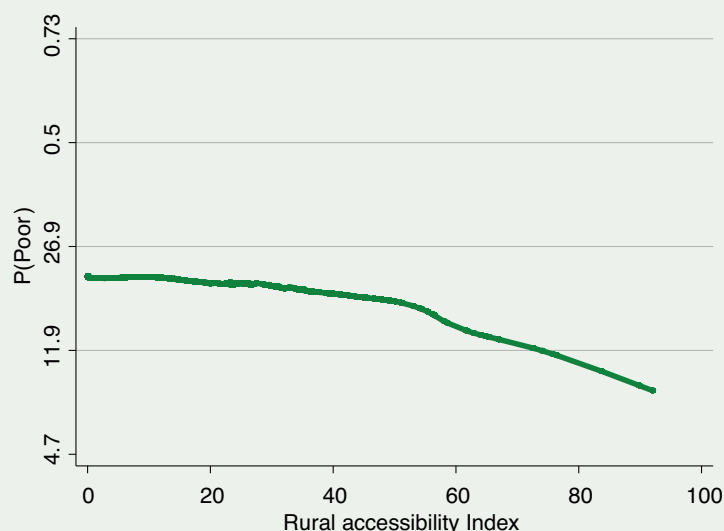
The study highlighted the fundamental role of rural roads in poverty reduction and resilience by connecting rural residents to markets. Despite such benefits, the implementation of the URRAP has been slowing down due to the lack of funding, which also make it challenging to provide proper maintenance to the vast amount of already developed rural roads. It will be important to connect the remaining rural communities, particularly in remote areas, to accelerate poverty reduction and enhance the resilience of rural populations against shocks.



Figure 37

## POVERTY DECREASES AS RURAL CONNECTIVITY INCREASES

Poverty rates by rural accessibility, 2016

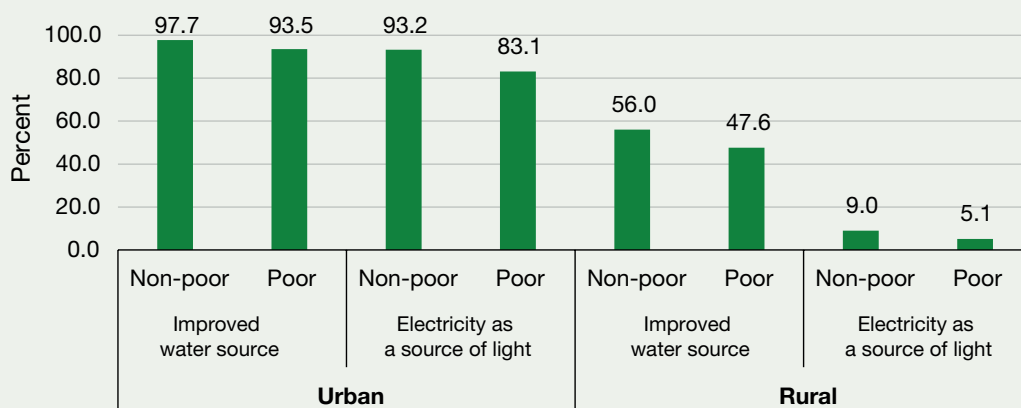


Source: HCES, WMS, 2016.

Figure 38

## THE POOR HAVE LESS ACCESS TO IMPROVED WATER AND ELECTRICITY BOTH IN RURAL AND URBAN AREAS

Access to improved water and electricity by poverty status in 2016: urban and rural



Source: HCES, 2011; 2016. World Bank staff calculations.

of the population, has largely similar characteristics as the poor but tend to be concentrated in different places (Box 7).

**All figures presented so far are merely bivariate correlations and do not control for the influence of other characteristics.** For instance, it is possible that households in the drought-probe lowlands are not more likely to be poor just because of their location, but because of other

characteristics that may be more prevalent there (such as low education levels, poor connectivity, etc.). Similarly, the finding that poverty rates are lower in female-headed households may not be due to a pure gender effect, but due to women having other characteristics that correlate with lower poverty (such as smaller households). The next section will provide a more robust analysis of the correlates of poverty by controlling for the effects of confounding factors in a regression.

**Box 7****The characteristics of the ultra-poor**

The previous chapter showed that the ultra-poor, defined as the bottom 10 percent of the population, did not experience any real increase in consumption since 2005. Do the ultra-poor have particular characteristics that can be used to identify them, and are these characteristics different from those of households that also fall below the poverty line but not in the bottom 10 percent?

The ultra-poor have similar characteristics as the overall poor population, only extremer. Whereas the poor are characterized by large households, high dependency rates, and a lack of education, the ultra-poor have yet larger households, higher dependency rates, and still less education (Table 12). The ultra-poor are also more likely to be rural (compared to the poor) and more distanced from markets (lower score on the market accessibility index). There are no discernable differences in occupations and livelihoods across the poor and ultra-poor, and both groups are equally likely to be in the Productive Safety Net Project (PSNP).

**Table 12****THE ULTRA-POOR LOOK LIKE THE POOR, ONLY EXTREMER**

|   | ULTRA-POOR | POOR  | SIGNIFICANCE |
|---|------------|-------|--------------|
| Household size                                    | 7.2        | 6.5   | ***          |
| Number of children                                | 3.7        | 3.3   | ***          |
| Dependency rate                                   | 1.6        | 1.4   | **           |
| Female head of HH (% yes)                         | 15.8       | 16.5  |              |
| HH head married (% yes)                           | 86.9       | 87    |              |
| HH head completed primary education (% yes)       | 3.1        | 7.3   | ***          |
| Any HH member completed primary education (% yes) | 18.8       | 26.6  | ***          |
| Market access index                               | 0.018      | 0.024 | ***          |
| Rural (%)   | 90.4       | 85.9  | ***          |
| In PSNP (% yes)                                   | 12.3       | 10.3  |              |
| Agriculture main livelihood (% yes)               | 86.9       | 84.3  |              |

Note: Ultra-poor defined as people in the bottom 10 percent of the consumption distribution. \*\*\*: Statistically significant at 1%; \*\*: Statistically significant at 5%.

Source: HCES, WMS, 2016; World bank staff calculations.

**Relative to the poor and the overall population, the ultra-poor are more likely to live in SNNPR and Somali.**

While SNNPR accounted, in 2016, for 18 percent of the poor (Table 3), it accounted for 24 percent of the ultra-poor. Somali accounted for nine percent of the ultra-poor, compared to five percent of the poor. While Amhara region is characterized by high levels of poverty, accounting for 26 percent of national poverty in 2016, its share of the ultra-poor is relatively low (18 percent), pointing towards a lower severity of poverty (or, more transitory poverty in Amhara, as will be argued in Chapter 4). The drought-prone lowlands, the lowland belt in eastern and southern Oromia and southern SNNPR, are significantly overrepresented among the ultra-poor: The drought-prone lowlands account for seven percent of the population, 10 percent of the poor, and 14 percent of the ultra-poor. In terms of absolute numbers though, the bulk of the ultra-poor live in Oromia (39 percent) and the moisture-reliable highlands (59 percent).



### 3. CORRELATES OF POVERTY

The multivariate analysis largely confirms the descriptive findings from the previous section. Education, occupation, and demographics are the main correlates of household consumption expenditures, with large households with many children and lower educated heads and with a main livelihood in casual labor having the lowest consumption levels. In rural areas, female-headed households have substantially higher consumption levels, but there is a substantial penalty on being divorced. Both in urban and rural areas, households engaging in non-farm self-employment, mainly in the services-sector, have the highest consumption levels. Returns to education increased between 2011 and 2016, both in rural and urban areas. There are substantial effects of location, with the drought-prone lowlands and the moisture-reliable highlands having lower consumption levels.

This section presents the correlates of poverty—how different variables affect monetary living standards controlling for the influence of other variables. Consumption expenditures per adult equivalent is taken as an independent variable while the explanatory variables includes three broad categories, namely, household head characteristics, household-level socio-economic characteristics and geography/location variables. Household head characteristics include marital status, sex, age, employment status and education level, while household level socio-economic characteristics includes livelihood, asset ownership, demographic composition, and education and employment of members other than the head. For rural areas, PSNP participation is also included as part of household level characteristics. Finally, geographic variables include agro-ecological groups and whether the household is located in a zone that borders other countries. For rural areas, distance to all weather roads and the closest town are included as additional geographic/location variables. Because of the difference in socio-economic structure between rural and urban areas, separate regressions are run for each – this allows to see if the same covariate has different effect on consumption in rural and urban areas. The results are reported in Figure 39 (urban) and Figure 40 (rural).

#### 3.1 Significant returns to education and a penalty on being divorced

**Education is a main correlate of poverty, both in urban and rural areas.** Relative to households with an uneducated head, households with heads who have any level of education have higher consumption and the difference increases with the level of education (Figure 39 and Figure 40). While the association between education and consumption is stronger in urban areas, returns to education in rural areas are also substantial: Relative to a rural household with an uneducated head, a household headed by someone who completed primary school has consumption levels that are 21 percent higher. This increases to 34 percent for households whose head is secondary-educated, though this is rare in rural areas. In urban areas, returns are highest at the post-secondary levels, with households headed by someone with post-secondary education having consumption levels that are 64 percent higher, all else equal. Education of household members other than the head matters too: The more illiterate household members in the household, the lower consumption.

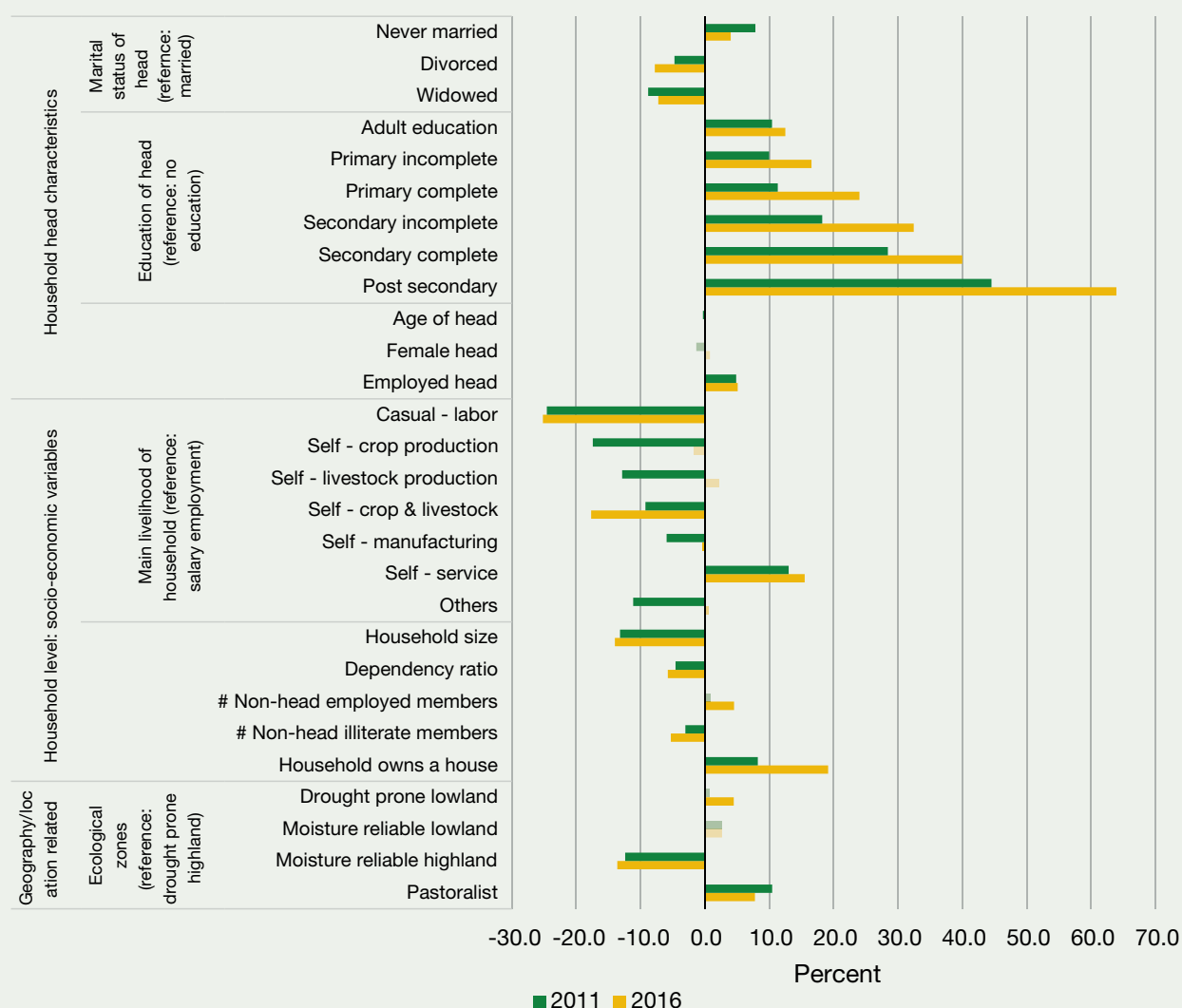
**Returns to education in terms of consumption have increased, both in urban and in rural areas.** Whereas in urban areas post-secondary education had a 45 percent return in terms of household consumption in 2011 (relative to a household with an uneducated head), it had a 64 percent return in 2016. This may reflect the increase in real hourly wages in urban Ethiopia between 2011 and 2016 as well as the modest decrease in unemployment<sup>30</sup>. In rural areas, the return of having a head who completed primary education doubled from 10 percent in 2011 to 21 percent in 2016. The increasing returns to education in rural areas are not

straightforward to explain, but are consistent with the patterns presented in Chapter 1, whereby especially the better-off (and more educated) farmers in rural areas have been doing well.

**While having a female head of household is not correlated with lower living standards, there is a significant penalty on being divorced.** The divorce penalty is particularly high in rural areas, where it is correlated with over 15 percent lower consumption, all else equal (Figure 40). As only very few male heads of household are divorced, this

**Figure 39 CONSUMPTION CORRELATES IN URBAN AREAS IN 2016 AND 2011**

Correlates of consumption per adult equivalent in urban areas: 2011, 2016



Note: Effects that are statistically significant (at least at 5 percent) are in dark yellow for 2016 and in dark green for 2011.

Source: HCES 2011, 2016. World Bank staff calculations.

30 According to own calculations on the Urban Employment and Unemployment Surveys, real hourly wages in urban Ethiopia increased by 9.6 percent between 2011 and 2016. The unemployment rate marginally declined from 18.3 percent to 17.3 percent.

penalty applies to women-headed households. Households headed by widows also have lower consumption levels: Eight percent lower in urban areas and 10 percent in rural areas. In contrast, there is no adverse consumption effect of having a female head of household. In urban areas, there is no association whatsoever between consumption and sex of the household head. In rural areas, being female-headed is associated with significantly higher consumption levels. Age of the household head is not correlated with consumption expenditures.

**Controlling for other variables, dependency ratios are significantly correlated with consumption levels.** Each 0.1 increase in the dependency ratio is associated with five

percent less consumption in rural areas and six percent less consumption in urban areas. Larger households also have lower consumption levels.

## 3.2 Large effects of occupations

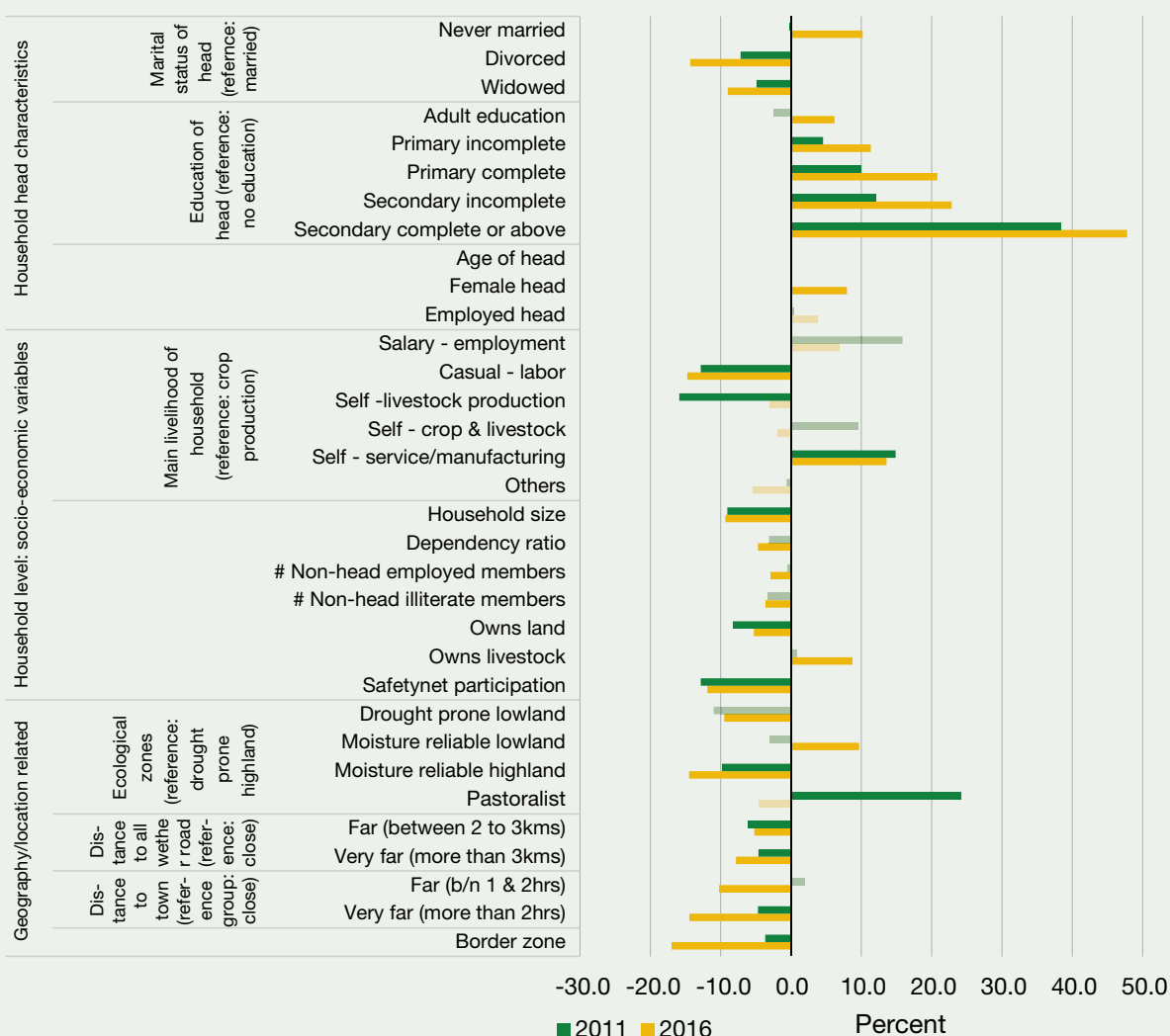
**The main livelihood of the household matters for consumption though differently in rural and urban areas.**

Those who mainly depend on service sector self-employment do relatively better both in urban and rural areas, and more so in rural areas. In urban areas, self-employment in the service sector is associated with 13.1 percent more consumption compared to the reference group of salaried

**Figure 40**

### CONSUMPTION CORRELATES IN RURAL AREAS IN 2011 AND 2016

Correlates of consumption per adult equivalent in rural areas: 2011, 2016



Note: Effects that are statistically significant (at least at 5 percent) are in dark yellow for 2016 and in dark green for 2011.

Source: HCES 2011, 2016. World Bank staff calculations.



employment. Those who depend on crop and livestock in urban areas have less consumption while those depending on casual labor are typically the poorest. In rural areas, self-employment in the non-farm sector (either services or manufacturing) is associated with 15 percent higher consumption (relative to own crop production) while those depending on casual labor have significantly lower consumption levels. While depending on livestock for a livelihood was associated with significantly lower consumption levels in 2011, this was no longer the case in 2016 (Figure 40).

**Being employed has a different correlation with welfare levels in urban vs rural areas.** In rural areas of low-income countries, labor force participation rates tend to be high and unemployment rates low. This does not indicate well-functioning rural labor markets, though rather the necessity to work to survive in the absence of formal unemployment insurance schemes. Ethiopia is no exception: According to the latest national Labor Force Survey, labor force participation in rural Ethiopia was 88 percent and unemployment a mere two percent<sup>31</sup>. This is also borne out of the analysis in Figure 16: Whether the head of household is employed or not does not matter for the household's consumption levels. In urban areas there is a significant correlation between employment of the head and consumption levels, though the magnitude of the relation is relatively weak (six percent higher consumption levels if head is employed). Employment of non-head household members is also correlated with higher consumption in urban areas.

### 3.3 Remoteness is correlated with lower consumption levels

**In rural areas, remoteness from roads and population centers is associated with lower welfare levels.** Relative to households that are close to an all-weather road (close defined as within 2 km), rural households who live between 2km and 3km from an all-weather road have five percent lower consumption, and households who live more than 3km away have eight percent lower consumption. The impact in terms of consumption becomes higher the higher the distance to the road. Distance to towns and small population centers has a higher magnitude: Living between a 1 and 2-hours'

walk from a town has a consumption penalty of 10 percent, rising to 14 percent for people living more than 2 hours away (Figure 40).

### 3.4 Location matters – even after controlling for other factors

**Controlling for other factors, location still exhibits a statistically significant association with household consumption levels.** Relative to households in the drought-prone highlands, rural households in the drought-prone lowlands and moisture-reliable highlands are poorer, while rural households in the moisture-reliable lowlands have higher consumption levels. This result, which was also found in the previous Poverty Assessment, cautions against the reliance on moisture- or rainfall-based indicators to make statements about poverty levels (moisture-reliable highlands for instance have lower consumption levels than the drought-prone highlands). While severe adverse rainfall shocks within geographical units are typically related to lower welfare outcomes, differences in rainfall or dryness across geographical units are poorly correlated with welfare.

**The persistent notion that the pastoral areas of Ethiopia are the poorest of the country is also not confirmed by the data.** Figure 40 shows that living in pastoral areas is not correlated with consumption levels. If we also include the pastoral zones that were added to the HCES in 2016 (the nomadic zones that were not interviewed in 2011), then there is a positive association between living in pastoral areas and consumption (Annex Figure 4). This is not a new result: The pastoral areas, which cover most parts of Afar and Somali region, have typically had average or below average poverty rates. Monetary poverty is hence not more of a problem in pastoral areas than elsewhere (see for instance the poverty rates in Table 4). Pastoral areas are however significantly lagging on human development outcomes. Education, health, and other social indicators tend to be much worse in the pastoral regions (Afar and Somali). Other regions with a significant pastoral population, such as Oromia, also tend to perform below average on human development outcomes (Table 13), reflecting the difficulty of providing public services in low-density areas with mobile populations.

31 Based on the last national Labor Force Survey in 2013.

Table 13

## PASTORAL REGIONS DO NOT HAVE HIGHER RATES OF MONETARY POVERTY, BUT LAG ON HUMAN DEVELOPMENT OUTCOMES

|             | NET ATTENDANCE<br>IN PRIMARY SCHOOL<br>– BOYS (%) | NET ATTENDANCE<br>IN PRIMARY SCHOOL<br>– GIRLS (%) | UNDER-5<br>MORTALITY RATE | DELIVERY IN<br>HEALTH FACILITY<br>(%) |
|-------------|---|--|---------------------------|---------------------------------------|
| Tigray      | 78.1  | 86.3   | 59                        | 56.9                                  |
| Afar        | 62.6  | 63.7   | 125                       | 14.7                                  |
| Amhara      | 73.4  | 79.9   | 85                        | 27.1                                  |
| Oromiya     | 67.4  | 65.2   | 79                        | 18.8                                  |
| Somali      | 60.6  | 57.2   | 94                        | 17.9                                  |
| BSG         | 81.3  | 72.8   | 98                        | 25.7                                  |
| SNNPR       | 75.9  | 76.3   | 88                        | 25.5                                  |
| Gambella    | 86.9  | 89.6   | 88                        | 45                                    |
| Harari      | 80  | 76.2   | 72                        | 50.2                                  |
| Addis Ababa | 98.2  | 92.1   | 39                        | 96.6                                  |
| Dire Dawa   | 82.2  | 75.3   | 93                        | 56.2                                  |

Note: Under-5 mortality rate is expressed as number of deaths per 1,000 live births. Delivery in health facility refer to women who gave birth in the five years prior to the survey.

Source: DHS, 2016.

**Living in zones that border another country is correlated with lower consumption levels.** This was already the case in 2011 but seems to have increased in magnitude since. In 2016, living in a border zone was, all else equal, associated with 17 percent lower consumption levels. Explaining this effect is difficult, but certain elements could potentially contribute: First, most of the border zones are located in the Developing Regional States (Somali, Afar, Gambella, and Benishangul-Gumuz) where administrative capacity tends to be

lower. Several of the neighboring countries are plagued by chronic instability (Somalia and South Sudan) which may have spillover effects on the other side of the border, and relations between Ethiopia and the northern neighbor, Eritrea, have been tense until the recent rapprochement and re-opening of the border. Finally, it may also be the case that the border variable is picking up omitted variables, such as the 2015/16 drought (though, surprisingly, research has failed to find an adverse welfare effect of the drought at household level).

## CONCLUSIONS

### **The poverty profile for Ethiopia is largely unsurprising.**

As in most low-income countries in the world, the poor are poorly educated, depend on agriculture and/or casual labor, live in large households with high dependency rates, and tend to be further away from key infrastructure. In contrast to common perceptions, female-headed households are less likely to be poor. There is however a substantial penalty in terms of consumption of being divorced: Households headed by divorced women have substantially lower consumption levels. Controlling for other factors, households in the drought-prone lowlands (the lowland areas of Oromia and SNNPR) and moisture-reliable highlands have lower consumption levels.

**The ultra-poor, the bottom 10 percent whose consumption has not grown since 2005, have largely similar characteristics of the poor, but extremer.** Whereas

the poor are characterized by remoteness, large households, high dependency rates, and a lack of education, the ultra-poor are yet more remote, have yet larger households, higher dependency rates, and still less education. Compared to the overall distribution of the poor, the ultra-poor are more likely to be located in rural areas of Somali and SNNPR.

### **Returns to education have increased between 2011 and 2016.**

In urban areas, the increasing returns to education are likely related to increasing real hourly wages and decreasing unemployment between 2011 and 2016. The significant increase in education returns in rural areas is more difficult to explain but may reflect the increase in use of technology from a low base. Use of agricultural technology such as improved seeds and fertilizers and herbicides have increased in recent years, and are mainly taken up by more educated farmers.









# Drivers of Poverty Reduction in Ethiopia

The first two chapters documented the decline in poverty in Ethiopia between 2011 and 2016, and also presented profiles of the poor population. This chapter generally focuses on a longer period of time – 2000 to 2016 and investigates what the drivers behind poverty reduction in Ethiopia have been. It does so in two distinct sections. The first uses household survey data to decompose poverty changes so that the roles of different characteristics can be uncovered. It also analyzes how important changes in endowments versus changes in returns to these endowments were over time. The second section updates the zonal panel dataset that was used in the previous Poverty Assessment in order to investigate the roles of agricultural productivity, investments in public infrastructure and sectoral changes in reducing poverty between 2000 and 2016.

The analysis finds that the contribution of urban areas to poverty reduction is increasing and is likely to grow. Nevertheless, poverty reduction overall was still heavily concentrated in rural areas and in the agricultural sector. Productivity growth in agriculture will remain critical to poverty reduction, given its share of employment. The role of structural transformation – shifts out of agriculture and into manufacturing or services – was very limited in reducing poverty over the period. Increases in endowments, and particularly asset accumulation, played a large role in lowering poverty rates.

Poverty fell fastest in the zones that had the strongest agricultural growth between 2000 and 2016, while the expansion of the PSNP between 2011 and 2016 also played a crucial role in reducing poverty rates. Improved access to large towns, as measured through decreased travel times, was associated with strong poverty reduction, indicative of the complementary nature of agricultural and non-agricultural growth.

There was a shift away from the production of cereal crops in favor of cash crops between 2011 and 2016. This shift had significant poverty-reducing effects, largely because of the rapid relative gains in the prices of cash crops, especially khat, over these years. While this increase in crop prices helped net producers, and will likely continue to do so, there are also potential losers from these changes. Policy should be nimble enough to ensure that the effects of rising prices on vulnerable households and parts of the population are effectively mitigated.



# Introduction

**This chapter builds on the analysis of Chapters 1 and 2 by focusing on what the key drivers behind Ethiopia's poverty reduction over the 2000 to 2016 period have been.** The decade and a half that this chapter covers saw sustained strong growth in the country, though that growth was not necessarily spread evenly over the distribution of consumption. The headcount poverty rate at the start of the period stood at 47.4 percent. By 2016 this had been reduced by 24 percentage points to 23.4 percent. Understanding which factors drove this decline is the focus of this chapter.

**An important question dealt with in this chapter is how different the nature of poverty reduction between 2011 and 2016 was, compared to the 2000 to 2011 period.** As noted in the last Poverty Assessment for the country World Bank (2015) the provision and expansion of rural safety nets, large investments in infrastructure and increasing market integration all served to compliment overall economic growth in reducing poverty. However, increasing rates of urbanization, an ever more educated population and shifts in sectoral occupations could mean that there is a changing nature to poverty reduction.

**A longitudinal zonal data set is used in combination with household survey data to explore what the most important factors that drove welfare improvements were.** Among these factors are changes in the sectoral composition of households, different rates of sectoral productivity growth over time, changes in agricultural productivity and prices, and the expansion of safety nets, particularly in rural areas. This zonal panel dataset is constructed using data from a variety of sources including the Household Income and Expenditure Survey (HCES), the Welfare Monitoring Survey (WMS), the Agricultural Sample Survey (AgSS), the manufacturing census, the survey of trade and distributive services, administrative data from the Productive Safety Net Programme (PSNP), and the Livelihoods, Early Assessment and Protection project (LEAP) datasets from various years.

**The chapter proceeds as follows.** Section 2 decomposes the reduction in poverty between 2000 and 2016 into shifts within sectors versus shifts between sectors, and also investigates whether changes in endowments or changes in the returns to these endowments were more important for poverty reduction. Section 3 extends the zonal panel analysis contained in the last Poverty Assessment and assesses the contributions of overall growth, sectoral growth, agricultural productivity and investments in public services and infrastructure to poverty reduction.



## Evidence on the drivers of poverty reduction in Ethiopia

There is a growing body of literature aimed at uncovering the drivers of the recent poverty reduction in Ethiopia. Dercon (2006) presents early analysis of the impact of economic reform between 1989 and 1995 on consumption poverty in Ethiopia. The most important drivers behind consumption changes over the period were how relative prices changed – these had strong effects on the returns to physical and human capital, as well as to location. Changes to the terms of trade, particularly strong real increases in producer prices, increasing returns to road infrastructure and location are consistent with economic changes that took place under the market-oriented reforms that took place in that period. This complements the analysis in Dercon (2004) which looks at consumption changes specifically, rather than at the impacts of economic reforms. Dercon (2004) found that there were significant and persistent negative impacts of rainfall shocks on household consumption, and that the lack of insurance and social protection coverage exacerbated how low these effects were felt for. Dynamically, a drop in rainfall of 10 percent that occurred 4 to 5 years ago reduced current growth rates by one percentage point. Dercon *et al* (2012) use a decade and a half of longitudinal data from Ethiopia to show that although chronically poor populations benefit from some of the key drivers of growth such as better connectivity and market access, the growth rate of their consumption is lower than that of other groups, mainly because their initial conditions are severely lacking in both human and physical capital. This reflects earlier work in Dercon (2009) that showed the key roles played by agricultural extension services and an expansion of the road network between 1994 and 2004.

Hill and Tsehaye (2018) highlight the central role of higher agricultural productivity in reducing poverty. This was particularly true in the period between 2005 and 2011, during which agricultural output growth accounted for a 2.2 percent drop in poverty annually. However, the authors note that the increase in productivity was conditional on being in close proximity to urban centers. Another condition for poverty reduction through agricultural growth was that the adoption of productivity enhancing technologies such as fertilizer and improved seeds were dependent on good rainfall and the maintenance of high prices.

Vandecasteele *et al* (2018) investigate the proximity of rural teff farmers to primary and secondary cities impacts the prices of agricultural produce, adoption of improved technology and farming intensification. They find that positive effects on prices and technology adoption is far higher for farmers that live close to cities compared to those that live close to secondary towns. This dynamic occurs in concert with evidence from other countries showing that the poverty reduction associated with secondary towns is driven by rural migrants being more likely to engage in non-farm sector work after they migrate (Christaensen *et al* 2016).

A study by Dorosh *et al* (2018) looks forward and uses a CGE model to simulate which kinds of investments are most likely to lead to the strongest poverty reduction in Ethiopia. The results suggest that relatively higher investments into urban development will lead to stronger poverty reduction in the medium-to-long-term, while immediate investments in the rural non-farm sector are likely to be relatively more pro-poor.

The relationship between the expansion of Ethiopia's social protection programs and poverty reduction is discussed in detail in Chapter 6. A study that complements that chapter (Hirvonen *et al* 2016) looks at the comparative effectiveness of social protection and income taxation in driving poverty reduction in the country. The authors find that the PSNP has been effective in reducing poverty by 0.9 percentage points, and simulate that perfect targeting of the program in its current form would reduce aggregate poverty by about 1.5 percentage points.

## 2. DECOMPOSING POVERTY REDUCTION BETWEEN 2000 AND 2016

**The decomposition method most suited to attributing changes in poverty to intra-sectoral versus population shift effects is due to Ravallion and Huppi (1991).** This approach exploits the additive decomposability of the standard FGT measures of poverty in order to generate the decomposition. The aim is to decompose changes in poverty

into an intra-sectoral effect (changes in poverty levels within each group), and a population shift effect (changes in the characteristics of the population). Decomposing poverty changes in this way allows us to determine which of the two factors was more responsible for driving poverty changes over a given time period.

### Box 9

### Decomposing poverty changes over time

The poverty decompositions used in this chapter are based on Ravallion and Huppi (1991).<sup>32</sup> The decompositions will reflect changes in the poverty headcount rate, but extend naturally to the poverty gap and poverty gap squared measures. Poverty at time  $t$  is given as  $P_t$ . The change in poverty between  $t$  and  $t+1$  is composed of the following effects:

$$\begin{aligned}
 P_{t+1} - P_t &= \sum_{i=1}^n s_{it} (P_{i,t+1} - P_{i,t}) && \text{Intra-sectoral effect} \\
 &+ \sum_{i=1}^n P_{it} (s_{i,t+1} - s_{i,t}) && \text{Population shift effect} \\
 &+ \sum_{i=1}^n (P_{i,t+1} - P_{i,t})(s_{i,t+1} - s_{i,t}) && \text{Interaction effect}
 \end{aligned}$$

For the purposes of this chapter,  $i$  represents the specific sector, and  $n$  is the number of sectors. These include: urban vs rural; the five main sectors of occupation; self-employed versus not self-employed.  $P_{i,t}$  is the poverty rate of group  $i$  in period  $t$ . Finally,  $s_{i,t}$  is the population share of group  $i$  in period  $t$ .

An illustrative example, adapted from Valderrama and Viveros (2014) may be useful in explaining the counterfactual assumptions underlying this decomposition. Consider that in time period 1 there are three sectors – agriculture, manufacturing and services in which a household head could be employed. Each of these sectors has a different poverty rate associated with it, with the highest poverty rate in the agriculture sector and the lowest poverty rate in the services sector. Consider a simple change in which a group of households shifts from the agriculture sector to the services sector. If, after the shift, the within-sector poverty rates remain the same, then it must be that the national poverty rate went down. This is a pure population shift effect – the drop in national poverty was driven entirely by population shift from agriculture to services. Consider now a situation in which the poverty rate in the agriculture sector goes down, but no households change sectors.<sup>33</sup> Again, the national poverty rate would decrease. In this situation, however, the decrease would have been driven entirely by the intra-sectoral effect. In practice, as shown in this chapter, the overall poverty change will be a combination of both the population shift effect and the intra-sectoral effect, along with an interaction effect to balance out the accounting exercise.

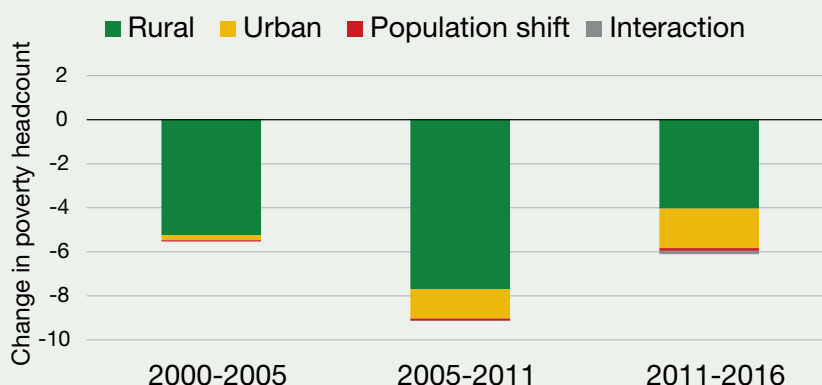
32 Poverty is defined at the household level, and for this reason the chapter uses the occupational characteristics of the household head as the characteristic that defines the entire household. Finally, the caveat should be added that the decomposition is purely a statistical exercise that should be used to understand past changes, rather than a tool that should be used to estimate future trends in poverty.

33 This could also be the case if the poverty rate decreases in one sector but there is no net mobility across sectors.

Figure 41

## THE URBAN CONTRIBUTION TO POVERTY REDUCTION IS INCREASING

Rural-urban decomposition of poverty changes 2000 to 2016



Source: HCES; 2000; 2005; 2011, 2016. World Bank staff calculations.

**The absolute magnitude of poverty reduction was similar for the 2000-2005 and 2011-2016 periods, but the rural-urban composition of this reduction was very different.** Figure 41 shows that in the first period the approximately 6 percentage point drop in poverty was driven almost entirely by changes within rural areas. In the 2011 to 2016 period, about one third of the fall in the national poverty rate could be explained by changes in urban areas. The result of this, as shown in Chapter 2, was that the share of urban households in the overall number of poor households declined. Poverty reduction within urban areas was driven primarily by changes within households that were engaged in the trade sector, as discussed in Chapter 5. At no point did population shifts from rural to urban areas contribute significantly to the overall reduction in poverty over the period. However, it should be noted that this decomposition analysis does not consider spillover effects of urbanization for rural economies, such as increasing demand for agricultural products, improved access to better agricultural inputs, remittances, etc.

**The agriculture sector remained the largest contributor to poverty reduction while the role of structural change remains very limited.** Agriculture's share in explaining national poverty reduction dropped from about three quarters (2000 to 2005) to about two thirds (2011 to 2016).

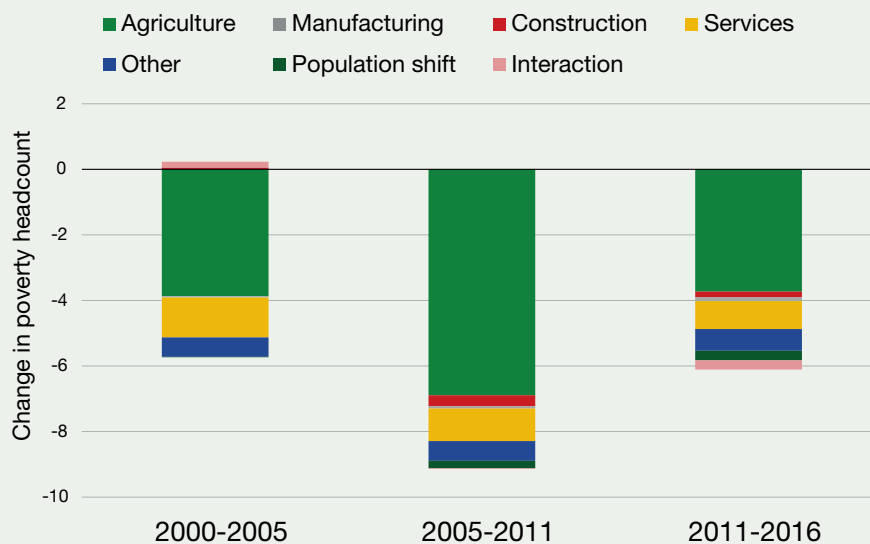
At the same time, the poverty share of agricultural households increased slightly over the same time period, reflecting faster poverty reduction in other sectors. As shown in Figure 42 the contribution of manufacturing to poverty reduction was generally quite small, in line with the share of households that were engaged primarily in that sector. Changes within the services sector accounted for about 15 percent of poverty reduction between 2011 and 2016. Structural transformation, here proxied by the population shift effect across economic sectors, played a very minor role, explaining only 5 percent of the poverty reduction in the last period.

**The contributions of the self-employed versus wage workers to poverty reduction were very similar in the first and final time periods.** This is unsurprising, given that the self-employed are generally agricultural, and agriculture's contribution to poverty reduction was also quite consistent over the same time periods. Annex Figure 5 breaks down the poverty changes by employment type. Comparing the middle and final windows of time reveals that even though the share of the population that was not self-employed increased between 2011 and 2016, the absolute and relative contributions of this group to poverty reduction went down. The small population shift effects were in fact poverty enhancing in the first and second windows, but were poverty reducing in the 2011 to 2016 period.

Figure 42

## THE AGRICULTURE SECTOR REMAINS THE LARGEST CONTRIBUTOR TO POVERTY REDUCTION

Sectoral decomposition of poverty changes 2000 to 2016



Source: HCES; 2000; 2005; 2011, 2016. World Bank staff calculations.

**Improvements in the characteristics of individuals and households – endowments – explain most of the changes in welfare and are particularly important for the bottom 40 percent of rural households.** The blue line in Figure 43 shows the change in consumption between 2011 and 2016 over the distribution of consumption itself for rural households. This is analogous to the growth incidence curves that were presented in earlier chapters. The red line and the green line show the roles played by endowments and returns to endowments respectively across the distribution. Details on how overall changes were decomposed into endowment and returns contributions are outlined in Box 11.

**Changes in endowments contributed positively to changes in consumption for households across the distribution.** The characteristics used in the decomposition include education, demographics, household location, conditions (access to electricity, improved water, dwelling unit materials), assets, and the sector and main income source

of the household residents. All of the positive consumption change in rural households can be explained by an increasing level of endowments, as this line is always above zero, while the returns line is always negative.

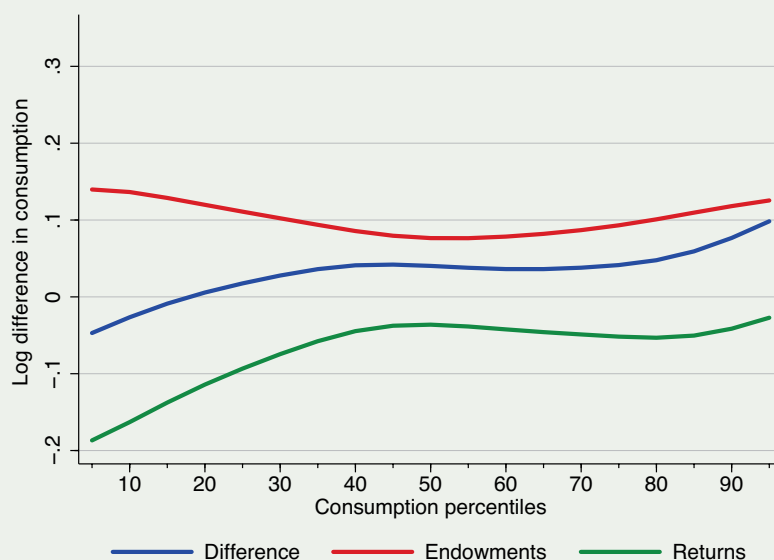
**For urban households the roles are reversed, with returns generally outweighing endowments as drivers of consumption change.** Figure 44 shows that for urban households the endowment effect is larger than the return effect only for the bottom quartile. Neither of the effects is negative at any point of the distribution, and so their sum – the blue line – is always above them. Returns to assets were particularly strong drivers of positive consumption change at the bottom of the urban distribution, while returns to changing household demographics (smaller household sizes and lower dependency ratios) are the most important drivers of consumption change for the top 40 percent of the urban distribution.



**Figure 43**

## CHANGES IN CHARACTERISTICS OF RURAL HOUSEHOLDS EXPLAIN MOST OF THE INCREASE IN CONSUMPTION SINCE 2011

The contributions of endowments and returns to consumption growth, rural households 2011 to 2016

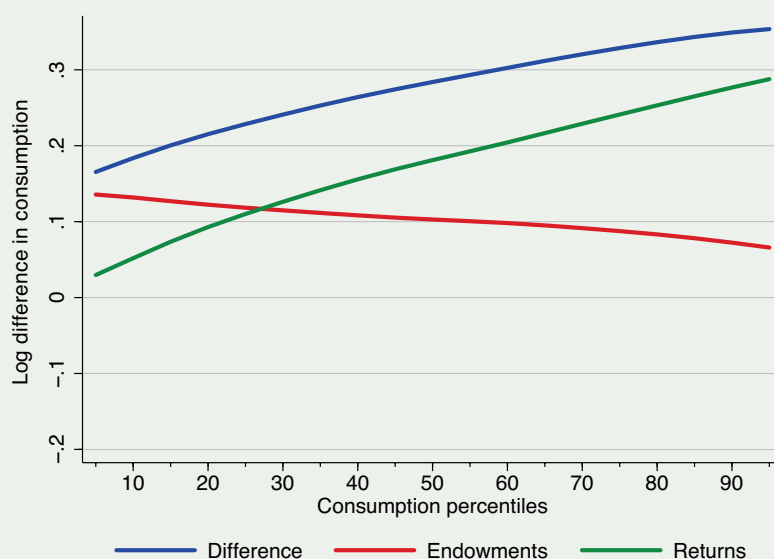


Source: HCES 2011, 2016. World Bank staff calculations.

**Figure 44**

## WHILE CHANGES IN RETURNS EXPLAIN MOST OF THE CONSUMPTION INCREASE FOR URBAN HOUSEHOLDS SINCE 2011

The contributions of endowments and returns to consumption growth, urban households 2011 to 2016



Source: HCES 2011, 2016. World Bank staff calculations.

## Decomposing changes in consumption into endowment and returns components

**Changes in household consumption levels over time can be decomposed into two components.** The first component is due to changes in personal/household characteristics or endowments – more education, more household assets, better infrastructure and so on. The second component is due to changes in the returns to those endowments – returns to education, returns to assets, increased land productivity and so on. These components can then be further analyzed to identify the contributions of each specific attribute to changes in consumption, over the entire welfare distribution.<sup>34</sup>

**The decomposition procedure takes place over two steps.** In the first step a counterfactual distribution is estimated to show what consumption in 2011 would have looked like if that society had 2016's characteristics. The difference between the actual consumption distribution in 2016 and this counterfactual distribution is change in consumption that can be explained by the changes in the characteristics or endowments of the population between 2011 and 2016, with returns held constant. The difference between the actual consumption distribution in 2011 and the counterfactual distribution is then the part of the change in consumption that is due to changes in returns to those characteristics/endowments over the period (endowments are held constant). There is also an interaction term that captures changes in the correlation between endowments and returns over time. In the second step, RIF regressions are used to decompose the explained and unexplained parts into the contribution of each individual covariate at different percentiles of the distribution.

**By far the biggest contribution to positive consumption change was the accumulation of assets.** The effect of asset accumulation between 2011 and 2016 was the largest factor explaining positive consumption changes for every percentile of the rural distribution, but was particularly strong for the bottom 40 percent. This is highlighted in Figure 45 which shows endowment effects for rural households. The assets underlying this effect include land ownership, live-stock ownership, and ownership of various durables including a cellphone, television and bicycle.

**The accumulation of assets was important for urban households, as it was for rural households, but the effects of education were far more prominent.** For urban households the accumulation of assets was also important, but this effect declined steadily over the consumption

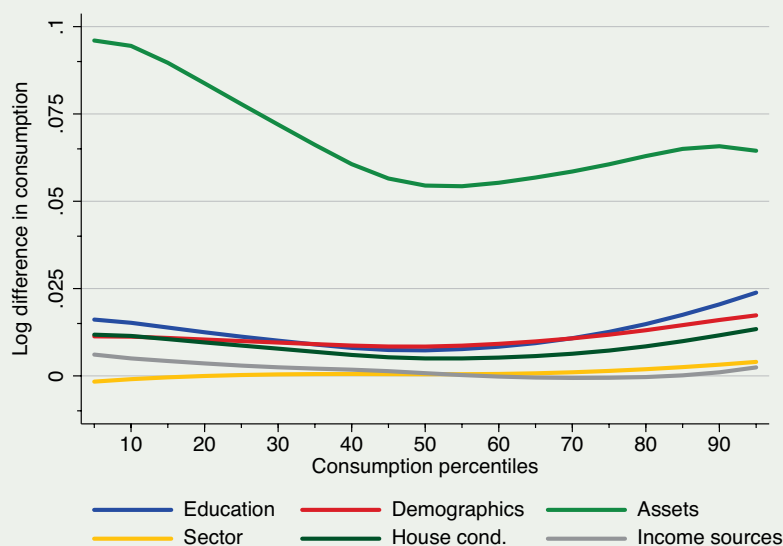
distribution, as can be seen in Figure 46. For the top 20 percent of urban households increasing years of education was the most significant driver of consumption changes between 2011 and 2016, although the education endowment effect was uniform over the distribution. For a pooled model that decomposes changes for the whole country together (not shown) the effects of increasing urbanization were very muted across the entire distribution. This is because the overall share of the urban population in Ethiopia grew slowly between 2011 and 2016, even though the absolute number of people migrating to urban areas was large. As noted in Chapter 5, although the urban population increased by about 4.1 million people between 2011 and 2016, the urban share of the population increased by only 2.5 percentage points over the same time period.

34 The endowment and returns decompositions in this chapter are based on the Recentered Influence Function (RIF) and Unconditional Quantile Regression (UQR) methodology contained in Firpo, Fortin et al. (2009) which generalizes the method detailed in Oaxaca (1973) and Blinder (1973).

Figure 45

## ASSET ACCUMULATION EXPLAINS THE BIGGEST PART OF THE CONSUMPTION INCREASE FOR RURAL HOUSEHOLDS

The contributions of endowments to consumption growth, rural households 2011 to 2016

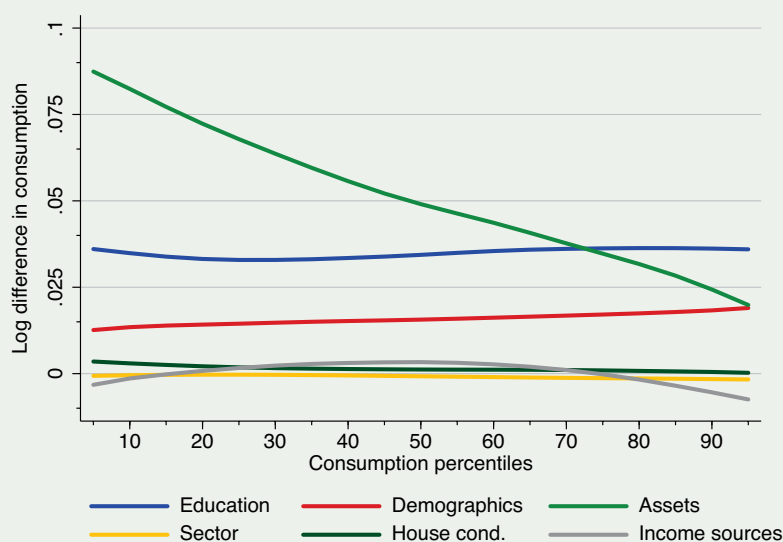


Source: HCES 2011, 2016. World Bank staff calculations.

Figure 46

## WHILE INCREASING EDUCATION AND CHANGING DEMOGRAPHICS ARE MORE IMPORTANT FOR URBAN HOUSEHOLDS

The contributions of endowments to consumption growth, urban households 2011 to 2016



Source: HCES 2011, 2016. World Bank staff calculations.

**The total effect (endowment plus returns) of changes in assets is prominent for all four quartiles of the distribution.** Figure 47 adopts a slightly different approach and groups the overall effect of the different components for each of the four consumption quartiles. For the bottom quartile, approximately corresponding to the poor population, changes in home conditions (access to electricity, improved water, dwelling unit materials) had an overall larger positive effect on consumption than did asset accumulation. The total effect of improving home conditions then becomes more and more muted as households become richer. Even though the accumulation of assets was an important endowment effect for poor households (Figure 44), decreasing returns to those assets meant that the total effect of assets was more muted, though still positive (Figure 45).

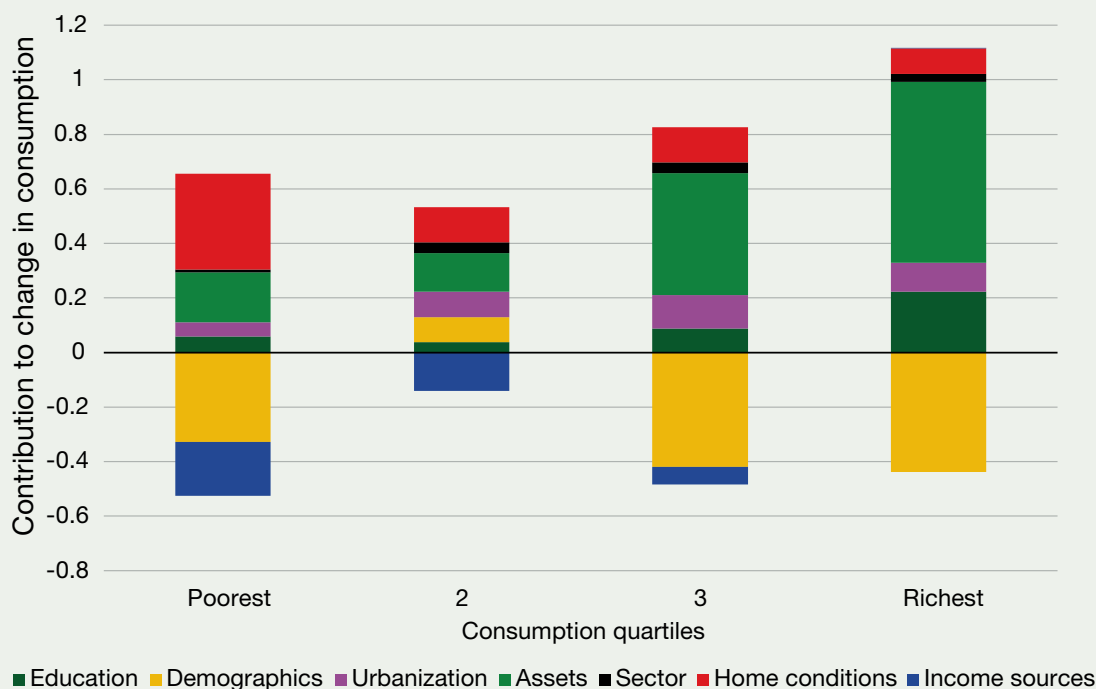
**The total effect of asset accumulation is highest for the top quartile, indicating that this group also had the highest returns to asset accumulation.** Figure 45 showed that the asset endowment effect decreased over the distribution, while Figure 46 shows that the overall effect increased. This means that the returns to assets became stronger over the distribution of consumption. Although the total effect of education also increased across the consumption distribution, the overall effect was driven by endowment changes rather than by returns. The effect of education was weak for the poorest households, reflecting the poor performance of education in rural areas.

**Demographic changes contributed negatively to consumption changes between 2011 and 2016.** This was true for all except the second quartile. This overall effect was driven by changes in returns, as the endowment effects from demographic changes were generally small and positive, as reflected in Figure 46.

**Figure 47**

### ASSET ACCUMULATION EXPLAINS THE BIGGEST PART OF THE CONSUMPTION INCREASE BETWEEN 2011 AND 2016

Overall contributions to consumption changes 2011 to 2016



Source: HCES 2011, 2016. World Bank staff calculations.

### 3. DRIVERS OF POVERTY REDUCTION: EVIDENCE FROM A ZONAL PANEL DATASET

**In order to better understand the drivers behind the changes in poverty, a longitudinal zone-year dataset ranging from 2000 to 2016 is used.** The dataset and findings serve as a direct update to the previous Ethiopia Poverty Assessment World Bank (2015), and also to Hill and Tsehaye (2018). The analysis makes use of the fact that poverty has been reduced at different rates in different zones in Ethiopia

over time, and there has also been variation in sectoral output growth and in the roll-out of public infrastructure and support programs over the period covered. 50 zones are covered in the analysis, and this covers almost all of Ethiopia's population. Box 11 provides a brief overview of the data sources used in this part of the chapter, as well as the methodology used in the assessment.

#### Box 11 Datasets and methodology for estimating poverty changes using a zonal panel

**This chapter presents an update to the results of the zonal panel estimates of growth, safety nets, infrastructure and poverty reduction presented in World Bank (2015) and Hill and Tsehaye (2018).** As such, the description of the methodology briefly presented here draws on the exposition in these texts.

**Poverty estimates, population estimates, and the number of people engaged in work in each sector at the zonal level come from HICES datasets for the years covered.** Data from the Central Statistical Agency's Agricultural Sample Survey is used for estimates of zonal agricultural production, the area of land cultivated, the value of agricultural output, the proportion of land using improved seeds and fertilizer, and a weighted crop price index.

**Data on manufacturing output is derived from an annual census of large and medium manufacturing enterprises.** In the estimation the share of manufacturing output that is produced by small firms is allowed to vary across zones and over time, but a constant output growth rate of these firms is assumed over the 2000 to 2016 period. Data on zonal service sector output are calculated by using the HICES datasets to generate the number of service and trade workers and then multiplying by nationally published estimates of value added per worker in this sector. This yields a measure of service sector output per worker at the zonal level.

**Distance variables to schools, roads and large towns are constructed using data from the Welfare Monitoring Survey and the Rural Accessibility Index.** Household-level distances are averaged to arrive at zonal level estimates. Administrative data on the number of beneficiaries of the PSNP are aggregated to the zonal level. Finally, rainfall shocks and associated crop losses are derived at the zonal level from data from the Livelihoods, Early Assessment and Protection (LEAP) project.

**There are two main regressions that are estimated in this chapter.** The first examines the effect of aggregate output growth, public good provision and infrastructure on changes in the poverty rate. The following is estimated:

$$\Delta \ln p_{zt} = b_0 + b_Y \Delta \ln Y_{zt} + b_N \Delta \ln N_{zt} + b_E \Delta \ln E_{zt} + b_D \Delta \ln D_{zt} + u_z + e_{zt}$$

where  $p_{zt}$  is the poverty rate in the zone at time  $t$ ,  $Y_{zt}$  is zonal output at time  $t$ ,  $N_{zt}$  is the proportion of people in the zone who are PSNP participants at time  $t$ ,  $E_{zt}$  is a measure of increased access to primary schools in the zone at time  $t$ , and  $D_{zt}$  is a measure of infrastructure in the zone at time  $t$ .

The second kind of equation that is estimated investigates poverty reduction and sectoral output growth and includes the change in the log poverty as the dependent variable with the same explanatory variable as above, but now also with the shares of agriculture, manufacturing and service sector outputs interacted with their growth rates to allow for the impact on poverty to be in line with the size of the sector.



**Hill and Tsehaye (2018) find that between 1996 and 2011 poverty reduction was highest in zones that had the highest growth in agricultural output.** This effect was particularly strong from 2005 onwards. Growth in agricultural output per capita contributed to poverty reduction, but there was no discernable effect to growth in manufacturing or services output per capita to poverty reduction at the national level. Within the agricultural sector the production of cereal crops was central to poverty reduction, but this effect relied on the intersection of good rainfall, high prices and access to markets.

**The strong reduction in poverty measures at the zonal level between 2000 and 2016, the key dependent variable in this part of the chapter, is evident in Table 14.**<sup>35</sup> The poverty headcount, gap and severity measures were all about half in 2016 what they were in 2000. The overall employment share in agriculture reduced by eight percentage points over the period, while there were increases of three percentage points and five percentage points for

manufacturing and services respectively. Thus, even though the employment share of agriculture trended downwards, it is still by far the largest sector in the Ethiopian economy, and changes in output and prices in this sector will be key to understanding overall poverty changes at the zonal level. This has already been alluded to in the chapter in the sectoral decompositions of poverty that were presented in Figure 42.

**The expansion of public infrastructure variables saw a higher proportion of households covered by the PSNP, while access to school, public transport and nearby large towns increased substantially.** The zonal average of PSNP coverage rose from eight percent in 2011 to almost 14.5 percent by 2016. At the same time the average distance to public transport dropped by over four kilometers, and the travel time taken to get to the nearest large town dropped substantially as well. The predicted level of crop loss due to low rainfall increased between 2011 and 2016, though this took place against increased use of improved seeds and increased coverage of fertilizer, on average.

**Table 14** DESCRIPTIVE STATISTICS OF VARIABLES USED IN ZONE PANEL REGRESSIONS

|  | 2000 | 2005 | 2011 | 2016 |
|--|------|------|------|------|
| <b>POVERTY</b>                               |      |      |      |      |
| Poverty rate                                 | 47.4 | 40.3 | 28.1 | 22.8 |
| Poverty gap (%)                              | 13.6 | 8.6  | 7.4  | 6.8  |
| Poverty severity (%)                         | 5.4  | 2.8  | 2.9  | 2.8  |
| <b>SECTORS</b>                               |      |      |      |      |
| Agriculture emp. share                       | 80.1 | 79.5 | 77.0 | 72.0 |
| Manufacturing emp. share                     | 2.2  | 5.6  | 4.8  | 5.0  |
| Services emp. share                          | 17.7 | 14.9 | 18.3 | 23.0 |
| <b>SAFETY NETS, SERVICES, INFRASTRUCTURE</b> |      |      |      |      |
| Share of households in PSNP                  | 0    | 0    | 8.3  | 14.4 |
| Distance to nearest primary school (km)      | 4.1  | 4.1  | 2.7  | 1.9  |
| Distance to public transport (km)            | 20.5 | 17.5 | 13.6 | 9.3  |
| <b>AGRICULTURE VARIABLES</b>                 |      |      |      |      |
| Predicted crop loss due to rainfall (%)      | 22.4 | 26.6 | 15.7 | 20.4 |
| Land planted with improved seeds (%)         | 1.4  | 2.3  | 4.1  | 5.9  |
| Land using fertilizer (%)                    | 9.6  | 16.7 | 27.6 | 33.9 |
| Index of crop prices (Birr per kg)           | 3.2  | 4.1  | 12.3 | 23.3 |

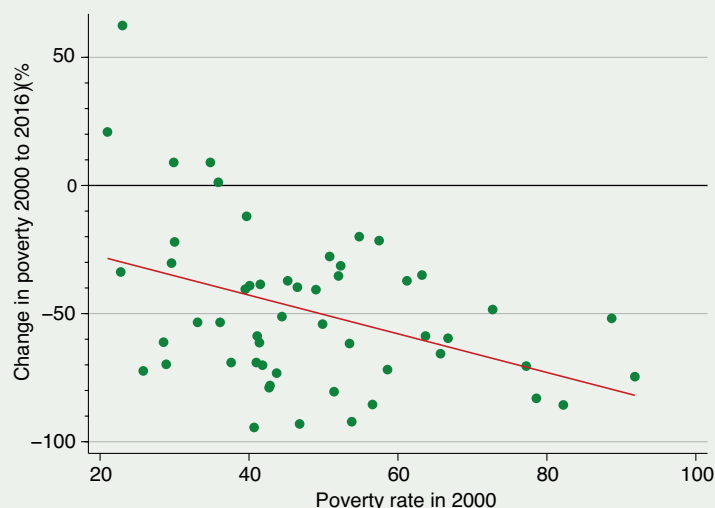
Source: Calculations from datasets described in Box 3

<sup>35</sup> It is important to note that while these numbers are similar to the officially published poverty numbers, they should not be treated as such. The numbers in the table are zonal averages of poverty, for the 50 zones only that are followed over the time period.

Figure 48

## THE POOREST ZONES EXPERIENCED THE FASTEST POVERTY REDUCTION

The rate of zonal poverty reduction and initial poverty level



Source: Calculations from HCES, 2000; 2005; 2011, 2016.

### 3.1 How has growth contributed to poverty reduction?

**The zones that were initially the poorest experienced the fastest poverty reduction between 2000 and 2016.**

Figure 48 plots the percentage change in poverty at the zonal level against initial poverty in 2000. The same pattern is evident when the percentage point change is used as the y-axis rather than the percentage change in poverty. A regression of the change in poverty headcount on the change in zonal output per capita yields a coefficient of -0.34, which is significant at the 1 percent level. This suggests that a 1 percent increase in growth resulted in a 0.34 percent reduction in poverty over the period. This measure of the growth elasticity of poverty using household consumption data is higher than the growth elasticity of poverty reported in Chapter 1, which used real changes in GDP.

**Poverty fell fastest in the zones in which agricultural growth was strongest.** The second column of Table 15 shows the results of regression analysis assessing the roles of sectoral output growth and investments in public infrastructure on poverty reduction. The implied elasticity of poverty to agricultural growth can be calculated by multiplying the coefficient by the average employment share of the sector for each of the years 2000, 2005, 2011 and 2016

detailed in Table 14. This results in a weighted elasticity of -0.13, meaning that a 1 percent increase in agricultural output per capita is associated with a 0.13 percent reduction in the overall poverty rate.

**The poverty-reducing effect of increases in manufacturing output per capita is significant post-2005, and particularly in urban areas.**

Neither of the manufacturing or services coefficients are statistically significant in column two, reflecting the same result described in World Bank (2015). These two output measures are considerably more imprecise than the agricultural output estimates, and so it cannot be ruled out that the magnitude of the coefficients in the overall sample is this small because of attenuation bias. Perhaps for this reason the contribution of the services sector to poverty reduction, as presented in Figure 42 earlier in the chapter is not reflected in the regression analysis. Nevertheless, when the time period is restricted to 2005 and later, and each zone is weighed by the proportion of its population that is urban, growth in manufacturing output per capita has a poverty-reducing effect. The standard error is relatively large, likely because of the level of imprecision associated with this variable, but the effect is significant at the 10 percent level. The zone-level correlation between growth in agricultural employment and growth in services employment is stronger than the zone-level correlation between growth in

agricultural employment and manufacturing employment, as can be seen in Figure 8 in the appendix. Agricultural growth thus seems to have positive spillovers on the services sector.

**The expansion of the PSNP had a significant effect on reducing poverty at the zonal level, particularly in the 2011 to 2016 period.** As shown in the second column, a one percent annualized increase in PSNP coverage was associated with a 0.1 percent annualized decrease in the poverty rate. This effect is more significant (both economically and statistically) than what is reported in Hill and Tsehaye (2018), which covered 1996 to 2011 and therefore only worked with one period of PSNP expansion. The effect of the PSNP remains significant when observations are weighted by the urban population share between, but not when these weights are applied in the 2005 to 2016 window.

**Improving access to large towns played an important role in explaining poverty reduction.** In the analysis a town is considered to be large if it has a population of at least 50,000. Access is measured by the number of minutes taken, on average, from each zone to the nearest large town<sup>36</sup>. On average an increase in the travel time to a large town by four percent increases the zonal poverty rate by one percent. The effect is particularly strong for locations that are three hours or more away from a large town (confirming the results from the URRAP analysis presented in Chapter 2). Unsurprisingly the effect disappears when the sample is weighted by the urban population, as in columns 3 and 4 of Table 15. The final column of the table presents outputs from an instrumental variables regression in which growth in agricultural output has been instrumented with weather

**Table 15** **SECTORAL GROWTH, SAFETY NETS, INFRASTRUCTURE AND POVERTY REDUCTION 2000 TO 2016**

|  | 1                  | 2                  | 3                      | 4                  | 5                 |
|--|--------------------|--------------------|------------------------|--------------------|-------------------|
|  |                    |                    | WEIGHTED BY URBAN POP. |                    | IV                |
| ANNUALIZED PERCENTAGE CHANGE IN POVERTY RATE | 2000-2016          | 2000-2016          | 2000-2016              | 2005-2016          | 2000-2016         |
| <b>ANNUALIZED PERCENTAGE CHANGE IN</b>       |                    |                    |                        |                    |                   |
| Output per capita                            | -0.12*<br>(0.07)   |                    |                        |                    |                   |
| Agricultural output per capita               |                    | -0.17**<br>(0.07)  | -0.22***<br>(0.07)     | 0.15<br>(0.21)     | -0.03<br>(0.12)   |
| Manufacturing output per capita              |                    | -0.05<br>(0.11)    | -0.15<br>(0.10)        | -0.46*<br>(0.24)   | 0.00<br>(0.09)    |
| Services output per capita                   |                    | 0.01<br>(0.16)     | 0.01<br>(0.35)         | 0.22<br>(0.36)     | -0.02<br>(0.12)   |
| Proportion in PSNP                           | -0.12***<br>(0.03) | -0.10***<br>(0.03) | -0.08**<br>(0.04)      | -0.05<br>(0.03)    | -0.11**<br>(0.03) |
| Distance to primary school                   | -0.21<br>(0.17)    | -0.19<br>(0.17)    | -0.18<br>(0.17)        | 0.02<br>(0.14)     | -0.09<br>(0.14)   |
| Distance to nearest large town               | 0.24**<br>(0.10)   | 0.25**<br>(0.10)   | 0.11<br>(0.11)         | 0.22<br>(0.19)     | 0.34***<br>(0.09) |
| Constant                                     | -0.00<br>(0.01)    | -0.01<br>(0.01)    | -0.03***<br>(0.01)     | -0.03***<br>(0.01) | -0.01<br>(0.01)   |
| Observations                                 | 168                | 168                | 154                    | 124                | 166               |
| R-squared                                    | 0.40               | 0.42               | 0.50                   | 0.12               |                   |
| Number of zones                              | 50                 | 50                 | 46                     | 46                 | 50                |

Note: Zone fixed effects are included but not shown. Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Source: Calculations based on data sources described in Box 3.

36 Travel time for years before 2016 is based on the model and data in Schmidt and Kedir (2009). Access and connectivity for 2016 data are based on HICES 2015/16 and the Rural Accessibility Index.

shocks. Although the sign on the agriculture variable is in the expected direction, the effect is not statistically significant. The fact that this relationship is not significant is in contrast to previous findings (Hill and Tsehaye (2018)) and may indicate a degree of reverse causality in that households that were less poor were better able to increase their agricultural income over the period. Four maps showing the rapid and substantial increase in connectivity across the country can be found in Annex Figure 7 in Annex 3.

## 3.2 Agricultural growth and poverty reduction

**The key factors driving the relationship between growth in agriculture and poverty reduction are now explored.** Table 16 maintains the annualized percentage change in the poverty rate as the dependent variable, but now adds several new explanatory variables. These include interaction terms between growth in agricultural output per capita and: whether the travel time to the nearest large town is less than or more than three hours, and growth in cereal and cash crop output per capita. Also included are the proportion of cultivated land using improved seeds and fertilizer, and interactions between fertilizer use in bad conditions (drought and slower than average rises in crop prices) and good conditions. Finally, a weighted index of crop prices and an indicator for rainfall-induced crop losses are also included in the estimation.

**Proximity to the markets of large towns, increasing use of improved seeds, and rising crop prices were the key drivers behind agriculture's role in reducing poverty between 2000 and 2016.** There has been a noticeable shift in the drivers behind the relationship between agricultural growth and poverty reduction when data from 2016 are added to the zonal panel. In the previous Poverty Assessment (World Bank (2015)) and in Hill and Tsehaye (2018), the most important explanatory variables for the equivalent regressions reported in Table 15 were proximity to a large town, growth in cereals output per capita, and fertilizer use in good conditions. The

results below suggest that the expanded use of fertilizers did not appear to have a significant effect on poverty reduction, in either good or bad conditions. Although the interaction between agricultural growth and being close to a large town is statistically significant in the results below, the magnitude of the coefficient is far smaller: -0.82 in this study versus -3.40 in previous findings. However, this is still suggestive of the importance of the complementarities between agricultural and non-agricultural growth on poverty reduction.

**The increased use of improved seeds is associated with significant poverty reduction – this is potentially important given the relatively low existing use of improved seeds.** As has been shown earlier in this chapter, coverage of improved seeds grew from 1.4 percent of cultivated land in 2000 to 5.9 percent in 2016. This is far lower than the 34 percent fertilizer coverage in the same year. According to the results below, a one percent increase in the use of improved seeds is associated with a 0.14 percent reduction in poverty, on average. The flip in the relative importance of fertilizer versus improved seeds in this versus previous studies suggests that there may be relatively higher returns to investing in expanding the latter.

**Changes in the output of cash crops had a larger poverty-reducing effect than changes in the output of cereals.** The effect was large in economic terms – a 1 percent increase in cash crop output per capita was associated with a 0.58 percent reduction in the poverty rate, on average. Once again this is in contrast to previous findings (Hill and Tsehaye (2018)) which highlighted the relative importance of cereals over cash crops in reducing poverty. The determinants of what drove the increase in agricultural output per capita will be explored shortly in this chapter. Increases in crop prices may also have influenced individual decisions to farm with cereals versus cash crops. Gains accruing to net producers can be seen by the fact that the crop price index coefficient is negative and statistically significant, in contrast to studies covering the 1996 to 2011 period in which it was smaller and not statistically significant.

Table 16

## AGRICULTURAL GROWTH AND POVERTY REDUCTION

| ANNUALIZED PERCENTAGE CHANGE IN POVERTY RATE   | 1                 | 2                 | 3                 | 4                 |
|--|-------------------|-------------------|-------------------|-------------------|
| Growth in agricultural output per capita:      |                   |                   |                   |                   |
| Close to large town                            | -0.82**<br>(0.33) |                   |                   |                   |
| Far from large town                            | 0.08<br>(0.12)    |                   |                   |                   |
| Cereal output per capita                       |                   | -0.13<br>(0.22)   |                   |                   |
| Cash crop output per capita                    |                   | -0.58**<br>(0.26) |                   |                   |
| Manufacturing output per capita                | -0.21<br>(0.38)   | -0.07<br>(0.11)   | 0.03<br>(0.11)    | 0.03<br>(0.11)    |
| Services output per capita                     | -0.04<br>(0.17)   | 0.02<br>(0.16)    | 0.03<br>(0.16)    | 0.04<br>(0.16)    |
| Proportion of land with improved seeds         |                   |                   | -0.14**<br>(0.06) | -0.14**<br>(0.07) |
| Proportion of land with fertilizer             |                   |                   | 0.02<br>(0.01)    |                   |
| Fertilizer*bad conditions                      |                   |                   |                   | 0.02<br>(0.02)    |
| Fertilizer*good conditions                     |                   |                   |                   | 0.01<br>(0.02)    |
| Weighted crop price index                      |                   |                   | -0.23*<br>(0.12)  | -0.23*<br>(0.12)  |
| Change in predicted rainfall-induced crop loss |                   |                   | 0.00<br>(0.00)    | 0.00<br>(0.00)    |
| Constant                                       | -0.04**<br>(0.02) | -0.01<br>(0.01)   | -0.00<br>(0.01)   | -0.00<br>(0.01)   |
| Observations                                   | 135               | 168               | 162               | 162               |
| R-squared                                      | 0.10              | 0.49              | 0.48              | 0.48              |
| Number of zones                                | 50                | 50                | 49                | 49                |

Note: Zone fixed effects are included but not shown. Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Source: Calculations based on data sources described in Box 3.



### 3.3 Drivers of agricultural growth

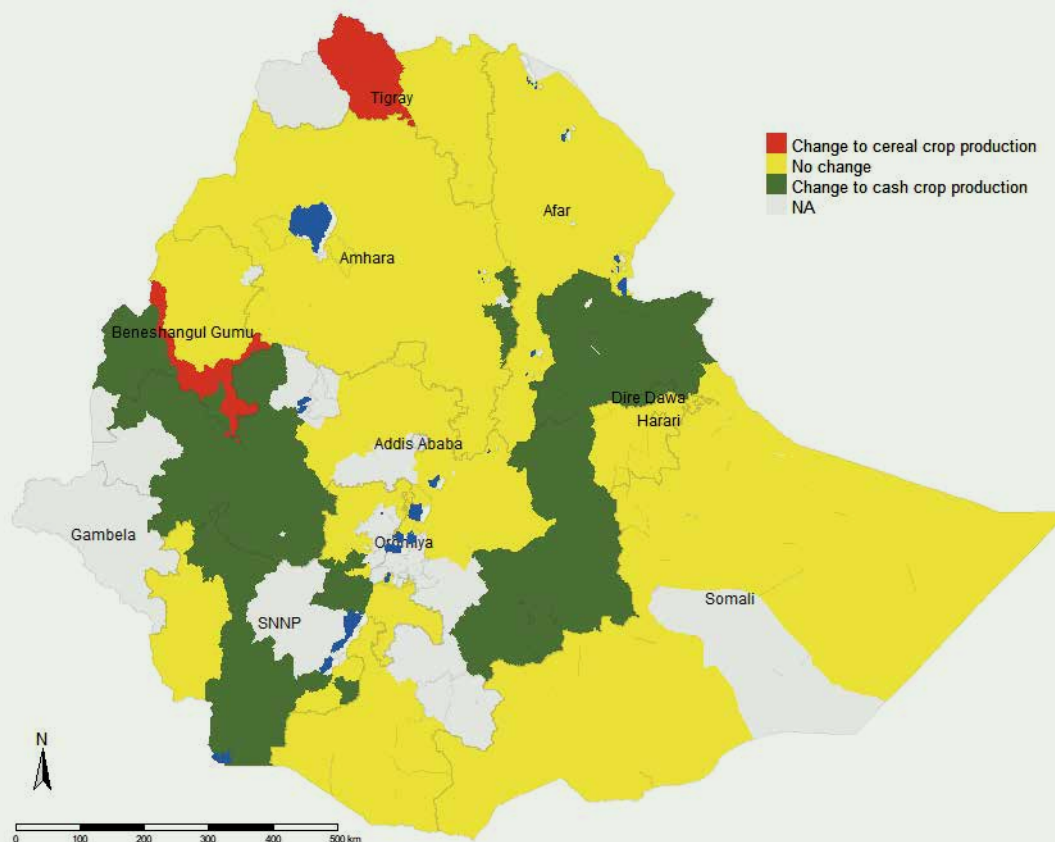
**Shifting the focus to agricultural growth rather than poverty reduction confirms that there were very large movements into cash crop production between 2011 and 2016.** The analysis now moves away from using changes in poverty as the dependent variable, and now uses the change in the log of agricultural revenue per capita at the zonal level. As a result of this change there are more years that can be used for analysis, since there is agriculture data for most years between 2000 and 2016, while there are only four years with poverty numbers over that period. The other implication of this approach is that the analysis is now on an overall revenue effect across the entire distribution, rather than only on a poverty-reducing effect.

**The expansion of cash crops meant that there was a large increase in the share of zone-level output accruing to cash crops rather than cereal crops.** Growth in cash crop cultivation was especially strong for coffee, khat, oil seeds such as sesame and nueg, and kocho. The zones that showed particularly strong shifts towards cash crops were in Oromia (Jimma, West Hararge and East Hararge), SNNPR (Sidama) and Harari. Figure 49 shows changes in the predominant type of crop revenue at the zonal level. This is determined by which crop type had the higher revenue per capita. Zones in green represent those in which predominant revenue per capita switched from cereals to cash crops between 2011 and 2016. In the eastern parts of Oromia this shift was largely towards khat. Red zones represent a switch from cash crops to cereals, while zones in yellow did not change.

**Figure 49**

#### **STRONG SHIFTS FROM CEREALS TO CASH CROPS IN THE WEST AND EAST OF THE COUNTRY**

Changes in the predominant kind of crop cultivation as measured by revenue per capita at the zonal level, 2011 to 2016



Source: Calculations from Agricultural Sample Surveys.

**Within the category of cash crops there was a rapid shift in the relative prices of khat and coffee.** Figure 50 shows an index of the price of khat divided by the price of coffee over the decade from 2007 to 2017, with 2007 as the base. The dotted line shows the fitted linear trend over the series. The trend line indicates that the relative price of khat over coffee grew by more than 40 percent over the ten years. This may to a certain extent explain the switch in which cash crops are produced in different parts of the country. West and East Hararge zones, where khat is cultivated, both experienced very sharp drops in poverty between 2011 and 2016. The chapter is agnostic about the direction of the relationship between the shift to cash crops and poverty reduction in these zones, but they are outliers on both counts.

**The impact of crop price changes on revenue is about twice as large for cash crops that it is for cereals.** Table 17 presents regression output on the drivers of revenue growth of cereals and cash crops separately. Column 3 shows that a one percent increase in the weighted crop

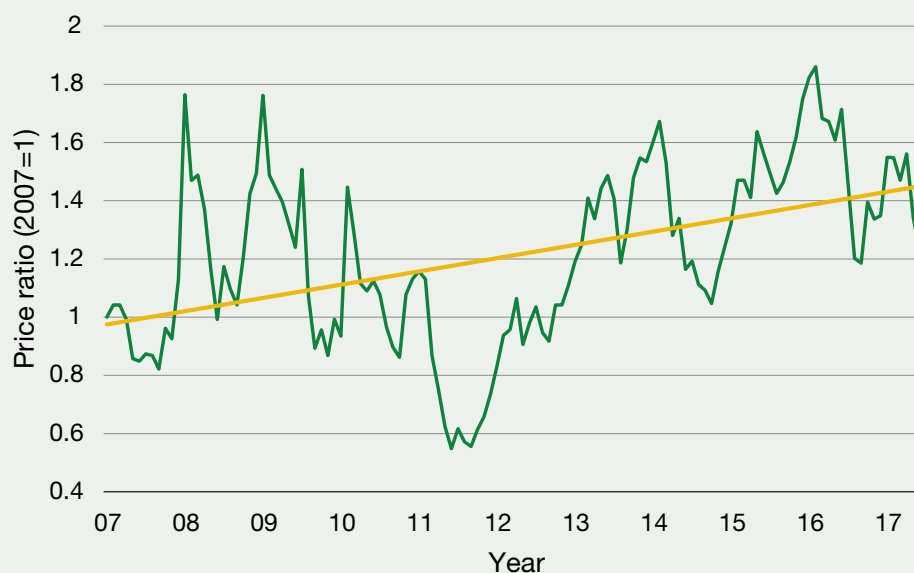
price index resulted in a 0.7 percent increase in revenue from cereals. The corresponding number for cash crops, shown in column 6, was 1.39. It is likely that increases in crop prices induced farmers to cultivate more land, to work longer hours in the field or to hire additional workers. As can be seen in the final row of coefficients, expanding the area of cultivated land had very high returns, especially for cash crops. For these, a one percent expansion in the area of land cultivated was associated with a 2.6 percent increase in revenue per capita.

**There were important differences in the application of fertilizer in bad versus good conditions.** Applying fertilizer to cereals in both good and bad conditions had a positive impact on revenue growth (see column 2), though the effect was larger in good conditions. In contrast, column 6 shows that the application of fertilizer on cash crops in bad conditions is associated with a reduction in revenue from these crops. Revenue from cash crops also appears to be more sensitive to drought conditions than revenue from cereals.

**Figure 50**

## THE RELATIVE PRICE OF KHAT OVER COFFEE JUMPED BY 40 PERCENT OVER A DECADE

The ratio of khat prices to coffee prices between 2007 and 2017



Source: Figure provided by IFPRI.

Table 17

# DETERMINANTS OF REVENUE GROWTH IN CEREALS AND CASH CROPS 2000 TO 2016

| VARIABLES: CHANGE OR GROWTH IN          | 1                       | 2                    | 3                   | 4                          | 5                    | 6                   |
|---|-------------------------|----------------------|---------------------|----------------------------|----------------------|---------------------|
|   | REVENUE GROWTH: CEREALS |                      |                     | REVENUE GROWTH: CASH CROPS |                      |                     |
| Rainfall-induced crop loss              | -0.005***<br>(0.002)    | -0.006***<br>(0.002) | -0.001<br>(0.002)   | -0.017*<br>(0.009)         | -0.018**<br>(0.009)  | -0.002<br>(0.008)   |
| Proportion of land with improved seeds  | -0.039<br>(0.039)       | -0.040<br>(0.039)    | -0.020<br>(0.034)   | -0.149<br>(0.176)          | -0.151<br>(0.176)    | -0.078<br>(0.159)   |
| Proportion of land with fertilizer      | -0.039<br>(0.039)       | -0.040<br>(0.039)    | -0.020<br>(0.034)   | -0.149<br>(0.176)          | -0.151<br>(0.176)    | -0.078<br>(0.159)   |
| Land with fertilizer in bad conditions  |                         | 0.116***<br>(0.044)  | 0.040<br>(0.039)    |                            | -0.136<br>(0.199)    | -0.426**<br>(0.183) |
| Land with fertilizer in good conditions |                         | 0.170***<br>(0.050)  | 0.108**<br>(0.043)  |                            | 0.112<br>(0.223)     | -0.122<br>(0.203)   |
| Crop prices                             | 0.686***<br>(0.034)     | 0.688***<br>(0.034)  | 0.700***<br>(0.029) | 1.341***<br>(0.153)        | 1.349***<br>(0.154)  | 1.393***<br>(0.138) |
| Area of land cultivated                 |                         |                      | 0.679***<br>(0.061) |                            |                      | 2.565***<br>(0.289) |
| Constant                                | -0.076***<br>(0.026)    | -0.076***<br>(0.026) | -0.046**<br>(0.022) | -0.316***<br>(0.116)       | -0.319***<br>(0.116) | -0.205*<br>(0.105)  |
| Observations                            | 377                     | 377                  | 377                 | 377                        | 377                  | 377                 |
| Number of zones                         | 38                      | 38                   | 38                  | 38<br>(0.02)               | 38<br>(0.02)         | 38<br>(0.02)        |

Note: Zone fixed effects are included but not shown. Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Given the focus on agricultural production not all zones are included.

Source: Calculations from Agricultural Sample Surveys and LEAP data.



## CONCLUSION

**This chapter focused on what the key drivers behind Ethiopia's recent poverty reduction have been.** Household survey data was used to decompose this poverty reduction into contributions by sector, before the roles of endowments and returns to these endowments was analyzed. The chapter then switched focus to a zonal panel in order to assess the contributions to poverty reduction of overall growth, sectoral growth, agricultural productivity, and investments in social programs and public infrastructure.

**Rural areas were responsible for most of the recent poverty reduction in the country, but the contribution of urban areas is increasing and is likely to continue to grow.** One third of poverty reduction between 2011 and 2016 was attributable to poverty reduction in urban areas, representing a large increase in its overall contribution. At the same time, the share of agriculture in explaining poverty reduction stood at two thirds between 2011 and 2016, down from three quarters in the 2000 to 2005 period. Growth of agriculture will remain critical for poverty reduction, given its share of employment and GDP. The role of structural transformation – shifts in the population out of agriculture and into

manufacturing or services – was very limited over the last period. The role of this factor is likely to increase in the future.

**Increases in endowments do a better job of explaining poverty reduction than increases in the returns to those endowments.** Within endowments, the effect of increasing educational attainment was uniformly important for urban households. The education endowment effect was smaller, but still positive for rural households, in particular the best off households in rural areas. In rural areas the asset accumulation effect was particularly large for the bottom 40 percent of households, while the top quarter of the distribution experienced the highest returns to these assets.

**Poverty fell fastest in the zones that had the strongest agricultural growth between 2000 and 2016, while the expansion of the PSNP between 2011 and 2016 also played a crucial role in reducing poverty rates.** Improved access to large towns, as measured through decreased travel times, was associated with strong poverty reduction, indicative of the complementary nature of agricultural and non-agricultural growth.



**Expansions in the use of improved seeds was an important driver of increased agricultural production and therefore poverty reduction, while the role of the expanded use of fertilizer is less clear.** With improved seeds being used on only about six percent of cultivated land, there is scope for expanding its use in the future.

**There was a shift away from cereal crops towards cash crops between 2011 and 2016, and changes in the output of cash crops had a larger poverty-reducing effect than changes in the output of cereal crops.**

The rapid increase of crop prices over the period meant that revenue growth expanded rapidly, and this was particularly true of cash crops. While this increase in crop prices helped

net producers, and will likely continue to do so, there are also potential losers from these changes. Policy should be nimble enough to ensure that the effects of rising prices on vulnerable households and parts of the population are effectively mitigated.

**Poverty reduction in Ethiopia over the last two decades has largely been based on public investments in agricultural, social protection and infrastructure programs.**

Given the recent shift in the country's development focus it is crucial that the growth of private markets, along with their potentially poverty-reducing effects are made to complement the progress that has already been made.









# Household poverty dynamics and economic mobility

The previous chapters showed that the poorest households in 2016 were worse off than the poorest households in 2011. Due to the cross-sectional nature of the HCES data, it was not possible to assess whether the households that were poor in 2016 were also the ones that were poor in 2011. This chapter uses data from a different survey, the Ethiopian Socioeconomic Survey (ESS), to examine consumption dynamics at the household level. The ESS is a longitudinal survey that interviewed a representative sample of households in rural areas and small towns of Ethiopia in 2012, 2014 and 2016. Larger towns and cities were also covered in the last two rounds of the survey.

The ESS confirms that households that were poor in 2016 were on average poorer than in 2012. But these were not the same households. Households that were poorest in 2012 experienced the fastest rate of consumption growth, while consumption of households that were initially in the upper part of the distribution contracted between 2012 and 2016. While the large extent of upward mobility is a positive finding, the other side of the coin is that resilience was limited: About as many households escaped poverty as fell into it.

Upward mobility was higher in towns and cities than in the rural hinterland. 58 percent of the rural population who were poor in 2012 had managed to escape poverty by 2016. This probability amounted to 62 percent in towns and 69 percent in cities. The risk of falling into poverty was also higher in rural areas: 26 percent of the non-poor population in rural areas had fallen into poverty by 2016, compared to 14 percent in towns and four percent in cities. Other factors positively influencing the probability to escape poverty are education of the household head and living in pastoral areas. Male-headed households, household with large dependency rates and households living in the drought-prone lowlands were more likely to fall into poverty.

Exploiting the longitudinal nature of the data, we find that 16 percent of the Ethiopian population in rural areas and small towns were chronically poor over the 2012-2014-2016 period. An additional 31 percent experienced transitory poverty between 2012 and 2016. Taken together, almost half of the population experienced at least one spell of poverty between 2012 and 2016, reflecting the high extent of consumption variability in rural Ethiopia. Chronic poverty is mainly concentrated in SNNPR, while transitory poverty is highest in Amhara. Relative to the transitory poor, the chronic poor have larger households and dependency rates, less land and fewer assets, less education, and are more likely to be living in the moisture-reliable highlands. The chronic poor are more likely to benefit from the Government's social protection programs.

# Introduction

**The first two chapters in this Poverty Assessment have made the point that although consumption growth in Ethiopia has been strong over the last decade, not everyone has benefited, with the poorest 15 percent of people not experiencing real consumption growth.**

While cross-sectional datasets allow us to see the parts of the distribution in which growth has been relatively stronger or weaker, they are unable to inform us whether the initially worse off gained or lost, or whether the initially better off gained or lost. In other words, while we do know that the bottom decile did not become better off since 2005, we do not know whether this decile consists of the same people in different survey years. With longitudinal data we are able to tackle this question. Exploiting the time dimension of the data allows us to see who escaped poverty and why, who remained trapped in poverty and why and, crucially, what the profiles are of those who were chronically poor. This kind of approach is potentially particularly useful for informing policy actions in the future.

**Along with the changes in the poverty rate in rural parts of Ethiopia between 2012 and 2016, came a lot of upward and downward economic mobility.**<sup>37</sup> 60 percent of those who lived in rural areas and were poor in 2012 were measured as non-poor in 2016, but more than a quarter who started out as non-poor were measured as being poor in the

final round of data. Transitions amongst the urban population were less dramatic, albeit over a shorter time period, with just under 4 percent of the urban population entering poverty between 2014 and 2016.

**The longitudinal nature of the Ethiopia Socioeconomic Survey (ESS) data means that households can be separated into those that were chronically poor, and those that experienced transitory poverty.** The importance of this for policy purposes is highlighted in Lipton and Ravallion (1995), who note that an appropriate policy response to chronic poverty would focus on increasing the attainment of and returns to the assets (both human and physical) of the poor, while transient poverty would be better tackled through initiatives that focus on insurance and income stabilization. Accordingly, conclusions about longer run welfare depend on how much mobility is present over time in society.

**This chapter is divided into several sections.** The first describes changes in the welfare of a panel Ethiopian households over time using ESS 2012, 2014 and 2016 data. The chapter then focuses on the kind of poverty that these households faced over the period and outlines the characteristics and differences of households in chronic poverty and transitory poverty. The final section analyzes the dynamics of welfare in Ethiopia, with particular attention being paid to the determinants of poverty exit and entry.

## 2. DESCRIBING HOUSEHOLD CONSUMPTION DYNAMICS

**Chapter I showed that household consumption growth was highest at the upper parts of the distribution and that the bottom 10 percent did not grow in real terms.**

Due to the cross-sectional nature of the HCES, it was not possible to ascertain whether this pattern was driven by poor household remaining poor, or by a large extent of mobility across the consumption distribution. The longitudinal ESS data suggests the second explanation: Consumption levels of the baseline poor grew relatively faster than those of the non-poor. Figure 51 is a simplified version of the full non-anonymous GIC that is given as Annex Figure 10. It was created by ordering the rural and small-town population by

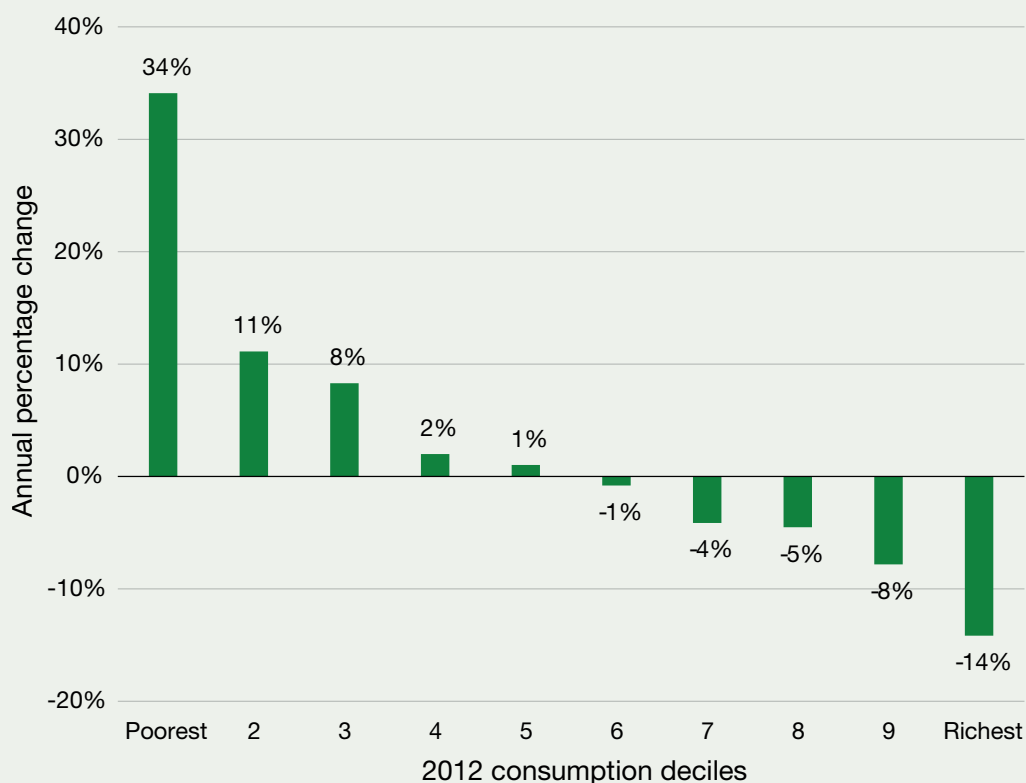
consumption level in 2012, and then comparing each household's consumption in 2016 to its consumption in 2012, regardless of where in the final distribution the household ended up. Holding the initial ordering of households constant in this way shows that annual growth rates in consumption were highest for those who were initially the worst off. Growth rates were in fact positive, on average, for those who were in the bottom half of the 2012 distribution. Growth rates turned negative for those who were in the 6th decile and above in 2012, and are -14 percent for those who were initially the best off.

37 It is important to note that the poverty rates referred to in this chapter do not correspond to the official national poverty rates that are issued by Ethiopia's Central Statistical Agency, which are estimated using a non-comparable consumption expenditure module in the Household Income Consumption and Expenditure Survey (HICES).

Figure 51

## THE BASELINE POOR GREW FASTEST BETWEEN 2012 AND 2016

Growth rate of consumption conditional on decile in 2012 (non-anonymous quasi-GICs)



Source: Own calculations from ESS 2012, 2014 and 2016.

### The consumption growth rates for the bottom three deciles were high, but they grew from a very low base.

The absolute year-on-year increase in consumption for many of the poor was not enough to lift them over the poverty line. In other words, the consumption growth of the baseline poor was impressive in percentage terms but was modest in real ETB terms (Figure 52). On average, real growth was ETB 569 a year for the poorest 10 percent of rural Ethiopians, and this decreased to a very small ETB 47 a year for the 5th decile. The drop in consumption for the richest 10 percent was very significant.

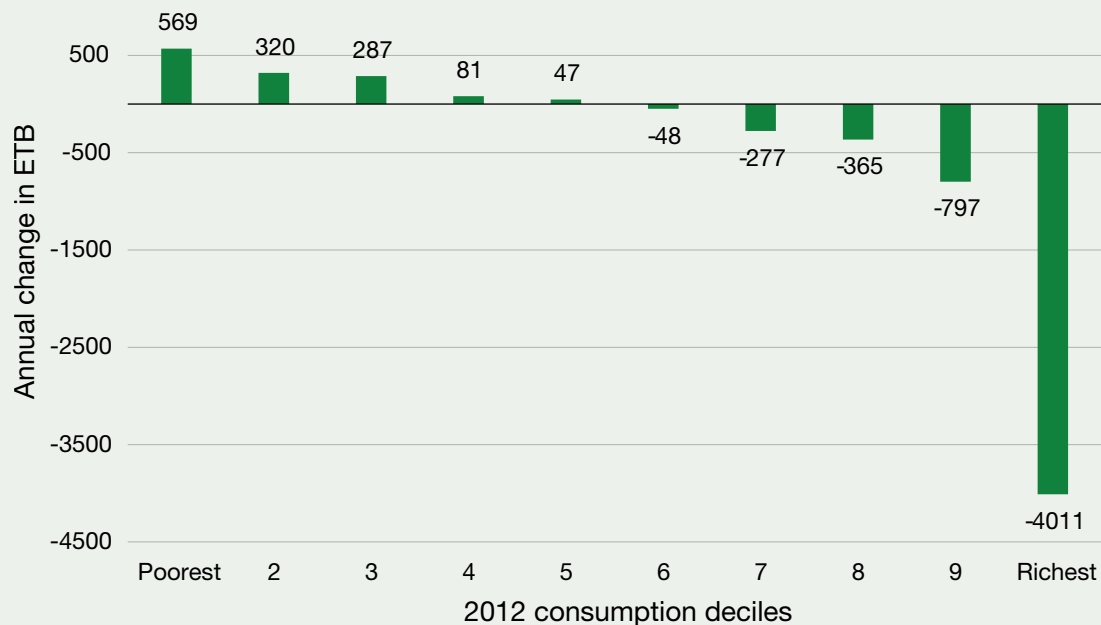
### Another way of thinking about changes over the distribution is to compare the proportion of households that experienced increases in consumption by baseline decile.

The outcome of this exercise is shown in Annex Figure 11. The share of households that experienced consumption increases between 2012 and 2016 fell monotonically over the deciles – from 83 percent in the poorest decile to only 7 percent in the richest decile. Only in the poorest three deciles did more than half of households see an increase in real consumption.

**Figure 52**

## THE GROWTH IN CONSUMPTION OF THE POOREST WAS SMALL IN ABSOLUTE TERMS

Year-on-year changes in consumption levels by consumption decile in 2012 – rural and small-town households only



Source: Own calculations from ESS 2012, 2014 and 2016.

## 3. POVERTY STATUS AND TRANSITIONS, 2012-2016

**There was a lot of mobility in and out of poverty in Ethiopia.** Table 18 shows 2016 poverty status conditional on 2012 status. Transitions into poverty were far more likely in rural areas than in small towns or urban areas. 26 percent of the rural non-poor in 2012 had entered poverty in 2016, compared to 14 percent of those living in small towns. The same holds true in reverse, with rural areas having the lowest conditional poverty escape rates of the three localities. A very high 58 percent of the initially poor in rural areas were non-poor in the final year, compared to almost two thirds in small towns, and 69 percent in urban areas. This overall high level of economic mobility echoes the findings of other studies using ESS data in Ethiopia, the results of which are summarized in Box 12.

**Table 18**

### TRANSITION MATRICES - END-YEAR POVERTY STATUS CONDITIONAL ON BEGINNING-YEAR POVERTY STATUS

| Rural |          |          |      |     |
|-------|----------|----------|------|-----|
| 2016  |          |          |      |     |
| 2012  |          |          |      | 100 |
|       | Non-poor | Non-poor | Poor |     |
|       | Poor     |          |      |     |
|       | Non-poor | 74.6     | 25.5 | 100 |
|       | Poor     | 57.8     | 42.2 | 100 |

| Small towns |          |      |      |     |
|-------------|----------|------|------|-----|
| 2016        |          |      |      |     |
| 2012        |          |      |      |     |
|             | Non-poor |      | Poor |     |
|             | Non-poor |      |      |     |
|             |          | 86.3 | 13.7 | 100 |
|             | Poor     | 62.2 | 37.8 | 100 |

| Urban |          |          |      |     |
|-------|----------|----------|------|-----|
| 2016  |          |          |      |     |
|       |          | Non-poor | Poor |     |
| 2014  | Non-poor | 96.1     | 3.9  | 100 |
|       | Poor     | 69.3     | 30.7 | 100 |

Source: Own calculations from ESS 2014 and 2016.



## Findings from other studies of poverty dynamics using the ESS

**The main aim of a paper by Seff and Jolliffe (2016) is to use the first two rounds of ESS data to investigate the dynamics of multidimensional poverty in Ethiopia.** These dynamics are then compared to the dynamics of money-metric (consumption expenditure) poverty. The authors find that there is very little overlap between those households that are in the bottom of the multidimensional poverty (MDP) distribution, and those who are at the bottom of the money-metric distribution. The rates of multidimensional poverty in the first two rounds of the ESS are far higher than the rates of consumption poverty, and changes in household consumption have a very low correlation to changes in multidimensional wellbeing. The analysis reveals that nonmonetary measures of poverty are better at picking up the shocks that households experience compared to money-metric measures of wellbeing. For policymakers, this implies that changes in both money-metric and multidimensional welfare should be considered carefully when designing programs. An analysis of the factors driving transitions into and out of multidimensional poverty reveals that the most important roles are played by education variables, access to an improved water source, and the ability to accumulate assets.

**Kafle, McGee et al. (2016) also use the first two rounds of the ESS data to explore both consumption and asset-based poverty in Ethiopia.** Similar to Seff and Jolliffe (2016) this means that the analysis is restricted to rural areas and small towns. The authors set the consumption poverty line at the 30th percentile of the consumption distribution during the first round of the ESS. This choice of poverty line is slightly higher than the one that is used in this chapter. An asset-based poverty line is derived analogously, based on the distribution of assets in the first round of the ESS. The analysis reveals that although the cross-sectional measures of consumption poverty were stable in both periods, there was a lot of economic mobility into and out of poverty. These large shifts into and out of poverty were not reflected as dramatically when an asset-based measure of welfare is used. A more detailed investigation of spending patterns shows that there was a general shift towards higher expenditure on relatively more nutritious food items, and away from staples. Like Seff and Jolliffe (2016) the authors of this paper find that consumption and asset-based poverty measures are largely uncorrelated. Asset-based poverty rates, however, fell more steeply between the two rounds of the ESS than consumption poverty did. Many of the more recent studies of poverty dynamics in Ethiopia build on early work by Dercon and Krishnan (2000) who use three rounds of data from 1 450 rural Ethiopian households and finds that although cross-sectional poverty estimates are relatively stable, there is a great deal of variation in household consumption that is driven by seasonality effects. The implication is that cross-sectional estimates of poverty that ignore the seasonal dimension of consumption data are likely to underestimate vulnerability to poverty.

**A more comprehensive picture of poverty dynamics emerges if the second wave (2014) of the ESS is added to the analysis.** Now, instead of having four possible poverty state combinations (PP, PN, NP, NN)<sup>38</sup> there are eight possible combinations. These can be used to identify the kind of poverty that was experienced by different groups in

the population. There are a number of ways in which repeated observations of welfare can be used to define various inter-temporal categories of poverty and non-poverty. Box 13 outlines some of these and provides the definitions of chronic and transitory poverty that are used in the remainder of this chapter.

38 P=poor; N=non-poor.

## Defining chronic and transitory poverty

**A number of definitions for distinguishing chronic and transitory poverty have been proposed in the literature.**

Two of the most commonly-found ones are the spells approach (McKay and Lawson (2003)) and the components approach (Jalan and Ravallion (1998)). The spells approach defines chronic poverty according to how many times (or how long) a household or individual has been below the poverty over a particular period of time. For example, a household could be defined as being in chronic poverty if it is poor in at least two out of the three waves of ESS. The components approach involves estimating the chronic and transitory components of some measure of permanent welfare. The fluctuating nature of household welfare over time is thought of as containing both a transitory component and a permanent component. The transitory component is generated by variability in household consumption levels, while the permanent component gives the poverty level if consumption does not stray from its average value.

One application of the components approach is to think about the classification of poverty into chronic and transitory groups over three waves of data by defining several characterizations (adapted from Hulme and Shepherd (2003):

- **Always poor:** Consumption expenditure is below the poverty line in all three rounds of ESS.
- **Usually poor:** The average of consumption expenditure over the three rounds of ESS is below the poverty line, but the household is not poor in all three rounds.
- **Occasionally poor:** The average of consumption expenditure over the three rounds of ESS is above the poverty line, but the household is poor in at least one round.
- **Never poor:** Consumption expenditure is above the poverty line in all three rounds of ESS.

In this chapter chronic poverty status is assigned to households/individuals who are always poor or usually poor. Transitory poverty is associated with those household/individuals who are occasionally poor.

**The share of the rural and small-town population that was in chronic poverty was about half of the share that was in transitory poverty between 2012 and 2016.** 16 percent of the population in rural areas and small towns was chronically poor, according to the definition outlined in Box 13. This was significantly lower than the 31 percent who experienced transitory poverty over the period. The high mobility rates described earlier in this report go some way to explaining why the transitory component is so high for these households.<sup>39</sup>

**There were large regional differences in the extent of chronic poverty.**<sup>40</sup> Chronic poverty rates were highest in SNNPR and Amhara, at 28 percent and 20 percent respectively.<sup>41</sup> 6 percent of the population in Oromia was in chronic poverty between 2012 and 2016, while the share in Tigray was 8 percent (Figure 53). Rates of transitory poverty were more evenly spread through the different regions and ranged between 24 percent in Oromia and 43 percent in Amhara.

39 Fuje (2018) constructs a different measure of chronic poverty by defining this category as containing only those who were poor in all three rounds of data. This yields lower chronic poverty rates of 12 percent in rural areas, and 6 percent in small towns. The corresponding transitory poverty rate for rural areas in Fuje (2018) is 20 percent.

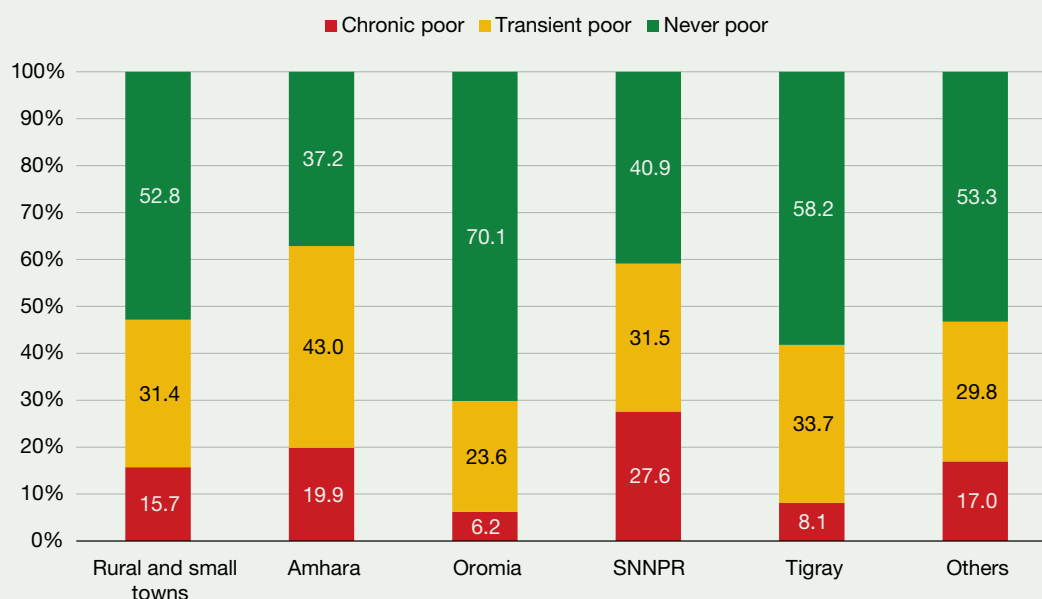
40 In this context, the region that a household is located in is the region that was recorded in 2012.

41 Earlier chapters showed that the poverty rate in rural SNNPR was around 22 percent in 2016. The fact that the chronic poverty rate in the rural parts of the region is 28 percent reflects the fact that while HCES offer a snapshot of welfare, chronic poverty is calculated over a longer period of time. The average consumption level of a household over time can still be below the poverty line even if the 2016 consumption level is above the line.

Figure 53

## CHRONIC POVERTY WAS HIGHEST IN SNNPR, WHILE TRANSITORY POVERTY WAS HIGHEST IN AMHARA

Chronic and transitory poverty over ESS 2012 to ESS 2016 – rural and small-town households



Source: Own calculations from ESS 2012, 2014 and 2016.

**Figure 54 breaks down the composition of poverty type by region.** This is in contrast to Figure 52 which took each region and then broke down region-specific poverty types. Decomposing the distribution of chronic and transitory poverty in this way allows for a better understanding of where the majority of the chronically poor are concentrated. 45 percent of all the chronically poor in rural areas and small towns live in SNNPR. The share living in Amhara is also high and stands at 31 percent. These substantially outweigh the population shares of SNNPR and Amhara which are 20 percent and 23 percent, respectively (shown in Table 9). 15 percent of the chronically poor live in Oromia, while around 5 percent each are in Tigray and other regions.

**The dynamic changes somewhat when the focus shifts to transient poverty, with Amhara taking up the largest overall share of this category.** 34 percent of the transient poor in Ethiopia live in Amhara, which is a similar share of the chronically poor. The share of the transient poor living in Oromia is 28 percent – almost double the chronic share. In contrast, one quarter of the transient poor live in SNNPR, compared to 45 percent of the chronically poor.

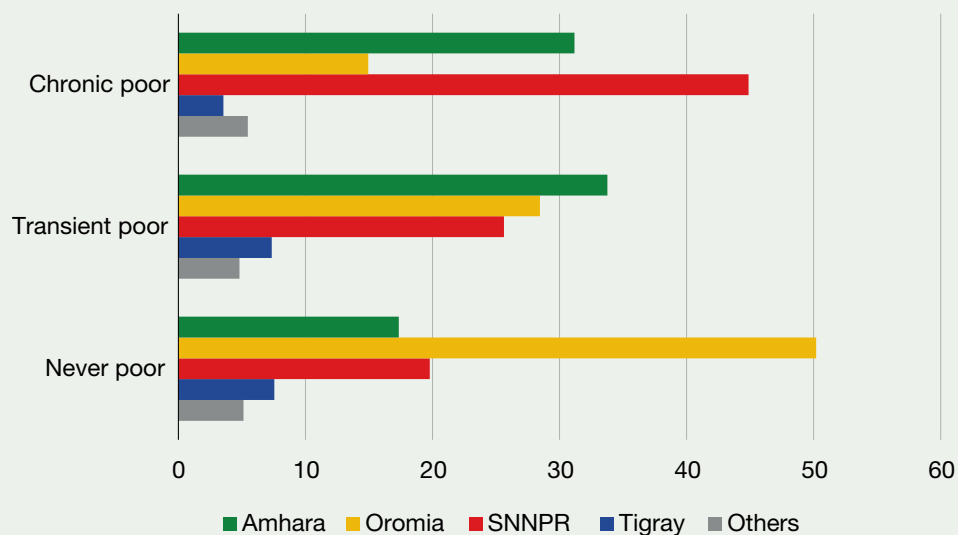
**The regional differences in the nature of poverty over time are highlighted once again in Figure 55.** Given that there are three time periods and two possible poverty states in each period, there are 8 possible poverty and non-poverty configurations ranging from poor in all three periods (PPP), to non-poor in all three periods (NNN). Overall, just 5 percent of the rural and small town population was poor in all three time periods. This number, however, hides variations by region which range from 9 percent in SNNPR to 2 percent in Oromia. The shares of this in Tigray and Amhara that were poor in all three rounds were 3 percent and 6 percent, respectively.

**Almost three quarters of the population in Oromia was non-poor in 2012, 2014 and 2016, compared to just 37 percent in Amhara.** The share of the population that was non-poor in 2012 and 2014 but fell into poverty in 2016 (the NNP category) was very evenly across regions, at between 12 and 14 percent. There were fairly substantial proportions of the population that escaped poverty after 2012 and remained non-poor (PNN). The shares in the PNN category were 14 percent in Amhara, 11 percent in Tigray, 4 percent in Oromia, and 6 percent in SNNPR.

**Figure 54**

## MOST OF THE CHRONIC POOR LIVE IN SNNPR AND AMHARA

Regional shares of each poverty category

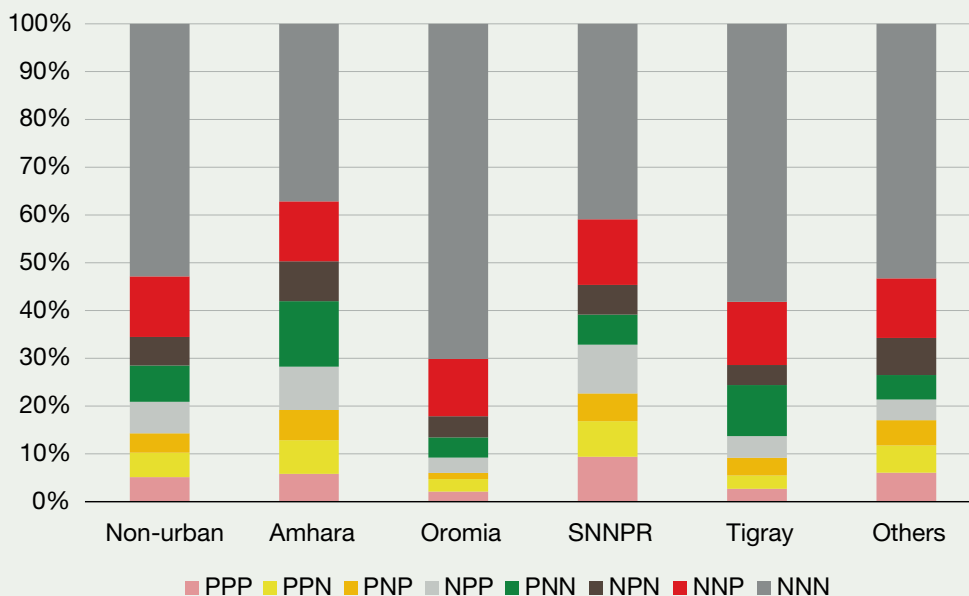


Source: Own calculations from ESS 2012, 2014 and 2016.

**Figure 55**

## THE LIKELIHOOD OF A HOUSEHOLD BEING POOR IN ALL 3 ROUNDS IS HIGHEST IN SNNPR

Regional shares of each poverty category



Source: Own calculations from ESS 2012, 2014 and 2016.

## Poverty dynamics and measurement error

Figure 53 showed that the prevalence of transient poverty was about double the prevalence of chronic poverty in rural areas and small towns in the three rounds of ESS data. One serious concern about the robustness of this finding, however, is that the high share is driven by measurement error pushing households above and below a poverty line in a particular period, rather than by real changes in consumption. Measurement error is likely to arise because it is difficult to measure all the variables that comprise consumption expenditure, along with imputing values for the household's consumption of its own production (Baulch and Hoddinott, 2000). Furthermore, there is a significant burden placed on respondents who are asked to recall past expenditures.

The sensitivity of consumption-based measures of welfare to measurement error are exacerbated when using longitudinal data. Even if measurement error is random, it exaggerates the real changes in consumption experienced by the household, resulting in an overestimation of poverty transitions (Glewwe and Gibson, 2005). As was noted in Box 12, Seff and Jolliffe (2016) find that there is a very low correlation between consumption poverty and multidimensional poverty in the first two rounds of the ESS. Furthermore, shocks are picked up more reliably in non-monetary than monetary measures of welfare.

The correlation between monetary welfare over the three rounds of the ESS and the household's asset index in round 1 is low. The correlation of average consumption over three rounds with a count asset index (a simple sum of the number of assets the household owns) is 0.31. The correlation between this welfare measure and an asset index derived using principal components analysis is about half of this. Another way of investigating this relationship is to construct a non-monetary poverty indicator so that the rate of asset poverty is the same as the rate of consumption poverty. The correlation of asset poverty to chronic monetary poverty is very low, at 0.13. This suggests significant measurement error in consumption.

There are several ways in which the impact of measurement error on poverty dynamics can be estimated and possibly mitigated. An early example is a paper by Alderman and Garcia (1993) that regresses changes in assets on changes in incomes. If changes in incomes were nothing more than measurement error, then there should be no statistically significant relationship between changes in the asset and income variables. McCulloch and Baulch (2000) adopt an instrumental-variables approach in which consumption is used as an instrument for income. Regressions with and without the instrument are used to derive a noise-to-signal ratio of the welfare measure that is then used to scale down the variability of observed incomes. Glewwe (2012) and Aguero et al (2007) use health-related instrumental variables to estimate how much mobility is due to measurement error in Vietnam and South Africa respectively. Both find that at least 15 percent of reported mobility is due to measurement error.

Although this chapter does not separately estimate the impact of measurement error on the estimation of transient poverty, assuming a similar contribution of 15 percent would imply that the true share of chronic poverty is closer to 20 percent than to the 15.7 percent shown in Figure 54. The implication is that the share of transient poverty reported in this chapter should be interpreted as an upper bound of the true share, while the share of chronic poverty should be interpreted as the lower bound of the true share.



## 4. PROFILING CHRONIC AND TRANSITORY POVERTY

**There are many significant differences in the composition and characteristics of chronic poor, transitory poor and never poor households.** Table 19 presents differences in characteristics that are measured at the level of the household and the household head in 2012. The final two columns of the table provide a test of the statistical significance of the difference between the chronic and transitory poor, and the chronic and never poor, respectively.<sup>42</sup>

**Chronically poor households in Ethiopia are larger, contain more young children, and have higher dependency ratios than transitory poor households and those that were never poor.** The average household size of the chronically poor was 5.9, compared to 5.3 for the transitory poor, and 4.9 for the never poor. Differences between the chronically poor and the other two categories were statistically significant at the 1 percent level for this variable. This difference is driven in part by the higher number of children aged under 14 in chronically poor households. These households had, on average, 0.3 more children than the transitory poor, and 0.6 more than the never poor. Unsurprisingly, this also meant that dependency ratios were highest in chronically poor households.<sup>43</sup>

**Chronically poor households owned about a quarter of a hectare less land per adult than never poor households, on average.** Households that were in transitory poverty between 2012 and 2016 owned about 0.43 hectares per adult on average, compared to the 0.57 hectares per adult owned by never poor households. Differences in the asset index between these groups of households are also significant in both economic and statistical senses.<sup>44</sup> The normalized asset index score of the chronically poor was -0.5, compared to -0.2 for transitory poor households and 0.1 for households that were never poor.

**Somewhat surprisingly, chronically poor households are not generally much more remote than those households that did not experience poverty between 2012 and 2016.** The average chronically poor household was located about 14km from the nearest road, while the corresponding distances for the transitory poor and the never poor were 17km and 14km, respectively. As shown in Figure 56, zones in which chronic poverty exceeded transitory poverty did not appear to be significantly more remote than zones in which transient poverty dominated. Proximity to the nearest population center of 20 000 people or more also did not vary too much between the groups. This proximity, measured in the number of minutes taken to travel to the nearest town, decreased for all three groups between 2012 and 2016, and the differences between the groups are never significantly different. The rural accessibility index was lowest for chronically poor households at about 52, up from a score of 49 in 2012.

**There was a significant difference in the proportion of chronically and transitory poor households that were PSNP beneficiaries in the first round of the ESS (19 percent and 14 percent).** The relatively good targeting of the PSNP in this round can be seen by the fact that never poor households were far less likely to have been part of the program in 2012.

**Almost half of chronically poor households reported being food insecure over the last 12 months, though only 9 percent were recipients of food aid.** In contrast to the targeting of the PSNP, it appears that more transitory and never poor households benefited from the scaling up of food aid programs between 2012 and 2016 than chronically poor households did.

42 Fuje (2018), using different definitions of chronic and transitory poverty, finds that there are generally very few differences in the baseline characteristics of the chronic poor and the transitory poor.

43 The definition of the dependency ratio comes from Central Statistical Agency of Ethiopia (2017) and is, "...the population that is not of working age (<15 and >64) divided by total number of working age persons (15-64 years). The value is then multiplied to express it in percent. Households with no working persons were excluded in the dependency ratio computation."

44 The asset index used in this table is a share index which is calculated by first multiplying an indicator variable (for example: household owns a fridge) by the proportion of households that own the variable (for example: proportion of households that own a fridge). These products are then summed over each component at the household level to generate the share index. The components of the index are: Refrigerator, sewing machine, radio, bicycle, car, cellphone, television, electric stove, kerosene stove, sofa, wardrobe, mattress, animal-pulled cart

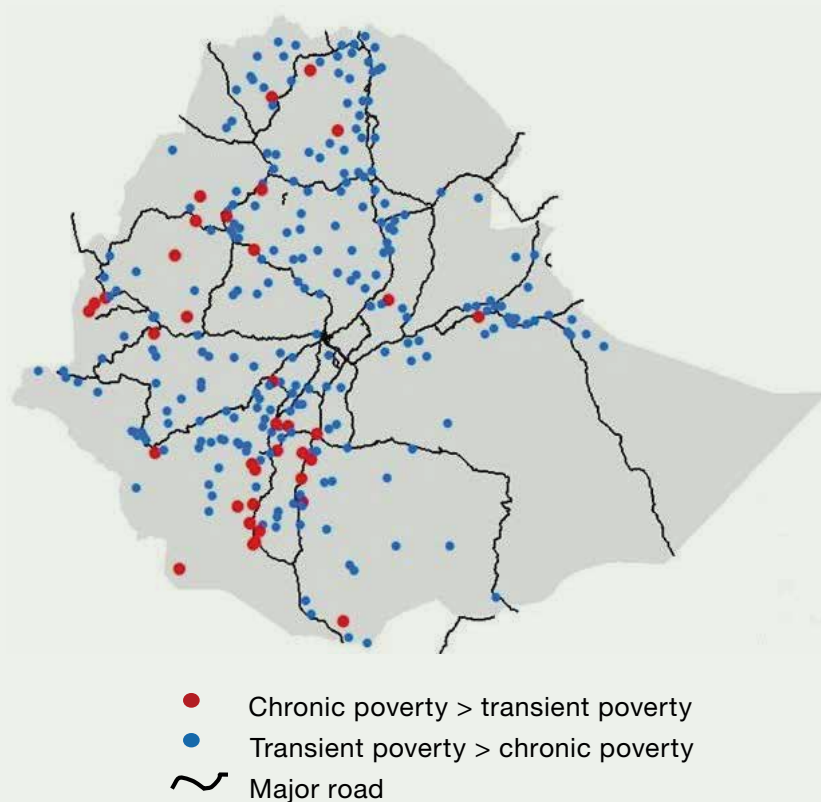
**Households that were in chronic poverty were less likely to have had a female head than those that were in transitory poverty or never poor, and more likely to have a head with no education.** 22 percent of never poor households were headed by a woman, while just over 17 percent of chronically poor households were. In contrast, 70 percent of chronically poor households were headed by

a member who had no education, compared to around 57 percent of never poor households. Although secondary and post-secondary education attainment levels were very low in Ethiopia, 4 percent of never poor households were headed by someone with a secondary or post-secondary education, compared to 0.4 percent of the chronically poor, and 2.4 percent of the transitory poor.

**Figure 56**

## **CHRONIC POVERTY IS CONCENTRATED IN THE SOUTH AND DOES NOT SEEM TO BEAR MUCH RELATION TO PROXIMITY OF MAJOR ROADS**

The locations of chronically poor and transient poor households in relation to major roads



Source: Own calculations from ESS 2012, 2014 and 2016.

Table 19

# CHARACTERISTICS OF THE CHRONIC POOR, TRANSITORY POOR AND THE NON-POOR

|                                | (1)<br>CHRONIC<br>POOR | (2)<br>TRANSITORY<br>POOR | (3)<br>NEVER<br>POOR | (1) VS (2) | (1) VS (3) |
|--------------------------------|------------------------|---------------------------|----------------------|------------|------------|
| <b>HOUSEHOLD</b>               |                        |                           |                      |            |            |
| Household size                 | 5.9                    | 5.3                       | 4.9                  | ***        | ***        |
| Number of children <14         | 2.0                    | 1.7                       | 1.4                  | ***        | ***        |
| Dependency ratio               | 101.3%                 | 88.5%                     | 74.0%                | *          | ***        |
| Share of expenditure on food   | 82.3%                  | 82.3%                     | 81.2%                |            |            |
| Land per adult (hectares)      | 0.32                   | 0.43                      | 0.57                 | ***        | ***        |
| Asset index                    | -0.5                   | -0.2                      | 0.1                  | ***        | ***        |
| PSNP household in W1 (2012)    | 19.3%                  | 14.2%                     | 11.4%                | *          | ***        |
| Ever PSNP HH (W1 to W3)        | 25.2%                  | 20.8%                     | 19.0%                |            | *          |
| Not enough food last 12 months | 47.4%                  | 35.6%                     | 27.8%                | ***        | ***        |
| Free food recipient W1         | 9.0%                   | 8.9%                      | 4.2%                 |            | ***        |
| Free food recipient W3         | 9.3%                   | 15.0%                     | 10.4%                | **         |            |
| Extension program W1           | 34.4%                  | 30.7%                     | 35.7%                |            |            |
| Extension program W3           | 45.5%                  | 40.4%                     | 47.2%                |            |            |
| <b>HOUSEHOLD HEAD</b>          |                        |                           |                      |            |            |
| Age                            | 43.8                   | 46.0                      | 44.4                 | **         |            |
| Female                         | 17.5%                  | 18.2%                     | 22.0%                |            | *          |
| No education                   | 70.3%                  | 71.5%                     | 57.3%                |            | ***        |
| Primary                        | 29.2%                  | 25.7%                     | 35.6%                |            | *          |
| Secondary                      | 0.4%                   | 2.4%                      | 4.2%                 | ***        | ***        |
| Post-secondary                 | 0.0%                   | 0.5%                      | 2.9%                 | **         | ***        |
| <b>ACCESSIBILITY</b>           |                        |                           |                      |            |            |
| Rural Accessibility Index 2016 | 52.18                  | 56.47                     | 59.23                |            | **         |
| Minutes to nearest town 2012   | 118                    | 126                       | 108                  |            |            |
| Minutes to nearest town 2016   | 106                    | 111                       | 103                  |            |            |
| Fare to urban center (Birr)    | 36.81                  | 45.14                     | 38.62                | ***        |            |
| <b>ACCESSIBILITY</b>           |                        |                           |                      |            |            |
| Moisture reliable highlands    | 74.0%                  | 60.0%                     | 61.9%                | ***        | ***        |
| Drought prone highlands        | 13.7%                  | 26.7%                     | 27.3%                | ***        | ***        |
| Moisture reliable lowlands     | 7.1%                   | 5.3%                      | 5.4%                 |            |            |
| Drought prone lowlands         | 4.5%                   | 6.1%                      | 2.7%                 |            | *          |
| Lowland pastoralist            | 0.6%                   | 1.9%                      | 2.6%                 | ***        | ***        |

Source: Own calculations from ESS 2012, 2014 and 2016, and from Rural Accessibility Index.

## 5. THE DYNAMICS OF POVERTY TRANSITIONS: EXIT AND ENTRY

### 5.1 The characteristics associated with poverty transitions

Figure 57 and Figure 58 show the relationships between different household head and household characteristics and poverty exit and entry transitions, respectively. The dashed lines represent the average poverty exit and poverty entry rates of 57.9 percent and 24.8 percent, corresponding to the combination of the rural and small-town transition matrices presented earlier in the report. The blue triangles above the line correspond to characteristics that are associated with an above-average probability of transition, while the red dots below the line are associated with a below-average probability of transition.



There are some useful insights that can come from plotting these different correlates together, not least the fact that doing so can potentially uncover their ordering of importance. However, as noted in Dang, Lanjouw et al. (2017), the major caveat is that there will be overlap between different groups (for example, those with higher education levels are more likely to live in urban areas where there is easier access to secondary and post-secondary education).

**Living in a household in which the head has attained a secondary level of education is strongly associated with a higher probability of transitioning out of poverty.**

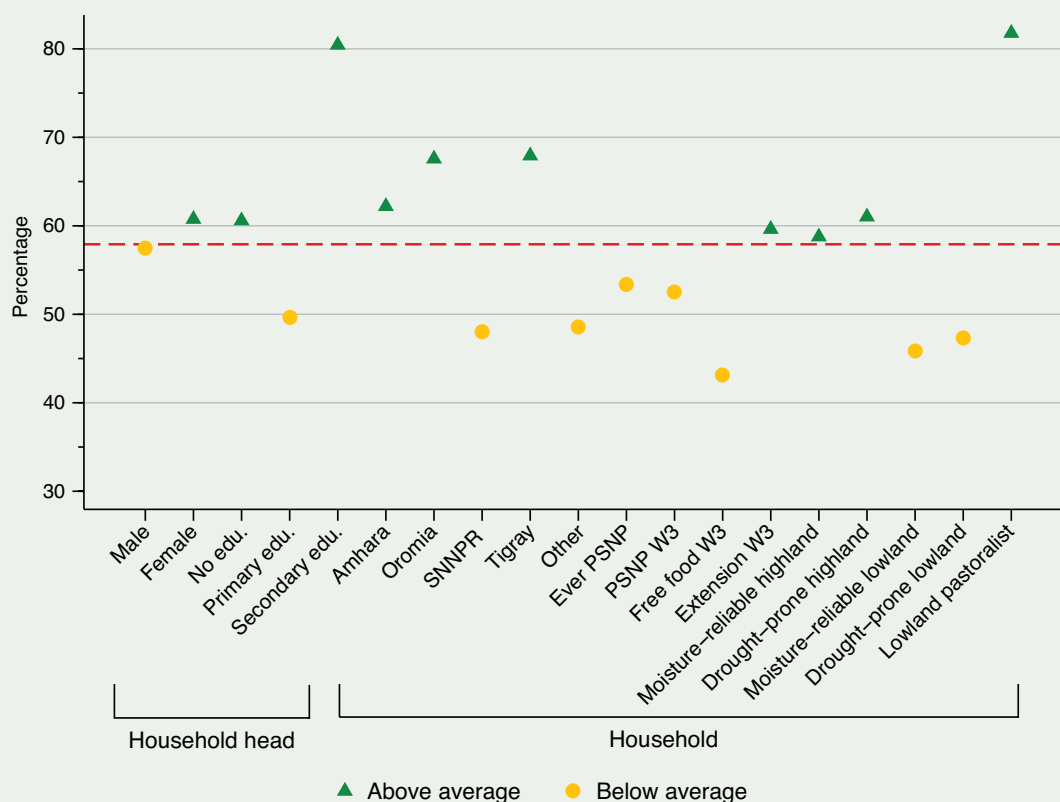
Over 80 percent of households with a head with secondary education that were poor in 2012 were no longer poor in 2016, compared to 50 percent of households in which the head had a primary level of schooling. The unconditional differences in the probability of exiting poverty were similar for male versus female headed households, with the latter having a slightly higher unconditional probability of escaping poverty. Households in Oromia and Tigray were most likely to exit poverty, compared to the overall rural and small-town average, while households in SNNPR were the least likely to (unconditionally) exit poverty between 2012 and 2016.

**Households that had participated in the PSNP at any stage between 2012 and 2016 were less likely to exit poverty than the overall average, as were round three food aid households.** This is a finding that potentially bears out the effective targeting of the PSNP, as this is a pattern we would expect to see, especially if the baseline consumption levels of PSNP participants are very low. Unconditional poverty exit rates differed markedly by agro-ecological zone, with lowland pastoralist by far the most likely to have exited poverty between 2012 and 2016, and those living in the lowlands being the least likely.

Figure 57

## HOUSEHOLDS WITH SECONDARY-EDUCATED HEADS AND HOUSEHOLDS LIVING IN PASTORAL AREAS WERE MORE LIKELY TO ESCAPE POVERTY

Poverty exit and unconditional transition rates for different characteristics



Note: Dashed line is the average probability of exiting poverty of 57.91%.

Source: Own calculations from ESS 2012, 2014 and 2016.

### The gender differences in poverty transitions are clearer when considering unconditional poverty entry.

Individuals living in male-headed households were almost 7 percentage points more likely to have entered poverty between 2012 and 2016 than individuals living in female-headed households. The strong effects of increasing educational attainment are once again present. Households in which the head had a secondary education entered poverty at a rate that was 8 percentage points lower than the average, while those in households in which the head did not have any education entered poverty at a rate of about 27 percent. Similar regional dynamics are present in this figure to the ones in the previous figure. The probability of households in Amhara and SNNPR entering poverty between 2012 and 2016 was

about 33 percent, compared to 22 percent in Tigray, 18 percent in Oromia, and 21 percent in the other regions. Lowland pastoralists were by far the least likely of the agro-ecological groups to enter poverty, while those living in the drought-prone lowlands were most likely to transition into poverty over the period.

## 5.2 Regressions of poverty exit and poverty entry dynamics

In this final section of the chapter we exploit the longitudinal nature of the data by reporting the results of probit regressions for poverty exit and poverty entry between ESS1 and ESS3.<sup>45</sup> Marginal effects from the probit

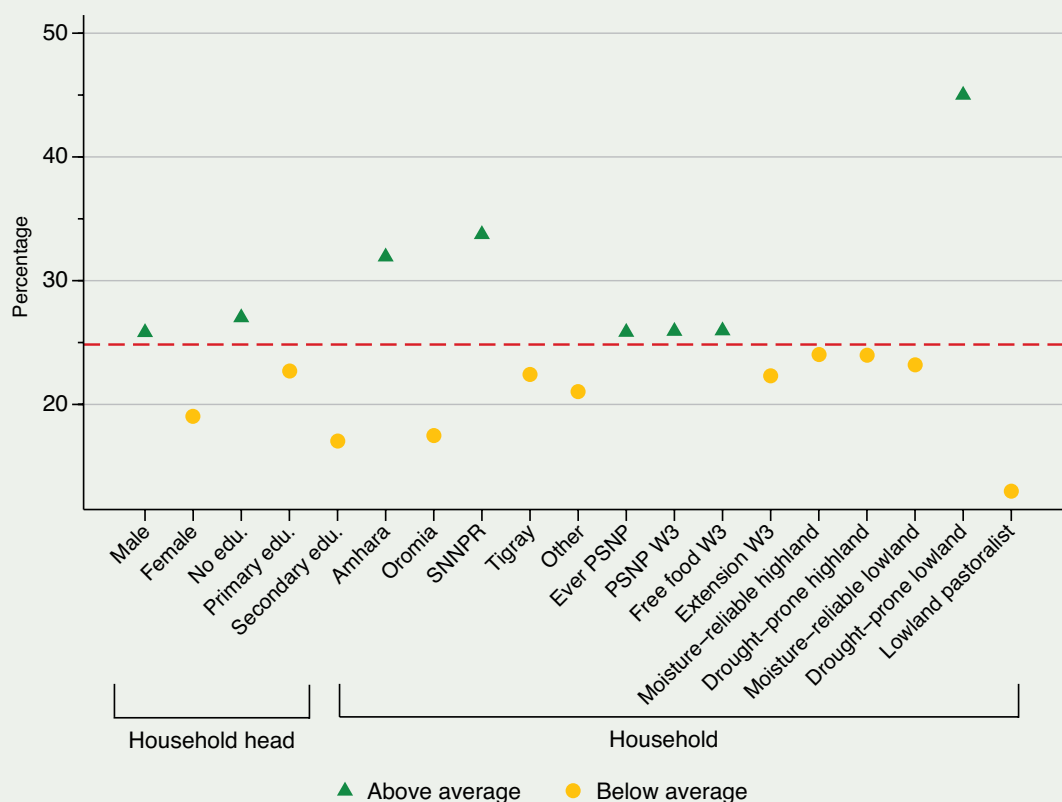
45 Full results can be found in the appendix, along with corresponding estimates for transitions between ESS 2012 and ESS 2014.



Figure 58

## HOUSEHOLDS IN THE DROUGHT-PRONE LOWLANDS WERE MORE LIKELY TO FALL INTO POVERTY

Poverty entry and unconditional transition rates for different characteristics



Note: Dashed line is the average probability of entering poverty of 24.84%.

Source: Own calculations from ESS 2012, 2014 and 2016.

regressions are presented along with their 95 percent confidence intervals in Figure 59 and Figure 60. Marginal effects to the left of the red vertical line are associated with lower probabilities of poverty exit/entry, while those to the right are associated with higher rates of exit/entry.

**The largest effects associated with poverty exit were the education level of the household head, and the location of the household.** The other explanatory variables included in this specification are generally not statistically significant at the 5 percent level. Households in which the head had a secondary education (partial or completed) were about 31 percentage points more likely to exit poverty than households in which the head had no education (the base category), though this was not particularly precisely measured, given

the small number of poor secondary education households to begin with. There was no difference in the probability of poverty exit between household heads with no education, and household heads with primary education. Table 19 showed that there were few differences between the chronically poor, the transitory poor, and the never poor in terms of distance to roads, population centers and markets. The regression output confirms this, with the marginal effects of all three “distance” variables being very close to zero, with small standard errors. Households in the lowland pastoralist agro-ecological zone were, on average, about 30 percent more likely to exit poverty than households in moisture-reliable highlands (the base region), but there were no other statistically significant zonal effects, while controlling for other variables.

Figure 59

## EDUCATION AND LOCATION CORRELATED WITH THE PROBABILITY OF EXITING POVERTY

Marginal effects associated with poverty exit between 2012 and 2016

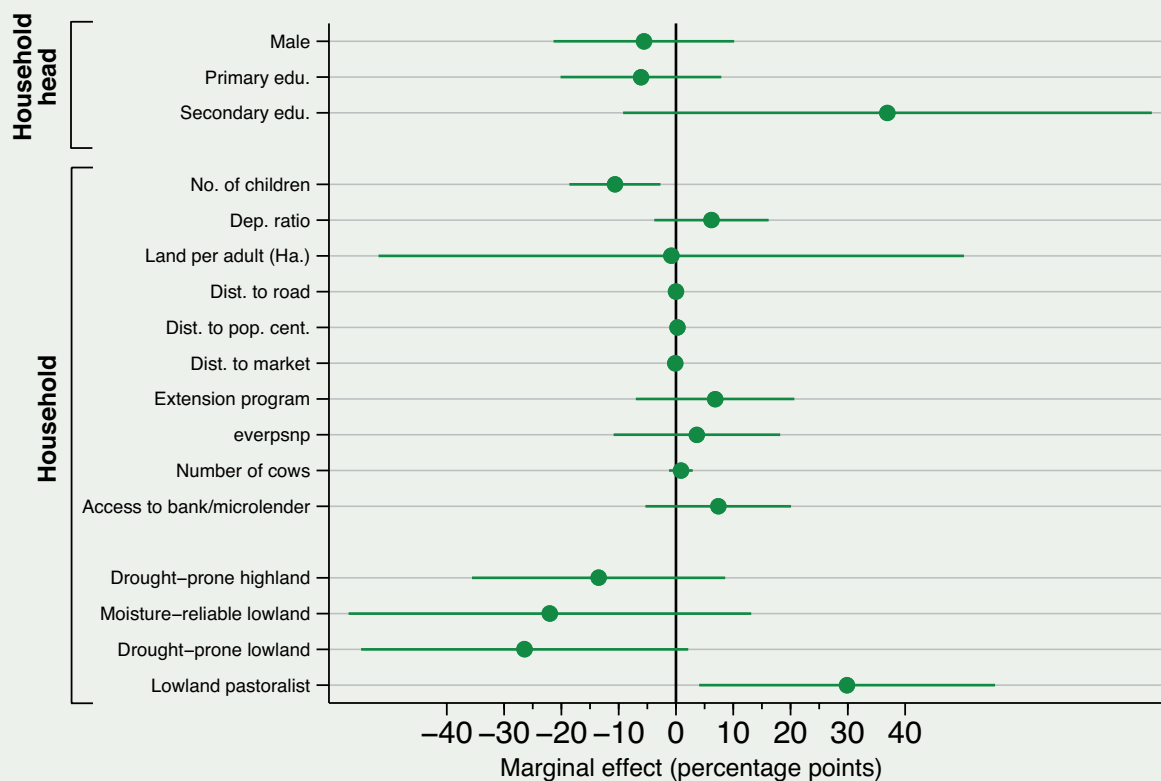


Figure shows marginal effect and 95% confidence interval.  
Base categories: Household head has no education; Household located in moisture-reliable highlands.  
Region and small town dummies included.

Source: Own calculations from ESS 2012, 2014 and 2016.



Figure 60

## MALE-HEADED HOUSEHOLDS WITH HIGH DEPENDENCY RATES AND SMALL LANDHOLDINGS MORE LIKELY TO FALL INTO POVERTY

Marginal effects associated with poverty entry between 2012 and 2016

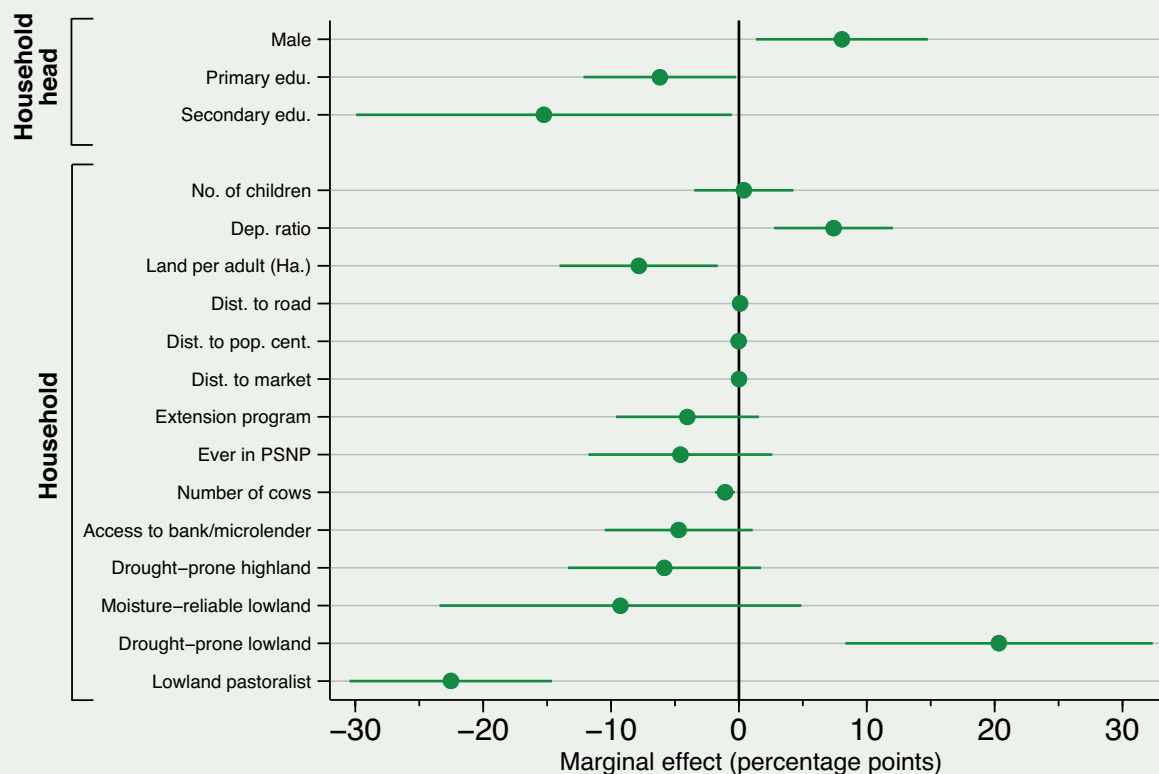


Figure shows marginal effect and 95% confidence interval.  
Base categories: Household head has no education; Household located in moisture-reliable highlands.  
Region and small town dummies included.

Source: Own calculations from ESS 2012, 2014 and 2016.

**The marginal effects of the agro-ecological in which the household was located are more strongly highlighted when considering the dynamics of poverty entry between 2012 and 2016.** The marginal effects of the primary and secondary education categories for the household head are negative, meaning that households in these categories were less likely to enter poverty than the base category of a household head with no education. Once again, the very large standard errors of the secondary education category are driven by the fact that there were relatively few secondary education households that entered poverty over the period. An additional hectare of land per adult is associated with a 7.5 percentage point power probability of transitioning

into poverty. Once again, the differences in the distances of households from roads, population centers and markets are not statistically different from zero.<sup>46</sup> The differences between the agro-ecological zones are once again apparently, with lowland pastoralists being far less likely to enter poverty, on average, than the base category of households in moisture-reliable highlands. In contrast, households in drought-prone lowlands were the most likely to have entered poverty over the period – 20 percentage points more than the base category. Of course, as with any poverty analysis, the results are sensitive to the choice of the poverty line. Box 15 discusses how the results change when the line is shifted down and then it is shifted up.

46 This is also true is distances are measured in block, for example less than 5km, more than 5km, or more than 10km.

## The sensitivity of poverty dynamics to the choice of the poverty line

**Changing the analysis of dynamics using different poverty lines yields some interesting results.** If the poverty line is set at the 20th, rather than the 25th percentile then the most significant driver of households exiting poverty was whether it participated in the extension program. Although this variable was positive in Figure 9, it was not statistically significant. The dynamics of poverty exit between the different agro-ecological zones are the same at this new poverty line, with pastoralist households far more likely to exit poverty than those living in any of the other four zones.

**There are also some interesting differences at this new lower poverty line when considering poverty entry.** Although the male, secondary education, and dependency ratio coefficients are of a similar magnitude to those in Figure 10, the coefficient on land per adult is now even larger and is significant at the 1% level. Participation in the extension program is also negatively associated with transitioning into poverty – households that were participants were about five percentage points less likely to enter poverty over the period compared to non-participating households.

**Another option to test the sensitivity of the results is to raise the poverty line. If the line is set at the 40th, rather than the 25th percentile then there are some different results when considering the probability of households exiting poverty.** While before there were very few significant variables, at a different poverty line things look different. The coefficient on land per adult is large and significant at the 1% level – each additional hectare of land per adult is associated with approximately a 25 percent higher likelihood of exiting poverty between round 1 and round 3. The coefficient on the variable measuring whether the household has access to a bank or a financial institution is also strongly associated with a higher probability of exiting poverty. Interestingly, at this higher poverty line, the significant effect of some of the policy variables (extension program and PSNP) is no longer statistically significant. In addition, there are no different effects in the probability of exiting poverty between the five agro-ecological zones, in contrast to the clear patterns that emerged at a lower poverty line.

**With the poverty line set at the 40th percentile there are also some different results when considering the probability of a household entering poverty.** The coefficient on the land per adult variable is negative and large – about twice as large as was the case in Figure 10. At this poverty line households that are part of the extension program are 9 percent less likely to enter poverty than non-participating households, on average. Finally, and in contrast to the poverty exit estimates, there are large differences between the agro-ecological zones, with pastoralist households being the least likely to enter poverty, and households in the drought prone lowlands the most likely to have become poor over the time period.

**Overall then, there are four variables that seem to be consistently associated with both a higher probability of exiting poverty and with a lower probability of entering poverty:**

- Whether or not the head of the households has a secondary education
- Higher land per adult in the household
- Whether or not the household was a participant in the extension program
- Whether or not the household has access to a bank or financial institution

# Conclusion

**Households in rural areas and small towns did worse than households living in urban areas between 2012 and 2016.** In particular, the losses experienced by the top decile of households in rural areas between the first and third rounds of the ESS were relatively large. Overall there was a large amount of mobility as measured by the consumption expenditure of households. Although only 10 percent of rural households were observed as being poor in both 2012 and 2016, almost one third experienced some kind of transition into or out of poverty over the same period.

**Most of the longer-term poverty in Ethiopia is transient, according to ESS data, but there are notable large shares of households that are trapped in chronic poverty.** The proportion of the population in chronic poverty is particularly high in the SNNPR region, in which nearly 30 percent of households were considered to be chronically poor. The share of the population in chronic poverty was lowest in Oromia and Tigray regions. Overall, most of the chronically poor in the country live in the SNNPR region, followed by Amhara. Most of the transient poor households are located in Amhara.

**Chronically poor households tend to be larger, have more children and less land per adult than transient poor and never poor households.** Interestingly, chronically poor households were not substantially more remote than households that were never poor, as measured by distance to the nearest road or population center with 20 000 people or more. The expansion of the extension program between 2012 and 2016 is evident, with 34 percent of chronically poor households covered in the first round of the ESS, and 46 percent covered in the third round. Although almost half of chronically poor households reported having experienced food shortages over the last 12 months, only 9 percent reported being recipients of food aid.

**The ESS data analysis confirms much of the HCES data analysis presented in the previous chapters.** Both the ESS and HCES show that (i) chronic poverty (called the “ultra-poor” in Chapter 1 and 2) is mainly concentrated in SNNPR and transitory poverty in Amhara, (ii) households in pastoral areas have done relatively well, and (iii) households in the drought-prone lowlands have fared relatively poorly. Both datasets also show that female-headed households have higher consumption levels and were less likely to fall into poverty. Finally, they also agree on urban areas performing better than rural areas between 2011 (or 2012) and 2016.







# Urban Poverty in Ethiopia

Strong consumption growth in urban Ethiopia led to an 11-percentage-point reduction in poverty between 2011 and 2016. The reduction in poverty happened across towns and cities of all sizes, though was mainly driven by small and medium-sized towns given their large contribution to the total urban population. Overall, poverty rates decrease with city size, with the exception of Addis Ababa which has a relatively high poverty rate.

Households with little-educated heads working in trade, services or agriculture contributed most to urban poverty reduction. In addition, the rising education levels of the urban labor force contributed substantially to the reduction in urban poverty. Urban poverty reduction mostly took place within each industry rather than being driven by workers' mobility across industries, pointing to limited structural transformation of employment. The main contributor to urban poverty reduction is the trade and service sector, while agriculture plays an important role in small towns, where the labor force is less educated and keeps close links with the rural hinterland.

Consumption gains among households with self-employed heads and other employed household members have pushed down urban poverty. Households with a self-employed head accounted for 46 percent of the urban population and 53 percent of the reduction in poverty. Poverty reduction among these households was especially strong if other household members also took up self-employment. The importance of additional self-employment (additional in the sense of being led by a household member other than the head) holds regardless of the occupation of the head: Poverty reduction was strongest if other household members transitioned into self-employment, regardless the occupation of the household head.

Though small towns have been important for urban poverty reduction, access to key services and amenities is not keeping up. The level of access to basic services is particularly low among low-income households in small towns. Thanks to large investments, access to services and amenities has been improving in pace with the urban growth in major towns. Investments in small towns will be required to improve living standards and reduce migration pressure on the bigger cities.

The economic integration of rural migrants depends on city size. Recent migrants (less than three years) have substantially worse employment outcomes in Addis Ababa but not in large towns/secondary cities. In Addis however, migrants seem to catch up with the resident population as they stay longer in the city. Social integration seems to be more difficult: The education level of children of rural migrants is substantially worse than that of the resident population of the same age, even for migrants that have been in the city for long.

# Introduction

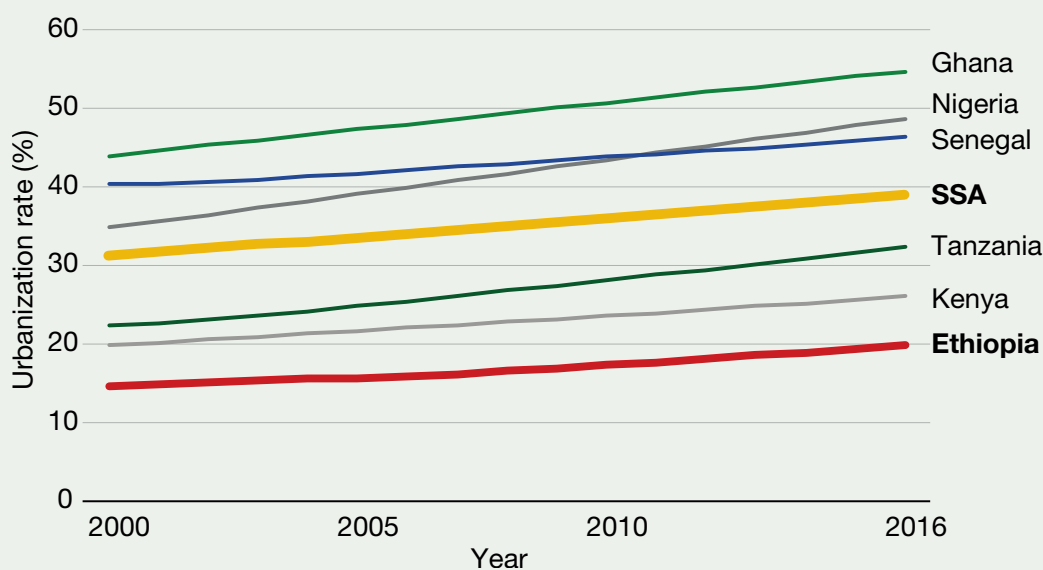
**Despite being one of the least urbanized Sub-Saharan countries, Ethiopia's urban population has been growing fast.** According to the latest rounds of HICES, Ethiopia's urbanization rate—the share of the country's population in urban areas—rose from 16.6 percent in 2011 to 19.1 percent in 2016.<sup>47</sup> While its urbanization level is still among the lowest in Sub-Saharan Africa (Figure 61), urban population growth is rapid: The urban population increased by 6.2 percent annually since 2011, which is much faster than rural population growth of 2.7 percent. This means that nearly 1 million people are added to the urban population every year. It is estimated that there are 45 cities of at least 50,000 population as of 2015 (Schmidt et al. 2018). Ethiopia's urban population is projected to reach 42 million by 2032 and its population share to hit 30 percent by 2028 (World Bank, 2015).

**Urban population growth will take place mainly in small towns and secondary cities.** Natural population increase accounted for the largest part of urban population growth in Ethiopia until recently (World Bank 2015). However, rural to urban migration is expected to outpace natural increase as of 2018, contributing to more than 40 percent of urban population growth. Between 2015 and 2025, around 5 million people are projected to be added in small towns with a population of less than 50,000 (Schmidt et al. 2018). Secondary cities with a population of greater than 100,000 (such as the regional capitals) will also grow at the similar scale, adding 5.7 million people between 2015 and 2025. In the meantime, the contribution of Addis Ababa to the overall urban population will decline (though it will remain by far the biggest city).

**Figure 61**

## ETHIOPIA REMAINS UNDER-URBANIZED

Urbanization rates in Sub-Saharan African countries, 2010-2016



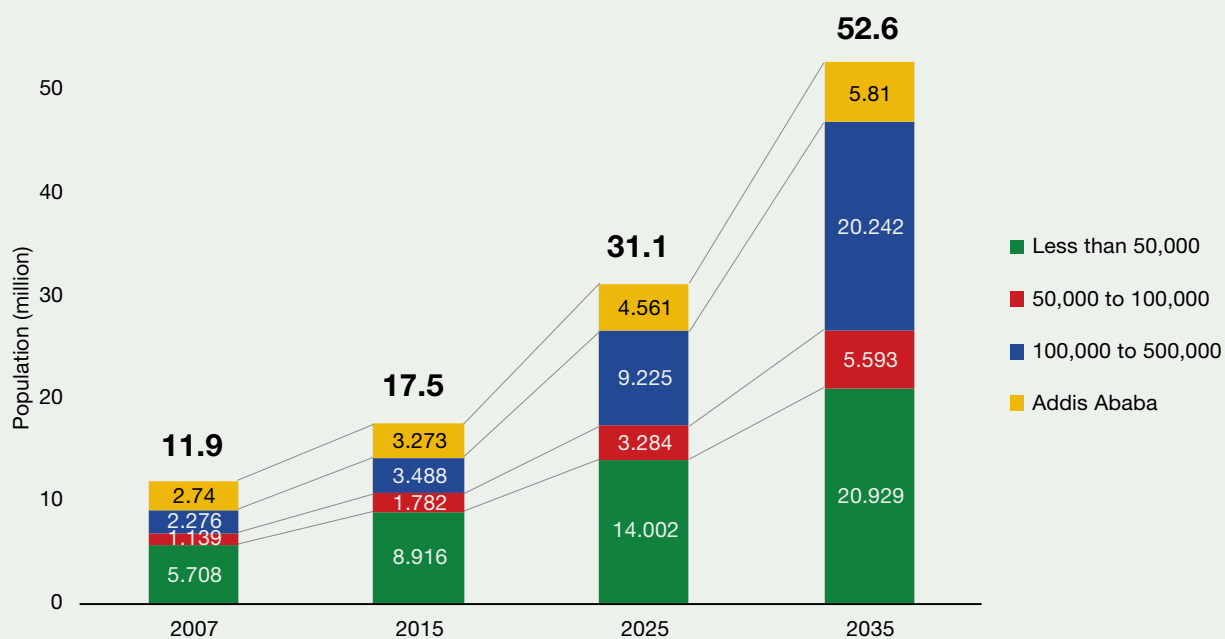
Source: World Development Indicators.

<sup>47</sup> The Central Statistical Agency (CSA) defines urban areas as localities that satisfy one of the following criteria: 1) localities with 2,000 or more inhabitants; 2) all administrative capitals of regions, zones, and woredas; 3) localities with at least 1000 people who are primarily engaged in non-agricultural activities; and/or 4) areas where the administrative official declares the locality to be urban (Schmidt and Kedir 2009).

**Figure 62**

## SMALL TOWNS AND SECONDARY CITIES WILL ACCOUNT FOR THE BULK OF URBAN POPULATION GROWTH

Urban population trends and projections, 2007-2035

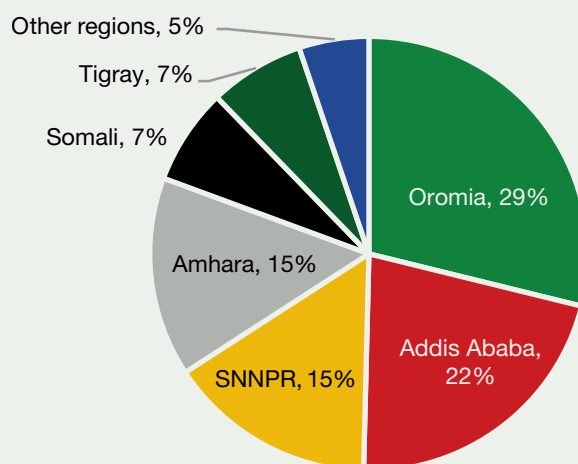


Source: Schmidt et al. (2018).

**Figure 63**

## HALF OF THE URBAN POOR ARE LOCATED IN OROMIA AND ADDIS ABABA

Regional share of the urban poor, 2016



Source: HCES; 2011, 2016. World Bank staff calculations.

**Urban poverty has declined rapidly between 2011 and 2016.** As presented in Chapter 1, the share of the urban population living below the national poverty line decreased from 26 percent in 2011 to 15 percent by 2016. The absolute number of poor also declined, despite rapid urban population growth. In 2016 there were an estimated 2.4 million people below the poverty line in urban areas, the majority of which were located in cities in Oromia region and Addis Ababa (Figure 63).

**This chapter takes a closer look at the rapid urban poverty reduction between 2011 and 2016 and at the constraints to be addressed to further accelerate urban poverty reduction.** The chapter proceeds as follows: The next section examines where urban poverty has been rapidly declining and where it has been persisting, by looking at regions and the population size of cities. It also examines various living conditions by household consumption and city size. The chapter then takes a closer look at developments in urban labor markets to further explore what factors have made cities conducive places for poverty reduction.

## 2. SPATIAL DIAGNOSTIC OF URBAN POVERTY, LIVING STANDARDS, AND LABOR MARKETS

### 2.1 A brief profile of the urban poor

#### SMALL TOWNS ACCOUNT FOR ONE-THIRD OF THE URBAN POOR

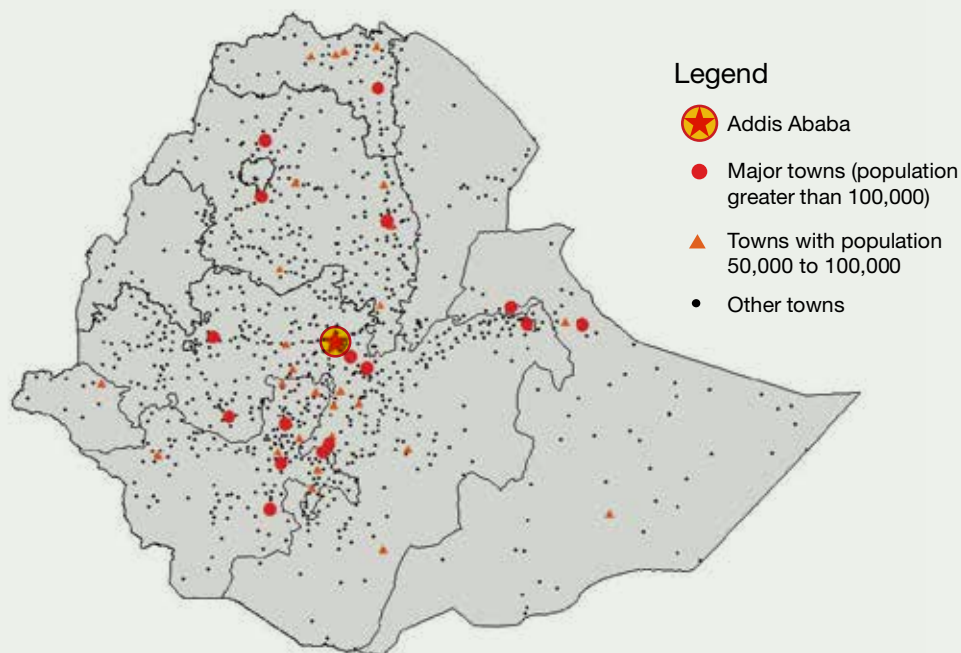
**Analyzing poverty across towns of different sizes is useful, given their distinct demographic and economic structures.** The sampling design of the HICES/WMS gives poverty and other key statistics representative at 10 sub-cities in Addis Ababa, 21 major towns (including regional capitals), 8 other urban areas (i.e., urban areas except for Addis

Ababa and the 21 major towns), and rural areas in each region (CSA 2017). For the analytical purpose of this chapter, towns are classified as follows: (i) Addis Ababa (including all the 10 sub-cities), (ii) major towns with a population of at least 100,000 (not including the sub-cities in Addis Ababa), (iii) medium sized towns with a population ranging from 20,000 to 100,000, and (iii) small towns with a population of fewer than 20,000. Rearranged in this way, the HICES/WMS 2015/16 includes Addis Ababa, 20 major towns, 52 medium towns, and 54 small towns.





**Figure 64** TOWNS AND CITIES IN ETHIOPIA



Source: CSA (2013).

**Poverty rates remain relatively high in small towns and Addis Ababa.** The previous Ethiopia Poverty Assessment (World Bank 2015a) shows that poverty rates tend to be lower in cities with a larger population, except for Addis Ababa. This association seems to have remained in 2015/16 (Table 2). The poverty headcount ratios in towns of a population of less than 20,000 (20 percent) are higher than other bigger towns and cities. A third of Ethiopia's urban poor population lives in these small towns. In contrast, major towns with a population of greater than 100,000 have relatively low poverty rates, such as Mekele (9.4 percent), Dire Dawa (11.1 percent), Gonder (10.1 percent), Adama (14.1 percent), and Hawassa (8.0 percent) (Figure 66). Addis Ababa is an exception with a poverty rate (16.8 percent) being slightly higher than the urban average (14.8 percent). Among the 21 major towns, 14 towns—as well as Addis Ababa and some

medium-sized towns—received funding for infrastructure development from the Urban Local Government Development Project (ULGDP) between 2008 and 2014 (Box 17). The second phase of the ULGDP targets additional 25 major and medium towns between 2014 and 2019.

**Even within the same regions, poverty varies by city size.** In Somali region, for example, the poverty rate is only 5.9 percent in Jijiga but 27.3 percent in the rest of urban areas (Figure 66). Similarly, the poverty rate in the capital town of Gambella region is only 10 percent, while other urban areas in the region still have 22.8 percent of the population in poverty. In contrast, gaps in poverty rates between major towns and other urban areas are relatively narrow in some regions, such as Afar and Amhara.

Table 20

## POPULATION AND POVERTY DISTRIBUTION IN URBAN ETHIOPIA

|                                       | POPULATION     |              | POVERTY     | POOR POPULATION |              |
|---------------------------------------|----------------|--------------|-------------|-----------------|--------------|
|                                       | MILLION<br>(1) | SHARE<br>(2) | RATE<br>(3) | MILLION<br>(4)  | SHARE<br>(5) |
| Small towns (20,000 or lower)         | 4.3            | 25.1%        | 20.0%       | 0.9             | 33.8%        |
| Medium sized towns (20,000 - 100,000) | 5.9            | 34.8%        | 12.1%       | 0.7             | 28.4%        |
| Major towns (100,000 or greater)      | 3.6            | 21.1%        | 11.4%       | 0.4             | 16.2%        |
| Addis Ababa                           | 3.2            | 19.0%        | 16.8%       | 0.5             | 21.5%        |
| Urban total                           | 17.0           | 100.0%       | 14.8%       | 2.5             | 100.0%       |

Note: Population is based on the 2016 population projection by the CSA

Source: Staff calculations based on HICES 2015/16.

## Box 16

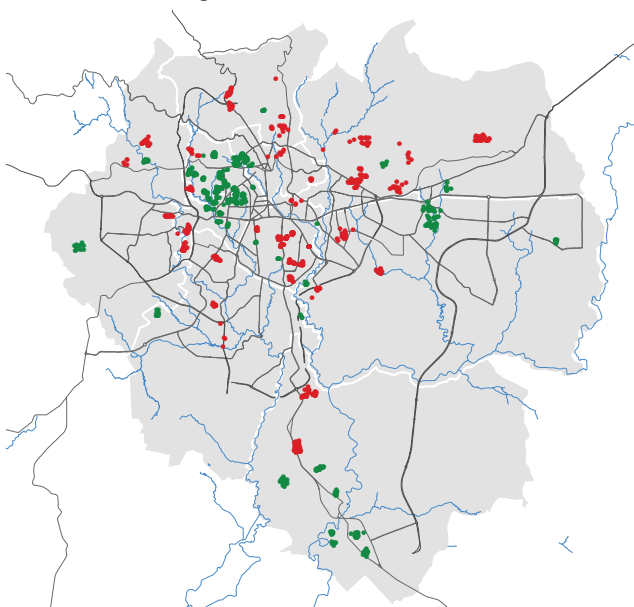
## Where is poverty in Addis Ababa concentrated?

**Based on the geo-localization included in the 2016 HCES, it is possible to identify clusters of low- and high-income households in Addis Ababa.** Though Addis Ababa is a socially and economically mixed city, there are a number of distinct low-income neighborhoods. The largest cluster of poorer households (the green dots) is found surrounding Merkato in Addis Ketema and Lideta (Geja Sefer neighborhood), while a second and smaller low-income cluster is found in the east, between Goro and Gurd Shola (Figure 65). Small high-income clusters (red dots) are scattered across the city. Future work will look in more detail at the interplay of location, housing, and poverty in Addis Ababa.

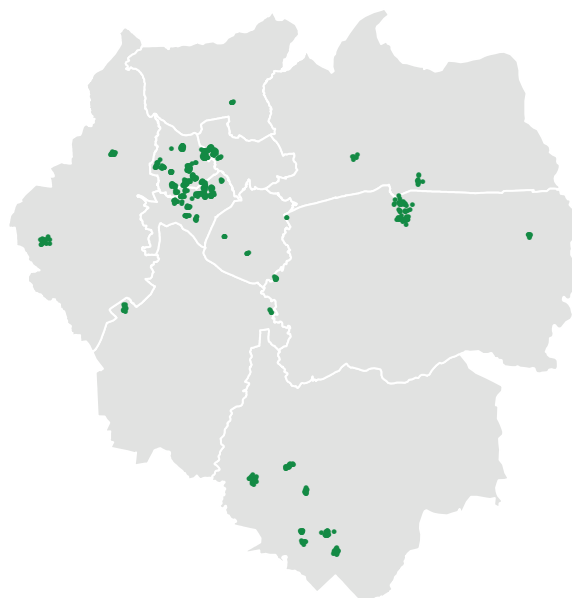
Figure 65

## LOW- AND HIGH-INCOME CLUSTERS IN ADDIS

## A. Low- and high-income clusters



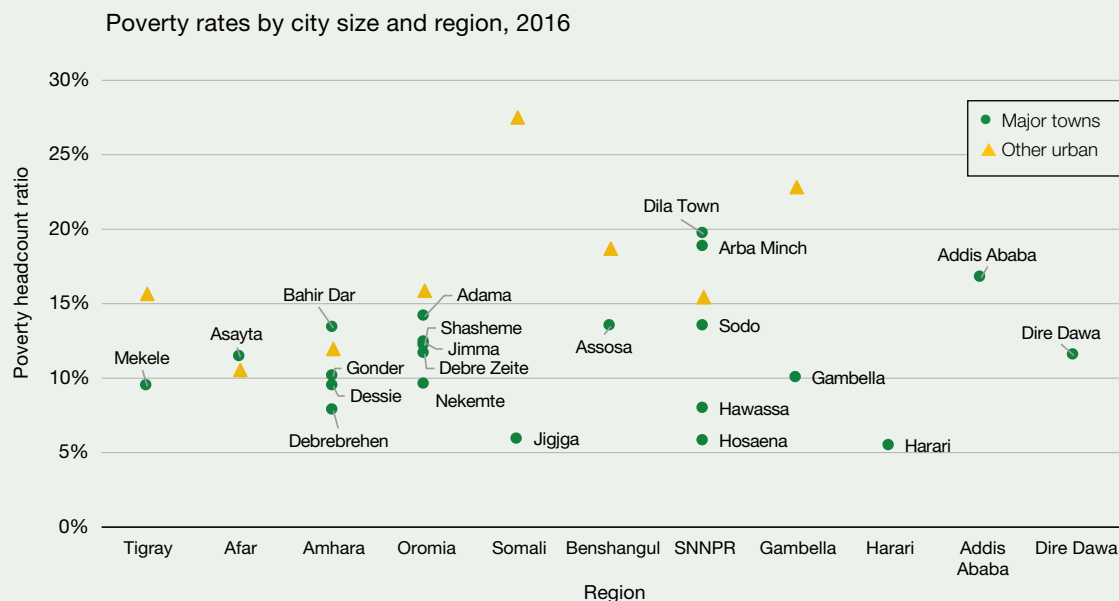
## B. Low-income only



Source: HCES, 2016. Low-income clusters in blue.

Figure 66

## POVERTY RATES ARE GENERALLY LOWER FOR BIGGER TOWNS THAN SMALLER ONES



Note: Towns targeted by the infrastructure development under the ULGDP I (2008-2014) are shown in bold font.

Source: HCES; 2016. World Bank staff calculations.

### Box 17

## The Urban Local Government Development Project (ULGDP)

The World-Bank funded ULGDP aims to address institutional and fiscal gaps at the urban local government level by supporting improved institutional performance in the planning, delivery, and sustained provision of urban services and infrastructure by local governments. The first phase of the program (2008-2014) provided capacity building grants to 37 local governments (US\$7.5 million) and the Ministry of Urban Development, Housing, and Construction (MUDHCo) and performance-based grants to 19 local governments for urban infrastructure investments (US\$403 million). The second phase of the ULGDP aims to provide US\$557 million grants to additional 26 local governments between 2014 and 2019. During the first phase, 2.6 million people benefited from the infrastructure and services financed under the ULGDP, as 870 km of non-rural roads were built, 647 km of drainage lines were constructed, and 131 improved community water points were created.





### **POOR HOUSEHOLDS TEND TO BE HEADED BY AN OLDER, POORLY-EDUCATED AND SELF-EMPLOYED HEAD**

**Households whose heads are older are more likely to be poor in urban Ethiopia, and this pattern is observed across towns of different population sizes.** Young households in Addis Ababa are least likely to be poor (poverty rate of less than three percent), poverty incidence among older households in the city is a lot higher (over 20 percent). In urban Ethiopia, the poorest age group is older households living in small towns. Overall, female-headed households are not significantly more likely to be poor than male headed households in urban areas (Panel A in Figure 67), though the association depends on city size. The poverty rates among female-headed households are 3 points higher in Addis Ababa and medium towns, though this gap is not observed in major towns and small towns.

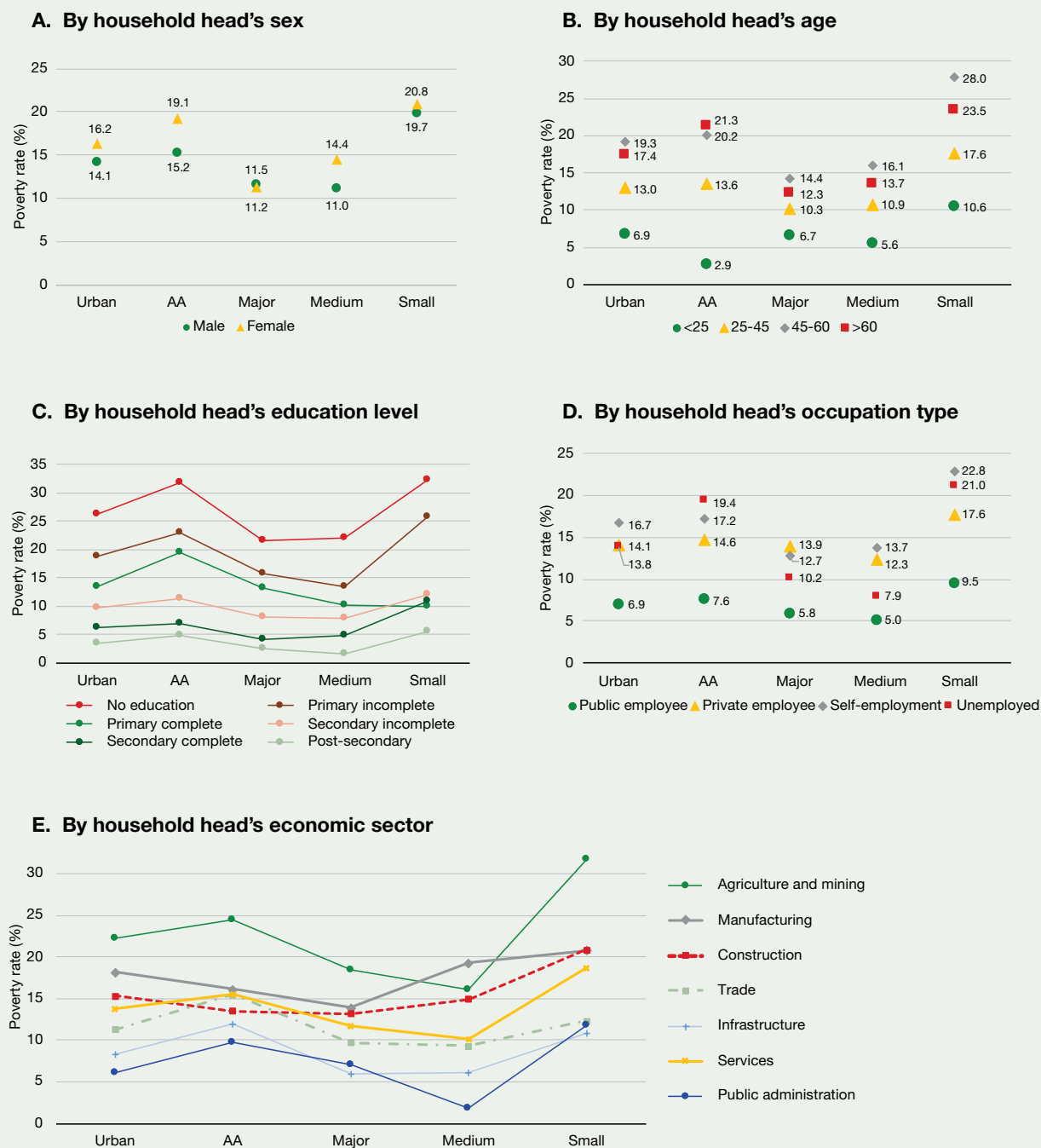
**Household heads' education level is strongly associated with poverty in urban Ethiopia.** The higher the education level of household heads, the less poor the households are (Panel C). Poverty incidence among the households with secondary or higher education is low in all places. Households with no education or incomplete primary are most likely to be poor, especially in Addis Ababa and small towns.

Poverty incidence among the households with completed primary is relatively high in Addis Ababa, implying that primary education is not good enough to economically fare in the capital city. Many of these households with low education levels are older as well.

**Household heads' employment status is also correlated with poverty as public employees are the least poor, and the pattern is not very different across urban sizes.** In urban Ethiopia, households whose heads are public employees are less likely to be poor across towns of all sizes (Panel D in Figure 67). Poverty incidence is higher among self-employed households than private employees. This pattern is observed in Addis Ababa, major towns, medium towns, and small towns, respectively. While household head's employment status is clearly correlated with poverty, the employment status of other household members also potentially influences their poverty situation. This will be examined in detail in the next section.

**Poverty status also depends on the economic sector of the household head's primary job.** Regardless of city size, poverty incidence is lowest among the households with public administration jobs (Panel E). Poverty is highest in agriculture, manufacturing, and construction jobs, sectors which unskilled workers tend to engage in.

**Figure 67** URBAN POVERTY BY HOUSEHOLD CHARACTERISTICS



Note: Poverty rates are calculated at the household level. Major towns have populations greater than 100,000 (excluding Addis Ababa); medium towns have populations between 20,000 and 100,000; and small towns have populations less than 20,000.

Source: HCES; 2016. World Bank staff calculations.



## 2.2 Dissecting urban poverty reduction

### SMALL AND MEDIUM-SIZED TOWNS ACCOUNT FOR THE BULK OF URBAN POVERTY REDUCTION

#### Poverty rapidly decreased across cities of all sizes.

Headcount ratios have declined by around 10 percentage points in Addis Ababa, major towns, medium towns, and small towns, respectively (Panel A in Figure 68). While poverty rates remain relatively high in Addis Ababa and small towns, they have reduced poverty at a similar pace as major and medium towns since 2011. Poverty gap and severity measures have also decreased across the board (Panel B). Overall, these results demonstrate that urban poverty reduction between 2011 and 2016 has been robust and widespread.

**Small and medium-sized towns account for over half of urban poverty reduction.** Chapter 3 showed that a third of Ethiopia's poverty reduction since 2011 can be attributed

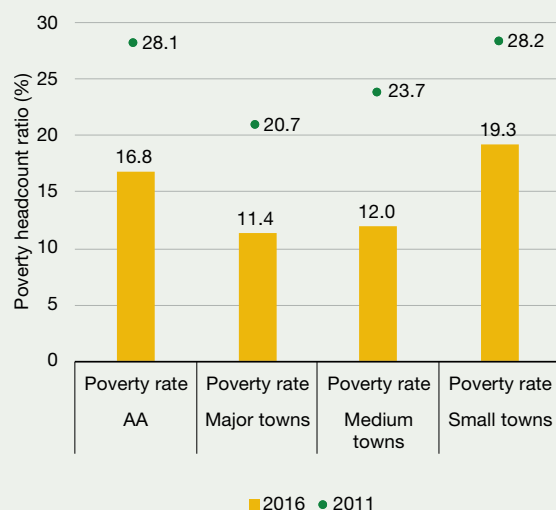
to urban areas. Urban poverty fell by 11 percentage points between 2011 and 2016, over half of which can be explained by poverty reduction in medium-sized and small towns (second panel of Figure 69). At the national level, small and medium-sized towns contributed one percentage point to the overall poverty reduction of six percentage points. Population shifts across towns of different sizes accounted for only a limited proportion of poverty reduction, since the population shares across Addis Ababa, major towns, medium towns, and small towns have changed only marginally since 2011 (pointing to limited inter-city migration). When it comes to the reduction in vulnerability in urban areas, the contribution of small and medium towns is even higher (Panel C). Vulnerability here is measured by using a higher poverty line: The official poverty line multiplied by 1.5. The reduction in urban poverty has been accompanied by a move further away from the poverty line (in the right direction), suggesting that urban households would be able to deal with shocks without necessarily falling back into poverty.

Figure 68

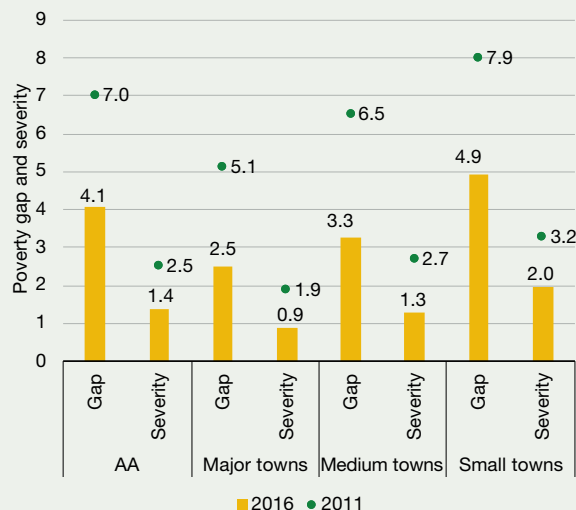
### STRONG URBAN POVERTY REDUCTION ACROSS CITY SIZE

Poverty trends by city size

#### Poverty headcount ratio



#### Poverty gap/severity



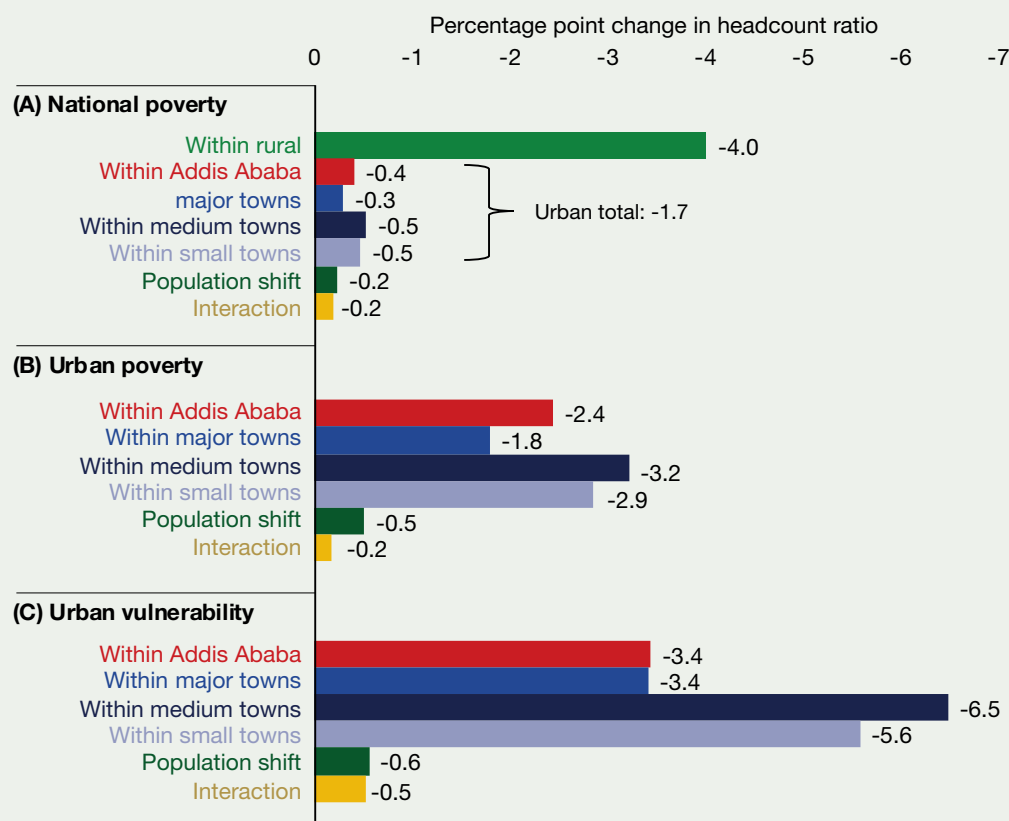
Note: Major towns have populations greater than 100,000 (excluding Addis Ababa); medium towns have populations between 20,000 and 100,000; and small towns have populations less than 20,000.

Source: HCES; 2016. World Bank staff calculations.

Figure 69

## SMALL AND MEDIUM TOWNS DRIVE MUCH OF THE REDUCTION IN URBAN POVERTY AND VULNERABILITY

Decomposition of poverty changes by city size, 2011–2016



Note: Numbers were calculated by excluding the zones that were covered only in the 2016 data for the purpose of comparison between 2011 and 2016. Major towns have populations greater than 100,000 (excluding Addis Ababa); medium towns have populations between 20,000 and 100,000; and small towns have populations less than 20,000.

Source: HCES; 2016. World Bank staff calculations.

**In addition, the spillover effects of towns on surrounding rural areas, which is not considered in the decomposition analysis above, has likely contributed to rural poverty reduction.** A growing literature argues the for importance of secondary towns for poverty reduction (Christiansen and Kanbur 2017; Christiaensen and Todo 2014). In addition to direct impacts through rural to urban migration (Beegle, de Weerd, & Dercon 2011; de Brauw, Mueller, & Woldehanna 2017), towns can support rural poverty reduction by improving agricultural productivity (through increased availability of modern inputs and reduction in input prices) and raising the demand for agricultural products. A recent study suggests that proximity to secondary towns (e.g.,

Bahir Dar and Adama in the case study) potentially benefits rural farmers by raising agriculture output prices, facilitating the uptake of modern inputs among farmers, and increasing yields on farms (Vandecasteele et al. 2018). Chapter 3 also showed that agricultural growth is more poverty-reducing in areas that are closer to towns.

### MOST OF THE REDUCTION IN URBAN POVERTY CAME FROM HOUSEHOLDS WITH LITTLE-EDUCATED HEADS

**Most of the urban poverty reduction took place among households with little-educated heads.** The contribution to urban poverty reduction between 2011 and 2016 mainly

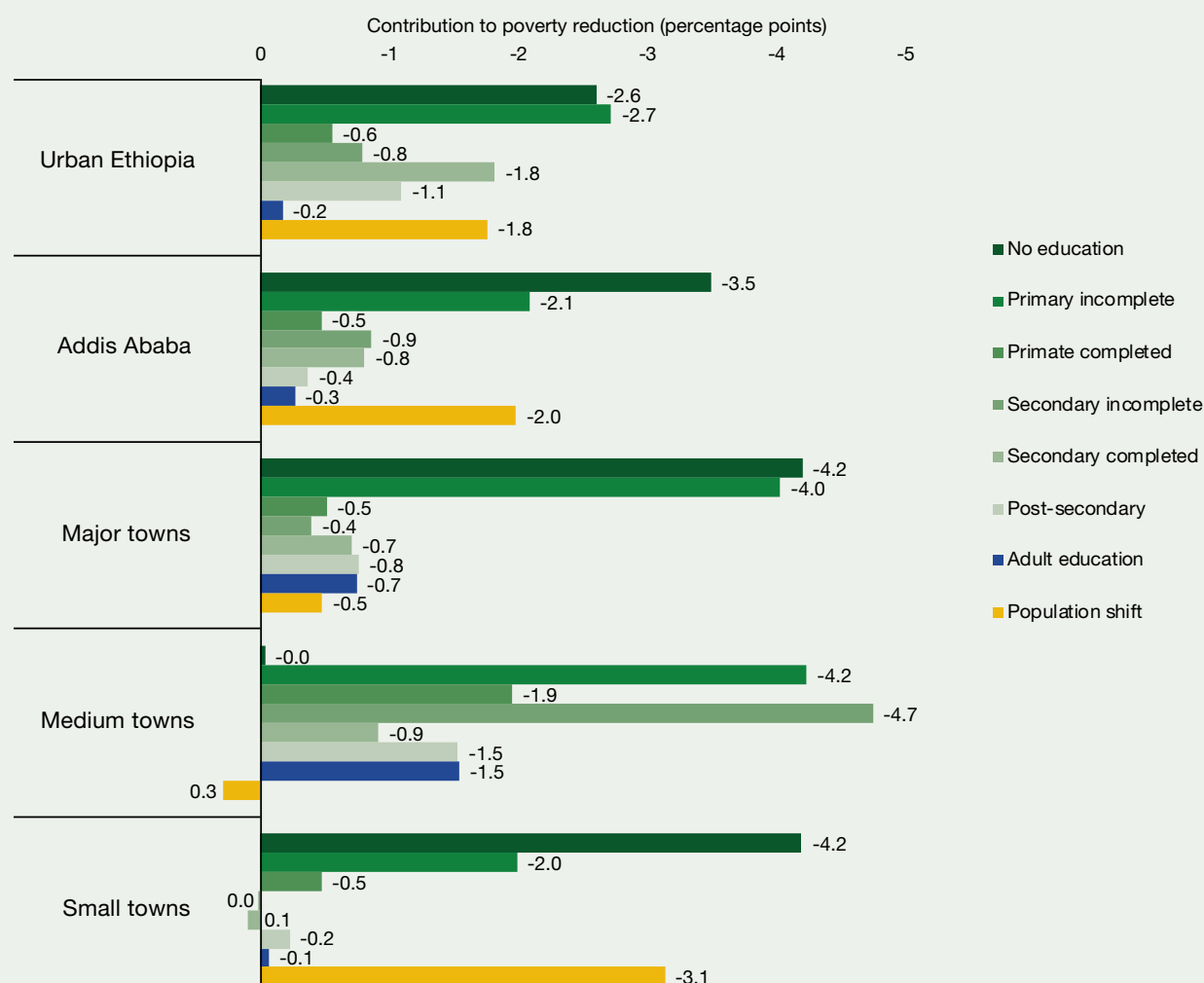
came from households whose heads did not complete primary education (2.6 percentage points, or 23 percent) or never enrolled in school (2.7 percentage points, or 25 percent) (Figure 70). This pattern is observed across towns with different population sizes. Compared to households with heads who did not complete primary education, households whose heads completed primary education have made only a moderate contribution to poverty reduction. Another

important contributor to urban poverty reduction is the “population-shift effect” (yellow bars in Figure 70), which proxies the overall improvements in education levels in urban areas since 2011. The effect of increasing education levels was particularly large in Addis Ababa and small towns, where the gap in poverty between least educated households and others is very wide (as shown in Panel C of Figure 67).

**Figure 70**

## URBAN POVERTY REDUCTION MAINLY CAME FROM HOUSEHOLDS WITH LITTLE EDUCATED HEADS

Decomposition of poverty changes by education of household head, 2011-2016



Note: Numbers were calculated by excluding the zones that were covered only in the 2016 data for the purpose of comparison between 2011 and 2016. Major towns have populations greater than 100,000 (excluding Addis Ababa); medium towns have populations between 20,000 and 100,000; and small towns have populations less than 20,000.

Source: HCES; 2016. World Bank staff calculations.

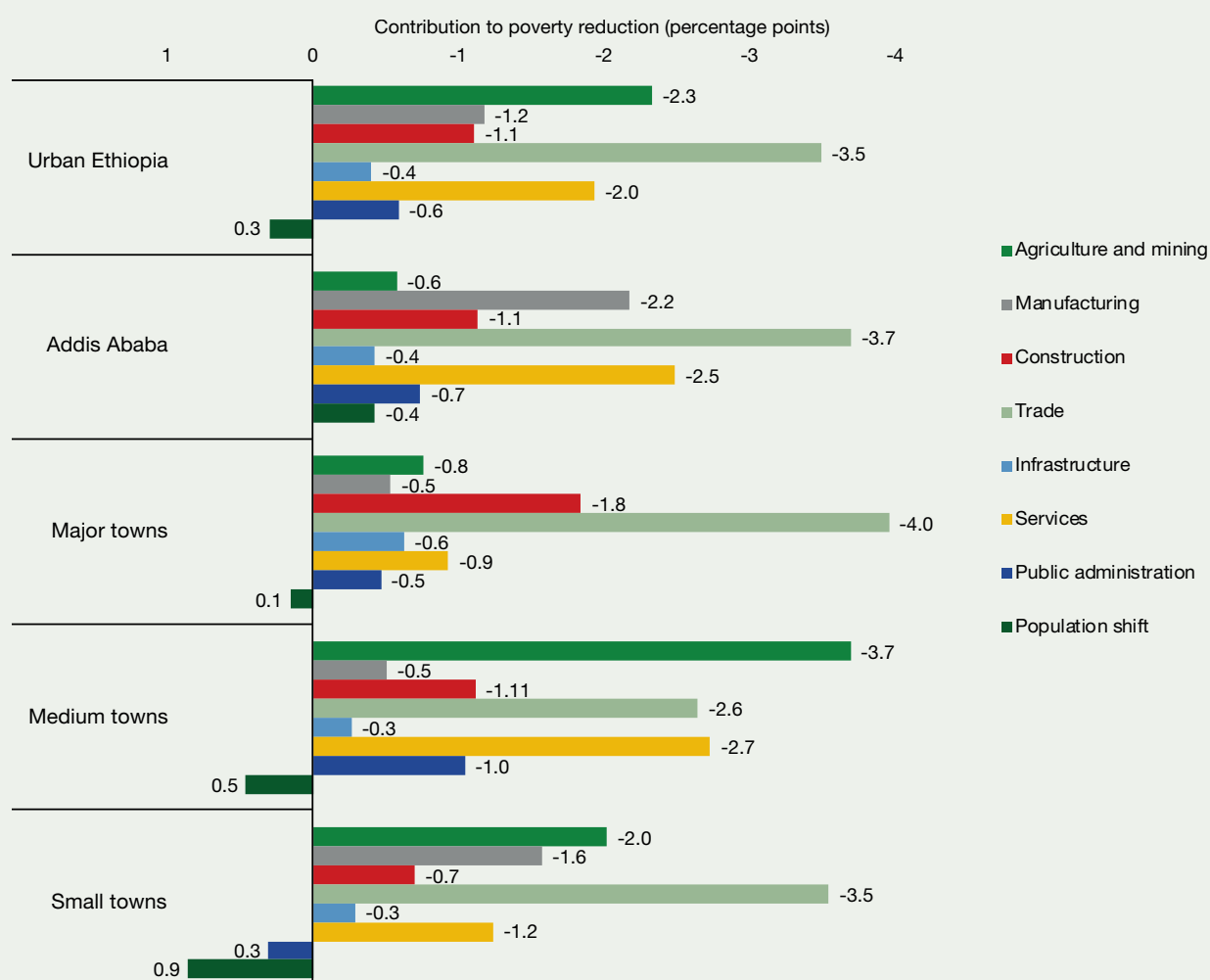
## POVERTY REDUCTION MAINLY CAME FROM THE TRADE, URBAN AGRICULTURE, AND SERVICES SECTORS

In terms of employment of the household head, urban poverty reduction has taken place mainly in the trade and services sector as well as agriculture. Urban poverty mainly declined among households that engage in jobs in the trade sector (3.5 percentage points, or 32 percent), in agriculture (2.3 percentage points, or 21 percent), in services (1.9 percentage points, or 18 percent), in manufacturing (1.2 percentage points, or

11 percent), and in construction (1.1 percentage points, or 10 percent) (Figure 71). The contribution of the manufacturing sector to urban poverty reduction is relatively large in Addis Ababa and small towns. The construction sector was important in major towns. Agriculture still accounted for a large contribution to poverty reduction in medium towns and small towns, indicating a fair amount of urban agriculture in these towns. Poverty reduction due to the sectoral shifts has been negligible in urban Ethiopia, in line with the familiar “growth without structural transformation” narrative on Ethiopia.

**Figure 71** URBAN POVERTY REDUCTION MAINLY CAME FROM HOUSEHOLDS EMPLOYED IN TRADE AND AGRICULTURE

Decomposition of poverty changes by economic sector of household head, 2011-2016



Note: Major towns have populations greater than 100,000 (excluding Addis Ababa); medium towns have populations between 20,000 and 100,000; and small towns have populations less than 20,000. Interaction effects are not shown. The analysis does not include households whose heads are not active labor forces or unemployed.

Source: HCES; 2016. World Bank staff calculations.

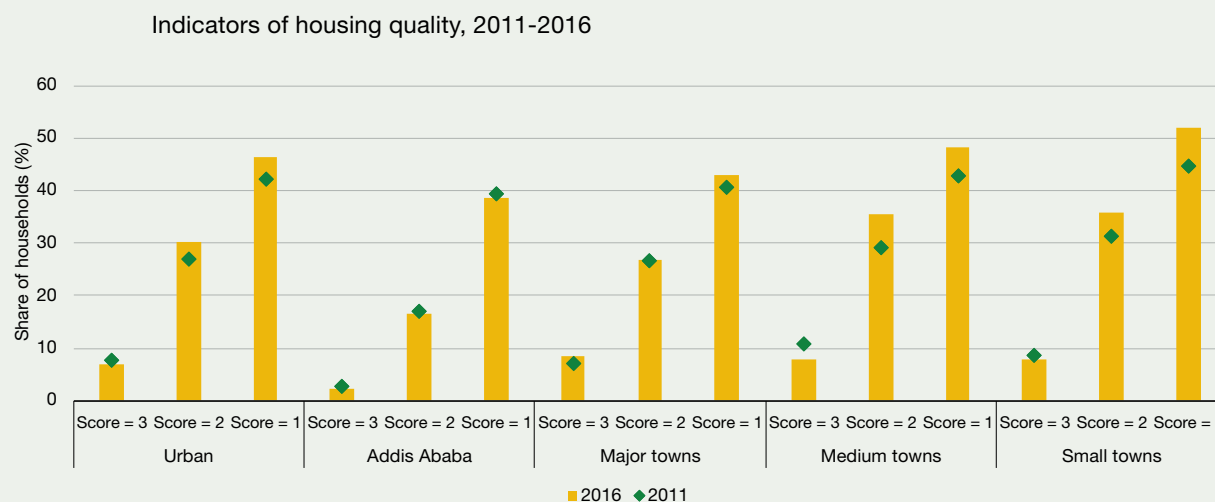
## 2.3 Access to services and amenities by city size

### LIVING STANDARDS ARE WORSE IN SMALL TOWNS, AND THE GAP WITH LARGER TOWNS HAS NOT BEEN CONVERGING

**The share of substandard housing is highest in medium and small towns.** For the purpose of a broad assessment, this chapter defines substandard housing based on three criteria: (i) lack of access to piped water (regardless of private or public taps), (ii) lack of improved sanitation (flush toilet or ventilated improved latrine), and (iii) overcrowding (household size divided by the number of rooms is greater than 3). While housing units that lack all three criteria account for only 7 percent in urban areas, 30 percent of houses lack 2 criteria and 46 percent of houses lack 1 criterion (Figure 72). The share of substandard housing is clearly correlated with city size, as smaller towns tend to have a larger share of substandard housing. The share of substandard housing has slightly increased since 2011 due to a worsening housing situation in medium and small towns, which were not included in the first-phase ULGDP.

**While electricity access has improved, other living conditions have not changed much in medium and small towns since 2010/11.** Access to piped water is relatively good in Addis Ababa (nearly 90 percent of households) (Panel A in Figure 73). Only about 70 percent of households have access to piped water in major towns, medium towns, and small towns, and their situation did not change since 2011. Compared to access to water, access to improved sanitation is much worse in urban Ethiopia: Only a fifth of urban households have access to an improved sanitation facility (Panel B). No clear improvement in sanitation was observed between 2011 and 2016. Within urban areas, people in smaller towns tend to have worse access to sanitation. Access to electricity (Panel C) and improved solid waste management (Panel D) have improved in urban areas since 2011. While the share of households with electricity access has reached nearly 90 percent in medium and small towns, solid waste management remains problematic. About 40 percent of urban households rely on a waste disposable vehicle for waste management, while many others still simply throw garbage away.

**Figure 72 SUBSTANDARD HOUSING IS MOST COMMON IN SMALL TOWNS**



Note: Criteria are 1) access to improved water (piped water), 2) access to improved sanitation (flush toilet or VIP latrine), and 3) overcrowded (Household size divided by the number of rooms is greater than 3). Major towns have populations greater than 100,000 (excluding Addis Ababa); medium towns have populations between 20,000 and 100,000; and small towns have populations less than 20,000.

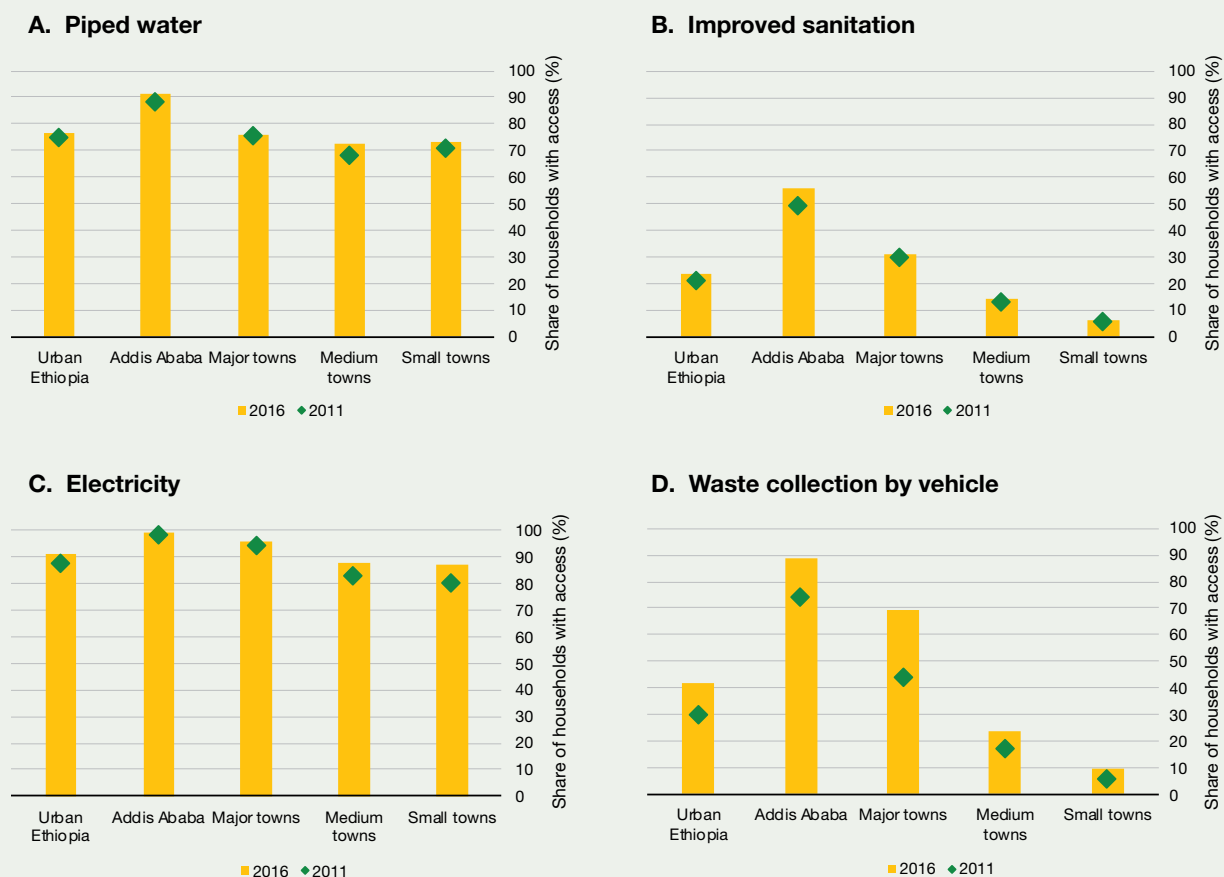
Source: HCES; 2016. World Bank staff calculations.



Figure 73

## SANITATION AND SOLID WASTE MANAGEMENT REMAINS PROBLEMATIC IN SMALL TOWNS

Access to services/amenities by city size



Note: Major towns have populations greater than 100,000 (excluding Addis Ababa); medium towns have populations between 20,000 and 100,000; and small towns have populations less than 20,000.

Source: HCES; 2016. World Bank staff calculations.

**Access to basic services is overall better in larger towns, and richer households enjoy better access across cities of different sizes.** In case of access to piped water, for example, 82 percent of the households in the top quintile have access to piped water, compared to 71 percent of households in the bottom quintile (Panel A of Figure 74). While this disparity is relatively small, it is important to note that the *type* of piped water is not considered here. The gap between richer and poorer households becomes wider if only

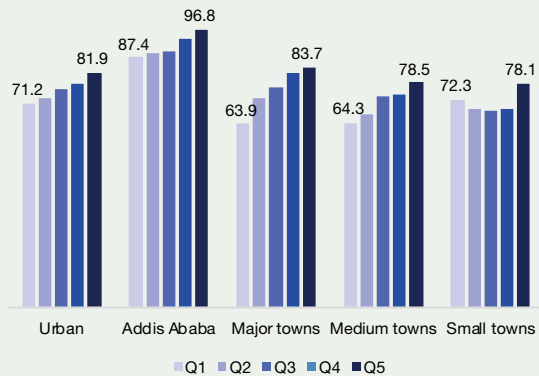
access to private piped water (within the dwelling) is considered. Similar patterns are observed for improved sanitation (Panel B), access to electricity (Panel C), solid waste management (Panel D), and overcrowding (Panel E). Medium and small towns are particularly lagging in providing solid waste management services and in access to improved sanitation. Addis Ababa fares relatively well: Even households in the poorest quintile in Addis Ababa have overall better access than households in the richest quintile in major towns.

**Figure 74**

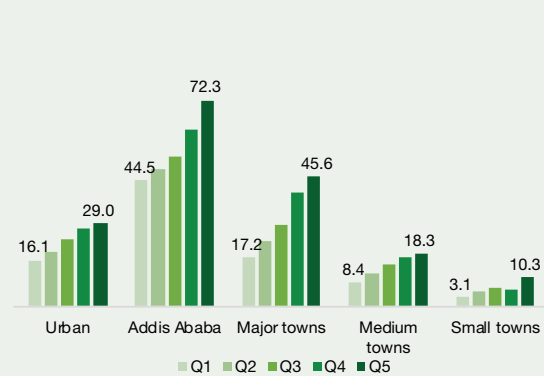
## ACCESS TO AMENITIES WITHIN URBAN AREAS DEPENDS ON HOUSEHOLD WELFARE

Access to services/amenities by city size and consumption quintile

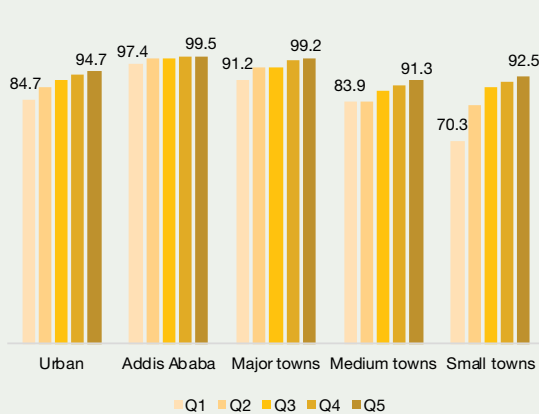
### A. Piped water



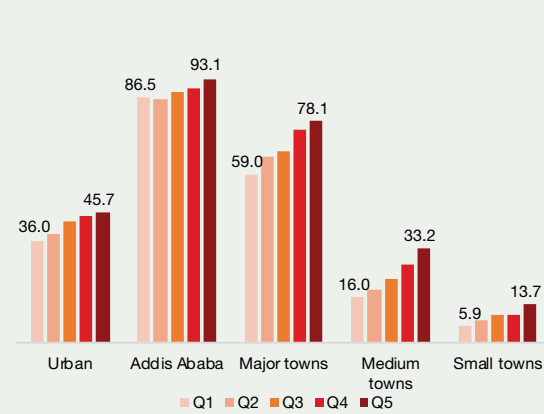
### B. Improved sanitation



### C. Electricity



### D. Waste collection by vehicle



Note: Major towns have populations greater than 100,000 (excluding Addis Ababa); medium towns have populations between 20,000 and 100,000; and small towns have populations less than 20,000. Consumption quintiles are calculated for each urban classification.

Source: HCES; 2016. World Bank staff calculations.

## 2.4 Urban labor market developments

**This subsection looks at developments in urban labor markets between 2011 and 2016 to provide context to the rapid reduction in urban poverty.** The analyses presented in this section are based on the 2011 and 2016 HCES, the 2010 to 2016 Urban Employment and Unemployment Surveys (UEUS), and the Labor Force Survey (LFS) 2013, each of which has different advantages and disadvantages.<sup>48</sup>

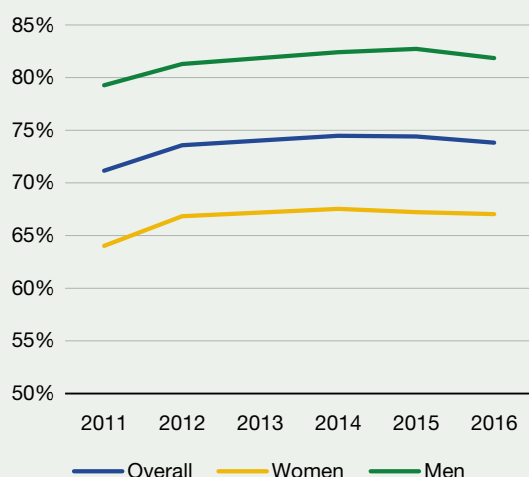
**Between 2011 and 2016, labor force participation increased and unemployment decreased.** In 2016, 74 percent of the working-age population participated in the labor force, up from about 71 percent in 2011. LFP increased both for men and women, though the gap remained large (Figure 75). At the same time, unemployment decreased from 19.6 percent in 2011 to 17.3 percent in 2016, according to the UEUS (Figure 76). The fact that unemployment decreased

even though more people are participating in the labor force indicates a solid pace of jobs growth in urban Ethiopia between 2011 and 2016: The number of employed people in urban areas increased from 4.5 million in 2011 to 7 million by 2016 (Table 21). Female unemployment remains high: 1 in 4 women in urban Ethiopia is unemployed.

**The modest reduction in unemployment was accompanied by an increase in wages.** Real hourly wages increased by 10 percent between 2011 and 2016. Public and private sector wages increased at a similar pace, and the public sector wage remained substantially higher than the private sector one (Figure 77). Real hourly wages increased most for the uneducated and the secondary-educated, but decreased for workers with a postsecondary degree (Figure 78). The increase in wages for the uneducated is consistent with the strong poverty reduction among households headed by a little-educated head (although only a minority of the uneducated are wage-employment: 29% in 2016).

**Figure 75** LABOR FORCE PARTICIPATION INCREASED

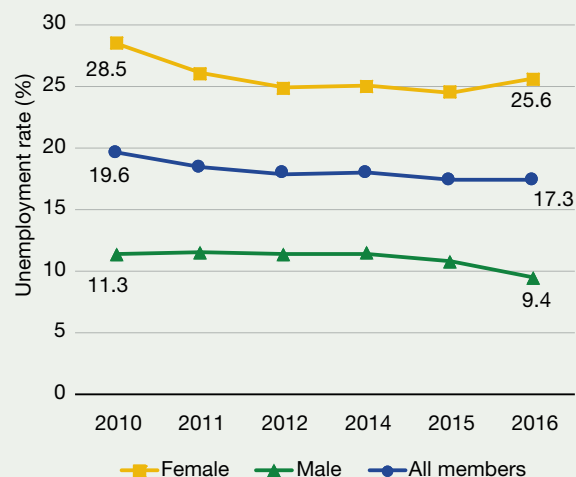
Labor force participation in urban Ethiopia



Source: UEUS, 2011-2016.

**Figure 76** WHILE UNEMPLOYMENT RATES MODESTLY DECREASED

Unemployment rate in urban Ethiopia



Source: UEUS, 2011-2016.

48 The HCES contains some basic labor-related information, yet it does not allow to identify unemployment based on a standard definition. Moreover, the HCES does not report income, which prevents any analysis about wages. The UEUS contain a variety of labor information, including unemployment and wages, on an annual basis. However, the UEUS does not allow to link such labor information to poverty due to the lack of comparability between the UEUS and the HCES. Another downside of the UEUS is its lack of migration-related information. Thus, this section relies on the LFS 2013, which contains detailed migration information, when analyzing migration and labor issues. Additional advantage of the LFS is its information about secondary jobs, which is not available in neither the HCES nor the UEUS.

Table 21

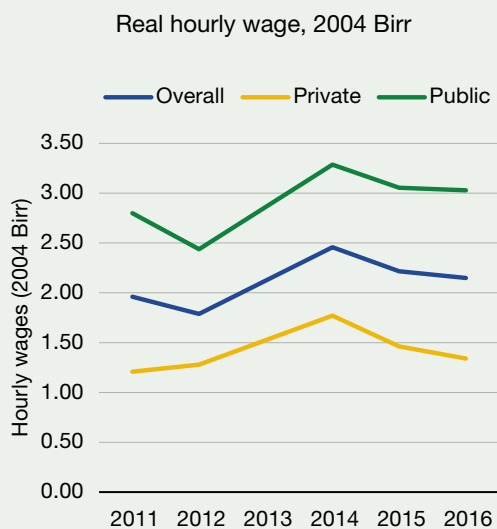
**EMPLOYMENT/UNEMPLOYMENT TRENDS IN URBAN ETHIOPIA, 2010-2016**

|                              | ALL HOUSEHOLDS |       |        | HEADED BY UNSKILLED |       |        |
|------------------------------|----------------|-------|--------|---------------------|-------|--------|
|                              | 2016           | 2011  | CHANGE | 2016                | 2011  | CHANGE |
| Number of employed (million) | 7.03           | 4.52  | 2.51   | 2.76                | 2.16  | 0.61   |
| Per household                | 1.58           | 1.56  | 0.02   | 1.44                | 1.42  | 0.02   |
| Per working age              | 0.61           | 0.57  | 0.04   | 0.59                | 0.56  | 0.03   |
| Unemployment rate            |                |       |        |                     |       |        |
| Household head               | 8.5%           | 9.1%  | -0.7   | 10.5%               | 10.3% | 0.2    |
| Non-head member              | 25.6%          | 28.8% | -3.2   | 26.6%               | 28.4% | -1.8   |
| All members                  | 17.3%          | 19.6% | -2.2   | 18.7%               | 19.5% | -0.8   |

Note: Unskilled workers are defined in this chapter as those who did not complete primary education.

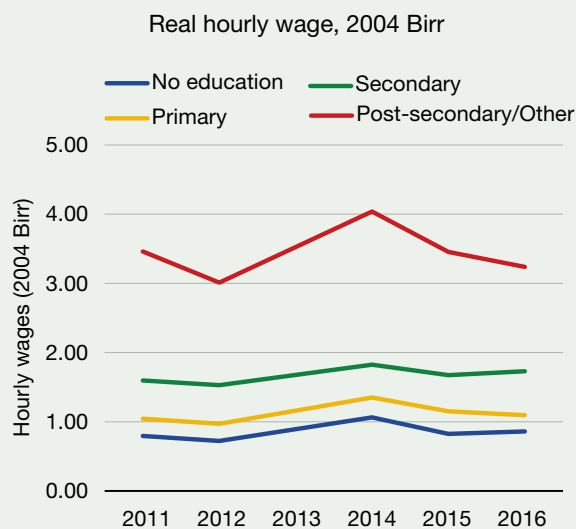
Source: Staff calculations based on UEUS 2010-2016.

Figure 77

**REAL HOURLY WAGES INCREASED**

Source: UEUS, 2011-2016.

Figure 78

**EXCEPT FOR WORKERS WITH A POST-SECONDARY DEGREE**

Source: UEUS, 2011-2016.

**The education level of the urban labor force has substantially improved since 2011, with larger cities accommodating a larger share of better-educated workers.**

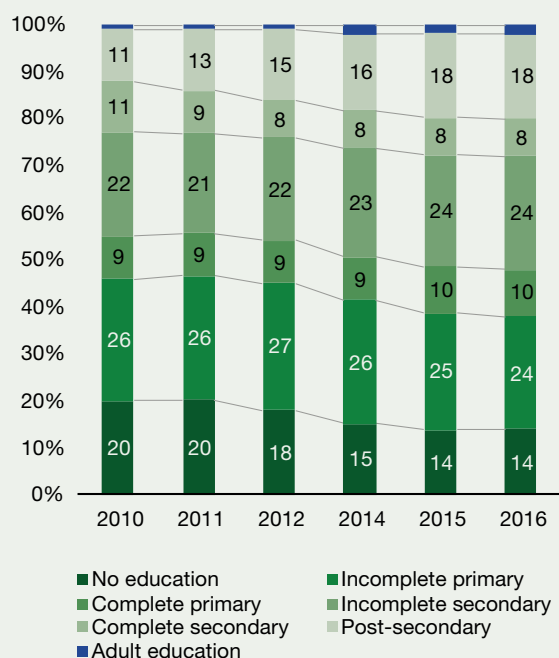
According to the UEUS, the share of the working-age population in urban Ethiopia without primary education declined from 20 percent in 2010 to 14 percent in 2016 (Figure 79). In tandem, the share of those who complete secondary education or more has increased from 23 percent to 28 percent. Workers in small towns are on average less educated than workers in larger towns and cities (Figure 80). The increasingly educated urban labor force reflect rapid improvements in urban education and has been a main correlate of decreasing poverty rates, explaining 16 percent of the reduction in urban poverty between 2011 and 2016 (Figure 70).

**The composition of urban employment did not change much between 2011 and 2016.** The most notable change, if any, is the increase in the share of self-employment in total urban employment (increase by three percentage points - Figure 81). The sectoral composition of employment did not change at all (Figure 82). This explains why the population shifts across industries did not contribute to poverty reduction in Figure 71. Given the lack of mobility across industries, the strong urban poverty reduction between 2011 and 2016 took place within economic sectors.

**Figure 79**

### EDUCATION OF THE URBAN LABOR FORCE IMPROVED

Educational composition of the urban labor force

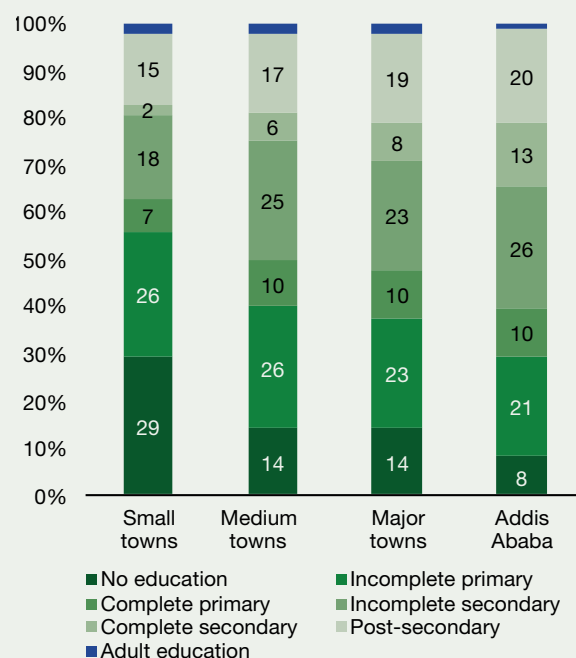


Source: UEUS, 2011-2016.

**Figure 80**

### WORKERS IN SMALL TOWNS ARE LESS EDUCATED

Educational composition of the urban labor force by city size, 2016



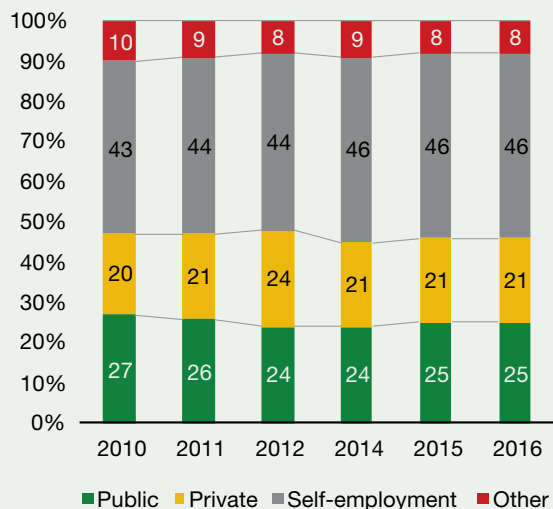
Source: UEUS, 2011-2016.



Figure 81

## SELF-EMPLOYED MARGINALLY INCREASED

Status in employment, urban areas

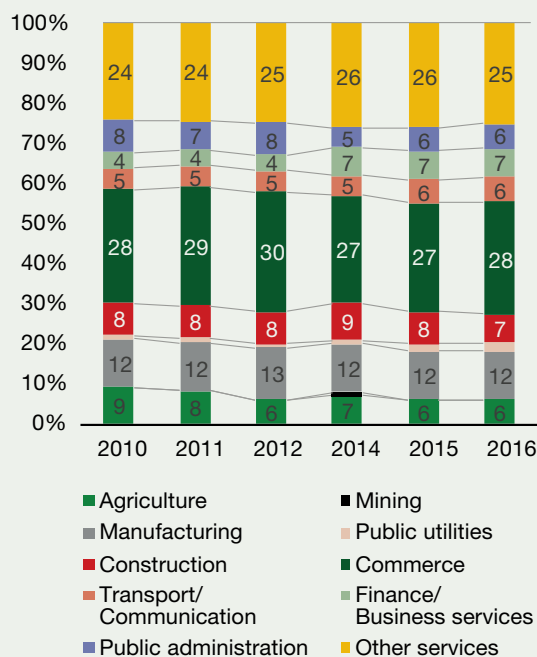


Source: UEUS, 2011-2016.

Figure 82

## NO SECTORAL EMPLOYMENT SHIFTS

Sectoral composition of employment, urban areas



Source: UEUS, 2011-2016.

**A closer look at household job compositions suggests that urban poverty reduction between 2011 and 2016 was mainly driven by households headed by self-employed workers.** People living in households headed by self-employed heads accounted for 46 percent of the total urban population in 2011 and 53 percent of all urban poverty reduction between 2011 and 2016 (Table 22). The reduction in poverty for households with a self-employed head was strongest when other (non-head) household members also engaged in employment: A poverty decrease of 19 percentage points in case other household members were self-employed (in addition to the self-employed head), 15 percentage points if other household members had private wage-employment, and 13 percentage points if other households

members had public wage-employment (Table 22). The share of households with a self-employed head that also has other employed household members increased from less than 23 percent in 2011 to more than 28 percent in 2016, explaining a fair share of urban poverty reduction. Overall, looking at Table 22, the reduction in poverty was largest when non-head household members moved into self-employment, regardless of the head's occupation. It seems, in other words, that returns to self-employment increased between 2011 and 2016 (see Figure 83 and Box 4). This is consistent with the finding in Figure 68 that the little-educated accounted for most of the poverty reduction in urban Ethiopia (the unskilled are more likely to be self-employed).

Table 22

## EMPLOYMENT COMPOSITIONS WITHIN URBAN HOUSEHOLDS, 2011-2016

| HEAD               | NON-HEAD MEMBER                    | SHARE        |              |            | POVERTY RATE |             |              | CONTRIBUTION TO POVERTY REDUCTION |
|--------------------|------------------------------------|--------------|--------------|------------|--------------|-------------|--------------|-----------------------------------|
|                    |                                    | 2016         | 2011         | CHANGE     | 2016         | 2011        | CHANGE       |                                   |
| Public employee    | At least one public                | 2.8          | 3.9          | -1.1       | 11.4         | 19.7        | -8.4         | 2.9                               |
|                    | No public but at least one private | 5.6          | 5.7          | -0.1       | 3.7          | 7.8         | -4.1         | 2.1                               |
|                    | Only self-emp                      | 1.9          | 1.6          | 0.3        | 9.5          | 27.1        | -17.7        | 2.5                               |
|                    | Nobody employed                    | 7.6          | 8.1          | -0.5       | 6.4          | 12.4        | -6.0         | 4.5                               |
| Private employee   | At least one public                | 1.9          | 2.7          | -0.9       | 17.8         | 25.7        | -7.9         | 1.9                               |
|                    | No public but at least one private | 0.9          | 1.0          | 0.0        | 10.6         | 17.6        | -7.0         | 0.6                               |
|                    | Only self-emp                      | 3.6          | 2.8          | 0.8        | 17.1         | 27.6        | -10.5        | 2.7                               |
|                    | Nobody employed                    | 5.8          | 5.2          | 0.6        | 11.6         | 22.2        | -10.6        | 5.0                               |
| Own account worker | At least one public                | 18.0         | 16.2         | 1.8        | 19.6         | 32.4        | -12.8        | 18.8                              |
|                    | No public but at least one private | 2.8          | 2.2          | 0.6        | 10.1         | 24.8        | -14.8        | 2.9                               |
|                    | Only self-emp                      | 7.3          | 4.4          | 2.9        | 14.4         | 33.4        | -19.0        | 7.5                               |
|                    | Nobody employed                    | 16.6         | 23.6         | -7.0       | 15.2         | 26.1        | -10.9        | 23.3                              |
| Others             | At least one public                | 4.8          | 6.3          | -1.5       | 24.2         | 36.4        | -12.2        | 7.0                               |
|                    | No public but at least one private | 3.9          | 3.0          | 0.9        | 13.5         | 28.4        | -14.8        | 4.0                               |
|                    | Only self-emp                      | 5.8          | 4.0          | 1.9        | 17.4         | 38.6        | -21.2        | 7.6                               |
|                    | Nobody employed                    | 10.6         | 9.4          | 1.1        | 14.2         | 21.7        | -7.5         | 6.4                               |
| <b>Total</b>       |                                    | <b>100.0</b> | <b>100.0</b> | <b>0.0</b> | <b>14.6</b>  | <b>25.6</b> | <b>-11.0</b> | <b>100.0</b>                      |

Sources: Staff calculations based on HICE 2010/11 & 2015/16.

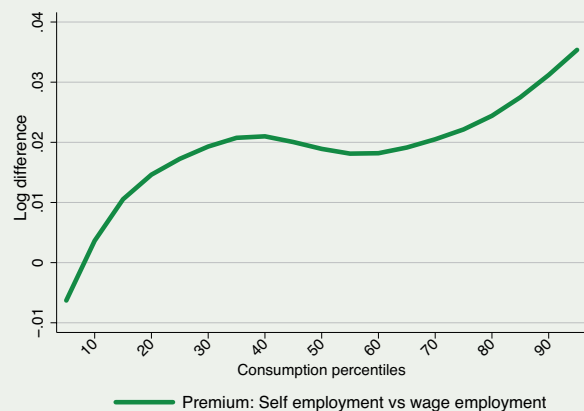
**Increasing returns to self-employment versus wage employment were important drivers of consumption changes in urban areas.** Figure 83 shows the premium accruing to self-employment over wage employment in urban areas between 2011 and 2016. The estimates are calculated using the same RIF methodology outlined in Chapter 3 except now the sample is restricted to urban households, and controls for the type of employment of the household head are added. The premium is positive across all but the very bottom of the distribution and is especially large for the wealthiest households. The small increase in the share of urban self-employment (Figure 81) combined with the increasing returns to self-employment shown below, were both important in explaining poverty reduction in Ethiopia's cities and towns.

**The positive effect of a higher proportion of household members being engaged in self-employment is strongest for the poorest urban households.** A variable reflecting the share of household members that were engaged in self-employment activities was also included in the RIF regressions. The role of that variables in explaining consumption changes between 2011 and 2016 is shown in Figure 84 below. The impact is strongest for the poorest urban households before declining to zero over the consumption distribution. It therefore appears that although the returns to having a self-employed household head were not particularly strong for poor urban households, increasing the share of household members who were self-employed was a strong driver of consumption changes over time.

Figure 83

### THE PREMIUM OF SELF-EMPLOYMENT OVER WAGE EMPLOYMENT INCREASED OVER THE URBAN CONSUMPTION DISTRIBUTION

Returns to self-employment versus wage employment in urban areas 2011-2016

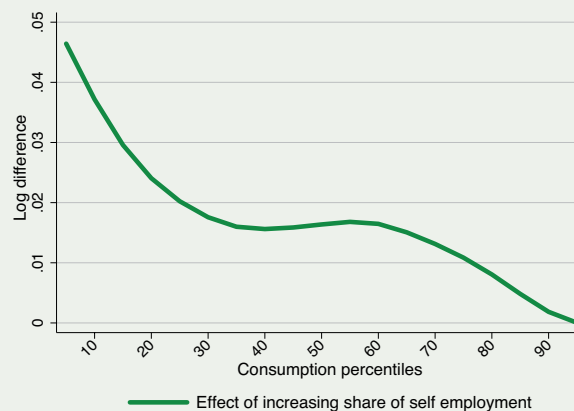


Source: HCES 2011, 2016. World Bank staff calculations.

Figure 84

### INCREASING THE SHARE OF HOUSEHOLD MEMBERS IN SELF-EMPLOYMENT WAS MOST IMPORTANT FOR THE POOREST URBAN HOUSEHOLDS

The effect of increasing household shares of self-employment in urban areas 2011 to 2016



Source: HCES 2011, 2016. World Bank staff calculations.

**Larger cities have started to form agglomeration economies.** Urban economic theory posits that cities with a large population size have productivity advantages due to agglomeration economies. A common way to measure such agglomeration effects on labor productivity is to relate nominal wages to the population size of towns. In the competitive markets where average wages reflect the average marginal product of labor, higher (nominal) wages in large cities indicate that workers earn more than they would otherwise do in smaller towns. The econometric analysis in Kammei and Nakamura (2019) suggests that given their observed

characteristics (such as age, sex, marital status, and educational attainment), workers earn 5.7 percent more as the town population size doubles. The chance of finding a wage job (or the share of workers with wage jobs) increases by 4.4 percentage points as the town population size doubles (Figure 85). Importantly, the estimated effects are larger among female (6.4 percentage points), the youth (7.7 percentage points), and unskilled workers (7.4 percentage points). In addition, unemployment is not necessarily higher in larger towns once workers' characteristics are considered, whereas underemployment is lower.

**Box 18****Self-employment and poverty transitions**

Panel data from the Ethiopia Socioeconomic Survey (ESS) can be used to investigate the relationship between poverty dynamics and the sector of employment of the head of the household. This analysis is restricted to urban households that were interviewed in both the second and third rounds (2014 and 2016) of the ESS. The poverty line is set at the 25th percentile of the national consumption distribution, which is consistent with what was done in the poverty dynamics chapter in this poverty assessment.

There were substantial movements out of poverty for households with a self-employed head. As shown in the two panels in Table 23 within the self-employed category there were more transitions for those households in the informal sector (the majority of households) than there were in the formal sector. Of all the informally self-employed households in urban Ethiopia that were below the poverty line in 2014, two-thirds had escaped poverty by 2016. This is far higher than the seven percent that fell below the poverty line over the same period. A similar pattern holds for the formally self-employed, who experienced far more positive (out-of-poverty) transitions than negative (into poverty) ones.

**Table 23****STRONG MOVEMENTS OUT OF POVERTY FOR THE URBAN SELF-EMPLOYED**

Conditional poverty transition probabilities, 2014-2016

| Formal self-employed (urban) |          |      |          |      |
|------------------------------|----------|------|----------|------|
| 2016                         |          |      |          |      |
| 2014                         |          |      | Non-poor | Poor |
|                              | Non-poor | Poor |          |      |
|                              | Non-poor |      | 98.2     | 1.8  |
|                              | Poor     |      | 44.7     | 55.3 |
|                              |          |      |          | 100  |

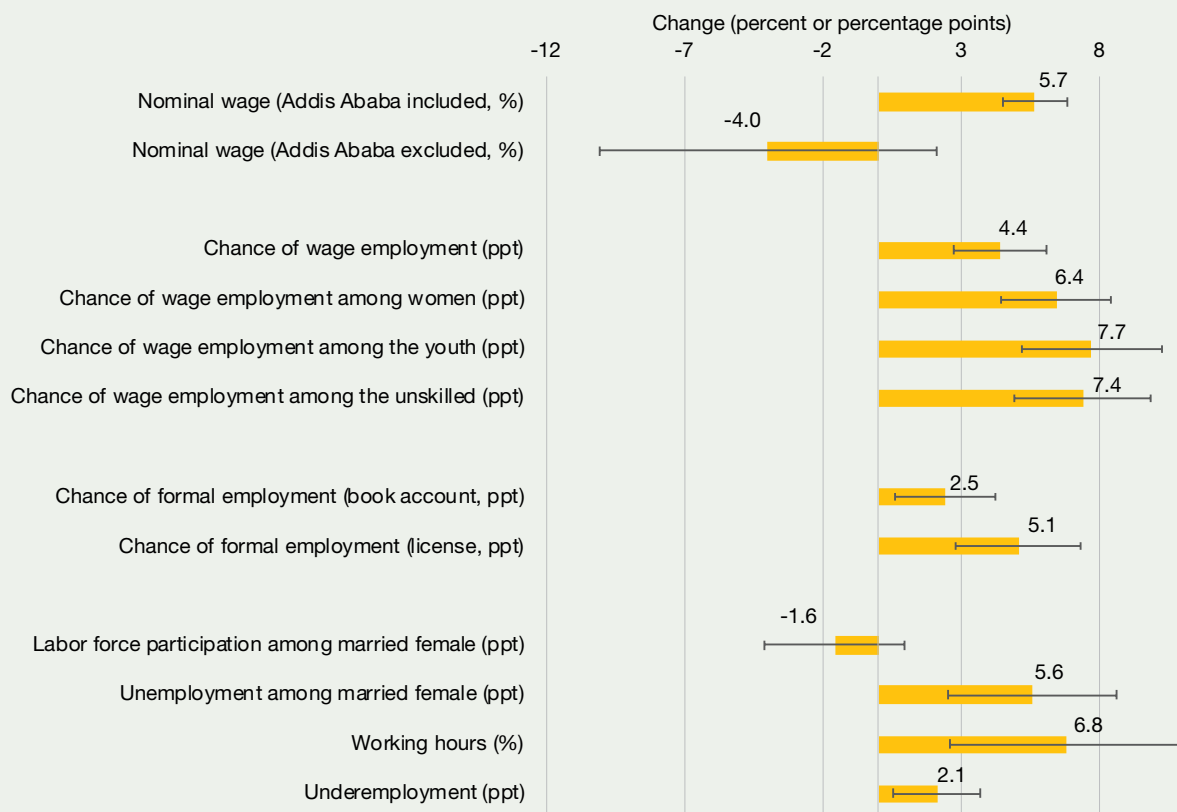
| Informal self-employed (urban) |          |      |          |      |
|--------------------------------|----------|------|----------|------|
| 2016                           |          |      |          |      |
| 2014                           |          |      | Non-poor | Poor |
|                                | Non-poor | Poor |          |      |
|                                | Non-poor |      | 93.3     | 6.7  |
|                                | Poor     |      | 66.6     | 33.4 |
|                                |          |      |          | 100  |

Source: ESS, 2014, 2016. World Bank staff calculations.

Figure 85

## CITY POPULATION SIZE AND LABOR OUTCOMES

A doubling of town population size is associated with an increase of...



Note: The numbers indicate the changes in labor outcomes (expressed in either percent or percentage points) associated with a 100 percent increase in the town population size, after workers' characteristics are controlled for. The estimated two-stage least-square regression models include past population density as the instrumental variable to reduce endogeneity. See Kamei and Nakamura (2019) for details.

Source: HCES 2011, 2016. World Bank staff calculations.

## 2.5 Integration of rural migrants into urban labor markets

**Though still limited, rural to urban migration is expected to increase substantially in coming years.**<sup>49</sup> Given that increasing skills often drive migration, the higher overall education levels in Ethiopia can be expected to induce more

and more rural youth to look for employment in urban areas. This is a good thing, as research shows ample welfare benefits of increased internal migration (Box 19). For Ethiopia too, De Brauw, Mueller and Woldehanna (2017) find that both rural to rural and rural to urban migration lead to substantial gains in real consumption levels (adjusted for rural-urban differences in cost of living).

49 The latest survey with systematic information on migration was the 2013 LFS. In the five years prior to the 2013 LFS, six percent of Ethiopians changed zone of residence, a similar share as in 1999. The pattern of internal migration is however changing, with rural-to-urban becoming the dominant flow as of 2008.



## From advocating restrictions to letting them move

Economic theory now recognizes that governments should not try to hold on to people

**Many governments around the world actively attempt to discourage internal population movements from rural to urban areas.** In a 2013 UN survey on Population and Development, 148 out of the 185 surveyed countries with data (80 percent) had government policies aimed at reducing internal migration from rural to urban areas. Such efforts are particularly prevalent among countries in Africa, where 85 percent of countries have policies aimed at reducing rural-to-urban migration. Only five countries in the world had policies aimed at speeding up migration to urban areas: China, Sri Lanka, Poland, Tajikistan, and the Maldives.<sup>50</sup>

**Governments' efforts to control rural-urban migration have their roots in the early influential literature on the links between rural-urban migration and urban unemployment.** In the well-known Harris-Todaro model (1970), differences in expected incomes between rural and urban sectors attract migrants from rural areas. Wages in the modern urban sector are fixed and exogenous, and jobs are rationed. Only a small fraction of rural migrants find employment in the modern urban sector, with the others unemployed or underemployed in an urban informal sector. Job creation programs in urban areas raise the expected urban income, stimulating further rural-urban migration and, if the labor demand elasticity in urban areas is large enough, increase the level of urban unemployment. This implication of the model was particularly important for policy because it argued against making cities attractive and implicitly endorsed measures to discourage or reverse migration (Commission on Growth and Development, 2009).

**Though the Harris-Todaro model has been and remains influential, evidence supporting the predicted link between migration and urban unemployment is weak.** Many of the critical assumptions and predictions of the model have not been supported by subsequent empirical studies of labor markets in developing countries. More robust and more plausible alternative models of migration have since emerged, with very different policy implications.<sup>51</sup> In particular, increasing returns to scale in the modern sector (vs. constant returns in agriculture) and spillovers from clustering imply that movement from lagging to leading places could have substantial growth and welfare payoffs. In addition, on average, migration brings sizable economic benefits to the migrant in terms of increased consumption levels. Also, migrants who move to cities tend to maintain strong links with their home communities, sending back remittances that boost consumption and investment in origin communities and help to converge living standards across space. In that sense, limiting migration comes down to slowing down development.

**As argued by the World Development Report on Reshaping Economic Geography, the policy challenge is not to keep people from moving, but how to keep them from moving for the wrong reasons.** Agglomeration forces and economic opportunities will inevitably pull workers and families to cities, and the goal for policy is how to best accommodate these flows. To avoid migration for the wrong reasons, governments should work to eliminate or alleviate the factors that push people out of their origin areas, such as agricultural decline, due to pressures of population growth or environmental degradation, inefficient land tenure systems, and lack of adequate public services. Migration due to push factors is unlikely to add to agglomeration benefits but likely to exacerbate the urban congestion that policy-makers strive so hard to avoid.

50 World Population Policies Database ([http://esa.un.org/poppolicy/about\\_policy\\_section.aspx](http://esa.un.org/poppolicy/about_policy_section.aspx)).

51 See Lall, Selod and Shalizi (2006); Commission on Growth and Development (2009).

**Given that migrants will become a larger share of the urban labor force in coming years, it is important to assess how they perform in the urban labor market vis-à-vis the resident population.** Migrants from rural areas to Addis Ababa and major towns are far less educated than non-migrant residents of those towns (though more educated than non-migrants from the same origin zone). Those migrants tend to work for temporary or casual private jobs, as well as informal self-employment jobs. There seems to be a structural difference in the time it takes migrants to catch up with the resident population. In Addis Ababa, recent migrants (less than three years in the city) have substantially worse employment outcomes relative to older migrants (between 3

and 10 years in the city) and the resident population. However, as they stay in Addis longer, rural migrants increasingly find a chance to work in public employment and private permanent jobs, and their employment structure becomes more comparable to the resident population (Table 24). Rural migrants in other major towns outside Addis also have lower educational levels than non-migrant household heads. However, these lower education outcomes do not seem to affect their employment status much. The employment status of recent migrants in major towns is fairly similar to that of older migrants and the resident population, suggesting that economic integration of migrants in those towns is relatively smooth compared to the capital city.

**Table 24** **MIGRANTS' CHARACTERISTICS IN ADDIS ABABA AND MAJOR TOWNS, 2013**

|                              | ADDIS ABABA |          |             | MAJOR TOWNS |          |             |
|------------------------------|-------------|----------|-------------|-------------|----------|-------------|
|                              | <3 YRS      | 3-10 YRS | NON-MIGRANT | <3 YRS      | 3-10 YRS | NON-MIGRANT |
| Sex                          |             |          |             |             |          |             |
| Male                         | 86.2        | 78.5     | 63.6        | 75.2        | 78.2     | 70.9        |
| Female                       | 13.8        | 21.5     | 36.4        | 24.8        | 21.8     | 29.1        |
| Education                    |             |          |             |             |          |             |
| No education                 | 20.1        | 14.9     | 3.2         | 20.9        | 17.2     | 9.3         |
| Primary incomplete           | 32.9        | 39.2     | 12.3        | 25.6        | 33.8     | 21.4        |
| Primary complete             | 7.2         | 12.3     | 9.3         | 10.0        | 9.0      | 11.3        |
| Secondary incomplete         | 37.9        | 16.0     | 20.7        | 23.4        | 15.4     | 23.1        |
| Secondary complete           | 2.0         | 3.2      | 23.6        | 2.9         | 4.0      | 15.5        |
| Post-secondary               | 0.0         | 14.4     | 30.8        | 17.3        | 20.3     | 19.3        |
| Adult education              | 0.0         | 0.0      | 0.1         | 0.0         | 0.4      | 0.1         |
| Employment status            |             |          |             |             |          |             |
| Public employee              | 0.0         | 17.6     | 20.6        | 24.1        | 23.7     | 25.2        |
| Private employee (permanent) | 13.1        | 20.1     | 23.2        | 8.3         | 7.5      | 9.3         |
| Private employee (temporary) | 32.6        | 18.0     | 11.5        | 17.9        | 19.4     | 12.8        |
| Private employee (contract)  | 2.3         | 6.2      | 5.3         | 3.8         | 2.7      | 5.1         |
| Private employee (casual)    | 11.9        | 5.4      | 2.7         | 3.5         | 5.7      | 3.3         |
| Self-employment (formal)     | 5.9         | 4.0      | 11.1        | 1.4         | 3.6      | 4.6         |
| Self-employment (informal)   | 25.3        | 24.0     | 20.3        | 37.3        | 35.0     | 35.5        |
| Others                       | 9.0         | 4.6      | 5.4         | 3.9         | 2.4      | 4.1         |

Note: Only household heads of ages between 25 and 45 years are included. Migrants are only those who moved from rural areas.

Sources: Staff calculations based on LFS 2013.

**However, the educational attainment of rural migrants' children does not catch up with those of non-migrants.**

In the capital city, 70 percent of 18 to 20-year-old individuals in the households headed by rural migrants who arrived during the last 10 years had not completed primary education (Table 25). This share amounts to 45 percent among the households who arrived between 10 and 20 years ago. Nevertheless, their educational levels are by far lower than the

individuals of the same age in non-migrant households (nearly 90 percent complete primary education). A similar pattern is observed in major towns. It is important to better understand the challenges rural migrants' face when it comes to education in their urban destination. Otherwise, increasing intergenerational economic mobility—which is a key function of cities—is undermined (see Chapter 7).

**Table 25 RURAL MIGRANTS' CHILDREN ARE FAR LESS EDUCATED THAN THE CHILDREN OF THE RESIDENT POPULATION**

Characteristics of 18-20-year-olds, by parents' migration status and duration

|                      | ADDIS ABABA |           |             | MAJOR TOWNS |           |             |
|----------------------|-------------|-----------|-------------|-------------|-----------|-------------|
|                      | <10 YRS     | 10-20 YRS | NON-MIGRANT | <10 YRS     | 10-20 YRS | NON-MIGRANT |
| Sex                  |             |           |             |             |           |             |
| Male                 | 44.8        | 34.1      | 52.8        | 51.2        | 51.8      | 50.9        |
| Female               | 55.2        | 65.9      | 47.2        | 48.8        | 48.3      | 49.1        |
| Education            |             |           |             |             |           |             |
| No education         | 15.3        | 0.0       | 0.4         | 5.6         | 0.0       | 3.0         |
| Primary incomplete   | 44.3        | 55.2      | 11.6        | 40.0        | 36.2      | 17.9        |
| Primary complete     | 18.3        | 4.4       | 11.3        | 9.4         | 14.4      | 10.7        |
| Secondary incomplete | 22.1        | 40.4      | 52.0        | 41.8        | 49.5      | 48.6        |
| Secondary complete   | 0.0         | 0.0       | 14.6        | 0.0         | 0.0       | 10.4        |
| Post-secondary       | 0.0         | 0.0       | 10.1        | 3.3         | 0.0       | 9.5         |

Note: Only individuals of ages between 18 and 20 whose household heads are migrants from rural areas or non-migrants.

Sources: Staff calculations based on LFS 2013.

**Qualitative research suggests that new rural migrants face significant challenges in towns and cities.**

A qualitative study commissioned by the World Bank confirms that most migrants move to urban areas in search for work and better opportunities (mainly education), and to escape rural areas they describe as bereft of hope and prospects.<sup>52</sup> Young women also migrate to escape arranged marriages and traditional gender roles. The migration experience is described as tough and full of challenges, and risky for young women in particular. Despite the many challenges, the bulk of migrants rate their migration as positive, saying that it opened up opportunities that were unthinkable in rural areas. Life in the city however is hard, with migrants complaining of frequent

harassment by local authorities and law enforcement (and for young women, sexual harassment by brokers and employers), the difficulty of obtaining ID cards (Box 20), and, related, the difficulty of accessing different types of government support. Interviews with regional and city authorities revealed a staunchly negative view of rural-urban migration, labeling it as “unacceptable” or “illegal” and exacerbating problems in urban areas. SME bureaus and BOLSAAs confirmed not providing services to migrants as they do not have ID cards. This restrictive context leads to a lose-lose situation: Rural Ethiopian migrants are exposed to unnecessary risks and hardships while receiving towns and cities forego the increase in economic output migrant workers can bring.

52 BDS Center for Development Research. “Employability of rural migrants in urban settings in Ethiopia: Final Report”. August 2017, Addis Ababa.

## The correlates of having a Kebele ID

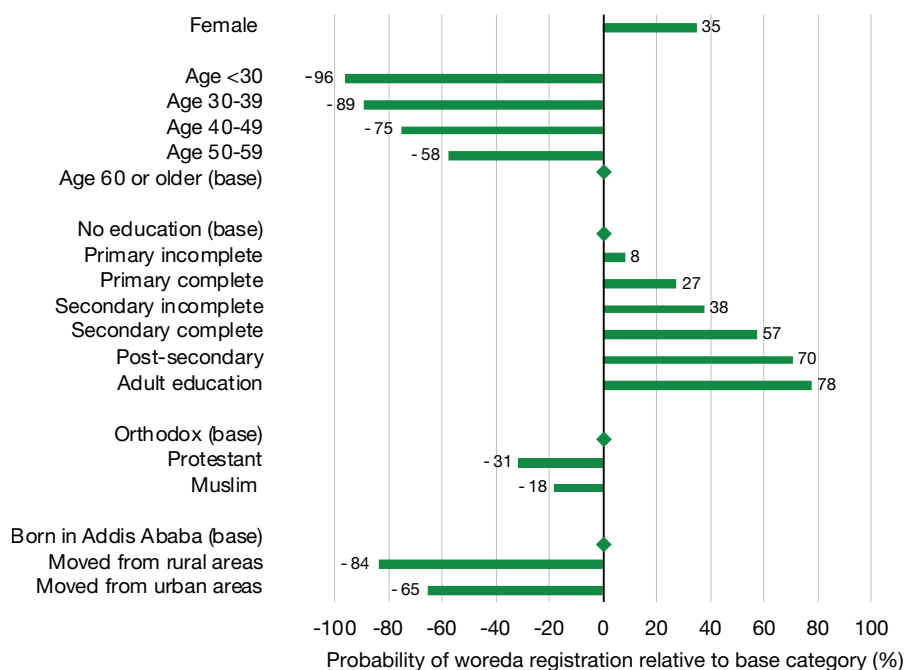
**Ethiopia does not have a national ID, but works with so-called Kebele IDs. Kebele IDs are IDs issued by the Kebele (village) in which a person is residing.** Having a Kebele ID is a prerequisite for being able to benefit from certain government support services and programs in the Kebele. For instance, obtaining an unemployment ID and gaining access to government services for the unemployed requires having a Kebele ID. As a result, recent rural migrants that not have the ID from their new urban Kebele cannot access the full package of public services and support.

**Is not having an ID widespread?** Among the 28,000 households surveyed in Addis Ababa for the screening purpose of the Urban Productive Safety Net Program (UPSNP), 14 percent of the households were not registered at the Kebele. Nearly 60 percent of non-registered households did not attempt to register at woreda, while 26 percent of non-registered households did attempt but their registration was unsuccessful (did not obtain the ID). Relative to households whose head was born in Addis, households headed by rural migrants are 84 percentage points less likely to be registered at the Kebele. Households with younger and less educated heads tend not to be registered (Figure 56). Interestingly, female-headed households are more likely to be registered, compared to male-headed households.

Figure 86

### YOUNG RURAL MIGRANTS ARE LEAST LIKELY TO HAVE A KEBELE ID

Correlates of having a Kebele ID from Addis Ababa



Source: UPSNP baseline survey.

**The results show that rural migrants are less likely to be registered.** They however do not show whether this non-registration carries certain adverse consequences. For instance, does the mere fact of not being registered explain the worse education outcomes for migrants' children documented in Table 25? A focused study is warranted to examine the causes behind migrants' worse outcomes and whether this is at all related to the ID system.

# Conclusions

**Ethiopia is rapidly urbanizing from a low base.** Despite fast urban population growth, the number of people below the poverty line in urban areas decreased, reflecting a strong drop in the poverty rate. The reduction in poverty was widely shared across all types of cities. Given their large share in the urban population, small and medium-sized towns accounted for much of the reduction in urban poverty between 2011 and 2016.

**Urban poverty reduction has been associated with positive developments in the labor market.** To further increase the labor market's contribution to urban poverty reduction, it needs to be made more inclusive by designing interventions and policies to increase labor force participation of women and youth. This is especially important for bigger cities: A doubling of population leads to a six percentage-point increase in the unemployment rate for married women.

**Private sector wage employment has contributed little to poverty reduction.** As noted in the fifth Ethiopia Economic Update, wage levels in the private sector, which seem

to be informally pegged to public sector wages, are low and not sufficiently determined by their productivity. It is important to remove any regulatory barriers which may be distorting wages and job creation in the private sector. The ongoing reform agenda in the country is expected to contribute positively to private sector development.

**Self-employment has been the main contributor to urban poverty reduction.** Households with a self-employed head experienced fast poverty reduction, and even faster if other household members also transitioned into self-employment. The low base of private sector wage employment implies that self-employment will absorb, in absolute terms, most of the new urban labor force over the coming decade, even though the private sector is expected to start growing faster. To facilitate self-employment and poverty reduction, it would be wise to simplify and streamline the current onerous procedures to start and operate a micro- and small enterprises (in terms of licensing and workspace requirements, annual license renewals, certificates of competence, etc.).









# Poverty and Social Protection

The Productive Safety Net Program (PSNP) and Humanitarian Food Aid (HFA) are Ethiopia's main social protection programs in terms of spending. While the PSNP addresses chronic food insecurity in rural areas, HFA responds to acute food insecurity as a result of severe shocks, mainly of climatic nature. This chapter assesses targeting, coverage, and beneficiary incidence of both programs as it relates to poverty.

The analysis in this chapter shows that the PSNP is overall well targeted, with beneficiaries more likely to be poor and having food shortages, owning fewer assets, and living in more remote and drier places. Within an overall positive picture, three main issues emerge. First, in both 2011 and 2016 the number of beneficiaries by region bore little relation to poverty or food security needs by region, with caseloads exceeding poverty or food security indicators in certain regions and substantially falling short in other regions. Second, first-stage selection of districts (woredas) added little to overall targeting performance, suggesting a rethink on the merits of geographical targeting in a country with relatively small spatial welfare disparities in rural areas. And third, under-coverage remained an important issue, with only 13 percent of the poor population in Ethiopia covered by PSNP in 2016. Increasing the coverage of the poor will likely require an expansion of the PSNP to more woredas in rural Ethiopia and better aligning regional needs and beneficiary numbers, without necessarily increasing the total number of beneficiaries.

Overall, HFA is reasonably well targeted as well. Inclusion errors nevertheless exist, with a substantial share of HFA beneficiaries being significantly better-off on a wide range of indicators. These inclusion errors are mainly due to HFA targeting in woredas where PSNP is not active: HFA is well targeted in woredas where PSNP is active, though poorly targeted where PSNP is not active. Results suggest HFA targeting could be improved by harmonizing PSNP and HFA.

Finally, the data show that issues of food insecurity have become progressively less salient in Ethiopia, reflecting Ethiopia's development success over the past decades. Poverty, while it has also decreased substantially, has remained stickier. In light of this, the Government could consider reorienting the focus of safety nets to poverty in general and target benefits to the poorest rather than the narrowly-defined food insecure. This shift would lead to a more inclusive social protection policy.

# Introduction

**The previous chapters showed that, despite substantial improvements, poverty and vulnerability in Ethiopia remain widespread.** Over 21 million Ethiopians still live in absolute poverty -are not able to meet their most basic needs- and transitions in and out of poverty are common. Indeed, Chapter 4 suggests that about half of the Ethiopian population experienced a spell of poverty between 2012 and 2016, while the share of chronically poor households -households that are always poor- also remains significant at about 15 percent. These findings highlight the need for social protection interventions that help increase income levels and, equally important, protect households from seasonal fluctuations and shocks.

**This chapter will analyze the targeting, coverage, and benefit incidence of Ethiopia's main social protection interventions.** For reasons of availability of comparable and good quality data, the analysis will largely focus on the two largest programs: The rural Productive Safety Net Project

(PSNP) and the Humanitarian Food Aid (HFA) intervention. Data on both projects are available from the 2011 and 2016 HCES. The Urban Productive Safety Net Program (UPSNP) only started operations in early 2017, and as such has not been included in the most recent HCES. From the outset, it is important to note that this chapter will not estimate impacts of social protection interventions. Rather, the focus is on coverage, benefit incidence, and targeting, with the aim to provide actionable suggestions on how to improve coverage of the poorest and most vulnerable people in society.

**This chapter proceeds as follows:** Section 2 summarizes Ethiopia's social protection system and its evolution in terms of coverage and financing. This section also briefly summarizes the large literature estimating the impacts of the PSNP. Section 3 focuses on targeting, coverage and benefit incidence of the PSNP, while Section 4 focuses on HFA. The final section concludes.



## 2. ETHIOPIA'S SOCIAL PROTECTION SYSTEM

**For the Government of Ethiopia, social protection is a key part of a policy framework focused on reducing poverty, social and economic risk, vulnerability and exclusion.** The National Social Protection Policy comprises five focus areas: safety nets, tailored livelihoods support, social security, increased access to basic services by vulnerable groups and legal protection for those who are vulnerable to abuse and violence. Table 26 identifies the principal social

protection instruments in each focus area. Focus area 1 represents the largest area of intervention, accounting for 71.4 percent of social protection spending between 2012/13 and 2015/16.<sup>53</sup> Spending in 2015/16 was increased because of an increased emergency food intervention in response to the El Nino drought; but even without this safety nets would remain the largest area of investment in social protection in Ethiopia.

**Table 26** PRINCIPAL SOCIAL PROTECTION INSTRUMENTS BY FOCUS AREA

| FOCUS AREA 1:<br>PRODUCTIVE<br>SAFETY NETS   | FOCUS AREA 2:<br>EMPLOYMENT OP-<br>PORTUNITIES AND<br>LIVELIHOODS | FOCUS AREA 3:<br>SOCIAL<br>INSURANCE | FOCUS AREA 4:<br>ACCESS TO<br>HEALTH, EDUCA-<br>TION AND OTHER<br>SOCIAL SERVICES | FOCUS AREA 5:<br>LEGAL PRO-<br>TECTION AND<br>SUPPORT            |
|--|---|--------------------------------------|---|--|
| a) Unconditional transfers                   | a) Technical support to on and off-farm livelihoods               | a) Mandatory social insurance        | a) Social transfers for human capital development                                 | a) Communications for prevention of abuse and exploitation       |
| b) Conditional transfers                     | b) Employment services and standards                              | b) Index linked weather insurance    | b) Health fee waivers and health insurance subsidies                              | b) Care for people living outside protective family environments |
| c) Public works                              | c) Financial services   | c) Life insurance                    | c) Establishment of a social work system  | c) Protective legal and policy environment                       |
| d) Scale-up mechanisms for disaster response |   | d) Community based health insurance  | d) Services for persons with disabilities   | d) Support to survivors of abuse and exploitation                |
|  |   |                                      | e) School feeding   | e) Drop-in centres and hotline                                   |
|  |   |                                      |   | f) Establishment of a network of specialized service providers   |

Source: OECD, 2019.

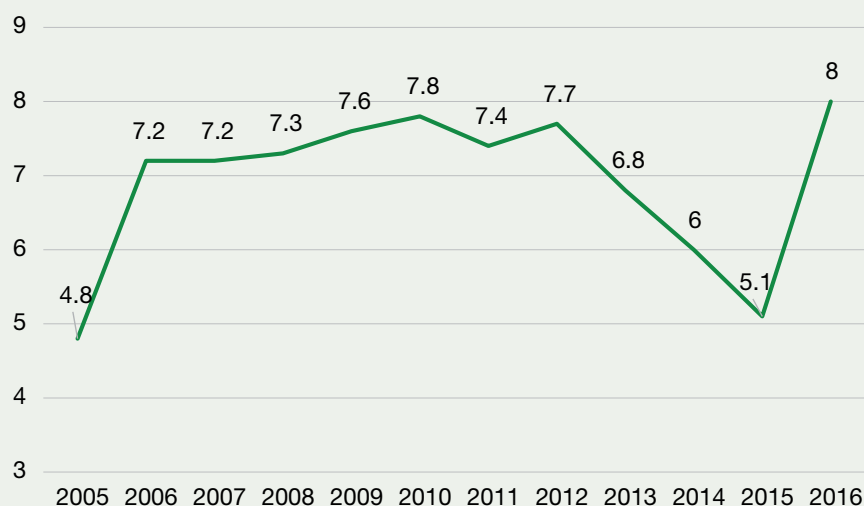
53 Kefyalew Endale, Pick, A. and Tassew Woldehanna, 2019, Financing Social Protection in Ethiopia: A Long-term Perspective, OECD Development Policy Papers No. 15, OECD

**PSNP and HFA account for the bulk of spending on social protection in Ethiopia.** Since its inception in 2004/5, coverage of the PSNP has increased from 4.8 million (in 2004/5) to 8 million in 2015/16, though caseloads were on a downwards trend since 2012 (Figure 87). Despite this scale up, financing for the PSNP has declined in real terms (Figure

88). This decline in benefit spending (in real terms) reflects a significant fall in the value of benefits, which in turn has reduced the programme's effectiveness in reducing poverty (Devereux, Sabates-Wheeler and Slater, 2008). Benefits were however increased in 2018 and 2019.

**Figure 87**

### THE NUMBER OF PSNP BENEFICIARIES HAS INCREASED BETWEEN 2005 AND 2016...

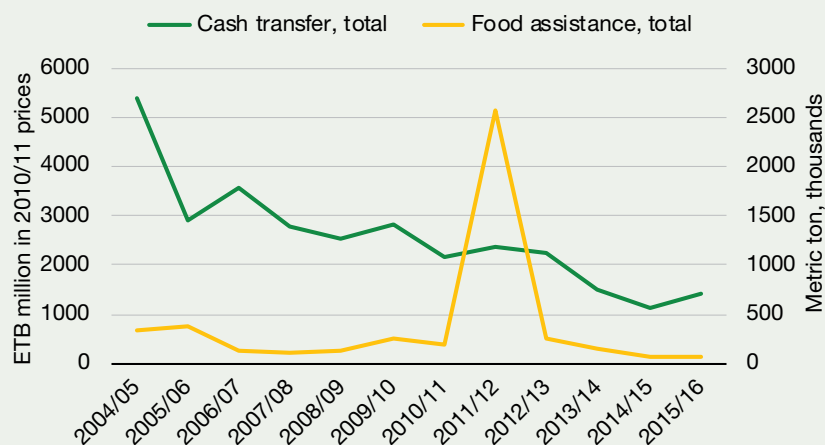


Source: OECD, 2019.

**Figure 88**

### WHILE FUNDING, IN REAL TERMS, HAS DECREASED

Cash transfers – left axis – and food assistance – right axis- per year



Source: OECD, 2019.



**As a country prone to increasingly frequent climatic shocks, emergency drought relief plays a crucial role in supporting populations affected by these crises.**

HFA beneficiary numbers vary wildly from year to year, reflecting the vicissitudes of unpredictable weather patterns.<sup>54</sup> The number of beneficiaries was fairly low in 2010/11 (approximately 2.8 million) but increased to 10 million during the 2015/16 El Nino drought. Though accurate data on spending on emergency relief is difficult to come by given its largely off-budget nature, it is estimated that over US\$1 billion was spent on HFA during the 2015/16 drought year.

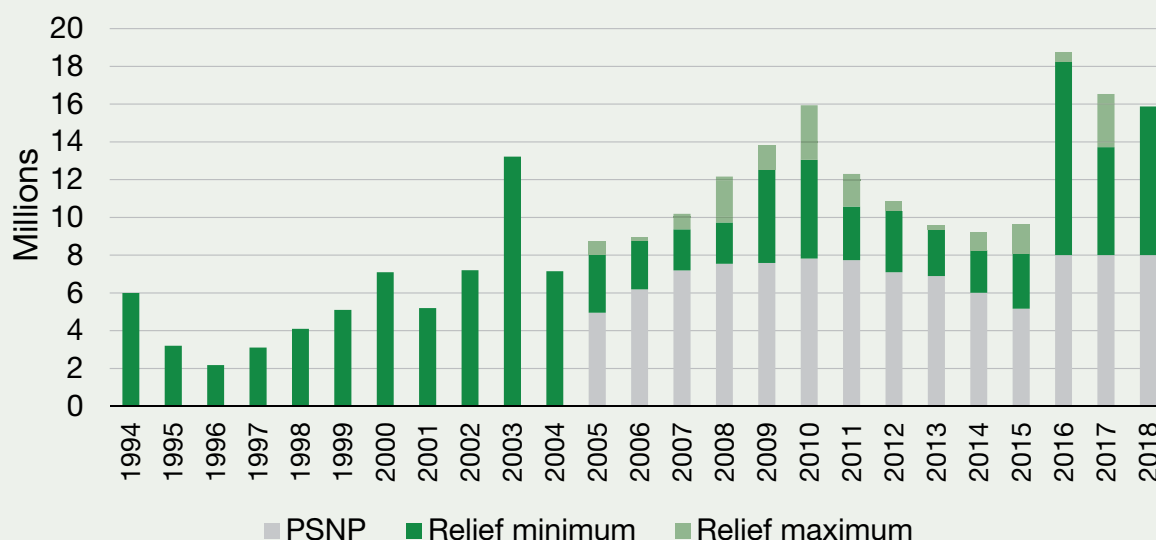
**Food security is at the heart of Ethiopia's social protection system.** The rural PSNP and the HFA target chronically and acute food insecure people in rural areas, respectively, while the UPSNP is part of a broader Urban Food Security Strategy that aims to minimize food insecurity, which it deems

pervasive in urban areas (FDRE, 2016).<sup>55</sup> The prevalence and depth of food insecurity has decreased substantially over the past decade. In 2005, close to one-third of Ethiopians reported experiencing food shortages in the 12 months preceding the survey. This decreased to 22 percent in 2011 and 10 percent in 2016 (Table 27). The food gap, defined as the number of months per year food insecure households report food insecurity, decreased from 3.9 months in 2005 to 3.3 months in 2016. The progress becomes even more striking when considering all households, and not only the ones who reported having experienced a food shortage: Overall, the number of months per year an Ethiopian citizen experienced food insecurity decreased from 1.2 months in 2005 to 0.7 months in 2011 and 0.3 months in 2016. From the impact evaluations, it is clear that the PSNP has substantially contributed to the improvement in food security (Box 21).

**Figure 89**

**EMERGENCY RELIEF CASELOADS VARY FROM YEAR TO YEAR**

Emergency relief beneficiaries, millions



Source: OCHA, 2018.

54 HFA is defined as direct transfers to individuals or households for the purpose of increasing the quantity and/or quality of food consumption in anticipation of, during, and in the aftermath of a humanitarian crisis. It includes both in-kind food aid and cash transfers for smoothing consumption.

55 The 2016 WMS suggests food insecurity in urban areas is not that pervasive: Four percent of the urban population reported having experienced a food shortage in the 12 months preceding the survey.

Table 27

## AS A SIGN OF PROGRESS, FOOD SHORTAGES ARE INCREASINGLY LESS PREVALENT

Food shortage in the last 12 months -% yes- and number of months of shortage, 2005-2011-2016

|                   | 2005              |                   | 2011              |                   | 2016              |                   |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
|                   | FOOD SHORTAGE (%) | FOOD GAP (MONTHS) | FOOD SHORTAGE (%) | FOOD GAP (MONTHS) | FOOD SHORTAGE (%) | FOOD GAP (MONTHS) |
| Tigray            | 32.5              | 3.5               | 13.2              | 3                 | 11.9              | 2.5               |
| Afar              | 33.1              | 3.3               | 7.7               | 5.2               | 9                 | 3.8               |
| Amhara            | 30.4              | 3.5               | 23.2              | 3.1               | 10.4              | 3                 |
| Oromia            | 36.8              | 4.3               | 16                | 3.1               | 10.5              | 3.6               |
| Somali            | 28.9              | 3.8               | 30.3              | 4.4               | 6                 | 3                 |
| Benishangul-Gumuz | 22.5              | 3.1               | 5.6               | 2.1               | 8.5               | 2.8               |
| SNNPR             | 26.6              | 3.9               | 35                | 3.4               | 12.6              | 3.2               |
| Gambella          | NA                | NA                | 31.6              | 2.6               | 3.8               | 1.2               |
| Harari            | 15.3              | 3.4               | 8                 | 3.2               | 0                 | NA                |
| Addis Ababa       | 11.8              | 4                 | 7.8               | 4                 | 1.1               | 3.6               |
| Dire Dawa         | 20.6              | 4.7               | 13.5              | 1.6               | 7.7               | 2                 |
| National          | 31.4              | 3.9               | 21.6              | 3.3               | 10.2              | 3.3               |

Note: Food gap is only calculated for those households that report a food shortage.

Source: WMS, 2005; 2011; 2016.

**The next two sections will look at standard indicators of coverage, targeting and beneficiary incidence of Ethiopia's main social protection programs.** Due to data availability, the focus will be on the PSNP and HFA (humanitarian food aid). For both programs, the chapter will first look at the national picture, before disaggregating and decomposing some of the indicators at lower administrative levels, mainly regional and woreda-level. Targeting of the programs will be assessed on a variety of indicators of well-being (food security, assets, household consumption, etc.). Given the

nature of this report (a Poverty Assessment), the ultimate aim of social protection programming (to reduce poverty and vulnerability), and the way in which the Government of Ethiopia measures and monitors poverty, the emphasis will be on targeting as it relates to consumption poverty.<sup>56</sup> Throughout the analysis, we will use an estimate of pre-benefit household consumption expenditures in order not to conflate targeting accuracy and program benefits. Annex 5 describes in detail the technical approach to the analysis.

<sup>56</sup> To assess targeting accuracy, we use a measure of pre-transfer total consumption expenditures. Given the focus of both PSNP and HFA on food security, one might ask why the chapter focuses on total consumption and not food consumption. While this is a valid question, the rank correlation coefficient between quintiles of total consumption expenditure and food consumption expenditure is higher than 0.8, meaning that focusing on one or the other will not have any substantive impacts on the analysis.

## Impacts of the PSNP

**Over the years PSNP demonstrated notable impacts, though their scope varies by region and period.** In the highland regions the impact evaluations of the PSNP carried out on panel surveys every two years between 2006 and 2014 reported that food security has improved: The impact estimates showed that the number of months a household cannot satisfy its food needs was reduced on average by more than 40 percent, from 3.1 to 1.7 months for public works beneficiaries. During the same period positive impact estimates were also recorded on consumption, dietary diversity, housing conditions, and, to some extent, livestock holdings: Both food and total consumption per capita doubled (in real terms), dietary diversity improved by about 25 percent, and positive impacts on livestock assets were observed for the poorest 20 percent beneficiary households but not for the rest of the relatively better-off households. In the lowlands however, where public works were introduced in 2010, evaluations found no significant impact until 2014 on most relevant outcomes except a decrease in food insecurity of almost one month for the poorest 50 percent of beneficiaries. The evaluation reports also found that overall PSNP participants markedly reduced their use of distress asset sales. In addition, some impact evaluation rounds suggest that PSNP has led to an increase in girls' grade attainment and has improved schooling efficiency by 10–20 percent. Similarly there is some evidence that participation in PSNP lowers fertility and leads to a delay in marriage of adolescent girls. However, these impacts were not sustained over the years.

**The impact evaluation sample and methodology were revised in 2016.** During 2016–2018, despite several challenges including the El Nino and La Nina induced droughts, no adjustments of benefits value despite two digits inflation, and worsening of implementation performance with respect to timely payments delivery, the program sustained its impacts: food security (+0.1 months), household consumption (+10%), and dietary diversity (+0.1 food groups) continued to improve in highlands. In the lowlands the impact estimates on food security are positive and higher than in the past - a reduction of about half month in the food gap for the overall PSNP beneficiaries sample compared to the control group.

Source: Berhane, Hirvonen, and Hoddinott (2015a); Berhane, Hirvonen, and Hoddinott (2015b); Berhane et al. (2018a); Berhane et al. (2018b); Hoddinott and Mekasha (2017).

### 3. THE RURAL PRODUCTIVE SAFETY NET PROJECT

The PSNP is overall well-targeted to the poor and compares favorably with Public Works programs in other countries. First stage woreda-selection does not add much to the targeting performance of PSNP, reflecting the difficulty of geographical targeting in a country with relatively small spatial welfare disparities in rural areas. Pro-poor selection of households within woredas however compensates for relatively weak geographical targeting. PSNP is better targeted towards the poor in the highlands, yet even in the lowlands the PSNP is progressive. Contrary to conventional wisdom, Afar outperforms the other regions on targeting, thanks to the fact that all woredas in Afar are included in PSNP and hence there is no first-stage exclusion of the poor due to woreda selection. Within an overall positive picture, three main issues emerge: First, the number of beneficiaries by region bears little relation to poverty or food security needs by region, with case-loads exceeding poverty or food security indicators in certain regions and substantially falling short in other regions. Second, selection of woredas adds little to targeting performance, suggesting a rethink on whether geographical targeting can actually work in a country such as Ethiopia. And third, under-coverage remains an important issue, with only 13 percent of the poor population in Ethiopia covered by PSNP in 2016.

#### 3.1 The national picture

##### COVERAGE AND BENEFICIARY INCIDENCE

**While absolute coverage of PSNP increased between 2011 and 2016, relative coverage slightly decreased.**

While slightly over nine percent of the total population was covered by the PSNP in 2011, this decreased by a half a percentage point by 2016. Coverage declined substantially until

2015, when PSNP covered less than six percent of the population, but then sharply increased in 2016 as a result of the EL Nino drought. At the regional level, coverage decreased most in Tigray and increased sharply in Somali (Table 28). In 2016, coverage of the PSNP was highest in Afar (32 percent), Somali (30 percent) and Tigray (19 percent). Harari and Oromia had the lowest coverage at about five percent of the population (with the exception of Addis Ababa, Gambella and Benishangul-Gumuz that are not covered by the PSNP).

**Table 28**

#### SUBSTANTIAL CHANGES IN REGIONAL COVERAGE BETWEEN 2011 AND 2016

Share of the population covered by PSNP, by region

|                   | 2011  | 2016  | DIFFERENCE |
|-------------------|-------|-------|------------|
| Tigray            | 30.9% | 19.6% | -11.3%     |
| Afar              | 31.0% | 31.8% | 0.8%       |
| Amhara            | 12.4% | 9.1%  | -3.3%      |
| Oromia            | 4.4%  | 5.0%  | 0.6%       |
| Somali            | 8.5%  | 29.9% | 21.4%      |
| Benishangul-Gumuz | 0.0%  | 0.0%  | 0.0%       |
| SNNPR             | 8.7%  | 5.6%  | -3.1%      |
| Gambella          | 0.0%  | 0.0%  | 0.0%       |
| Harari            | 7.9%  | 4.5%  | -3.4%      |
| Addis Ababa       | 0.0%  | 0.0%  | 0.0%       |
| Dire Dawa         | 13.7% | 14.3% | 0.6%       |
| National          | 9.2%  | 8.7%  | -0.5%      |

Note: Coverage is the share of the population covered by PSNP.

Source: PSNP administrative data; CSA population projections. World Bank staff calculations.

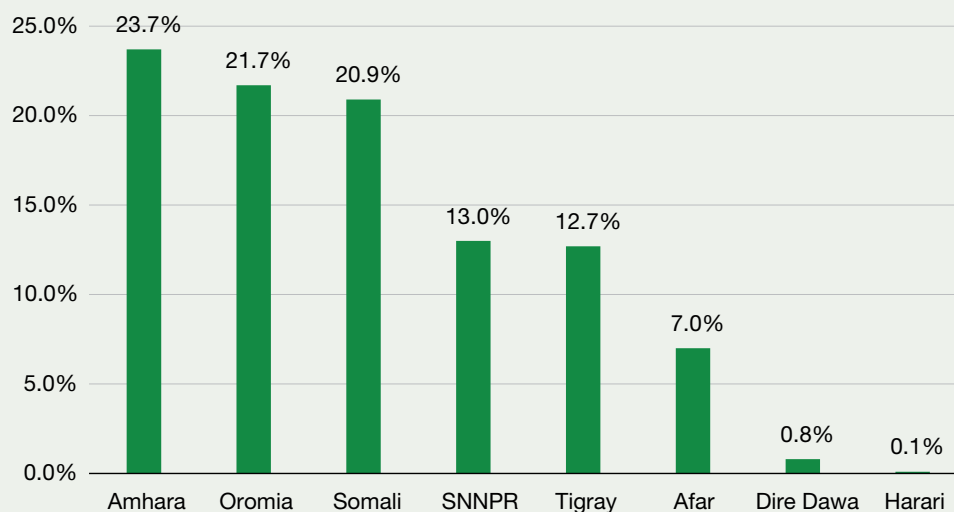
**In 2016, two-thirds of all PSNP beneficiaries were clustered in three regions.** Amhara region accounted for 24 percent of all PSNP beneficiaries, Oromia for 22 percent and Somali region for 21 percent (Figure 90). While Oromia region

had a relatively low coverage in 2016 (Table 28), its *beneficiary incidence* was nevertheless high due to its large population. Somali, despite having a relatively small population, still accounted for a large share of overall beneficiaries.

**Figure 90**

## AMHARA, OROMIA, AND SOMALI REGIONS ACCOUNT FOR TWO-THIRDS OF PSNP BENEFICIARIES

Distribution of PSNP beneficiaries by region, 2016



Source: WMS, 2016. World Bank staff calculations.

**The slight decrease in coverage between 2011 and 2016 applied to all income groups and to food-secure and insecure households alike.** In 2011, 17 percent of the poorest quintile of the Ethiopian population was covered by PSNP, decreasing to 13 percent in 2016 (Figure 91). Coverage of higher-income groups decreased too: Close to six percent of the wealthiest 20 percent of the Ethiopian population was covered by the PSNP in 2011, decreasing to four percent in 2016. In both years, PSNP coverage was higher for low-income than higher-income quintiles, showing the progressive nature of PSNP targeting. Looking at self-reported food insecurity rather than consumption poverty, coverage of both the food-insecure and secure slightly decreased but remains progressive: In 2016, about 17 percent of the nationwide food-insecure people were covered by PSNP, compared to seven percent of the food-secure population.<sup>57</sup>

Overall, 13 percent of the poor population in Ethiopia was covered by the PSNP in 2016 (Figure 91).

## A DETAILED TARGETING ASSESSMENT

**Beneficiary targeting for the PSNP happens in different stages.** The procedure to target households can be broken down into three steps. In the first step, the Federal Ministry of Agriculture, following consultations with the regions, defines the caseload per woreda based on the history of food aid in the woreda. When the PSNP started in 2005, woredas included were the ones that had received three consecutive years of food aid prior to 2005. In the second step, kebele selection and caseloads are determined by the woreda. Finally, households are selected at kebele level through community-based targeting. This subsection will assess overall targeting of the PSNP but will also break down the targeting

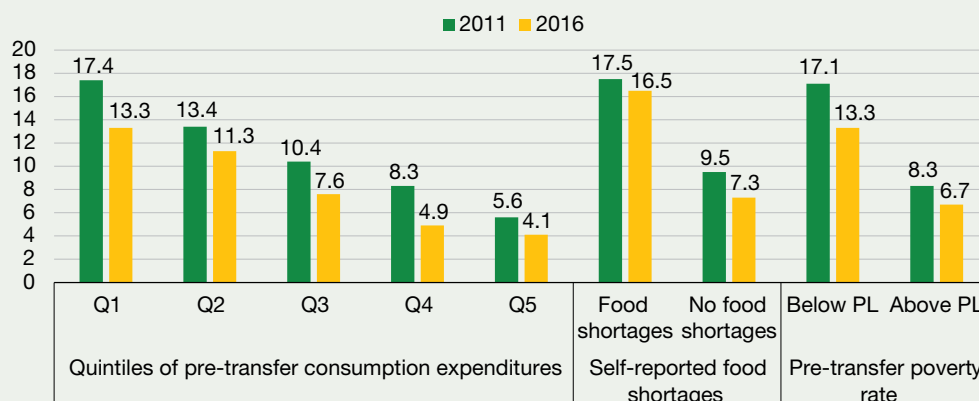
57 The results on food security need to be interpreted with caution. In contrast to consumption expenditures, where it is possible to construct a pre-PSNP consumption estimate, we cannot get to a pre-PSNP food security situation based on the WMS. For instance, part of the food-secure population that is covered by PSNP may in fact have been food-insecure if it were not for PSNP.



Figure 91

## COVERAGE DECREASED ACROSS THE DISTRIBUTION

Share of population covered by PSNP, by pre-transfer consumption quintile, pre-transfer poverty status, and self-reported food security, 2016



Source: WMS, 2011; 2016. World Bank staff calculations.

performance by the different selection steps. Given data limitations, step 1 (selection of woredas) and step 2 (selection of kebeles) will be combined in the analysis.

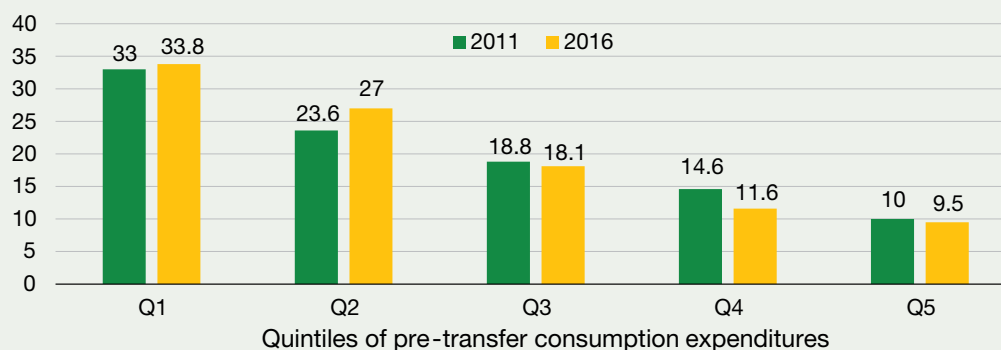
**At the national level, PSNP is well targeted towards the poor.** About one-third of PSNP beneficiaries were in the poorest quintile in terms of consumption in 2016, and 60 percent of beneficiaries were in the bottom 40 percent (Figure 92). Targeting performance was largely similar in 2011 and 2016, though inclusion of the bottom 40 percent was

somewhat better in 2016.<sup>58</sup> Despite the progressive nature of targeting, there was considerable inclusion of the upper quintiles: Close to ten percent of beneficiaries were in the top consumption quintile in 2016, and 21 percent were in the upper 40 percent of the consumption distribution. In terms of binary poverty status, 39 percent of PSNP beneficiaries were below the national poverty line in 2016. The beneficiary incidence for PSNP compares favorably in cross-country comparisons (Box 22).

Figure 92

## MOST OF PSNP BENEFICIARIES ARE IN THE LOWER CONSUMPTION QUINTILES

Share of beneficiaries by quintile, 2011 and 2016



Source: WMS, 2011; 2016. World Bank staff calculations.

<sup>58</sup> Higher inclusion of the bottom 40 percent in 2016 is largely due to the broader sample in the 2016 HCES (the inclusion in the sample of the previously uncovered pastoral zones of Somali and Afar).

## Box 22

# Targeting of PSNP Public Works Looks Good in Cross-Country Comparison

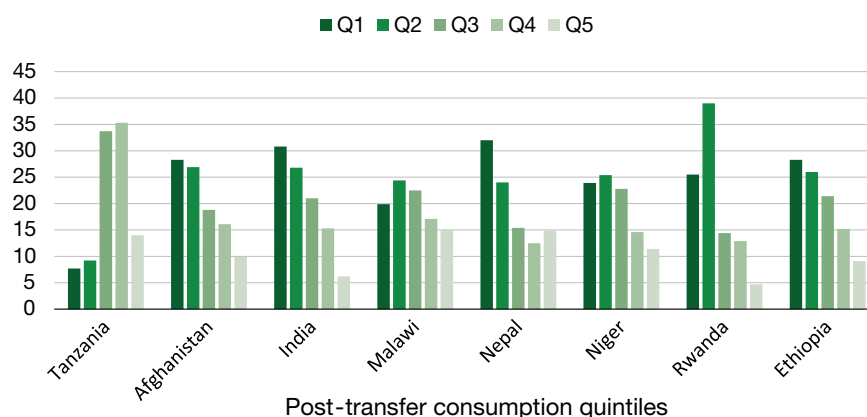
**How does the coverage and beneficiary incidence of PSNP compare to programs in other countries?** To answer that question, we use harmonized data from the World Bank's Atlas of Social Protection – Indicators of Resilience and Equity (ASPIRE). ASPIRE is a compilation of Social Protection and Labor (SPL) indicators gathered from officially-recognized international household surveys in 123 countries.<sup>59</sup> Given that ASPIRE indicators are mainly used for cross-country comparison, trade-offs need to be made to make the data as comparable as possible. For this current comparison, the trade-offs are the following: We focus only on Public Works programs (which accounts for the bulk of PSNP), we use post-transfer final consumption aggregates, and we use the US\$1.9 international poverty line. Querying the ASPIRE database for countries with Public Work programs and data between 2010 and 2016 resulted in 11 hits. Three hits were removed from the comparison as the countries and/or programs were deemed quite incomparable to Ethiopia (The Philippines, Mexico and Argentina).<sup>60</sup>

**Overall, Ethiopia compares favorably to other countries when it comes to coverage and beneficiary incidence.** In 2016, slightly over seven percent of the Ethiopian population was covered by the PSNP Public Works, which is higher than most of the other countries in the comparison, except Malawi, India and Afghanistan. Targeting was also relatively good in Ethiopia, with the share of Public Works beneficiaries that is in the bottom quintile being higher than in any of the other African countries, though lower than in India and Nepal (Figure 93). In contrast, the share of PW beneficiaries that is below the international poverty line is lower in Ethiopia (35 percent) than in Malawi (74 percent), Rwanda (81 percent), and Niger (65 percent). This is however largely explained by Ethiopia's relatively low poverty rate compared to those countries.

Figure 93

## ETHIOPIA'S BENEFICIARY INCIDENCE COMPARES FAVORABLY

Share of beneficiaries by quintile, Public Works programs



Source: ASPIRE, 2019. WMS, 2016. World Bank staff calculations.

59 Accessible at [http://datatopics.worldbank.org/aspire/about\\_aspire](http://datatopics.worldbank.org/aspire/about_aspire)

60 The eight comparator countries are Rwanda (2013), Malawi (2013), Niger (2014), Tanzania (2012), Nepal (2010), India (2011), and Afghanistan (2011).

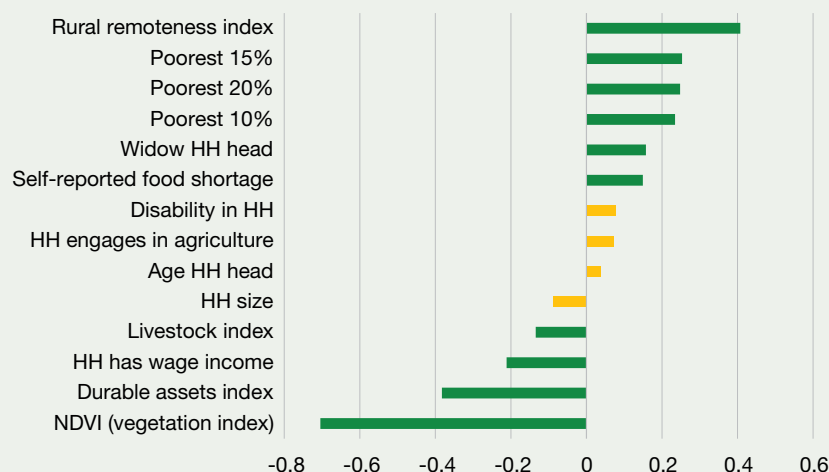
**PSNP is also well targeted on other non-monetary indicators of living standards.** Figure 94 shows standardized differences in a number of indicators of living standards between PSNP and non-PSNP beneficiaries. Differences are standardized so as to easily interpret the length of the bars as the magnitude or importance of the differences. Overall, PSNP beneficiaries are more likely to be poor, more likely to report food shortages, and are more remote in terms of distance from key infrastructure assets. They also have lower scores on standardized asset and livestock indices. The

main difference between beneficiaries and non-beneficiaries however, as seen by the largest bar in Figure 94, is the “greenness” of the area where they live: PSNP beneficiaries live in areas that have far lower scores on the normalized difference vegetation index (NDVI), a measure of the greenness of the vegetation. In simple terms, PSNP beneficiaries live in dryer places with less vegetation and less suitable for rainfed agriculture -likely a result of path-dependency as woredas included in PSNP are the ones that have a history of receiving emergency food aid.

**Figure 94**

## PSNP BENEFICIARIES ARE WORSE-OFF ON A VARIETY OF WELFARE INDICATORS

Standardized mean differences between PSNP and non-PSNP beneficiaries, 2016



Note: Bars in green are statistically significant at the 10% level or lower.

Source: WMS, HCES; 2016. World Bank staff calculations.

**Though PSNP is well targeted overall, regional beneficiary numbers are not strongly related to regional patterns of poverty and food insecurity.** Table 29 compares the number of PSNP beneficiaries by region with the number of poor and food-insecure people in that region, estimated from the 2016 WMS. Though findings depend on the specific indicator considered, three broad patterns are clear: First, more populated regions such as Oromia and SNNPR have low beneficiary numbers compared to needs, with needs proxied by the number of poor or food-insecure people. Second, in the lowlands regions of Afar and Somali the PSNP beneficiary numbers exceed the number of poor or food-insecure

people. Somali for instance had 1.7 million PSNP beneficiaries in 2016, even though the WMS survey of the same year estimated a far lower number of people in poverty or food-insecurity. And third, there seems to be no objective reason to not include the western lowlands regions of Gambella and Benishangul in the PSNP, as their needs (again proxied in terms of poverty or food insecurity) exceed the ones of Harari and rural Dire Dawa.<sup>61</sup> Looking at chronic poverty (as estimated in Chapter 4) rather than poverty or food insecurity largely tells a similar story: Regions' shares in national chronic poverty seems quite disconnected from regions' shares in the total PSNP beneficiary caseloads (Figure 95).<sup>62</sup>

61 Doing the same calculations for the 2011 survey results in qualitatively similar results. The patterns presented in Table 4 are not influenced too much by the 2015/16 drought.

62 The ESS are only representative at regional level for Tigray, Oromia, Amhara and SNNPR. The estimates of chronic poverty for Somali and Afar need to be interpreted with care.

Table 29

**THE NUMBER OF PSNP BENEFICIARIES BY REGION**

Food shortage in the last 12 months -% yes- and number of months of shortage, 2005-2011-2016

|                   | NUMBER OF POOR PEOPLE | NUMBER OF POOR PEOPLE PRE-PSNP TRANSFERS | NUMBER OF FOOD-INSECURE PEOPLE (SELF-REPORTED) | NUMBER OF PSNP BENEFICIARIES |
|-------------------|-----------------------|--|--|------------------------------|
| Tigray            | 1,368,769             | 1,415,335                                | 610,640  | 1,010,750                    |
| Afar              | 391,037               | 488,569                                  | 151,221  | 562,082                      |
| Amhara            | 5,280,434             | 5,451,790                                | 2,119,424                                      | 1,890,985                    |
| Oromia            | 7,941,991             | 7,993,015                                | 3,495,489                                      | 1,733,622                    |
| Somali            | 1,141,383             | 1,144,429                                | 304,177  | 1,673,009                    |
| Benishangul-Gumuz | 264,158               | 264,158                                  | 84,535   | 0                            |
| SNNPR             | 3,597,101             | 3,635,469                                | 2,210,394                                      | 1,039,959                    |
| Gambella          | 81,350                | 81,350                                   | 14,145   | 0                            |
| Harari            | 10,310                | 10,310                                   | 0  | 10,723                       |
| Dire Dawa         | 37,519                | 38,543                                   | 15,140   | 64702                        |

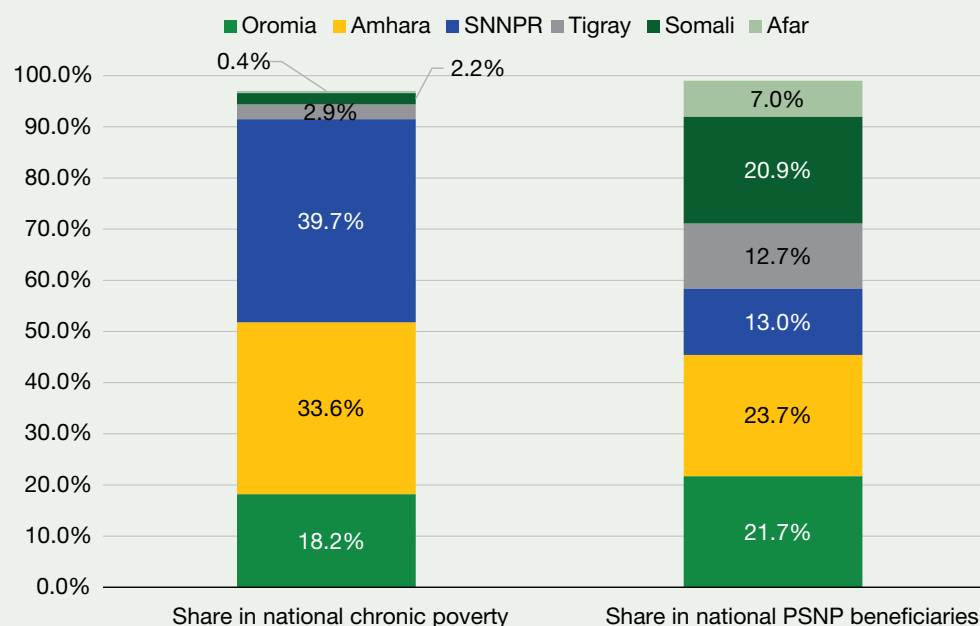
Note: Number of poor people and number of food-insecure people are calculated from the HCES/WMS using survey sampling weights. The number of poor people pre-PSNP transfers deducts PSNP transfers from the consumption aggregate to get an estimate of pre-PSNP poverty levels.

Source: HCES, WMS, 2016. World Bank staff calculations.

Figure 95

**SUBSTANTIAL DISPARITIES BETWEEN REGIONS' CONTRIBUTION TO OVERALL CHRONIC POVERTY AND REGIONS' SHARES IN OVERALL PSNP CASELOAD**

Regions' contribution to national chronic poverty and national PSNP caseload, 2016



Source: WMS, 2016. World Bank staff calculations.

## STEPS 1 & 2: SELECTION OF WOREDAS AND KEBELES

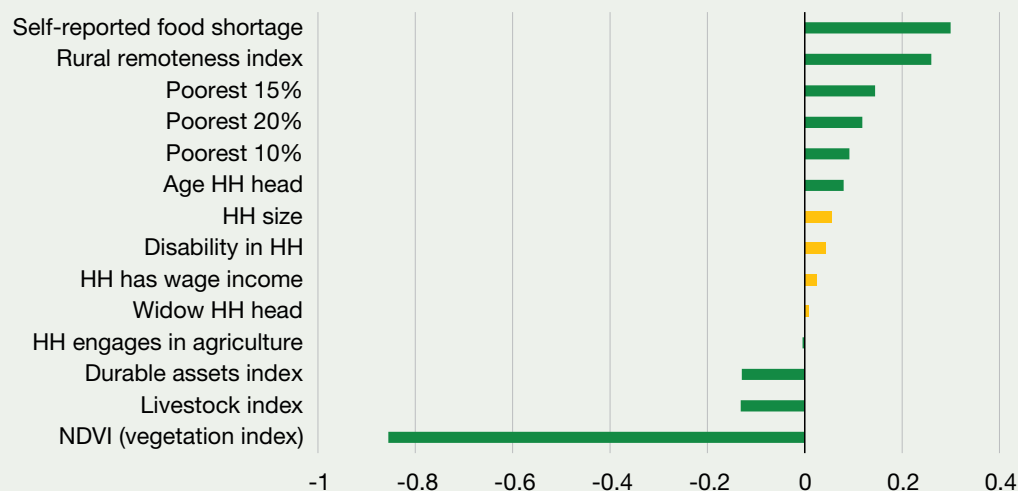
The federal Ministry of Agriculture, in consultation with the regions, select woredas to be included in the PSNP and their caseload based on historical receipt of food assistance. Once a woreda is selected for the PSNP, there is no set time limit for the woreda to stay in PSNP.<sup>63</sup> Overall, woredas selected for the PSNP are on average worse-off than not-selected woredas. PSNP woredas have higher poverty rates, report more food shortages and are more remote (Figure 96). Asset and livestock holdings are lower in PSNP woredas and, most importantly, they are less green (lower score on the normalized difference vegetation index). Given that woredas are selected into the PSNP based on the history of food aid, it is no surprise that woreda greenness is the main correlate of a woreda being in the PSNP.

Despite a fairly good woreda selection, poverty rates are relatively high even in non-PSNP woredas. In 2016, PSNP woredas had a poverty rate of 28 percent, compared to 23 percent in non-selected woredas. This relatively small difference highlights the difficulty of geographical targeting in Ethiopia: Poverty in Ethiopia is widely spread across regions and woredas and there are few specific spatially-defined pockets of poverty. In such a situation, a first-stage spatial targeting will inevitably exclude a large share of the poor. To assess to what extent the geographical targeting in the PSNP contributes to its overall targeting performance, we need to use a targeting indicator that is decomposable in a geographical component (the choice of woredas) and a within-unit component (choice of households within woredas). The “targeting differential” provides such a measure (Box 23).

Figure 96

### THE GREENNESS OF WOREDA VEGETATION IS THE STRONGEST CORRELATE OF WOREDA SELECTION FOR PSNP

Standardized mean differences between PSNP and non-PSNP woredas, 2016



Note: Bars in green are statistically significant at the 10% level or lower.

Source: WMS, HCES; 2016. World Bank staff calculations

63 No woreda, once selected for the PSNP, has ever exited the program. This is normal and reflects the chronic nature of social needs and the need for a long-term social protection system.



## Decomposing targeting performance

### The targeting differential

To decompose the overall targeting performance of the PSNP into an “inter-woreda” (or “inter-kebele”) and an “intra-woreda” component, we use the targeting differential. The targeting differential (TD), introduced by Ravallion (2000), is defined as a program’s coverage of the poor minus its coverage of the non-poor. A TD of zero means that coverage of the poor is equal that of the non-poor, indicating a random allocation of the program. Theoretically, the TD can range between -100 (zero coverage of the poor and complete coverage of the non-poor) and +100 (complete coverage of the poor and zero leakage to the non-poor). In practice the possible range of the TD is determined by the size of the program and the prevailing poverty rate. If the size of the program is insufficient to cover all the poor, the maximum attainable TD is given by  $G/H$ , where  $G$  is the coverage of the program and  $H$  the poverty rate. The lower bound of the TD is then given by  $-G/(1-H)$ . An appealing feature of the TD is that it is decomposable into a “geographical selection” and a “household selection” component, measuring, respectively, the higher-level administration’s performance in correctly identifying the poorest lower-level administrative units and the lower-level administrative units’ performance in correctly identifying the poorest households.

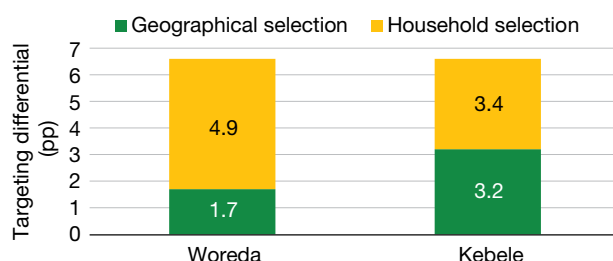
Given that the targeting differential is a function of program coverage and prevailing poverty rates, it cannot be used to compare targeting performance across administrative divisions. To compare targeting performance across regions, we define a relative targeting differential. The relative targeting differential measures how close the actual targeting differential approaches the maximum possible targeting differential. The maximum possible targeting differential is determined by program coverage and prevailing poverty rates. If program coverage is either insufficient or just sufficient to cover all the poor, the maximum possible targeting differential is given by  $G/H$ . If program coverage exceeds the poverty rate, the maximum possible TD is equal to  $1 - ((G-H)/(1-H))$ . The relative targeting differential then is simply the actual TD divided by the maximum possible.

In 2016, PSNP targeting achieved about 20 percent of the maximum possible – the relative targeting differential was 20 percent. Keeping into account the size of the PSNP in 2015/16, the maximum attainable TD was 33.8 percent – assuming PSNP only included households below the national poverty line.<sup>64</sup> The actual TD was 6.6 percent: Coverage of the poor was 6.6 percentage points higher than coverage of the non-poor.<sup>65</sup> Of this difference in poverty rates, selection of woredas accounted for 1.7 percentage points (one-fourth of the TD), while selection of households within woredas accounted for close to five percentage points (three-fourths of the TD) – Figure 97. Woredas did however manage to select the poorer kebeles. Doing the decomposition at kebele level shows that selection of kebeles and selection of households within kebeles each account for about half of the targeting differential.

Figure 97

### WOREDA SELECTION DOES NOT ADD MUCH TO PSNP’S TARGETING PERFORMANCE

Decomposition of the targeting differential



Note: Targeting differential is the difference between coverage of the poor and that of the non-poor.  
Source: WMS, 2016. World Bank staff calculations.

64 This is obtained by dividing PSNP’s coverage in 2016 (8.3 percent) by the prevailing pre-PSNP poverty rate (24.4 percent)

65 In terms of self-reported food insecurity, the relative targeting differential in 2016 was 11 percent (the actual TD of 9.2 divided by the maximum possible of 81 percent).

**Selection of woredas, though progressive, does not contribute much to the PSNP's targeting performance.**

In 2016, the PSNP covered 13.3 percent of the poor and 6.7 percent of the non-poor, resulting in a targeting differential of 6.6 percentage points. About one-fourth of the TD is explained by selection of woredas while three-fourths is explained by selection of households within woredas (Figure 97). In terms of self-reported food security, the pattern is largely similar<sup>66</sup>: PSNP coverage of the food-insecure is nine percentage points higher than coverage of the food-secure (TD of 9.2 percent), of which a mere 0.8 percentage points is explained by woreda selection<sup>67</sup>. Selection of kebeles within woredas however is strongly correlated with kebele food insecurity: Selection of kebeles accounted for close to 60 percent of the TD for food insecurity, while household selection within kebeles accounted for 40 percent.

**Though the selection of woredas contributes to the PSNP's targeting performance, there is room to increase this contribution.** To illustrate, Table 30 compares

the 20 best-off PSNP woredas with the 20 worst-off non-PSNP woredas. The numbers need to be treated with caution, as the HCES is not representative at the woreda level. However, unless sampling in these woredas were systematically geared towards wealthier kebeles and households (in PSNP woredas) and towards poorer kebeles and households (in non-PSNP woredas), they will still indicate a signal. The 20 best-off PSNP woredas in the HCES have low poverty rates (5 percent), low food insecurity (3 percent), more durable assets and livestock, and are less remote (lower score on a rural remoteness index). The 20 worst-off non-PSNP woredas on the other hand have far worse indicators. The PSNP woredas are however less green (lower NDVI score than the poor woredas outside PSNP). This underscores a basic point on the geographical targeting of the PSNP: Greenness of a woreda is the single main predictor of whether or not a woreda is in PSNP. And while greenness is correlated with poverty, the correlation is far from perfect.

**Table 30**

**THERE IS ROOM TO IMPROVE WOREDAS SELECTION**

Selected household indicators in the 20 best-off PSNP woredas and the 20 worst-off non-PSNP woredas, 2016

|                                 | 20 BEST-OFF PSNP<br>WOREDAS | 20 WORST-OFF<br>NON-PSNP WOREDAS | 413 OTHER WOREDAS |
|---------------------------------|-----------------------------|----------------------------------|-------------------|
| Poverty rate (pre PSNP and HFA) | 4.6%                        | 61.1%                            | 25.8%             |
| Food shortages (% yes)          | 3.3%                        | 13.9%                            | 11.6%             |
| NDVI                            | 4,674                       | 5,159                            | 4,731             |
| Durable assets index            | 0.08                        | -0.303                           | -0.219            |
| Rural remoteness index          | -0.342                      | 0.225                            | 0.202             |
| Livestock index                 | 0.186                       | -0.008                           | 0.256             |
| Total HH obs in woredas         | 336                         | 384                              | 8,492             |

Note: Coverage is the share of the population covered by PSNP.

Source: WMS, 2011; 2016. World Bank staff calculations.

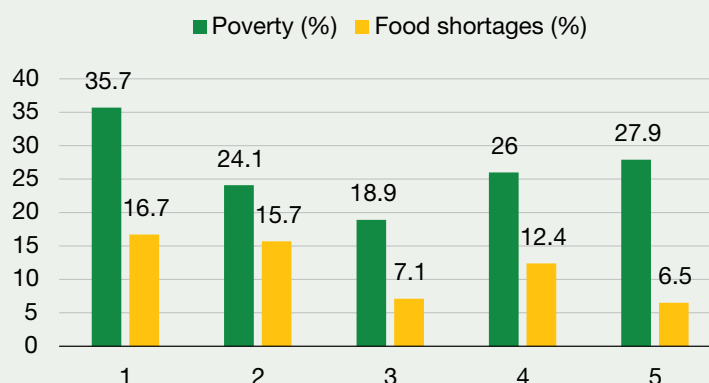
<sup>66</sup> Households are considered food-insecure if they reported having experienced food shortages in the past 12 months preceding the survey.

<sup>67</sup> In terms of food insecurity, the maximum attainable TD in 2016 was 81 percent (calculated as the PSNP coverage of 8.3 percent divided by the prevalence of self-reported food insecurity of 10.3 percent). The actually observed TD of 9.2 percent indicates that PSNP achieved about 11 percent of its theoretical best targeting performance. However, as food insecurity is only observed after assistance, these numbers will be underestimated.

Figure 98

## GREENNESS AND POVERTY ARE RELATED, BUT ONLY WEAKLY

Incidence of poverty and food security by quintile of the vegetation index



Source: WMS, HCES, 2016. World Bank staff calculations.

### STEP 3: SELECTION OF HOUSEHOLDS

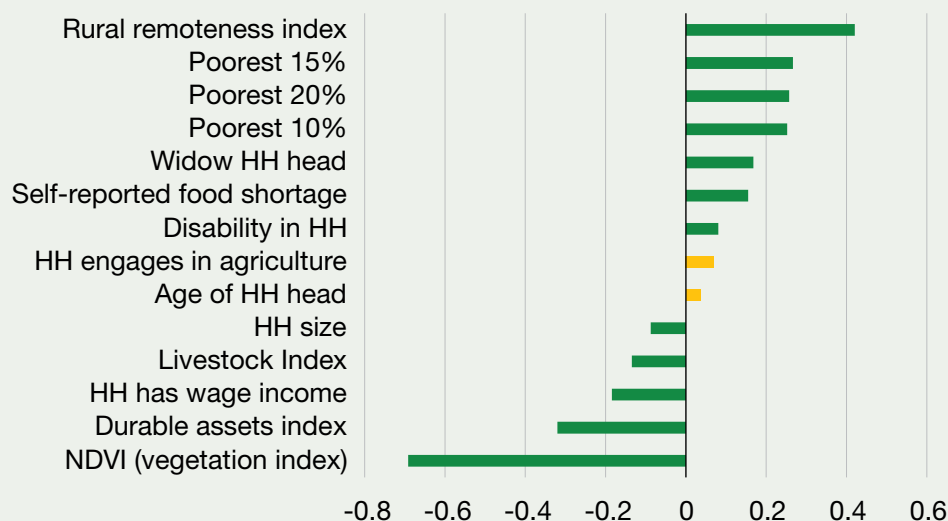
**Selection of households within PSNP woredas is generally good.** Considering only the woredas that were in PSNP (in 2016), selected households were more remote, more likely to be below the poverty line, and more likely to report food shortages (Figure 99). They were also more likely to be headed by a widow and include a disabled household

member. Selected households were on average smaller and had less livestock and fewer durable assets. As was also the case with woreda selection, the main difference between PSNP and non-PSNP households within PSNP woredas is the greenness of their surroundings: Within PSNP woredas, PSNP households live in places that have less vegetation, and are presumable less suitable for agriculture, compared to non-PSNP households.

Figure 99

## SELECTION OF HOUSEHOLDS WITHIN PSNP WOREDAS IS GENERALLY GOOD

Standardized mean differences between PSNP and non-PSNP households within PSNP woredas, 2016



Note: Bars in green are statistically significant at the 10% level or lower.

Source: WMS, HCES, 2016. World Bank staff calculations.

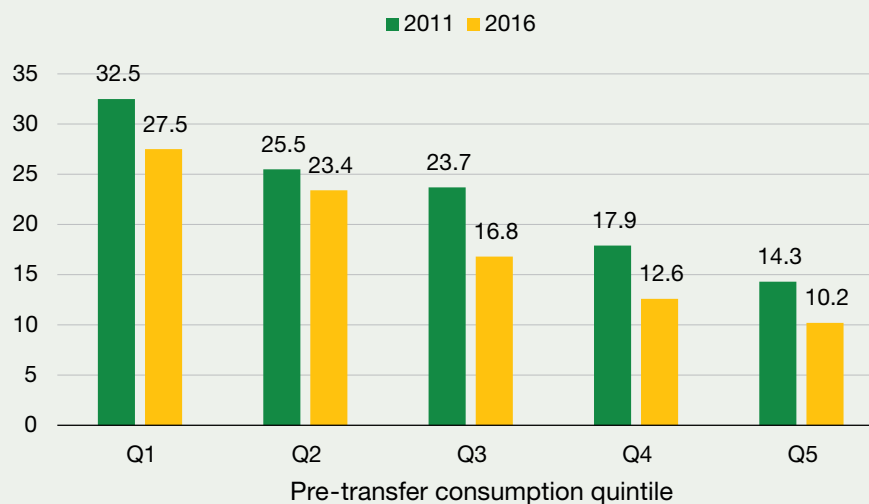
**There is nevertheless substantial inclusion of the top consumption quintiles in PSNP woredas.** In 2016, the PSNP covered, in PSNP woredas, 13 percent of households in the fourth consumption quintile and 10 percent of households in the top consumption quintile (Figure 100). A closer look at the characteristics of these households shows a picture that is more nuanced than that of blatant mistargeting. Relative to non-PSNP households, PSNP households in the upper quintiles have higher consumption expenditures and calorie intake on a per adult equivalent basis, are less likely to report food shortages and have a lower food gap

(Table 31). However, they have fewer assets, less livestock, are more remote, and are headed by a less educated head. PSNP households in the upper quintiles tend to be smaller and more likely to be female-headed. They are more likely to be in the direct support component of PSNP (20 percent of PSNP households in the upper two quintiles are direct support households, compared to 13 percent in the bottom two quintiles). While these households are not consumption-poor today, one could make a case that these households, given their low asset base, are vulnerable to future poverty.

**Figure 100**

### WITHIN PSNP WOREDAS, COVERAGE IS PROGRESSIVE BUT STILL INCLUDES THE UPPER QUINTILES

PSNP coverage by pre-transfer quintile, PSNP woredas only



Source: WMS, 2016. World Bank staff calculations.

Table 31

**HOUSEHOLD INCLUSION ERRORS SEEM LESS SALIENT THAN THEY APPEAR**

Selected indicators for PSNP households in the upper quintiles and non-PSNP households in PSNP woredas, 2016

|                                  | PSNP HOUSEHOLDS<br>IN Q4 AND Q5 | NON-PSNP HOUSEHOLDS<br>IN PSNP WOREDAS |
|----------------------------------|---------------------------------|--|
| Female head of household (% yes) | 34.1                            | 16.6                                   |
| HH completed primary (% yes)     | 6.3                             | 11.8                                   |
| Age HH                           | 45.7                            | 45                                     |
| Widow HH (% yes)                 | 14.9                            | 8.2                                    |
| Household size                   | 4.2                             | 5.9                                    |
| Durable asset index              | -0.174                          | -0.015                                 |
| Livestock index                  | 0.002                           | 0.118                                  |
| Consumption expenditures per AE  | 16,706                          | 11,842                                 |
| Rural remoteness index           | 0.234                           | 0.106                                  |
| Food shortage (% yes)            | 11.5                            | 14.8                                   |
| Food gap (# of months)           | 0.38                            | 0.5                                    |
| Calories per day per AE          | 3,702                           | 2,973                                  |

Note: The rural remoteness index is higher in more remote places. The food gap is calculated on all households, including those households that did not report a food shortage.

Source: WMS, 2016. World Bank staff calculations.

**To summarize, PSNP is overall well-targeted to poor households.** While woreda selection does not contribute much to the targeting performance, with woredas included in PSNP being not much worse-off compared to non-selected woredas, this is compensated by a good targeting performance within woredas. Despite this overall positive picture, three main issues emerge: First, there is substantial under-coverage, with PSNP covering only 13 percent of the poor in 2016. Second, woreda selection can be improved to strengthen overall targeting performance, with the caveat that geographical targeting is difficult in Ethiopia. Third, regional distribution of PSNP beneficiaries does not seem to align to any indicator of monetary welfare or food security. The next section takes a more disaggregated look at highlands and lowlands.

## 3.2 Highlands vs Lowlands

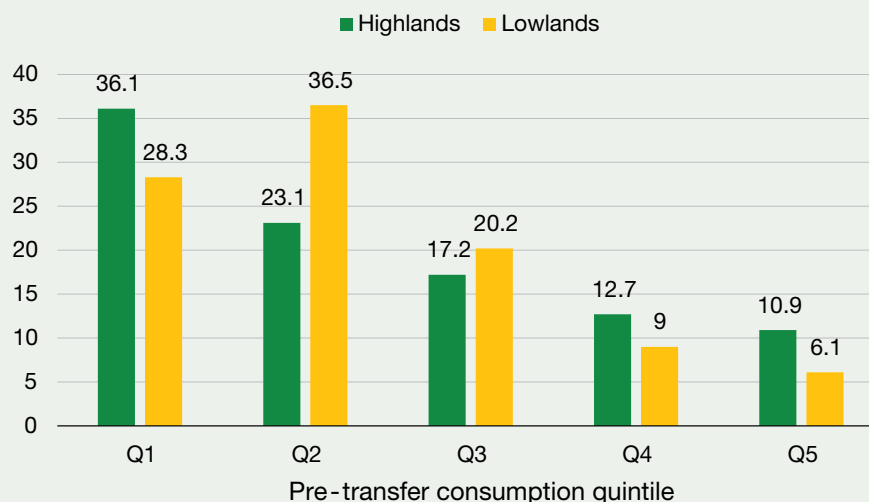
**In line with evidence from the PSNP impact evaluations, PSNP is well-targeted in the highlands.** 36 percent of beneficiaries in the highlands are in the poorest quintile, and 60 percent of beneficiaries are in the poorest 40 percent. In the lowlands too, PSNP is reasonably well-targeted, with 65 percent of beneficiaries in the poorest 40 percent. Relative to the highlands though, fewer beneficiaries in the lowlands are in the poorest quintile while more are in the second quintile (37 percent). On the other hand, leakage to the upper quintiles is higher in the highlands: 24 percent of beneficiaries in the highlands are in the two upper consumption quintiles, compared to 15 percent in Somali and Afar.



Figure 101

## BENEFICIARY INCIDENCE IS PROGRESSIVE BOTH IN HIGHLANDS AND LOWLANDS

Distribution of PSNP beneficiaries across pre-transfer quintiles, 2016



Source: WMS, 2016. World Bank staff calculations.

**PSNP is well-targeted on a range of other indicators as well, particularly in the highlands.** Relative to non-beneficiaries, PSNP beneficiaries in both highlands and lowlands are poorer, have less durable assets, are headed by an older head, and live in places that have less vegetation (Figure 102 and Figure 103). In the lowlands however, there are no discernable differences between PSNP and non-PSNP households when it comes to remoteness, self-reported food shortages, and livestock holdings.

**Relative to what is theoretically possible, the highlands achieve a better targeting differential.** Taking into account PSNP coverage in the highlands and the pre-transfer poverty rate, the maximum attainable TD in the highlands amounted to slightly over 27 percent. The actual TD of 5.8 means that targeting in the highlands achieved 21 percent of the maximum possible. In the lowlands, given that PSNP coverage in 2016 was higher than the poverty rate, it would theoretically have been possible to cover all the poor. A TD of 100 percent would however not have been attainable, as the over-coverage of the PSNP in the lowlands meant that non-poor households needed to be included as well (to reach the allocation). The maximum possible TD in the lowlands in

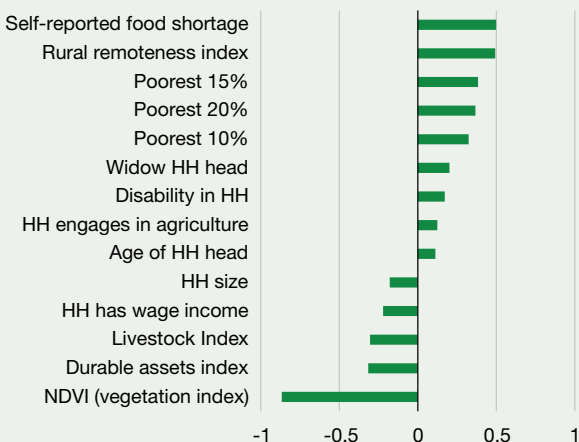
2016 was 92 percent. The actual TD of 14.1 percent means that targeting in the lowlands achieved 15 percent of the maximum possible. Note that geographical targeting contributes substantially to overall targeting performance in the lowlands but not in the highlands. This is explained by the fact that PSNP covers a large share of woredas in the lowlands, which implies there is less scope for geographical exclusion of the poor in the lowlands as compared to the highlands.<sup>68</sup>

**To summarize, PSNP targeting is progressive in both the highlands and the lowlands.** The poorest 20 percent of households are better covered in the highlands, but leakage to the upper quintiles (the better-off households) is higher in the highlands too. In 2016, the lowlands were over-covered given the prevailing poverty and food insecurity rates. This over-coverage led to a higher targeting differential in absolute terms, but a lower targeting performance in terms what could theoretically be achieved (a lower relative TD). First stage woreda selection contributes more to overall targeting performance in the lowlands, not because woreda selection is better per se, but because PSNP covers a higher share of woredas in the lowlands and therefore has lower exclusion as compared to the highlands.

68 In the 2016 HCES/WMS sample, 80 percent of woredas in the lowlands were included in the PSNP. In the highlands, 40 percent of woredas were included.

**Figure 102 PSNP IS WELL TARGETED IN THE HIGHLANDS...**

Standardized mean differences between PSNP and non-PSNP households in the highlands, 2016

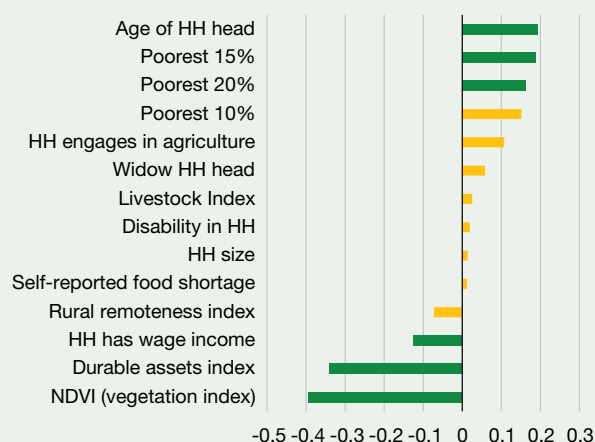


Note: Bars in green are statistically significant at the 10% level or lower.

Source: WMS, HCES; 2016. World Bank staff calculations.

**Figure 103 AND ALSO IN THE LOWLANDS, BUT TO A LESSER EXTENT**

Standardized mean differences between PSNP and non-PSNP households in the lowlands, 2016

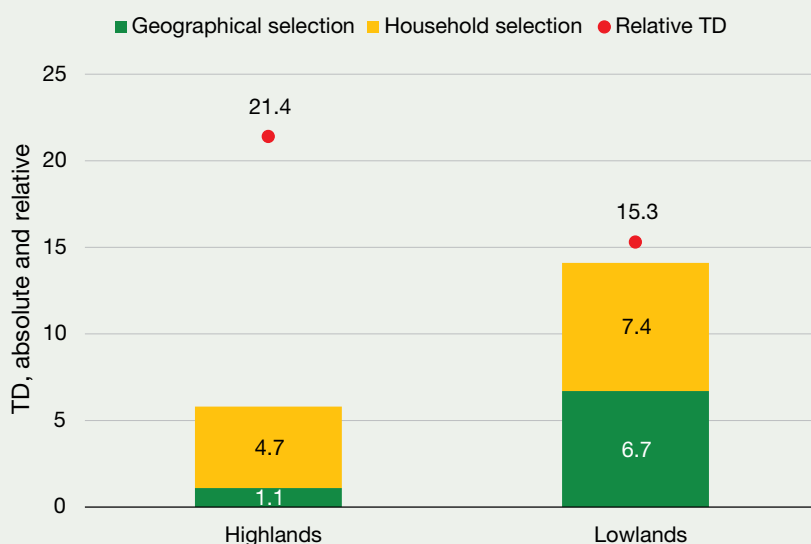


Note: Bars in green are statistically significant at the 10% level or lower.

Source: WMS, HCES; 2016. World Bank staff calculations.

**Figure 104 THE HIGHLANDS ACHIEVE A HIGHER RELATIVE TARGETING DIFFERENTIAL**

Decomposition of absolute TD and TD as share of maximum attainable, 2016



Note: Targeting differential is the difference between coverage of the poor and that of the non-poor. Relative TD expresses the TD as a percentage of what is possible under perfect targeting.

Source: WMS, 2016. World Bank staff calculations.

### 3.3 A Regional Perspective

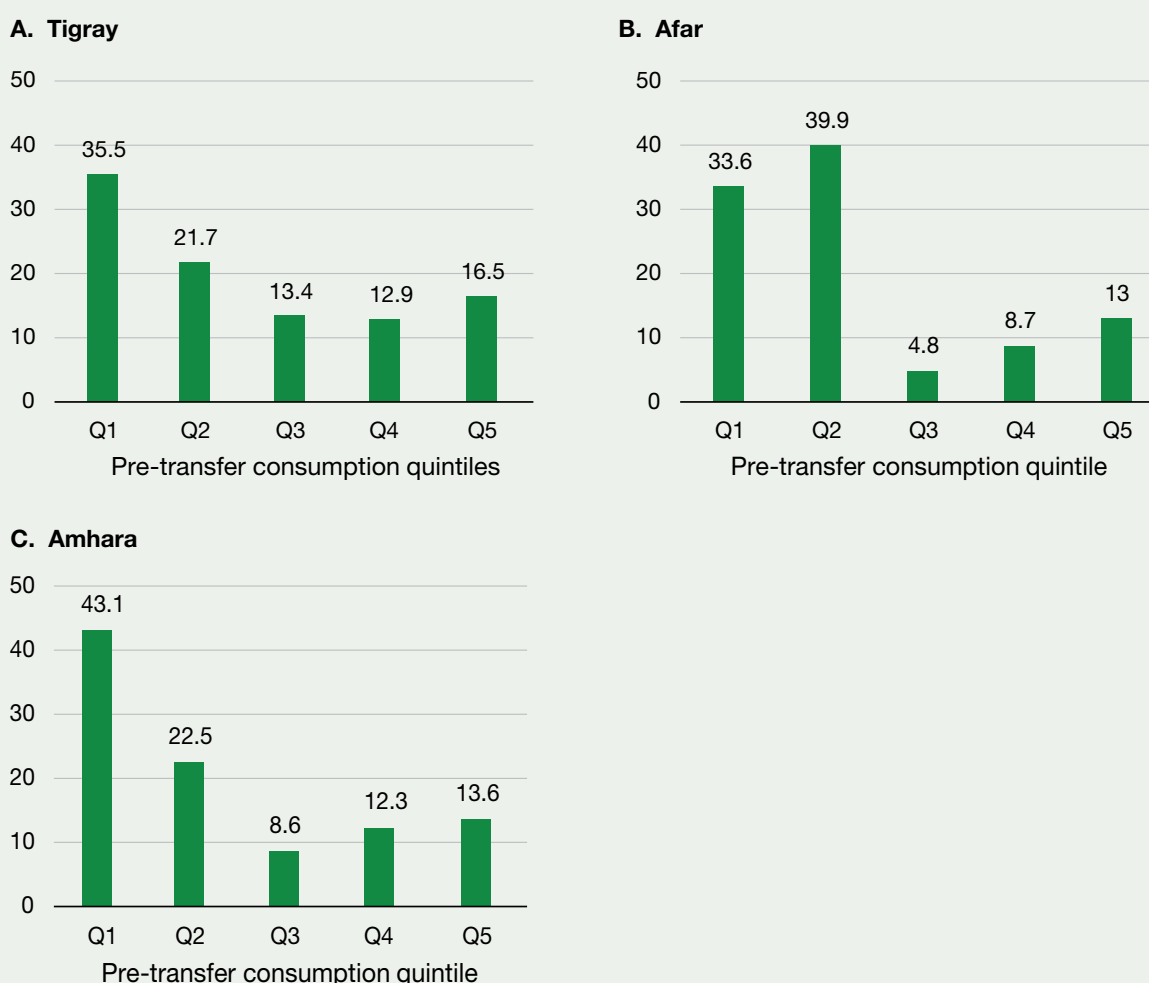
**A regional analysis of PSNP incidence using the HCES/WMS is constrained by issues of sample size.** While the surveys are representative at regional levels and at urban and rural levels within regions, the number of PSNP households within regions is not always sufficiently high to have confidence in the patterns. This subsection briefly looks at beneficiary incidence for those regions where the sample contains a sufficient number of PSNP beneficiaries. We put this “sufficient number” at an arbitrary 300 households. Using this cut-off point, the region of Tigray, Afar, and Amhara qualify for a regional analysis.

**The distribution of PSNP beneficiaries is progressive in the three considered regions of Tigray, Amhara and**

**Afar.** Coverage of the poorest quintile is highest in Amhara, with 43 of beneficiaries in the poorest 20 percent (Figure 105). In Tigray, the single largest share of beneficiaries are also in the bottom quintile (34 percent), while in Afar the second quintile accounts for most of the beneficiaries (mirroring the lowlands pattern presented in Figure 101). A common pattern in the three regions is that the top consumption quintile accounts for a higher share of beneficiaries than either the third or fourth quintile. Although hypothetical, the over-coverage of the top quintile could be due to traditional perceptions of vulnerability, which are not necessarily related to consumption poverty: PSNP households in the fifth quintile are more likely to be small, female-headed (by a widow), and tend to be in the direct support component. While they are not consumption-poor, they conform with traditional perceptions of vulnerability of households headed by an older woman.

**Figure 105 PSNP IS PROGRESSIVE IN THE THREE CONSIDERED REGIONS**

Distribution of PSNP beneficiaries across pre-transfer consumption quintiles, by region, 2016



Source: HCES, WMS, 2016; World bank staff calculations.

**In all three regions, household selection within woredas is the main contributor to targeting performance.**

In Tigray and especially in Amhara, the first-stage selection of woredas does not add significantly to the targeting differential, meaning that PSNP woredas in those regions have poverty rates similar to non-PSNP woredas.<sup>69</sup> In absolute terms, Afar has the highest targeting differential (coverage of the poor is 24 percentage points higher than coverage of the non-poor). Even accounting for differences in PSNP coverage and poverty rates across the regions, Afar comes closest to the maximum possible TD (relative TD of 27 percent), followed by Amhara (24 percent) and Tigray (15 percent). The relatively good performance of Afar is due to the fact that the PSNP in Afar covers all woredas: There is no ex-ante exclusion of the poor because of a first-stage woreda selection.<sup>70</sup>

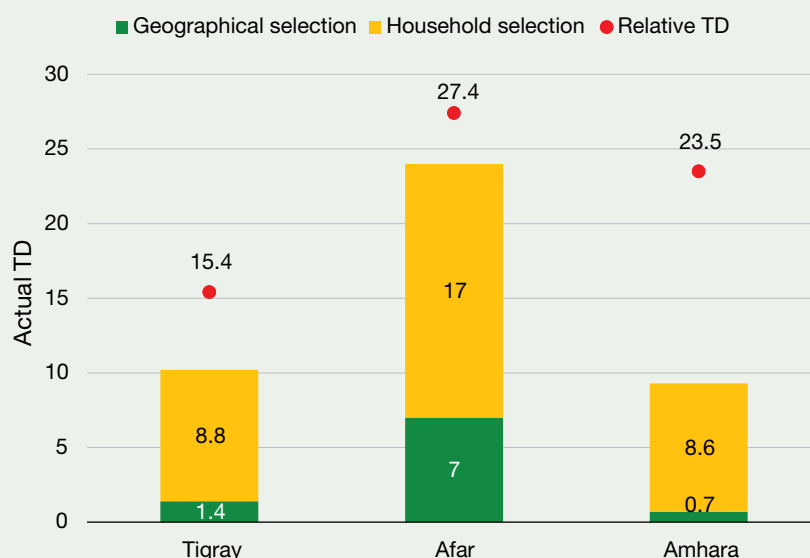
**The finding that Afar achieved the highest targeting differential in 2015/16 may seem surprising.**

The PSNP evaluations conducted by IFRPI routinely find evidence of poor targeting in the lowland regions of Afar and Somali.<sup>71</sup> It appears that this discrepancy is partly driven by differences in outcome variables. Evaluating PSNP targeting in Afar based on household consumption expenditures and household durable assets results in a good targeting performance. Evaluating it based on a livestock index however changes this result, making PSNP targeting regressive (Table 32). Statements on the quality of targeting will therefore crucially depend on the yardstick against which targeting is evaluated. While targeting in Afar is good when evaluated against durable assets and consumption expenditures, the same cannot be said when evaluated against livestock.

**Figure 106**

**AMONG THE THREE REGIONS, AFAR HAS THE HIGHEST ABSOLUTE AND RELATIVE TARGETING DIFFERENTIAL**

Decomposition of absolute targeting differential and share of maximum possible, 2016



Note: Targeting differential is the difference between coverage of the poor and that of the non-poor. Relative TD expresses the TD as a percentage of what is possible under perfect targeting.

Source: WMS, 2016. World Bank staff calculations

69 In Afar, all woredas are included in the PSNP. The relatively high contribution of woreda selection in Afar can be explained by the fact that the poorer woredas tend to have the most beneficiaries.

70 The finding that Afar has a relatively high TD while the lowlands as a whole (Afar and Somali) have a relatively low TD must mean that Somali region has a low TD. Indeed, based on the 2016 HCES/WMS, the PSNP in Somali achieved a mere four percent of the maximum possible. This is however based on a small sample (231 PSNP beneficiaries in the HCES sample in Somali region).

71 The 2018 PSNP-4 midline evaluation reports following PSNP coverage by livestock quintile for Afar: 54 percent for the lowest livestock quintile (Q1), 60 percent in Q2, 61 percent in Q3, 57 percent in Q4, and 47 percent in the highest livestock quintile.

Table 32

## TARGETING PERFORMANCE IN AFAR DEPENDS ON THE OUTCOME VARIABLE CONSIDERED

Share of PSNP beneficiaries by quintiles of consumption, durable assets, and livestock; Afar 2016

| PSNP | CONSUMPTION<br>(PRE-BENEFIT) | DURABLE HOUSEHOLD<br>ASSETS | LIVESTOCK INDEX |
|------|------------------------------|-----------------------------|-----------------|
| Q1   | 33.6                         | 33.5                        | 8.8             |
| Q2   | 39.9                         | 34.5                        | 35.1            |
| Q3   | 4.8                          | 20.5                        | 18.6            |
| Q4   | 8.7                          | 6.3                         | 11.3            |
| Q5   | 13                           | 5.2                         | 26.3            |

Note: Table shows the share of PSNP beneficiaries by quintile of the relevant variable.

Source: HCES; WMS, 2016. World Bank staff calculations.

## 4. HUMANITARIAN FOOD AID

While PSNP aims to cover the chronically poor and food-insecure, HFA aims to cover people with acute food needs, mainly related to shocks. Overall, HFA was reasonably well targeted in 2016, with HFA beneficiaries being poorer, more remote, more likely to report food shortages, and having fewer assets and living in less green places. Similar to the PSNP, first-stage geographical targeting does not significantly add to HFA targeting performance, reflecting the fact that food insecurity is not geographically clustered in Ethiopia. Despite an overall good targeting, inclusion errors exist, with a substantial share of HFA beneficiaries being significantly better-off on a wide range of indicators. These inclusion errors are mainly due to HFA targeting in woredas where PSNP is not active: HFA is well targeted in woredas where PSNP is active, though poorly targeted where PSNP is not active. About 2 percent of the population in Ethiopia were covered by both PSNP and HFA in 2016, and this overlap was well-targeted to the poorest. Results suggest HFA targeting could be improved by harmonizing PSNP and HFA and revisiting, in tandem with PSNP, the procedures for first-stage geographical targeting.

**While the PSNP seeks to address chronic and predictable food insecurity in the lean season, humanitarian food aid (HFA) addresses acute food insecurity caused by shocks, mainly drought.** HFA needs are typically assessed twice yearly during seasonal assessments with the results released in a joint Government-Humanitarian Partners appeal document. The multi-agency seasonal assessment produces woreda level estimates of numbers of people in need of assistance and duration of assistance. It does so by reviewing woreda level assessments and depends heavily on subjective data on crop production and rainfall. While each round of support of HFA is provided to the full approved beneficiary caseload, the duration of support provided is

dependent on the resources available. Woreda staff are responsible for selecting kebeles and defining the kebele caseload. Household targeting is undertaken by community structures.

**Given that HFA aims to address acute food insecurity following an adverse shock, it is not supposed to be targeted explicitly towards poverty.** To assess HFA targeting, this section considers a whole range of indicators, similar to the PSNP analysis presented earlier. Given that there is nevertheless a consensus that the poor should be prioritized in case of a shock, we also look at targeting of HFA as it relates to consumption poverty.



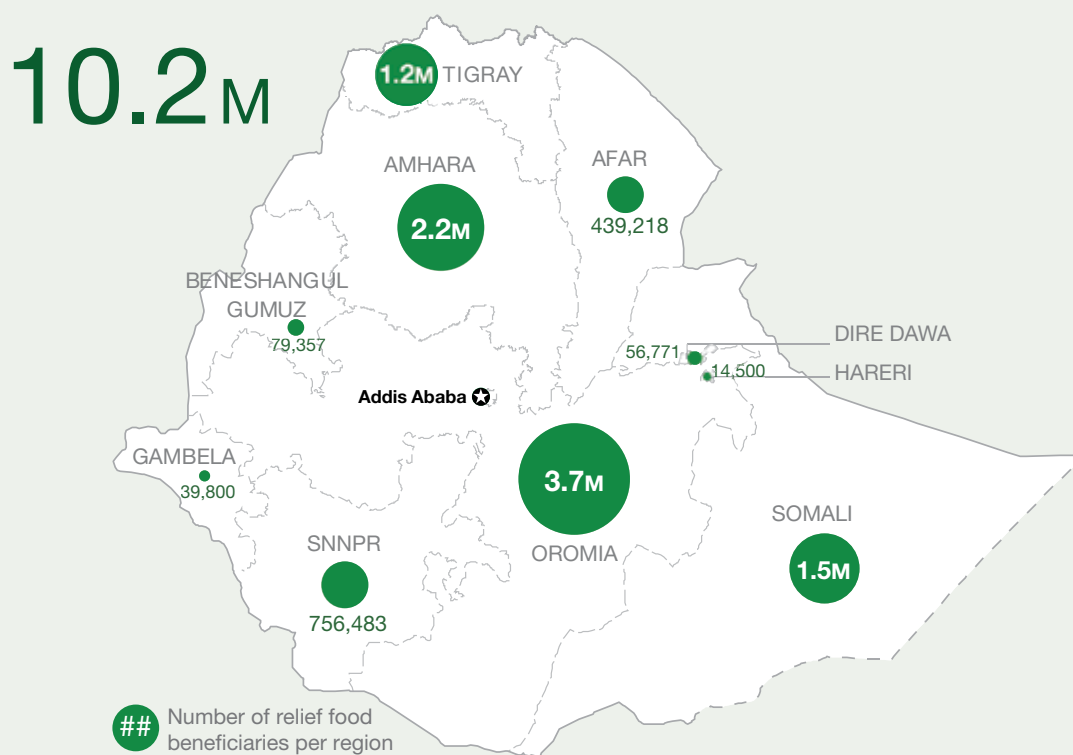
## 4.1 The national picture

**The latest HCES/WMS surveys were implemented during a bad drought year.** The 2015/16 El Nino drought caused the HFA caseload to swell from about 2.5 million in 2014/15 to 10 million in 2015/16.<sup>72</sup> Oromia accounted for the bulk of the HFA beneficiaries in 2015/16 (36 percent), followed by Amhara (22 percent) and Somali (15 percent). Coverage of HFA was largest in Somali (27 percent of the population covered), Afar (25 percent) and Tigray (23 percent). Comparing the numbers in Figure 107 with the numbers reported in Table 28 above reveals substantial disparities between needs and allocations, with the number people deemed in need of HFA exceeding the number of self-reported food-insecure people in several regions (mainly Afar, Somali and Tigray).

**While not supposed to be explicitly targeted towards poverty, poorer households were more likely to receive HFA.** In 2016, 31 percent of HFA beneficiaries were in the bottom consumption quintiles and another 28 percent in the second quintile (Figure 108). Beyond the second quintile, beneficiaries were equally likely to come from the third, fourth, or top quintile. Almost 30 percent of HFA beneficiaries in 2016 were in the top two quintiles in terms of pre-food-aid consumption, indicating a fair degree of leakage (for PSNP, the corresponding share was 21 percent – see Figure 92). HFA targeting was progressive in 2011 as well, though less so than in 2016. In terms of binary poverty status, 37 percent of HFA beneficiaries were below the national poverty line in 2016 (using a pre-food aid estimate of consumption expenditures), compared to 39 percent for PSNP.

**Figure 107 OROMIA ACCOUNTED FOR THE BULK OF HFA NEEDS**

People in need of food aid according to HRD, 2016

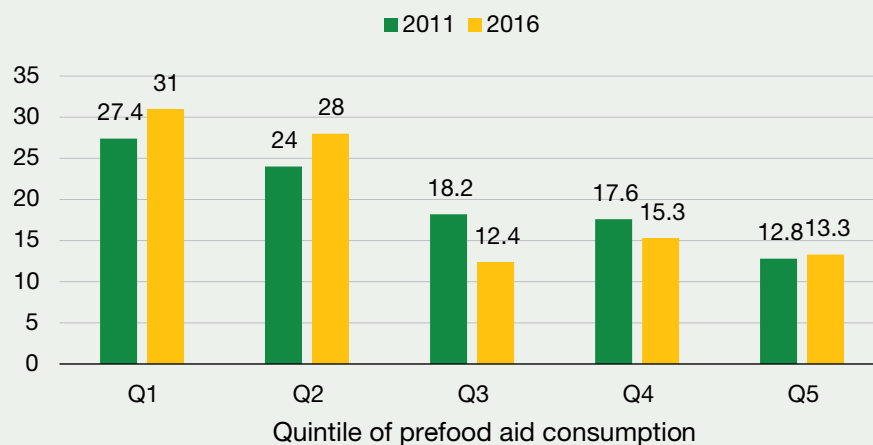


Source: Joint GoE and DP assessment, 2016

72 Perhaps due to the timing of the survey (July 2015 to July 2016), the HCES does not reflect this big caseload: In the survey, five percent of people reported receiving food aid-about half the share compared to administrative data.

### Figure 108 THE BOTTOM QUINTILES ARE OVERREPRESENTED AMONG HFA BENEFICIARIES

Distribution of HFA beneficiaries across pre-transfer quintiles, 2011 and 2016



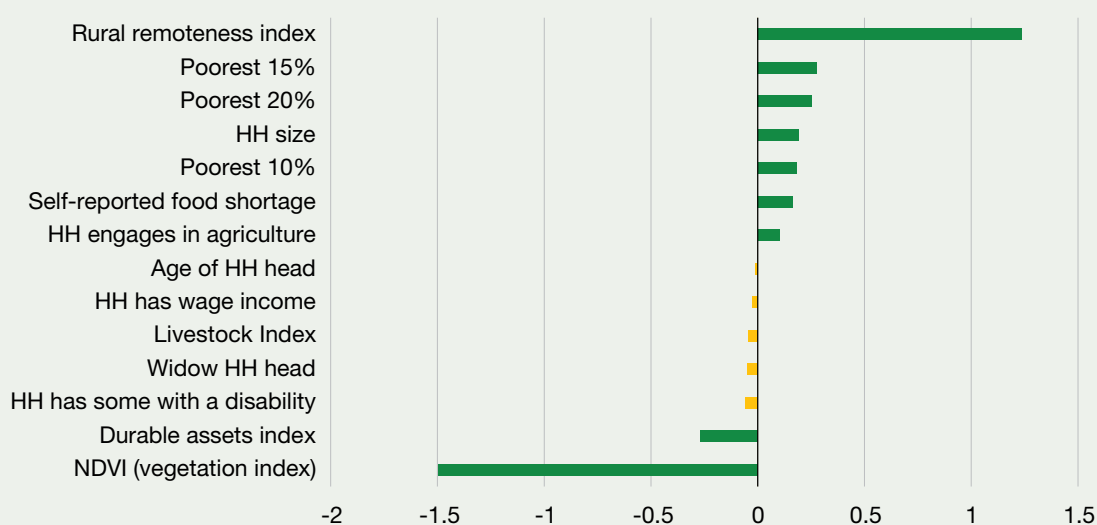
Source: WMS, 2011, 2016. World Bank staff calculations.

**Other indicators also suggest a decent targeting performance of HFA.** Relative to non-beneficiaries, beneficiaries lived in more remote places, were poorer, and more likely to report food shortages in the 12 months prior to the survey. HFA beneficiaries scored lower on a durable assets index, though there was no discernible difference in ownership

of productive assets (livestock). Similar to PSNP, the main correlate of a household getting HFA is the greenness of its surroundings: Relative to non-beneficiaries, beneficiary households lived in places that, in 2016, had far lower values on the normalized difference vegetation index.

### Figure 109 TARGETING OF HFA BENEFICIARIES IS PROGRESSIVE

Standardized mean differences between HFA and non-HFA households, 2016



Note: Bars in green are statistically significant at the 10% level or lower.

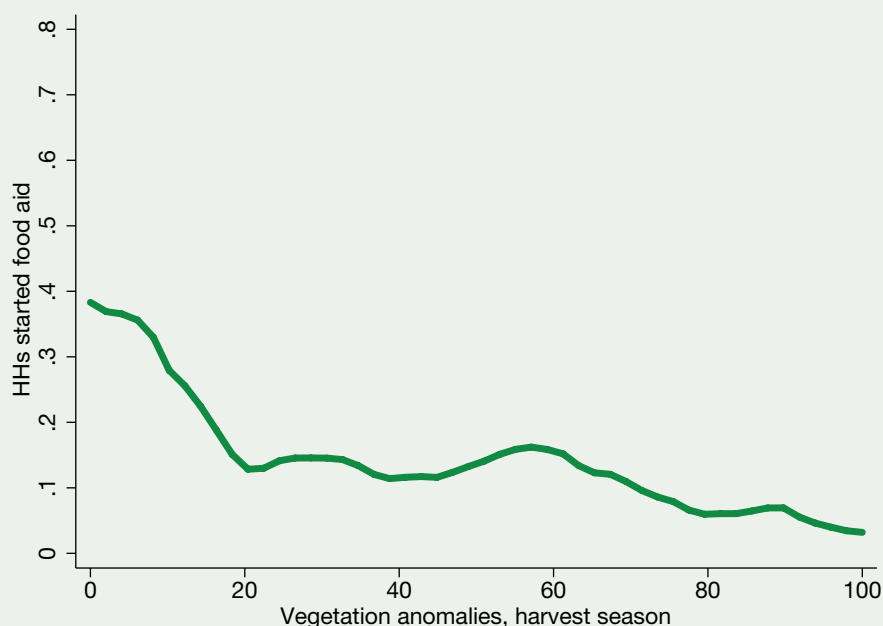
Source: WMS, HCES; 2016. World Bank staff calculations.

**An important question is whether HFA effectively responded to the intensity of the drought in 2016.** The NDVI shows that HFA on average went to households who lived in places that are less green than other places (a spatial comparison). A more important question is whether HFA was more likely to cover households in places that had, in 2015/16, an exceptionally low greenness compared to a long-term average (a temporal comparison). The Vegetation Condition Index (VCI) compares current NDVI to the range

of values observed in the same period in previous years. As such, high levels of VCI indicate that vegetation is better than normal, while low levels indicate that vegetation is worse than normal. Exceptionally low levels indicate a drought shock. As shown in Figure 110, households in places that had exceptionally poor vegetation during the 2015 Meher harvest were far more likely to receive food aid compared to households in places with normal or good vegetation, indicating that HFA responded to the spatial intensity of the drought.

**Figure 110 HFA WENT TO HOUSEHOLDS WHO LIVED IN PLACES WITH EXCEPTIONALLY POOR VEGETATION**

Local polynomial smoothing between receiving HFA and vegetation anomalies



Source: Sohnesen, 2018.

**Though HFA targeting is progressive, there are nevertheless substantial inclusion errors:** Close to 30 percent of beneficiaries were in the top two consumption quintiles in 2016. As HFA is not targeted on poverty per se, such a pattern would not be a cause for concern if other indicators would show that these households were in need of acute aid following a shock. This narrative is not supported by the data: Relative to non-beneficiaries in the same woredas,

HFA beneficiaries from the top two quintiles lived in smaller households, had a higher calorie intake, and far higher consumption expenditures, both pre- and post HFA. They were not more likely to have experienced food shortages nor did they have fewer assets or less livestock (quite to the contrary). While these households lived in more remote and drier places, they were actually better-off than households in less remote, slightly greener places (Table 33).

Table 33

**HFA INCLUSION ERRORS ARE FAIRLY SALIENT**

Selected indicators for HFA households in the upper quintiles and non-HFA households in HFA woredas, 2016

|   | HFA BENEFICIARIES IN Q4/Q5 | NON-HFA BENEFICIARIES IN HFA WOREDAS | STATISTICALLY SIGNIFICANT |
|---|----------------------------|--------------------------------------|---------------------------|
| HH size   | 5.10                       | 5.62                                 | **                        |
| Durable asset index                                       | 0.12                       | 0.13                                 |                           |
| Rural remoteness index                                    | 0.29                       | 0.04                                 | **                        |
| Livestock index   | 0.22                       | 0.03                                 |                           |
| HH head widow (% yes)                                     | 8.8%                       | 10.0%                                |                           |
| Age of HH head  | 42.40                      | 45.00                                |                           |
| Female HH head (% yes)                                    | 20.0%                      | 20.7%                                |                           |
| HH has a disabled member (% yes)                          | 7.2%                       | 7.2%                                 |                           |
| HH does agriculture (% yes)                               | 90.5%                      | 86.9%                                |                           |
| HH Head has completed primary education (% yes)           | 15.7%                      | 12.5%                                |                           |
| NDVI (vegetation)   | 3,795                      | 4,205                                | ***                       |
| Consumption per AE (post food aid) – December 2010 prices | 19,629                     | 12,847                               | ***                       |
| Consumption per AE (pre-food aid) - December 2010 prices  | 18,588                     | 12,847                               | ***                       |
| Calorie intake per day per adult                          | 3,476                      | 2,799                                | ***                       |
| Food shortage past 12 months (% yes)                      | 9.6%                       | 12.2%                                |                           |
| Food gap past 12 months (# months)                        | 0.27                       | 0.36                                 |                           |
| Number of observations                                    | 332                        | 7,837                                |                           |

Note: The rural remoteness index is higher in more remote places. The food gap is calculated on all households, including those households that did not report a food shortage. NDVI is the normalized differenced vegetation index, with higher values denoting more vegetation. \*\*\*: Statistically significant at 1%; \*\*: Statistically significant at 5%.

Source: WMS, 2016. World Bank staff calculations.

## 4.2 Woreda vs household targeting

**Like the PSNP, selection of woredas and their case-loads does not add much to overall targeting performance of the HFA.** In 2016, the poverty targeting differential for HFA was 3.3 percent, meaning that HFA coverage of the poor was 3.3 percentage points higher than HFA coverage of the non-poor. Over 80 percent of the TD is explained by selection of kebeles and households within woredas, and less than 20 percent by first-stage selection of

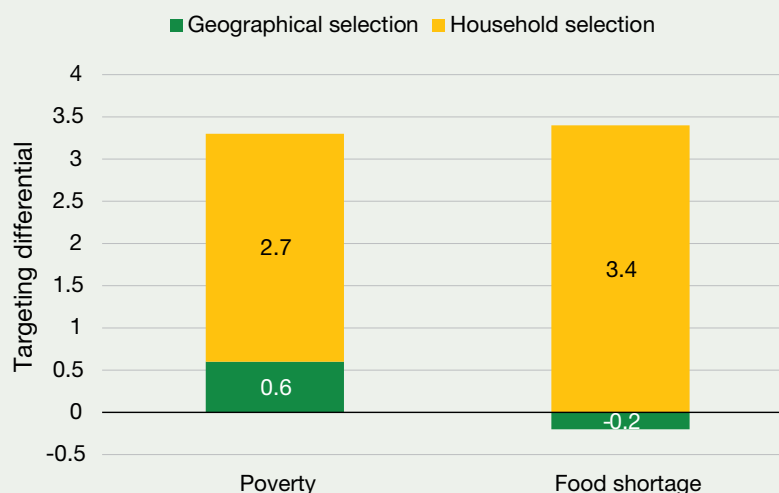
woredas - Figure 111. Looking at food shortages rather than poverty, the pattern is largely similar: Coverage of the food insecure was 3.2 percentage points higher than coverage of the food secure, and woreda selection did not contribute to the TD (Figure 111). In other words, HFA beneficiaries in 2016 were not clustered in woredas with higher levels of self-reported food shortages.<sup>73</sup> This finding again reflects the fact that food insecurity, much like poverty, is not geographically clustered in Ethiopia.

73 Of course, this result needs to be interpreted with caution, as receiving food aid may lead to fewer self-reported food shortages.

Figure 111

## WOREDA SELECTION DOES NOT ADD MUCH TO HFA TARGETING PERFORMANCE

Decomposition of absolute TD for HFA, 2016



Source: WMS, 2016. World Bank staff calculations

**To summarize, targeting of HFA is progressive in the sense that poorer and more food-insecure households were more likely to be covered.** There are however substantial inclusion errors with a fair share of genuinely better-off households benefiting from HFA in 2016. While HFA targeting is progressive both in the highlands and lowlands, the poorest households (the bottom quintile) tend to be under-covered in the lowlands. The difficulty of geographical targeting in Ethiopia is also borne out of the HFA analysis: First stage woreda selection adds little to the HFA targeting performance. Despite its overall pro-poor nature, HFA seems to suffer from a regional mismatch also observed for PSNP, with certain regions being substantially overcovered relative to needs while others substantially under-covered. There is ample room to further improve HFA targeting by revisiting the regional caseloads and the first-stage selection of woredas.

### 4.3 Overlap and complementarity between HFA and PSNP

**In the absence of a comprehensive social registry in Ethiopia, the extent of overlap between the PSNP and HFA cannot be assessed with administrative data.** In

this section, we use the HCES and WMS data to look at overlap and complementarity between these two social protection and food security interventions. An important caveat is in order: Though participation in PSNP and/or HFA was measured by two separate questions in the survey questionnaire, it is not entirely clear to what extent respondent households correctly made that distinction. For instance, in 2015/16 the duration of PSNP support was extended from its normal term of six months to nine months to respond to the ongoing drought. It is unclear whether beneficiary households labeled this as the PSNP or as HFA.

**According to the survey, about two percent of the Ethiopian population benefited from both PSNP and HFA in 2015/16.** HCES data suggest that of all PSNP beneficiaries in 2016, one in four also received food aid. Of all food aid beneficiaries, one in three were also PSNP clients. Overlap was highest in the lowland regions of Afar (18 percent of the population) and Somali (8 percent of the population). There is a large overlap between PSNP and HFA at the woreda-level: More than 90 percent of PSNP woredas also received HFA, and over 70 percent of HFA woredas also benefit from PSNP.<sup>74</sup>

74 Hirvonen et al., 2019.



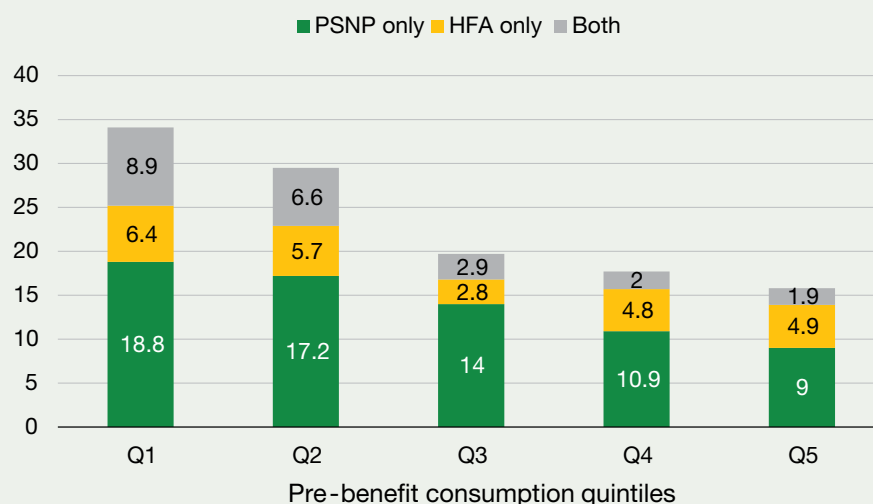
**Complementarity between PSNP and HFA is often conceptualized as HFA covering non-PSNP households in case a woreda is affected by a shock.<sup>75</sup>** If that is the case, we would expect PSNP to mainly cover the bottom quintiles (the poor) while HFA would over-cover households that are not in the PSNP and that are presumably in higher quintiles. This is partly supported by the data: In PSNP woredas, coverage of PSNP decreases monotonically as one moves to higher quintiles. HFA coverage follows a weak U-shaped pattern, with both poorer and better-off households (in terms of consumption) more likely to be covered (Figure 112). Overall, coverage of either PSNP or HFA (or both) in PSNP woredas is progressive, with coverage decreasing as we approach higher quintiles. The issue of under-coverage is obvious from Figure 112: Even within PSNP woredas, two-thirds of the poorest (the bottom quintile) remain un-covered by either PSP or HFA.

**Beneficiary characteristics suggest that both programs largely reach who they are supposed to reach and complementarity is, to some extent, achieved.**

PSNP beneficiaries are clearly worse off than the average rural population and have the “typical” characteristics of the poor, as presented in Chapter 2 (Table 34). In contrast, HFA beneficiaries are largely comparable to the average rural population, with the exception that they have significantly lower calorie intake. The descriptives presented in Table 34 are consistent with HFA covering average households who were faced with an acute shock which temporarily made their calorie intake decrease, while PSNP covers households who would be poor in most states of the world.

**Figure 112 HFA COMPLEMENTS THE PSNP IN PSNP WOREDAS**

Coverage by program and quintile in PSNP woredas, 2016



Source: WMS, 2016. World Bank staff calculations.

<sup>75</sup> Indeed, a recent assessment by IFPRI found that in qualitative interviews woreda and community respondents indicated that non-PSNP households are prioritized in the allocation of HFA, though PSNP households are also eligible.

**Table 34****PSNP AND HFA REACH DIFFERENT BENEFICIARY GROUPS**

Beneficiary characteristics by program, 2016

|   | PSNP ONLY | HFA ONLY | PSNP AND HFA | RURAL POPULATION |
|---|-----------|----------|--------------|------------------|
| HH size   | 5.56      | 6.04     | 6.22         | 5.82             |
| Durable asset index                             | -0.30     | -0.10    | -0.29        | -0.01            |
| Rural remoteness index                          | 0.41      | 0.59     | 1.14         | 0.06             |
| Livestock index                                 | -0.04     | 0.23     | -0.01        | 0.16             |
| HH head widow (% yes)                           | 14.3%     | 6.4%     | 9.4%         | 9.0%             |
| Age of HH head                                  | 45.81     | 44.07    | 44.81        | 44.50            |
| Female HH head (% yes)                          | 29.6%     | 17.6%    | 24.9%        | 18.5%            |
| HH has a disabled member (% yes)                | 9.1%      | 3.9%     | 6.5%         | 6.3%             |
| HH does agriculture (% yes)                     | 92.2%     | 93.0%    | 95.1%        | 91.4%            |
| HH Head has completed primary education (% yes) | 4.2%      | 10.3%    | 5.8%         | 11.2%            |
| NDVI (vegetation)                               | 3,581     | 3,598    | 3,310        | 4,811            |
| Calorie intake per day per adult                | 2,770     | 2,696    | 2,585        | 3,039            |
| Food shortage past 12 months (% yes)            | 20.0%     | 11.7%    | 22.0%        | 10.9%            |
| Food gap past 12 months (# months)              | 0.62      | 0.38     | 0.72         | 0.35             |
| Number of observations                          | 1,290     | 668      | 338          | 18,320           |

Note: The rural remoteness index is higher in more remote places. The food gap is calculated on all households, including those households that did not report a food shortage. NDVI is the normalized differenced vegetation index, with higher values denoting more vegetation. \*\*\*: Statistically significant at 1%; \*\*: Statistically significant at 5%.

Source: WMS, 2016. World Bank staff calculations.

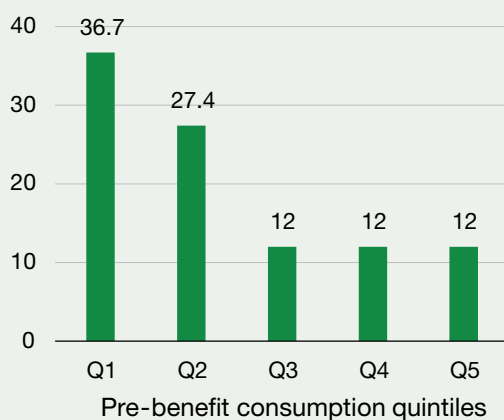
**Another aspect of complementarity is that HFA appears to be better targeted in woredas that also have PSNP.** 37 percent of HFA beneficiaries in PSNP woredas were in the bottom consumption quintile in 2016 and another 27 percent came from the second quintile (left-hand side graph of Figure 113). In contrast, the distribution of HFA beneficiaries in non-PSNP woredas seemed fairly random, with no better inclusion of the bottom consumption quintiles (right-hand side graph of Figure 113). The HFA inclusion errors summarized in Table 33 are mainly due to targeting in non-PSNP woredas. In PSNP woredas, HFA can draw on pre-existing PSNP structures and experiences, which positively affects targeting performance of HFA.

#### **Overlap between PSNP and HFA benefits the poorest.**

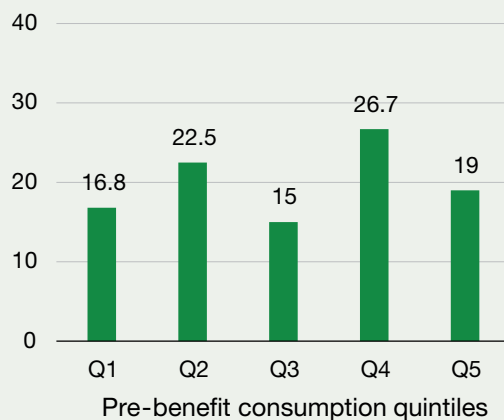
43 percent of people who received both PSNP and HFA in 2016 were in the bottom consumption quintile, and 74 percent were in the bottom 40 percent of welfare (Figure 114). Looking at the pre-benefit poverty rates (right-hand side panel of Figure 114), it is clear that the combined HFA-PSNP beneficiaries are the poorest: Over half of them would be below the national poverty line if PSNP/HFA benefits were removed from their consumption. Looking at post-aid poverty rates (based on the official consumption aggregate), 35 percent of combined beneficiaries were poor in 2016, compared to the national poverty rate of 24 percent. The figures in Table 34 confirm that combined PSNP+HFA beneficiaries are by and large the poorest and most vulnerable.

**Figure 113 HFA IS BETTER TARGETED IN PSNP WOREDAS**

**HFA beneficiaries by quintile, PSNP woredas**



**HFA beneficiaries by quintile, non-PSNP woredas**

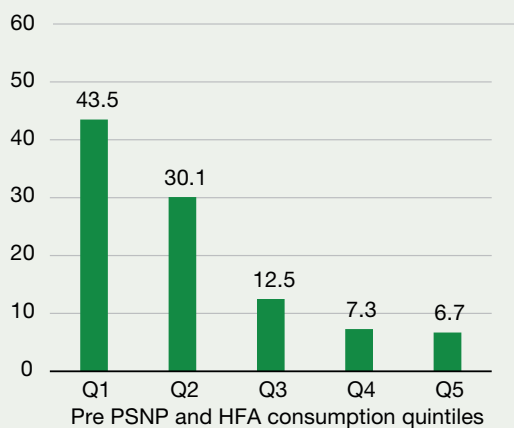


Note: Pre-benefit consumption quintiles are based on a consumption aggregate that is filtered of PSNP and HFA benefits.

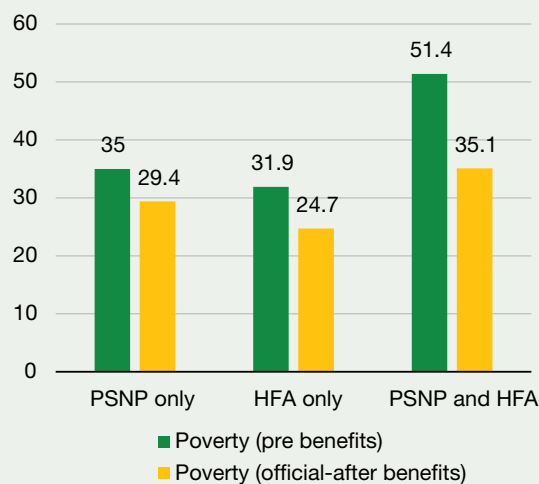
Source: WMS, HCES, 2016. World Bank staff calculations

**Figure 114 OVERLAP IS WELL TARGETEDS**

**Share of PSNP + HFA beneficiaries by pre-aid consumption quintile, 2016**



**pre- and post-aid poverty rates for HFA, PSNP, and HFA+PSNP beneficiaries, 2016**



Note: Pre-benefit consumption quintiles are based on a consumption aggregate that is filtered of PSNP and HFA benefits.

Source: WMS, HCES, 2016. World Bank staff calculations

# Conclusions

**Overall, this Chapter painted a positive picture of targeting of Ethiopia two largest social protection and food security programs.** Both in 2011 and 2016, both the PSNP and the HFA were progressive in the sense that households and people from the lower income quintiles were more likely to be covered. Looking beyond monetary living standards, beneficiaries of both programs tended to be worse-off on a wide range of indicators of well-being. As such, both programs positively contribute to Ethiopia's pro-poor development strategy.

**Despite this overall positive assessment, there is room for improvement.** While targeting differentials for both programs are positive, indicating their progressiveness, they are relatively small compared to what could be obtained under hypothetical (and unattainable) perfect targeting. The main avenues to further improve targeting performance of the programs is through revisiting the process to determine the regional allocation of beneficiaries and the first-stage selection of woredas within regions.

**The regional beneficiary numbers seem not to be well connected to actual needs.** Both for PSNP and HFA, the more populated regions appear under-covered relative to needs (with the exception of Amhara), while the smaller regions are substantially over-covered. This under- and over-coverage introduces significant inclusion and exclusion errors: In the under-covered regions, the bulk of the poor remain excluded from any form of assistance; in the over-covered regions, relatively better-off households need to be included as the beneficiary allocation for these regions exceeds the number of poor and food-insecure in these regions (most notably the case in Somali and Afar). Designing a way to bring regional caseloads more in line with needs will further improve targeting performance and the programs' impacts on poverty.

**Within regions, first-stage targeting of woredas adds little to overall targeting performance.** This is not so much a result of outright mistargeting than it is of the fact that poverty is not geographically concentrated in Ethiopia. In a context such as Ethiopia's where poverty is spread across all areas of the country, geographical targeting will inevitable lead to exclusion of a large share of the country's poor. To illustrate, of all Ethiopia's poor in 2016, half lived in woredas covered by PSNP.<sup>76</sup> The other half lived in woredas not in PSNP and are, by design, excluded. The role of woreda selection in overall targeting performance is nicely illustrated by Afar. For the PSNP, Afar had, in 2016, a better targeting performance than

either Tigray or Amhara. This was not because targeting committees in Afar were superior in selecting poor households. It was because Afar includes all woredas in PSNP and hence does not have a first-stage exclusion of the poor.

**Given that targeting of households within selected woredas is generally good, improving PSNP's ability to reach the poor will likely require a shift in the approach to geographical targeting.** A possible scenario is to expand the coverage of PSNP to all rural woredas, but select a far smaller number of beneficiaries per woreda to manage the fiscal implications. Including all rural woredas has the obvious advantage to remove the "exclusion by design" feature of the current woreda selection approach. It would also reflect the reality that geographical targeting in Ethiopia is wicked hard. Having a small beneficiary caseload within each woreda could also help in reducing the inclusion errors, as the small caseload would only be sufficient to cover the poorest of the poor in the woreda. An extension of the PSNP to all rural woredas but with smaller woreda allocations should of course be properly costed to assess the fiscal implications.

**For the lowland regions, a smaller but more flexible PSNP may be envisaged.** In 2016, the PSNP beneficiary numbers in Afar and Somali exceeded the number of poor people in these regions and far exceeded the food-insecure. Arguably, a better use of scarce resources would be to reduce the core caseload in these regions but design a flexible system that can be scaled up rapidly and efficiently in times of crises.

**Finally, the data presented in this Chapter suggest that issues of food insecurity have become progressively less salient in Ethiopia.** This largely reflects Ethiopia's development success over the past decades. Poverty, while it has also decreased substantially, has remained stickier, going from 39 percent in 2005 to 24 percent in 2016. Overall, while only one in ten people in Ethiopia suffer from self-reported food shortages, one in four still below the poverty line. Given the evidence on the impact of PSNP on household consumption the Government could consider reorienting the focus of safety nets to poverty in general and target benefits to the poorest rather than the narrowly-defined food insecure. This shift would lead to a more inclusive social protection policy. At the same time, reducing fragmentation of the national safety net by consolidating the PSNP and emergency drought relief (HFA) under one scalable rural safety net would improve the efficiency and effectiveness of the social protection system.

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76 Looking at self-reported food insecurity, 66 percent of the self-reported food insecure lived in PSNP woredas.

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BĀRNOOTA QULQULLINA  
QABUDHA /  
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# Inequality of Opportunity in Ethiopia

While inequality in household consumption expenditures in Ethiopia is low, there are substantial disparities in access to key services and opportunities. This chapter uses the Human Opportunity Index to assess access to opportunities for children in Ethiopia, how access to these opportunities is determined by circumstances outside one's control, and how coverage of opportunities has evolved between 2011 and 2016. It also investigates the strength of the intergenerational relationship of educational attainment, how that relationship differs across characteristics, and how it has changed over time.

Overall, access to opportunities has improved between 2011 and 2016 and disparities in access have narrowed, leading to an increase in the Human Opportunity Index. The location of the household and household wealth, circumstances that are largely outside children's control, are the main factors determining access to key opportunities: 40 percent of children 15-18 in urban areas were enrolled in secondary school in 2016, compared to 10 percent of rural children. Half of children (15-18) in households from the top consumption quintile had completed primary school, compared to less than 20 percent of children in the bottom consumption quintile.

The extent to which parental education influences children's education has weakened between 2011 and 2016, reflecting an increase in intergenerational mobility. The probability of a child being enrolled in primary school has become less dependent on parental education, while the opposite happened for enrolment in secondary school. Improvements in access to education happened for children with poorly educated parents in urban areas and children with relatively higher educated parents in rural areas.

Household consumption levels have a large influence on whether the household's children go to school. The effect of household consumption on access to primary school did not change between 2011 and 2016, while its effect on enrolment in secondary school increased. The effect of household welfare levels on children's schooling is significantly stronger in rural areas. The implication of these results is that children of poor households and poorly-educated parents in rural areas are in danger of being left behind. Breaking the intergenerational transmission of poverty will require that children of extremely poor households in rural areas accumulate more schooling, which may require the introduction of additional policy instruments.

# Introduction

**Over the last two decades, Ethiopia has experienced significant economic growth.** Although economic growth started from a relatively low base, the pattern of growth saw a major shift from negative GDP growth in 1998 to double digit growth by 2004. Today Ethiopia is the second most populous country in Africa, the fastest growing economy in the region, and one of the fastest in the world. GDP growth has remained high at close to eight percent in 2018. Despite this growth, there has been a relatively weak transmission between economic growth and poverty reduction in the country over the last decade (see Chapter 1) and social and economic outcomes for the poor remain precarious.

**Though there has been an increase in recent years, inequality of outcomes in Ethiopia remains relatively low.** The Gini Coefficient of 0.33 in 2016 was slightly higher than the 0.30 of 2011, but remains low in regional comparison. There were however increasing disparities between urban and rural parts of the country. These changes naturally lead to a focus on better understanding what is generating these disparities - not only in outcomes, but in access to opportunities and its effects on socioeconomic mobility.

**Evidence in this and the previous poverty assessment has shown divergent trends of growth based on geographic location.** The urban-rural differences highlighted in the last poverty assessment (World Bank (2015)) have been consolidated. The last two decades have seen heavy investment in some of the most substantial safety net programs in the region. While this has had a poverty-reducing effect, the consumption gaps between rural and urban areas have increased. Of particular concern is the contraction of the income accruing to the bottom 10 percent of households.

**Generating a better understanding of inequality of opportunity (IOp) is key to thinking about how poverty and inequality in a society may develop in future years.** Broadly speaking, the focus of inequality research has expanded to place greater emphasis on access to opportunities and its relationship to birth circumstances such as race, gender, and location of birth, or even the wealth of a household a child is born into. These circumstances are generally thought of as being outside of an individual's control. If access to opportunities is influenced by circumstances that are out of the control of individuals, then any resulting inequality is fundamentally unfair. If, in contrast, all individuals in a society have similar access to opportunities, any remaining inequality in outcomes will mainly be the result of differences in talent, hard work, or choices, which can be considered fair.

**Gaps in access to basic opportunities may be predictive of future gaps in outcomes, and widening disparities in outcomes may become problematic for widespread economic growth for a country (World Bank (2006), Bourguignon, Ferreira et al. (2007); Ferreira and Walton (2006)).** If inequality of opportunity is pervasive and persistent, the effects have the potential to entrench the existing gaps between different socioeconomic groups and reproduce living standards across generations. The link between inequality of opportunity and inequality of outcomes is important, as policies to address gaps now are aimed at reducing welfare gaps in the future.

**An important indicator of access to opportunity is the extent of intergenerational mobility in a country – how much a child's outcomes depends on those of his or her his parents.** In an ideal society, a child's access to opportunities is independent of his or her parents' outcomes. Societies with equal access to opportunities have high social mobility since children are not constrained by their circumstances at birth (Chetty, Hendren et al. (2014), Solon (2014)). Data constraints do not allow us to match future economic outcomes of children with those of their parents'. As a result, this chapter will focus on intergenerational mobility in education along two dimensions: differences in average educational attainment, and the relationship between a child and parents' level of education.

**This chapter investigates inequality of opportunity and intergenerational mobility in Ethiopia between 2011 and 2016, and addresses two key questions:** (i) To what extent does the gap in access to key services in Ethiopia depend on circumstance variables? How has this evolved over time, and what are the biggest drivers of unequal access? And (ii) What are the patterns of intergenerational educational attainment in Ethiopia? Has this changed over time, and are there differences across different parts of the population?

**This chapter is divided into several sections.** Section 2 investigates the Human Opportunity Index (HOI) for Ethiopia, shows how this has changed since 2011, and decomposes it into key components. Section 3 analyses the intergenerational transmission of educational attainment, and shows how the strength of the relationship differs by various parts of the population. The final section presents some concluding remarks and potential policy avenues that can be explored.

## 2. THE HUMAN OPPORTUNITY INDEX IN ETHIOPIA

### 2.1 Background and methodology

**The Human Opportunity Index (HOI) is widely used to measure inequality of opportunity.** The HOI captures both (i) the overall access to basic services, such as education, water and electricity, (the coverage rate); and (ii) inequality in access (Barros, Ferreira et al. (2008)). If access to a basic service is perfectly equal, then the HOI is the same as the coverage rate. As access becomes more and more unequal, so the HOI becomes lower and lower.

**The extent of inequality of opportunity is measured using the D-index.** This index calculates how much access to services varies by birth characteristics, such as socio-economic status of a households and the location of the household. A D-index of zero indicates perfect equality (no gaps in access to services across circumstance groups), whereas a D-index of one indicates perfect inequality. More information on the construction of the HOI and the D-index is provided in Box 24.

#### Box 24

### Constructing the HOI and the D-Index

The central question behind the HOI is to what extent circumstances beyond one's control influence the one's access to a set of important basic services. Simply put, the HOI takes the coverage level of a basic service or "opportunity" (for example whether a child is enrolled in primary education) and combines this with the extent to which that opportunity is determined to be beyond the control of the child (for example being born in a rural rather than urban area or being a girl rather than a boy). Ideally, random circumstances should play no role in determining access to opportunities.

The D-index measures dissimilar access rates to a given basic opportunity for groups of children where groups are defined by circumstance characteristics (for example, area of residence, or gender) compared to the average access rate to the same service for the population as a whole. To formulate groups the sample is stratified into groups or "cells," so that all individuals in any given cell have the same combination of circumstances. The resulting subgroups are known in the literature as "types" (Barros, Ferreira et al. (2008)). These cells are then compared to one another. The difference in outcomes between cells can be attributed to inequality of opportunity, while the differences within cells can be considered the result of effort or luck.

The D-index summarizes all the gaps into a single measure by weighting them according to the population share in each circumstance group. The D-index generates a value between 0 and 1. In a society in which there is no inequality of access the D-index is be zero. If average access is denoted by  $\bar{p}$ , the specific access rate of group  $i$  is  $p_i$ , and the share of group  $i$  in the population is given by  $\beta_i$  then the D-index is:

$$D = \frac{1}{2\bar{p}} \sum_{i=1}^n \beta_i |p_i - \bar{p}|$$

The HOI can then be calculated as:

$$HOI = \bar{p} (1 - D)$$

The measure is also decomposable so that the extent to which specific opportunity sets contribute to the dissimilarity can be assessed. This means that the contribution of different circumstances to overall inequality of opportunity can be determined.

**To assess access to opportunities in Ethiopia, we focus on the six key outcomes:** (i) Primary school enrolment, (ii) primary school completion, (iii) secondary school enrolment, (iv) access to electricity; (v) access to an improved water source; and (vi) access to a health post within 5km (Table 35). The importance of these outcome variables is obvious. Education is a key opportunity with large effects on earnings and welfare later in life. Access to safe water is key

for good health and nutrition which also affects outcomes in adulthood, while access to electricity can produce many potential benefits, including increasing the time available for study. Circumstance variables include rural/urban location, gender, religion, agro-ecological zone, consumption quintile of the child's household, region, and the household's score on the rural accessibility index (RAI).<sup>77</sup>

**Table 35** KEY OUTCOME VARIABLES FOR THE ANALYSIS

| Variable                         | DEFINITION  |
|----------------------------------|---|
| <b>Age 7-14</b>                  |   |
| Enrolment in to primary school   | A child aged 7-14 is registered to attend primary school.                               |
| <b>Age 15-18</b>                 |   |
| Completed primary school         | A child aged 15-18 has completed primary school.  |
| Enrolment in secondary education | A child aged 15-18 is registered to attend secondary school.                            |
| <b>Age 7- 18</b>                 |   |
| Access to electricity            | A child lives in a household with an electrical connection.                             |
| Access to improved water         | A child has access to an improved water source (piped water, a protected water source). |
| Distance to Health Post          | A child lives in a household that is under 5km from a health post                       |

Sources: Staff calculations based on LFS 2013.



<sup>77</sup> Accessibility was also tested using a market accessibility variable, and the results were broadly consistent.



## 2.2 Descriptive statistics and results

### IMPROVEMENTS IN ACCESS TO KEY SERVICES AND OPPORTUNITIES

**There were across the board improvements in coverage of the key outcome variables between 2011 and 2016.** Figure 115 presents these measures across six outcome variables over this five-year period. The first panel of the figure shows coverage rates. The proportion of age-eligible children (7 to 14) enrolled in primary school increased from 61 percent in 2011 to 71 percent in 2016. There were also large improvements in access to an improved water source, and in the share of children that lived within 5km of a health post.

**Despite these improvements, access to electricity, health care, primary school completion and secondary enrollment remain low and unequal.** The improvement in primary school enrollment rates did not translate fully into either primary school completion or secondary school enrollment. Fewer than one in five children who were age-eligible

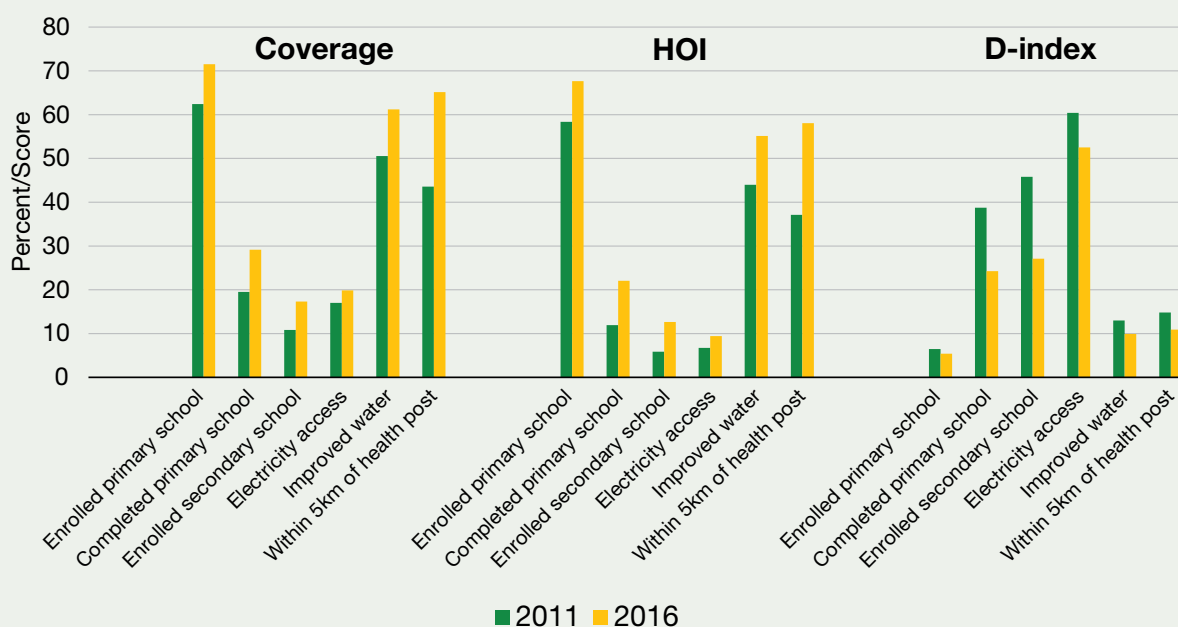
for secondary school (15 to 18) were enrolled in secondary school in 2016. This indicates that the education opportunity set is quite different for the older cohort of children (15-18) than the younger cohort (7-14). The proportion of children with access to electricity improved marginally by about three percentage points but remained low at 20 percent in 2016. 30 percent of children 15-18 had completed primary school in 2016, which nevertheless represented a large increase from 20 percent in 2011.

**The HOI improved for all outcome variables, while the D-index decreased, indicating that circumstances played less of a role in determining outcomes in 2016 than they did in 2011.** Proportional increases in the HOI were particularly strong for primary school completion, secondary school enrollment and proximity to a health post. The HOI was lowest, and showed the smallest improvement, for proximity to a hospital, and it was also very low (under 10) for access to electricity.

**The largest improvements in the D-index were seen for the primary completion and secondary enrollment outcomes.** Although the coverage rates of these variables were

**Figure 115** EQUAL ACCESS TO OPPORTUNITIES INCREASED BETWEEN 2011 AND 2016

Coverage, HOI, and D-Index for different outcomes, 2011 and 2016



Source: Calculations from WMS 2015/16 and HCES 2015/16.



low in both 2011 and 2016 (see panel 1 of the Figure 115), the role of circumstances in determining access decreased by around 16 points for both over the time period. The D-index was lowest for enrollment in primary education, driven by the fact that enrollment rates for age-eligible children was already relatively high.

**However, unequal coverage of infrastructure access variables remains a challenge.** The D-index was highest for proximity to a hospital and for access to electricity, exemplifying the rural-urban divide in access to these services that will be explored in the coming decomposition. An example serves to highlight some of these differences. A rural, female child living in the drought prone highlands is 53 percent less likely to have access to electricity and 64 percent less likely to have access to a hospital compared to a male child living in an urban area.

## LOCATION AND HOUSEHOLD WEALTH ARE THE MAIN DETERMINANTS OF ACCESS

**Location and household wealth are the most significant contributors to inequity in access to basic opportunities.** Though access to opportunities increased across the board between 2011 and 2016, the gains were unevenly spread. As a result, gaps between rural and urban areas and between richer and poorer households remained large. For example, roughly half of urban children between the ages 15-18 were enrolled in secondary school, but only 10 of children in rural households are. Similarly, about half of children between 15 and 18 in the top consumption quintile had completed primary school in 2016, compared to less than 19 percent in the bottom quintile (Annex Figure 12)

**Access gaps by gender are relatively small.** This is consistent both when measuring at an individual level for children, and when using the gender of the household head for variables such as electricity access. However, there are some access differentials when comparing religious groups. Children belonging to households identifying as Ethiopia Orthodox tend to have higher access rates than children who live in other Christian (Catholic or Protestant) or Muslim households.

**Unsurprisingly, the biggest electricity access differentials are based on rural-urban location and on the**

**household's consumption quartile.** Figure 116 shows that the rural-urban electricity access gap is also extremely large, with an access rate of 90 percent in urban areas but just under 10 percent in rural areas. Ethiopian Orthodox households are just above the mean access rate of about 23 percent, while non-orthodox households are slightly below. Households in the top quartile are about five times as likely to have access to electricity than the poorest quarter of households.

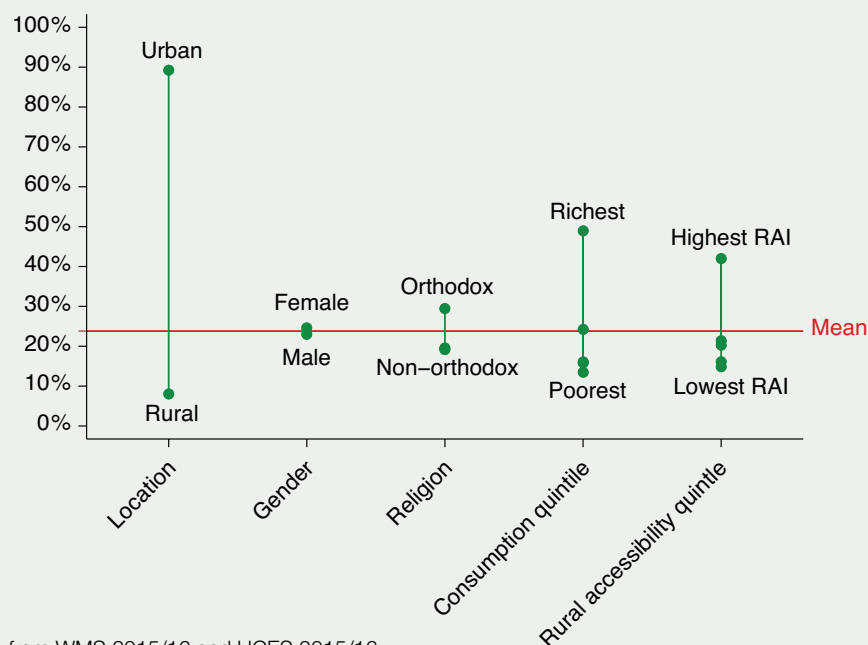
**Differences in primary school enrollment rates are not so stark between circumstances, as the mean access rate is fairly high.** As shown in Figure 117, which is restricted to children aged between 7 and 14, the rural-urban gap is about 16 percentage points – far smaller than it was for electricity access. As with all the outcome variables considered, the difference between female and male children was extremely small, though the female mean was slightly higher. The biggest differences in access are at the regional level. Almost 90 percent of age-eligible children living in Addis Ababa are enrolled in primary school, while the figure for Somali is just over half. In fact, on this measure Somali lags far behind the next lowest region, which is Afar. The gap between the richest quintile of households and the poorest is approximately as large as the gap between urban and rural locations. The patterns for enrollment in secondary education (for those aged between 15 and 18) are essentially replicated, but at a much lower level. The mean age-eligible secondary enrollment rate for age-eligible children was under 20 percent. It was as high as 40 percent in urban areas, and as low as 11 percent in the poorest quintile of households. Figures for this and for the access rates for the other outcome variables are shown in Annex Figures 12 to 15.

**About two thirds of households live within 5km of one of the country's approximately 17 000 health posts, with the biggest differences occurring between regions.** Almost all urban households are located within the 5km threshold, as shown in Figure 118. The access differential between male- and female-headed households is extremely small, while the access differences across religious groups are also relatively small. Regional differences are stark, however, and range from almost full access in Addis Ababa and almost 90 percent in Dire Dawa to around 50 percent in Somali and Afar.

**Figure 116**

## ACCESS TO ELECTRICITY IS LARGELY DETERMINED BY LOCATION AND HOUSEHOLD WEALTH

Coverage of access to electricity by circumstance variables, 2016

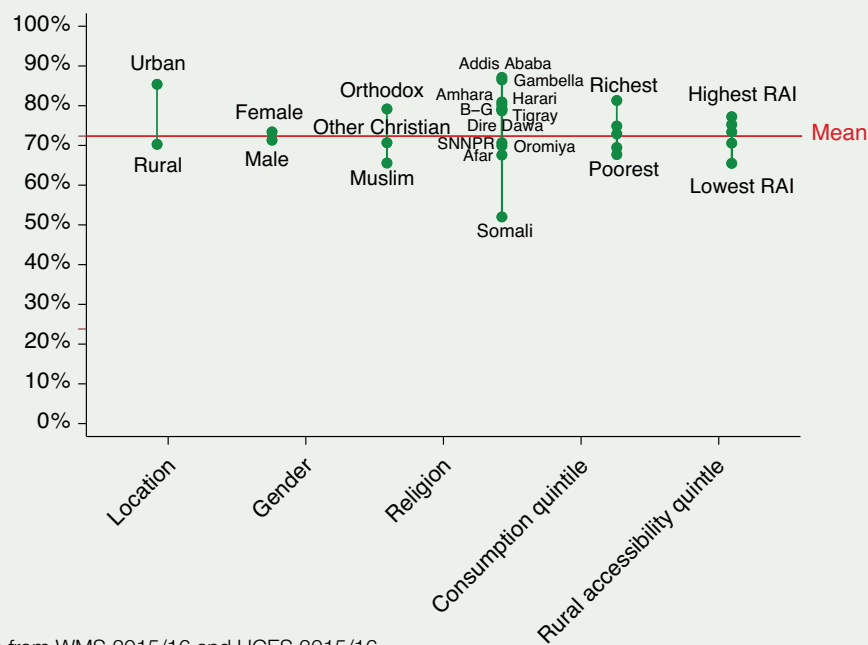


Source: Calculations from WMS 2015/16 and HCES 2015/16.

**Figure 117**

## PRIMARY SCHOOL ENROLMENT CRUCIALLY DEPENDS ON THE REGION WHERE ONE IS BORN

Coverage of access to primary education by circumstance variables, 2016

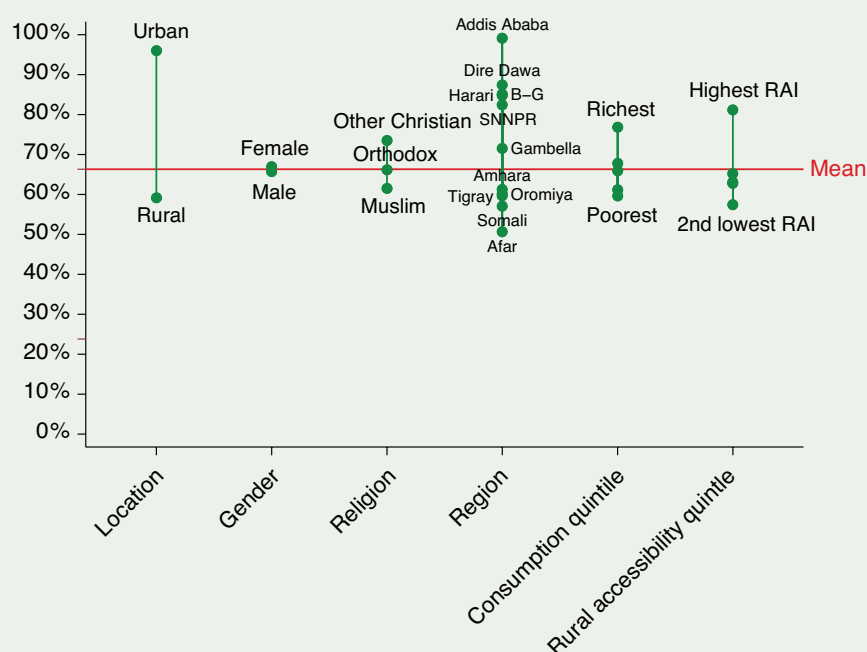


Source: Calculations from WMS 2015/16 and HCES 2015/16.

Figure 118

## LOCATION DETERMINES PROXIMITY TO A HEALTH POST

Coverage of having a health post within 5km by circumstance variables, 2016



Source: Calculations from WMS 2015/16 and HCES 2015/16.

## Box 25

## Gender differences and the HOI

In the HOI analysis, gender matters only for education outcome variables. Estimating the HOI and D-index separately for male and female children, and for male- and female-headed households yields some interesting results. Primary school enrollment rates are relatively high, and although the female HOI for this outcome variable is slightly higher than the male HOI, the difference between the two is not statistically significant. Females between the ages of 15 and 18 are more likely to have completed primary school than males in the same age cohort, and they have a higher HOI as well. There are no significant differences in the HOI or D-index between male and female children based on secondary school enrollment, access to basic infrastructure or healthcare facilities.

The differences between children living in male- versus female-headed households are more prominent. Once again there are no differences for the primary enrollment outcome variable, but children living in female-headed households are about 10 percentage points more likely to have completed primary school than those in male-headed households. This result is robust to controls for urban residence and household consumption. The primary completion HOI is also higher for children in female-headed households. However, the D-index for this outcome variable is almost identical for male- and female-headed households for this variable, indicating that the role of differential access by circumstances actually matters less. A similar qualitative result holds for the secondary enrolment outcome variable, though the difference in the HOI is not quite as large. Finally, there are no significant differences in the HOI or D-index for the infrastructure or health access variables.

**Decomposing inequality of opportunity into its circumstance components shows that location is the biggest driver of unequal access.** The application of the Shapley Value approach allows for the estimation of the contribution of each circumstance to the D-index.<sup>78</sup> As shown in Figure 119 the only outcome for which the rural-urban variable is not the main explanatory factor is for age-eligible primary school enrollment. For this variable the religion of the household explains just over 40 percent of the inequality of opportunity. Underlying this finding is the fact that children who live in Muslim households are less likely to be enrolled in primary school. This is strongly correlated with populations living in pastoralist areas and in drought-prone lowlands, where household movements in relation to rainfall and the availability of grazing lands and water are more common.

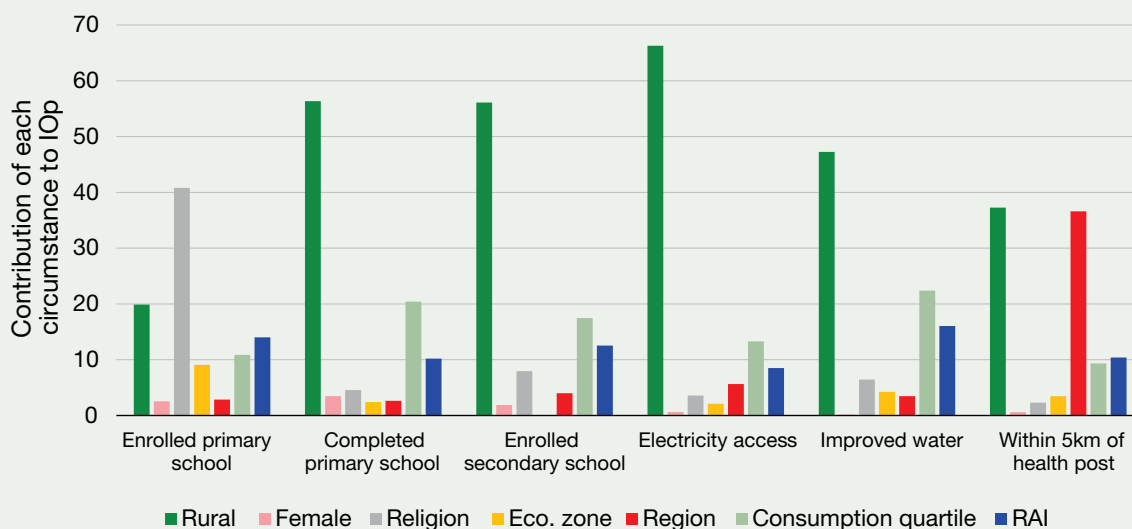
#### **Inequality of opportunity as measured by differences in primary school completion and secondary school**

**enrolment is mostly explained by differences between rural and urban areas and difference in household wealth.** The same is true for the infrastructure access variables – two thirds of unequal access to electricity is explained by a household's rural location, as is about half of unequal access to an improved water source (Figure 119).

**Household poverty is usually the second most important factor in explaining access to services.** One fifth of differences in primary school enrollment is explained by the household's consumption quartile. Children in poorer households are also less likely to complete primary school, even after controlling for location and accessibility factors. The household's consumption quartile also explains 16 percent and 18 percent of inequality in secondary school enrollment and access to an improved water source, respectively. Differences by gender play a relatively minor role in explaining inequalities across all seven outcome variables (Box 25).

**Figure 119 LOCATION AND HOUSEHOLD WEALTH ARE THE MAIN SOURCES OF INEQUITY IN ACCESS TO OPPORTUNITIES**

Decomposition of the D-Index by circumstance variable, 2016



Source: Calculations from WMS 2015/16 and HCES 2015/16.

78 For further details on theory and application see Hoyos and Narayan (2011) and Abras, Cuesta et al. (2012).

### 3. INTERGENERATIONAL EDUCATIONAL MOBILITY

**The chapter now turns to another question that is central to understanding inequality of opportunity, that of intergenerational educational mobility.** If children's educational attainment is largely influenced by the educational attainment of their parents, then there will be a high transmission of poverty or prosperity across generations. This section begins by outlining the methodology used in the estimation, before presenting results on the relationship between parental education and the probability that an age-eligible child is enrolled in primary school. The strength of the link between household consumption and age-eligible enrollment is then explored. Finally, the analysis investigates the correlation between years of parental education and years of education attained by the child. Box 26 summarizes the extent of intergenerational mobility in a sample of African countries.<sup>79</sup>

**There are three central questions in this section:** (i) To what extent does a child's educational outcomes depend on the education of his or her parents? (ii) How does this differ by different groups in society? (iii) How has this changed in Ethiopia between 2011 and 2016? For the main results, the relationship is estimated using an OLS regression with the following specification:

$$Child_{edu} = \beta_0 + \beta_1 Father_{edu} + \beta_2 Child_{age} + \beta_3 Urban + \beta_4 Father_{edu} * Urban + \epsilon$$

where Urban is a dummy variable indicating whether child was born in an urban area. A low estimated value of the coefficient  $\hat{\beta}_1$  means that relative intergenerational mobility is *high* in rural areas, because education attainment does not depend on one's parents. Similarly, if the coefficient,  $\hat{\beta}_4$ , is positive and statistically significant, this means that relative

intergenerational mobility is lower in urban areas. We do this analysis separately for 2011 and 2016, to measure how these relationships have changed over time. Depending on the specification, the child's education outcome variable either reflects the years of educational attainment or is binary and reflects primary or secondary enrollment. The age range for children used in the estimation is generally 7 to 18, but is adjusted to 7 to 14 when looking at primary enrollment, and 15 to 18 when looking at primary completion or secondary enrollment.

**While the gap between rural-urban primary enrollment rates decreased between 2011 and 2016, the gap in secondary enrolment increased.** Table 36 presents summary statistics for some of the key variables that are used in the analysis in this section. The data used are for fathers and children (aged 7 to 18) who are co-resident in the 2011 and 2016 samples. The average number of years of education for a rural father living with a primary-school-aged child in a rural area was 1.8 in 2011 and 2.2 in 2016. This is in contrast to the urban comparison which is 6.6 years and 7.3 years, respectively. There was considerable improvement in primary school enrollment rates for children aged 7 to 14 between 2011 and 2016.<sup>80</sup> In rural areas the enrollment rate increased by more than 10 percentage points, while in urban areas it increased by three percentage points to 90 percent. Secondary enrollment rates were low overall, and the gap between rural and urban areas widened. In 2016 only about 6 percent of children aged 15 to 18 were enrolled in secondary school, compared to just over one third of age-eligible children in urban areas. The average number of years of education for a 15-year-old child increased in both rural and urban areas over the period.

79 Father's education rather than mother's education is used in this analysis. The mother's education variable for school-aged children piles up at zero years of formal education – in fact it is zero until the 75th percentile. The father's education variable contains zeros up to the 25th percentile, and is 5 years at the 75th percentile. This tends to make results using mother's education a lot more imprecise than when using father's education. Regressions using a different specification in which “highest education either mother or father” yield very similar results compared to a regression using father's education only.

80 The full cumulative distribution functions of educational attainment for children aged 7 to 18 in 2011 and in 2016 is provided in Annex Figure 16.



**Table 36****THE RURAL-URBAN GAP IN EDUCATION SLIGHTLY DECREASED BUT REMAINS HIGH**

Education indicators of father and children, 2011-2016

|   | RURAL | URBAN | DIFFERENCE |
|---|-------|-------|------------|
| 2011                                      |       |       |            |
| Father years edu. (with child aged 7-14)  | 1.8   | 6.6   | ***        |
| Father years edu. (with child aged 15-18) | 1.3   | 6.1   | ***        |
| Age-eligible enrolled in primary          | 60%   | 87%   | ***        |
| Age-eligible enrolled in secondary        | 2%    | 27%   | ***        |
| Years of education 15 year old            | 3.1   | 6.2   | ***        |
| 2016                                      |       |       |            |
| Father years edu. (with child aged 7-14)  | 2.2   | 7.3   | ***        |
| Father years edu. (with child aged 15-18) | 2.1   | 7.2   | ***        |
| Age-eligible enrolled in primary          | 71%   | 90%   | ***        |
| Age-eligible enrolled in secondary        | 6%    | 35%   | ***        |
| Years of education 15 year old            | 3.9   | 6.5   | ***        |

Source: WMS, 2011; 2016. World Bank staff calculations.

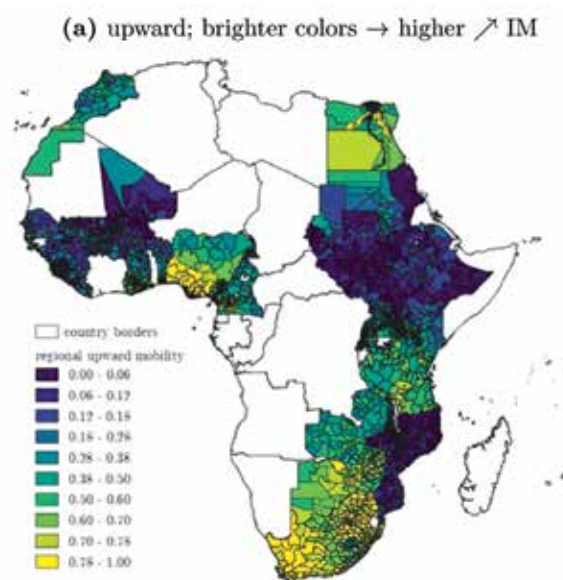


## Intergenerational mobility in African countries

A study of 23 African countries by Alesina, Hohmann et al. (2019) shows that since independence intergenerational mobility has increased, largely reflecting the rise in educational attainment. Countries in which the parental generation has lower than average years of education tend to have lower mobility. Conversely, a more highly educated parental generation is associated with a higher level of intergenerational mobility. South Africa, Nigeria, and to a lesser extent Botswana, Kenya, Ghana, and Tanzania, have higher mean education of the parental generation, and also higher levels of mobility. On the other hand, Ethiopia, Senegal, Sudan and Mali have both relatively low average education levels, and lower levels of intergenerational mobility. Research by Azomahou and Yitbarek (2016) shows that Ethiopia, Burkina Faso, Sudan, South Sudan and Morocco have very high parental generation illiteracy rates at around 90%. Children of parents without formal schooling in these countries have a very low probability of completing primary school – around 20 percent. This is in contrast to countries with a better educated parental generation, in which primary school completion rates are generally at or above 70 percent.

Figure 120

### UPWARD INTERGENERATIONAL SOCIAL MOBILITY IN DIFFERENT AFRICAN COUNTRIES



Source: Reproduction of Figure 3 panel (a) in Alesina, Hohmann et al. (2019).

The figure above, from Alesina, Hohmann et al. (2019), shows estimates of intergenerational mobility for individuals aged 14 to 18. The figure shows upward mobility – the brighter the color the higher the upward mobility. Upward mobility in this case is defined as “the likelihood that children whose parents have not completed primary school will themselves go on to complete at least primary education”. The results show that Ethiopia has among the lowest rates of upward mobility for countries for which data are available, reflecting the relatively poor performance in education.

**The relationship between children's education and their parents' education weakened slightly between 2011 and 2016, indicative of a small increase in intergenerational mobility.** The regression output in Table 37 shows the results of estimating years of education of the child on the years of education of his or her father, with controls included for the child's age, urban location, and an interaction term between father's education and urban location. On average, a one year increase in parental education was associated with a 0.10 year increase in the child's education in 2016, while controlling for age and location.

**The educational effect of living in an urban area increased between 2011 and 2016.** The urban coefficient in Table 37 rose from 1.3 years to 1.44 years, on average: Relative to a rural child of the same age, an urban child had completed on average 1.44 more years of education. The interaction term between urban location and father's years of education was not statistically significant in 2016. Taken together this means that the educational effect of happening to live in an urban area increased over the period, but the intergenerational relationship in urban versus rural areas did not change. There were no statistically significant differences between male and female children (regression output not shown) in either 2011 or 2016.

**Table 37** INTERGENERATIONAL MOBILITY HAS IMPROVED BETWEEN 2011 AND 2016

Intergenerational educational attainment: 7-18

| Y=CHILD'S YEARS EDU.       | 2011               | 2016               |
|----------------------------|--------------------|--------------------|
| Father's education         | 0.12***<br>(0.01)  | 0.10***<br>(0.01)  |
| Urban                      | 1.30***<br>(0.06)  | 1.44***<br>(0.06)  |
| Urban * Father's education | -0.02*<br>(0.01)   | -0.001<br>(0.01)   |
| Child's age                | 0.51***<br>(0.01)  | 0.42***<br>(0.01)  |
| Constant                   | -3.95***<br>(0.06) | -3.27***<br>(0.06) |
| Observations               | 23 074             | 22 711             |
| R2                         | 0.49               | 0.42               |

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Source: Calculations from WMS 2010/11 and 2015/16, and HCES 2010/11 and 2015/16.

**Another way of understanding the intergenerational relationship between education is to investigate the probability that an age-eligible child is enrolled in school conditional on his or her parents' level of education.** This is achieved by running a logistic regression of whether the age-eligible child is enrolled or not on parental education while controlling for other variables such as location. Figure 121 shows this relationship in 2011 and in 2016 for both rural and urban areas.

**The biggest improvements were concentrated among children with poorly-educated fathers in urban areas,**

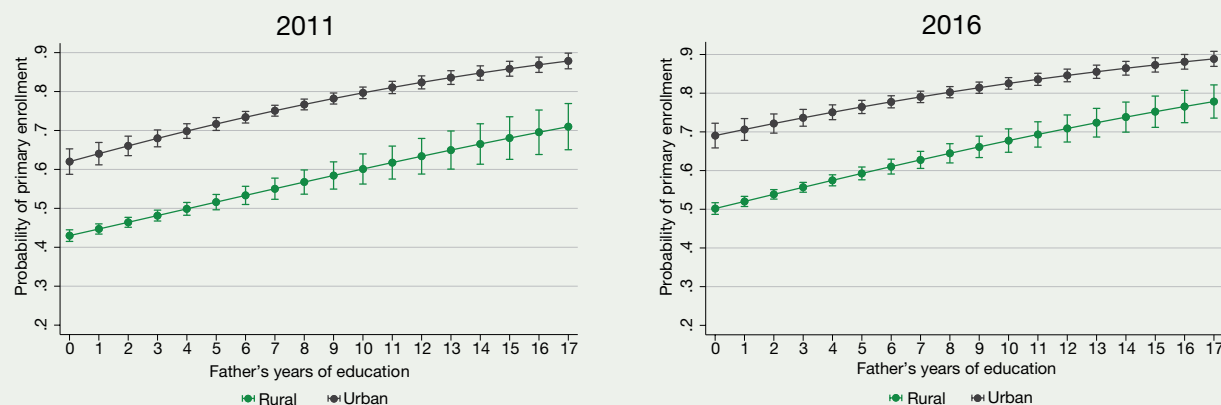
**and children with better-educated fathers in rural areas.** Figure 121 shows that the relationship between father's education and the probability of being enrolled in primary school became flatter over time in urban areas, reflecting a more equal access to primary school in urban areas. The relative improvement of rural children with well-educated parents can be seen by the closing of the gap at the top of the distribution between 2011 and 2016. However, the differences at the lower end of the distribution between rural and urban children remain stark: 70 percent of urban children with an uneducated father are enrolled in primary school, compared to 50 percent of rural children.



**Figure 121**

## ENROLMENT IN PRIMARY SCHOOL BECAME LESS DEPENDENT ON FATHER'S EDUCATION IN URBAN AREAS

Probability of a child being enrolled in primary school, by father's education, 2011 and 2016



Note: Analysis restricted to children aged 7 to 14. Figures show the predicted probability of enrollment for age-eligible children following a logistic regression. Sample sizes for rural were 9,248 and 9,612 in 2011 and 2016 respectively. Sample sizes for urban were 7,515 and 7,611 in 2011 and 2016 respectively.

Source: Calculations from WMS 2010/11 and 2015/16, and HCES 2010/11 and 2015/16.

**The dynamic is amplified when considering secondary school enrollment.** The two panels in Figure 122 show the predicted probabilities of secondary enrollment for individuals aged 15 to 18 over the range of their father's education. The relationship for children in rural areas was completely flat in 2011, which is not surprising considering the overall secondary enrollment rate of about two percent. The enrollment rate in 2016 was still only six percent, but it is clear that most of that change came from rural households with better-educated fathers.

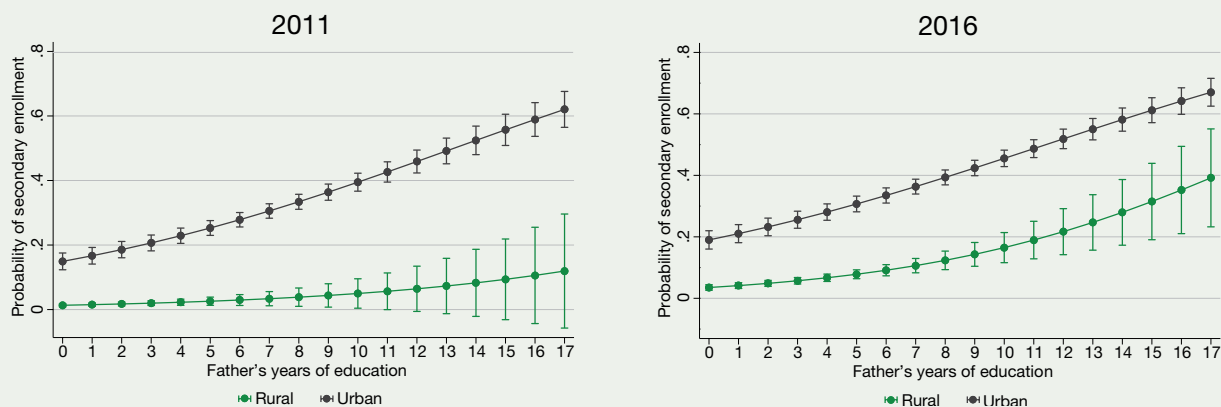
**The improvement in urban areas was driven by small gains in the probability of secondary enrollment for children of poorly-educated fathers.** The overall age-eligible secondary enrollment rate in urban areas increased by eight percentage points (from 27 percent to 35 percent), and much of that was concentrated in gains accruing to children of fathers with between zero and five years of education. In other words, there was an intercept change for the urban line, but it did not flatten out to the same extent as did the primary enrollment urban line presented in the previous figure.<sup>81</sup> All else equal, children of poorly-education parents in urban areas were more likely to go to secondary school than the children of well-educated parents in rural areas. This resulted in an increase in this measure of secondary education intergenerational mobility in urban areas, but a decrease in rural areas.

81 Similar analysis was undertaken to investigate differences between religious groups and the agro-ecological zones in which households were situated. For the former, the main differences occurred in the probability of secondary school enrollment, in which children in Ethiopian Orthodox households were more likely to be enrolled for any level of parental education than were children in non-Orthodox Christian and Muslim households. Patterns between the agro-ecological zones show very few differences at the top of the distribution. The children of poorly-educated parents in the drought-prone lowlands had lower primary enrollment probabilities than the other four agro-ecological zones in both 2011 and 2016.

**Figure 122**

## ENROLMENT IN SECONDARY SCHOOL BECAME MORE DEPENDENT ON FATHER'S EDUCATION IN RURAL AREAS

Probability of a child being enrolled in secondary school, by father's education, 2011 and 2016



Note: Analysis restricted to children aged 15 to 18. Figures show the predicted probability of enrollment for age-eligible children following a logistic regression. Sample sizes for rural were 3,022 and 2,913 in 2011 and 2016 respectively. Sample sizes for urban were 2,967 and 3,071 in 2011 and 2016 respectively.

Source: Calculations from WMS 2010/11 and 2015/16, and HCES 2010/11 and 2015/16.





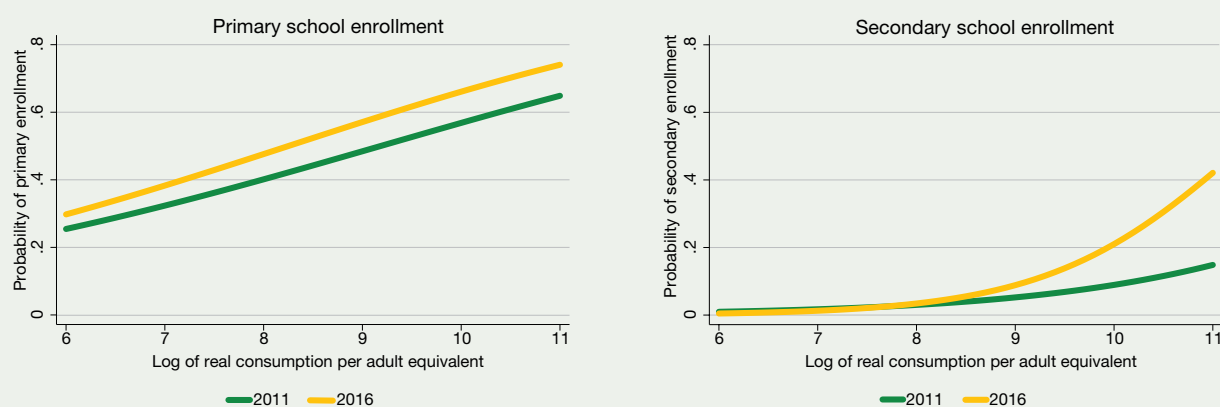
## THE ROLE OF HOUSEHOLD WELFARE IN ACCESSING EDUCATION IS INCREASING, ESPECIALLY IN RURAL AREAS

**While access to education has increased between 2011 and 2016, the increase was larger for children from wealthier households.** As a result, household welfare has become more important in determining access to education.<sup>82</sup> The probability of the poorest children being enrolled in primary school did not significantly increase between 2011 and 2016, while this increase was significant at the top of the distribution (left-hand side graph of Figure 123). Changes in the predicted probability of secondary school enrollment were concentrated in the top quartile of households, while the probability of being enrolled in secondary school for children in the bottom half of the distribution was not different in 2011 and 2016 (right-hand side graph of Figure 123). This means that the gains in secondary enrollment between 2011 and 2016 went mainly to children in relatively richer households. For children in poor households, and households in the middle of the consumption distribution, the probability of attending secondary school did not change significantly over the period.

**The increased disparity in access to education and quantity of education attained between poor and better-off children is driven by rural areas.** While there is a positive association between household consumption levels and schooling of the household's children in both rural and urban areas, the association is significantly stronger in rural areas (a positive and statistically significant interaction effect in Annex Table 6). This result suggests that the poorest households in rural areas face substantial financial constraints in getting and, especially, keeping their children in school. Specifically, children from poor rural households tend to start school at a later age, affecting their ability to progress successfully through school. This effect is seen predominantly at the primary school level. This pattern holds when also controlling for distance to actual school facilities. Demand-side interventions that provide financial support or incentives to extremely poor rural households may be necessary to build the human capital of their children and break the intergenerational poverty trap.

**Figure 123** ENROLMENT IN SCHOOL BECAME MORE DEPENDENT ON HOUSEHOLD WELFARE BETWEEN 2011 AND 2016

School enrollment probabilities by household consumption, 2011 and 2016



Source: Calculations from WMS 2010/11 and 2015/16, and HCES 2010/11 and 2015/16.

82 The effect of household welfare on accessing primary school did not significantly change between 2011 and 2016. However, the influence of household wealth on the likelihood of enrolment in secondary school significantly increased.

# Conclusion

**This chapter presented evidence on how inequality of opportunity and intergenerational mobility in Ethiopia have changed over the last five years.** Understanding these two concepts better is a crucial part of thinking about how poverty and inequality may develop and be tackled in future years. This is important, as although Ethiopia has made significant gains in poverty reduction, and inequality of outcomes remains relatively low, the economic growth of the last decade has not been equally shared within the country. Ensuring that there is equal opportunity of access to services is linked to more sustainable and inclusive economic growth as investing in the productivity and welfare of all citizens through access to opportunities equates to improved economic outcomes in the future.

**There has been an overall improvement in equal access to basic services but there are still large disparities between circumstance groups.** Rural vs urban location and household welfare are the main sources of inequity in access to key opportunities. Urban children and children from households in the top consumption quintile have far better access to key services compared to rural or poorer children.

**Intergenerational mobility in education also improved between 2011 and 2016.** Overall, the effect of parental education on children's education has weakened, though is still strong and significant. The overall dynamic masks different dynamics at different level of education: While enrolment in primary school has become less dependent on parents' education levels, enrolment in secondary school has become more dependent on parent's education.

**Education gains between 2011 and 2016 were concentrated among the children of better-educated parents in rural areas and less-educated parents in urban areas.** The implication is that the children of poorly-educated rural parents are in danger of being left behind. This is confirmed by the finding that the impact of household welfare levels on child schooling is substantially higher in rural than urban areas. The poorest rural households may need supplementary support to get and keep their children in school for longer.

**Overall, the results tell a consistent story that crucial investments need to be made in providing access to services in rural areas, so that children born in rural households are afforded the same opportunities as those born in urban areas.**

# References

- Aguero, J., Carter, M. & May, J. (2007). "Poverty and inequality in the first decade of South Africa's democracy: What can be learnt from panel data from KwaZulu-Natal?". *Journal of African Economies*, 16(5): 782-812.
- Alderman, H. & Garcia, M. (1993). Poverty, household food security and nutrition in rural Pakistan. Research paper 96. Washington DC: IFPRI.
- Bachewe, F., & Headey, D. (2017). Urban wage behavior and food price inflation in Ethiopia. *The Journal of Development Studies*, 53 (8), 1207-1222.
- Bachewe F, F. Yimer, B. Minten, and P. Dorosh. (2016). Agricultural prices during drought in Ethiopia: An assessment using national producer data (January 2014 to January 2016) ESSP Working Paper 88 Washington DC: International Food Policy Research Institute.
- Baulch, B. & Hoddinott, J. (2000). "Economic mobility and poverty dynamics in developing countries." *Journal of Development Studies* 36(6): 1-24.
- Beegle, K., de Weerdt, J., & Dercon, S. (2011). Migration and economic mobility in Tanzania: Evidence from a tracking survey. *Review of Economics and Statistics*, 93 (3), 1010-1033.
- Berhane, G., Hirvonen, K. and J. Hoddinott. (2015a). The Implementation of the Productive Safety Nets Programme, 2014: Highlands Outcomes Report.
- Kumar, N. and J. Hoddinott. (2015b). The Implementation of the Productive Safety Nets Programme, 2014: Lowlands Outcomes Report.
- Berhane, G., Gilligan, D., Hirvonen, K., Hoddinott, J., Kumar, N., and A. Seyoum-Tafesse. (2018a). The Productive Safety Net Programme 4 Midline Survey 2018. Highland Outcomes Report.
- Berhane, G., Gilligan, D., Hirvonen, K., Hoddinott, J., Kumar, N., and A. Seyoum-Tafesse. (2018a). The Productive Safety Net Programme 4 Midline Survey 2018. Lowland Outcomes Report.
- Blinder, A. (1973). "Wage discrimination: Reduced form and structural estimates." *The Journal of Human Resources* 8(4): 436-455.
- Central Statistical Agency of Ethiopia (2017). LSMS - Integrated surveys on agriculture: Ethiopia Socioeconomic Survey (ESS) report. Addis Ababa, Central Statistical Agency of Ethiopia.
- Chauvin, J. P., Glaeser, E., Ma, Y., & Tobio, K. (2017). What is different about urbanization in rich and poor countries? cities in Brazil, China, India and the United States. *Journal of Urban Economics*, 98, 17-49.
- Christaensen, L., De Weerdt, J., & Kanbur, R. (2016). Urbanization and poverty reduction: The role of secondary towns in Tanzania. Analysis and Policy Brief No 18. Institute of Development Policy and Management.
- Christaensen, L., & Kanbur, R. (2017). Secondary towns and poverty reduction: Refocusing the urbanization agenda. *Annual Review of Resource Economics*, 9, 405-419.
- Christaensen, L., & Todo, Y. (2014). Poverty reduction during the rural-urban transformation: The role of missing middle. *World Development*, 63, 43-58.
- Dang, H.-A. H., P. F. Lanjouw and R. Swinkels (2017). Who remained in poverty, who moved up, and who fell down? Poverty Reduction in the Course of African Development. M. Nissanke and M. Ndulo. Oxford, Oxford University Press.
- de Brauw, A., Mueller, V., & Woldehanna, T. (2017). Does internal migration improve overall well-being in Ethiopia? *Journal of African Economies*, 27 (3), 1-19.
- Dercon, S., & Krishnan, P. (2000). Vulnerability, seasonality and poverty in Ethiopia. *Journal of Development Studies*, 36(6), 25-53.
- Dercon, S. (2004). Growth and shocks: Evidence from rural Ethiopia. *Journal of Development Economics*, 74(2), 309-329.
- Dercon, S. (2006). Economic reform, growth and the poor: Evidence from rural Ethiopia. *Journal of Development Economics*. 81(1). 1-24.

- Dercon, S., Gilligan, D., Hoddinott, J., & Woldehanna, T. (2009). The impact of roads and agricultural extension on consumption growth and poverty in fifteen Ethiopian villages. *American Journal of Agricultural Economics*, 91(4), 1007-1021.
- Dercon, S., Hoddinott, J., & Woldehanna, T. (2012). Growth and chronic poverty: Evidence from rural communities in Ethiopia. *Journal of Development Studies*, 48(2), 238-253.
- Devereux, S., R. Sabates-Wheeler and R. Slater (2008), Ethiopia's Productive Safety Net Programme (PSNP): 2008 Assessment Report Study Team.
- Dorosh, P., Thurlow, J., Kebede, F., Ferede, T. & Taffesse, A. (2018). Structural change and poverty reduction in Ethiopia: Economy-wide analysis of the evolving role of agriculture. Strategy Support Program Working Paper 123. IFPRI.
- Duranton, G. (2014). Growing through cities in developing countries. *The World Bank Research Observer*, 30, 39-73.
- Duranton, G. (2016). Agglomeration effects in Colombia. *Journal of Regional Science*, 56(2), 210-238.
- Fafchamps, M. (2012). Reprint of development, agglomeration, and the organization of work. *Regional Science and Urban Economics*, 42(5), 765-778.
- FDRE (2016). Urban Food Security Strategy. Federal Democratic Republic of Ethiopia: Ministry of Urban Development and Housing.
- FDRE (2017). Ethiopia's Progress Towards Eradicating Poverty: An Interim Report on 2015/16 Poverty Analysis Study. Ethiopia: National Planning Commission.
- Firpo, S., N. Fortin and T. Lemieux (2009). "Unconditional quantile regressions." *Econometrica* 77(3): 953-973.
- Franklin, S. (2019). Slums to failed estates? Evidence from a lottery for low-cost housing in Ethiopia. Unpublished manuscript.
- Fuje, H. (2018). Welfare dynamics and drought in Ethiopia. CSAE Conference 2018: Economic Development in Africa. Oxford.
- Gindling, T. H., & Newhouse, D. (2014). Self-employment in the developing world. *World Development*, 56, 313-331.
- Glewwe, P. & Gibson, J. (2005). "Analysis of poverty dynamics". *Handbook on Poverty Statistics: Concepts, Methods and Policy Use*. Geneva: United Nations.
- Glewwe, P. (2012). "How much of observed economic mobility is measurement error? IV methods to reduce measurement error bias, with an application to Vietnam". *The World Bank Economic Review*, 26(2): 236-264.
- Gollin, D., Jedwab, R., & Vollrath, D. (2016). Urbanization with and without industrialization. *Journal of Economic Growth*, 21(1), 35-70.
- Henderson, J. V., & Kriticos, S. (2018). The development of the African system of cities. *Annual Review of Economics*, 10, 287-314.
- Henderson, J. V., Storeygard, A., & Deichmann, U. (2017). Has climate change driven urbanization in Africa? *Journal of Development Economics*, 124, 60-82.
- Hill, R. and E. Tsehay (2018). Growth, safety nets and poverty: Assessing progress in Ethiopia from 1996 to 2011. Policy Working Research Paper 8380. Washington DC, World Bank.
- Hirvonen, K., Mascagni, G. & Roelen, K. (2016). Linking taxation and social protection: Evidence on redistribution and poverty reduction in Ethiopia. Working Paper 2016/111. UNU-WIDER.
- Hirvonen K., Sohnesen, T. and Bundervoet, T. (2018). "Impact of Ethiopia's 2015 drought on child undernutrition". International Food Policy Research Institute (IFPRI) ESSP Working Paper 114.
- Hirvonen, K., Hoddinott, J., Lind, J., Sabates-Wheeler, R., Tefera, M., and Seyoum-Tafesse, A. (2019). Humanitarian Food Assistance 2018 – Process Evaluation Report. PPT presentation shared with WB team.
- Hirvonen, K., T. P. Sohnesen and T. Bundervoet (2018). Impact of Ethiopia's 2015 drought on child undernutrition. Ethiopia Strategy Support Program. Washington DC, International Food Policy Research Institute.
- Hoddinott, J. and T. Mekasha. (2017). Social protection, household size and its determinants: Evidence from Ethiopia. ESSP Working Paper 107.

- Hulme, D. and A. Shepherd (2003). "Conceptualizing chronic poverty." *World Development* 31(3): 403-423.
- Jalan, J. and M. Ravallion (1998). "Transient poverty in post-reform rural China." *Journal of Comparative Economics* 26(2): 338-357.
- Jedwab, R., Christiaensen, L., & Gindelsky, M. (2015). Demography, urbanization and development: Rural push, urban pull and... urban push? *Journal of Urban Economics*, 98, 6-16.
- Kafle, K., K. McGee, A. Ambel and I. Seff (2016). "Once poor always poor? Exploring consumption- and asset-based poverty dynamics in Ethiopia." *Ethiopian Journal of Economics* 25(2): 37-76.
- Kamei, A., & Nakamura, S. (2019). Urban agglomerations and employment transitions in Ethiopia. Unpublished manuscript.
- Kefyalew Endale, Pick, A. and Tassew Woldehanna, 2019, Financing Social Protection in Ethiopia: A Long-term Perspective, OECD Development Policy Papers No. 15, OECD.
- Kosec., K., Ghebru, H., Holtemeyer, B., Mueller, V. and E. Schmidh. (2018). "The Effect of Land Access on Youth Employment and Migration Decisions: Evidence from Rural Ethiopia." *The American Journal of Agricultural Economics* 100(3): 931-954.
- Lipton, M. and M. Ravallion (1995). *Poverty and policy. Handbook of Development Economics*. J. Behrman and T. N. Srinivasan. Amsterdam, North Holland. III.
- McCulloch, N. and B. Baulch (2000). "Simulating the impact of policy upon chronic and transitory poverty in rural Pakistan." *Journal of Development Studies* 36(6): 100-130.
- McKay, A. and D. Lawson (2003). "Assessing the extent and nature of chronic poverty in low income countries: Issues and evidence." *World Development* 31(3): 425-439.
- Melo, P. C., Graham, D. J., & Noland, R. B. (2009). A meta-analysis of estimates of urban agglomeration economies. *Regional science and urban Economics*, 39(3), 332-342.
- Minten, B., Dereje, M., Bachewe, F. and T. Seneshaw. (2018). "Evolving Food Systems in Ethiopia: Past, Present and Future." ESSP Working Paper. Washington DC: IFPRI.
- Moreno-Monroy, A. (2012). Critical commentary. informality in space: Understanding agglomeration economies during economic development. *Urban Studies*, 49(10), 2019-2030.
- Mukim, M. (2016). How do cities in Ethiopia create jobs? World Bank Policy Research Working Paper 7866.
- Nakamura, S., Bundervoet, T., & Nuru, M. (2019). Rural roads, poverty, and resilience: Evidence from Ethiopia. World Bank Policy Research Working Paper No. 8800.
- Oaxaca, R. (1973). "Male-female wage differentials in urban labor markets." *International Economic Review* 14(3): 693-709.
- Puga, D. (2010). The magnitude and causes of agglomeration economies. *Journal of Regional Science*, 50(1), 203-219.
- Quintero, L. E., & Roberts, M. (2018). Explaining spatial variations in productivity: evidence from Latin America and the Caribbean. World Bank Policy Research Working Paper 8560.
- Ravallion, M. and M. Huppi (1991). "Measuring changes in poverty: A methodological case study of Indonesia during an adjustment period." *World Bank Economic Review* 5(1): 57-82.
- Ravallion, M. and S. Chen (2003). "Measuring pro-poor growth." *Economics Letters* 78(1): 93-99.
- Ravallion, M., 2000. Monitoring targeting performance when decentralized allocations to the poor are unobserved. *World Bank Economic Review* 14 (2), 331- 345.
- Rosenthal, S. S., & Strange, W. C. (2004). Evidence on the nature and sources of agglomeration economies. In *Handbook of regional and urban economics* (Vol. 4, pp. 2119-2171). Elsevier.
- Schmidt, E. and M. Kedir (2009). Urbanization and spatial connectivity in Ethiopia: Urban growth analysis using GIS. ESSP 2 Discussion Paper 003. Addis Ababa, IFPRI.



- Schmidt, E., Dorosh, P., Jemal, M.K., & Smart, J. (2018). Ethiopia's spatial and structural transformation: Public policy and drivers of change. IFPRI/EDRI Strategy Support Program Working Paper 119.
- Seff, I. and D. Jolliffe (2016). "Multidimensional poverty dynamics in Ethiopia: How do they differ from consumption-based poverty dynamics?" *Ethiopian Journal of Economics* 25(2): 1-35.
- Sohnesen, T. (2018). "Measurement and economic impact of drought: The case of Ethiopia's El-Nino drought". Internal working paper.
- Sohnesen, T. P. (2018). Droughts, measurement and impact: The case of Ethiopia in 2015. CSAE Conference 2018: Economic Development in Africa, Oxford.
- UN-Habitat. (2007). Situation Analysis of Informal Settlements in Addis Ababa. Nairobi, Kenya: UN-Habitat.
- Valderrama, D. and M. Viveros (2014). Sectoral gains and population shifts. Poverty and inequality measures in practice: A basic reference guide with Stata examples, World Bank Group, Poverty and Equity Global Practice.
- Vandecasteele, J., Beyene, S.T., Minten, B., & Swinnen, J. (2018). Big cities, small towns, and poor farmers: Evidence from Ethiopia. *World Development*, 106, 393-406.
- World Bank (2015). Ethiopia Poverty Assessment 2014. Washington DC: The World Bank.
- World Bank (2019a). Ethiopia Urban Land Supply and Affordable Housing: Housing Deep Dive Report. Unpublished manuscript.
- World Bank (2019b). Ethiopia Gender Diagnostic Report. Washington DC: The World Bank.
- World Bank. (2015a). Ethiopia Poverty Assessment. Washington, D.C.: World Bank.
- World Bank. (2015b). Ethiopia Urbanization Review: Urban institutions for a middle-income Ethiopia. Washington, D.C.: World Bank.
- World Bank. (2016). 5th Ethiopia Economic Update: Why so idle? Wages and employment in a crowded labor market. Washington, D.C.: World Bank.
- World Bank. (2016). Ethiopia's Great Run. The growth acceleration and how to pace it. Washington DC: The World Bank.
- World Bank. (2018). Review of the Ethiopian Rural Roads Program: Study Report. Washington, D.C.: World Bank.





# Additional material for Chapter 1

## ETHIOPIA'S WELFARE MONITORING SYSTEM

**As briefly mentioned at the beginning of Chapter I, Ethiopia monitors the evolution of poverty, inequality and non-monetary dimensions of welfare through the HCES and WMS.** The HCES and WMS have been conducted roughly every five years between 1995/96 and 2015/16. With five welfare and poverty surveys over a period of 20 years, Ethiopia compares favorably to other IDA countries. There is however room to further strengthen the welfare monitoring system to better fit the context of a fast-growing and fast-changing country vulnerable to frequent shocks. This relates particularly to transparency and documentation at the one hand and frequency at the other.

### Transparency and documentation

**While the household consumption data collected by HCES is considered good quality, no public documentation is provided on the construction of the consumption aggregate.** Given that different assumptions and approaches can lead to different aggregates and different poverty rates, this lack of documentation is important. A good practice is to ensure replicability, whereby the construction of the aggregate is explained in detail in the data documentation, together with the code used in constructing the aggregate. This practice is used, for instance, by the Living Standards Measurement Study.

**Another element of transparency and consistency relates to the method of adjusting the consumption aggregate or the poverty line for differences in prices across space and over time.** As surveys are implemented in different years with different prices, prices need to be expressed in a constant period to allow for a valid comparison. There are several ways of constructing price deflators, and each way will typically lead to slight or non-so-slight differences in poverty rates. Between 1995/6 and 2015/16, NPC has used different ways of deflating the consumption aggregate or inflating the poverty line. In 2000 and 2005, the consumption aggregate was expressed in 1996 prices using the CPI, and the deflated aggregates were compared with the

1996 poverty line of ETB 1,075 to estimate the poverty rates. In 2011, the method changed: The original food basket underpinning the 1996 poverty line was re-costed at 2011 prices and an allowance for non-food consumption was added, resulting in a poverty line of ETB 3,781 (2011 prices). Still another approach was used in 2016, when the 2011 poverty line was updated to 2016 prices using the GDP deflator. These changes in methods jeopardize the consistency of the reported poverty trends. Using a consistent way to construct price deflators or formulating scientific arguments as to why a change in deflator is warranted (and presenting the trend using the original deflator as well) would improve the integrity of the poverty statistics.

### Frequency

**The HCES and WMS are currently implemented every five years.** One might argue that this is not frequent enough in a fast-growing and changing country with frequent weather shocks to confidently inform effective policy-making. To illustrate, the results of the latest 2015/16 survey may suggest that progress in rural Ethiopia has slowed substantially, and that renewed efforts are needed to uplift rural areas. This survey was however implemented amidst the El Nino drought, so the rural numbers may reflect the short-term impact of a severe shock and as such mask a positive long-term trend. Having more frequent poverty measurements would allow distinguishing longer-term trends from short-term fluctuations and closer monitoring of living standards.

**There are broadly two options to increase the frequency of poverty monitoring:** Increase the frequency of the HCES/WMS or use the ESS to provide interim poverty estimates. One option, and likely the preferred one, would be to increase the frequency of the WMS/HCES to every three years, which would need to be financed. A second option would be to use the ESS to estimate interim poverty numbers in between successive HCES surveys. For instance, the ESS round that is being implemented in 2019 can be used to provide an interim poverty estimate until the next HCES

has been implemented, completed and analyzed. Though the design and implementation modalities of HCES and ESS are different, statistical techniques can be used to maximize comparability.<sup>83</sup> This option has the advantage of being lower-cost.

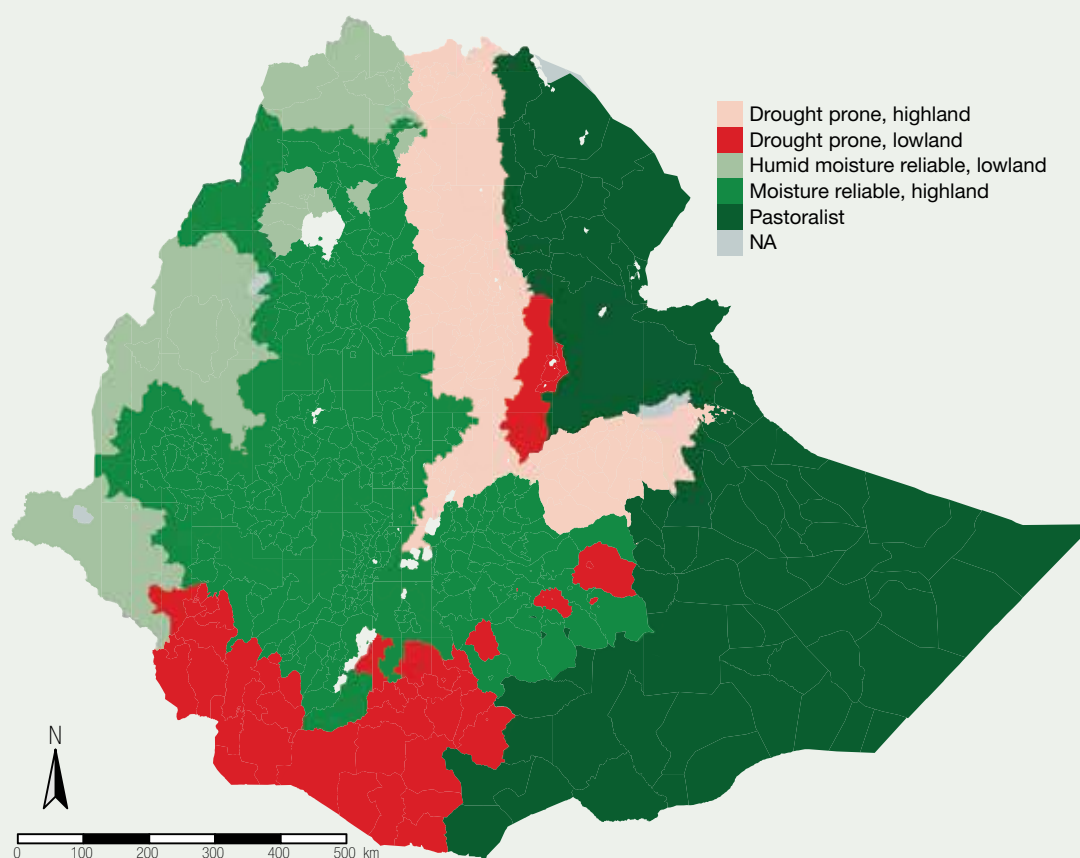
**A final reflection on frequency concerns the poverty line.** The poverty line that is currently being used to assess poverty in Ethiopia is still based on a food basket that was

fixed in 1996. That is, it reflects the food consumption patterns of the poor more than 20 years ago. Given the rapid changes in Ethiopia over this period, it is likely that the consumption patterns of the poor have changed substantially and that the original food basket no longer reflects the current situation. As a good practice, the food basket and poverty line should be re-estimated periodically to make sure it still reflects actual consumption patterns of the poor.

Annex Figure 1

## THE FIVE ETHIOPIA'S

The five main agro-ecological zones of Ethiopia



Source: HCES, 2011; 2016. World Bank staff calculations.

83 Based on a technique called “survey to survey imputation”, poverty numbers estimated from the ESS-3, implemented in 2016, are statistically indistinguishable from the 2016 official HCES poverty numbers. The point estimates were however higher in the ESS.

Annex Table 1

## MEDIAN HOUSEHOLD CONSUMPTION INCREASED IN ALL REGIONS EXCEPT AFAR AND AMHARA

Regional median annual consumption per adult equivalent in December 2015 prices

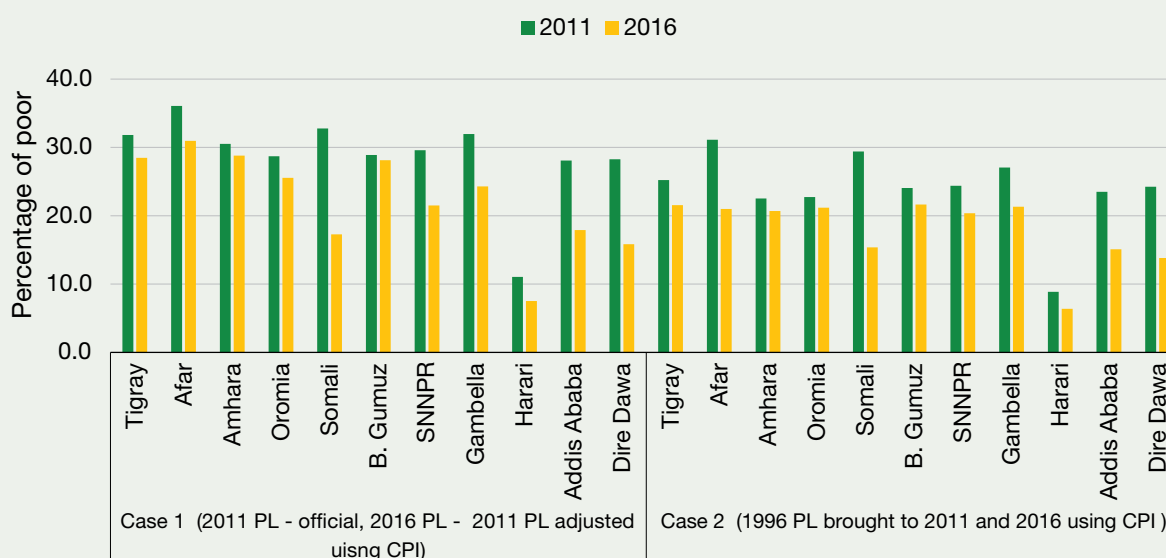
|                   | TOTAL  |        |          | URBAN  |        |          | RURAL  |        |          |
|-------------------|--------|--------|----------|--------|--------|----------|--------|--------|----------|
|                   | 2011   | 2016   | % CHANGE | 2011   | 2016   | % CHANGE | 2011   | 2016   | % CHANGE |
| Tigray            | 9,308  | 10,749 | 15.5     | 13,786 | 15,665 | 13.6     | 8,604  | 9,705  | 12.8     |
| Afar              | 9,031  | 8,503  | -5.9     | 11,317 | 15,339 | 35.5     | 8,277  | 7,892  | -4.7     |
| Amhara            | 9,395  | 9,219  | -1.9     | 10,289 | 16,095 | 56.4     | 9,301  | 8,758  | -5.8     |
| Oromia            | 9,748  | 10,993 | 12.8     | 10,758 | 14,090 | 31.0     | 9,615  | 10,894 | 13.3     |
| Somali            | 9,197  | 10,195 | 10.9     | 11,052 | 12,143 | 9.9      | 8,868  | 10,128 | 14.2     |
| Benishangul-Gumuz | 9,671  | 10,641 | 10.0     | 11,640 | 14,659 | 25.9     | 9,506  | 9,971  | 4.9      |
| SNNPR             | 9,278  | 9,972  | 7.5      | 10,308 | 14,089 | 36.7     | 9,169  | 9,692  | 5.7      |
| Gambella          | 9,134  | 11,382 | 24.6     | 10,304 | 13,862 | 34.5     | 8,837  | 10,210 | 15.5     |
| Harari            | 11,255 | 16,739 | 48.7     | 12,448 | 18,392 | 47.8     | 10,638 | 15,607 | 46.7     |
| Addis Ababa       | 10,377 | 12,718 | 22.6     | 10,377 | 12,718 | 22.6     | -      | -      | -        |
| Dire Dawa         | 9,610  | 12,203 | 27.0     | 9,540  | 15,876 | 66.4     | 9,733  | 11,280 | 15.9     |

Source: HCES, 2011; 2016. World Bank staff calculations.

Annex Figure 2

## SENSITIVITY OF POVERTY MEASURES TO DIFFERENT POVERTY LINE DEFLATORS: REGIONAL

Sensitivity of poverty measures to different poverty line deflators: regional

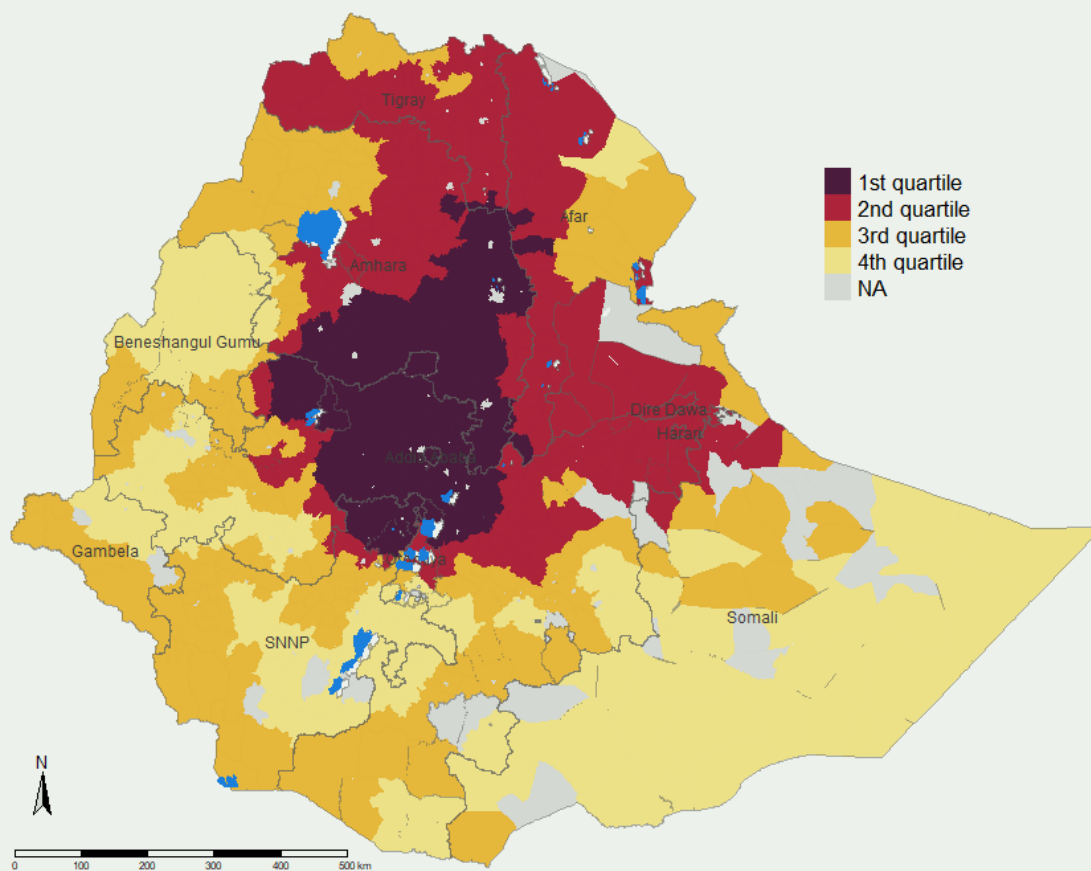


Source: HCES, 2011; 2016. World Bank staff calculations.



## MAP OF QUARTILES OF RAIN FALL SHOCKS IN 2015

Based on average z-score for the months of June, July, August and September 2015



Note: 1st quartile indicates the most severe rain shortfall, while the 4th quartile indicates more than average rainfall.

Source: CHIRPS; World Bank staff calculations.

# Additional material for Chapter 2

Annex Figure 4

## CORRELATES OF RURAL CONSUMPTION IN 2016, ALL NOMADIC ZONES INCLUDED



Source: HCES, WMS; 2016. World Bank staff calculations.

## POVERTY INDICATORS BY SUBGROUPS, 2016

| HOUSEHOLD CHARACTERISTICS | SUBGROUPS                  | POPULATION SHARE | POVERTY SHARE | MEAN CONSUMPTION PER AE | POVERTY HEAD COUNT | POVERTY GAP (DEPTH) | SQUARED POVERTY GAP (SEVERITY) |
|---------------------------|----------------------------|------------------|---------------|-------------------------|--------------------|---------------------|--------------------------------|
| Urban/rural               | Rural                      | 80.9             | 88.0          | 10,946                  | 25.6               | 7.4                 | 3.1                            |
|                           | Big cities                 | 7.6              | 4.4           | 17,947                  | 13.8               | 3.2                 | 1.1                            |
|                           | Medium cities              | 5.9              | 3.0           | 19,782                  | 11.9               | 2.8                 | 1.0                            |
|                           | Small cities               | 5.7              | 4.7           | 17,671                  | 19.4               | 5.4                 | 2.3                            |
|                           | All urban                  | 19.1             | 12.0          | 18,519                  | 14.8               | 3.7                 | 1.4                            |
| Region                    | Tigray                     | 5.8              | 6.6           | 14,108                  | 27.0               | 7.1                 | 2.7                            |
|                           | Afar                       | 1.9              | 1.9           | 12,282                  | 23.6               | 4.2                 | 1.2                            |
|                           | Amhara                     | 23.0             | 25.5          | 12,340                  | 26.1               | 6.2                 | 2.2                            |
|                           | Oromia                     | 37.8             | 38.3          | 12,022                  | 23.9               | 6.8                 | 3.0                            |
|                           | Somalia                    | 5.8              | 5.5           | 10,408                  | 22.4               | 8.4                 | 3.8                            |
|                           | Benishangul-Gumuz          | 1.1              | 1.3           | 13,373                  | 26.5               | 5.6                 | 1.8                            |
|                           | SNNPR                      | 19.9             | 17.5          | 12,204                  | 20.7               | 7.5                 | 3.1                            |
|                           | Gambella                   | 0.4              | 0.4           | 13,855                  | 23.0               | 5.8                 | 2.1                            |
|                           | Harari                     | 0.3              | 0.1           | 21,059                  | 7.1                | 3.0                 | 1.9                            |
|                           | Addis Ababa                | 3.6              | 2.6           | 16,237                  | 16.8               | 4.1                 | 1.4                            |
|                           | Dire Dawa                  | 0.5              | 0.3           | 17,428                  | 15.4               | 3.0                 | 0.9                            |
| Agro-ecological groups    | Drought prone highland     | 22.5             | 19.9          | 13,422                  | 20.8               | 5.1                 | 2.0                            |
|                           | Drought prone lowland      | 7.4              | 10.0          | 11,129                  | 31.7               | 10.9                | 5.0                            |
|                           | Moisture reliable lowland  | 58.4             | 58.5          | 12,136                  | 23.6               | 6.8                 | 2.8                            |
|                           | Moisture reliable highland | 4.3              | 4.7           | 14,705                  | 25.4               | 5.9                 | 2.0                            |
|                           | Pastoralists               | 7.4              | 6.9           | 11,211                  | 21.9               | 7.3                 | 3.1                            |
| Age of head               | Less than or equal to 30   | 12.8             | 4.9           | 17,197                  | 9.0                | 2.2                 | 0.9                            |
|                           | 30 to 44                   | 41.9             | 43.7          | 11,958                  | 24.6               | 7.0                 | 2.9                            |
|                           | 50 to 59                   | 28.5             | 34.9          | 10,985                  | 28.9               | 8.5                 | 3.5                            |
|                           | 60 and above               | 16.9             | 16.5          | 12,201                  | 22.9               | 6.4                 | 2.6                            |
| Education of head         | No education               | 48.0             | 58.0          | 10,498                  | 28.4               | 8.8                 | 3.7                            |
|                           | Primary incomplete         | 29.7             | 28.0          | 11,920                  | 22.1               | 5.8                 | 2.3                            |
|                           | Primary complete           | 3.2              | 1.8           | 15,513                  | 13.0               | 2.8                 | 0.8                            |
|                           | Secondary incomplete       | 5.1              | 2.8           | 18,128                  | 12.8               | 2.8                 | 1.0                            |
|                           | Secondary complete         | 1.7              | 0.5           | 19,440                  | 6.1                | 1.3                 | 0.4                            |
|                           | Post-secondary             | 4.5              | 0.7           | 25,569                  | 3.5                | 0.6                 | 0.2                            |
|                           | Adult education            | 7.7              | 8.3           | 11,692                  | 25.2               | 6.1                 | 2.3                            |

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| HOUSEHOLD CHARACTERISTICS    | SUBGROUPS                          | POPULATION SHARE | POVERTY SHARE | MEAN CONSUMPTION PER AE | POVERTY HEAD COUNT | POVERTY GAP (DEPTH) | SQUARED POVERTY GAP (SEVERITY) |
|------------------------------|------------------------------------|------------------|---------------|-------------------------|--------------------|---------------------|--------------------------------|
| Marital status of head       | Never married                      | 2.2              | 1.0           | 23,407                  | 10.2               | 2.8                 | 1.1                            |
|                              | Married                            | 84.1             | 87.1          | 11,964                  | 24.3               | 6.9                 | 2.8                            |
|                              | Divorced                           | 4.3              | 3.5           | 14,277                  | 19.1               | 5.6                 | 2.3                            |
|                              | Widowed                            | 9.4              | 8.4           | 12,790                  | 21.0               | 6.0                 | 2.5                            |
| Sex of head                  | Male                               | 19.9             | 83.8          | 12,079                  | 24.6               | 7.0                 | 2.9                            |
|                              | Female                             | 80.1             | 16.2          | 13,676                  | 19.1               | 5.3                 | 2.1                            |
| Sector of head's employment  | Agriculture                        | 72.0             | 80.3          | 10,756                  | 26.2               | 7.5                 | 3.1                            |
|                              | Industry                           | 4.6              | 3.6           | 15,029                  | 18.1               | 4.6                 | 1.8                            |
|                              | Service                            | 15.1             | 8.9           | 18,734                  | 13.9               | 3.9                 | 1.6                            |
|                              | No sector (head has no employment) | 8.2              | 7.2           | 13,574                  | 20.7               | 5.7                 | 2.4                            |
| Dependency ratio             | Less than 0.5                      | 28.7             | 19.1          | 15,700                  | 15.7               | 4.1                 | 1.6                            |
|                              | Between 0.5 and 1                  | 28.6             | 27.3          | 12,298                  | 22.5               | 6.5                 | 2.7                            |
|                              | Between 1 and 2                    | 28.6             | 34.6          | 10,443                  | 28.5               | 8.2                 | 3.4                            |
|                              | More than 2                        | 14.1             | 18.9          | 9,794                   | 31.5               | 9.5                 | 4.1                            |
| Household size               | 1                                  | 1.8              | 0.2           | 31,544                  | 2.2                | 0.4                 | 0.2                            |
|                              | 2                                  | 4.9              | 1.2           | 20,117                  | 5.7                | 1.0                 | 0.3                            |
|                              | 3                                  | 10.0             | 3.9           | 16,296                  | 9.3                | 2.1                 | 0.8                            |
|                              | 4                                  | 14.3             | 7.7           | 14,159                  | 12.7               | 3.0                 | 1.1                            |
|                              | 5                                  | 16.8             | 13.9          | 12,174                  | 19.5               | 5.1                 | 1.9                            |
|                              | 6                                  | 17.0             | 19.4          | 11,012                  | 26.9               | 7.1                 | 2.7                            |
|                              | 7 and above                        | 35.4             | 53.7          | 9,318                   | 35.7               | 11.2                | 4.9                            |
| Main livelihood of household | Salary employment                  | 8.0              | 3.9           | 19,976                  | 11.3               | 3.0                 | 1.1                            |
|                              | Casual labor                       | 2.9              | 3.6           | 11,304                  | 28.6               | 8.8                 | 3.8                            |
|                              | Self-crop production               | 51.5             | 56.4          | 10,874                  | 25.7               | 7.1                 | 2.8                            |
|                              | Self-livestock                     | 4.7              | 5.3           | 9,814                   | 26.2               | 8.5                 | 3.5                            |
|                              | Self-crop & livestock              | 19.8             | 21.8          | 10,908                  | 25.7               | 7.8                 | 3.5                            |
|                              | Self-manufacturing                 | 1.3              | 1.1           | 15,412                  | 20.5               | 4.8                 | 1.9                            |
|                              | Self-service                       | 7.3              | 4.3           | 18,651                  | 13.9               | 3.7                 | 1.4                            |
|                              | Other livelihoods                  | 4.4              | 3.7           | 15,313                  | 19.6               | 5.7                 | 2.4                            |

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| HOUSEHOLD CHARACTERISTICS     | SUBGROUPS                     | POPULATION SHARE | POVERTY SHARE | MEAN CONSUMPTION PER AE | POVERTY HEAD COUNT | POVERTY GAP (DEPTH) | SQUARED POVERTY GAP (SEVERITY) |
|-------------------------------|-------------------------------|------------------|---------------|-------------------------|--------------------|---------------------|--------------------------------|
| Distance to health facility   | Close (less than 2kms)        | 54.2             | 46.2          | 13,908                  | 20.0               | 5.5                 | 2.2                            |
|                               | Far (between 2 and 3 kms)     | 16.4             | 16.1          | 10,994                  | 23.1               | 6.4                 | 2.6                            |
|                               | Very far (more than 3kms)     | 29.4             | 37.6          | 10,396                  | 30.1               | 9.1                 | 3.9                            |
| Distance to all weather roads | Close (less than 2kms)        | 51.2             | 41.0          | 14,353                  | 18.8               | 5.0                 | 2.0                            |
|                               | Far (between 2 and 3 kms)     | 9.0              | 9.1           | 10,865                  | 23.8               | 6.6                 | 2.7                            |
|                               | Very far (more than 3kms)     | 39.8             | 49.8          | 10,226                  | 29.4               | 8.8                 | 3.8                            |
| Distance to town              | Close (less than 1hr walking) | 55.6             | 42.6          | 14,235                  | 18.1               | 4.8                 | 1.9                            |
|                               | Far (between 1 and 2hrs)      | 21.6             | 25.7          | 10,845                  | 28.2               | 7.4                 | 2.9                            |
|                               | Very far (more than 2hrs)     | 22.9             | 31.7          | 10,060                  | 32.7               | 10.3                | 4.4                            |
| Border/no border zones        | Border zones                  | 20.0             | 25.0          | 11,678                  | 29.4               | 9.3                 | 4.0                            |
|                               | Non-border zones              | 80.0             | 75.0          | 12,570                  | 22.1               | 6.1                 | 2.5                            |

Source: Own calculations from HCES, WMS, 2016.

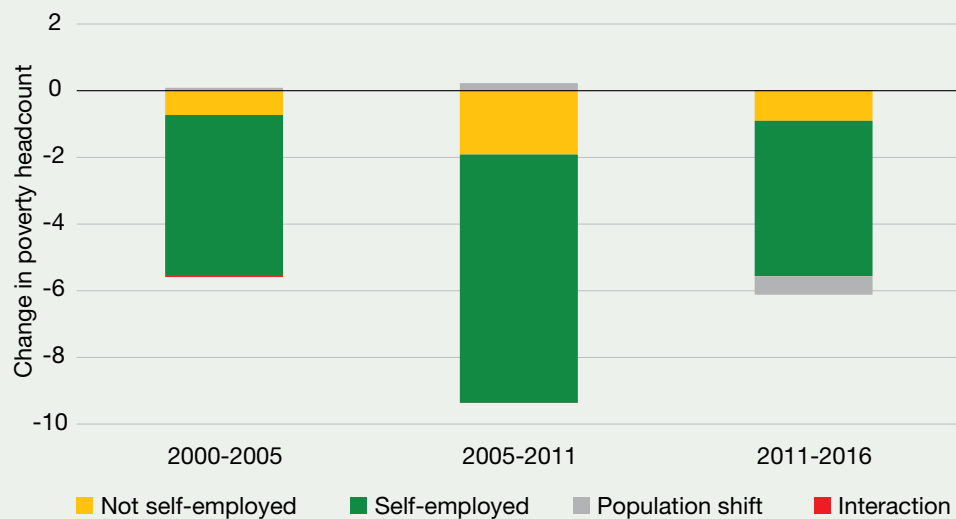


## Additional material for Chapter 3

Annex Figure 5

### MOST OF THE REDUCTION IN POVERTY HAPPENED AMONG THE SELF-EMPLOYED

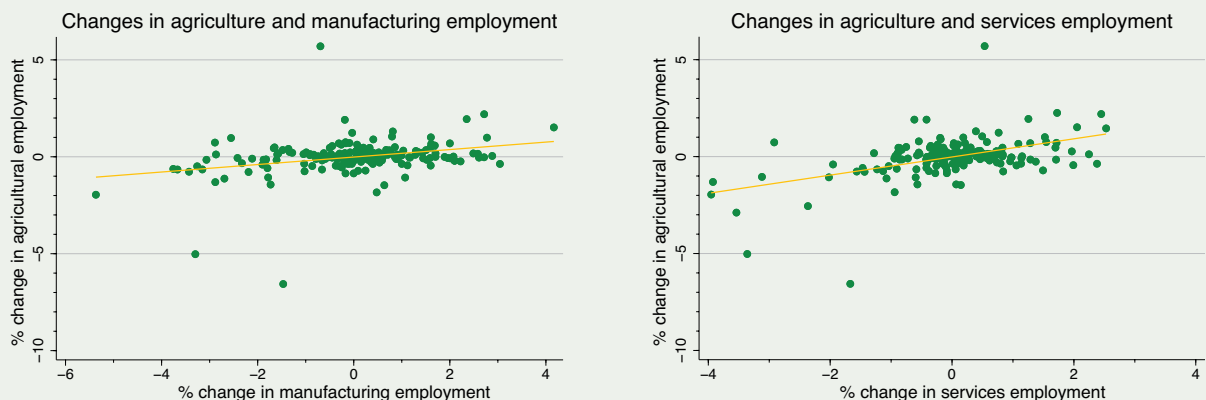
Employment type decomposition of poverty changes, 2011-2016



Source: HCES, 2011; 2016. World Bank staff calculations.

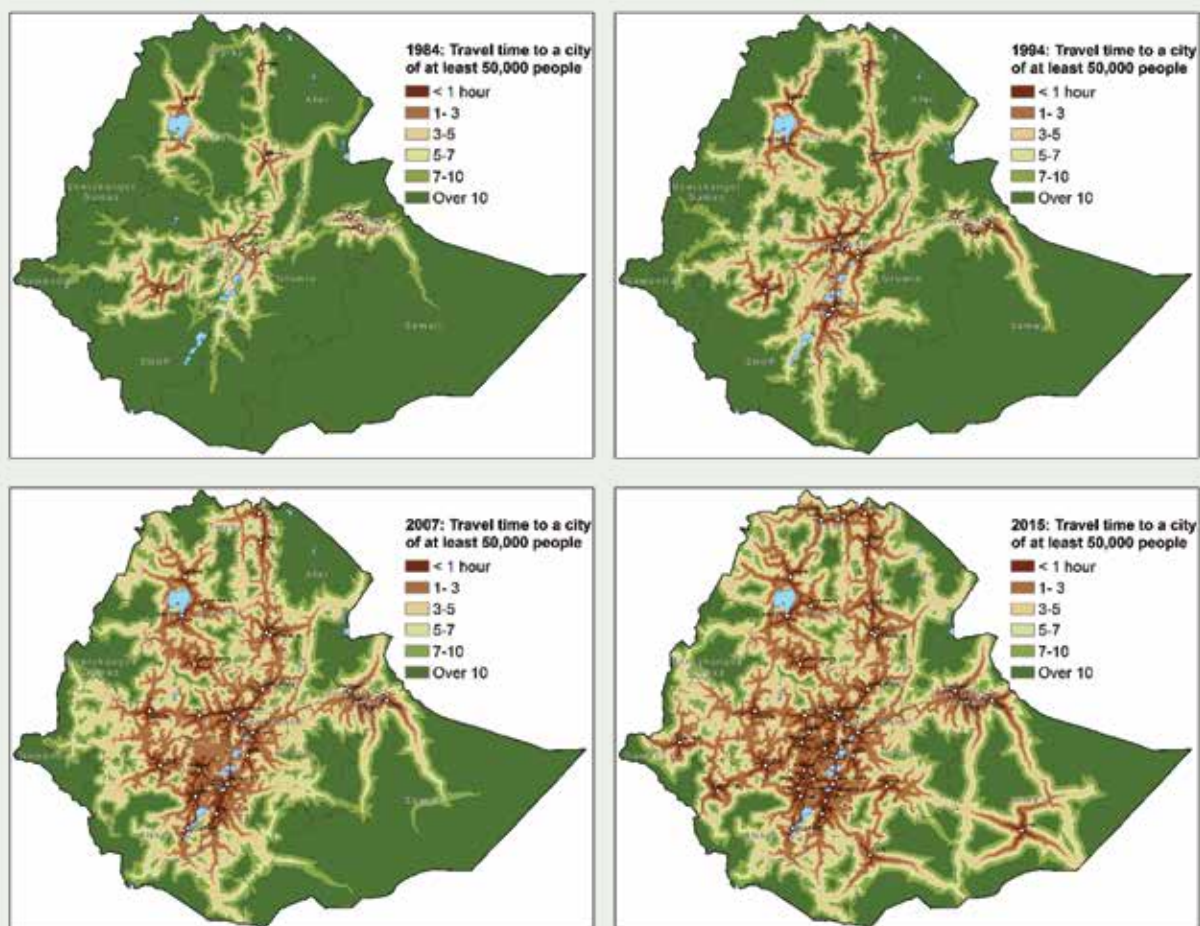
Annex Figure 6

### CHANGES IN AGRICULTURAL EMPLOYMENT, MANUFACTURING EMPLOYMENT AND SERVICES EMPLOYMENT 2000 TO 2016



Source: HCES, 2011; 2016. World Bank staff calculations.

# MAPS OF TRAVEL TIME TO THE NEAREST CITY OF 50 000 PEOPLE 1984, 1994, 2007 AND 2015



Source: Schmidt, Dorosh et al (2018).

## Additional material for Chapter 4

**This chapter uses the first three rounds of ESS data, corresponding to 2012, 2014, and 2016.** The ESS is a nationally representative panel survey of households that comprised rural households and small towns in all rounds, but urban (large town) households in rounds 2 and 3 only. Much of the analysis of dynamics is therefore focused on a balanced panel of rural and small town residents. The ESS is representative at the rural and small town level in all rounds, and additionally at the urban level in rounds 2 and 3. It is also representative for the regions of Amhara, Oromia, Tigray, and SNNPR, which cover approximately 90 percent of the population. In this report, the other regions are generally displayed as the regional group “Other”.

**The poverty line used in the analysis is an annual adult equivalent level of consumption of ETB 3 299.** This is the consumption level of the 25th percentile of the overall distribution in 2016.<sup>84</sup> All monetary values are converted to their 2016 equivalents, and values are also spatially adjusted

to account for variation in the cost of living across regions. In line with Fuje (2018) (who uses a poverty line at the 40th percentile) this relative poverty line is different to the official poverty line, and it was chosen as a 2016 benchmark against which progress from 2012 can be measured, rather than as a national poverty line to be used in wider studies.

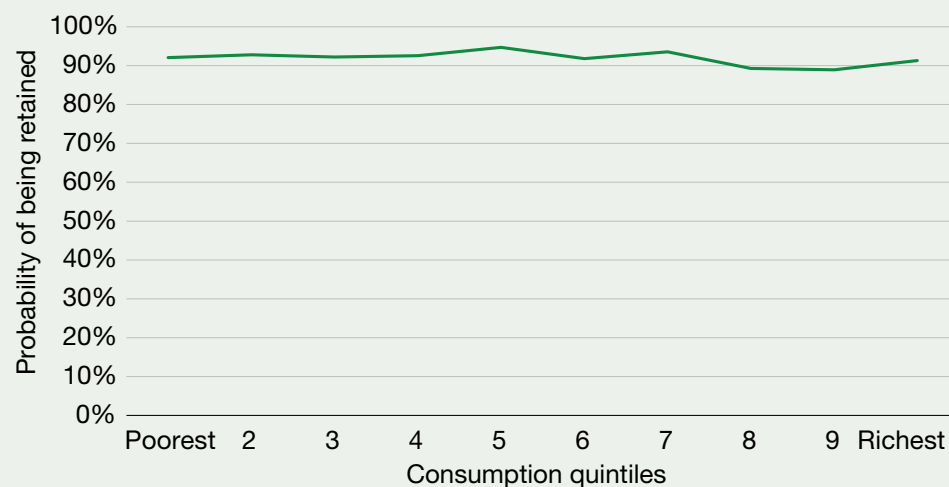
**Rates of attrition for these households were low over the three rounds of the ESS, with little evidence to suggest that the probability of attrition differed over the distribution of consumption.** Figure 15 shows that the overall retention rate for all rural and small town households between 2012 and 2016 was over 90 percent. 94 percent of rural households that were interviewed in ESS 2012 were successfully re-interviewed in ESS 2016. For households in small towns, the corresponding rate was about 85 percent. Attrition in urban households was higher than in other areas, and was close to 16 percent between ESS 2014 and ESS 2016.



<sup>84</sup> This is approximately the poverty rate that is estimated using the national poverty line in the 2015/16 HICES.

Annex Figure 8

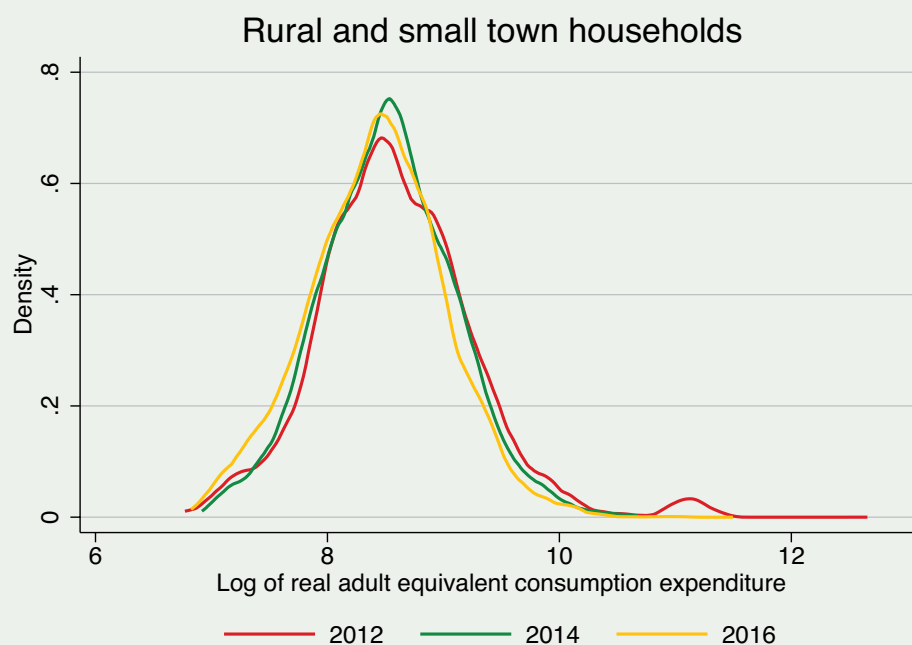
### PROBABILITY OF BEING RETAINED BETWEEN 2012 AND 2016 – RURAL AND SMALL TOWN HOUSEHOLDS ONLY



Source: Own calculations from ESS 2012, 2014 and 2016.

Annex Figure 9

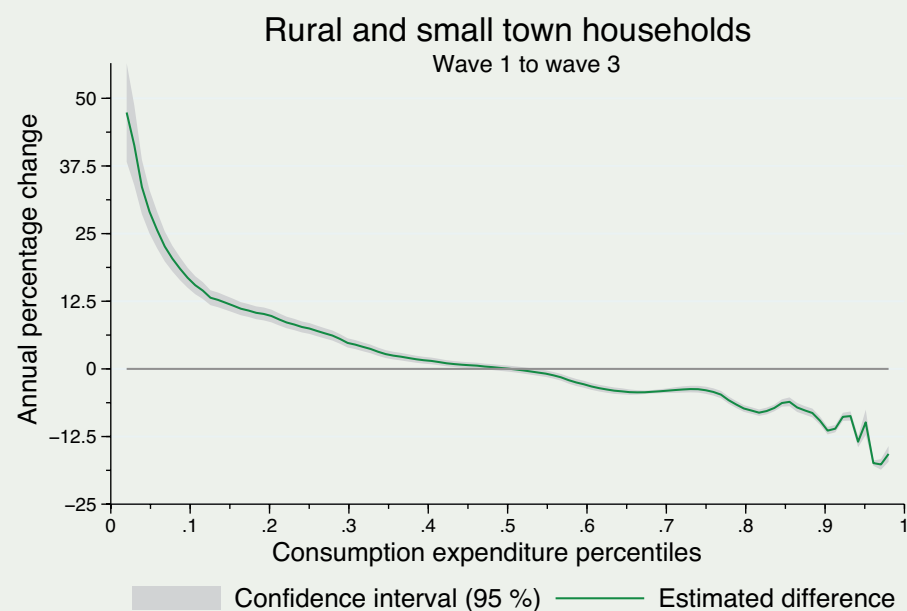
### KERNEL DENSITY DISTRIBUTIONS OF REAL CONSUMPTION EXPENDITURE FOR RURAL AND SMALL TOWN HOUSEHOLDS



Source: Own calculations from ESS 2012, 2014 and 2016.

Annex Figure 10

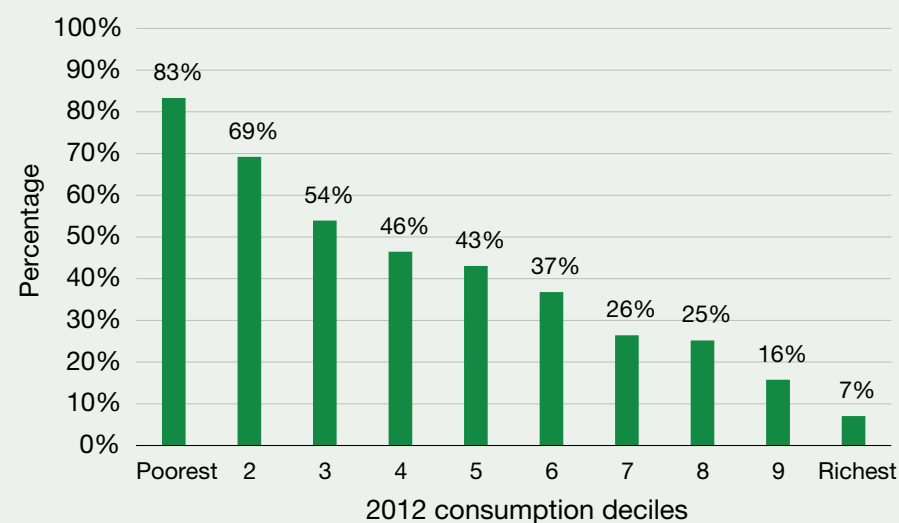
## NON-ANONYMOUS GIC FOR RURAL AND SMALL TOWN HOUSEHOLDS, 2012 TO 2016



Source: Own calculations from ESS 2012, 2014 and 2016.

Annex Figure 11

## PROPORTION OF RURAL AND SMALL TOWN HOUSEHOLDS WITH POSITIVE CONSUMPTION CHANGE BASED ON 2012 DECILES



Source: Own calculations from ESS 2012, 2014 and 2016.



## MARGINAL EFFECTS OF PROBIT FOR POVERTY EXIT

| TRANSITIONS OUT OF POVERTY |                    |                      | TRANSITIONS OUT OF POVERTY |                     |                    |
|----------------------------|--------------------|----------------------|----------------------------|---------------------|--------------------|
| WAVE 1 VARIABLES           | W1 TO W2           | W1 TO W3             | WAVE 1 VARIABLES           | W1 TO W2            | W1 TO W3           |
| Household Head             |                    |                      |                            |                     |                    |
|                            |                    |                      | PSNP in kebele             | 0.146*              | -0.046             |
| Age of household head      | 0.002<br>(0.002)   | 0.001<br>(0.002)     |                            | (0.086)             | (0.081)            |
| Male household head        | -0.024<br>(0.083)  | -0.056<br>(0.080)    | Number of cows             | 0.001<br>(0.010)    | 0.009<br>(0.010)   |
| Primary education          | 0.123*<br>(0.072)  | -0.061<br>(0.071)    | Access to bank/finance     | -0.106<br>(0.066)   | 0.074<br>(0.065)   |
| Secondary education        | 0.504**<br>(0.222) | 0.369<br>(0.235)     | Small town                 | 0.044<br>(0.165)    | 0.086<br>(0.151)   |
| Household                  |                    |                      | Oromia                     | -0.135<br>(0.101)   | 0.073<br>(0.103)   |
| Size                       | -0.039*<br>(0.021) | 0.039*<br>(0.022)    | SNNPR                      | -0.129<br>(0.107)   | 0.025<br>(0.103)   |
| Number of children         | 0.029<br>(0.044)   | -0.107***<br>(0.040) | Tigray                     | -0.044<br>(0.132)   | 0.249**<br>(0.101) |
| Dependency ratio           | -0.059<br>(0.053)  | 0.062<br>(0.051)     | Other                      | -0.193<br>(0.181)   | -0.013<br>(0.190)  |
| Land per adult (hectares)  | -0.101<br>(0.216)  | -0.008<br>(0.260)    | Drought-prone highland     | 0.165<br>(0.105)    | -0.135<br>(0.112)  |
| Land per adult squared     | 0.191<br>(0.155)   | 0.251<br>(0.221)     | Moisture-reliable highland | 0.012<br>(0.175)    | -0.220<br>(0.179)  |
| Distance to road           | -0.001<br>(0.002)  | 0.000<br>(0.002)     | Drought-prone lowland      | 0.367***<br>(0.093) | -0.264*<br>(0.145) |
| Distance to pop. Center    | 0.001<br>(0.002)   | 0.003*<br>(0.001)    | Lowland pastoralist        | 0.397**<br>(0.167)  | 0.299**<br>(0.131) |
| Distance to market         | -0.000<br>(0.001)  | -0.002*<br>(0.001)   | Observations               | 469                 | 464                |
| Extension program          | 0.080<br>(0.063)   | 0.068<br>(0.070)     |                            |                     |                    |
| Ever in PSNP               | 0.015<br>(0.081)   | 0.037<br>(0.074)     |                            |                     |                    |

Note: Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Source: Own calculations from ESS 2012, 2014 and 2016.

Annex Table 4

## MARGINAL EFFECTS OF PROBIT FOR POVERTY ENTRY

| TRANSITIONS INTO POVERTY  |           |          | TRANSITIONS INTO POVERTY   |           |           |
|---------------------------|-----------|----------|----------------------------|-----------|-----------|
| WAVE 1 VARIABLES          | W1 TO W2  | W1 TO W3 | WAVE 1 VARIABLES           | W1 TO W2  | W1 TO W3  |
| Household Head            |           |          |                            |           |           |
|                           |           |          | PSNP in kebele             | 0.037     |           |
|                           |           |          |                            | (0.035)   |           |
| Age of household head     | -0.001*   | -0.001   |                            |           |           |
|                           | (0.001)   | (0.001)  | Number of cows             | -0.009*** | -0.011*** |
|                           |           |          |                            | (0.004)   | (0.004)   |
| Male household head       | 0.077**   | 0.081**  |                            |           |           |
|                           | (0.032)   | (0.034)  | Access to bank/finance     | -0.029    | -0.047    |
|                           |           |          |                            | (0.028)   | (0.030)   |
| Primary education         | -0.076*** | -0.062** |                            |           |           |
|                           | (0.026)   | (0.030)  | Small town                 | -0.048    | -0.152*   |
|                           |           |          |                            | (0.068)   | (0.081)   |
| Secondary education       | -0.060    | -0.152** |                            |           |           |
|                           | (0.064)   | (0.075)  | Oromia                     | -0.221*** | -0.172*** |
|                           |           |          |                            | (0.036)   | (0.037)   |
| Household                 |           |          | SNNPR                      | -0.126*** | -0.062    |
|                           |           |          |                            | (0.044)   | (0.046)   |
| Size                      | 0.013     | 0.018*   |                            |           |           |
|                           | (0.009)   | (0.010)  | Tigray                     | -0.188*** | -0.091    |
|                           |           |          |                            | (0.052)   | (0.058)   |
| Number of children        | 0.008     | 0.004    |                            |           |           |
|                           | (0.017)   | (0.020)  | Other                      | -0.138    | 0.054     |
|                           |           |          |                            | (0.087)   | (0.106)   |
| Dependency ratio          | 0.070***  | 0.074*** |                            |           |           |
|                           | (0.023)   | (0.024)  | Drought-prone highland     | -0.078*** | -0.058    |
|                           |           |          |                            | (0.030)   | (0.038)   |
| Land per adult (hectares) | -0.099*** | -0.078** |                            |           |           |
|                           | (0.030)   | (0.032)  | Moisture-reliable highland | -0.011    | -0.093    |
|                           |           |          |                            | (0.084)   | (0.072)   |
| Land per adult squared    | 0.005***  | 0.004**  |                            |           |           |
|                           | (0.001)   | (0.002)  | Drought-prone lowland      | 0.015     | 0.203***  |
|                           |           |          |                            | (0.043)   | (0.061)   |
| Distance to road          | 0.000     | 0.001    |                            |           |           |
|                           | (0.000)   | (0.001)  | Lowland pastoralist        | -0.064    | -0.225*** |
|                           |           |          |                            | (0.075)   | (0.040)   |
| Distance to pop. Center   | -0.000    | -0.000   |                            |           |           |
|                           | (0.000)   | (0.001)  | Observations               | 2,095     | 2,070     |
|                           |           |          |                            |           |           |
| Distance to market        | 0.001**   | 0.000    |                            |           |           |
|                           | (0.000)   | (0.000)  |                            |           |           |
| Extension program         | -0.003    | -0.040   |                            |           |           |
|                           | (0.024)   | (0.029)  |                            |           |           |
| Ever in PSNP              | -0.010    | -0.046   |                            |           |           |
|                           | (0.030)   | (0.037)  |                            |           |           |

Note: Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Own calculations from ESS 2012, 2014 and 2016.

## Additional material for Chapter 6

The PSNP analysis presented in Chapter 6 is based on the 2011 and 2016 Household Consumption Expenditure Surveys. The survey includes a variable on whether a household is, or has ever been, a PSNP beneficiary. This variable has four response options: (i) graduated, (ii) currently participating, (iii) dropped out, (iv) never participated. In the analysis we mainly focus on response option (ii), the households that were PSNP beneficiary during the year of the survey.

Additional data cleaning was necessary both for the 2011 and 2016 survey. In both surveys, a number of households in Gambella and Benishangul-Gumuz regions reported to be PSNP beneficiaries, even though the PSNP is not active there. Similarly, a number of households in large cities reported to be part of PSNP. For these households, the decision was made to recode them to non-beneficiaries. Overall, the final analysis sample consisted of 2,171 PSNP households in 2011 and 1,668 in 2016.

Though the HCES surveys identify PSNP beneficiary households, they do not allow to distinguish between Direct

Support (DS) or Public Works (PW) beneficiaries. This matters for the analysis, given that the magnitude of transfers and duration of support is different between the two modalities. To assign PSNP households to the DS or PW modality, we constructed a statistical model based on the 2016 Ethiopian Socio-Economic Survey (ESS). The ESS contains information on whether a PSNP household is in DS or PW. A logistical regression model was applied to estimate the correlates of being in DS. This model was then used to the same independent variables in the HCES surveys to estimate the probability of a PSNP household being in DS. Project administrative data was used to assign PSNP households to DS or PW, separately for each region (so that the share of households assigned to DS in each region is the same as the share of households in that region in DS according to administrative data). Overall, this imputation exercise seems to have worked well, with PSNP households estimated to be in DS being smaller, more likely to be headed by an older, widowed woman, more likely to have a disabled household member, and less likely to be involved in agriculture (Annex Table 4).

Annex Table 5

### DIFFERENCE IN CHARACTERISTICS BETWEEN PW AND DS HOUSEHOLDS

DS status estimated by ESS prediction model

|                              | DS HHS | PW HHS | NON PSNP HHS |
|------------------------------|--------|--------|--------------|
| HH size                      | 3.83   | 6.09   | 5.97         |
| Female head (share yes)      | 0.63   | 0.21   | 0.16         |
| Disability in HH (share yes) | 0.19   | 0.06   | 0.06         |
| Age head                     | 63.19  | 42.69  | 44.94        |
| Widow head (share yes)       | 0.53   | 0.06   | 0.08         |
| Poor (share yes)             | 0.33   | 0.33   | 0.27         |
| Food share                   | 0.58   | 0.55   | 0.55         |
| Asset index                  | -0.5   | -0.35  | 0.07         |
| Remoteness index             | 0.83   | 1.66   | -0.07        |
| HH engaged in agriculture    | 0.88   | 0.95   | 0.98         |

Note: Asset index is a standardized score on a composite asset indicator. Lower values mean fewer assets. Remoteness index is based on variables measuring the distance to key infrastructure assets (roads,...). Higher scores mean more remote.

Source: HCES, 2016; ESS, 2016.

Total real household consumption expenditures per adult equivalent is among the welfare metrics used in this chapter. The household expenditures calculated from the survey data and used throughout this report are, by construction, inclusive of all aid and donations. However, to study benefit incidence and coverage of social protection projects in general and PSNP in particular, we need to try to obtain a counterfactual: What households' welfare levels would have been in absence of the PSNP. To remove PSNP benefits from household expenditures, we calculate total PSNP payments based on the prevailing wage rate (obtained from project data), household size (which determines household transfer value), and type of support (PW vs DS). For the 2016 HCES, the value of PSNP transfers was estimated as follows:

$$PW_{ij} = \text{Daily wage rate}_j * \text{Number of days worked per month}_j * 6$$

$$DS_{ij} = \text{Daily wage rate}_j * \text{Eligible days per month} * 12$$

Where  $PW_{ij}$  is the annual value of benefits received by a PW household  $i$  in woreda  $j$ . The daily wage rate differs across woredas and the number of days worked per month is a function of household size. PW beneficiaries work for six months per year (hence the monthly payment is multiplied by 6).  $DS_{ij}$  is the annual value of benefits received by a DS household  $i$  in woreda  $j$ . Eligible days per month for DS households is also a function of household size.<sup>85</sup> Monthly payments are multiplied by 12 as DS households receive support all-year-round. For 2011, similar formulas were used, but with the 2011 wage rate.

Given that PSNP is supposed to target the poorest household, we assume a marginal propensity to consume of 1; that is, we assume that all PSNP payments are consumed and hence show up in consumption expenditures.<sup>86</sup> The total value of PSNP payments is subtracted from total household consumption expenditures. The resulting pre-transfer consumption variable is then spatially and temporally deflated and divided by household size expressed in adult equivalents. All analyses were also conducted with a marginal propensity to consume of 0.5 and with the final unadjusted consumption aggregates (the official ones). As expected, results remain qualitatively similar.

Correcting the aggregate for HFA benefits is more complicated as there is no comprehensive data on the volume of food aid provided nor the number of rounds (months) during which aid was provided. Based on administrative data from humanitarian partners, it appears seven rounds of food aid were provided in 2015/16. It is estimated that the value of HFA benefits are on average 15 percent higher than PSNP. Monthly HFA benefits at household level were calculated using the same household size rule as in PSNP, and with a benefit rate 15 percent higher than PSNP. This is multiplied by 7 to account for the seven rounds of food aid in 2015/16. The HFA analysis was also conducted using the unadjusted aggregate. Results were qualitatively similar.

85 Following rule was used to determine the number of days per month per household: Up until four household members, the household is eligible to work five days per month per household member (20 days for a household of four). For a household of between five and eight members, the total number of days worked per month is capped at 20. For households of more than eight members, the total number of days worked per month is capped at 25. Though according to the project manual larger households should get more working days (more than 25), the observation on the field is that large households work fewer days than planned for in the project documents, likely related to budget constraints. Applying this rule to the 2016 HCES results in an average of 3.8 beneficiaries per PSNP household, which is exactly the same as the number obtained from project administrative data.

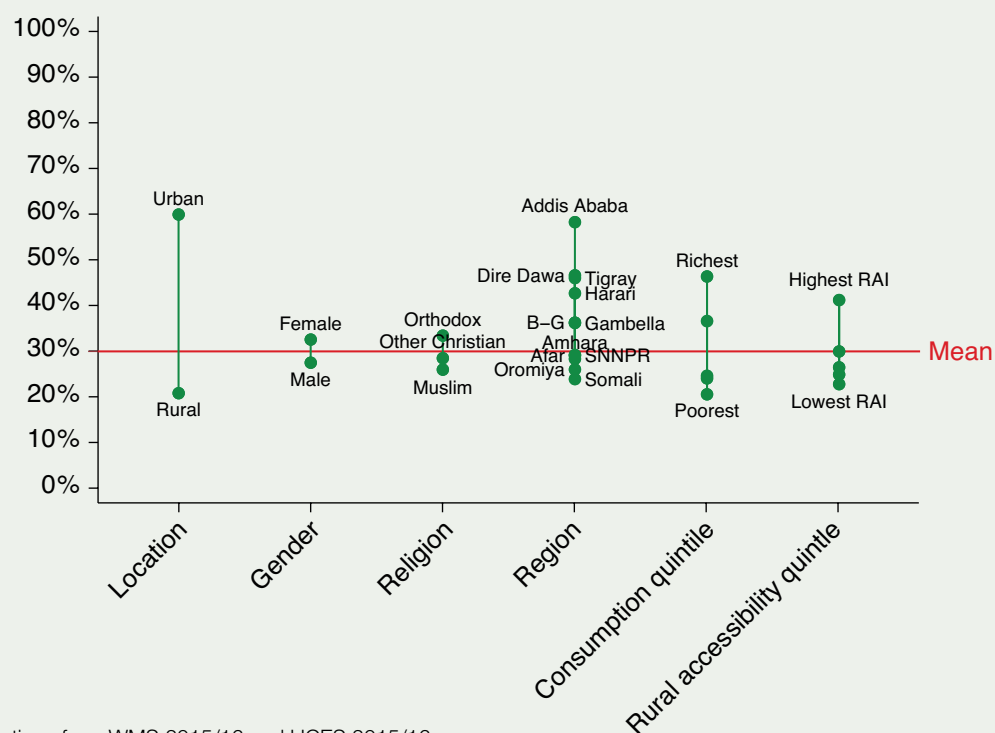
86 Given that PSNP payments are made in-kind (food), this would not appear to be an unreasonable assumption.

## Additional material for Chapter 7

Annex Figure 12

### LOCATION AND HOUSEHOLD WEALTH DETERMINES PRIMARY SCHOOL COMPLETION

Completion of primary school by circumstance variables, children 15-18, 2016



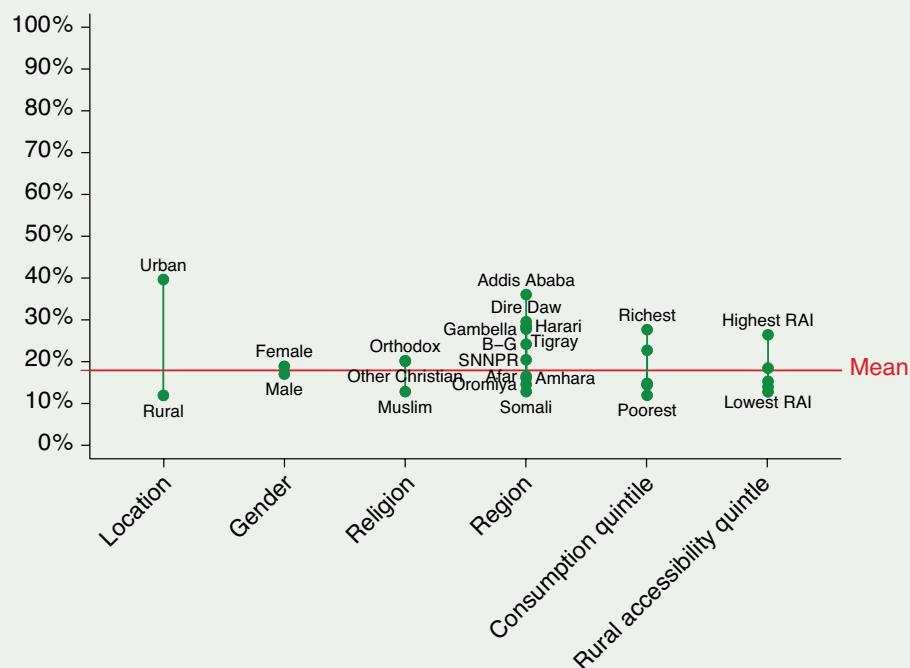
Source: Calculations from WMS 2015/16 and HCES 2015/16.



Annex Figure 13

## LOCATION AND HOUSEHOLD WEALTH DETERMINE ENROLMENT IN SECONDARY SCHOOL

Completion of primary school by circumstance variables, children 15-18, 2016

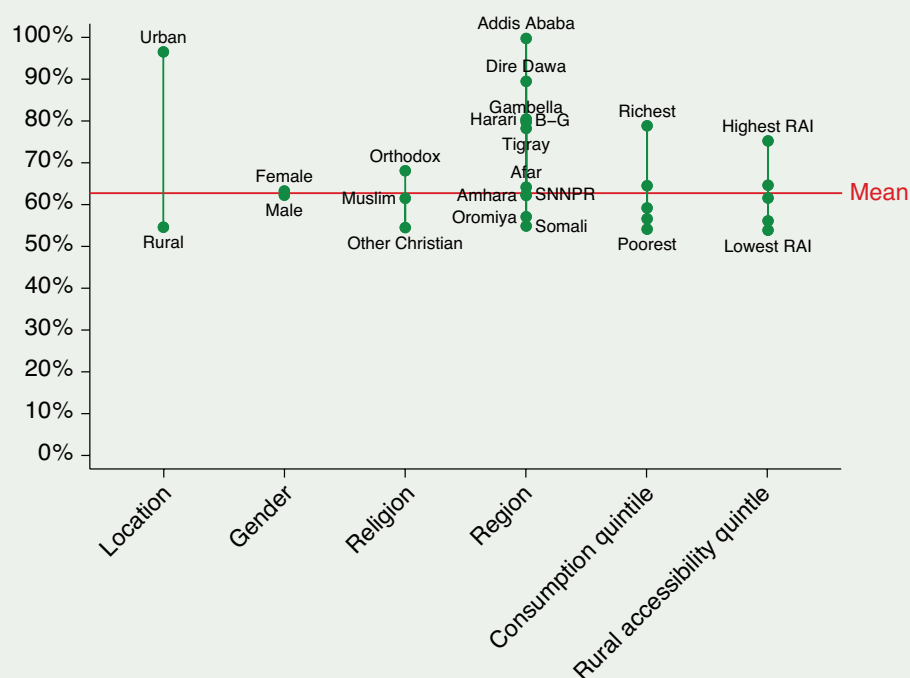


Source: Calculations from WMS 2015/16 and HCES 2015/16.

Annex Figure 14

## LOCATION LARGELY DETERMINES ACCESS TO IMPROVED WATER

Access to an improved water source by circumstance variables, children 7-18, 2016

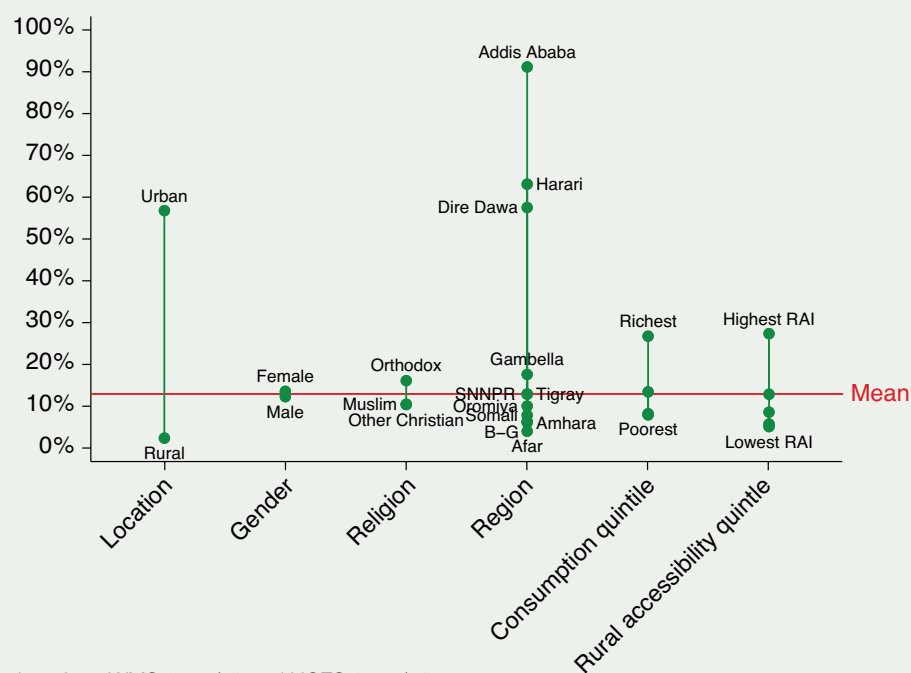


Source: Calculations from WMS 2015/16 and HCES 2015/16.

Annex Figure 15

## LOCATION DETERMINES PROXIMITY TO A HOSPITAL

Access to a hospital within 5km, children 7-18, 2016

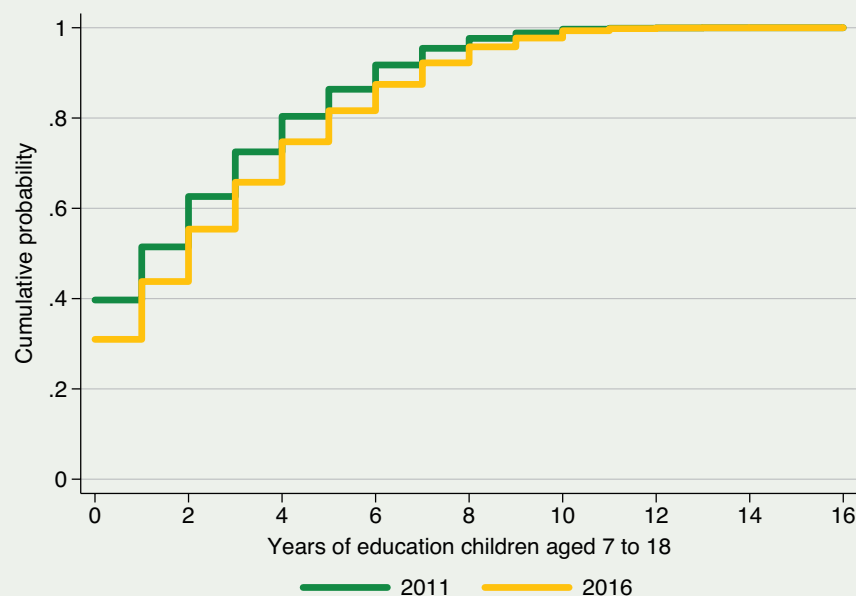


Source: Calculations from WMS 2015/16 and HCES 2015/16.

Annex Figure 16

## EDUCATIONAL ATTAINMENT IMPROVED FOR SCHOOL-AGED CHILDREN BETWEEN 2011 AND 2016

Years of educational attainment, children 7-18, 2011-2016



Source: Calculations from HCES 2010/11 and HCES 2015/16.

Annex Table 6

## RELATIONSHIP BETWEEN HOUSEHOLD CONSUMPTION LEVEL AND CHILDREN'S SCHOOLING, 2016

| VARIABLES             | YEARS OF EDUCATION   |
|-----------------------|----------------------|
| Age 8                 | 0.884***<br>(0.001)  |
| Age 9                 | 1.538***<br>(0.001)  |
| Age 10                | 1.948***<br>(0.001)  |
| Age 11                | 2.307***<br>(0.001)  |
| Age 12                | 2.478***<br>(0.001)  |
| Age 13                | 2.686***<br>(0.001)  |
| Age 14                | 2.850***<br>(0.001)  |
| Age 15                | 2.911***<br>(0.001)  |
| Age 16                | 3.077***<br>(0.001)  |
| Age 17                | 3.141***<br>(0.001)  |
| Age 18                | 3.153***<br>(0.001)  |
| Female                | 0.024***<br>(0.000)  |
| Log consumption       | 0.128***<br>(0.000)  |
| Rural                 | -1.377***<br>(0.002) |
| Rural*Log consumption | 0.099***<br>(0.000)  |
| Constant              | -2.278***<br>(0.002) |
| Observations          | 36 041               |

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Results show coefficients from a negative binomial regression with years of education as the dependent variable. Sample is restricted to individuals aged between 7 and 18.

Source: Calculations from WMS 2015/16, and HCES 2015/16.













