WELFARE AT A CROSSROADS: TURNING TIDES

Ethiopia Poverty and Equity Assessment

November 2024

THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP

1818 H Street NW, Washington, DC 20433 Telephone: 202-473-1000; Internet: www.worldbank.org

Cover design & layout: Cybil Nyaradzo Maradza

CURRENCY EQUIVALENTS

Exchange Rate Effective as of June 28, 2024		
Currency Unit	=	ETB (Ethiopian Birr)
ETB 57.74	=	US$1.00
Fiscal Year	=	September to August

ACRONYMS AND ABBREVIATIONS

Acronym	Definition
ACLED	Armed Conflict Location & Event Data
ATT	Average Treatment Effect on the Treated
CHIRPS	Climate Hazards Group InfraRed Precipitations with Stations
CPI	Consumer Price Index
DTM	Data Tracking Matrix
ECHO	European Civil Protection and Humanitarian Aid Operations
ESPS	Ethiopian Socioeconomic Panel Survey
ETB	Ethiopian Birr
FAO	Food and Agriculture Organization
GAEZ	Global Agro-Ecological Zoning
GDP	Gross Domestic Product
HBS	Household Budget Surveys
HCES	Household Consumption and Expenditure Survey
HFPS	High-Frequency Phone Surveys
HoWStat	Household Welfare Statistics Survey
IPC	Integrated Food Security Phase Classification
IOM	International Organization of Migration
LMMIS	Large- and Medium-sized Manufacturing Industries Survey
LFS	Labor Force Survey
MPSE	Mobile Populations Survey for Ethiopia
PPP	Purchasing Power Parity
OCHA	Office for the Coordination of Humanitarian Affairs
REER	Real Effective Exchange Rate
RID	Rural Income Diagnostics
SCD	Systematic Country Diagnostics
SME	Small and Micro Enterprise
SNNP	Southern Nations, Nationalities, and People's
SOE	State Owned Enterprise
WMS	Welfare Monitoring Survey

Regional Vice President : Victoria Kwakwa
Country Director : Maryam Salim
Regional Director : Hassan Zaman
Practice Manager : Pierella Paci, Rinku Murgai
Task Team Leaders : Obert Pimhidzai, Christina Wieser

ACKNOWLEDGEMENTS

The report was prepared by Obert Pimhidzai, Lead Economist, EECPV; Christina Wieser, Senior Economist, ESAPV; Cesar A. Cancho, Senior Economist, EAEPV; Wondimagegn Mesfin Tesfaye, Economist, EAEPV; Jeremy Aaron Lebow, Young Professional, HSPGE; Lulit Mitik Beyene, Senior Economist, EMFMD; Alemayehu A. Ambel, Senior Economist, DECLS; Tawanda Chingozha, Consultant, EAEPV; Fikirte Girmachew Abeje, Consultant, EAEPV; Musa Hasen Ahmed, Consultant, EAEPV and Manex Bule Yonis, Economist, DECLS.

The report draws from the following background papers commissioned for the study. These background papers were authored by

Wondimagegn Mesfin Tesfaye (Economist, EAEPV); Musa Hasen Ahmed (Consultant, EAEPV) and Tawanda Chingozha (Consultant, EAEPV) – Weather variability, risk preferences, and household welfare

Lulit Mitik Beyene (Senior Economist, EMFMD) – Impacts of exchange rate adjustment in Ethiopia

Cesar A. Cancho (Senior Economist, EAEPV) – Rightsizing Estimates of Economic Mobility in Ethiopia

Alemayehu A. Ambel (Senior Economist, DECLS) - Poverty dynamics and mobility in Ethiopia from 2019-2022: Evidence from longitudinal data

Jeremy Aaron Lebow (Young Professional, HSPGE) – Welfare impacts of conflict in Ethiopia

Christina Wieser (Senior Economist, ESAPV) and Aisha Mohammed Abubakar (Consultant, EAEPV) – Has Ethiopia harnessed structural transformation in the labor market?

Christina Wieser (Senior Economist, ESAPV) and Eleni Abraham Yitbarek (Consultant, EAEPV) – Impact of Food Inflation on Household Welfare in Ethiopia

The team gratefully acknowledges the technical collaboration with Ministry of Planning and Development and Ethiopian Statistical Service that enabled analysis of poverty trends. The team also benefited from feedback from peer reviewers: Arden Finn (Senior Economist, EMNPV), Rob Swinkels (Lead Country Economist, EAWDR), Kevin Carey (Program Manager, EFICT), and Hans Hoogeveen (Senior Economist, EAWPV) and other Word Bank staff involved in team consultations – Nistha Sinha (Senior Economist, EAEPV); Vinayak (Vinny) Nagaraj (Senior Economist, EAEM2); Samuel Mulugeta (Economist, EAEM2); Tehmina S. Khan (Lead Economist, Program Leader, EAEDR).

This report was prepared with guidance from Pierella Paci (Practice Manager, EAEPV) and Tom Bundervoet (Lead Economist, EAEPV).

TABLE OF CONTENTS

List of Maps

List of Boxes

List of Tables

List of Figures

EXECUTIVE SUMMARY

INTRODUCTION

Ethiopia has seen many changes since 2016, which until now, has been the reference year for data about the level and pattern of poverty in the country. The narrative around poverty was that years of high growth resulted in a significant reduction in poverty, but by less than expected because growth was uneven between rural and urban areas which received most of the gains from growth and there was a slow shift of labor from agriculture into the fast-growing segments of the economy. Since 2016, GDP per capita growth has decelerated—to 4.6 percent during 2016-2022 compared to nearly 7.4 percent during 2010-2016—not least because of multiple crises, including a global pandemic, droughts, locust infestation, conflict, and market shocks. This Poverty and Equity Assessment (PEA) updates the understanding of poverty and inequality in the country, using new data collected from 2021. This data was collected amidst security concerns, which posed challenges during the data collection process. Despite these challenges, data quality checks have verified that the collected information is reliable and representative of the country, excluding areas that were inaccessible, such as Tigray. The PEA updates statistics on poverty rates, inequality, the poverty profile, and identifies the drivers of these trends (Part 1). It provides an in-depth understanding of the key drivers of poverty in the country (Part 2) and charts the course for reducing poverty in the years to come (Part 3). Below are some high-level messages drawn from the analysis presented in the seven chapters of the report. Additional details are accessible in background papers accompanying the report.

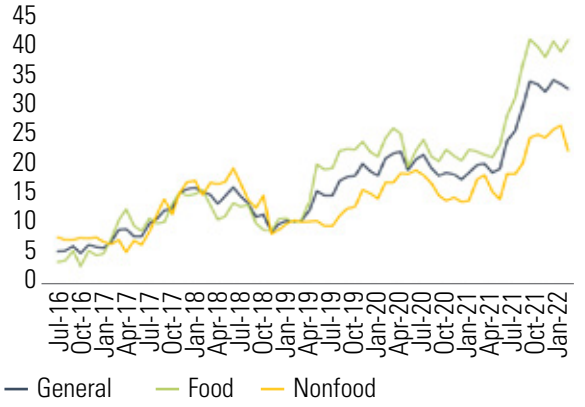
KEY FINDINGS

The poverty rate increased significantly to around 33 percent in 2021, due to a combination of many factors that led to declining incomes across the entire socio-economic spectrum. Nearly all households experienced at least one major shock, though the type of shocks were different depending on where they lived. These shocks slowed the economy's pace of growth and severely worsened the economic situation of households across the entire socio-economic spectrum, resulting in a significant increase in poverty even as inequality declined. The increase in poverty can be directly attributed to shocks but only partly, as it is also reflective of underlying structural weaknesses in Ethiopia's growth model. Even though social protection and adaptive measures are crucial, the shocks left scars that can only be patched with major structural reforms to put the country back on the path for sustainable growth and poverty reduction.

1. Multiple shocks have left no household untouched and worsened the economic situation across the country.

The multiple shocks experienced since 2018 affected nearly all households in the country. About 91 percent of the population either experienced droughts, locust infestation, floods, conflict, or a combination of them, which taken together, covered much of the country though their individual effects were localized. For instance, lowland areas experienced severe droughts for three consecutive years in some areas, at a time when conflict escalated in Northen Ethiopia because of the Tigray conflict (Figure ES1). At the same time, households were affected by the COVID-19 pandemic which caused severe income losses in 2020. Rising inflation followed in 2021 and 2022. Food inflation went on to reach a 10-year peak of 42 percent in February 2022 and consumer prices cumulatively tripled between 2016 and 2022.

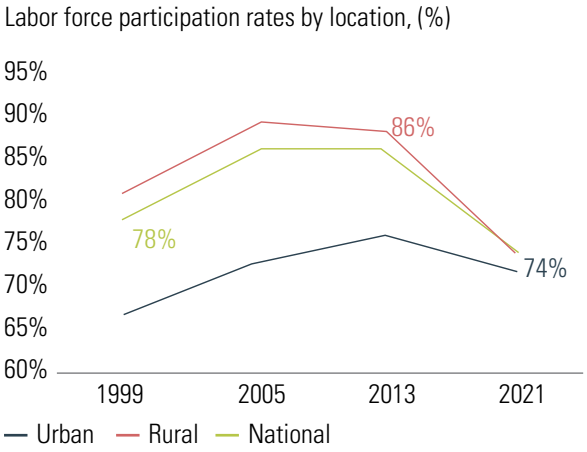
Figure ES1. Consumer Price Index, year-on-year % change



Source: Ethiopian Statistical Service.

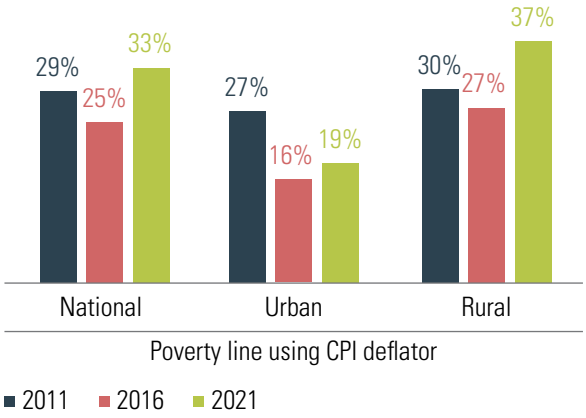
Against the background of these shocks, economic growth decelerated by 4 percentage points during 2016-21 compared to the preceding 5 years, and job creation stalled. Previously fast-growing segments of the economy saw the biggest decline in growth. The annual growth rate of the industry sector decelerated from an average of 26.8 percent during 2010-16, to 10.5 during 2016-2022, while growth in the services sector declined by 1.2 percentage points across these two periods. The labor market situation deteriorated in many ways too. Labor force participation dropped from 86 percent in 2013 to 74 percent in 2021, driven by a decline in rural areas, while unemployment nearly doubled to 9 percent in 2021 (Figure ES2). Overall, the economy created less than 1.2 million jobs during a period when the out of school, working age population expanded by 5 million, signaling a deficit of job creation. The industry sector shed half a million jobs and wage job creation by the private sector came to a standstill. In comparison, 8.5 million jobs were created during 2005-13, of which more than 4 million, including 1.7 million wage jobs, were created outside the agriculture sector. Agriculture production grew in aggregate, but this was insufficient to make up for an expanding population. Over 2019-22, agriculture GDP per capita did not grow at all. Survey data shows a decline in incomes from crop cultivation in real terms during 2019 and 2022.

Figure ES2. Trends in key labor market outcomes in Ethiopia



Source: Authors' estimates based on LFS 2005; 2013; 2021.

Figure ES3. Trends in poverty headcount rates (%), 2010/11 - 2021



Source: Authors' estimates based on HCES 2010/11, 2015/16 and HoWStat 2021.

2. Previous gains in poverty reduction came undone owing to a deficit of growth across the entire socio-economic spectrum.

The poverty rate increased by 8 percentage points between 2016 and 2021, setting poverty back to levels seen in 2010 (Figure ES3). The poverty rate was 33 percent in 2021, compared to 24 percent in 2015/16 and 31 percent in 2010 with the Tigray region excluded from estimates across all years since data was not collected there in 2021. Rural areas performed worse in terms of the increase in poverty rates, which rose by 10 percentage points compared to urban areas where poverty increased by 3 percentage points. The poverty rate increased across all regions except for Addis Ababa and Dire Dawa. In absolute terms, poverty rates increased much more in rural areas compared to urban areas within the same regions. Therefore, differences in living standards in Ethiopia continue to be defined by a rural-urban divide. Rural areas had a poverty rate of 37 percent – hence almost double the poverty rate in urban areas - and made-up 88 percent of the poor in Ethiopia in 2021. This is 10 percentage points more than rural areas' share in the population.

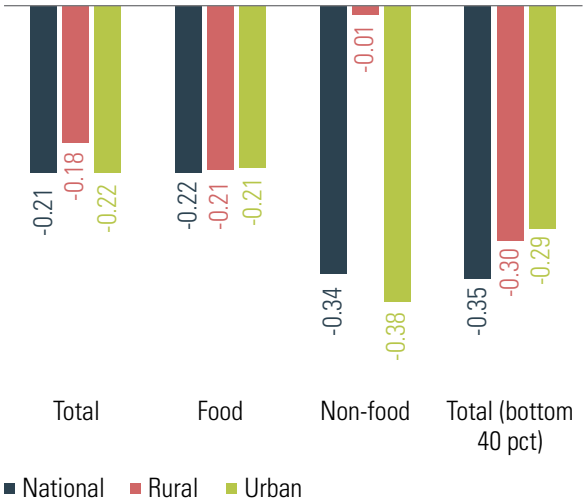
The increase in poverty owed to declining living standards across the entire welfare distribution, while inequality declined because the non-poor were affected more. Consumption growth cumulatively declined by 13.2 percent nationally. It declined by much more among better-off households and in urban areas in general. This reduced inequality as measured by the Gini coefficient from 0.32 in 2016 to 0.29 in 2021, owing to a drop in inequality within urban areas and a reduction in the gap between urban and rural areas. Statistical decomposition methods suggest that rising poverty was entirely driven by declining consumption growth. Although consumption declined by less in rural areas, poverty rates increased more because many non-poor rural households were just above the poverty line in 2016 - unlike in urban areas where consumption levels were significantly higher than the poverty line. The decline in welfare, while consistent with the deterioration in the labor market, presents a statistical discrepancy with the growth narrative from the macro statistics which show that the economy still grew at a decent pace. These differences could be due to how changes in the price level over time are adjusted in national accounts and household surveys (GDP deflator vs CPI), or the sources of growth but these do not fully explain the difference.

3. The reversal of households' fortunes was not only caused by shocks, but also reflective of limitations in the country's growth model.

High inflation, shocks, and limited transformation in the labor market were the primary drivers of the increase in poverty. Both household consumption and incomes doubled in nominal terms, but declined in real terms because incomes did not rise fast enough to compensate for the increase in prices. Empirical estimates suggest that incremental food inflation between 2019 and 2022 reduced household consumption by 22 percent, reflecting the impact of the rise of the general price level on poverty (Figure ES4 and Figure ES5). However, food prices rose faster than non-food prices, yet rural areas were still affected by rising prices because most households are subsistence orientated, generally self-sufficient in the production of cereals. Between 75 and 89 percent of producers of maize, teff and sorghum are self-sufficient, and net buyers of food outnumber net sellers of food among rural household. Recent exposure to droughts further reduced consumption by at least 5 percent, on average. Consumption among households in Favored Agriculture Areas (FAA) i.e., those with low long-term exposure to geographical and environmental risks – is 45 percent higher than households in less FAA. Meanwhile, each day of an active conflict exposure directly contributed to a 3.3 percent decline in consumption among households in Afar, Amhara and Benishangul-Gumuz, which (excluding Tigray) are the other regions most impacted by Northern Ethiopia conflict. In other words, a household living in a location that experienced 7 days of battles, strikes and/or other forms of violent events would experience close to 17.5 percent decline in consumption. Lastly, having few people engaged in work – because of a combination of shocks and other structural factors – reduced household consumption. For example, the consumption of a household with just one of two adults working would be 47 percent less than the consumption of a similar household in which both adults are working.

Not all the increase in poverty is explained by the impact of recent shocks. Instead, shocks amplified existing vulnerabilities and showed limits to the country's growth model. For example, data from the Labor Force Survey (LFS) shows that job creation in the industry sector and services

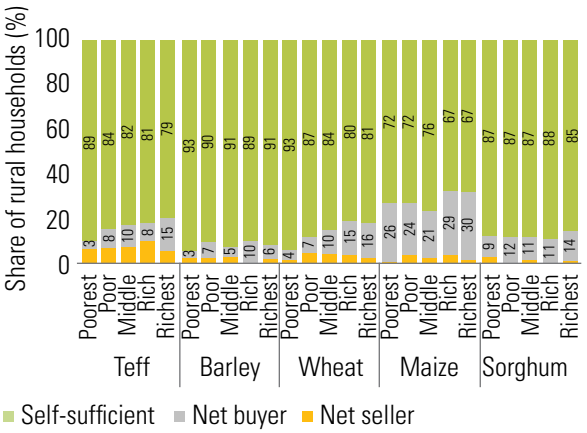
Figure ES4. Impact of incremental inflation on household welfare



Source: Authors' estimates based on ESPS 2018/19; 2021/22.

Notes: The dependent variables are total consumption (total), food consumption (food), nonfood consumption (non-food), and total consumption for the bottom 40 percent (total bottom 40 pct).

Figure ES5. Rural households net market position by food crop, 2022



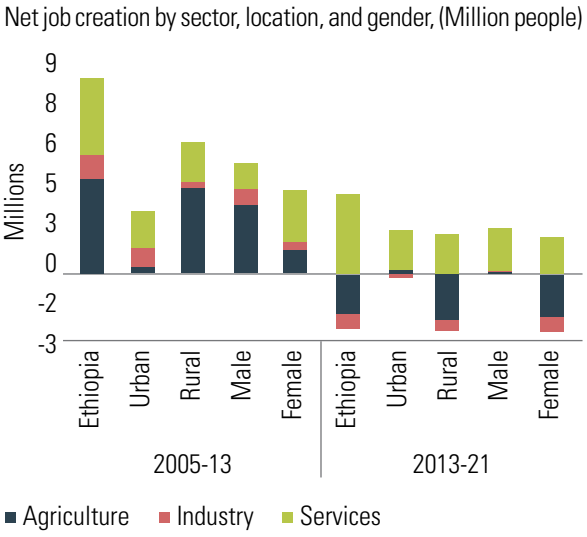
Source: Authors' estimates based on ESPS 2021/22.

Notes: A household's net market position is defined based on the net buyer ratio (NBR) of a food item which is calculated as net production (production-consumption) divided by total household consumption. It expresses the household food production and consumption gap relative to a household's expenditure. Households are classified based on their NBR as follows: Net Buyers (NBR < -0.05); Net Sellers (NBR>0.05) and Self-sufficient (-0.05 < NBR < 0.05).

sectors already stalled from 2016 onwards (Figure ES6). Less than 50,000 non-agriculture jobs were created in urban areas between 2016 and 2018. The Large- and Medium-sized Manufacturing Industries Survey (LMMIS) shows that employment among these types of enterprises started declining in 2018 before COVID-19 hit in 2020, while the growth rate in the industry sector had already halved. Overall, the state-led development model relied on suppression of market incomes, especially in the agriculture sector, followed by redistribution that the government could no longer afford after the COVID-19 pandemic and the costly conflict in Tigray.

Structural weaknesses inherent in the country's growth model had started to bind. For example, macroeconomic imbalances like exchange rate misalignment proved a key constraint for businesses. Estimates suggest that a real exchange rate appreciation of the magnitude observed in Ethiopia during 2016–2021 could have reduced employment among manufacturing firms proportionate to their degree of export orientation. Reduced fiscal space after the Northern Ethiopia conflict broke out made many of the subsidies unsustainable, exposing households more to the impact of market shocks while the government could not afford to fully adjust social assistance benefits to inflation.

Figure ES6. Trends in key labor market outcomes in Ethiopia



Source: Authors' estimates based on LFS 2005; 2013; 2021.

Inflation ended up hurting rural farmers, instead of them benefiting from rising food prices due to the legacy of distortionary agriculture policies. Years of policies emphasizing food security – for good reasons given the country's history of famine – succeeded in increasing food security but distorted the market by relying on market controls that reduced prices for farmers and distorted input markets. This resulted in the underdevelopment of agricultural technologies in some key areas (e.g., wheat) and the suboptimal availability of inputs such as fertilizers. Together, these factors limited surplus generation and farmers' market orientation. Rising inflation therefore contributed to welfare losses in rural areas because most rural households do not produce a marketable surplus, hence they were not positioned to take advantage of rising food prices. Rural households also faced limited access to off-farm opportunities in part due to restrictive spatial policies that inhibited the efficient functioning of land and labor markets – the two factors of production most available to the poor. As a result, migration has been low in Ethiopia, limiting an important trigger for rural transformation and closing a channel for access to non-farm opportunities for rural youth who became unemployed instead, and a coping mechanism for rural households to climate shocks.

4. Scarring from the shocks poses a danger to recovery.

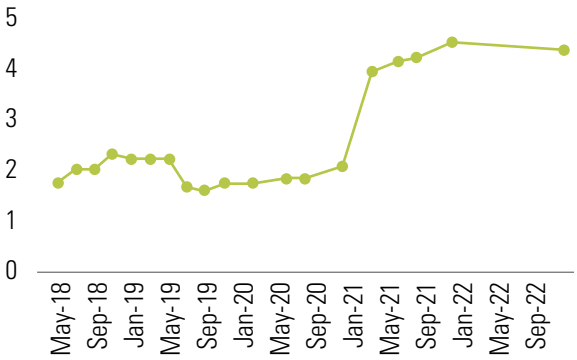
Job market recovery showed signs of being scarred from the effects of shocks. Evidence from COVID-19 monitoring surveys show that employment in the industry sector failed to recover from the job losses at the onset of the pandemic when 8 percent of workers lost their jobs and a third of household enterprises closed. Both the number of households operating household enterprises and revenues of businesses still in

operation had not fully recovered by 2022. Job losses during COVID-19 were mostly experienced by women who made up nearly two-thirds of workers who lost their jobs due to COVID-19. Thus, labor force participation rates declined more among women compared to men and female unemployment nearly doubled, from 7 percent in 2013 to 13 percent in 2021. Furthermore, the number of people Not in Employment, Education or Training (NEET) increased by 5 million. Ethiopia also lost market access for its garments and textiles exports to the US after its suspension to AGOA, which threatens recovery of jobs in this sector which has been an important source of jobs for women.

Exposure to climate and conflict shocks can have persistent effects beyond the year of the shock. Agricultural households in Ethiopia have a high aversion to downside risks to output variability that increases with exposure to droughts and lasts for up to two years after the drought occurs. This risk aversion partly explains lower adoption of marketed inputs and increased land allocation to cereal production among households who previously faced hot temperatures. Thus, high exposure to shocks could be a strong disincentive for households to commercialize. Both drought and conflict reduce households' productive capital in terms of human capital and physical assets. Drought exposure increases the chance that at least one child in a household will be stunted by 7 percent while by its nature, conflict destroys people's assets and disrupts livelihoods, not least through displacement. The number of displaced people in Ethiopia rose to 4.4 million people at the height of the conflict (Figure ES6). Livelihood recovery among displaced populations is slow and conflict exposure has long lasting effects that can extend intergenerationally. Human capital losses due to conflict also lower people's lifetime productivity and earnings and reduce intergenerational economic mobility.

Figure ES7. Internal displacement trends

Panel A: Nov 2018 – Oct 2020



Source: Authors calculations using IOM DTM Site Assessments and Emergency Site Assessments (which covered parts of Tigray, Amhara, and Afar throughout 2021).

Notes: Each blue point in Panel A and red dot in Panel B represents a separate site assessment. Site Assessments between March-August 2022 were excluded from Panel A because they did not include Tigray. Key informants are used to identify sites with a reported 20 or more IDP households, then site visits and focus group discussions are conducted to estimate the number and characteristics of IDPs in each site. Each Site Assessment (SA) round, which typically occurs 4 times a year, presents an estimated snapshot of the IDP situation in the country. However, it is not necessarily a representative sample of IDPs because coverage of many sites is severely limited by inaccessibility due to conflict, sites with less than 20 IDP households are excluded, and self-settled IDPs in urban areas are often missed. These numbers should therefore be seen as estimates that are lower bounds. The November 2022 Site Assessment includes Tigray and was implemented through June 2023. Given limited data coverage, these should be seen as lower bounds.

POLICY IMPLICATIONS

In the current context, the key priories for poverty reduction are (i) strengthening households and the economy's resilience to shocks, (ii) increasing the generation of agriculture surplus, and (iii) addressing spatial and economic policy driven structural impediments to job creation and access to better economic opportunities.

1. Strengthen resilience to shocks.

The high vulnerability of households to shocks and the impacts this had on poverty, necessitates the need to strengthen households' resilience to shocks in three ways:

i. **Slowing the onset or impact of shocks at entry –** This requires three types of interventions. One set of interventions are investments to increase productive assets of households and communities, which range from infrastructure investment in irrigation and land structures, natural resource management and skills development to increase households' adaptability. The other set of interventions focuses on developing and promoting the adoption of *Climate Smart Agriculture technologies and strategies*. The third set of interventions focuses on prevention and preparedness, which includes enhancing early warning systems for households to take adaptive measures to minimize the impact of shocks.

ii. **Reducing the impact on incomes once they occur –** through establishing/ expanding mechanisms to finance crisis response (e.g., destocking and school feeding programs) in response to droughts; expanding the coverage and range of *consumption smoothing measures* such as shock responsive social safety nets and access to credit and; establishing market *mechanisms to moderate volatility* (e.g., warehousing receipts).

iii. **Facilitating faster and full recovery from shocks –** through investments for *livelihood restoration and reconstruction* which applies for both climate and conflict shocks (e.g., infrastructure rehabilitation and re-stocking and input support programs) and promoting the *adoption of insurance products* (e.g., livestock insurance).

2. Increase generation of agriculture surplus.

The poor are increasingly concentrated in rural areas, most of them in high agricultural potential areas. Many rural poor were not able to capitalize on rising food prices. This points to the necessity of interventions to increase market surplus generation among rural households and to promote agriculture commercialization. Most of these measures have been discussed in detail in the Ethiopia Rural Income Diagnostics (World Bank, 2022b). They include:

i. **Reducing market distortions to trigger a supply response –** by *eliminating marketing controls* that blunt price signals to farmers such as export controls and marking restrictions for commodities.

ii. **Increasing availability and adoption of advanced agriculture inputs and technologies –** by *liberating input* markets to promote a greater role of the private sector in agriculture technology development, input production, and distribution to increase timely availability of the right type of inputs.

iii. **Optimizing crop cultivation choices and incentivizing production of commercial crops –** through the adoption of a *plurality of agriculture extension services* and *shifting in messaging* to encourage a shift towards commercial crops and optimize crop cultivation choices to land suitability.

Other sets of measures include those mitigating the impact of climate shocks discussed under the priority intervention to increase resilience to shocks, as these can also influence household agriculture production decisions based on their impact on risk preferences.

3. Eliminate structural impediments to job creation.

A more fundamental challenge for poverty reduction is the lack of better economic opportunities. This is evidenced by the declining pace of job creation, with a net reduction of jobs in the industry sector, stalled private sector wage job creation, and the exit from the labor market by people – women in particular – facing limited

opportunities in the context of stalling structural transformation and the general decline in the quality of jobs as trends in the job quality index showed. Evidence also suggests that the poverty impacts of climate change can be moderated with the implementation of structural reforms that enhance productivity under all climate change scenarios. The necessary reforms have been discussed in detail in the Systematic Country Diagnosis for Ethiopia (SCD, 2024). They include the following:

i. **Macro-fiscal stabilization –** by eliminating macro policy distortions that undermine private investment. Key among them is addressing the exchange rate misalignment, *liberalizing interest rates*, and *reducing state dominance in the financial sector* to direct more lending towards the private sector.

ii. **Reducing barriers to entry and state dominance in the economy –** by promoting *market neutrality and reducing foreign entry restrictions* in markets with high potential for reorganizing agriculture value chains (e.g., permitting foreign entry into wholesale and retail markets).

iii. **Reducing barriers to labor mobility –** by eliminating burdensome *administrative procedures* for migrants (e.g., household registration requirements) and reducing job search costs by enhancing job intermediation and employment promotion services.

INTRODUCTION

BACKGROUND

Ethiopia is the second most populous country in Africa, with a population of 118 million people, mainly rural (78 percent), young with nearly 39 percent of them children under the age of 14 years old, and ethnically diverse – with more than 80 ethnic groups. It is landlocked, and primarily agrarian, though two-thirds of its land is comprised of semi-arid and arid areas that are sparsely populated and carry less than 9 percent of the total population. However, it has wide ecological diversity, with 6 traditional ecological zones that can be subdivided into 33 agro-ecological zones. The country is situated in a volatile region - sharing borders with Djibouti, Eritrea, Kenya, South Sudan, Sudan, and Somalia – which has high exposure to weather shocks and a history of famines.

However, Ethiopia has been a growth champion in the two decades up to 2020. Its GDP increased by 6-fold to PPP$ 333 billion (US$126.7 billion) in 2022, which ranks as the fifth largest economy in Africa. This is also by virtue of its population size because its GDP per capita of PPP $2,698 (US$ 1027 in 2022) ranks it as the 19th in Africa. Ethiopia's growth has been achieved through a state-led growth model, with heavy public investment – that for a time made the country one of the fastest growing in Africa. Ethiopia made concerted efforts to industrialize, through investments in industrial parks in particular, which saw the industry sector's share in GDP double to 29 percent during the last decade. However, its exports remain dominated by agriculture commodities, with coffee as its largest export, though manufacturing exports also rose over time, driven by the garment and textile

sectors. This Poverty Assessment looks at how poverty evolved in this context.

Recap of poverty challenges: A story of strong but spatially uneven progress

The last Poverty Assessment for Ethiopia was completed in 2020, based on data from the Household Consumption and Expenditure Survey of 2015/16 (HCES 2015/16) which until now, remains the latest publicly available data for official poverty estimates. The analysis showed that Ethiopia made significant progress in reducing poverty, but less than proportionate to the high pace of economic growth the country experienced. For the 16 years leading up to 2015, the economy grew by an annualized average of 9 percent, tripling in size. In that time, the poverty headcount rate declined from 44.2 to 23.5 percent, with a 6-percentage point drop during the last observed period of 2011-16. This translated to a growth elasticity of poverty of -0.46, implying that a percentage increase in growth translated to less than half a percentage decline in poverty between 2011 and 2016. This is lower than the growth elasticity in other countries such as Tanzania and Uganda.

Past growth was urban centered, leaving many people in low productivity agriculture and did not fully exploit opportunities in rural areas. During 2011 to 2016, poverty in urban areas decreased by 11 percentage points compared to 5 percentage points in rural areas that had higher poverty rates to start with. The annual growth rates in consumption in rural areas did not exceed 3 percent, even for the richest percentile while mean consumption growth in urban areas was 5.9 percent per year and was always above 3 percent, even for the poorest. Growth was lower for rural households because growth in the agriculture sector was lower than in any other sector, yet labor has been slow to shift out of agriculture. The uneven pattern of growth resulted in an increase in inequality in almost all regions (except Somali) from 2011 to 2016. Inequality became increasingly determined by differences between urban and rural areas rather than differences within regions. Inequality of opportunity for children also showed large. Regional variations and whether a household is rural or urban, rather than the level of wealth of the household, explained differences in primary school completion rates, secondary school enrolment rates, and access to electricity within regions.

Drawing on more recent official data, this Poverty and Equity Assessment (PEA) Report updates the knowledge of the poverty situation in the country, given the many challenges the country has faced since 2016. The report shows recent trends in poverty, and provides an in-depth understanding of the drivers of poverty in the country. The PEA also investigates (i) how much and who has been impacted by various shocks; (ii) the extent to which structural transformation has occurred and growth trickled down to the poor; and (iii) how key policy reforms in the government's economic reforms impact household welfare. Most importantly, the PEA discusses what needs to be done to accelerate poverty reduction by improving the productive capacity of poor households to become active contributors to growth while strengthening their resilience to shocks.

Marrying traditional and non-traditional data for a nuanced understanding of poverty

The report primarily relies on the Household Welfare Statistics Survey that was conducted in 2021 (HoWStat 2021). This survey is representative of all regions, except Tigray, which was not accessible due to security reasons (see Box 1). It is a combined version of the previous Welfare Monitoring Surveys (WMS) and the Household Consumption and Expenditure Surveys (HCES) that we shall collectively refer to as HCES. The analysis of trends uses the previous two rounds covering the beginning and mid part of the past decade (HCES 2010/11 and HCES 2015/16),

which gives a picture of the socio-economic development in Ethiopia over the past decade. These surveys are the official data sources for poverty and welfare monitoring and are the basis for analyzing poverty trends.

Complementary data is used to inform specific topics. This includes panel data from the Ethiopia Socio-Economic Panel Survey (ESPS) that was conducted every two years since 2011/12. The most recent rounds were conducted in 2018/19 and 2021/22 with a refreshed sample. The analysis also uses the National Labor Force Surveys conducted in 2005, 2013, and 2021 alongside the Urban Employment and Unemployment Survey (UEUS) to provide a more nuanced description of the labor force. Some analysis of employment outcomes is done using the Large- and Medium-sized Manufacturing Industries Survey (LMMIS) from 1997-2020. These traditional data sources are combined with several geospatial data in the analysis. High frequency quasi-global rainfall data from the Climate Hazards Group InfraRed Precipitations with Stations (CHIRPS) is incorporated to measure the impact of climate shocks. Enumeration areas level proxies for suitability and productive potential of land are computed from the FAO GAEZ spatial data and Galor & Ozak (2016) caloric suitability index – both based on the application of machine learning to satellite imagery. Incidence of conflict uses data from the Armed Conflict Location & Event Data Project (ACLED) and the IOM's Displacement Tracking Matrix (DTM) data is used for analysis of internal displacement.

Table 1. Description of data sources for the Poverty and Equity Assessment

Data Source	Data Type and Characteristics
Household Welfare Statistics Survey (HoWStat 2021) Household Consumption and Expenditure Survey and Welfare Monitoring Survey HCES/WMS 2010/11, 2015/16	Nationally representative data collected from July to June the following year in 2010-11 and 2015-16 and from January to December in 2021. The Survey in 2021 did not cover the Tigray Region. The data provides variables on: Household consumption and other household and individual characteristics, but does not include agriculture production.
Ethiopia Socioeconomic Panel Survey (ESPS) – 2011/12, 2013/14, 2015/16; 2018/19, 2021/22	Nationally representative longitudinal data that was first implemented in three 3 waves from 2011/12-2015/16 and then in two waves in 2018/19 and 2021/22 with a refreshed sample. The data provides variables on: Household and individual characteristics; Land and agriculture production at plot level; Geographic characteristics such as population density, connectivity.
Ethiopia National Labor Force Survey (LFS) – 2005, 2013, 2021	Nationally representative, cross-sectional survey data, collected over a one-month period. Due to conflict the 2021 survey excluded the Tigray region (which constitutes about 6 percent of the population).
Urban Employment and Unemployment Survey (UEUS)	Representative of urban areas in each region of Ethiopia. Data is collected over a one-month period.
Large- and Medium-sized Manufacturing Industries Survey (LMMIS)- 1997-2020	Covers all manufacturing firms in Ethiopia that engage ten persons or more and use power-driven machines. Captures firm's characteristics including production, imports/export status, workers by gender.

Data Source	Data Type and Characteristics
Displacement Tracking Matrix (DTM)	Data collected from sites with 20 or more IDP households - that are identified through key informant interviews -during site visits and focus group discussions as part of Site Assessment (SA) to estimate the number and characteristics of IDPs in each site. Each round typically occurs 4 times a year. Data presents an estimated snapshot of the IDP situation in the country but is not a fully representative sample of IDPs because coverage of many sites is severely limited by inaccessibility due to conflict, IDPs living in sites with less than 20 IDP households are excluded, and self-settled IDPs in urban areas are often missed.
The Climate Hazards Group InfraRed Precipitations with Stations (CHIRPS)	High frequency 30 years quasi-global rainfall at 6-hourly, daily, monthly, bi-monthly, quarterly & annually. Based on triangulation of Earth based rainfall gauge data and satellite imagery at 0.050 resolution.
Armed Conflict Location & Event Data Project (ACLED); www.acleddata.com	Geocoded data of each conflict event reported in the country by a special team devoted to mapping conflict in Ethiopia using a combination of Ethiopian and international media reports and local informants (EPO 2021b). This provides an "indirect" measure of conflict based on household proximity to the event. Analysis in this report is restricted to explosions, strikes, battles, or violence against civilians.
FAO GAEZ Data	Geospatial data, at 9.3 x 9.3 km pixel size (resolution). The Data is extracted at the EA Level. Provides information on agriculture potential.
Galor & Ozak (2016)	Geospatial data – at 9.3 x 9.3 km resolution measuring potential variation in crop yields across space in calories per hectare per annum. https://ozak.github.io/Caloric-Suitability-Index/
Drought data	Palmer Drought Severity Index (PDSI) captures long-term drought as it relies on temperature information and a physical model of water balance. The data covers 1980-2019 and covers the months of May - September (the main agriculture season in Ethiopia). https://hydrology.princeton.edu/getdata.php?dataid=7 FAO Agriculture Stress Index (ASI) measures the proportion of an area that experienced drought in each season (1984-2019), only covers crop areas, based on the Vegetation Health Index (VHI) which is derived from satellite imagery. https://www.fao.org/giews/earthobservation/asis/index_1.jsp?lang=en

Box 1. Data quality and representativeness of HoWStat 2021

The HoWStat 2021 survey, conducted from January to December 2021, excluded the Tigray region and other conflict-affected areas due to security concerns. This issue was also encountered by other surveys conducted in the country during the same period, such as the Ethiopia Socioeconomic Panel Survey and the Labor Force and Migration Survey, which were officially released by the Ethiopian Statistical Service.

For HoWStat 2021, multiple quality checks were performed to ensure data reliability. First, a qualitative assessment of the distribution of households and enumeration areas by region indicated that the household sample was of good quality, except for the Tigray region and other conflict-affected areas, which were not included. In addition, selected data quality indicators that might suggest sub-optimal fieldwork efforts showed no significant concerns in the data collection process. These indicators included histograms and distribution tests (Kolmogorov-Smirnov test, Shapiro-Wilk W test) to detect clustering or peaks in the distribution of the number of households, household size, household composition, the number of food and non-food items, and the number of durables.

Additional checks included assessing missing quantities, measurements, units, prices, and expenditures information, along with missing information on key socio-economic characteristics. None of the tests conducted revealed issues of missing values in these key variables. Finally, the distributions of key variables collected in HoWStat 2021 were compared with those from the 2015/16 Household Consumption Expenditure and Welfare Monitoring Surveys (HCES/WMS) at the regional level. The indicators assessed included household expenditure (e.g., the number of food and non-food items consumed), the number of durables/assets owned, household characteristics (e.g., land and livestock ownership, housing ownership), labor market indicators, and household member characteristics (e.g., the share of male respondents, household size, age, sex). The assessment indicates that the distribution of these variables is consistent across the 2015/16 and 2021 surveys by region.

REPORT OUTLINE

The PEA comprises of seven chapters including this introductory chapter, divided into three major parts. The first part of the report provides the basic poverty diagnostics to update knowledge of the broader country and socio-economic developments and their implications for the trends, patterns, and drivers of monetary and non-monetary poverty and inequality in the country. The second part of the PEA unpacks the drivers of poverty in an in-depth analysis focusing on shocks and structural impediments to poverty reduction. The third and final part of the report provides strategies for poverty reduction in the country. An overview of chapters in these parts is provided below.

Part 1: Trends, Patterns, and Drivers of Poverty and Inequality

This part of the report is aimed at filling knowledge gaps on the evolution of poverty and inequality in Ethiopia and the underlying drivers of the observed trends in poverty and inequality in the country. It will have the following three chapters:

Chapter 2: Recent socioeconomic developments and implications for household welfare – to set the stage, this chapter provides a snapshot of recent socio-economic developments that have a strong bearing on the direction for poverty reduction. It links these developments to macroeconomic outcomes and the implications for household income and consumption growth patterns.

Chapter 3: Trends and patterns of poverty and inequality – this describes the trends and patterns of monetary and non–monetary poverty. The analysis presented in this chapter uses the HoWStat 2021, which is the official source of poverty estimates recognized by the country, hence most of the cross-sectional and trend analyses will rely on this data.

Chapter 4: Drivers of poverty – After presenting data on the trends of poverty and inequality, this chapter starts digging into the drivers of the observed trends focusing both on the determinants of household welfare more broadly and the determinants of being poor and moving in and out of poverty using a combination of statistical decomposition techniques and regression analysis.

Part 2: Deepening the Understanding of Drivers of Poverty

The section provides an in-depth look at the key drivers of poverty trends focusing on three key areas that have been or are expected to continue to be drivers of challenges and opportunities for poverty reduction and where there is scope for value addition from new analysis. The three topics selected are climate change, conflict, and structural transformation.

Chapter 5: Welfare impact of shocks – Focus on Climate Change - the first deep dive examines the impact of climate-induced shocks and policy responses on household welfare. It depicts the incidence and exposure of households to climate change variability and extremes, shows the temporal and spatial distribution of climate and drought shocks, and the short-term welfare impacts of climate change-induced shocks and applies macro-micro simulations to estimate the long-term poverty impacts of different climate change scenarios.

Chapter 6: Welfare impact of shocks: Focus on Conflict – the second deep dive explores the relationship between conflict, internal displacement, and poverty trends. It charts the pattern of conflict and its immediate impact on welfare. It puts a lens on internal displacement by characterizing the socioeconomic conditions of IDPs in Ethiopia, the characteristics of hosting communities and the specific challenges faced by IDPs in camps and hosting communities.

Chapter 7: Structural transformation and household welfare – the third deep dive looks beyond the impact of shocks to investigate the structural factors behind the changes in poverty in Ethiopia. The chapter examines the changes in the labor market in Ethiopia to assess the pace and nature of structural transformation, whether this contributes to welfare improvements and what are the policy constraints to acceleration of the transformation.

Part 3: Turning Tides for Poverty Reduction

The last section of the report synthesizes the main findings from the previous chapters and presents the policy recommendations. Given the focus on shocks and structural transformation, the policy priorities focus on increasing the productive capacity of the poor, based on what needs to be done to (i) increase household employment or use of their labor assets, (ii) increase returns and eliminate distortions to households' assets, and (iii) insure or protect households' assets and returns.

PART 1

Trends, Patterns, and Drivers of Poverty and Inequality

This section discusses the socio-economic developments in Ethiopia since 2016 when the last survey for measuring poverty was implemented. Using new data, the section updates trends on poverty and inequality and identifies key dimensions of welfare heterogeneity, for example across geographical regions. The section aligns evidence to answer a series of questions on who and where are Ethiopia's poor, how poverty has changed and what are the driver of those changes? The section thus marshals new evidence and deploys statistical techniques to help understand the drivers of poverty changes in the country, especially the effects of recent and contemporary shocks on vulnerability and welfare and the potential implications on poverty reduction efforts in Ethiopia. In relation to this, the section highlights the welfare effects of inflation, conflict, and droughts, along with some underlying drivers of poverty in the country.

RECENT SOCIOECONOMIC DEVELOPMENTS AND IMPLICATIONS FOR HOUSEHOLD WELFARE

This chapter discusses the many changes in Ethiopia and indeed the world, since 2016 when the last survey to measure poverty in Ethiopia was conducted. *A new government came into power in 2018 and launched a Home-Grown Economic Reform Agenda aiming to shift the development paradigm from a state to private sector led development. Then the country was hit with a series of global and local shocks that have characterized much of the recent period – ranging from a global pandemic, droughts, pest invasions, and an escalation in conflict. Though some shocks like droughts and conflict were localized, they covered different parts of the country such that almost all households were affected by at least one such shock, not counting the economy wide effects of the COVID-19 pandemic and inflation. The economy ended up growing at a much slower pace than during the first half of the decade and job creation stalled. The consequence was a decline in household welfare across the entire socio-economic spectrum.*

Multiple shocks left no households untouched.

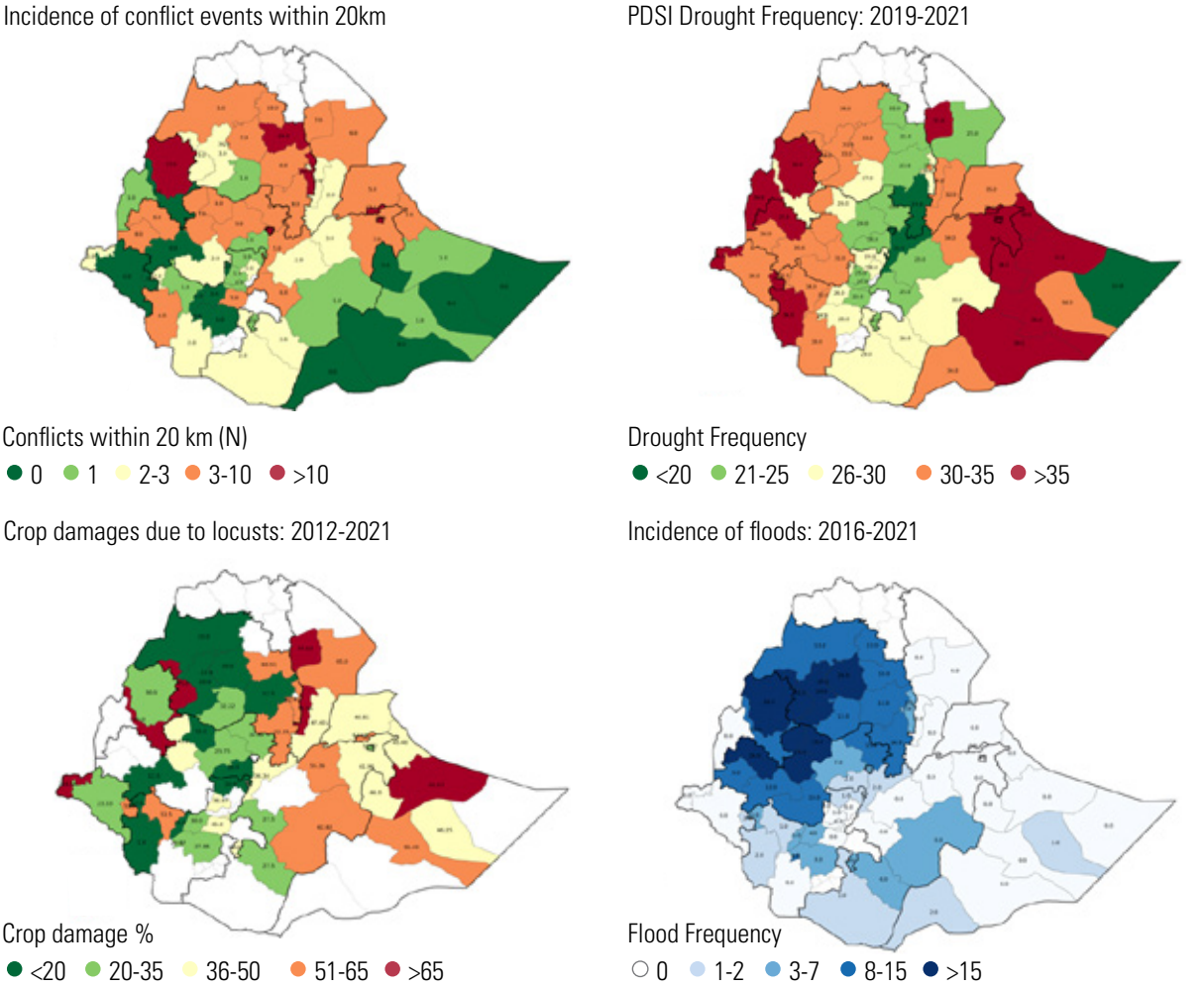
This PEA covers the period between 2016 and 2021, a time when households in Ethiopia contended with a series of shocks - often concurrently. Droughts, locust invasions, floods, and conflict were localized, but taken together, covered much of the country. Consequently, 91 percent of the population in Ethiopia experienced at least one of these shocks during 2017-2021 (Map 1). Close to half of the population (48 percent) experienced multiple shocks in this time. This poly-crisis was unprecedented.

Local conflict is not new in the country, but it escalated in 2020 with the eruption of war in Northern Ethiopia. Throughout 2021, the conflict expanded beyond Tigray to the neighboring regions of Amhara and Afar. Across the country, 3,153 conflict events occurred, resulting in nearly twenty thousand fatalities between November 2019 and the end of 2022. This is around 10 times greater than the number of conflict events and fatalities in the same period before the war. This created large-scale displacements, and vast humanitarian needs in Northern Ethiopia (ECHO, 2022). As of June 2021, about 5.5 million people in Tigray and neighboring Afar and Amhara (nearly 93 percent of the population in Northern Ethiopia) were in high acute food insecurity. The conflict also had other economic impacts extending beyond the conflict areas. The country received USD 1.5 billion less ODA in 2021, while its spending on defense increased, squeezing its fiscal space for spending on social sectors and capital investments. Ethiopia was also suspended from AGOA, which affected the competitiveness of its nascent garment industry.

Meanwhile, the lowland areas were ravaged by the compounded risks of droughts, crop diseases, and pests. The country experienced a major drought in 2019 covering most parts of the country. This increased in severity in lowland areas with failed consecutive rainy seasons in three subsequent years, affecting nearly 7 million people in Oromia, SNNP, Southwest, and Somali (OCHA, 2022). Then there were two invasions of desert locusts in 2020. The first invasion, between January to May, was reported to have invaded 180-240 Woredas primarily in eastern and southern Ethiopia. The second invasion started in late September and peaked in October-November. It was more severe than the first and ranks amongst the worst to date (Ilukor & Gourlay, 2021). Data from a High Frequency Phone Survey (HFPS), conducted by the World Bank at the time, shows that over half of all rural households and nearly 30 percent, experienced locusts in their kebele and on their farms, respectively, during the first locust invasion (World Bank, 2021). At the peak of the second invasion, 37 percent and 20 percent

of the rural households observed locusts in the kebele and on their farm, respectively. The western parts of Ethiopia, on the other hand, were prone to both droughts and flooding at various times, while other parts (Benishangul-Gumuz for example) experienced an uptick in conflict.

Map 1. Spatial incidence of climate shocks, locust invasions, and conflict in Ethiopia



Source: Authors calculations from various geospatial data sources: Armed Conflict Location & Event Data Project (ACLED); www.acleddata.com; https://hydrology.princeton.edu/getdata.php?dataid=7; The Climate Hazards Group InfraRed Precipitations with Stations (CHIRPS).

The conflict and climate change-induced shocks occurred when the whole country was suffering from the COVID-19 pandemic. Its health impacts in Ethiopia may not have been as devastating as it was in the developed world, but it had a major impact on the welfare of households through the loss of incomes due to disruptions of employment and remittances caused by COVID-19 related restrictions (Harris et al., 2021; Yimer et al., 2020). Estimates from the HFPS show that over 40 percent of businesses had closed, 32 percent of businesses reported no revenues and 8 percent of wage employees lost their job in the first month of the pandemic (March or April 2020) (World Bank, 2020). These were accompanied by a decline in domestic and international remittances. A significant share of households reported losses in incomes throughout 2020 (Figure 1). While the economic impacts abated during the second half of the year, the pandemic left permanent scars. Real wages for example, declined more the longer the pandemic lasted - having initially declined

by 3 percent in April 2020 compared to April 2019 before eventually falling by 17 percent by December 2020 compared to December 2019. Both employment in industry and the number of households running a business never fully recovered to their pre-pandemic levels.

Inflation, which accelerated in 2021, compounded the crisis. After hovering around 20 percent in 2020, inflation rose to above 30 percent in early 2022. Food inflation reached 42 percent in February 2022- the highest rate recorded since 2011 - while non-food inflation stood at 23 percent (Figure 2). The rising prices of bread and cereals and oils and fats contributed to about 60 percent of food inflation during this time. Non-food inflation was mainly driven by (i) housing, water, electricity, gas & other fuels, (ii) furnishings, household equipment & routine maintenance, and (iii) clothing & footwear. Cumulatively, consumer prices tripled between 2016 and 2021.

The global fall out from Russia's invasion of Ukraine later aggravated the situation. Within just a few weeks of the outbreak of the Russia-Ukraine war in February 2022, the global prices of wheat, corn, fertilizer, and oil all soared to unprecedented levels. Ethiopia was highly exposed as a primary importer of wheat and oil, but also of fertilizer, which had knock-on effects for agricultural production and food security in Ethiopia.

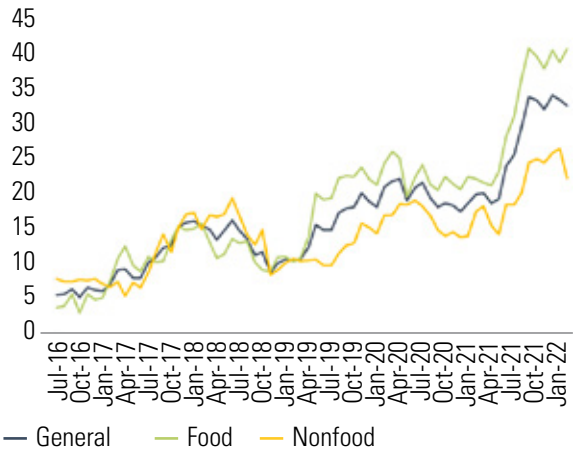
Growth decelerated in the face of multiple crises, creating unfavorable labor market conditions.

Amidst the multiple crises, Ethiopia's great run slowed down and changed its pattern. In real terms, annual GDP per capita growth declined from 6.8 percent during 2011-16 to 4.4 percent during 2016-21. It has averaged around 3 percent since 2019. The pattern of growth changed. Annual growth in the industry sector which was growing fast from a low base (i.e., a tenth of GDP in 2011), declined to 12 percent during 2016-21, shaving off 17 percentage points from the previous 5-year average growth rate. Because droughts were localized, the agriculture sector still grew by 4.4 percent per annum during 2016-21, but this was 2 percentage points less than during 2011-16. Its share of GDP is not declining as fast as in the past. Only services grew at a similar pace compared to the preceding five years (Figure 3). After growing at 13.4 percent and 7.9 percent per annum during 2011-16, investment and public consumption expenditures respectively, grew at an annual average of 1.3 percent and 2.6 percent, during 2016-21. The growth in national savings similarly declined.

Figure 1. Share of rural households reporting loss in incomes (%): April–October 2020

Source: World Bank (2020).

Figure 2. Consumer Price Index, year-on-year % change



Source: Ethiopian Statistical Service.

Figure 3. GDP growth rate by sector, (%)

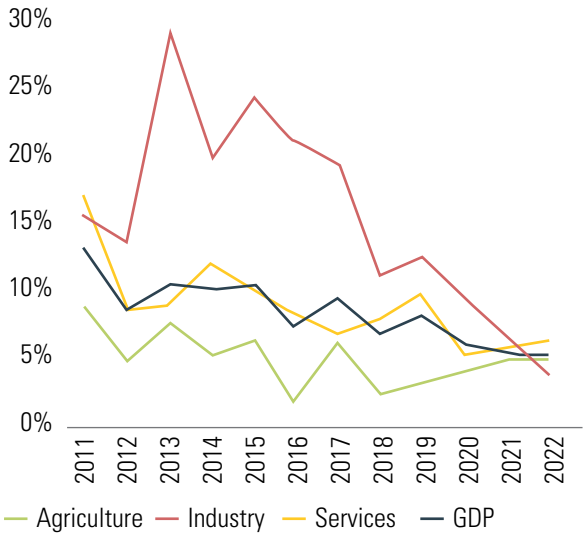
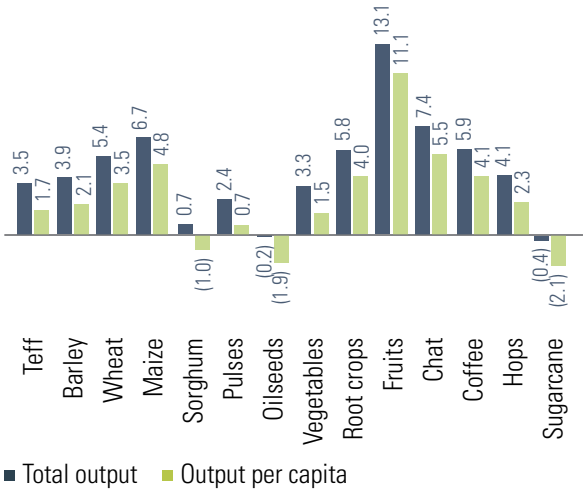


Figure 4. Agriculture production growth by crop, between 2015/16 and 2020/21 (%)



Source: Authors' estimates based on NBE annual reports; AgSS 2015/16, 2020/21.

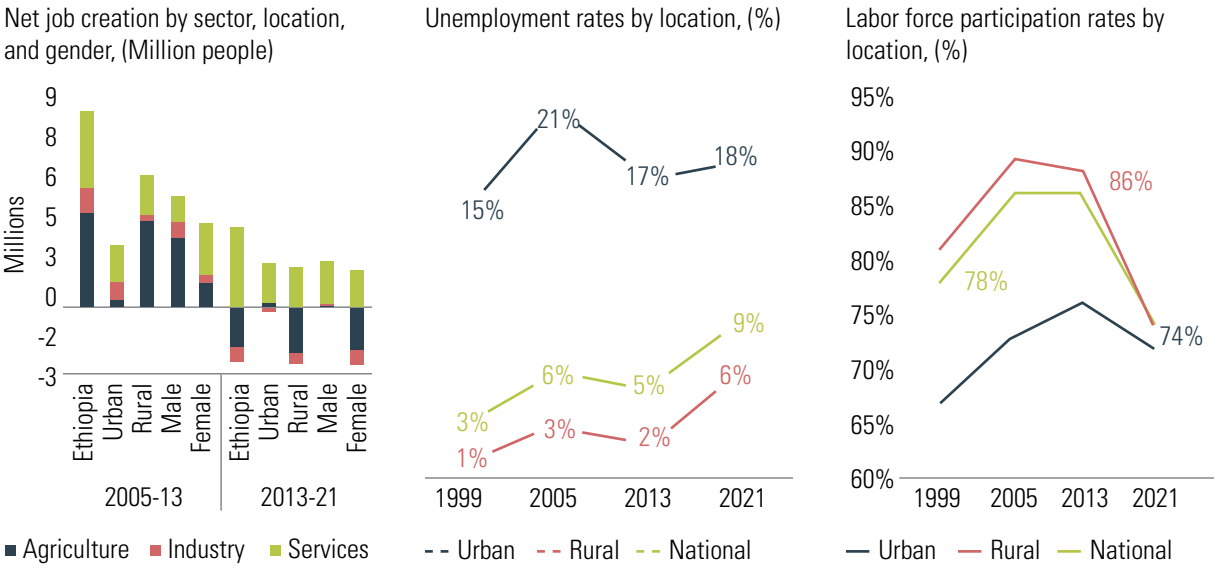
Growth in agriculture output, was smaller when considering the increase in the country's population in that time (Figure 3). Analysis of agriculture output for major food crops, shows that agriculture production increased during 2016-21, especially for staple foods. The production of maize increased by close to 48 percent, wheat by 36 percent and teff production by 23 percent during 2016-21 (Figure 4). The slowest growth was in the production of sorghum, which is mostly grown in the drought ravaged eastern parts of Ethiopia. In total, cereal production grew at an annual average of 4.5 percent during 2016-21, closely aligned to the agriculture GDP growth, but in per capita terms, cereal production grew at half that pace. Therefore, marketed surplus generation for most cereals – including those where yields have increased substantially – has not grown fast enough. In fact, agriculture GDP per capita has not grown since 2019 when the most recent drought set in.

Job creation lost steam, leaving many people out of work.

The economic impacts of the multiple crisis, along with other factors, was reflected in the labor market which lost steam. Data from the last National Labor Force Survey conducted in 2021 shows that there were over 10 million more people of working age in 2021 than in 2013 when the previous LFS was conducted. Yet, the number of employed people increased by less than 1.2 million in contrast to the preceding 8-year period (2005-13) when the economy had created a net total of 8.5 million jobs during 2005-13. The industry sector shed more than 600,000 jobs during 2013-21. Employment in agriculture declined too. Some people in rural areas were engaged in the services, the only sector that created the same number of jobs during 2013-21 as it had in the 8 years before then (Figure 4).

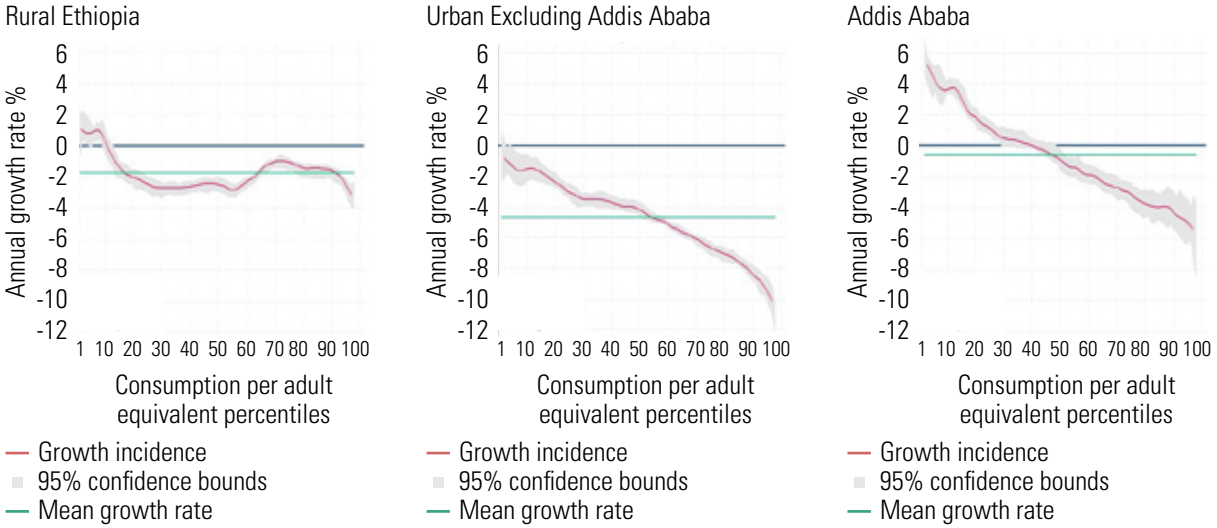
More people – mostly rural women - found themselves out of work completely or still in search of work. The unemployment rate increased from 5 percent in 2013 to 9 percent in 2021, while the labor force participation rate (LFPR) in that period declined by 12 percentage points in 2021 in contrast to a steady increase in previous periods. These changes mostly occurred in rural areas and were borne by women. The net decline in industry and agriculture employment among women accounted for all the decline in the number of jobs in these sectors (Figure 5).

Figure 5. Trends in key labor market outcomes in Ethiopia



Source: Authors' estimates based on LFS 2005; 2013; 2021.

Figure 6. Consumption growth by household welfare ranking



Source: Authors' estimates based on HCES 2010/11, 2015/16 and HoWStat 2021.

Household consumption growth declined across the board.

Household consumption – the preferred measure of welfare in Ethiopia – declined for both the rich and the poor but more so for the rich than the poor. To arrive at a measure of welfare, households' total consumption of food, frequently purchased non-food items, actual rent paid by renters, or the amount homeowners think they would pay if they rented their dwellings and the use value of durable goods they own, are added together, and converted to an annual value. This is then divided by the household size adjusted for demographic composition using an equivalence scale, to arrive at annual consumption per adult equivalent amount as the measure of welfare. The approach for estimating welfare using HoWStat 2021 is comparable to that applied in HCES 2015/16. By this measure, average household welfare declined by 2.1 percent nationally between 2016 and 2021. In a complete reversal from the

trend observed at the beginning of the last decade, the richest 20 percent of the population lost more than the poorest 20 percent, though all groups were generally worse off in 2021 than in 2015/16.

Rural areas appeared more resilient than urban households. The consumption per adult equivalent declined in rural areas by 2 percent on average, which was only slightly worse for people ranked in the middle than for everyone else (Figure 6). In urban areas outside Addis Ababa, consumption declined by 5.2 percent on average and by up to 11 percent for people in the richest two quintiles. In both rural and urban areas outside Addis Ababa, people in all parts of the socioeconomic ranking were at best not better off in 2021 than they were in 2015/16. But in Addis Ababa, the poorest 25 percent of households registered some gains, while those in the top half of the socioeconomic rankings experienced significant losses.

Thus, the period up to 2021, was characterized by reversals of fortunes for households in Ethiopia, but that also presents a puzzle or a discrepancy with macro statistics. From the microeconomic perspective, households endured a series of social, climate, health, and economic shocks around the same time, fewer jobs were created, and more people were out of work than before. This would align with the data showing that households ended up worse in monetary welfare terms in 2021 than they were in 2015/16. However, macro statistics show that the economy in general still grew – at a slower pace, but still high in comparison to other countries. This presents an inconsistency with the microdata on rising unemployment and deteriorating household consumption. There are several possible sources of this discrepancy, but none are definitive. One is that real consumption and GDP growth are estimated using different deflators, therefore the difference between the CPI, which is used to deflate consumption, and the GDP deflator, which rose more slowly than CPI, accounts for some of the difference in the household consumption growth and GDP growth. Growth in agriculture output would have been expected to benefit some rural households, which does not seem to be the case. That growth declined across the entire welfare spectrum, rules out the possibility that welfare deteriorated because gains from growth were unevenly distributed.

In what follows, the report discusses the implications of this on trends in poverty and inequality in Ethiopia. The reports builds on this to analyze drivers of the changes in poverty in the next two sections of Part 1 of this report. In Part 2, the report will dig deeper into the discussion of the major shocks and their implications for household welfare in two deep dive chapters focused on conflict and climate shocks, then go in-depth on issues affecting the labor market in another deep dive focused on structural transformation.

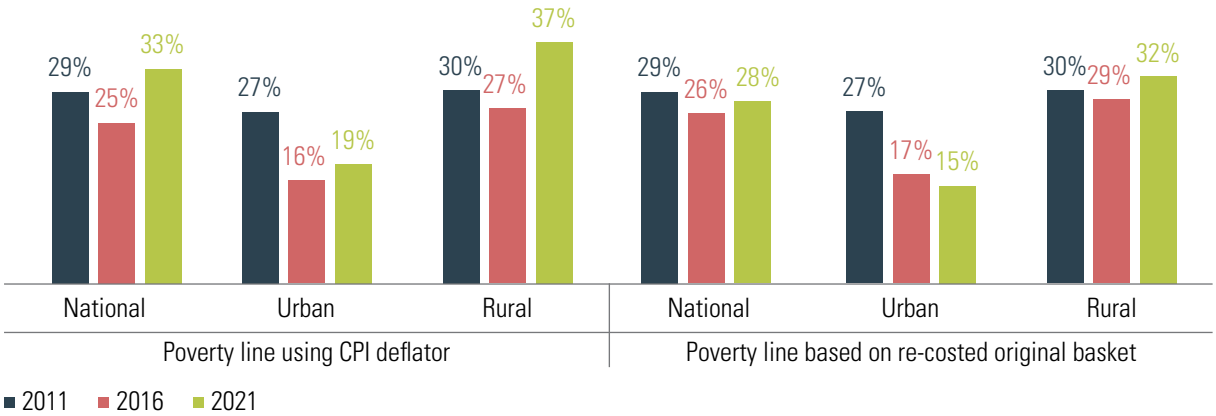
IMPLICATIONS FOR THE TRENDS AND PATTERN OF POVERTY

This section explores the poverty implications of the decline in consumption following the deterioration in the economic situation and multiple shocks experienced in Ethiopia. *It presents trends in poverty and considers how the patterns of poverty changed over time. This shows that poverty increased in all areas of Ethiopia except Addis Ababa and Dire Dawa by 10 percentage points and validated by worsening in other welfare measures including non-monetary indicators. However, the distributional pattern of poverty has remained the same as before, defined by rural-urban disparities including within regions, and by the geographical distribution of the population across regions rather than the gaps in the incidence of poverty across regions. With most of the population in Ethiopia living in moisture-reliable areas, so too are most of the poor, reflecting how the narrative of poverty in Ethiopia is in part about the unrealized agricultural potential.*

Poverty increased, undoing gains made at the beginning of the previous decade.

Poverty increased between 2016 and 2021 to around where it was in 2010. The magnitude of the increase depends on how one adjusts the poverty line for price changes over time (Figure 7). In one approach, preferred by the government, the poverty line is adjusted by computing the cost of the poverty food basket using prices from the HoWStat 2021 to obtain a food poverty line which is scaled up by the non-food share in consumption at the time the poverty basket was derived in 2010. This gives a total poverty line of 17,753 per annum per adult equivalent in December 2021 prices and a poverty rate of 28 percent in 2021 compared to 26 percent in 2015/16, excluding Tigray from the calculations since it was not covered in the HoWStat 2021. Another approach uses the national CPI to update the official poverty line derived in 2015/16 in December 2021 prices, giving a poverty rate of 33 percent in 2021 – an 8 percentage points increase over the poverty rate in 2015/16 excluding Tigray (Figure 7). This is more than the incidence of poverty in 2010 (30 percent). The analysis presented in the rest of this report is based on this second approach and compares poverty across time excluding Tigray in previous surveys. A detailed description of the methodology and justification of this choice is provided in Box 2 and in Annex 1 and the methodological note (World Bank, 2024). Despite survey data not being available for Tigray, Box 3 summarizes the welfare situation in Tigray and projected welfare trends.

Figure 7. Trends in poverty headcount rates (%), 2010/11 - 2021



Source: Authors' estimates based on HCES 2010/11, 2015/16 and HoWStat 2021.

Box 2. Poverty estimation methodology in Ethiopia

The methodological choice for the 2021 poverty assessment hinged on two options: adopting a new methodology based on 2021 data or replicating the 2016 methodology. The second option was selected because the year 2021 was marked by crisis, making it an atypical year to anchor a new poverty basket. Notably, there was a decline in caloric intake in 2021 compared to 2016, coupled with an uptick in the prevalence of caloric inadequacy, indicating a rise in calorie-based poverty. More importantly, some parts of the country, mainly the Tigray region and conflict-affected areas, were not covered by the survey for security reasons. For this reason, the government plans to conduct a new survey from July 2024 to June 2025, with an improved consumption module and national coverage, laying the groundwork for a new poverty line. Therefore, replicating the 2016 methodology to the greatest extent possible is the more viable option, which offers the advantage of consistency, enabling the comparison of poverty trends over time.

Replicating the 2016 methodology requires a consistent approach to generating the nominal consumption aggregate, spatial price deflators to account for regional price differences and adjusting for price changes over time, and updating the poverty line. Spatial price indices at the reporting level or strata were calculated using a Laspeyres weighted price food and non-food spatial deflators based on survey unit prices following the same approach documented in previous government poverty reports (MoFED, 2002). An alternative approach matching the HoWStat 2021 data to reporting levels for HECS 2016 to use spatial deflators published at the strata level in 2016 was not chosen because regional CPI trends suggest that relative prices across regions changed between 2016 and 2021. Furthermore, the 2021 based deflators yield monetary poverty rates rankings across strata that are more consistent with the non-monetary indicators rankings. Within-survey temporal price adjustments were done using national CPI with December 2021 as the reference month.

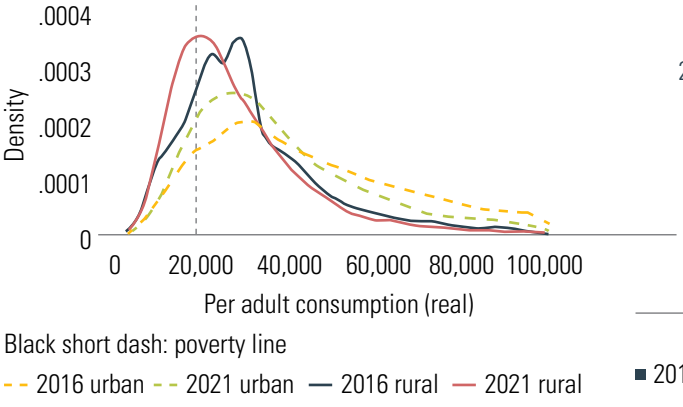
The poverty line for 2021 is obtained using two alternatives – either updating the 2015 poverty line using CPI deflators or by re-costing the original poverty basket in average 2021 prices. The poverty line is anchored in a poverty basket through a selection of a food bundle commonly consumed by the poor, ensuring it meets a set minimum caloric intake (2,200 kcal). The composition of the food basket has remained unchanged since its determination in 1996. The poverty line was revised in 2011 by re-costing the items in the original food basket at prevailing prices and applying a non-food allowance component based on the non-food shares. The official poverty line in 2015/16 inflated the 2011 poverty line using the GDP deflator which produced a smaller increase in the poverty line relative to changes reflected in the CPI. To properly account for changes in the poverty basket since 2016, the poverty line in 2021 can either be adjusted by the CPI or derived by directly costing the existing food basket and apply an adjustment for the non-food component, which would entail revising the 2016 line also to have a consistent approach. The CPI based and direct costing approach yields poverty lines of Birr18,964 and 17,753 in 2021. The government prefers the second line, arguing that the CPI does not accurately reflect rural price changes since price data is collected mainly from urban markets. However, because the poverty basket is defined in broad groups, the direct costing of the food basket involves using a composite price for each group hence the preference for using the CPI based poverty line as the basis for analysis in this poverty assessment.

Poverty increased more in rural areas than in urban areas because many non-poor rural households were just above the poverty line in 2015/16, hence highly vulnerable to falling into poverty. The poverty rate in rural areas increased from 27 percent in 2015/16 to 37 percent in 2021 compared to a 3 percentage points increase to 19 percent in urban areas. The decline in household consumption in rural areas, though smaller, pushed many rural households to fall below the poverty line, resulting in a higher increase in poverty compared to urban areas where many non-poor households started off with much higher consumption. The big decline in consumption in urban areas left most of them close, but still above the poverty line. This is demonstrated in Figure 8 which also shows that households at all consumption levels were no better off in 2021 compared to 2015/16 in both rural and urban areas. Therefore, the poverty rate increased in 2021 irrespective of the poverty line drawn.

The caloric deficiency rate, which abstracts from the issue of price adjustments over time, also points to an increase in poverty. The caloric deficiency is based on an estimation of the calorie intake from the reported quantities of items consumed by households. Households consuming less than the minimum daily calorie intake of 2,200 per person - adjusted for demographic differences in minimum calorie requirements using an adult male as a benchmark (i.e., using the adult equivalent scale) – are deemed to consume inadequate calories and classified as caloric deficient. The share of people in such circumstances increased from 26 percent in 2015/16 to 31 percent in 2021 (Figure 9). They increased more in urban areas (11 percentage points) than in rural areas (2 percentage points), reflecting the larger decline in food expenditure among urban households (23 percent) than rural households (15 percent). Food poverty rates doubled because of this (see Annex 3, Table A.3.1).

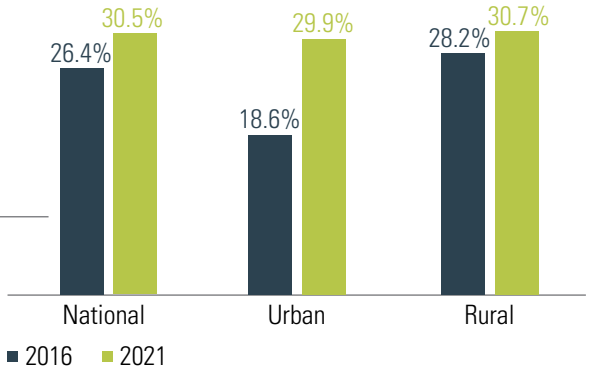
Human development outcomes either deteriorated or did not statistically change. The share of adults with secondary education and above barely changed and declined in urban areas. Thus, education attainment levels remain low. Just 7 percent of adults in the country and just 2 percent in rural areas, had secondary education or above in 2021, while 78 percent of adults nationally (86 percent in rural areas) have no formal education or have incomplete primary education. Child nutrition outcomes worsened, reflected in the increase in under 5 children stunting rates from 42 percent in 2015/16 to 45 percent in 2021 (Table 2). This increase was observed in both rural and urban areas. Both health and education outcomes deteriorated as one can imagine with the disruptions caused by the COVID-19 pandemic on schooling and health (Harris et al., 2021) and considering the nutritional impact of reduced food consumption reported above.

Figure 8. Comparison of the population distribution by consumption levels



Source: Authors' estimates based on HCES 2015/16; HoWStat 2021.

Figure 9. Incidence of calorie deficiency (%), 2015/16 - 2021



The improvement in access to some public services, especially in rural areas, was the most notable positive welfare gain between 2016-21. The share of households with access to piped water and those connected to the electricity grid both increased by 7 percentage points nationally. These improvements were most notable in rural areas. Access to the electricity grid, for example, doubled in rural areas to around 15 percent in 2021, though it marginally declined in urban areas to 88 percent in 2021 compared to 91 percent in 2016. More than a third of rural households had access to piped water in 2021, reflecting a 9 percentage points increase in rural access to piped water compared to 2016. Housing quality (improved roofing and floor materials), along with ownership of durable goods such as televisions and phones, also improved significantly in rural areas. These may reflect earlier gains before multiple crises set in and that households did not resort to asset disposals.

The multidimensional poverty index improved because of the increased access to public services, quality of housing, and ownership of durable assets in rural areas. The multi-dimensional poverty index combines three dimensions – education, health, and living standards. The first two dimensions deteriorated. The living standards dimension improved due to the increase in access to electricity, improved water, improved housing quality and asset ownership. Because of these gains, the multi-dimensional poverty index declined by three percentage points to 69 percent in 2021. This was driven by improvements in rural areas, where the improvements in access to services were notable, while multi-dimensional poverty increased in urban areas (Table 2).

The weight of evidence, however, points to an overall increase in poverty. The incidence of poverty based on monetary poverty increased and household consumption declined at all levels of consumption which points to declining poverty irrespective of where the poverty line is drawn. Stripping the influence of prices in the valuation of consumption, the caloric deficiency shows that

Table 2. Multidimensional poverty and non-monetary poverty indicators

	2016			2021		
	National	Rural	Urban	National	Rural	Urban
Multi-dimensional poverty headcount	**72%**	**82%**	**28%**	**69%**	**77%**	**38%**
Share of adults with no education or incomplete primary education	79%	90%	45%	78%	86%	54%
Share of adults with secondary and above education	8%	2%	27%	7%	2%	20%
Stunted child	42%	45%	30%	45%	48%	34%
Severely stunted child	22%	23%	13%	25%	27%	17%
Access to piped water	41%	25%	92%	48%	34%	87%
Access to electric grid	27%	7%	91%	34%	15%	88%
Television	14%	1%	54%	19%	5%	60%
Telephone	53%	42%	89%	68%	61%	88%
Improved roof	61%	50%	96%	72%	64%	96%
Improved floor	11%	2%	43%	18%	6%	54%

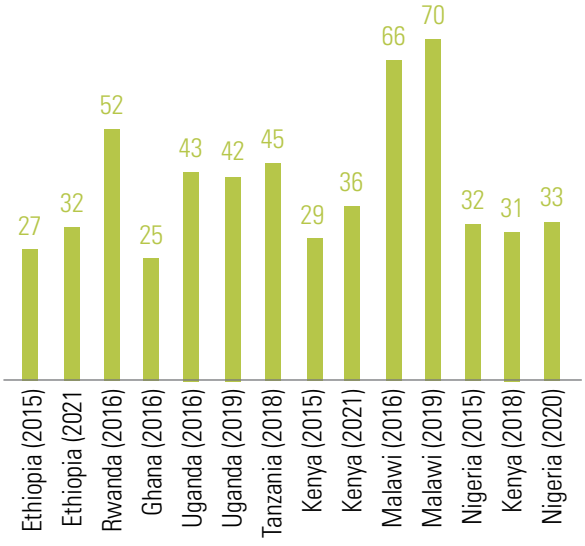
Source: Authors' estimates based on WMS 2015/16 and HoWStat 2021.

Notes: Multidimensional poverty computation is based on the Global MPI methodology by Alkire et al. (2021). The MPI covers health, education, and living standard dimensions, and ranges from 0 to 1, higher value representing a high level of deprivation. Multidimensional poverty headcount represents the share of people with a deprivation score of one-third or higher (see Annex 2 for detailed methodology).

more households failed to meet their minimum consumption needs. Shifting away from monetary to non-monetary indicators shows a lack of improvement in human development outcomes. The positive gains in access to piped water, electricity, and means of communication lay the potential for future improvements but at present, households are in an economic pinch.

Ethiopia's experience of rising poverty during this period is not unusual. Other African countries like Kenya, Nigeria, and Cameroon, also either registered an increase in poverty or did not see any gains over a comparable period (Figure 10). For perspective, the poverty rate based on the international extreme poverty line of PPP $2.15 per person per day increased from 27 percent in 2015 to 32 percent in 2021 in Ethiopia, while it increased from 29 percent in 2015 to 32 percent in 2021 in Kenya. In Nigeria,

Figure 10. International comparisons in poverty rate trends: 2014-2021, (%)



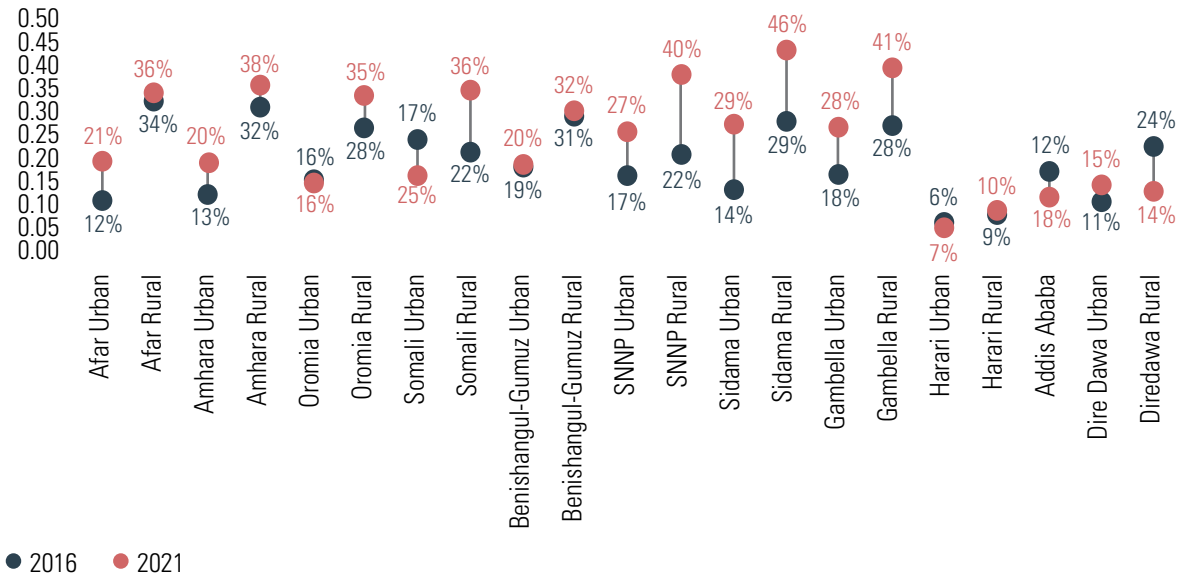
Source: Compilations of various World Bank Reports.

the poverty rate barely changed during 2015-20. There are some exceptions, like Burkina Faso, that still registered significant improvements in poverty over a comparable period.

Poverty increased in all regions except Addis Ababa and Dire Dawa and increased most in the lowlands.

A reversal in living standards was experienced in all regions except in Addis Ababa. The incidence of poverty increased the most in Gambella, Somali, and former SNPP regions (now Sidama, Southwest, Southwest Ethiopia, and Central Ethiopia regions) where poverty increased by 11–17 percentage points (Figure 11). These are also the areas most exposed to drought shocks – particularly hit hard by the 2019 drought. This relationship between drought shocks and various measures of poverty will be explored further in Chapter 5. The poverty rate in the Amhara region – which experienced a surge in conflict - increased by 5 percentage points overall, primarily driven by the 11-percentage point increase in poverty in urban areas where conflict was concentrated. A similar pattern is observed in the Afar Region. This poverty and conflict nexus shall be explored further in Chapter 6. Evidence of the changes in poverty in Benishangul is inconclusive and tainted by the fact that zones that were poorer in 2015/16 were not covered in 2021 due to conflict. Poverty in the most urbanized regions either did not change (in Harari and Dire Dawa) or declined (in Addis Ababa). The increase in poverty in urban areas is thus driven by increasing poverty in regional capitals, medium cities, and small towns in other regions. These urban areas had previously experienced some of the fastest decline in poverty.

Figure 11. Regional trends in monetary poverty, 2015/16-2021, (%)



Source: Authors' estimates based on HCES 2015/16 and HoWStat 2021.

Notes: The EAs that were inaccessible in Benishangul-Gumuz in 2021 appear to have been replaced with EAs from areas that were less poor in 2015/16, which could bias the results. The SNNP region has since split into several regions, which are regrouped together in this Poverty Assessment when comparing regional trends over time.

Box 3. What do we know about welfare in Tigray?

The conflict caused the deaths of tens of thousands, created large-scale displacements, and vast humanitarian needs in Tigray. The number of deaths and internally displaced people due to conflict increased drastically (for more details, see Part 2 on Conflict and household welfare in Ethiopia). The conflict further led to widespread crop and livelihood losses, the destruction of the local economy, and impairment of market activities, access to services, and humanitarian assistance.

The conflict in Tigray increased poverty, caused high levels of food insecurity, and large-scale displacement. The conflict erupted in November 2020 at the peak of the main agricultural season (Meher) harvest period when many households had not yet harvested their crops. As the conflict spread into Amhara and Afar, agriculture planting and later harvest were also interrupted in the conflict areas. Lack of access to agricultural inputs could have reduced yields too. Non-agriculture activities were also interrupted by the closure and damage of shops and industrial parks leading to forgone incomes not only during the conflict period but for some time after the conflict. In Tigray, the delivery of social assistance transfers was also suspended and support through the largest social protection programs—the PSNP and UPSNP—were only restarted in April 2023, 2.5 years after the conflict started. High inflation due to increased scarcity and impairment of market functioning further eroded household purchasing power.

All this contributed to a loss in income for households, most deeply among poor households who depended heavily on agriculture and social assistance. Despite survey data not being available for Tigray through HoWStat 2021, conservative estimates based on a simulation exercise for 2020 and 2021 suggest that due to disruptions in livelihoods, households in Tigray lost 46 percent of their income in 2020 and

38 percent in 2021. The poorest quintile lost a greater share (53 percent) of their income in 2020. The variation of losses within Tigray was large. Those around Mekelle lost close to 70 percent of their income in 2020, compared to an estimate of around a third of income lost by households in North-Western Tigray in that period. Though income losses remained high in Tigray zones in 2021 more broadly – ranging from 30 percent in Western Tigray to 55 percent in Central Tigray.

	Year	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Tigray	2020	53%	41%	42%	47%	44%
	2021	39%	35%	40%	40%	36%

The factors driving household income losses differed by region and socio-economic status. Among the poor, household income losses were largely driven by losses in agriculture incomes due to lost harvest and planting opportunities, while losses in business incomes drove losses in income among the top two quintiles. With high conflict intensity in urban areas in 2020, losses in business incomes accounted for a greater share of income losses in Tigray.

Increases in poverty were accompanied by increased acute hunger. As of June 2021, about 5.5 million people in Tigray and neighboring Afar and Amhara (61 percent of the population in northern Ethiopia) were facing high levels of acute food insecurity, resulting from the cascading effects of conflict, including population displacements, movement restrictions, limited humanitarian access, loss of harvest and livelihood assets, and dysfunctional or non-existent markets (WFP, 2022b).

Calorie deficiency and food poverty rates increased everywhere except in rural Amhara, while multidimensional poverty increased in all regions except rural Amhara, Oromia, and Harari. Rural Amhara, where calorie deficiency rates declined was less affected by droughts. Multi-dimensional poverty remains highest in terms of both its incidence and severity, in pastoral regions of Somali (88 percent) and Afar (86 percent), a factor predominantly driven by poor access to services and lack of ownership of durable assets that require electricity connections (see World Bank, 2023). This low access to services such as electricity (grid) and access to piped water in rural areas – despite recent improvements - combined with low education levels explains the high incidence of multi-dimensional poverty outside the predominantly urban regions of Ethiopia (See Annex 3, Table A.3.3).

The poor are concentrated in populous highland areas and are predominantly rural and agricultural with low human capital.

Geographical differences in poverty rates in Ethiopia remain primarily defined by rural-urban differences rather than regional differences (Figure 11). Poverty rates in the three predominantly urban regions ranged between 8 percent (in Harari) and 14 percent (in Dire Dawa) with Addis Ababa at 12 percent. Setting aside Benishangul-Gumuz for reasons stated above, the poverty rates in all other, more rural regions, ranged between 32 percent (Afar and Oromia) and 38 percent (in the group of regions previously forming the SNNP region), hence the gap between them is small. However, there is a wide gap in poverty rates between rural and urban areas within these regions. Poverty rates

in urban areas in all these regions were 21 percent or less, except for Gambella (28 percent) and the group of regions that previously formed the SNPP region (27 percent). Thus, poverty rates in urban areas across most regions are higher but closer to the incidence of poverty in Addis Ababa, with a bigger gap between these urban areas and rural areas within the same regions.

Poverty in Ethiopia is therefore predominantly rural, with the distribution of poor people largely defined by the population size given the narrow differences in poverty rates across regions. Rural areas accounted for 88 percent of all the poor people in the country, which is higher than their share of the population in 2021 (78 percent) but unchanged from 2016. Across regions, Oromia accounts for the largest share of poor people (39 percent), followed by Amhara (25 percent) with these two regions accounting for 64 percent of poor people in the country, hence proportionate to their population. Pastoral regions of Somali and Afar which together cover 61 percent of Ethiopia's land mass, only account for 9 percent of the poor, because they make up only 9 of the population between them (see Annex 3, Table A.3.2). The geographical distribution of the poor thus remains like the pattern in 2016.

Table 3. Composition of the population, poor and non-poor by location, sector, and education level, 2021

	Pop. Share	Poor	Non-poor
Urban	22%	12%	27%
Rural	78%	88%	73%
Drought prone highlands	16%	13%	17%
Drought prone lowlands	9%	13%	7%
Moisture reliable lowlands	3%	4%	3%
Moisture reliable highlands	65%	65%	66%
Pastoral	6%	5%	7%
Head employed in agriculture	73%	85%	67%
Household head works in service/industry	27%	12%	26%
Completed primary education or above	16%	7%	20%
Incomplete primary education	20%	19%	21%
Has no formal education	64%	74%	59%

Source: Authors' estimates based on HoWStat 2021.

The poor are predominantly agricultural but most of them reside in high agricultural potential areas than in drought-prone areas. Pastoral ecological zones made up just 5 percent of the poor while the drought-prone highlands and lowlands ecological zones each accounted for 13 percent of the poor. As such, two-thirds of the poor reside in moisture reliable highland areas that also account for 65 percent of Ethiopia's population (Table 3). Poverty in Ethiopia is therefore largely a story of unrealized agriculture potential given the geographical location of most of the poor, combined with the fact that 80 percent of the poor are employed in agriculture. That a significant share of the non-poor (60 percent) works in agriculture demonstrates the potential for reducing poverty among agricultural households.

Poor households in Ethiopia have more children than the workers needed to support them and are poorly educated. A typical poor household has 6 people, about half of them children under 15. The dependency ratio of 1.26 suggests that workers in poor households support more people than workers in non-poor households which have a dependency ratio of 0.84 and have smaller households (4 people) with fewer children (Table 4). Though slightly more educated than poor people, most non-poor people still have lower levels of education. Half of them have no formal education – but an even higher share of the poor (61 percent) has no formal education. Just 19 percent of the non-poor have completed primary education (13 percent) or above (6 percent) though this is almost triple the share of poor people with complete primary education or above. This lack of skills could be a barrier to access to better economic opportunities. This will be discussed further in Chapter 7.

Poor households face significant disparities in access to public services and living conditions. Half of the households in the poorest quintile experience overcrowding (four or more people per room), compared to just 8 percent in the richest quintile. The construction quality of homes also varies, with poorer families more likely to live in houses made of substandard materials. Sanitation facilities are accessible to 37 percent of the richest families, but only 14 percent of the poorest. While 53 percent of the richest families have electricity, this is true for only 14 of the poorest. Access to safe water access is more equitable, yet still favors the richest quintiles (81 percent) over the poorest (59 percent). Asset ownership further illustrates the divide. Less than 1 percent of the poorest quintile own refrigerators, cars, bicycles, or computers, and there is a significant gap in the ownership of cell phones (47.5 percent vs. 74.1 percent), televisions (3.7 percent vs. 33 percent), and radios (9.7 percent vs. 20.4 percent) when compared to the richest quintile. The only assets the poorest households are more likely to own than richer households are farm implements, reflecting the higher incidence of poverty among agriculture households.

Table 4. Demographic characteristics of poor and non-poor households, 2021

	Poor	Non-poor
Male headed household	80%	75%
Age of household head (years)	46.4	43.8
Household size	5.92	4.11
Adult equivalent	4.95	3.40
Number of working members	2.92	2.33
Dependency ratio	1.26	0.84
Number of members below 15 years of age	2.84	1.60
Number of members above 64 years of age	0.17	0.18

Source: Authors' estimates based on HoWStat 2021.

Market and public service accessibility is a key driver of poverty reduction, yet the poorest households often face isolation from these critical resources. The average distance to food markets for the poorest is 7km, compared to just 4km for the richest. The richest households have better access to climate-resilient roads that are usable throughout the year. Financial services present another divide. Poor households have significantly less access to institutions such as banks and microfinance than their richer counterparts. Educational services exhibit similar disparities on access to secondary schools which is more limited for the poorest compared to the richest. Access to primary school access is generally equitable. Likewise, primary healthcare facilities are accessible to all income groups, but hospitals are on average 36km away from the poorest household compared to the average of 23km for the richest.

The poorest households are disproportionately affected by climatic shocks and food shortage, while the richest are more often impacted by conflict. Objective measures of climate shocks such as the Palmer Drought Severity Index (PDSI), indicate more severe conditions for the poorest households. Market shocks, which include fluctuations such as increases in food prices, higher prices for agricultural inputs, and decreases in output prices, are slightly more common among the richest quintile (18 percent) than the poorest (15 percent). Contrary to expectations, insecurity, violence, and conflict related shocks tend to impact the richest households more than the poorest, suggesting that such conflicts are urban centered. The prevalence of employment and health shocks is relatively even across different levels of welfare. These patterns will be discussed in more detail in Part 2 of the report.

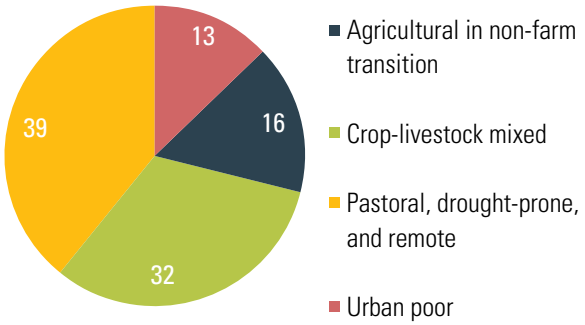
Social assistance programs, such as the Rural Productive Safety Net Program (PSNP) and the Urban Productive Safety Net and Jobs Program (PSNJP), along with humanitarian aid, primarily

cover the poorest. Approximately, 16 percent of households in the lowest income quintile are enrolled in or receive transfers from PSNP, either through public works or direct support. In contrast, 4.5 percent of the wealthiest quintile households benefit from PSNP. Humanitarian aid shows a broader distribution, benefiting 15 percent of households in the lowest expenditure quintile and 6.6 percent in the highest quintile. Despite the higher frequency of direct cash transfers from the government through safety nets and aid among the poorest and most vulnerable households, the coverage is modest (10.3 percent) considering the high poverty incidence in the country.

The differences among the poor are defined by agriculture dependency, connectivity, drought exposure and access to land.

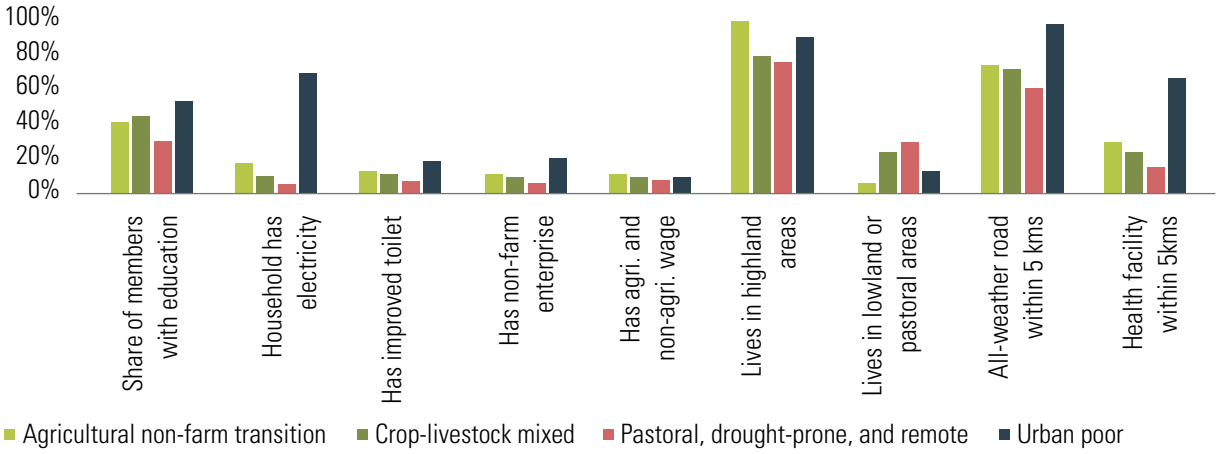
The poor are not a homogenous group and can be classified into four distinct groups. These groups are identified using cluster analysis – a statistical technique that partitions individuals into groups to maximize the similarity of individuals within each group while maximizing the dissimilarity between groups. The outcome has been modified to create four distinct subgroups of the poor (Figure 12). The first group of the poor–*rural agricultural households in non-farm transition*–are concentrated in Oromia, SNNP, and Amhara regions. The second group–crop-livestock mixed rural households–also seems to be concentrated more in Oromia, SNNPR, and Amhara regions. The third group–pastoral, drought-prone, and remote rural households–is concentrated in Oromia, Amhara, and Somali regions. The fourth group – urban poor–is concentrated in Oromia, Amhara, and SNNPR.

Figure 12. Composition of the poor by subgroups (%), 2021



Source: Authors' estimates based on HoWStat 2021.

Figure 13. Household characteristics by subgroups of the poor, 2021 (% of household in the subgroup)



Source: Authors' estimates based on cluster analysis using HoWStat 2021.

The constraints faced by these groups of the poor are different. For the rural poor, the primary constraints include limited education, lack of non-farm income opportunities, few assets, low connectivity, and remoteness (Figure 13). The first group of the poor is in areas with high agricultural potential and tends to have more diversified employment and livelihoods. Although reliant on crop production, they benefit from a broader economic base, being less remote and better connected. In contrast, the second group of the poor, although in areas with good agriculture potential, primarily engages in mixed farming systems that combine crop cultivation with livestock and are concentrated in moisture-reliant agroecological zones. The third group of the poor consists of pastoralists and rural households in drought-prone areas. These groups are often more isolated and suffer from the lowest level of human capital and asset ownership (excluding livestock). The last group of the poor, the urban poor, presents a different group. They represent urban households with limited access to formal employment, with most finding informal work in the service sector.

DRIVERS OF THE INCREASE IN POVERTY

This section analyzes the drivers behind the observed increase in poverty between 2015/16 and 2021. *It starts by decomposing changes in poverty into the contribution of growth and inequality, changes within locations, employment/income types, and shifts across them, and then applies advanced statistical techniques to estimate the impact of various shocks on household welfare and poverty. The primary driver of the observed increase in poverty between 2015/16 and 2021 was a backslide of welfare across the entire population rather than increases in inequality, which declined. This welfare back slide reflected a lack of income growth mainly because incomes did not rise fast enough to keep up with inflation – a finding that is validated by more sophisticated statistical analysis. The reduction in agriculture and self-employment earnings, respectively, contributed the most to the increase in poverty in rural areas and urban areas. Rural households failed to capitalize on rising prices because only a few of them produce a marketable surplus – a legacy of the country's agricultural policies. Analysis of poverty transitions using panel data shows that exposure to shocks also contributed to the increase in poverty. Safety nets helped reduce the depth of poverty among beneficiaries, but limited coverage limits its broader impacts. Beyond shocks, low human capital and low access to better income generating opportunities are underlying contributors to poverty.*

Poverty increased due to a generalized decline in welfare across the entire distribution.

Inequality declined between 2015/16 and 2021 as the non-poor faced worse welfare losses than the poor. The Gini coefficient declined from 0.32 in 2015/16 to 0.29 in 2021 (Figure 14). Inequality declined because households in all parts of the distribution became worse, but with consumption declining more among the non-poor. Behind this decline was a drastic reduction of inequality in urban areas (9 Gini points), to a similar level of inequality than in rural areas in 2021 (Gini of 0.27) and a narrowing of the gap between rural and urban areas. In fact, the share of the Gini coefficient that can be attributed to differences between urban and rural areas fell from 29 percent in 2015/16 to 21 percent in 2021 (see Annex 3, Table A.3.5), while the gap in mean consumption between urban areas and rural areas declined from 76 percent to 42 percent in the same period. Inequality also declined across all regions, with a significant reversal in regions like Somali where inequality had been rising fast (see Annex 3, Table A.3.5).

Figure 14. Trends in inequality (Gini coefficient), 2010/11 - 2021

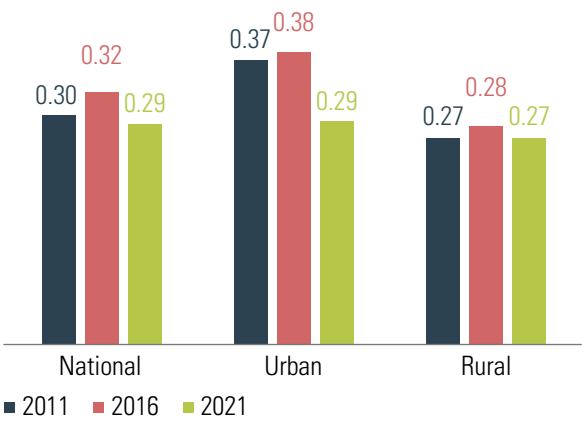
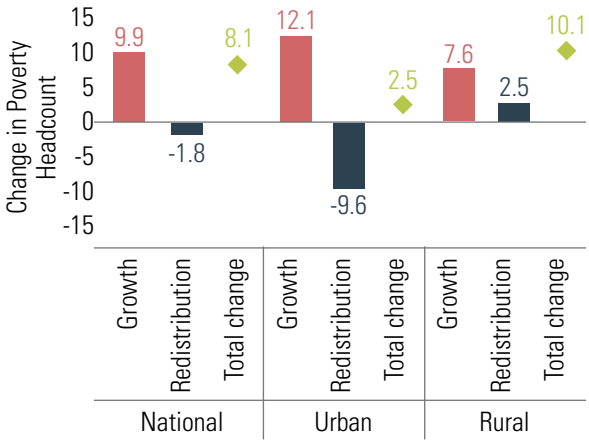


Figure 15. Decomposition of poverty changes due to growth and inequality, 2015/16 – 21 (pp change)



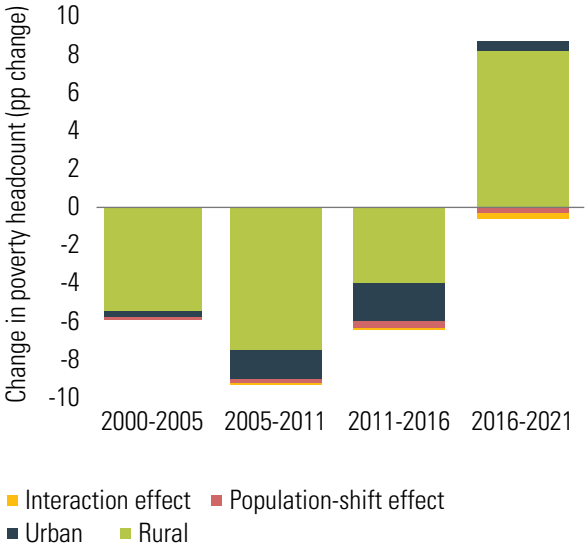
Source: Authors' estimates based on HCES 2015/16; HoWStat 2021.

Notes: Growth-inequality decompositions follows methodology in Datt & Ravallion (1992).

Therefore, the increase in poverty observed in recent years was due to negative growth in households' welfare rather than changes that led to a more inequitable distribution of welfare. The change in poverty between 2015/16 and 2021 can be decomposed into the contribution of growth and changes in inequality (Figure 15). The growth contribution suggests that the poverty rate would have increased by 9.9 percentage points if consumption for every household had declined at the same rate as the decline in average consumption during this period. The redistribution contribution suggests that poverty would have declined by 1.8 percentage points, if only inequality had reduced as observed, without the accompanying decline in average consumption. The final poverty rate decline of 8.1 percent is hence primarily because of declining growth, marginally tampered by this decline being steepest among people that were better off to begin with. These off-setting contributions explain the small drop in poverty in urban areas where average consumption declined more, but the smaller-than-average decline in consumption for households close to the poverty line meant that urban poverty increased less. Meanwhile, in rural areas, consumption for households close to the poverty line declined by slightly more than the rural average, amplifying the overall increase in rural poverty.

From a spatial perspective, most of the increase in poverty was driven by increasing poverty in rural areas and in the highlands. The larger share of the population in the countryside and the higher increase in poverty among rural household's accounts for 90 percent of the increase in poverty during 2015/16-21. This reversed the trend observed since 2000, when rural poverty declines drove the national poverty declines, although urban areas had also contributed to poverty reduction more than proportionally to their population share (Figure 16). The contribution of population shifts between rural and urban areas was negligible, as always has been the case in Ethiopia. Most of the increase in poverty rural areas is driven by the Highlands areas, because the highlands host over

Figure 16. Decomposition of poverty changes by intra-location changes and population shifts across locations (pp change), 2015/16 – 2021

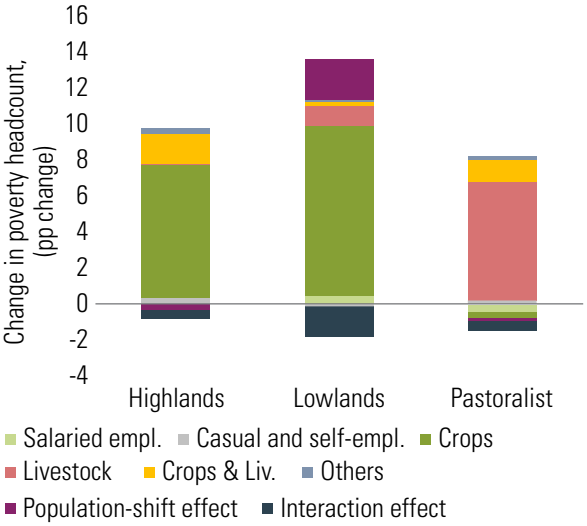


Source: Authors' estimates based on HCES 2015/16; HoWStat 2021.
Notes: Methodology follows Ravallion & Huppi (1991).

80 percent of the rural population, although poverty increased slightly less there. Poverty increased by more in lowland areas, but they only contributed to 10 percentage points of the increase in poverty owing to their smaller population shares.

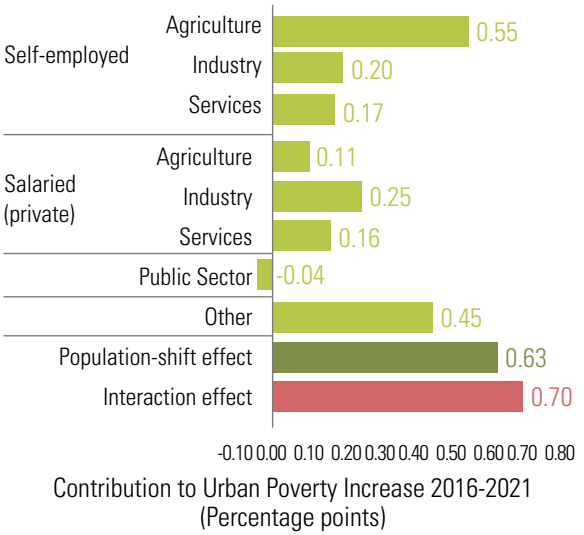
Reduced incomes from on-farm activities were the primary drivers of increasing poverty in rural areas, but with variations across ecological zones. The increase in poverty was driven by declining consumption among households that rely on on-farm incomes across the highlands, lowlands, and pastoralist areas (Figure 17). In highland and lowland areas, rising poverty was primarily driven by an increase in poverty among crop growers. While Lowlands households show a similar profile to the highlands, switching across different livelihood styles was the second largest contributor to the poverty increase in lowland areas – accounting for close to 19 percent of the increase in poverty in there – and third was rising poverty among herders. Meanwhile, rising poverty among mixed crop and livestock farmers was the second largest contributor to rising poverty in highland areas. Rising poverty among the herders mainly contributed to the increase in pastoral poverty.

Figure 17. Decomposition of poverty changes in rural areas by changes within income types and shifts across income types, 2015/16 – 2021



Source: Authors' estimates based on HCES 2015/16; HoWStat 2021.
Notes: Methodology follows Ravallion and Huppi (1991).

Figure 18. Decomposition of poverty changes in urban areas by changes within employment sectors and shifts across sectors, 2015/16 – 2021



Source: Authors' estimates based on HCES 2015/16; HoWStat 2021.
Notes: Methodology follows Ravallion and Huppi (1991).

In urban areas, declining earnings from self-employment are behind most of the decline in living conditions during 2015/16-2021. The urban self-employed contributed to 0.9 out of 3.2 percentage points increase in the urban poverty rate while increasing poverty among households dependent on salaried employment in the private sector contributed to 0.52 percentage points (Figure 18). Poverty does not show an increase among public sector workers, due to them being located safely above the poverty line rather than being cushioned from the decrease in their consumption levels. The population-shift effect and interaction-effect (altogether, larger than any other sector) signal that workers switched to sectors or forms of employment characterized by higher poverty rates. This is consistent with findings from the high frequency surveys monitoring the impacts of COVID-19 (Ambel et al., 2021). Household enterprises closed and the surviving ones were less profitable. Employment in industry declined and peopled switched to more self-employment, casual employment, and family work after the COVID-19 pandemic. Poverty in urban areas thus increased because people moved to historically lower earning self-employment which was also suffering from the impacts of the COVID-19 pandemic.

Household income gains were wiped out by inflation, driving the increase in poverty.

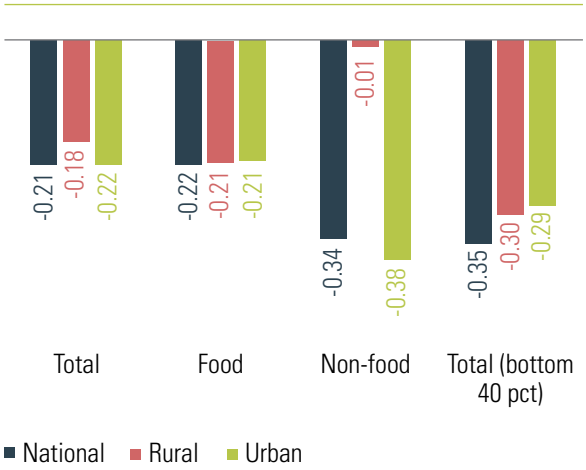
The deficit in real household consumption growth that drove the observed increase in poverty was in part due to high inflation. Mean household consumption per adult equivalent doubled in nominal terms between 2015/16 and 2021. However, this primarily reflected inflation rather than real gains. Nationally, mean consumption declined by close to 22 percent in real value (Table 5). The real value of non-food consumption declined by more than food consumption in urban areas, reflecting that households relying more on market purchases of both food and non-food goods sacrificed non-food spending to try to meet their food subsistence needs. Consequently, the share of food in total spending rose by more than 7 percentage points in urban areas to almost 53.8 percent in 2021. In contrast, food consumption declined by slightly more than non-food

consumption among rural households – for whom food production is the primary source of income. Rural households would have to sell some of their food production even if they are not in surplus to finance non-market purchases. The food share in total consumption among rural households slightly declined to 54.3 percent, which is a statistically insignificant change, hence food and non-food expenditure composition was unchanged.

Incomes did not rise fast enough to catch up with rising consumer prices. This can be seen from a comparison of growth in different sources of income reported by households in the Ethiopia Socio-Economic Surveys (ESS) conducted between 2015/16 and 2022 (Annex 3, Figure A.3.1). Crop incomes almost doubled in nominal terms, while non-agriculture wage and self-employment nominal incomes respectively, increased by 73 percent and 43 percent. But when corrected for inflation, their real values declined by between 53 and 43 percent. Income from transfers also declined, as social assistance benefit amounts were not fully adjusted for inflation. Only livestock incomes appear to have increased, which should be interpreted with some caution since the nomadic population that was more exposed to drought is not covered in the ESS, yet they account for the lion's share of the national livestock herd.

Not only was the overall impact of inflation negative, but the impact was uneven across regions of the country. This is shown from causal estimates based on a statistical method (difference in difference approach) that uses comparisons between enumeration areas which faced above average food price increases with the other enumeration areas of the country in the Ethiopian Socioeconomic Panel Survey (ESPS) 2018/19 -2021/22 (Box 4). The results show that total consumption and food consumption of households in areas more severely hit by food inflation declined by about 21 percent more than the rest, with impacts of similar magnitude in both urban and rural areas (Figure 19). The largest impact is observed in non-food consumption in urban areas, where the decline was close to 40 percent larger in areas that were more severely hit. Restricting the analysis only to households that belong to the bottom 40 percent of the country shows that the differentiated impacts of inflation were even larger among them. These results are consistent with the patterns observed for real consumption growth in the HoWStat 2021 data presented earlier. That means the increase in the general price level contributed to the observed decline in welfare.

Figure 19. Impact of incremental inflation on household welfare



Source: Authors' estimates based on ESPS 2018/19; 2021/22.

Notes: The dependent variables are total consumption (total), food consumption (food), nonfood consumption (non-food), and total consumption for the bottom 40 percent (total bottom 40 pct).

Table 5. Comparison of growth in nominal and real consumption per adult equivalent (Birr), 2015/16- 2021

		Nominal consumption			Real consumption		
	Location	2016	2021	Change (%)	2016	2021	Change (%)
Total consumption	National	14,723	29,688	101.7	38,594	31,714	-21.7
	Urban	22,135	43,793	97.8	58,024	40,663	-42.7
	Rural	12,422	24,820	99.8	32,564	28,625	-13.8
Food consumption	National	7,619	15,679	105.8	19,973	17,161	-16.4
	Urban	10,277	21,875	112.9	26,941	21,860	-23.2
	Rural	6,794	13,540	99.3	17,810	15,539	-14.6
Nonfood consumption	National	7,104	14,010	97.2	18,621	14,553	-28
	Urban	11,858	21,918	84.8	31,084	18,803	-65.3
	Rural	5,628	11,280	100.4	14,754	13,086	-12.7

Source: Authors' estimates based on HCES 2015/16 and HoWStat 2021.

Box 4. Estimating the welfare impact of inflation in Ethiopia

Wieser and Yitbarek (2024) use the last two waves of the Ethiopian Socioeconomic Panel Survey (ESPS) and difference-in-difference approach to investigate the differentiated impact of high food inflation on household's welfare in rural and urban Ethiopia. They classify enumeration areas (EAs) in the country into areas that faced above average price increases and areas that faced below average prices. Unit prices from the from the ESPS 2018/19 and 2021/22 rounds are used to create a Laspeyres price index, which is a fixed-base index that uses the quantities of goods and services in a base period as weights. If the Laspeyres price index of the EA was higher than the national median in 2019, households in that EA are classified as high inflation (H) households but are classified as a low-inflation (L) households if the EA's Laspeyres index is less than or equal to the national median. A similar categorization was done using the Paasche index for robustness checks.

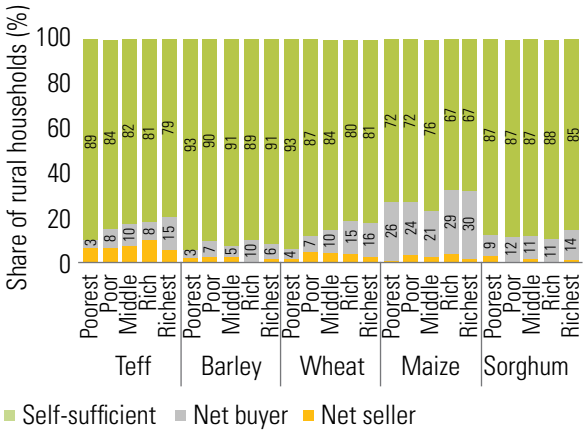
The differences in inflation across regions can be attributed to differences in local prices and household consumption baskets (inflation was measured using increases in a Laspeyres index) assuming that the changes in outcomes for households in areas with high and low inflation would have been comparable in the absence of food inflation. This is estimated from a regression using equation 1, where γ_{ite} is the observed welfare outcome for the i_{th} households living in EA e at time t, measured through consumption expenditure per adult equivalent per year, monetary poverty (based on the bottom 20 percent and 40 percent of the consumption expenditure), nutrition security and multidimensional poverty, post is a dummy variable that takes the value 1 for 2021 or 0 for 2019, H_i is a dummy variable that takes the value 1 if a household enumeration area Laspeyres price index was higher than the national median or 0 otherwise. post*H is an interaction term. εi is the error term, X_{it} is a vector of control variables which include the gender, age, education, marital status, and occupation sectors of the household head, γ_s and δ_t are the EA fixed effects and the time fixed effects. β_1 is the difference-in difference estimator which is computed by comparing the first differenced values of the outcome variables for the high and low-inflation household groups as in equation 2: Standard errors are clustered at the EA level to allow for within-cluster correlation.

$$\gamma_{it} = \beta_0 + \beta_1 (\text{post}) + \beta_1 (\text{post}_t * \text{H}_{st}) + \beta_{1\,x} X_{it} + \gamma_s + \delta_t + \varepsilon_{it} \quad (1)$$

$$\beta_1^{DD} = \left(\bar{\gamma}_1^{H} - \bar{\gamma}_0^{H} \right) - \left(\bar{\gamma}_1^{L} - \bar{\gamma}_0^{L} \right) \quad (2)$$

The results of this analysis show that high food inflation affects households differently based on their consumption level and, for non-food consumption, based on their location (urban or rural). Household consumption, both for food and non-food items, was more negatively impacted in above-average food inflation regions in the country. Households living in regions with above-average food inflation experienced a decrease of 21.4 percent, 21.5 percent, and 34 percent in total consumption, food consumption, and non-food consumption, respectively, compared to households in below-average food inflation. The impact of above-average inflation was more significant in urban households where households experienced a decline of 20.8 percent and 37.6 percent in food and non-food consumption, respectively, compared to households in regions where inflation was below average.

Figure 20. Rural households net market position by food crop, 2022



Source: Authors' estimates based on ESPS 2021/22.

Notes: A household's net market position is defined based on the net buyer ratio (NBR) of a food item which is calculated as net production (production-consumption) divided by total household consumption. It expresses the household food production and consumption gap relative to a household's expenditure. Households are classified based on their NBR as follows: Net Buyers (NBR < -0.05); Net Sellers (NBR>0.05) and Self-sufficient (-0.05 < NBR < 0.05).

Farming incomes did not keep up with rising prices even though food prices rose faster than non-food prices because most rural households do not produce a marketable surplus needed to capitalize on rising food prices. This is evident from looking at rural households' market position for five major cereals (teff, wheat, maize, sorghum, and barley) that are the core of Ethiopia's agriculture and food economy, accounting for about three-quarters of the total area cultivated (Taffesse et al., 2011). Households – especially those less well-off - are mostly self-reliant for most of these crops. Just a small share of households produced a marketable surplus across all crops in 2022 (Figure 20). For instance, less than 10 percent of households produced a large enough surplus of teff which has a greater share of net sellers than other crops. Those that participated more intensively in the market are more likely to be net buyers instead and hence are negatively impacted by food prices increase, especially for maize for which between 21 and 30 percent of households are net buyers. Moreover, even when there is evidence of crop diversification among Ethiopian rural households (Tesfaye, 2022) so that they can protect their consumption, most households still need to go to the market to complement their diets and buy non-food goods and services, hence suffering the negative impacts of the prices increases in the period.

Indeed, estimates of the short run impact of rising cereal prices suggest that the aggregate welfare impact among rural households is negative. The short run impact of rising food prices can be estimated using a net benefit ratio (NBR) which is calculated for each crop by taking a household's production net of its consumption and then dividing

Figure 21. Share of households selling at least one cereal crop, 2022

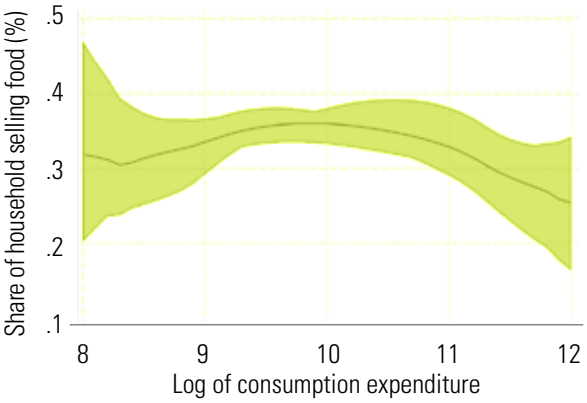
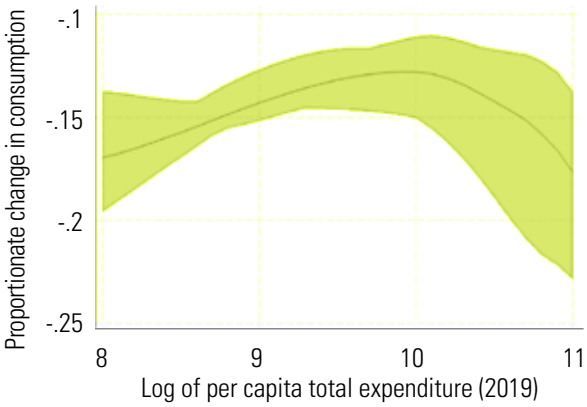


Figure 22. Welfare losses from rising food prices, 2022



Source: Authors' estimates based on ESPS 2021/22.

Notes: The net buyer ratio (NBR) of a food item is calculated as net production (production-consumption) divided by total household consumption.

it by a household's total expenditure. Net producers will have a positive NBR, which is higher the greater their surplus over their consumption of the crop. The opposite is true for net buyers. On average a third of households are net producers of at least one cereal food (Figure 21), but most are also net buyers of other crops. Therefore, the net benefit ratio is aggregated over crops to determine the net market position of households across many cereals they consume. The NBR is found to be negative for households across the entire welfare distribution in 2022, with steeper welfare declines among the poorest households (Figure 22). Shimeles and Woldemichael (2023) found results consistent with these patterns in a previous period-rising food prices only benefit land-rich rural households and that a rise in agricultural food prices increases overall poverty rates in rural areas of Ethiopia.

The limited benefit of rising food prices to rural households reflects a legacy of Ethiopia's agriculture policies. To combat food insecurity, the government focused on food self-sufficiency achieved with heavy state interventions in both input and output markets. This achieved results in terms of increasing yields for specific crops like maize, but other distortions such as export bans limited supply response to prices changes. For long periods of time, the domestic price for maize was significantly below the international price. Estimates by FAOSTAT, put Ethiopia as the only country in East Africa whose nominal protection rates for maize protection (at -47 percent in 2017) suggest that there is a price disincentive faced by farmers. Other distortions in the input markets result in suboptimal availability of inputs such as fertilizers, while the focus on self-sufficiency of the past contributed to sub-optimal land use choices (see World Bank, 2022).

Exposure to drought and climate shocks pushed people into poverty.

Recent exposure to drought shocks reduced consumption and is associated with an increase in poverty. Past studies found evidence of the negative welfare impacts of droughts. Hill and Porter (2016) for example, find that drought shocks reduce consumption by 9 percent, while increasing vulnerability to poverty in rural Ethiopia. This is corroborated with new analysis using recent survey data from the ESPS data for 2018/19 and 2021/22, overlaid with an enumeration level Palmer Drought Severity Index (PSDI) – a standardized indicator calculated using precipitation, temperature, and soil-water balance to measure deviations from average soil moisture conditions monthly. This shows that drought exposure is associated with increases in poverty , and child malnutrition (Table 6). Exposure to drought leads to a 6 percent increase in poverty (consumption below $2.15 per day per capita) and a 1 unit increase in drought intensity is

associated with a 3 percent increase in poverty (Table 6). Drought exposure and intensity leads to an increase child underweight and stunting. The results remain robust after accounting for historical variations in rainfall. Other estimates using Mobile Population Survey (MPS) data collected among pastoralists in 2021, find that exposure to drought reduced consumption among pastoral communities by at least 15 percent (World Bank, 2023). Additional analysis focusing on the incidence and long-term impacts of climate shocks is presented in Chapter 5.

Table 6. Estimated impacts of drought exposure on welfare

Explanatory variable	(1) Log consumption	(2) Poverty Rate ($2.15)	(3) Household has underwight child	(4) Household as stunted child
Drought (binary)	-0.08	0.06**	0.06***	0.07***
(Estimation 1)	(0.06)	(0.03)	(0.02)	(0.02)
Drought (intensity)	-0.05	0.03*	0.03*	0.03**
(Estimation 2)	(0.03)	(0.02)	(0.01)	(0.02)
Controls	Yes	Yes	Yes	Yes
Observations	47,368	47,368	47,368	47,368

Source: Authors' estimates based on HCES 2015/16 and HoWStat 2021.

Note: The impacts of drought (binary and intensity indicators) are estimated in separate regressions. The drought indicators are derived from the Palmer Drought Severity Index (PSDI), using a dummy for a drought shock if PDSI < 0 or the PDSI z-score as a proxy of drought intensity. Since drought is assumed to be exogenous, the impact of a drought shock is estimated using standard panel econometrics models based on whether the outcome variable is continuous or binary outcome. The regressions include control variables such as the gender, age, and education status of the household head, family and farm sizes, distance to markets, and time-fixed effects. Estimated impact on food poverty is positive and significant but insignificant on dietary diversity score (not shown). The estimated impacts are significant and have the expected signs when drought frequency is used.

Conflict had a direct negative welfare impact. The exact quantification of the welfare impacts of the recent conflict are complicated by the fact that data could not be collected from the areas that experienced the most intense conflict. That conflict exposure is not random - conflict events may occur near urban areas with more resources available to capture, near strategic locations, or disenfranchised populations where recruitment is easier – means the correlation between conflict and household welfare may not reflect the causal effect of conflict. Best estimates are obtained from using the MPS 2021 and the ESPS 2018/19 and 2021/22 household data geographically matched to geo-coded conflict events information from ACLED, to exploit the variation in distance to regional borders to indirectly infer (i.e., instrument for) household exposure to conflict since border disputes and ethnic tensions along borders have fueled much of the conflict in Ethiopia (Box 5). In Amhara and Afar, the conflict spilled across the border with Tigray.

Box 5. Estimation of the impact of conflict on household consumption growth

The impact of conflict exposure on household consumption growth is estimated using the ESPS 2019 and 2022 rounds by geographically matching households to conflict events from September 2019 to April 2022, which includes the intense country-wide spike in conflict that accompanied the war in Tigray. Since Tigray was not included in the 2022 survey due to security concerns, the analysis of household consumption does not include households in Tigray but focuses on the extensive conflict that occurred outside Tigray. An instrumental variable (IV) strategy based on the distance to the nearest internal regional border is used to estimate the impact since conflict events may occur for various reasons – for example, near urban areas with more resources available to capture, near strategic locations, or where recruitment is easier – which may be correlated with household characteristics that drive both household welfare and conflict. Distance to regional borders is a useful variation to use because border disputes and ethnic tensions along borders have fueled much of the conflict in Ethiopia over the past decade, while in Amhara and Afar, the conflict has spilled over across the border with Tigray. This is a common instrument used in the economics literature studying conflict (Hönig, 2021; Rohner et al., 2013; Serneels & Verpoorten, 2015). The required assumption is that distance to the nearest regional border affects changes in household welfare only through its effect on increased violence exposure after controlling for various geographic and household characteristics.

Variable type	Variables	Source
Conflict exposure	Days with conflict events within proximity (km) of household	ACLED
Baseline geographic controls	Region, nearest regional border, pre-period violent events within 20km, urban, Zone capital, Woreda town, distance to nearest Zone capital, distance to nearest Woreda town, whether there is a weekly market, distance to weekly market, type of road access, distance to asphalt road	ESPS 2019
Baseline demographics	Household size, age and education composition, household head gender	ESPS 2019
Baseline welfare controls	Log consumption per adult equivalent, log income per capita, has crops, has livestock, income shares of crops and livestock, farm area, tropical livestock units, dietary diversity, months of food insecurity in past year	ESPS 2019
Additional controls	Whether the household moved between waves (8% of the sample)	ESPS 2022

This IV strategy is most appropriate in the northern regions of Amhara, Afar, and Benishangul-Gumuz borders, and we focus our analysis on these areas. In these areas, border distance is a strong predictor of conflict because of various regional border disputes (such as in Afar along the Somali-Afar border), ethnic tensions along borders (such as between ethnic Gumuz and ethnic Amhara in Benishangul-Gumuz close to the Amhara border), and the spillover from the Tigray crisis in Amhara and Afar. The excluded region with the most conflict is Oromia, where Oromo-nationalist groups largely drove conflict and was less correlated with distance to borders, making it difficult to include in the IV analysis with reliable results. The regression controls for region fixed effects and various geographic and household characteristics (see Table above).

The welfare impact in high conflict affected areas has been severe. Analysis using ESPS data for households in Afar, Amhara and Benishangul-Gumuz, shows that for every additional day of violent conflict within 10km, household consumption growth was 5.2 percent slower than the average without conflict. It was 9 percent slower if there was a fatality (Table 6). These estimates are based on data that did not cover some of the areas that were most intensively affected by conflict. Estimates using the MPS 2021 which covered Afar zones affected by the Northen Ethiopia conflict, suggest that each additional day a conflict event within 20km to the household between November 2020 and the survey date, was associated with a 22.1 percent decrease in consumption expenditure. The closer the conflict event the greater the impact. The incidence and impacts of conflict will be further discussed in Chapter 6.

Beyond shocks, low endowments and lack of opportunities contributed to poverty.

Low human capital endowments reduce the productive potential of households, lowering their welfare. A key factor is the availability and quality of labor among households. A typical poor household in Ethiopia has 6 household members with 2 working-age people, hence a high dependency ratio than non-poor households that typically have 4 people with at least two working-age people. Estimates suggest that a higher dependency ratio is associated with lower consumption and a higher likelihood of poverty. For example, the consumption per adult equivalent for a household with 2 adults and 4 children is 10 percent lower than a household with 3 adults and 3 children but similar in other characteristics. Furthermore, consumption is much less when a greater share of these households' members has no formal education. The consumption of a household with just one of three adults never having been to school would be 39 percent more than the consumption of a similar household with two adults without any formal education among the three adults. The high dependency ratio and low educational attainment among poor households is thus a contributing factor to poverty in Ethiopia.

Limited access to better economic opportunities further limited the income generating potential of households due to both underutilization and lowering returns to labor. Households with a high share of unemployed adults have lower consumption and are more likely to be poor. The consumption per capita of a household having one of three adults not working, will be 40 percent lower than when two of the three adults are working, all other factors being the same. The more adults working in services sectors, the higher the consumption per capita consumption of the household. Recent trends that saw more people becoming unemployed and dropping out of the labor force altogether, would have reduced household consumption and increased poverty. This will be discussed further in Chapter 7.

Table 7. Estimated impacts of conflict exposure on household consumption growth

Explanatory variable	Proximity threshold			Proximity threshold		
	10km	20km	30km	10km	20km	30km
Days with Violent Events	-0.052*	-0.025*	-0.012*			
	(0.028)	(0.014)	(0.006)			
Days with Fatalities				-0.090**	-0.040*	-0.020*
				(0.045)	(0.021)	(0.010)
Controls and region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1027	1027	1027	1027	1027	1027

Source: Authors' estimates based on ESPS 2018/19 and 2021/22; Armed Conflict Location & Event Data Project (ACLED); www.acleddata.com
Notes: The outcome variable is the change in log of household consumption per adult equivalent between ESS 2019-2022 (spatially adjusted and adjusted for inflation). Event days are the number of days with violent events - explosions/strikes and violence against civilians excluding political arrests - within 10, 20, or 30 km of the household in between ESPS waves. Fatality days are days where at least one fatality occurred. Population weights adjusted for attrition. Standard errors clustered at the EA level.

However, some of the improvements in access to public services might have helped moderate the increase in poverty. The consumption per adult equivalent of households with access to electricity is at least 20 percent higher than those without access to electricity. At the same time, household consumption is higher and the likelihood of being poor is less, the closer the household is to an all-weather road. Proximity to a food market seems to affect only absolute and food poverty. The positive impact of improved connectivity has been established in other studies estimating the causal relationship between road expansion programs and household welfare (Nakamura et al., 2020). The observed positive impact suggested that recent improvements in access to electricity and roads could have helped offset the negative impacts of some of the factors discussed above.

The interplay of shocks, low endowments, and poor opportunities has increased vulnerability.

Panel data evidence also highlights how exposure to economic shocks plays a role in poverty dynamics in the country, as movements out and into poverty have been common in recent years. Results from the ESPS show that close to half of households living in poverty in 2022 were not poor in 2019 (Ambel, 2024). While the period covered by this panel study is shorter than the inter-survey period used for the rest of the chapter, it still provides strong evidence of mobility in and out of poverty in Ethiopia during a period in which multiple economic shocks affected households' livelihoods. Out of the 33 percent of the country identified as poor in 2022, almost half (16 percent) were also poor in 2019, while the remaining (17 percent) were households that fell into poverty between 2019 and 2022. Among the non-poor, in contrast, there is less mobility, as out of the 67 percent of the country identified as non-poor in 2022, almost three-fourths (49 percent) were also non-poor in 2019. The remaining fourth (18 percent) are households who escaped poverty between 2019 and 2022. An analysis of household characteristics shows that the chronically poor (i.e., poor in both 2019 and 2022) tend to have lower educational achievement and lower access to basic services; and are located further away from the local markets, compared to those who were poor in only one period. This signals the importance of human capital, access to services, and connectivity to markets to escape poverty, though, at the same time, they are not silver bullets that guarantee escaping from poverty permanently.

Social safety nets helped mitigate impacts among the beneficiaries.

Social assistance programs partly helped reduce the depth of poverty among beneficiaries. Beneficiaries of the PSNP program tend to be poorer – evidenced by the negative correlation between being a PSNP beneficiary and household consumption. However, estimates using methods that compare PSNP beneficiaries with non-PSNP beneficiaries who are similar in circumstances show that the consumption of PSNP program beneficiaries is at least 10 percent higher. This suggests that the PSNP program reduces the depth of poverty, given that most beneficiaries are still poor. However, the program's limited coverage of the poor limits its broader impacts.

Indeed, social safety nets in Ethiopia have played a pivotal role in increasing food security and reducing the depth of poverty. Evidence suggests that PSNP significantly contributed to poverty reduction until 2016 but progress stalled since. In 2015/16, 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 (World Bank, 2020). Though few beneficiaries graduate from the program, the PSNP shows a positive and significant impact on the welfare of households by reducing the number of months of food shortage and increasing livestock ownership in highland areas (with no significant impact in lowland areas) (IFPRI and IDS, 2022). In urban areas, the UPSNP had positive impacts in Addis Ababa by increasing public employment, improving local amenities, and increasing private sector wages across neighbourhood (AE) by 18.6 percent (Franklin et al., 2024). In terms of targeting performance, the UPSNP's reliance on a combination of geographic and community-based targeting performs reasonably well and UPSNP beneficiaries are poorer than the poorest urban residents (Wieser et al., 2021).

Given the positive impacts and good targeting performance, safety nets in Ethiopia should be expanded as they are well placed to compensate existing beneficiaries in cases of future shocks (such as a sharp rise in inflation). The geographical coverage of both rural and urban safety nets program should be expanded to cover a larger share of the poor. In 2021, the UPSNP covered 4.6 percent of the urban and PSNP 11.8 percent of the rural population. Together, they covered 10.3 percent of Ethiopians (Table 7) which explains the limited coverage of the poorest 20 percent households by social safety nets programs. Expanding safety net programs and better aligning regional caseloads to needs can support the poor in responding to economic shocks. Moreover, increasing the adequacy of benefits, especially in rural areas which are supported under the PSNP which has a lower adequacy of benefits than the UPSNP which supports urban areas—is vital to support the poor in times of hardship.

Table 8. Safety net coverage in 2021

	% of population		% of households	
	All	Poorest quintile	All	Poorest quintile
National	10.3%	16.8%	9.2%	16.1%
Rural	11.8%	17.8%	11.0%	17.2%
Urban	4.6%	8.4%	4.0%	8.1%
	Number of population (thousands)		Number of households (thousands)	
National	10,011	3,273	1,967	515
Rural	9,025	3,092	1,748	485
Urban	986	181	219	31

Source: Authors' estimates based on HoWStat 2021.

Notes: Lowest quantile based on 'total or post-transfer' per capita consumption aggregate.

PART 2

Deepening the Understanding of Drivers of Poverty

The section provides an in-depth look at the key drivers of poverty trends. This focuses on three key areas— weather variability in Chapter 5, conflict in Chapter 6, and structural transformation in Chapter 7 — that have been or are expected to continue to be drivers of challenges and opportunities for poverty reduction and where there is scope for value addition from new analysis. An overview of the welfare impacts of these factors has been presented in the previous chapter. The three chapters in this section will elaborate on the welfare impacts of these factors, first by providing additional context on key trends, a nuanced discussion of the incidence or impacts across the welfare distribution, highlighting the channels for long-term welfare impacts and putting into focus some issues that had so far not been extensively analyzed.

CLIMATE CHANGE AND HOUSEHOLD WELFARE IN ETHIOPIA

Ethiopia is one of the most vulnerable countries to climate variability and climate change. *Frequent extreme weather events, such as droughts and floods, exacerbate problems like soil erosion, deforestation, desertification, and biodiversity loss. This chapter examines the impact of climate-induced shocks and policy responses on household welfare. The chapter starts by depicting the trends of and exposure of households to climate change variability and extremes, shows the temporal and spatial distribution of climate and drought shocks, and the long-term welfare impacts of climate change-induced shocks – focusing in weather variability. It finds that poor households are more vulnerable to weather variability risks, though vulnerability among the non-poor is also high. The increased exposure to weather variability risks results in significantly lower welfare – a 16 percent decline in consumption. Recent exposure to droughts shocks increase households aversion to downward output risks which disincentives households from adopting marketed agriculture inputs and increases households' bias towards expanding areas under cultivation of cereals more than other crops. Household coping strategies to drought shocks include conservation agriculture, soil and water conservation, improved seeds, and organic fertilizer. Looking ahead to 2050, the chapter shows that climate change could increase poverty by an additional 2 percentage points above the no climate change scenario, but the impacts of climate change can be moderated with the implementation of structural reforms.*

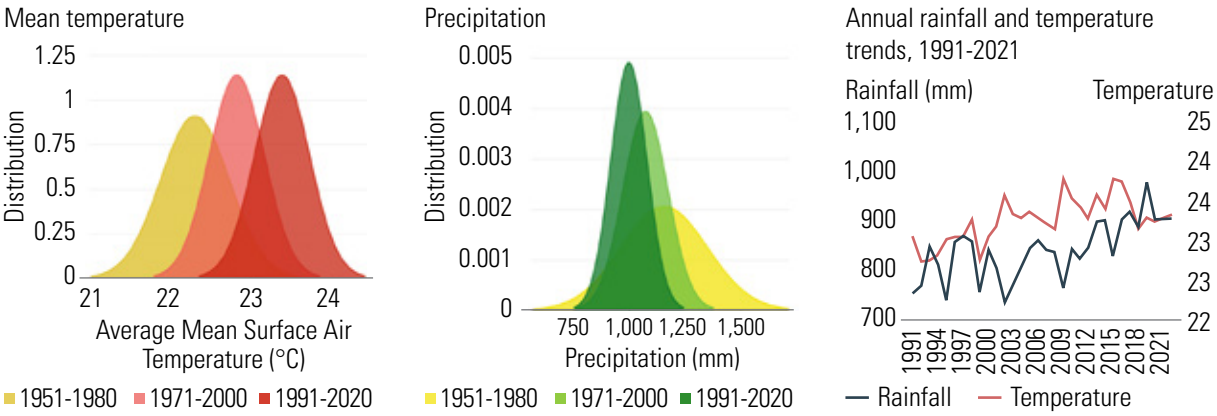
Ethiopia has experienced extreme weather events and significant weather variability in the past decade, mainly between 2016 and 2021.

Ethiopia is one of the most vulnerable countries to climate change and variability. The trends and changes in the distribution of climate (temperature and rainfall) and its variability based on a comparison of successive climatology periods through shifts in mean as well as the spread (width) of the variability are provided in Figure 23. The distribution of temperature variability shows that years are becoming hotter and/or more intense temperatures are occurring more frequently (Figure 24a). Average temperatures in Ethiopia have increased by 0.25 °C per decade since 1960, and the average number of 'hot days' (the hottest 10 percent of days annually) increased by 20 percent. Temperature increases have also led to increased evapotranspiration and reduced soil moisture; higher rates of warming have been observed in the central regions and highland areas. Strong variability makes long-term precipitation trends for Ethiopia difficult to determine, however, an overall decline has been observed in the last three to four decades, with significant year-to-year volatility (World Bank, 2021). Rains appear to be less but intense, reflecting frequent droughts and floods in recent decades (Figure 24b). The combination of less but intense rainfall and hotter and more intense temperatures in recent decades suggest that weather variability and climatic shocks have been more common in Ethiopia in the last few decades.

Indeed, the change in climate has increased the frequency of extreme events and climate-related shocks. The country experienced droughts in the 1983-1984, 1991-1992, 1998-2000, and 2002 periods; and in 2008, 2012, and 2015/16. According to the EM-DAT database, 11 drought events and 10 floods have been reported in the country since 1990. Estimates show that about 5 million people are exposed to an average drought and 0.25 million people to an average flood event every year (World Bank, 2019). Long-term drought trends assessed using the Palmer Drought Severity Index (PDSI) suggest that drought shocks were severe and covered most of the country (Figure 24a). The FAO Agricultural Stress Index (ASI) indicates a higher share of crop areas affected by drought in recent periods including 2015, 2016, and 2021 (Figure 24b). Overall, drought shocks

proxied by the Palmer Drought Severity Index (PDSI) show a downward trend until the mid-1990s, then a slight increase, and especially a decrease in overall volatility.

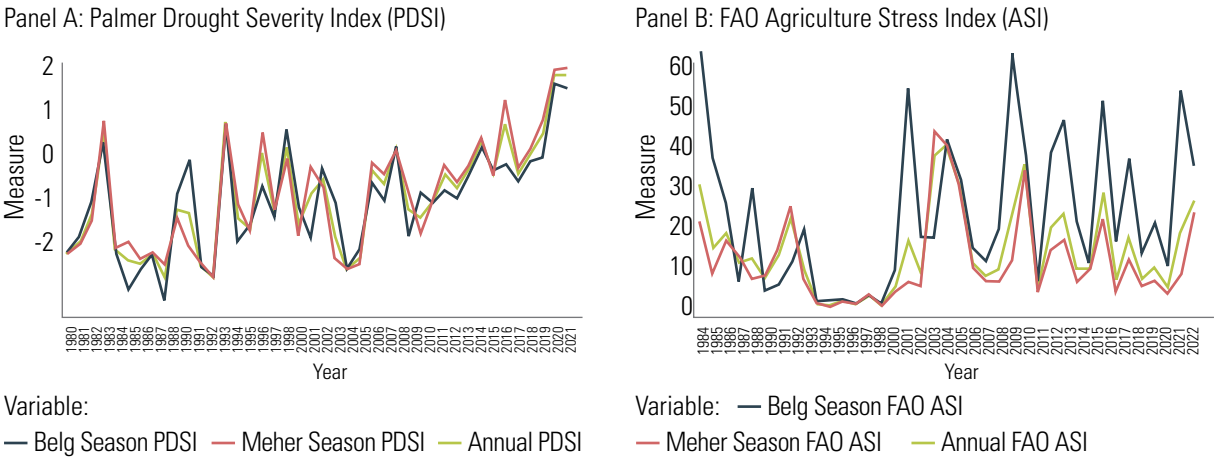
Figure 23. Changes in the distribution of precipitation and temperature, 1951-2020



Source: Authors based on Climate Change Knowledge Portal Ethiopia.

Notes: Each bell-shaped distribution represents a 30-year climatology interval.

Figure 24. Drought evolution and trends, 1980-2021



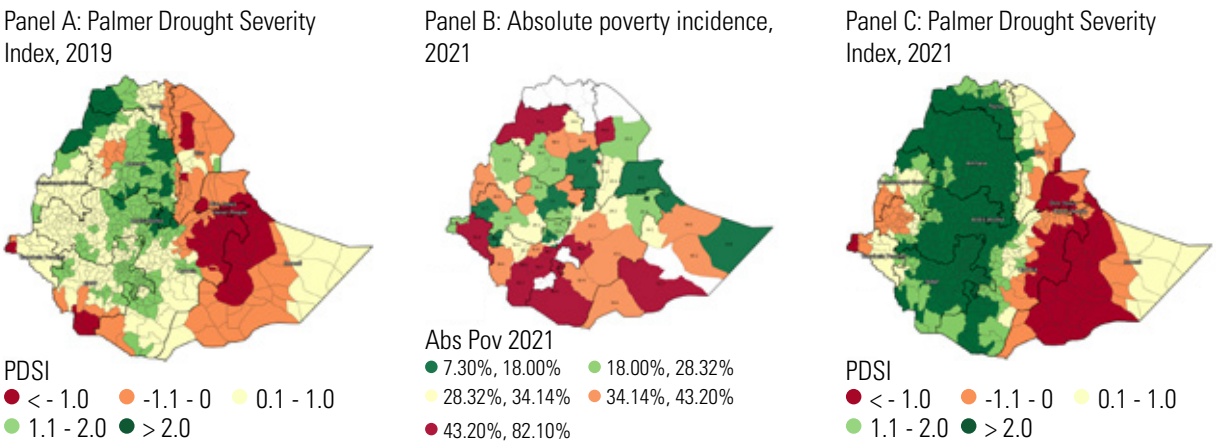
Source: CHIRPS; FAO: https://www.fao.org/giews/earthobservation/asis/index_1.jsp?lang=en; https://hydrology.princeton.edu/getdata.php?dataid=7;

Notes: The Palmer Drought Severity Index (PDSI) captures long-term drought as it relies on temperature information and a physical model of water balance using values from 1980 to 2019. Values of PDSI > 0 denote no drought conditions while PDSI < 0 denotes drought conditions. FAO ASI is based on the Vegetation Health Index (VHI) [VHI < 40 = Drought] covering the period 1984-2019. ASI looks at the percentage of an area affected by drought for a given season.

Household long-term vulnerability to climate shocks is high, more so for the poor.

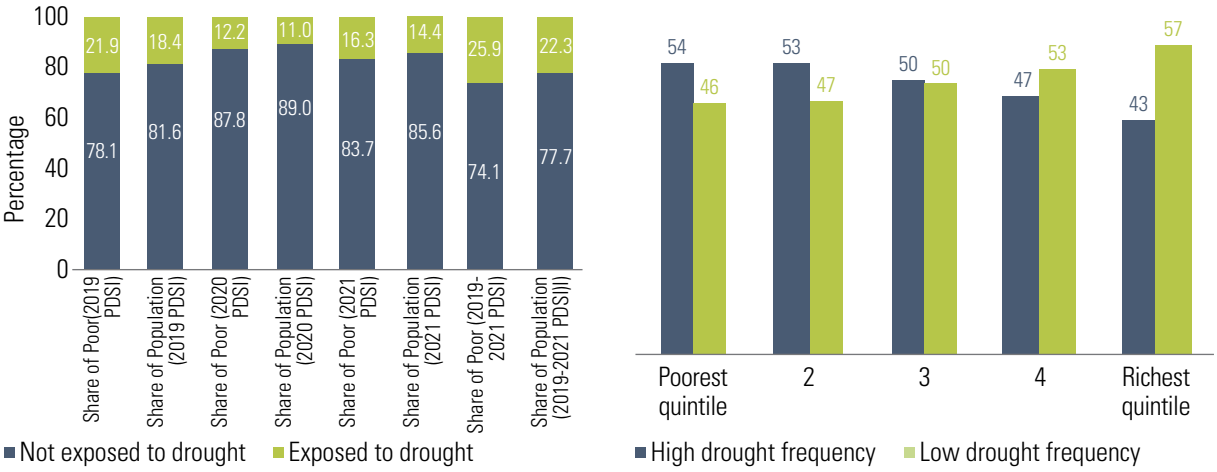
The poor have also been exposed to recent weather shocks more than nonpoor households. Households' exposure to drought shocks can be determined by overlaying household enumeration areas with a monthly measure of drought severity – the Palmer Drought Severity Index (PDSI). A household is considered exposed to a drought shock if the PSDI is negative for at least 3 months during the Meher season. A comparison of the PSDI and the incidence of poverty across zones in 2021 shows that poverty rates are greater in zones that experienced more severe droughts, particularly in 2019 (Figure 25). However, only 27 percent of the poor were exposed to a drought shock between 2019-21 for example (Figure 26a). This implies that there were more poor people who were not recently exposed to droughts than the number of poor people who recently experienced drought.

Figure 25. Poverty incidence and long-term drought exposure



Source: Authors' estimates based on HoWStat 2021, HCES 2015/16, ESPS 2018/19 and 2021/22 and geospatial data.

Figure 26. The share of the population and poor exposed to drought shocks



Source: Authors' estimates based on HoWStat 2021, HCES 2015/16, ESPS 2018/19 and 2021/22.

But over the long term, most households in Ethiopia have been highly vulnerable to climate risks, more so for the poorest households. Household locations can be grouped into high drought frequency and low drought frequency areas based on whether they experienced a drought shock above the median number of droughts recorded across enumeration areas in Ethiopia, defined using the PSDI as above. By this classification, around 54 percent of households in the poorest quintiles live in high drought frequency areas, compared to about 46 percent among the richest quintile (Figure 26b). This is consistent with findings from other studies showing that the impacts of climate change are regressive - falling more heavily on the poor than on the rich (Skoufias, 2012) and that the incidence of poverty is higher in areas of high environmental risk (Narloch & Bangalore, 2018).

Long-term exposure to climate shocks intensifies poverty.

Long-term exposure to weather variability — proxied by drought frequency and heat stress— have welfare-reducing effects. Spatial differences in long-term weather variability risk exposure are

captured using the concept of Favored Agriculture Areas (FAA) which combines geographical risks (poor soil quality) and environmental risks (droughts, floods, heat stress, and disease likelihood) using climate variables for the 1980 – 2019 period (Box 6). In 2021, household consumption in favored agriculture areas was 43 percent more than in less favored agriculture areas, after accounting for the influence of institutional/ location factors such as market access, land tenure regime, livelihood system, infrastructure, and household-level factors such as education and crop choice (Table 8). There is also a negative relationship between each weather variability shock (drought and heat stress frequency) and household consumption. Estimates suggest that a one percent increase in drought frequency and heat stress reduces per capita consumption by 15.5 and 6.2 percent, respectively.

Climate change-induced shocks intensify poverty by eroding productive assets and impairing human capital accumulation. Direct damage or loss of assets such as livestock or grains, coupled with asset liquidation as a form of consumption smoothing, can deplete household resources (Carter et al., 2007). A socio-economic study of pastoral and agropastoral populations in Ethiopia for example, showed that drought increased livestock mortality by 60 percent (World Bank, 2023). Climate shocks can also lead to a redistribution of disease burden, disproportionately affecting children who may be forced out of school or suffer long-term health issues. For instance, rainfall variability has been associated with reduced human capital formation (Alderman et al., 2006; Hoddinott & Kinsey, 2001). Recent data indicates that households subjected to drought shocks are more likely to experience health shocks than those not affected by drought shocks (50 percent vs. 37.8 percent), indicating that exposure to drought heightens health risks. The broader impact on labor markets is negative. Disasters can reduce the marginal productivity of labor, leading to reduced labor demand and compromised production (Mueller & Quisumbing, 2011).

Table 9. Estimated impacts of drought exposure and agriculture potential on welfare

	(1)	(2)	(3)	(4)
Favored Agriculture Areas (FAAs)	0.434 ***	0.320 ***		
	(0.060)	(0.082)		
Log PDSI Drought Frequency			-0.155 ***	-0.048
			(0.031)	(0.033)
Log Heat Stress Frequency			-0.062 ***	-0.040 ***
			(0.012)	(0.012)
Log Caloric Suitability Index			0.046 ***	0.107 ***
			(0.010)	(0.011)
Agroecology fixed effects	No	Yes	No	Yes
Rural fixed effects	No	Yes	No	Yes
Controls	No	Yes	No	Yes
Observations	6,680	6,680	6,503	6,503

Source: Authors' estimates based on HCES 2015/16 and HoWStat 2021 and geospatial data.

Notes: The dependent variable is the log of daily per capita consumption. The PDSI is the Palmer Drought Severity Index that captures long-term drought exposure (1980-2019). The Caloric Suitability Index (CSI) is based on Galor & Özak (2016) and captures soil quality. Long-term heat stress frequency (1980 - 2019) is based on Baquie and Fuje (2020) who defines the experience of an episode of heat in any of the Meher months if the recorded/estimated temperature is above the long-term 98th percentile. The FAAs index is computed at the EA level using these three bio-physical variables: PDSI, Heat Stress, and CSI. The control variables included in the regressions are distance to market, distance to road, livelihood systems, water and sanitation use, reliance on solid fuel for cooking, and livestock ownership.

Box 6. Estimation of the impact of long-term environmental risks and household welfare

The long-term association between climate shocks and welfare is assessed using survey data and novel geospatial data. The survey data used are the Ethiopia Socioeconomic Panel Survey (ESSP) 2018/19 and 2021/22 collected under the LSMS-ISA program of the World Bank in collaboration with the Ethiopian Statistical Service (ESS). The other data used are the 2015/16 Household Consumption Expenditure and Welfare Monitoring Survey (HCES/WMS) and the 2021 HoWStat survey data. The survey data are merged with weather and other geospatial datasets extracted from the Climate Hazards Group InfraRed Precipitations with Stations (CHIRPS); FAO (GAEZ Data and Agriculture Stress Index) and PSDI database.

To estimate the impact of the most recent shocks, the team linked geographic data to the latest household survey. For the case of droughts, this was done at the enumeration area level using the official geo-variables module. In respect of floods, a greater disaggregation could be made both in temporal and spatial terms. Daily precipitation estimates from NASA's IMERG project (which were formatted as a 0.1-degree square raster layer) were transformed into vectors of the same dimensions and merged with households based on their GPS coordinates. Key variables are defined as follows:

- Long-term Drought Frequency (1980 - 2019) is measured using the Palmer Drought Severity Index (PDSI) which captures shocks that occurred in at least 3 months during the May-Sept Meher season long-term drought frequency. Using the PDSI, an Enumeration Area (EA) is assumed to have experienced drought for a particular season if PDSI was below zero for any of the months of May - September (the main agriculture season in Ethiopia).

- Long Term Frequency of Heat Stress (1980 - 2019) - Following Baque and Fuje (2020), we assume that an EA experienced an episode of Heat in any of the Meher months if the recorded/estimated temperature is above the long-term 98th percentile.

- Galor & Ozak Caloric Suitability Index (CSI) is time-invariant and captures agriculture potential.

The LFAAs (Less Favored Agriculture Areas) Index is therefore computed at the EA level using these three bio-physical variables. Assuming climate shocks are exogenous, an OLS regression is used to estimate their impact on welfare outcomes. In the baseline regressions, the association is estimated by including the climate shock variable of interest only. In subsequent specifications, additional control variables are added progressively. The additional control variables included are agro-ecological regions, location (urban, rural), biophysical factors (proxied by agro-ecological regions as well as drought, heat stress, soil quality), human and institutional factors (proxied by distances to food markets, livestock markets, all-weather roads and banks or financial institutions), access to basic sanitation and solid fuel use for cooking dummies and livestock holding. The specifications also include different livelihood system dummies including agro-pastoral, arid pastoral oasis, eastern highlands maize mixed, highland barley livestock mixed, highland perennial, highland sorghum chat mixed, highland teff mixed, highland wheat livestock, lake fish-based, livestock maize mixed, lowland maize mixed, lowland sesame mixed, rift valley fish-based, sorghum mixed, and western highland maize based on Amede et al., 2017.

Price fluctuations, particularly during drought periods like those in 2011, 2016/17, and 2020-2022, can trigger food inflation, worsening poverty, and food insecurity. Households typically face shocks in the form of increased food costs, which can severely impact their ability to meet basic needs. These shocks disproportionately affect poor households, who depend heavily on subsistence agriculture, more than their non-poor counterparts. However, in Ethiopia, studies show that the price impact of drought shocks is considered moderate due to the mitigating effects of infrastructure and social safety nets (Hill & Fuje, 2020). The results on the impact of PSNP on household consumption showed that the program increases consumption among beneficiaries by at least 10 percent more than comparable non-PSNP beneficiary households.

Exposure to weather shocks reduce future incomes by lowering agricultural productivity and reducing farmers' market orientation.

Recurrent climate shocks have been shown to diminish agricultural productivity and income. Adverse weather conditions could have an immediate impact on agricultural production. A basic comparison shows that households affected by droughts experienced 3.5 times larger crop value losses compared to households not affected by drought (Table 9). The data further shows that drought-affected households reported reduced utilization of improved seeds (17.3 percent vs. 30.2 percent), chemical fertilizer (34.4 percent vs. 44 percent), and improved animal breeds (0.17 percent vs. 0.09 percent). The evidence suggests that drought amplifies economic hardships by reducing the ability to invest in essential agricultural inputs.

Table 10. Descriptive statistics on the conditions of households based on drought shock

	No drought	Drought	Mean difference
Crop value lost	41.1	143.4	-102.3***
Improved seed use	0.30	0.17	0.13***
Chemical fertilizer use	0.44	0.34	0.10***
At least one improved animal	0.17	0.09	0.08***
Health shock	0.38	0.50	-0.12***
Employment shock	0.02	0.02	0.00
Participation in off-farm activities	0.31	0.24	0.07***

Source: Authors' estimates based on ESPS 2018/19 and 2021/22.
Notes: Self-reported drought shock (*** p0.01, ** p0.05, * p0.1).

Table 11. Arrow-Pratt (AP) absolute and downside (DS) risk aversion by weather shocks

	(1)		(2)	
Arrow-Pratt	0.126***	(0.002)	0.127***	(0.002)
Downside risk	0.564***	(0.002)	0.563***	(0.002)
Drought (t - 1)			0.001**	(0.000)
Drought (t - 2)			0.003***	(0.001)
Drought (t - 3)			-0.000	(0.000)
Arrow-Pratt * Drought (t - 1)			-0.009***	(0.003)
Arrow-Pratt * Drought (t - 2)			-0.009*	(0.005)
Arrow-Pratt *Drought (t - 3)			-0.001	(0.002)
Downside risk * Drought (t – 1)			0.007**	(0.003)
Downside risk *Drought (t - 2)			0.004	(0.006)
Downside risk *Drought (t - 3)			-0.001	(0.003)
Observations	1,660		1,660	

Source: Authors' estimates based on ESPS 2018/19 and 2021/22.

Notes: The Arrow-Pratt and downward risk preferences are estimated using the moment approach designed by Antle (1983, 1987). Details are provided in Box 7. Bootstrap standard errors for (300 replications) are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Drought is a binary (0/1) variable.

Farmers are less willing to take output variability risks, in particular the downward output risks. Households in Ethiopia exhibit a general aversion to output variability and a specific reluctance to take risks that could result in lower yields (Table 10). The positive and statistically significant Absolute Pratt (AP) coefficient underscores farmers' general risk aversion, particularly regarding output variability. The downside risk (DS) aversion coefficient further reveals a reluctance to accept risks that could lead to yields falling below a certain threshold. Farmers who have recently experienced a drought shock are more cautious about potential negative outcomes, showing less willingness to take risks that could lead to lower outputs (Table 10). This is consistent with findings from similar studies (see Mulungu et al. (2023) and Di Falco and Vieider (2022)). The influence of drought on risk preferences among farmers persists for up to two years and becomes insignificant by the third year, suggesting that the impact of a drought shock on risk preferences lasts beyond the drought year but wanes over time. Some studies indicate that households may change their risk tolerance in response to policy and production shocks (Bozzola & Finger, 2021), hence the waning effect of a current drought shock on risk preferences.

Box 7. Estimation of the impact of climate shocks on household risk preferences

The impact of adverse rainfall shocks on farmers' risk preferences is assessed by estimating the Arrow-Pratt and downward risk preferences using the moment approach designed by Antle (1983, 1987). This approach avoids potential estimation problems arising from directly inserting the risk parameters into a production function. Because of the approach's flexibility, agricultural technology and risk parameters can be structurally estimated with no restrictions on the utility function (Mulungu et al., 2023). In this approach, the higher moments of the production distribution reflect the risk exposure. The first moment stands for the average expected yield, while the second and third moments, respectively, represent the output variability and the downside risk.

Assume that a farmer produces output $y=g(x;v)$ using a set of inputs $X=\{s,f\}$, where f and s stand for fertilizer and improved seed, respectively, and u stands for uncertainty factors. The farmer chooses input X to maximize her expected utility, which is a function of the first three moments of the output distribution.

$$\max_{fs} Eu\,(y) = U\,(\tau_1(X), \tau_2\,(X), \tau_3\,(X)) \qquad (1)$$

Where $\tau_1(X)$ is the first-order moment of the production distribution which stands for the expected yield and is given by $\mathrm{E(y(X))}$. The second and third moments of the production distributions are represented by $\tau_2(X)$ and $\tau_3(X)$. They are the square and cubic of the error terms. i.e., $\tau_2(X) = (y(X) - E(y(X)))^2$ and $\tau_3(X) = (y(X) - E(y(X)))^3$.

We can determine the conditions for each farmer to make the optimum use of the inputs by computing the first-order partial derivatives of equation 1 with respect to the inputs (improved seed and fertilizer) and equating them with zero. This implies that the mean output is a linear summation of the contributions of each input to output variance and skewness. Therefore, the third-order Taylor series expansion of the expected utility function around the expected output can be used to estimate our paraments of interest, the Arrow-Pratt and downside risk aversion coefficients. This can be done by approximating and rewriting

$$-2\theta_2 \approx \mathrm{AP} = -\frac{\mathrm{u''}\,(\tau_1)}{\mathrm{u'}} \text{ and } 6\theta_3 \approx \mathrm{DS} - \frac{\mathrm{u'''}\,(\tau_1)}{\mathrm{u'}}$$

the first partial derivatives as in equations 2 and 3, to estimate the AP and DS coefficients, where ε_h^f and ε_h^f are the usual random errors. We follow Mulungu et al. (2023), Bozzola and Finger (2020), and others, and imposed the restrictions that $AP_f = AP_s = AP$ and $DS_f = DS_s = DS$ to refrain from input-specific risk aversion parameters. Besides, we standardized the dependent and input variables to have a mean of 0 and a standard deviation of 1 to make the marginal effects comparable.

$$\frac{\vartheta\tau_{1h}}{\vartheta f_h} = \frac{1}{2} AP_f \frac{\vartheta\tau_{2h}}{\vartheta f_h} - \frac{1}{6} DS_f \frac{\vartheta\tau_{3h}}{\vartheta f_h} + \varepsilon_h^f \qquad (2)$$

$$\frac{\vartheta\tau_{1h}}{\vartheta s_h} = \frac{1}{2} AP_s \frac{\vartheta\tau_{2h}}{\vartheta s_h} - \frac{1}{6} DS_s \frac{\vartheta\tau_{3h}}{\vartheta s_h} + \varepsilon_h^s \qquad (3)$$

The above theoretical model can be empirically solved by estimating the effects of the inputs on the first three moments of the output distribution and then estimating the risk aversion parameters AP and DS using the

marginal expected effects of these inputs. Thus, to estimate the impact of the inputs on the first three moments of the production distributions, we first predict the mean, variance, and skewness. The first central moments of the production distribution can be given by equation 4:

$$y = g(X, V, \upsilon), = \tau_1 (X, \mathrm{V}; \varphi) + \varepsilon \quad (4)$$

Where $E[\, g(X, \upsilon) \mid X, V\,] = \tau_1 (X, V; \varphi\,)$. X and V are the vectors of the main inputs and other controls. The control variables used in the analysis include the gender of the household head, the size of agricultural land, access to agricultural extension service, distance to market, and share of adults in the household. ε stands for the error term. Using the same functional form, the second (variance) and third (skewness) central moments of output can be represented as follows:

$$E\,\{[\mathrm{g}(X, V, \upsilon), - \tau_1 (X, V; \varphi)^2 \,|X,V\} = E\,[\varepsilon^2 \,|X,V\,] = \tau_2 (X, V; \vartheta) \quad (5)$$

$$E\,\{[\mathrm{g}(X, V, \upsilon), - \tau_1 (X, V; \varphi)^3 \,|X,V\} = E\,[\varepsilon^3 \,|X,V\,] = \tau_3 (X, V; \rho) \quad (6)$$

The parameter vectors of the mean, variance, and skewness equations are denoted, respectively, by φ,ϑ and ρ. To estimate the impacts of the inputs on the three moments of the production distribution, we follow prior studies and use the quadratic production function, which considers the input levels, their squared terms, and the interaction of the two inputs along with some control variables. Their functional form is given below using equations 7 to 9.

$$y_{ht} = \varphi_0 + \varphi_1 f_{ht} + \varphi_2 (f_{ht})^2 + \varphi_3 s_{ht} + \varphi_4 (s_{ht})^2 + \varphi_5 (f_{ht} s_{ht}) + \delta_{ht} + (T * r)_t + \varepsilon_{ht} \quad (7)$$

$$\widehat{(\varepsilon_{ht})}^2 = \vartheta_0 + \vartheta_1 f_{ht} + \vartheta_2 (f_{ht})^2 + \vartheta_3 s_{ht} + \vartheta_4 (s_{ht})^2 + \vartheta_5 (f_{ht} s_{ht}) + \delta_{ht} + (T * r)_t + \varepsilon_{ht} \quad (8)$$

$$\widehat{(\varepsilon_{ht})}^3 = \rho_0 + \rho_1 f_{ht} + \rho_2 (f_{ht})^2 + \rho_3 s_{ht} + \rho_4 (s_{ht})^2 + \rho_5 (f_{ht} s_{ht}) + \delta_{ht} + (T * r)_{t\,t} + \varepsilon_{ht} \quad (9)$$

y_{ht} is output in kilogram and $\widehat{(\varepsilon_{ht})}^2$ $\widehat{(\varepsilon_{ht})}^3$ are the variance and skewness of the output distribution, respectively. δ_h and $(T * r)_t$ are households fixed effects and the interaction of region dummy and survey period. Once equations 7 to 9 are estimated, the marginal effects of the production distribution moments with respect to the inputs are predicted. These predictions are then used as inputs to estimate the AP and DS risk aversion coefficients. Hence, we solve the system of Equations (2) and (3) using a three-stage least squares model that helps us account for the correlation between the equation error terms.

We estimate the above equations using a fixed effects method. This framework provides some key advantages that help us strengthen our identification. It enables us to account for any time-invariant unobserved household and community-level characteristics, such as soil fertility and other environmental conditions that have an impact on the types of crops a community plant and its risk-coping mechanisms. We also included household, and community-level controls, and the interactions of regional dummies with the survey period to account for any regional policy changes or other shocks, such as conflict, price, and other shocks, as well as other state-level policy changes that might affect demand and supply of commercial inputs and farm households' response to drought shock.

This analysis is based on data from the Ethiopian Socioeconomic Panel Survey (ESPS) 2018/19 and 2021/22 data. ESPS compiles data on a variety of topics from a panel of households using five modules—households,

community, and three agricultural modules. The rainfall data comes from the Climate Hazards Group Infrared Precipitation with Stations (CHIRPS). CHIRPS provides gridded datasets from 1981 to the present at various temporal resolutions, with a spatial resolution of 0.05° (Funk et al., 2015). For analysis, we considered rainfall conditions during the agricultural season of the country. We integrate our climate data with the ESPS using the geographic identifiers included in the ESPS dataset. We calculate the weather shocks by using the standard definition of rainfall anomalies established in the relevant publications. More precisely, we use the Standard Precipitation Index (SPI) as our weather condition indicator. We begin by calculating the historical average and standard deviation of growing season rainfall using rainfall data from the years between 1981 and 2020. The difference between the annual rainfall and the historical mean is then calculated. The difference is then normalized by dividing it by the historical standard deviation. Following the related works of Mulungu et al. (2023) and others, we chose SPI less than negative 0.5 to represent drought conditions.

The change in household risk preference influences their technology adoption or innovations. Farmers' decisions are informed by their understanding of climate, which is built upon historical and present weather patterns which influences their expectations about future weather conditions, thereby affecting their decisions related to the use of commercial inputs, crop choices, and land allocation (Ahmed et al., 2023; Cui, 2020; Cui & Xie, 2022; Jagnani et al., 2021). Farmers might avoid adopting new agricultural inputs or practices that could increase their risk of yield variability and downside risk (Dercon & Christiaensen, 2011). On the flip side, they may be more inclined to adopt production techniques that reduce the likelihood of negative yield deviations to minimize the risk of adverse outcomes (Bozzola & Finger, 2021).

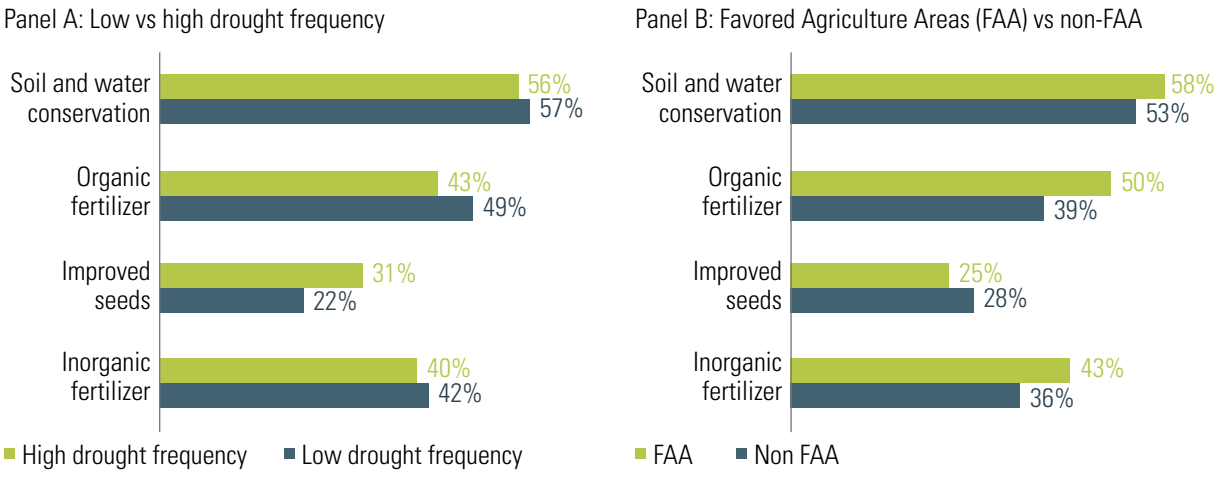
Agricultural households employ a range of coping strategies and responses that enhance resilience to climate shocks.

Agricultural households in Ethiopia utilize a wide range of strategies to cope with climatic shocks. Prominent agricultural technologies and improved practices (innovations) such as improved seeds, irrigation, organic fertilizer, soil and water conservation, and conservation agriculture have been shown to positively affect both agricultural productivity and welfare (Di Falco et al., 2011; (Di Falco et al., 2011; Dhakal et al., 2022; Sardar et al., 2021; Tesfaye et al., 2021), while enhancing the resilience of vulnerable farmers while reducing and/or removing greenhouse gas emissions (FAO, 2020; Torquebiau, 2017; van Wijk et al., 2020). The uptake of agricultural technologies and farming practices is influenced by exposure to climate shocks such as drought. For instance, the use of yield-increasing technologies like inorganic fertilizer is more prevalent in areas with low frequency drought areas and in favored than less-favored agriculture areas (48 vs 35 percent in 2022). Conversely, in areas where droughts are a common occurrence and in non-FAA, farmers are more likely to adopt risk-reducing and resource-conserving practices such as conservation agriculture compared to other agriculture practices (Figure 27).

Further analysis indicates that asset sales are a common risk-coping strategy among households in high drought frequency areas to buffer against the adverse welfare effects of climate shocks. However, the data do not show variation in the use of ex-post shock coping mechanisms such as reliance on savings, social insurance (help from government or social networks), and dietary changes, based on the level of drought exposure. Diversification in the form of income, crop variety, and labor is a cornerstone of resilience to climate shocks. However, income diversification strategies,

including increasing the number of income sources and the shift towards non-farm income, do not appear to vary with the degree of exposure to climate shocks in recent years in Ethiopia.

Figure 27. Adoption of agriculture technologies and farming practices



Source: Authors based on ESPS 2021/22.

Instead, cash transfers, food aid, and insurance are pivotal in helping households with the adverse effects of climate shocks. Extensive studies show that cash transfers help farmers move out of poverty, accumulate assets, and improve overall well-being in the aftermath of shocks (Abay et al., 2022; Porter & Goyal, 2016). Despite this, cash transfers do not always result in lifting households out of poverty, a phenomenon termed the "social protection paradox." This was observed in Latin America and Kenya, where cash transfers alone were insufficient for poverty alleviation (Ikegami et al., 2017). While its effectiveness on asset growth has been questioned, as seen after the 1998-2000 Ethiopian drought (Carter et al., 2007), analysis from recent data in Ethiopia finds evidence of the positive welfare impacts of social assistance.

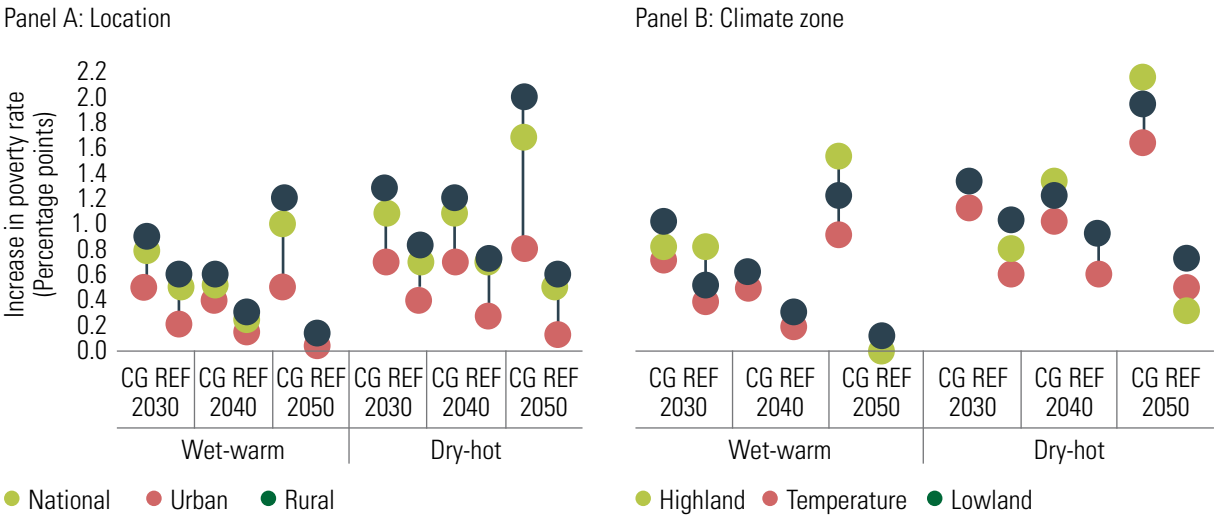
The impact of climate shocks can be moderated with the implementation of economic reforms.

Climate change will lead to increases in monetary poverty under all the different scenarios modelled in the next 25 years, with larger impacts in rural areas and highland areas. The long-term impacts of climate change are modelled under wet-warm and dry-hot climate scenarios, in the absence of structural reforms (constrained growth - CG) or with structural reforms implemented (REF), yielding four scenarios. Poverty is expected to decline as GDP is projected to expand, translating into consumption growth, but the expected impacts vary spatially and depending on the climate change scenario. The dry-hot, constrained growth scenario yields the largest poverty impacts by 2050, with around a 2 percentage points increase in poverty in rural areas and the highland climatic zones. Under the wet-warm scenario, this rate is 1.2 percentage points and 1.5 percentage points in rural areas and highland climatic zones, respectively (Figure 28).

Increases in poverty rates are, in all cases, expected to be smaller under the structural reforms (REF) scenario than in the constrained growth (CG) scenario. The microsimulation results show that the poverty impacts of climate change are lower under the REF scenario, with lower impacts on poverty as time passes, signaling that the policies implemented under this scenario could

largely counter the impacts of climate change in the mid-term (Figure 28). Under the wet-weather scenario, the impact of climate change on poverty would be negligible under the reforms compared to a percentage point increase under the constrained growth scenarios. The increase in poverty by 2050 will be at least 1 percentage point less if reforms are implemented than without them under the hot-dry scenarios. The REF scenario includes reforms that will accelerate growth and improve productivity, which will translate into more income-generation opportunities for households, either through salaried work, self-employment, or agricultural production. These increases in household earnings will counter the increases in poverty expected due to climate change under the CG scenario. Poverty rates are expected to decline further with climate actions that involve adaptation actions to cope with the impacts of climate change and strengthen resilience to climate shocks and mitigation measures, over and above implementing structural reforms.

Figure 28. Impact of climate change scenarios on poverty rates



Source: World Bank simulations using MFMOD inputs and HCES 2016.

Notes: The chart shows the increase in poverty rates ($2.15 in 2017 PPP) due to Dry-hot and Wet-warm climate change scenarios, with respect to the CG and REF baseline scenarios (no climate change, no adaptation).

CONFLICT AND HOUSEHOLD WELFARE IN ETHIOPIA

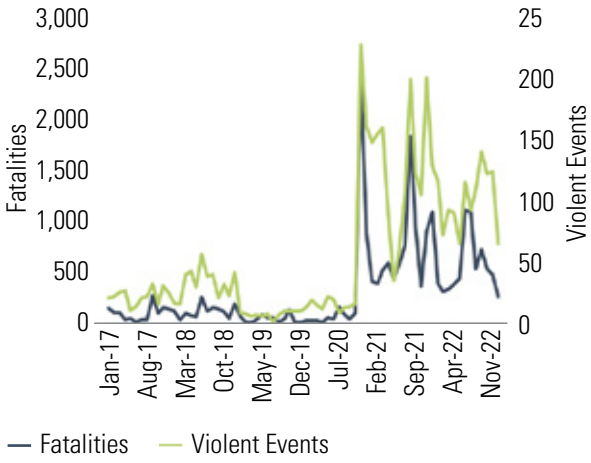
This chapter examines the impact of conflict on household welfare. *It analyzes the trends and incidence of conflict, quantifies the welfare impacts, and zooms in on Internally Displaced People (IDPs). The analysis shows that conflict spread more broadly across the country after the escalation of conflict in Tigray which spilled to other regions resulting in a 10-fold increase in the number of conflict events and fatalities recorded during 2020-22 compared to the two years before. The number of IDPs rose to an all-time high of 4.4 million during December 2021 and January 2022, of which 2.4 million were driven by the conflict in Northern Ethiopia. Estimates show that for every additional day of violent conflict within 20 kilometers, household consumption grew by 2.5 percent slower, or 4 percent slower if there was a fatality. Those displaced live in camps or hosting communities lacking public services, especially water and electricity. The majority of IDPs—and nearly all displaced from Tigray—prefer to return, followed by local integration among those who have been displaced longer.*

Escalation of the conflict in Tigray spread the conflict more across the country, with increasing intensity.

Ethiopia has grappled with internal conflict and ethnic tensions in the past. In the years leading up to the recent conflict in Northern Ethiopia, various disputes caused death and displacement in various regions across the country. Examples include the contestation over the Oromo-Somali regional border, over the administrative designation of the Konso woreda in SNNP region, and between Gedeo and Guji Oromo tribes in West Guji. In November 2020, fighting erupted between the Ethiopian National Defense Forces (ENDF) and the Tigray People's Liberation Front (TPLF) which continued for two years until a peace treaty was signed in November 2022. By then, the war had spread far into the neighboring regions of Amhara and Afar.

The onset of the war in Tigray in November 2020, marked a drastic increase in violent events and conflict fatalities across Ethiopia. Data from the Armed Conflict Location & Event Data Project (ACLED) shows the frequency and location of conflict across Ethiopia. It shows the prevalence of conflict events (which include battles, explosions, and violence against civilians) in the years leading up to the crisis, as well as the sharp increase in violence after November 2020 (Figure 29). Across the country, 3,153 conflict events were recorded, resulting in 19,113 fatalities between November 2020 and the end of 2022. This is around 10 times greater than the number of conflict events and fatalities in the same period length before the war.

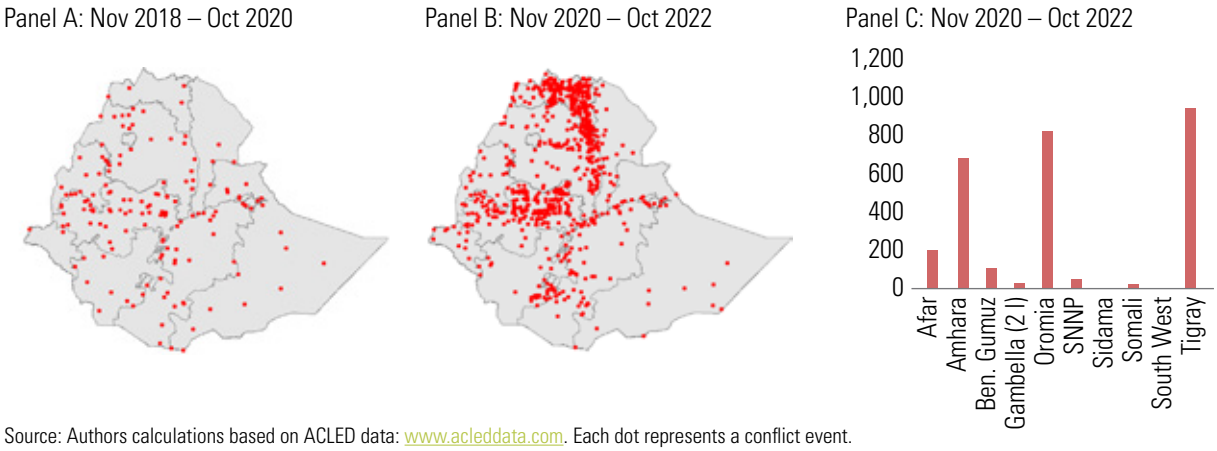
Figure 29. Evolution of conflict in Ethiopia



Source: Authors' calculations using data from Armed Conflict Location & Event Data Project (ACLED); www.acleddata.com

Notes: Violent events include battles, explosions/remote violence, and violence against civilians.

Figure 30. Dispersion of conflict events before and after November 2020



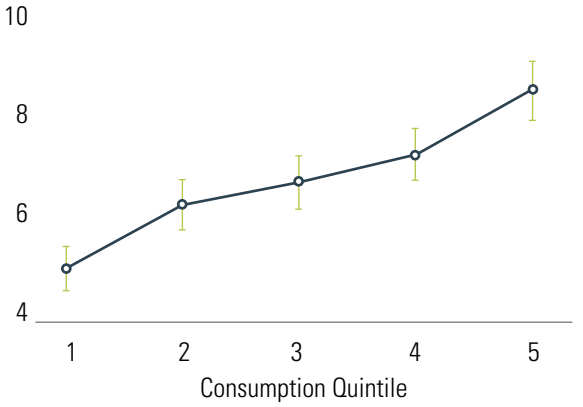
Source: Authors calculations based on ACLED data: www.acleddata.com. Each dot represents a conflict event.

During the Tigray war, conflict increased across the entire country—not only in Tigray and bordering regions—with various causes indirectly related to the conflict in Tigray. The increase in conflict events was not restricted to the North (Figure 30). During the 2-year period of the Tigray conflict, 37 percent of all conflict events happened outside of Tigray, Amhara, and Afar, the majority in the region of Oromia, Ethiopia's largest region by population. The conflict events in the rest of the country had many causes indirectly related to the war in Tigray. First, increased ethnic tensions fueled conflict, for example, between ethnic Gumuz militia and ethnic Amhara in the Benishangul-Gumuz region (IGC, 2022). Second, various long-standing disputes over internal regional boundaries between ethnic militias intensified during the war, for example, in Afar along the Somali border (EPO, 2023). Third, sapped federal resources emboldened ethno-nationalist groups in Oromia, who participated in clashes with local and federal troops, violence against civilians, and formed alliances with the TPLF against the Ethiopian government (BBC, 2021; EPO, 2021; IGC, 2022).

Recent conflict events have been concentrated in urban centers, translating into increased exposure among better-off households.

On average, across Ethiopia, better-off areas had the highest exposure to conflict between 2019 and 2022. Households with high consumption in the 2019 ESS experienced more days with a conflict event within 20km of the household from the end of the survey through 2022 (Figure 31). However, the positive relationship between consumption and conflict exposure disappears when considering regional welfare differences (Annex 3, Table A.3.6) as the household pattern was driven by differences across regions rather than within regions. In other words, the regions with the lowest consumption also had the lowest conflict exposure (particularly in Somali and SNNP). Within regions, there is also

Figure 31. Number of days with conflict events by consumption quintile



Source: Authors' calculations using ESPS 20118/19; Armed Conflict Location & Event Data Project (ACLED); www.acleddata.com.

Notes: Events days count days when a conflict event is registered within 20 km of the household between September 2019 and December 2022. Distance is relative to a household geocoded location in 2019. Conflict events include battles, remote violence, and violence against civilians. Population weighted means and 95% confidence intervals are presented.

no relationship between household demographic characteristics and the probability of experiencing conflict.

Conflict was more likely to occur near Zone capitals and in places where conflict occurred in the recent past. Households in Zone capitals experienced 4.9 more days with violent conflict events relative to rural areas in the same region and 4 more days relative to other urban areas (Annex 3, Table A.3.6). For every conflict event that occurred in the same length of time before September 2019, the number of subsequent conflict events increased by 0.36 days. This is consistent with how conflict events often persist in the same location over time in many different settings worldwide (Bazzi et al., 2022). The higher conflict exposure in urban centers—where households are on average better off than in rural areas—partly explains the higher conflict exposure among better off households. This is backed by multivariate analysis showing that the correlation between initial household consumption level is both weaker and statistically insignificant when the household location and past events are accounted for.

Conflict had broader impacts.

Conflict exposure has an immediate adverse impact on monetary poverty among severely affected communities. The median household in Ethiopia (excluding households in Tigray) experienced 1 conflict event day within 20km of its location between September 2019 to April 2022, corresponding to a consumption decrease of 2.5 percent based on the estimates presented earlier. It means that households with higher conflict exposure—at the 75th percentile—of 7 event days, experience a corresponding consumption decrease of 17.5 percent. Projections based on the estimated impact of conflict on consumption growth in Afar, Amhara and Benishangul-Gumuz suggest that the poverty rate—based on the international extreme poverty line—in this sample in 2022 was 9.2 percentage points higher than it would have been in the absence of conflict. The effect of conflict is concentrated on food rather than non-food consumption or the diversity of food (Table 11). This is corroborated by estimates based on the MPS 2021 which show a large significant adverse impacts of conflict exposure on caloric intake and food poverty among pastoral communities. In addition to disruptions to harvests and livestock losses, conflict reduced households' access to food through supply chain disruptions and sharp price increases.

Conflict has long-term impacts on household welfare. Loss of assets and the effects caused by forced displacement, migration and killings, injuries, or the recruitment of fighters that change household composition and alter household labor supply, are other channels through which conflict impacts household welfare. Conflict can also affect human capital development. For instance, conflict in childhood can lead to poorer lifetime health (Akresh et al., 2012; Bundervoet et al., 2009). The number of conflict days is found to lead to an increase in the prevalence of child wasting by 19.3 percentage points among pastoral communities (World Bank, 2022b). These negative health effects can extend intergenerationally, leading the original victims' children to also have worse outcomes. Therefore, human capital losses due to conflict lower people's lifetime productivity and earnings and reduce intergenerational economic mobility.

Table 12. Estimated impacts of conflict exposure on household consumption growth

Explanatory variable	1	2	3	4
	Log consumption	Log food consumption	Long non-food consumption	Dietary Diversity
Days with Violent Events	-0.025*	-0.034**	-0.009	-0.025
	(0.014)	(0.016)	(0.026)	(0.043)
Region fixed effects	Yes	Yes	Yes	Yes
Geographic and household controls	Yes	Yes	Yes	Yes
Observations	1,027	1,027	1,027	1,027

Source: Authors' estimates based on ESPS 2018/19 and 2021/22; Armed Conflict Location & Event Data Project (ACLED); www.acleddata.com.
Notes: The outcome variables measure is the change between 2019 and 2022 by geographically matching ESPS households to conflict events during September 2019 to April 2022, which includes the intense country-wide spike in conflict that accompanied the war in Tigray. The analysis does not include households in Tigray because the region was not covered in the 2021/22 survey, therefore analysis focuses on the extensive conflict that occurred outside Tigray. Event days are the number of days with violent events - explosions/strikes and violence against civilians excluding political arrests - within 10, 20, or 30 km of the household in between ESPS waves. Fatality days are days where at least one fatality occurred. Population weights adjusted for attrition. Standard errors clustered at the EA level. Dietary diversity is the number of food groups consumed in the past week (range 0 to 12).

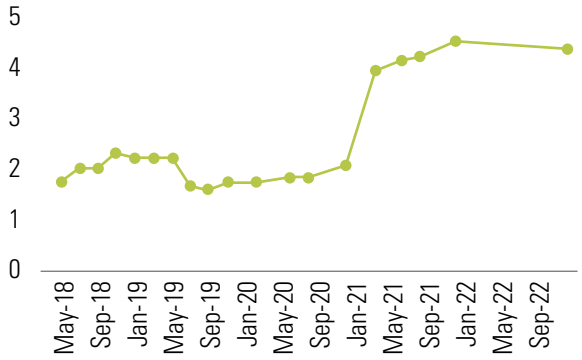
Conflict has driven up internal displacement for longer periods.

Internal displacement increased drastically across the country during the Tigray conflict. A year into the conflict, the number of IDPs rose to 4.5 million people, with at least 2.4 million driven by the conflict in Northern Ethiopia according to lower bound estimates from the Displacement Tracking Matrix (DTM) of the International Organization for Migration (IOM) based on the December 2021 through January 2022 observation round. At the time, this represented the "highest annual displacement figure ever recorded for a single country" (IOM, 2023). At the end of the conflict in November 2022, this number was still at 4.4 million (Figure 32a). Displacement was widely disbursed across the country and mostly driven by conflict (Figure 32b).

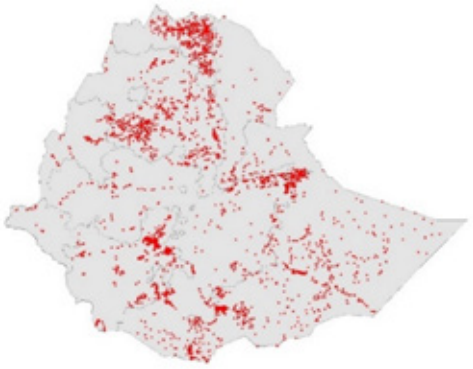
Internal displacement in Tigray increased suddenly and drastically during the conflict in Tigray, while it steadily doubled in the rest of the country between 2019 and 2022. Before November 2020, there were around 100,000 IDPs reported in Tigray, corresponding to around 5 percent of IDPs in Ethiopia. By mid-2021, the number of IDPs in Tigray increased to over 2 million (Figure 33a, Panel A), close to half of the national number of IDPs. All displacement in Tigray over this period was attributed to conflict. The number of IDPs in Tigray fell to around 1 million by the end of 2022, but still accounted for one quarter of the total number of IDPs in the country. In the rest of the country, the number of IDPs displaced due to conflict increased gradually from around 1 million at the start of 2020 to 1.9 million at the end of 2022, while the number of IDPs displaced due to climate increased from 0.5 million to 1.2 million over the same period (Figure 33b, Panel B). The increase in conflict-induced displacement occurred in almost all regions of the country. However, it is particularly notable in Amhara, Afar, Somali, and Oromia, as well as a sudden increase in Benishangul-Gumuz in mid-2022.

Figure 32. Internal displacement trends

Panel A: Nov 2018 – Oct 2020



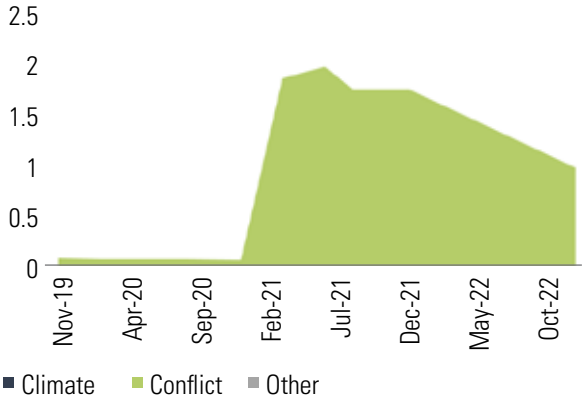
Panel B: Location of IDP Sites, Nov 2022- Jun 2023



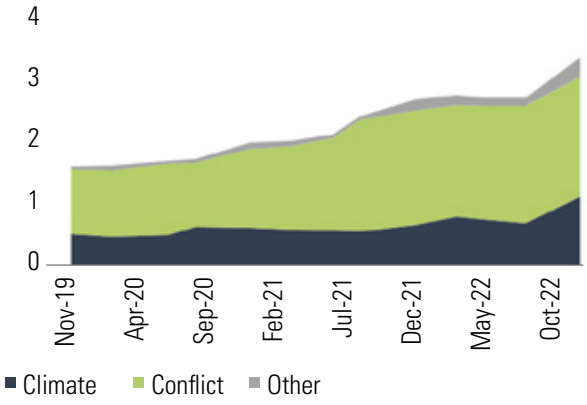
Source: Authors calculations using IOM DTM Site Assessments and Emergency Site Assessments (which covered parts of Tigray, Amhara, and Afar throughout 2021).
Notes: Each blue point in Panel A and red dot in Panel B represents a separate site assessment. Site Assessments between March-August 2022 were excluded from Panel A because they did not include Tigray. Key informants are used to identify sites with a reported 20 or more IDP households, then site visits and focus group discussions are conducted to estimate the number and characteristics of IDPs in each site. Each Site Assessment (SA) round, which typically occurs 4 times a year, presents an estimated snapshot of the IDP situation in the country. However, it is not necessarily a representative sample of IDPs because coverage of many sites is severely limited by inaccessibility due to conflict, sites with less than 20 IDP households are excluded, and self-settled IDPs in urban areas are often missed. These numbers should therefore be seen as estimates that are lower bounds. The November 2022 Site Assessment includes Tigray and was implemented through June 2023. Given limited data coverage, these should be seen as lower bounds.

Figure 33. Millions of IDPs by reason for displacement

Panel A: Tigray



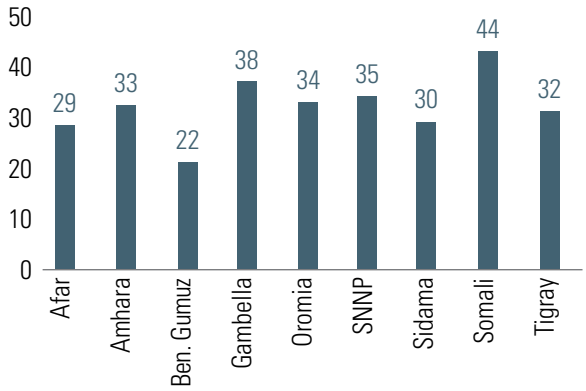
Panel B: Rest of Ethiopia



Source: Authors calculations using IOM DTM Site Assessments and Emergency Site Assessments.
Notes: Each site reported the most common reason for displacement in the site.

Climate shocks were also a contributing factor to internal displacement outside the Tigray region. At the end of 2022, conflict was the primary cause of displacement for 67 percent of IDPs in Ethiopia, climate for 26 percent of IDPs, and social tension (the largest "Other" category in Figure 33) for 7 percent of IDPs. Displacement due to climate shocks increased sharply towards the end of 2021. This increase is mostly reflecting the increase in drought events in Somali, Oromia, and Afar regions (IOM, 2023).

Figure 34. Average age of sites by region (December 2022)



Source: Authors' calculations using IOM DTM Site Assessments and Emergency Site Assessments.

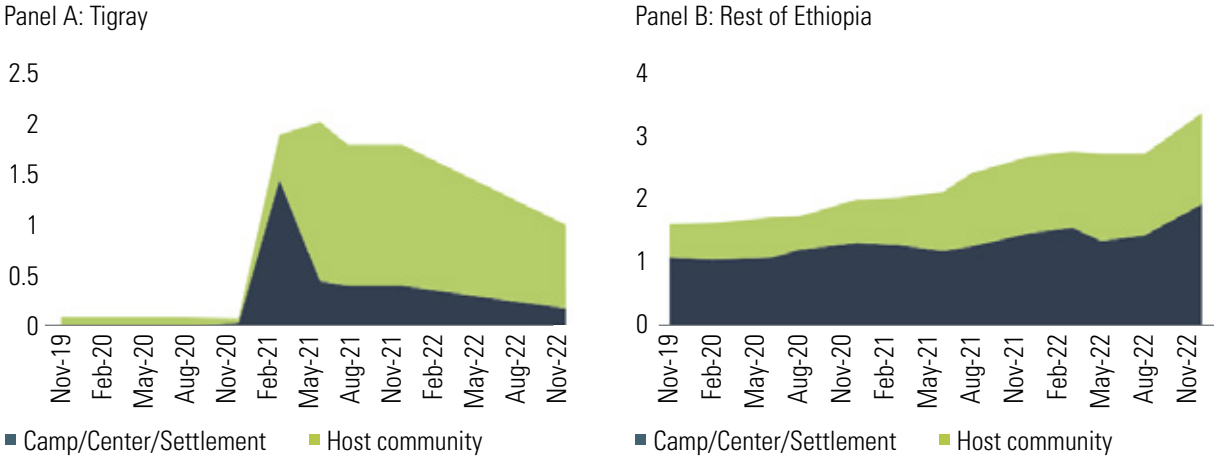
In December 2022, the average displacement site had been open for 35 months, highlighting the long-term nature of internal displacement in Ethiopia. This duration is relatively constant across regions (Figure 34). It is lowest in Benishangul-Gumuz, where there was a surge in displacement in mid-2022. Across the other regions with the most IDP sites – Tigray, Amhara, Oromia, and SNNP – the average site age varies from 32 to 35 months, and it is 44 months in Somali. Almost 20 percent of IDP sites across the country – and 42 percent in Somali - had been open for at least 5 years.

Recently, IDPs are more likely to settle in host communities. The share of IDPs in host communities increased steadily from 37 percent at the end of 2019 to 49 percent at the end of 2022 (Figure 35). In Tigray, IDPs initially settled into camps and collective centers, but by June 2021 the majority were hosted in host communities. To characterize the socioeconomic conditions of IDPs in Ethiopia, we look at the characteristics of IDP settlements over time.

Internally displaced people have limited access to services.

The quality of housing, electricity, and water services in IDP sites across Ethiopia is lacking - a persistent trend since 2019. Outside of Tigray, almost 80 percent of IDPs were in sites where over three-quarters of IDPs did not have access to electricity, and over 50 percent are in sites where there were complaints about water quality. Just under half of IDPs were in sites where roughly one-quarter were in shelters that did not protect them from the weather, while overcrowded and open-air shelters were less common, with few changes since 2019 (Figure 36). Multiple observations of the same displacement site over time make it possible to measure changes in site services over time. This reveals a gradual increase in the quality of shelters, a decrease in the quality of water services, and no change in the share with access to electricity (Table 12).

Figure 35. Millions of IDPs by settlement type

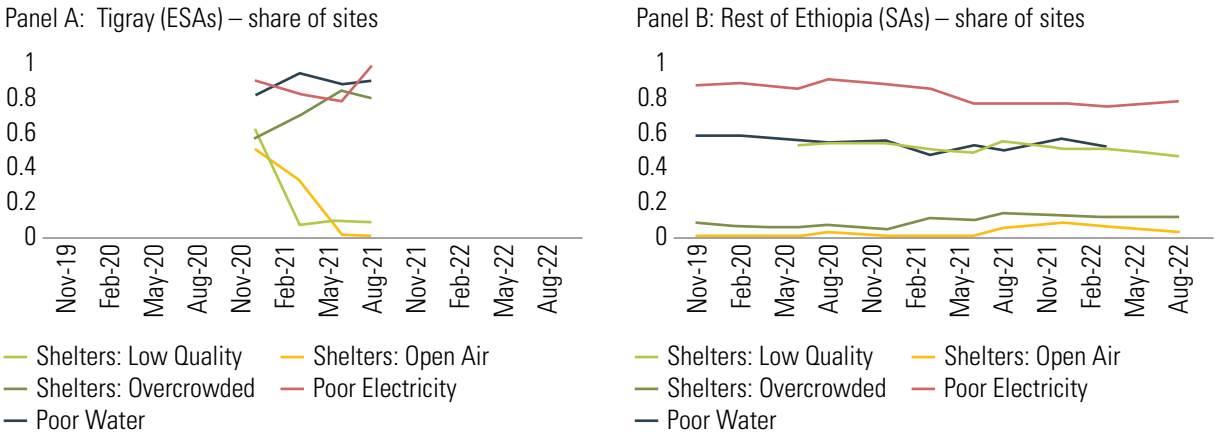


Source: Authors calculations using IOM DTM Site Assessments and Emergency Site Assessments.

Notes: Each site reported the most common reason for displacement in the site.

In Tigray, on the other hand, some IDP camps evolved during the crisis to meet needs while others worsened. At the onset of the crisis (in December 2020), 63 percent of IDPs were in sites with low-quality shelters (this time defined as "self-constructed and below standard"), 58 percent were in sites with over-crowded shelters, and 52 percent were in sites where over a quarter were sleeping in the open air (Figure 36a, Panel A). Nine out of ten IDPs lived in sites where electricity infrastructure and water service or tap infrastructure was non-existent, destroyed, or mostly not functioning. As the crisis continued, the share of Tigrayan IDPs in sites with low-quality or open-air shelters reduced to below 10 percent, but shelter overcrowding increased, and by August 2021, more than 90 percent of sites had dysfunctional electricity and water services.

Figure 36. Trends in site service quality attributes



Source: Authors calculations using IOM DTM Site Assessments and Emergency Site Assessments.

Notes: Quality indicators are binary variables measuring service quality at the site level, and the definitions vary between Tigray (ESAs) and the rest of Ethiopia (SAs). Shelters are "low quality" if over 25 percent are self-constructed and below standard (Tigray) or over 25 percent do not protect from weather (rest). Shelters are "open air" if over 25 percent are outside or in open space (Tigray and rest). Shelters are "overcrowded" if over 25% are within 3 meters (Tigray) or over 25 percent are overcrowded or congested (rest). Poor electricity indicates that electricity infrastructure is non-existent, destroyed, or mostly not functioning (Tigray) or over 75 percent do not have access to electricity (rest). Poor water indicates that water service or tap infrastructure is non-existent, destroyed, or mostly not functioning (Tigray) or if there are complaints about drinking water (rest).

Table 13. Relationship between site outcomes and site type and age

Explanatory variables		Outcome variables			
Key variable	Other Controls	Number of IDPs	Low-Quality Shelters	Poor Electricity	Poor Water
Host Community	Region and Round Fixed Effects, Site controls	-3509.80 (2438.61)	-0.34*** (0.03)	-0.21*** (0.03)	0.05 (0.04)
Years Since Site Opened	Site and Round Fixed Effects	542.14 (330.97)	-0.05*** (0.02)	0.01 (0.02)	0.03** (0.01)
Number of observations		21,504	13,741	15,722	13,525
Number of Sites		3,899	3,211	3,315	2,988

Source: Authors' calculations using IOM DTM Site Assessments and Emergency Site Assessments.

Notes: Data includes all DTM sites since Nov 2019 excluding Tigray. Tigray is excluded from this analysis because of the more limited coverage and different survey questions asked in the ESAs. Site fixed effects are not included in the regression with host community since the type of settlement typically does not change over time. Site controls include the site age and the primary reason for displacement. Shelters are low quality if over 25% of IDPs are not protected from weather, poor electricity indicates that over 75% do not have access to electricity, and poor water indicates that there are complaints about drinking water. Sample size changes as some variables are not available in some rounds. Sites are weighted by number of IDPs. Standard errors clustered at the site level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Relative to camps or settlements, IDP sites in host communities tend to have higher-quality housing and services and a lower preference for integration. Table 12 shows that, after controlling for the region, the age of the site and the cause of displacement, host community sites are 34 percentage points more likely to have high-quality shelters, 21 percentage points more likely to have broad electricity access.

Low access to services reflects challenges to service provision faced by hosting communities and disparities between IDPs and hosting communities. Urban non-hosting areas have better housing conditions in terms of dwelling conditions such as roof, floor, and toilet facilities compared to hosting areas – i.e., areas where households in the ESPS 2021/22 data lived within 5 kilometers IDP site location in DTM data). Hosting areas also have lower access to improved drinking water sources, in rural and urban areas. Thus, poor indicators on housing among IDPs partly reflect less than ideal conditions among hosting communities. On the other hand, IDP hosting areas have better access to electricity from grid connections in rural and urban areas, yet these are the most lacking among IDPs. This points to disparities between IDPs and host communities in access to public services.

The majority of IDPs prefer return, but preferences vary across regions.

Return and integration are the preferred solutions for IDPs, but preferences vary across regions. The majority of IDPs—54 percent nationally in 2022—live in sites where return is the preferred solution. Local integration is the second preferred solution. On average, 32 percent of IDPs in 2022, were in a site where the majority preferred local integration as opposed to return or relocation, the least preferred option. These preferences vary significantly across regions. In Tigray, almost all IDPs are interested in returning home, while in Somali and Afar over 70 percent of IDPs are in a site where the preferred solution is local integration (Figure 37). Only in Amhara, is a considerable number of IDPs (37 percent) living in sites where most people prefer to be relocated. The longer IDPs are displaced, the more likely they are to prefer local integration. For each additional year of displacement, the preference for integration over return or relocation increases by 6 percentage points. However, IDPs

in host communities are 19 percent less likely to prefer local integration (Table 13).

However, there are opportunities presented in host communities that increase the appeal for integration. IDP hosting areas have a better-educated population compared to non-hosting areas. The share of household members with secondary education is higher in hosting areas compared to non-hosting areas, both in rural and urban areas. The share of the population engaged in wage employment is also higher in hosting areas, whereas employment in agricultural activities is lower in hosting areas, specifically in urban areas. Also, rural hosting areas have lower shares of people engaged in self-employment.

Integration of IDPs into host communities is likely more effective in urban areas than in rural areas. Unlike urban areas, rural IDP hosting areas have lower welfare levels and fewer assets such as agricultural land, livestock, and farm equipment. Household welfare level measured in per capita consumption expenditure is lower in rural hosting areas compared to non-hosting areas. On the other hand, in urban areas, welfare levels are similar between hosting and non-hosting areas. Households in rural hosting areas cultivate less than a hectare of agricultural land on average, which is smaller than non-hosting areas. In addition, ownership of livestock in tropical livestock units (TLU) and farm implements is lower for households in rural hosting areas compared to households in non-hosting areas. Consistent with monetary and non-monetary welfare indicators, food security, measured by dietary diversity score, is lower in rural hosting areas.

Figure 37. Preferred solution by region

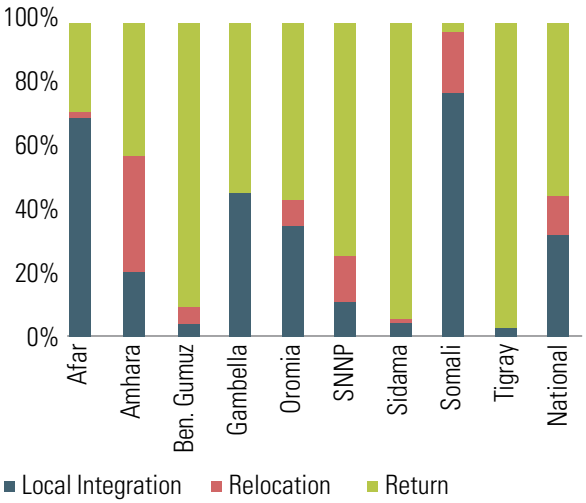


Table 14. Preference for integration by site type and age

Explanatory variable	Site attribute	
	Host Community	Years Since Site Opened
Prefer Integration	-0.19***	0.06***
	(0.03)	(0.01)
Region Fixed Effects	Yes	No
Site Fixed Effects	No	Yes
Site controls	Yes	No
Round Fixed Effects	Yes	Yes
N	16,634	16,634
Number of Sites	3,434	3,434

Source: World Bank staff calculations based on ESS 2011/12, 2013/14, 2015/16, 2018/19.

Notes: (a) The preferred durable solution indicates the preference for most IDPs in the site, for the most recent data available in August 2022 (Nov 2022 in Tigray). (b) Data includes all DTM sites since Nov 2019 excluding Tigray. Tigray is excluded from this analysis because of the more limited coverage and different survey questions asked in the ESAs. Site fixed effects are not included in the regression with host community since the type of settlement typically does not change over time. Site controls include the site age and the primary reason for displacement. Shelters are low quality if over 25% are not protected from weather, poor electricity indicates that over 75% do not have access to electricity, and poor water indicates that there are complaints about drinking water. Sample size changes as some variables are not available in some rounds. Sites are weighted by number of IDPs. Standard errors clustered at the site level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

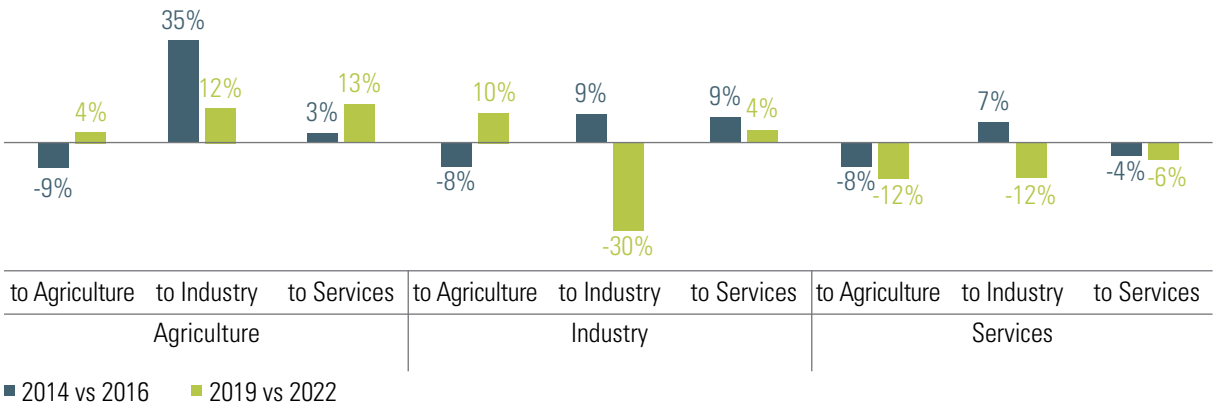
STRUCTURAL TRANSFORMATION AND HOUSEHOLD WELFARE IN ETHIOPIA

This section examines the changes in the labor market in Ethiopia to assess the pace and nature of structural transformation, whether this contributes to welfare improvements, and the policy constraints to the acceleration of the transformation. *The analysis reveals that movements of labor from agriculture to non-agriculture sectors - services in particular – are linked to increases in household consumption. Such shifts appear to have happened with a decline in agriculture employment and a rise in services employment, but this is overshadowed by the fact that more people have left the labor market altogether, resulting in a growing share of people not in employment, education, or training, signifying that the economy generated far fewer jobs than the growing number of people who need a job. The stalling job creation – especially wage employment in the private sector – reflected a stagnation in the country's economic structure as the state-led growth model reached its limit which was laid bare by the recent poly-crisis. Distortions and macroeconomic imbalances have widened in recent years, especially in the forex market, hindering job creation. Evidence presented shows that addressing these imbalances—aligning the exchange rate for example—will increase household consumption and create more jobs. Migration is a channel for moving labor from agriculture into non-agriculture which increases household consumption while being a catalyst for rural economic transformation, but this too, has been inhibited by a combination of prohibitive costs and administrative barriers faced by liquidity constrained migrants in destination areas.*

Sectoral and spatial shifts of labor from agriculture and rural areas have the potential to drive poverty reduction in Ethiopia.

Households shifting to more productive sectors experience higher consumption levels and greater growth in welfare compared to those who remain in their initial sectors. This is observed when comparing growth rates in consumption among households who stayed within sectors using the Ethiopia Socio-economic Panel Survey (ESPS) panel data for 2019 and 2022. Despite similar consumption levels in 2019, households that stayed in the same sector experienced a 3 percent decrease in consumption per capita by 2022, while households who made a progressive transition had a consumption growth rate of 9 percent and those making a regressive transition a welfare loss of 12 percent (Figure 38). Those who reallocated labor away from agriculture saw the biggest welfare improvements. This pattern is driven by rural areas.

Figure 38. Percentage change in household welfare by sectoral transition types



Source: Authors' estimates based on ESPS 2013/14; 2015/16; 2018/19; 2021/22.

Migration is a powerful channel for shifting rural labor from agriculture into non-agriculture sectors, facilitating rural economic transformation and increasing household consumption (World Bank, 2022c). Rural-urban migrants are equally as likely to be economically active, employed, and in non-agriculture work as urban residents, but are more likely to be in wage employment (Table 14), though a disproportionate share of wage-employed rural-urban migrants is engaged in low-quality domestic wage work (17 percent compared with 5 percent among non-migrant urban residents). In addition to being a pathway to better opportunities, migration reduces surplus labor in rural areas which raises labor productivity and output per worker (Table 15). This, in turn, raises household consumption and facilitates economic mobility (World Bank, 2022c).

In addition, remittances that migrants send back home contribute to households' income and become a source of investment and a coping mechanism during shocks, improving resilience and preventing households from falling back into poverty (World Bank, 2022c). On average, remittances from urban migrants were equivalent to one-third of the receiving household's consumption per capita in 2016, and more than double that among the poorest quintiles. Tracking migrants and non-migrants after five years in 18 villages in Ethiopia, de Brauw, Mueller, and Woldehanna (2018) also find positive impacts on real consumption levels among migrants, demonstrating the net positive benefits of migration.

Table 15. Labor market outcomes of migrants

Labor market indicator	Rural: Non-migrant	Urban: Non-migrant	Rural-urban migrant
Active	74%	71%	74%
Unemployed	6%	18%	20%
Sector of employment			
Agriculture	79%	13%	13%
Industry	3%	17%	20%
Services	18%	70%	68%
Employment type			
Wage employee	4%	45%	53%
Self-employed	58%	42%	35%
Unpaid family	37%	11%	10%
Employer	0%	1%	0%
Others	1%	1%	1%

Table 16. Impact of migration on factor markets and welfare in origin communities

Statistics	ATT	SE
Cultivated land (ha per capita)	0.035**	0.001
Land rented out	0.01**	0.001
Family labor supply (days per capita)	69.4**	0.695
Value of crop harvest (Birr per capita	1621.5**	107.4
Consumption per capita	3848.1**	36.9

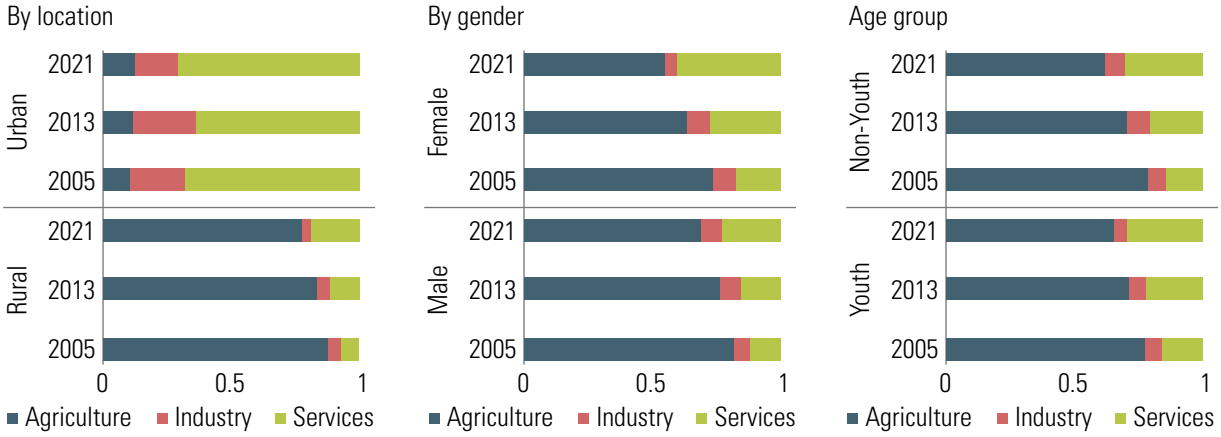
Source: Authors' estimates from the LFS 2021 (Table 15) and ESPS for 2018/19 and 2021/22 (Table 16).

Notes: Results in Table 15 are based on a household level regression using a propensity score 'Nearest Neighbor' matching estimator. A migrant household has at least one-person aged 10 years and above who moved out of the household except for health and natural disaster displacement reasons. The model includes household demographics, human and social capital, liquidity constraints, drought presence, and market accessibility which are controlled at village level and woreda level, respectively. Outcome variables are; (a) Cultivated land per capita - the area per hectare that the household utilizes for crop production; (b) Land rented out - the share of households renting/sharing out agricultural land; (c) Family labor supply - the total number of days household members spent on the household planting and harvesting activities; (d) Value crop harvest - Ethiopia birr value of the total production; (e) Welfare is measured using spatially adjusted per adult total consumption expenditure. ** results are statistically significant at the 5 percent level.

Many rural Ethiopians have moved out of agriculture in recent years.

There has been a shift—driven by women in rural areas—away from agricultural employment accompanied by continued expansion of employment in the service sector. The share of agricultural employment declined by 16 percentage points between 2005 and 2021, which was wholly driven by the decline in agricultural employment in rural areas. This decline was greater among women, whose share of employment in the agriculture sector declined by 19 percentage points, and among older adults. The increasing share of employment in the service sector correspond with the declining trend in agricultural employment in rural areas (Figure 39). Industry's employment share however declined overall, driven by a decline in urban areas from 24 percent in 2013 to 17 percent in 2021. The service sector has thus become the primary driver of job creation.

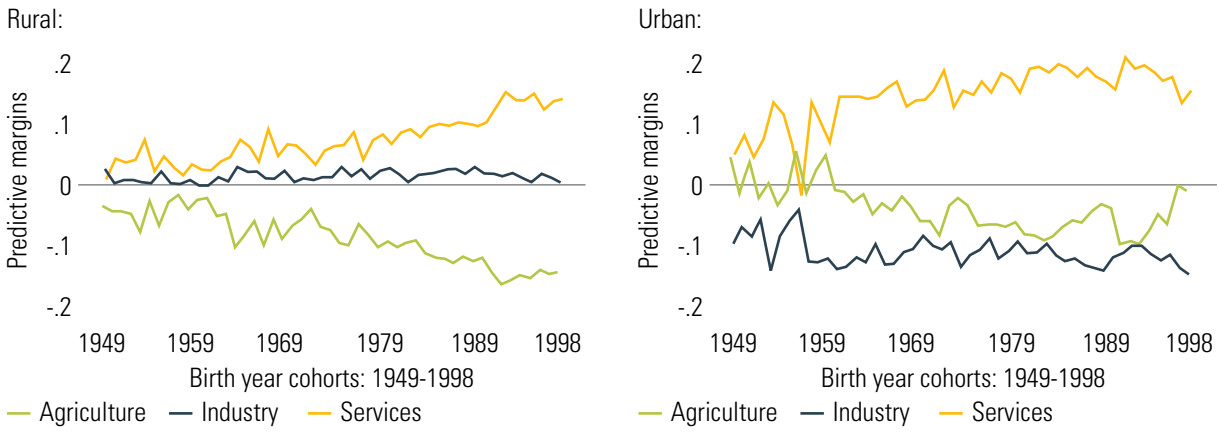
Figure 39. Sectoral-employment shares



Source: Authors' estimates based on LFS 2005, 2013, 2021.

Notes: Data from Tigray were removed from the analysis of LFS 2005 and 2013 as LFS 2021 did not include Tigray. More details on methodology and data can be found in Wieser and Abubakar (2024).

Figure 40. Predictive margins for sectoral labor mobility by birth year cohort and location



Source: Authors' estimates based on LFS 2005, 2013, 2021.

Notes: The intergenerational effects of sectoral employment were estimated using a fixed effects estimator on the cohort-level pseudo panel. Details on the methodology can be found in Box 2 and Wieser and Abubakar (2024). Data from Tigray were removed from the analysis of LFS 2005 and 2013 as LFS 2021 did not include Tigray. More details on methodology and data can be found in Wieser and Abubakar (2024).

Youth and women are more likely to work in non-agriculture sectors than the older generation. Evidence suggests that the global decline in agricultural employment is influenced by the entry of new cohorts into the labor market (Porzio et al., 2022), with these cohorts exhibiting different sectoral preferences than existing ones (Hobjin and Schoellman, 2019). Tracking the labor market outcomes using age cohort pseudo-panels to predict labor market outcomes based on age and gender cohort attributes (Box 8), reveals a widening margin between older and younger generations in the shift of labor towards non-agricultural sectors. The effects are most visible among cohorts born after 1963 in rural and urban areas and accelerated for those born around 1978 in rural areas (Figure 40). Driven by younger cohorts aged 15 to 20 years across periods, larger dips in the share of younger agricultural workers are accompanied by substantial upticks in non-agricultural employment, particularly in services. The sectoral reallocation of labor is thus driven by the entry of new cohorts into non-agricultural sectors in rural and urban areas.

Box 8. Following cohorts over time

To better understand the impact of age on sectoral labor mobility decisions—for example, when, over the job life cycle, workers decide to reallocate labor out of or into agriculture—Wieser and Abubakar (2024) evaluate the intergenerational effects of sectoral employment, considering important determinants of sectoral choice using a fixed effects estimator on the cohort-level pseudo panel. A pseudo panel is an approach to create panel data from cross-sectional data by aggregation to follow cohorts over time. We define cohorts by grouping observations by their birth year, gender, and residential status, and then create a panel at the cohort level.

Using this technique allows for examining sectoral mobility by tracking changes in the average share of sectoral employment across generations, along with adopting panel data techniques to assess the determinants of sectoral shares across generations. Following Guillerm (2017), the following fixed effects linear model is typically used with panel data:

$$Y_{it} = \alpha_i + \beta X_{it} + \varepsilon_{it}, \text{ with } i=1, ..., N; t=1, ..., T. \quad (1)$$

where Y_{it} measures the dependent variable of person i in time t and α is the individual fixed effect. The term X_{it} is a vector of time-varying independent variables, and β, the associated vector of parameters to be estimated. Here, ε_{it} is the residual term capturing anything else that the model does not consider.

In pooled cross-sectional data estimation, ignoring the fixed effect leads to biased estimators of the effect of the independent variables if these variables are correlated with the fixed effect. Because the same individuals are not observed over time as found in panel data, a pseudo panel is constructed from the repeated cross-sections such that cohorts can be observed over time rather than individuals. If c is the cohort at time t, then a pseudo-panel model that is estimated in practice is as follows:

$$Y^*_{ct} = \alpha^*_c + \beta X^*_{ct} + \varepsilon^*_{ct}, \text{ with } c=1, ..., N; t=1, ..., T. \quad (2)$$

Such that for each dependent or independent variable v, v^*_{ct}, $= E(v_{it} | i \in c, t)$. Considering that the true values of Y^*_{ct} and X^*_{ct} are unknown, empirical approximations are based on intra-cohort means:

$\overline{Y_{ct}} \frac{1}{n_{ct}} \sum_{i \in c,t} \sum_{it}$ and $\overline{X_{ct}} \frac{1}{n_{ct}} \sum_{i \in c,t} X_{it}$ (i.e., the means of observed values for the individuals belonging to the cohort). The smaller the size of the cohort, the greater the errors in measuring the empirical means for Y^*_{ct} and X^*_{ct}. For this reason, around 100 individuals per cohort were considered sufficient to reduce sampling errors (Verbeek & Nijman, 1992, 1993).

Using one-year intervals for the birth year resulted in 264 cohorts across 66 birth-year groups, subdivided equally between men and women and between rural and urban locations over time. Including cohorts that appear in at least two survey rounds, reducing the sample to 50 birth-year groups born between 1949 and 1998 brought the sample down to 200 cohorts.

To assess the generational effects of sectoral mobility at the cohort level, the mean level for continuous variables was included in addition to survey year dummies: age and age squared, household size, dependency ratio, and number of other employed adult household members. For non-continuous variables, cohort level shares were used, namely, the share of recent migrants, levels of educational attainment and skills, type of employment, household headship, marital status, and town size categories. Considering that gender and location of residence are time-invariant variables used to create cohorts, these are absorbed by the fixed effects parameter α^* in equation (2).

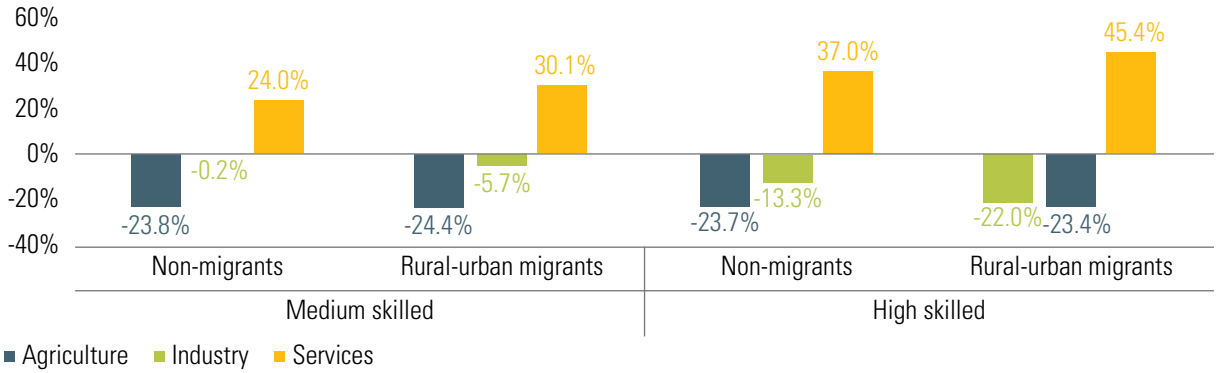
In urban areas, however, the demographic structure influences the sectors of work, for women in particular. Those belonging to a large household with a high dependency ratio have a lower probability of working in industry and services compared to agriculture. This trend is driven by urban female workers, whose decisions may be partly influenced by the constraints of balancing caregiving responsibilities with sectoral preferences. Also, the greater sense of communal living and stronger social support, more prevalent in rural settings than urban areas, can influence a worker's decision to seek employment outside or within agriculture.

Higher-skilled migrants, like other high-skilled workers in general, tend to work in non-agriculture sectors. Compared to low-skilled workers, medium- and high-skilled workers are less likely to work in agriculture and industrial sectors. There are larger marginal effects among high-skilled rural-to-urban migrants (45 percent) compared to similarly high-skilled non-migrants (37 percent), with a similar gap observed among medium-skilled rural-urban migrants and non-migrants (30 vs 24 percent). Many of the high-skilled rural-to-urban migrants get jobs in high-skilled services (Figure 41). On the other hand, low-skilled workers who move into urban areas are likelier to work in low-skilled agriculture or low-skilled industrial sectors, signaling the reallocation of labor from traditional, often low-productivity rural agriculture to comparable low-skilled roles in emerging urban sectors.

Recent signs of labor shifting away from agriculture belie weaknesses in Ethiopia's labor market.

Recent shifts belie the loss of workers as many people, particularly women, stopped working. The sectoral shift in employment composition is largely explained by the undesirable fact that millions left the labor market altogether in rural areas, which is evident in the rising number of NEET (not employed, in education, or training) in rural areas of 5 million during 2013-21. Moreover, the unemployment rate among women and youth increased to 8 percent for each group in rural areas and to 29 percent for both young people and women. Though the service sector net job growth of 1.7 million in rural areas matched the 1.9 million decline in agriculture employment during 2013-21, the number of service jobs created during this period was just the same as jobs created in the sector during 2005-13 and fell significantly below the increase in the out of school, working-age population in rural areas. The increase in wage employment also does not appear to be significant when comparing changes during 2013-21 rather than the entire 2005-21 period.

Figure 41. Skill levels and rural-to-urban migration



Source: Authors' estimates based on ESPS 2013/14; 2015/16; 2018/19; 2021/22.

Notes: To determine whether the decline in low-skilled agricultural employment in rural areas and the corresponding increase in low-skilled urban agriculture is influenced by rural-to-urban migrants, we interacted occupational skill levels with a person's rural-to-urban migration status for the urban sample

Job creation has stalled, lagging the growing number of people needing jobs. Job creation decelerated from 34 percent between 2005 and 2013 to 10 percent between 2013 and 2021 (Table 16). While there were 3.2 million more jobs in 2021 compared to 2013, this was underwhelming compared to the estimated 1.2 million new entrants into the labor market every year and falls short of Ethiopia's job creation target of 2 million jobs each year (MoF, 2020). The share of services in employment only increased because people left agriculture to become unemployed or economically inactive but not because of accelerated job creation in the service sector. Evidence from the cohort analysis points to the new service job expansion being driven by labor market entrants who found work in the services sector instead of existing, older, workers moving from agriculture into services.

The lack of economic opportunities drove the rise in economic inactivity. The probabilities of transitions between employment, unemployment, and inactivity in the rural labor market can be estimated by tracking individuals in the ESPS 2018/19 and 2021/22 panel surveys to reveal the correlates of the movement of people out of the labor force. This data corroborates the trend of increasing economic activity observed in the LFS 2021. The transition matrices confirm that women are more likely than men to become inactive in the labor market. Almost half of unemployed females in 2019 became inactive in 2022, while 30 percent of women employed in agriculture in 2019 went into inactivity (Figure 42). Estimates controlling for multiple factors show that older individuals, those with more than secondary education, exposed to recurrent weather shocks (hence limited work in agriculture), and those living in remote locations (measured by low levels of market accessibility) are more likely to become inactive. This broadly signifies that rising inactivity is driven by the lack of suitable opportunities in rural areas.

Table 17. Employment and job growth of subsectors

	Employment						Jobs Growth			
	Number			Share (%)			2013-2005		2021-2013	
	2005	2013	2021	2005	2013	2021	Number	Share (%)	Number	Share (%)
Total	**23,933,681**	**31,984,367**	**35,209,845**	**100**	**100**	**100**	**8,050,686**	**100**	**3,225,478**	**100**
Total Agriculture	**18,747,856**	**22,676,005**	**22,283,795**	**78.4**	**70.9**	**63.3**	**3,928,149**	**48.8**	**-392,210**	**-12.2**
Crops	2,017,929	5,079,065	4,731,206	8.4	15.9	13.4	3,061,136	38.0	-347,859	-10.8
Animals	607,989	1,782,599	3,414,581	2.5	5.6	9.7	1,174,610	14.6	1,631,982	50.6
Mixed farming	16,020,623	14,553,625	12,274,257	67	45.5	34.9	-1,466,998	-18.2	-2,279,368	-70.7
Other (e.g., hunting/gathering/forestry)	33,610	111,571	84,817	0.1	0.3	0.2	77,961	1.0	-26,754	-0.8
Agricultural support	67,705	1,149,146	1,778,935	0.3	3.6	5.1	1,081,441	13.4	629,789	19.5
Total Industry	**1,687,525**	**2,642,747**	**2,285,953**	**7.1**	**8.3**	**6.5**	**955,222**	**11.9**	**-356,794**	**-11.1**
Food processing	560,978	259,535	365,942	2.3	0.8	1	-301,443	-3.7	106,407	3.3
Non-food manufacturing	694,281	1,377,231	780,022	2.9	4.3	2.2	682,950	8.5	-597,209	-18.5
Mining and extractives	59,387	116,274	184,562	0.2	0.4	0.5	56,887	0.7	68,288	2.1
Construction	334,774	717,795	726,421	1.4	2.2	2.1	383,021	4.8	8,626	0.3
Public Utilities	38,104	171,911	229,006	0.2	0.5	0.7	133,807	1.7	57,095	1.8
Total Services	**3,483,283**	**6,665,615**	**10,640,096**	**14.6**	**20.8**	**30.2**	**3,182,332**	**39.5**	**3,974,481**	**123.2**
Food trade	462,430	1,280,495	1,618,960	1.9	4	4.6	818,065	10.2	338,465	10.5
Non-food trade	784,843	775,105	703,063	3.3	2.4	2.0	-9,738	-0.1	-72,042	-2.2
Transport	113,825	318,772	547,244	0.5	1	1.6	204,947	2.5	228,472	7.1
Hospitality - food	612,598	375,054	336,956	2.6	1.2	1.0	-237,544	-3.0	-38,098	-1.2
Hospitality - accommodation	38,394	24,999	13,142	0.2	0.1	0.0	-13,395	-0.2	-11,857	-0.4
Information & communication	44,189	56,010	90,536	0.2	0.2	0.3	11,821	0.1	34,526	1.1
Finance & real estate	40,055	125,046	276,673	0.2	0.4	0.8	84,991	1.1	151,627	4.7
Professional/technical	28,799	128,822	180,131	0.1	0.4	0.5	100,023	1.2	51,309	1.6
Administrative & support	17,474	131,822	264,196	0.1	0.4	0.8	114,348	1.4	132,374	4.1
Public administration & defense	273,890	266,961	363,312	1.1	0.8	1.0	-6,929	-0.1	96,351	3.0
Education & health	325,238	837,187	1,243,855	1.4	2.6	3.5	511,949	6.4	406,668	12.6
Arts, entertainment & recreation	10,450	36,785	39,926	0.0	0.1	0.1	26,335	0.3	3,141	0.1
Community & family-oriented	681,914	2,288,843	4,891,159	2.9	7.2	13.9	1,606,929	20.0	2,602,316	80.7
Extraterritorial organizations	49,185	19,713	70,945	0.2	0.1	0.2	-29,472	-0.4	51,232	1.6

Source: Authors' estimates based on LFS 2005, 2013, 2021.

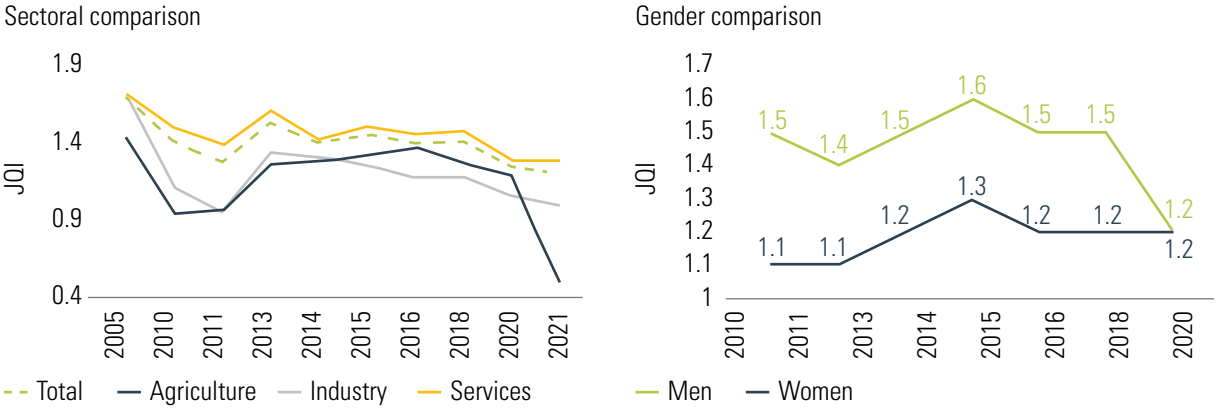
Notes: Analysis excludes Tigray in LFS 2005; 2013 for compatibility with LFS 202. See Wieser and Abubakar (2024) for more details. The vast majority of the increase in employment in the community & family-oriented category are activities of households as employers of domestic personnel, undifferentiated service-producing activities of private households for own, and other personal services activities.

Figure 42. Labor market transitions among rural population aged 18-64

Source: Authors' estimates from the ESS 2018/19 and 2021/22.

The quality of wage jobs in Ethiopia has been consistently low and has deteriorated further in recent years. Following an approach discussed by Hovhannisyan et al. (2022), the quality of jobs in Ethiopia is assessed for wage-employed workers in urban areas (where wage employment is concentrated) based on three dimensions: (i) income (wage earnings), (ii) job stability (employment by a formal entity and having a permanent contract), and (iii) working conditions (excessive work hours and whether people would like to work more, occupational safety and skills match). These are combined to generate a job quality index with a minimum and maximum value of 0 and 3, respectively. The index for urban wage jobs in Ethiopia has ranged between 1.2 and 1.4 during the past decade, reflecting a generally low quality of jobs (Figure 43). The lowest job quality was registered in 2021, signifying a drop from 2018. Service sector jobs, which offer better job stability, working conditions, and wages than agriculture and industry, are consistently higher than the overall average in Ethiopia, with better jobs found in finance, education, health, and other professional subsectors. However, the job quality in the service sector and the industry sector, has been on a downward trajectory since 2013. The job quality in agriculture, which has been on the rise since the beginning of the past decade, also experienced a sharp drop in 2021. The overall job quality of urban wage jobs thus deteriorated across all sectors in 2021.

Figure 43. Trends in wage job quality in urban areas



Source: Authors' estimates based on UEUS 2010-2020.

Notes: The job quality index (JQI) for urban Ethiopia describes the quality of jobs in seven indicators across three dimensions and sums the number of successes across dimensions with equal weighting and ranges from 0 to 3. It yields a score of 0 if a wage worker has a job that does not meet the criteria for quality in all dimensions and a maximum score of 3 if a wage worker's job meets the requirements for quality across all three dimensions. For more details on methodology, see Wieser and Abubakar (2024).

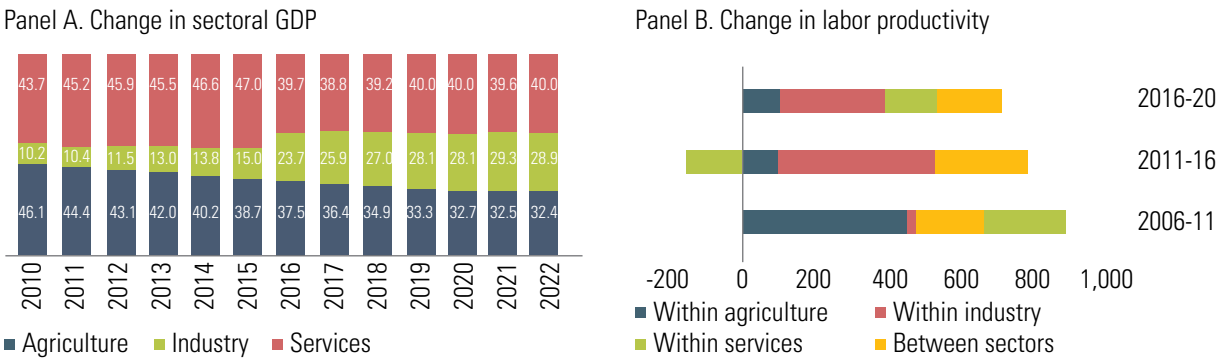
Job quality disparities persist by gender, age, and level of education. Adopting an approach inspired by Brummund et al. (2018) and Hovhannisyan et al. (2022)[1] to better understand the characteristics that determine the quality of jobs shows that women, youth, and the less educated are less likely to secure higher-quality jobs. In contrast, those in the public sector with advanced skills work in better-quality jobs. Gender differences in the quality of jobs are largely explained by sector. Working women increasingly move from elementary occupations into professional, technical, clerical, and skilled agriculture roles. At the same time, men account for increases in the share of machinery operators in the industrial sector.

Jobs in rural Ethiopia are characterized by low-skilled employment. Agricultural activities are mainly described by subsistence farming. Consequently, 85 percent of rural employment in 2021 was low-skilled, while in urban Ethiopia, only one-third of employment is low-skilled. There has been some evidence of progress in skill upgrades in the Ethiopian workforce, albeit with noticeable differences between urban and rural areas. Between 2013 and 2021, the share of medium-skilled workers in rural areas grew by 17 percent and that of high-skilled workers by 33 percent (though given the low share of medium and high-skilled workers in rural areas, this is only a 2 percentage point and 0.5 percentage point increase in absolute shares), while in urban areas, there was a 14 percent decrease in medium-skilled jobs and a 6 percent increase in high-skilled jobs. In addition to human capital development and occupational shift patterns, these differences may be explained by labor mobility between rural and urban areas.

Stalling non-agriculture job creation reflects a faltering transformation in Ethiopia's economic structure as the state-led growth model reached its limit

The economy's structure has remained broadly unchanged since 2018. Having initially declined by slightly more than 11 percentage points during 2010-18, agriculture's share in GDP has since declined by less than 2 percentage points while both the industry and service sectors' shares increased by about 1 percentage point (Figure 44a). Consistent with this lack of a further shift in the economic structure, net job creation in non-agriculture sectors declined. The industry sector lost jobs, owing to the non-food manufacturing subsector shedding close to 600,000 jobs during 2013-21, after having created almost 700,000 jobs in the preceding 8-year period. The contribution of between sector shifts to labor productivity also declined (Figure 44b).

Figure 44. Changes in economic structure and labor productivity



Source: Authors' estimates based on NBE annual reports; World Bank, 2024.

[1] The pooled cross-sectional regression model includes an individual's job quality about gender, age, educational attainment, occupational skill level, public or private sector employment, and employment subsector. Additionally, regional and year dummies are included to account for unobserved effects related to time and location. The specification and regression results are presented in Annex 4.

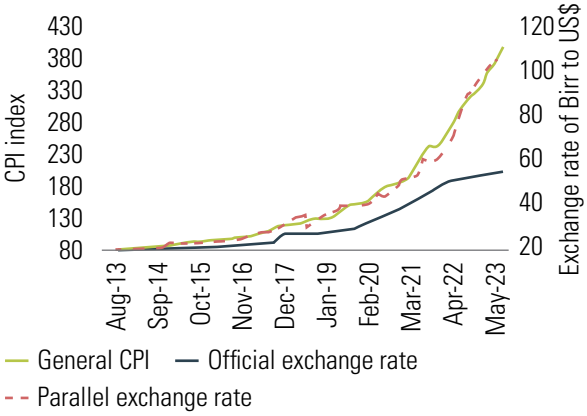
The limited change in Ethiopia's economic structure is a manifestation of the limitations of Ethiopia's state-led growth model, exposed during multiple crises in recent years (World Bank, 2024). Ethiopia relied on a state led growth model focused on improving intermediate inputs (roads, energy infrastructure, industrial parks, agricultural inputs) to stimulate domestic and foreign private investment. This was financed through domestic financial repression and exchange rate controls, enabling the state to commandeer domestic and external financial resources that were mostly channeled to State-Owned Enterprises (SOEs). This created an enormous cost by limiting the accumulation of private surpluses, crowding out private investment, undermining external competitiveness (World Bank, 2022a) and suppressing market incomes including for farmers (World Bank, 2022b). Declining exports and reduced capital inflows contributed to mounting external imbalances which coupled with declining agricultural productivity and the impact of persistent droughts and locust infestations, led to a recent slowdown in Ethiopia's growth rates (World Bank, 2024).

Foreign exchange market distortions and shortages aggravated these external challenges, resulting in widespread foreign exchange rationing that hindered economic activity, particularly in the private sector. The black-market premium increased from around 20-30 percent during the second half of the last decade to more than 100 percent now. Inflation has risen in tandem with the parallel exchange rate (Figure 45a). Though the official exchange rate was devalued significantly in 2021, the real effective exchange rate has been appreciating which undermined the competitiveness of exports (Figure 45b).

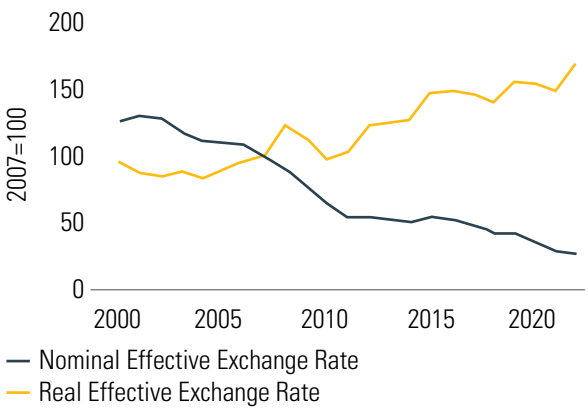
Widening imbalances, in the forex market, for example, inhibited job creation, especially in the manufacturing sector, which started losing jobs. Analysis of data from the Large- and Medium-sized Manufacturing Industries Survey (LMMIS) shows that manufacturing employment started to decline in 2018 (Figure 46), corroborating the trend observed in the labor force surveys. Statistical models show that a Real Effective Exchange Rate (REER) depreciation would have created more jobs and increased wages and productivity in proportionate to manufacturing firms' export exposure without a significant impact in relation to the firms' import exposure (Figure 47). The rents from an overvalued exchange rate to a degree, improved employment proportionately to a firm's import exposure, but at only slightly more than a fifth of the impact of the REER appreciation.

Figure 45. Trends in exchange rates and inflation in Ethiopia

Panel A: Official and Parallel Exchange Rates and CPI



Panel B: Real and Nominal Effective Exchange Rates



Source: NBE reports, Ethiopia Statistical Service (ESS) and Darvas (2021).

Figure 46. Number of workers in large and medium scale manufacturing firms in Ethiopia

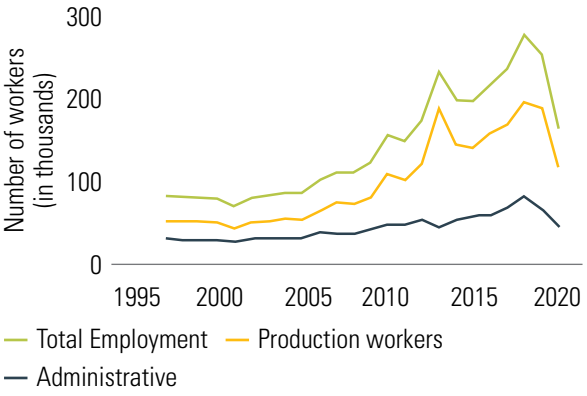
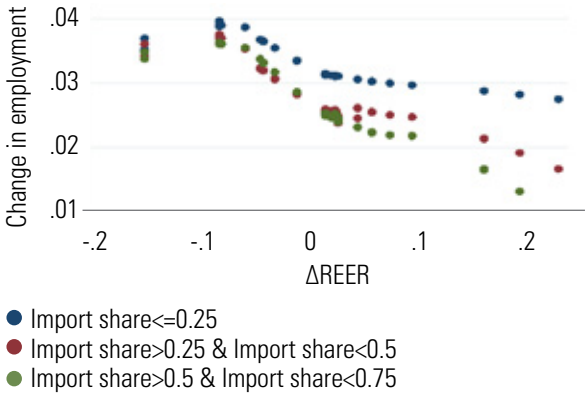


Figure 47. Relationship between exchange rates and employment by manufacturing firms



Source: Authors' estimates based on LMMIS.

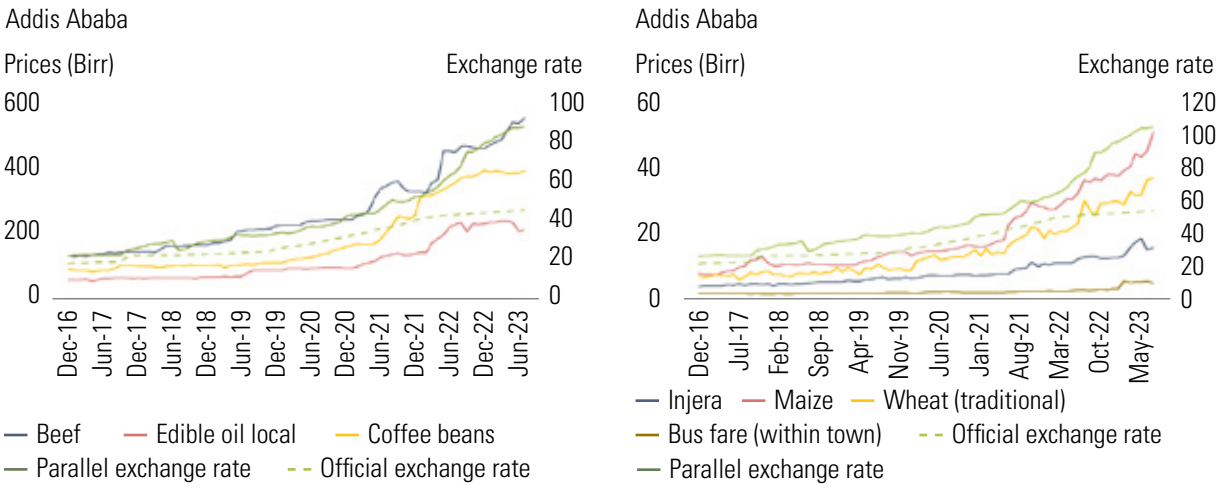
Notes: Predicted values of changes in employment based on a regression model following Nucci and Pozzolo (2010), using the LMMIS firm level data. The regression model includes the REER, the black-market premium, firm's export exposure (share of exports in revenue) and import exposure (share of imports in input costs), interactions between the import/export exposure variables with the REER, as the main explanatory variables. Other firm characteristics and sector fixed effects are also included.

While addressing macroeconomic imbalances has short-term costs, it will generate better-quality jobs and higher incomes.

Reforms to the forex regime in Ethiopia have been obstructed by concerns that an exchange rate realignment would raise inflation. Analysis from a CGE modeling accounting for the dual exchange rate and preferential access to forex for some preferred commodities provides tentative evidence supporting this notion (see Box 9). Compared to the business-as-usual (BAU) scenario, the CPI would be 5.4 percent higher in 2024 and 6.7 percent by 2030. This can be attributed to the structure of imports in Ethiopia. Unlike other countries which had large forex distortions such as Zimbabwe, not all key commodities in Ethiopia track the parallel market rates because commodities on the preferred list in Ethiopia account for more than half of imports. These have usually been imported through SOEs (e.g., wheat, fuel, and edible oil) with lower prices partly passed to consumers using a combination of controls over the distribution channels and retail prices or subsidies. The price of edible oil and wheat until 2021, for example, appeared to track the official rate more closely than the parallel market, while the prices of maize and beef, whose distribution is not controlled, appear to track the parallel market exchange rate more closely (Figure 48).

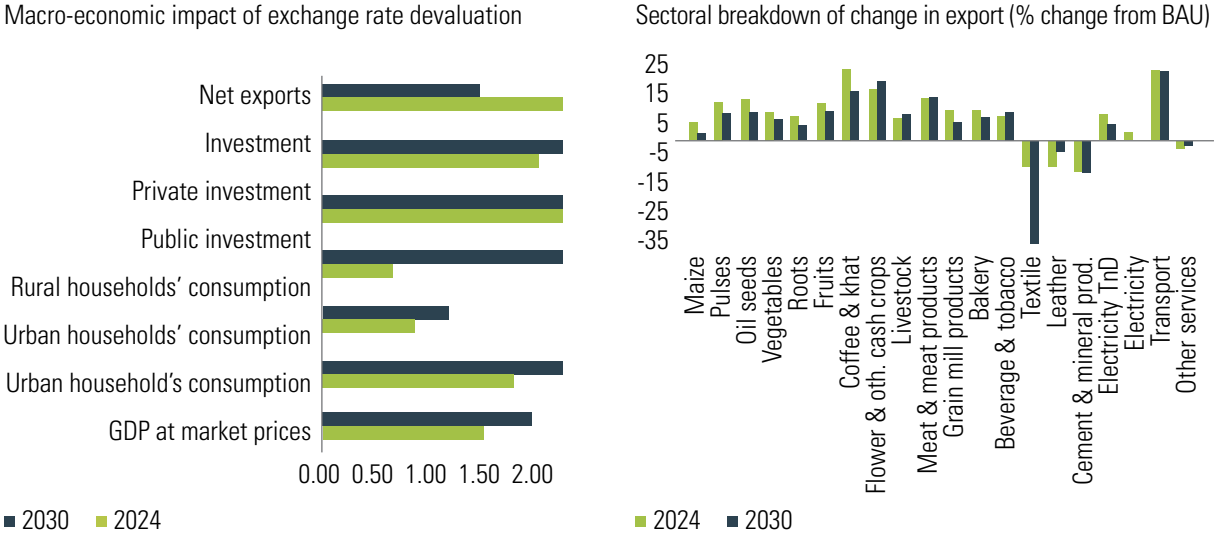
Delaying forex reforms means avoiding short-term adverse impacts but also losing out on medium-term benefits. Exchange alignment is projected to increase economic growth by 2 percent above the BAU scenario by 2030. Consumption of rural households would be 1.2 percent higher, driven by rising agriculture exports, and that of urban households by 3.2 percent, as they are the primary recipients of remittances and rely more on the service sector which will grow faster. Net exports would be higher as increased exports offset the impact of higher import input costs (Figure 49). However, some manufacturing sectors that rely heavily on imported intermediate inputs, like the textile and garment sectors, would become less competitive. In the short term, agricultural output would decline but would pick up in the medium term while manufacturing contracts throughout (Figure 50).

Figure 48. Correlation between commodity prices and parallel and official exchange rate in Ethiopia



Source: Authors' estimates from ESS and NBE publications.

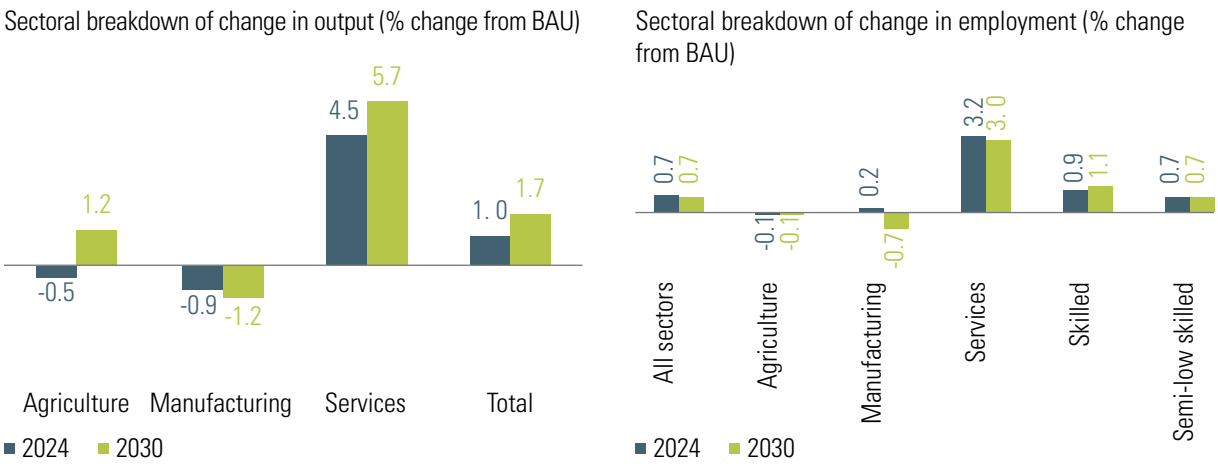
Figure 49. Comparison of the population distribution by consumption levels



Source: Authors' estimates based on HCES 2015/16 and HoWStat 2021.

Notes: Estimates are based on analysis using the Mitigation, Adaptation and New Technologies Applied General Equilibrium (MANAGE) model with 82 sectors, 85 products, 2 labor categories (skilled, semi and low-skilled), 8 tax accounts (commodity and direct taxes), 4 economic agents (households, enterprises, government, and rest of the world), 2 household categories (rural and urban) and 2 investment accounts (private and government). The model applies a uniform, exogenously calculated exchange rate premium, added to the official exchange rate to obtain the parallel market rate applied to products with restricted access to forex. The 70 percent surrender requirement is considered by distributing exporters' exports earnings for only 30 percent of exports, while the remaining is received by agents in the rest of the world and importers with priority access to forex (see Box 9 for additional details).

Figure 50. Sectoral breakdown of change in output and employment



Source: Authors' estimates based on HCES 2015/16 and HoWStat 2021.

Notes: Estimates are based on analyzed using the MANAGE CGE model as described in Figure 48 above and Box 9 .

Exchange rate alignment would catalyze sectoral shifts in employment towards higher quality jobs mirroring shifts in the economic structure. Compared to the BAU scenario, output would be 5.7 and 1.2 percent higher in the service and agriculture sectors, respectively, and lower in the industry sector in 2030. The overall net employment effect is small but positive (0.5 percent higher by 2030). But this is a result of a stronger sectoral shift of labor towards the services sector - where the job quality is higher – with a job growth of 3 percent compared to the BAU scenario, while labor moves away from manufacturing (0.7 percent decline) and agriculture (0.1 percent decline). More skilled jobs are created compared to low and semi-skilled ones (Figure 50). In a nutshell, addressing the exchange rate imbalance would promote structural transformation in the labor market and increase households' incomes.

Box 9. Economic and welfare impacts of exchange rate unification in Ethiopia

The analysis uses the MANAGE-WB model (Mitigation Adaptation and New Technologies Applied General Equilibrium model of the World Bank) a recursive dynamic single-country computable general equilibrium (CGE) model. MANAGE-WB has been extended to incorporate two exchange rates (official and parallel) and the capital control mechanisms in place in Ethiopia. Demand for foreign exchange is only partially satisfied by supply at the official exchange rate. Excess demand is met via a parallel market for foreign exchange. The spread between the two rates is introduced in the model and calibrated to reflect its evolution between 2018 and 2023 and maintained at 2023 level for the rest of the period.

Foreign exchange surrender requirements and rationing with preferential access for selected products are also introduced in the MANAGE-WB model. Goods and services have been classified in the model into two categories according to their priority in accessing foreign exchange at the official rate. Priority items are subsidized by an implicit tax/tariff on non-preferential imports and the surrender requirements. The 70 percent surrender rule on foreign exchange revenue from exports and inward remittances implies that only 30 percent of this inflow is received at the parallel rate. The rents generated by the premium between the official

and parallel exchange rates are, in part, received by imports with preferential access to foreign exchange. A significant share of the rents is distributed to the rest-of-the-world thereby capturing capital flight resulting from the avoidance of capital account restrictions through under- and over invoicing of trade transactions.

The baseline scenario assumes that the dual exchange rate system will continue with a progressive depreciation of the official rate. The counterfactual simulates a unification via a depreciation of the official rate and appreciation of the parallel rate. The unification is simulated via a 52.6 percent depreciation of the official rate and an appreciation of the parallel rate by 20 percent. The rationale is that initially, the official rate would depreciate to the level of the parallel rate. It is expected that the unified rate would then appreciate to settle at a level 20 percent lower that the parallel rate. The MANAGE model for Ethiopia is calibrated to annual data and therefore assumes that the new 'equilibrium' rate would be reached during the first year of the unification, that is in 2024. The transition and associated out of equilibrium effects are not accounted for.

The unification is accompanied by the removal of capital controls. The FX surrender requirements, FX rationing, and preferential access to FX for selected products are lifted and associated capital flight is eliminated. This implies that a parallel market to evade capital controls would not persist. A prudent macroeconomic framework is implemented by imposing model closures that avoid the deterioration of the current account and fiscal balances with the unification. Accordingly, we assume that government expenditure is adjusted to avoid a larger fiscal deficit. Hence, we maintain the deficit-to-GDP ratio at the baseline level and allow government consumption to adjust. Government investment share of GDP is kept at the baseline level while tax rates are exogenous. With this approach, we can capture the net effect on government debt denominated in foreign currency. Similarly, the CAB-to-GDP ratio is fixed at the baseline level. This implies that exports will need to expand to finance imports. Investment is savings driven.

Spatial transformation has also been hampered by barriers - some structural - to the movement of labor.

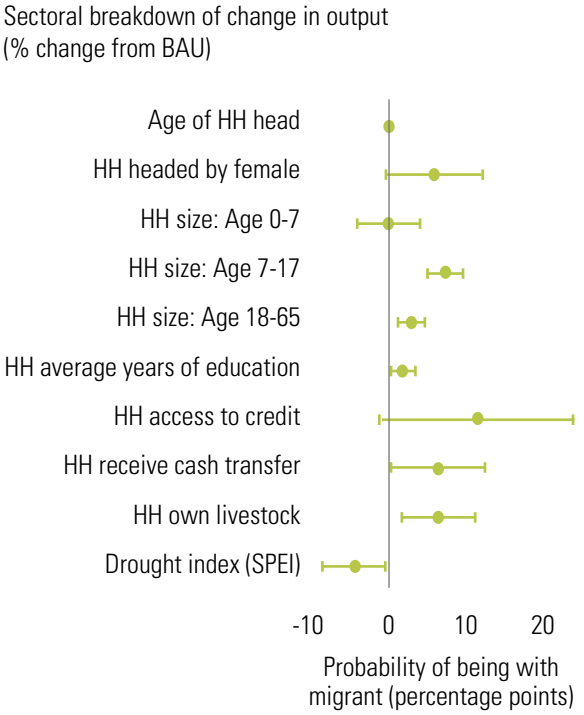
Rural-urban migration—a channel for moving labor into non-agriculture sectors—has also not happened fast enough to offset a growing rural population. The rural population increased by 24.4 percent between 2013 and 2021, notwithstanding the increase in rural-to-urban migration of 20.8 percent. The pattern of rural-to-urban and intra-rural migration shares to total internal migration has remained similar (World Bank, 2022c). Moreover, cross-regional mobility has decelerated in recent years compared with the trend observed before 2013. Thus, migration largely remains an intra-regional phenomenon.

Low financial, human, and social capital are a constraint to migration. Multivariate estimates (Figure 51) show that households with access to a larger credit amount and those that received cash transfers, were respectively, more than 15 and 7.5 percentage points more likely to send out a migrant. The migration decision is closely correlated with whether a household is already receiving remittances either from a rural, or urban area or from abroad, which is also a sign for meaningful social capital, since the household relates to the outside world other than just in the home place. Estimates comparing similar households in 2011/12 in terms of their likelihood of having a migrant in the second visit (2013/14) or the third visit (2015/16) show that the probability of having at least one person from a rural household migrate in the subsequent period increases by 7.5 percentage points if a household already had a migrant. Lastly, having poorly educated members or a smaller number of working-age members also reduces the possibility that any of them will migrate.

This shows that lack of capital – financial, human, and social capital – are important constraints for migration in Ethiopia.

The prohibitive costs of migration imposed by challenges in destination areas increase the barriers to migration for liquidity-constrained households. Evidence shows that the returns to migration could be high, but the migration process is fraught with difficulties. Qualitative studies (Bundervoet, 2018) suggest that migrants find that the job search process is more difficult than anticipated and that they face administrative barriers in obtaining kebele IDs, inhibiting their access to government services. Many typically find the transition to urban life onerous, and females face additional challenges. These factors make integration into destination areas more difficult and costly for migrants in the immediate term. They create a barrier to migration for those from liquidity-constrained rural households, who also lack social networks.

Figure 51. Marginal effects correlated with migration



Source: Adopted from World Bank (2022c).

PART 3
Turning Tides for Poverty Reduction

The previous chapters discussed the recent socio-economic developments, demonstrated how shocks and existing structural weaknesses have contributed to the increase in poverty since 2016 and highlighted some of the key challenges for poverty reduction. This section discusses what needs to be done to accelerate poverty reduction by improving the productive capacity of poor households to become active contributors to growth while strengthening their resilience to shocks.

SUMMARY OF KEY CHALLENGES FOR POVERTY REDUCTION

Poverty increased due to a combination of shocks and longstanding vulnerabilities in the development model.

Past gains in poverty reduction were undone during the second half of the last decade. The poverty rate is estimated to have increased by between 4 and 10 percentage points during 2016-2021. This increase in poverty was broad, and experienced in all regions except for Ethiopia's two major urban regions – Addis Ababa and Dire Dawa. Poverty increased because of a general decline in consumption across the entire socio-economic spectrum. On average, consumption cumulatively declined by 13 percent during 2016-21. The decline was deeper among better-off households and in urban areas, but poverty still increased more in rural areas because many non-poor rural households were just above the poverty line to begin with. Inequality declined because of the greater decline in consumption among the non-poor people making everyone poorer.

The country experienced multiple shocks, which were the immediate cause of the decline in welfare and rising poverty. Though localized, the combination of drought shocks that was prolonged in low land areas, conflict that intensified in the Northern Tigray, along with locust invasions and flooding across the country, meant that more than 90 percent of the population experienced a covariate shock of one form or another. At least 48 percent experienced more than one such shock. Additionally, there were economy wide shocks from the impacts of the COVID-19 pandemic and rising inflation. Estimates suggest that rising inflation reduced household consumption by 21 percent, drought exposure by 9 percent and exposure to conflict in Northern Ethiopia by up to 17.5 percent among the most exposed.

Shocks laid bare underlying structural weaknesses in the country's growth model, which amplified the increase in poverty. First, the state-led rural development policy focused on increasing food security because of the country's history of food insecurity. Though yields improved, farmers' incentives and input markets were distorted in favor of staple food production, hampering farmers' market orientation and generation of marketable surpluses. Therefore, only a few households could benefit from rising prices, and they were outnumbered by net food buyers. Second, structural transformation in Ethiopia stalled as the mounting distortions created by the state-led growth model increased macro-economic imbalances that undermined competitiveness and crowded out private sector development. Job creation during 2013-21 declined by 24 percentage points compared to the preceding period, unemployment increased, and labor force participation declined, leaving 5 million working-age Ethiopians not in employment, education, or training. The rising share of people out of work reduced consumption, while stalled sectoral transition posed forgone opportunities for income growth. Lastly, barriers to migration have limited labor mobility from agriculture to non-agriculture sectors, and in so doing, stalled the economic transformation of rural areas.

Interaction of shock and vulnerability left scars that make the continuation of the current model untenable.

The experience of shocks has long lasting effects that are amplified by the country's structural weaknesses. Employment in the industry sector which had already peaked before COVID-19 struck, has not recovered from the effects of the pandemic that saw women bear a greater burden of job losses, pushed labor to more vulnerable forms of employment and depressed earnings of household enterprises. The overvaluation of the exchange rate, financial repression and the large

SOE footprint limit prospects for recovery from the pandemic. Meanwhile, a combination of market volatility and climate shocks increase households' incentive towards self-sufficiency, where public extension services are already biased towards and limit the adoption of high-risk high reward agriculture technologies whose development and availability are constrained by government controls.

The rural-urban gaps persist due to untapped potential in the rural sector.

The rural-urban divide in welfare continued to persist. Poverty increased in rural areas during 2015/16 - 21 by up to 10 percentage points compared to less than 3 percentage points in urban areas. The incidence of poverty in rural areas is now double the poverty rate in urban areas. This gap primarily reflects within regions disparities between rural areas and the urban centers whose poverty rates are higher but close to Addis Ababa. Rural areas accounted for 88 percent of poor people in the country, though their share had declined to 78 percent by 2021.

Poverty remains a predominantly rural phenomenon because the huge agricultural potential is untapped. Most of the poor in Ethiopia (68 percent) reside in moisture reliable areas, while pastoral areas that account for another 7 percent of the poor host a lion's share of the country's livestock. Yet poverty increased more in rural areas because of the reduction in real crop incomes despite the rising food prices which should have benefited farmers if they produced a marketable surplus as happened in countries like Cambodia during the 2008 – 2010 food price increases. Furthermore, because of high dependency ratios and large household sizes, most gains in agriculture production have been absorbed by the growing population.

POLICY IMPLICATIONS

In the current context, the key priorities for poverty reduction are (i) strengthening households' and the economy's resilience to shocks, (ii) increasing the generation of agriculture surplus and (iii) addressing spatial and economic policy driven structural impediments to job creation and access to better economic opportunities.

Enhance resilience to shocks.

The high vulnerability of households to shocks and the impacts this had on poverty necessitates strengthening households' resilience to shocks in three ways:

i. Slowing down the onset or impact of shocks at entry – Household's vulnerability to shocks is in part driven by their limited ability to cope or minimize the direct impact of these shocks on their incomes. Addressing this requires three types of interventions. One set of interventions is *investments to increase the productive assets of households and communities, which range from infrastructure investment in irrigation and land structures, natural resource management, and skills development to increase households' adaptability*. The other set of interventions is developing and promoting the adoption of climate-smart agriculture technologies and strategies. The third set of interventions focuses *on prevention and preparedness, which includes enhancing early warning systems for households to take adaptive measures to minimize the impact of shocks*.

ii. Reducing the impact of shocks on incomes once they occur – The impact of shocks on households is exacerbated by limited access to or suboptimal response options to shocks. The coverage of social safety nets for example is

limited in Ethiopia, though this has been shown to be an effective instrument for mitigating the impacts of shocks. The high livestock mortality due to droughts that have been observed in pastoral areas (World Bank, 2023) is another example of how the limited options for households to respond or pre-empty the shocks lead to worse outcomes. Therefore, there is *a need to establish/ expand mechanisms to finance crisis response e.g., destocking and school feeding programs in response to droughts; expanding the coverage and range of consumption smoothing measures such as shock responsive social safety nets and access to credit; and establishing market mechanisms to moderate volatility e.g., warehousing receipts*.

iii. Facilitating faster and full recovery from shocks – Households affected by shocks, such as the massive loss of livestock due to drought, or displacement and destruction of assets due to conflict, need support to restore their livelihoods and recover from crisis. This can be done through investments for livelihood restoration and reconstruction which applies to both climate and conflict shocks e.g., infrastructure rehabilitation and re-stocking and input support programs; and promoting the adoption of insurance products (e.g., livestock insurance).

Enhance generation of agriculture surplus

Poor people in high agriculture potential areas have not been able to capitalize on rising food prices due to limited market surplus generation and limited market participation. This points to the necessity of interventions to increase market surplus generation among rural households and promote agriculture commercialization, thus re-orienting Ethiopia's rural development and agriculture policies from a food security focus towards a more transformation agenda as envisaged under the next phase of the Agriculture and Rural Development Policies. Most of these measures have been discussed in detail in the Ethiopia Rural Income Diagnostics (World Bank, 2022b). They include:

iv. Reducing market distortions to trigger a supply response – Surplus generation has to some extent been limited by a weak supply response, given Ethiopia's distortionary policies that until recently, suppressed domestic prices below international prices for some crops like maize, with Ethiopia emerging as one of the countries whose nominal protection rates for maize suggest its policies offer a price disincentive to farmers. *The government can increase the efficiency of market mechanisms and trigger a supply response by eliminating marketing controls that blunt price signals to farmers such as export controls and marking restrictions for commodities*.

v. Increasing availability and adoption of advanced agriculture inputs and technologies – Another driver of low surplus generation is low productivity growth for crops such as teff, coffee, and beans – in part due to distortions in input markets which biased agriculture technology development towards certain crops (e.g., maize) than others and led to suboptimal availability of inputs as discussed in the Ethiopia Rural Income Diagnostics (World Bank, 2022b). Adoption of some agriculture technologies – such as improved seed varieties – is low, as statistics presented in Chapter 4 suggests. *Liberating input markets to promote a greater role of the private sector in agriculture technology development, input production, and distribution is needed to increase the timely availability of the right type of inputs*.

vi. Optimizing crop cultivation choices and incentivizing production of commercial crops – Furthermore, surplus generation can be maximized by optimizing crop choices to the land suitability. Analysis presented in the Rural Income Diagnostics (World Bank, 2022b) show a crop bias in extension services messaging, while exposure to price and weather shocks and limited connectives

disincentive commercial orientation of households. *The adoption of a plurality of agriculture extension services and shifting in messaging to encourage a shift towards commercial crops and optimize crop cultivation choices to land suitability will therefore be crucial for increasing commercial orientation and surplus generation by households*. Other sets of measures include those mitigating the impact of climate shocks discussed under the priority intervention to increase resilience to shocks, as these can also influence household agriculture production decisions based on their impact on risk preferences (World Bank, 2022b).

Eliminate structural impediments to job creation.

A more fundamental challenge for poverty reduction is the lack of better economic opportunities. This is evidenced by the declining pace of job creation, with a net reduction of jobs in the industry sector, the exit from the labor market by people – women in particular – facing limited opportunities in the context of stalling structural transformation and the general decline in the quality of jobs as trends in the job quality index showed. Analysis in the report showed that eliminating macroeconomic distortions such as the exchange rate misalignment, can promote structural transformation and household income growth. Other studies identify state intervention in product and financial markets as key constraints to the creation of a vibrant private sector that creates better quality jobs. This calls attention to the need for reforms that promote job creation in an economy that is competitive and private sector led, while enhancing women's economic empowerment. The necessary reforms have been discussed in detail in the Systematic Country Diagnosis for Ethiopia (World Bank, 2024). They include the following:

vii. Macro-fiscal stabilization – Macro-economic distortions undermine competitiveness of the private sector and job creation as the example of exchange rate misalignment analyzed in this report shows. Eliminating macro policy distortions that undermine private investment is therefore necessary for poverty reduction in Ethiopia. Key among the macro-economic distortions – as identified in more detailed diagnostics such as the Country Economic Memorandum (World Bank, 2022a) and the Systematic Country Diagnostics (World Bank, 2024) - is *addressing the exchange rate misalignment, liberalizing interest rates, and reducing state dominance in the financial sector to direct more lending towards the private sector*.

viii. Reducing barriers to entry and state dominance in the economy – The stalling job creation in Ethiopia in part reflects stalling private sector wage job creation during 2013-21. Beyond the macro-economic distortions, private sector growth is limited by restrictions to entry and a playing field stacked in favor of state-owned enterprises which was the core part of the state-led growth model (World Bank 2024). As noted in other studies, private sector wage job creation can be stimulated by *promoting market neutrality and reducing foreign entry restrictions in markets with high potential for reorganizing agriculture value chains (e.g., permitting foreign entry into wholesale and retail markets)*.

ix. Reducing barriers to labor mobility – Evidence presented earlier suggests that rural-urban migration is a critical channel for rural workers to access non-farm economic opportunities, while at the same time, catalyzing rural transformation. However, this channel is limited in Ethiopia by the high cost of migration in part driven by administrative barriers that migrants face in their destinations and job search costs. *Eliminating burdensome administrative procedures for migrants (e.g., household registration requirements) and reducing job search costs by enhancing job intermediation and employment promotion services will be critical for linking rural workers to better economic opportunities in urban areas*.

REFERENCES

Abay, K. A., Abay, M. H., Berhane, G., & Chamberlin, J. (2022). Social protection and resilience: The case of the productive safety net program in Ethiopia. *Food Policy, 112* (August), 102367. https://doi.org/10.1016/j.foodpol.2022.102367

Ahmed, M. H., Tesfaye, W. M., & Gassmann, F. (2023). Early growing season weather variation, expectation formation and agricultural land allocation decisions in Ethiopia. *Journal of Agricultural Economics*, 74(1), 255–272.

Akresh, R., Lucchetti, L., & Thirumurthy, H. (2012). Wars and child health: Evidence from the Eritrean–Ethiopian conflict. *Journal of Development Economics*, 99(2), 330–340.

Alderman, H., Hoddinott, J., & Kinsey, B. (2006). Long term consequences of early childhood malnutrition. *Oxford Economic Papers*, 58(3), 450–474.

Alkire, S., Kanagaratman, U., & Suppa, N. (2021). The Global Multidimensional Poverty Index (MPI) 2021, OPHI MPI Methodological Note 51, *Oxford Poverty and Human Development Initiative, University of Oxford*.

Amare, M., & Balana, B. (2023). Climate change, income sources, crop mix, and input use decisions: Evidence from Nigeria. *Ecological Economics*, 211, 107892.

Ambel, A. A. (2024). *Poverty dynamics and mobility in Ethiopia from 2019-2022: Evidence from longitudinal data. Mimeo*.

Ambel, A. A., Sosa, L. C. M., Kassa, W. Y., Tsegay, A. H., & Wieser, C. (2021). *Monitoring COVID-19 Impacts on Households in Ethiopia: How COVID-19 is Affecting households - Results from the High-Frequency Phone Surveys of Households from April 2020 through January 2021 (English)*.

Antle, J. M. (1983). Testing the stochastic structure of production: a flexible moment-based approach. *Journal of Business & Economic Statistics*, 1(3), 192–201.

Antle, J. M. (1987). Econometric estimation of producers' risk attitudes. *American Journal of Agricultural Economics*, 69(3), 509–522.

Aragón, F. M., Oteiza, F., & Rud, J. P. (2021). Climate change and agriculture: Subsistence farmers' response to extreme heat. *American Economic Journal: Economic Policy*, 13(1), 1–35.

Baquie, S., & Fuje, H. (2020). Vulnerability to poverty following extreme weather events in Malawi. World Bank. Available online: https://elibrary.worldbank.org/doi/abs/10.1596/1813-9450-9435. *Policy Research Working Paper - World Bank*.

Bazzi, S., Blair, R. A., Blattman, C., Dube, O., Gudgeon, M., & Peck, R. (2022). The promise and pitfalls of conflict prediction: evidence from Colombia and Indonesia. *Review of Economics and Statistics*, 104(4), 764–779.

BBC. (2021). *Oromo Liberation Army: On the ground with Ethiopian fighters. BBC News*. https://www.bbc.com/news/av/world-africa-59095778.

Bozzola, M., & Finger, R. (2021). Stability of risk attitude, agricultural policies, and production shocks: evidence from Italy. *European Review of Agricultural Economics*, 48(3), 477–501.

Brummund, P. W., Mann, C., & Rodríguez-Castelán, C. (2018). Job Quality and Poverty in Latin America. *Review of Development Economics*, 22(4), 1682–1708.

Bundervoet, T. (2018). "*Internal Migration in Ethiopia Evidence from a Quantitative and Qualitative Research Study.*" Washington, DC: World Bank Group. https://openknowledge. worldbank.org/handle/10986/32097.

Bundervoet, T., Verwimp, P., & Akresh, R. (2009). Health and civil war in rural Burundi. *Journal of Human Resources*, 44(2), 536–563.

Carter, M. R., Little, P. D., Mogues, T., & Negatu, W. (2007). Poverty Traps and Natural Disasters in Ethiopia and Honduras. *World Development*, 35(5), 835–856. https://doi.org/10.1016/j.worlddev.2006.09.010

Chau, T. N., & Scrimgeour, F. (2023). Will climate change jeopardize the Vietnamese target of maintaining farmland for food security? A fractional multinomial logit analysis of land use choice. *Agricultural Economics*, 54(4), 570–587.

Cui, X. (2020). Climate change and adaptation in agriculture: Evidence from US cropping patterns. *Journal of Environmental Economics and Management*, 101, 102306.

Cui, X., & Xie, W. (2022). Adapting agriculture to climate change through growing season adjustments: Evidence from corn in China. *American Journal of Agricultural Economics*, 104(1), 249–272.

Cui, X., & Zhong, Z. (2024). Climate change, cropland adjustments, and food security: Evidence from China. *Journal of Development Economics*, 167(December 2023), 103245. https://doi.org/10.1016/j.jdeveco.2023.103245

Datt, G., & Ravallion, M. (1992). Growth and redistribution components of changes in poverty measures: A decomposition with applications to Brazil and India in the 1980s. *Journal of Development Economics*, 38(2, April), 275–259. https://doi.org/https://doi.org/10.1016/0304-3878(92)90001-P

de Brauw, A., Mueller, V., & Woldehanna, T. (2018). Does internal migration improve overall well-being in Ethiopia? *Journal of African Economies*, 27(3), 347–365. https://doi.org/10.1093/jae/ejx026

Deaton, A., & Zaidi, S. (2002). Guidelines for Constructing Consumption Aggregates For Welfare Analysis. In *World Bank Living Standards Measurement Study Working Paper* (Vol. 135).

Dercon, S., & Christiaensen, L. (2011). Consumption risk, technology adoption and poverty traps: Evidence from Ethiopia. *Journal of Development Economics*, 96(2), 159–173. https://doi.org/10.1016/j.jdeveco.2010.08.003

Dhakal, C., Khadka, S., Park, C., & Escalante, C. L. (2022). Climate change adaptation and its impacts on farm income and downside risk exposure. *Resources, Environment and Sustainability*, 10. https://doi.org/10.1016/j.resenv.2022.100082

Di Falco, S., Veronesi, M., & Yesuf, M. (2011). Does Adaptation to Climate Change Provide Food Security? A Micro-Perspective from Ethiopia. *American Journal of Agricultural Economics*, 93(3), 829–846. https://doi.org/10.1093/ajae/aar006

Di Falco, S., & Vieider, F. M. (2022). Environmental adaptation of risk preferences. *Economic Journal*, 132(648), 2737–2766.

ECHO. (2022). *ECHO (European Commission's Directorate-General for European Civil Protection and Humanitarian Aid Operations) Factsheet – Ethiopia*.

EPO. (2021). W*est and Kellem Wollega. Ethiopia Peace Observatory*. https://epo.acleddata.com/west-and-kellem-wollega.

EPO. (2023). *Afar-Somali Regions Border Conflict. Ethiopia Peace Observatory*. https://epo.acleddata.com/afar-somali-border-conflict.

FAO. (2020). *Food aid supports climate-adaptive investments by farmers in sub-Saharan Africa*.

Franklin, S., Imbert, C., Abebe, G., & Mejia-Mantilla, C. (2024). Urban Public Works in Spatial Equilibrium: Experimental Evidence from Ethiopia. *American Economic Review*, 114(5), 1382-1414.

Funk, C., Peterson, P., Landsfeld, M., Pedreros, D., Verdin, J., Shukla, S., Husak, G., Rowland, J., Harrison, L., Hoell, A., & Michaelsen, J. (2015). The climate hazards infrared precipitation with stations—a new environmental record for monitoring extremes. *Scientific Data*, 2, 150066.

Galor, O., & Özak, Ö. (2016). The Agricultural Origins of Time Preference. *American Economic Review*, 106(10), 3064–3103. https://doi.org/10.2139/ssrn.2486206

Grace, K., Hertrich, V., Singare, D., & Husak, G. (2018). Examining rural Sahelian out-migration in the context of climate change: An analysis of the linkages between rainfall and out-migration in two Malian villages from 1981 to 2009. *World Development*, 109, 187–196.

Gray, C., & Mueller, V. (2012). Drought and population mobility in rural Ethiopia. *World Development*, 40(1), 134–145.

Guillerm, M. (2017). Pseudo-panel methods and an example of application to Household Wealth data. *Economie et Statistique*, 491(1), 109-130.

Harris, D., Baird, S., Ford, K., Hirvonen, K., Jones, N., Kassa, M., Meyer, C., Pankhurst, A., Wieser, C., & Woldehanna, T. (2021). *The Impact of COVID-19 in Ethiopia: Policy Brief*.

He, X., & Chen, Z. (2022). Weather, cropland expansion, and deforestation in Ethiopia. *Journal of Environmental Economics and Management*, 111, 102586.

Hill, R., & Fuje, H. (2020). What is the Impact of Weather Shocks on Prices? : Evidence from Ethiopia. *What Is the Impact of Weather Shocks on Prices? : Evidence from Ethiopia, September*. https://doi.org/10.1596/1813-9450-9389

Hoddinott, J., & Kinsey, B. (2001). Child growth in the time of drought. *Oxford Bulletin of Economics and Statistics*, 63(4), 409–436.

Hönig, T. (2021). *The Legacy of Conflict: Aggregate Evidence from Sierra Leone. UNU-WIDER Working*

Paper, 104/2021. (UNU-WIDE104/2021; UNU-WIDER Working Paper). https://doi.org/10.35188/UNU-WIDER/2021/044-3.

Hovhannisyan, S., Montalva-Talledo, V., Remick, T., & Rodríguez-Castelán, C., Stamm, K. (2022). Global job quality: Evidence from wage employment across developing countries. *Working Paper*, 10134.

Hussain, A., Memon, J. A., & Hanif, S. (2020). Weather shocks, coping strategies and farmers' income: A case of rural areas of district Multan, Punjab. *Weather and Climate Extremes*, 30, 100288.

IGC. (2022). *Finding a path to peace in Ethiopia's Tigray region. International Crisis Group*. https://www.crisisgroup.org/africa/horn-africa/ethiopia/167-finding-path-peace-ethiopias-tigray-region.

Ikegami, M., Carter, M. R., Barrett, C. B., & Janzen, S. (2017). Poverty traps and the social protection paradox. In The economics of poverty traps (pp. 223-256). University of Chicago Press. In *The economics of poverty traps* (pp. 223–256). University of Chicago Press.

Ilukor, J., & Gourlay, S. (2021). *Locus Invasion in Ethiopia: Scope & Impact - Evidence from the World Bank-Supported High-Frequency Phone Surveys*.

IFPRI & IDS (2022). The Productive Safety Net Programme IV End-line Evaluation (2021) – Main Findings. *Mimeo*.

IOM. (2023). Ethiopia national displacement report 15. *International Organization for Migration*.

Jagnani, M., Barrett, C. B., Liu, Y., & You, L. (2021). Within-season producer response to warmer temperatures: Defensive investments by Kenyan farmers. *The Economic Journal*, 131(633), 392–419.

Kumar, S., Mishra, A. K., Pramanik, S., Mamidanna, S., & Whitbread, A. (2020). Climate risk, vulnerability and resilience: Supporting livelihood of smallholders in semiarid India. *Land Use Policy*, 97, 104729.

Little, P. D., Stone, M. P., Mogues, T., Castro, A. P., & Negatu, W. (2006). 'Moving in place': drought and poverty dynamics in South Wollo, Ethiopia. *Journal of Development Studies*, 42(2), 200–225.

Mancini, G., & Vecchi, G. (2022). *On the Construction of a Consumption Aggregate for Inequality and Poverty Analysis* (Issue March). http://documents.worldbank.org/curated/en/099225003092220001/P1694340e80f9a00a09b20042de5a9cd47e

MoFED. (2002). *Poverty Profile of Ethiopia: Analysis based on the 1999/00 HICE and WM Survey Results*.

MoFED. (2012). *Ethiopia's Progress Towards Eradicating Poverty: An Interim Report on Poverty Analysis Study (2010/11)* (Issue March).

Mueller, V., & Quisumbing, A. (2011). How resilient are labour markets to natural disasters? The case of the 1998 Bangladesh flood. *Journal of Development Studies*, 47(12), 1954–1971.

Mulungu, K., Kimani, M. E., & Sarr, M. (2023). Do farmers' risk preferences remain stable in the face of climatic shocks? Evidence from smallholder farmers in Zambia. *Applied Economics, 00*(00), 1–17. https://doi.org/10.1080/00036846.2023.2177599

Nainggolan, D., Abay, A. T., Christensen, J. H., & Termansen, M. (2023). The impact of climate change on crop mix shift in the Nordic region. *Scientific Reports*, 13(1), 2962.

Nakamura, S., Bundervoet, T., & Nuru, M. (2020). Rural Roads, Poverty, and Resilience: Evidence from Ethiopia. *Journal of Development Studies*, 56(10), 1838–1855. https://doi.org/10.1080/00220388.2020.1736282

Narloch, U., & Bangalore, M. (2018). Themultifaceted relationship between environmental risks and poverty: New insights from Vietnam. *Environment and Development Economics*, 23(3), 298–327. https://doi.org/10.1017/S1355770X18000128

OCHA. (2022). *Ethiopia Drought Update - UN Office for the Coordination of Humanitarian Affairs*.

Opondo, D. O. (2013). Erosive coping after the 2011 floods in Kenya. *International Journal of Global Warming*, 5(4), 452–466.

PDC. (2018). *Poverty and Economic Growth in Ethiopia (1995/96-2015/16). Planning and Development Commission (PDC), Federal Democratic Republic of Ethiopia, December, Addis Ababa*. (Issue December).

Porter, C., & Goyal, R. (2016). Social protection for all ages? Impacts of Ethiopia's Productive Safety Net Program on child nutrition. *Social Science & Medicine, 159*, 92–99. https://doi.org/10.1016/j.socscimed.2016.05.001

Ravallion, M., & Huppi, M. (1991). Measuring changes in poverty: A methodological case study of Indonesia during an adjustment period. *World Bank Economic Review*, 5(1), 57–82. https://doi.org/10.1093/wber/5.1.57

Rohner, D., Thoenig, M., & Zilibotti, F. (2013). Seeds of distrust: Conflict in Uganda. *Journal of Economic Growth*, 18, 2021/044-3. https://doi.org/10.35188/UNU-WIDER/2021/044-3.

Sardar, A., Kiani, A. K., & Kuslu, Y. (2021). Does adoption of climate-smart agriculture (CSA) practices improve farmers' crop income? Assessing the determinants and its impacts in Punjab province, Pakistan. *Environment, Development and Sustainability*. https://doi.org/10.1007/s10668-020-01049-6

Serneels, P., & Verpoorten, M. (2015). The impact of armed conflict on economic performance: Evidence from Rwanda. *Journal of Conflict Resolution*, 59(4), 555–592.

Shimeles, A., & Woldemichael, A. (2023). Rising food prices and household welfare in Ethiopia: evidence from micro data. *African Development Bank Group, Working Paper Series*, (182).

Skoufias, E. (2012). The Poverty and Welfare Impacts of Climate Change. In *The Poverty and Welfare Impacts of Climate Change* (Issue January). https://doi.org/10.1596/978-0-8213-9611-7

Taffesse, A. S., Dorosh, P., & Asrat, S. (2011). *Crop Production in Ethiopia: Regional Patterns and Trends", Working Paper No. 0016, Development Strategy and Governance Division, International Food Policy Research Institute, Ethiopia Strategy Support Program II, Ethiopia. March 201*1. (0016).

Tesfaye, W., Blalock, G., & Tirivayi, N. (2021). Climate-Smart Innovations and Rural Poverty in Ethiopia: Exploring Impacts and Pathways. American Journal of Agricultural Economics, 103(3), 878–899. https://doi.org/10.1111/ajae.12161

Tesfaye, W. M. (2022). Crop diversification and child malnutrition in rural Ethiopia: Impacts and Pathways. *Food Policy, 113*. https://doi.org/10.1016/j.foodpol.2022.102336

Torquebiau, E. (2017). Climate-smart agriculture: Making agriculture climate-friendly | Climate-smart agriculture: Pour une agriculture climato-compatible. *Cahiers Agricultures*.

van Wijk, M. T., Merbold, L., Hammond, J., & Butterbach-Bahl, K. (2020). Improving Assessments of the Three Pillars of Climate Smart Agriculture: Current Achievements and Ideas for the Future.

In *Frontiers in Sustainable Food Systems* (Vol. 4). Frontiers Media S.A. https://doi.org/10.3389/fsufs.2020.558483

Verbeek, M., & Nijman, T. (1992). Can cohort data be treated as genuine panel data? *Empirical Economics*, 17(1), 9–23.

Verbeek, M., & Nijman, T. (1993). Minimum MSE estimation of a regression model with fixed effects from a series of cross-sections. *Journal of Econometrics*, 59(1–2), 125–136.

Wieser, C., & Abubakar, A. (2024). *Has Ethiopia harnessed structural transformation in the labor market? Mimeo*.

Wieser, C., Franklin, S., & Hari, S. (2021). Effectiveness of the Urban Productive Safety Net Project. World Bank Group.

Wieser, C., & Yitbarek, E. (2024). *Impact of Food Inflation on Household welfare in Ethiopia. Mimeo*.

Worku, I. H., Dereje, M., Minten, B., & Hirvonen, K. (2017). Diet transformation in Africa: the case of Ethiopia. *Agricultural Economics (United Kingdom)*, 48(March), 73–86. https://doi.org/10.1111/agec.12387

World Bank. (2019). *Disaster Risk Profile: Ethiopia*. https://reliefweb.int/report/ethiopia/disaster-risk-profile-ethiopia

World Bank. (2020). *Ethiopia Poverty Assessment: Harnessing Continued Growth for Accelerated Poverty Reduction*.

World Bank. (2021). *Climate Risk Profile: Ethiopia (2021)*.

World Bank. (2022a). *Ethiopia's great transition: the next mile - A Country Economic Memorandum, Washington, DC: World Bank*. www.worldbank.org

World Bank. (2022b). *Ethiopia - Rural Income Diagnostics Study: Leveraging the Transformation in the Agri-Food System and Global Trade to Expand Rural Incomes. Washington, D.C. : World Bank Group*. https://documentsinternal.worldbank.org/search/33891468.

World Bank. (2022c). *Voluntary Migration in Ethiopia: In Search for Work and Better Opportunities. Washington, D.C.: World Bank Group*. https://documentsinternal.worldbank.org/search/33889248.

World Bank. (2023). *The State of Welfare of Pastoral Communities in Ethiopia – Forthcoming*.

World Bank. (2024). *Ethiopia Poverty Measurement Methodology Note 2021. Mimeo*.

Yimer, F., Alemayehu, M., & Taffesse, S. (2020). *The Short-run Impact of the COVID-19 Crisis on Poverty in Ethiopia*.

ANNEX

ANNEX 1: MONETARY POVERTY MEASUREMENT METHODOLOGY

Data for poverty measurement

This poverty assessment is based on the Household Welfare Statistics (HoWStat) survey conducted in 2021 by the Ethiopian Statistical Service (ESS). The ESS, previously known as the Central Statistics Agency (CSA), has a long history of conducting national household surveys to regularly track poverty and living standards, a practice initiated in 1995/96. The Household Income and Consumption Expenditure Survey and Welfare Monitoring Survey (HCES/WMS) stand out as the most significant among these, with its inception in 1995/96 and subsequent iterations in 1999/2000, 2004/05, 2010/11, and 2015/16. The HCES and WMS were combined into a single survey named Household Welfare Statistics (HoWStat) in 2021. HoWStat 2021 was conducted over a full year from January to December 2021 by randomly assigning households to each of the 12 months at the enumeration areas (EA) level to account for seasonal effects. The HoWStat 2021 survey covered all rural and urban areas of the country, regardless of area type, except for the Tigray region due to ongoing conflict. The survey utilized a two-stage stratified sampling technique to draw representative samples. The country was first stratified into nine regional states and two city administrations. Then each regional state was further stratified into three broad categories namely, rural, major urban centers, and other urban area categories. However, Harari region and Dire Dawa City Administration were stratified into rural and urban categories, while Addis Ababa has only an urban category, but is stratified by sub-city. In most cases, each sub-stratum was a survey domain or reporting level for which the major findings of the survey could be reported. In this way, the HoWStat 2021 survey has 45 reporting levels. Enumeration Areas (EAs) are the Primary Sampling Units (PSUs) and the households as the Secondary Sampling Unit (SSU). In total, the sample size of the HoWStat 2021 survey is 38,828, which is higher than the previous surveys.

Methodological Approach

The methodological choice for the 2021 poverty assessment hinged on two options: adopting a new methodology based on 2021 data or replicating the 2016 methodology. The new methodology based on 2021 data would entail generating a new consumption aggregate, a new poverty basket, and a new poverty line based on international best practices. On the other hand, the replication of the 2016 methodology would mean using the same approach to construct the consumption aggregate as in 2016 and making a temporal price adjustment using an appropriate deflator to inflate the 2016 poverty lines to 2021 prices. Upon careful consideration, it was evident that adopting a new methodology based on 2021 data may not be the optional path. The year 2021 was marked by crisis, making it an atypical year to anchor a new poverty basket. Notably, there was a decline in caloric intake in 2021 compared to 2016, coupled with an uptick in the prevalence of caloric inadequacy, indicating a rise in calorie-based poverty. More importantly, there is inadequate coverage of the country, mainly the Tigray region and conflict-affected areas for security reasons. The fact that 2021 appears to be an unusual year makes the 2021 data inappropriate for establishing a new poverty estimation methodology. For this reason, the government

plans to conduct a new survey from July 2024 to June 2025, with an improved consumption module and national coverage, laying the groundwork for a new poverty line. Therefore, the more viable option is the replication of the 2016 methodology to the greatest extent possible. This approach offers the advantage of consistency, enabling the comparison of poverty trends over time. It relies on an established methodology with published figures from 2016 (PDC, 2018; World Bank, 2020), facilitating the analysis of poverty changes. Replicating the 2016 methodology requires a consistent approach to generating the nominal consumption aggregate, generating spatial price deflators to account for regional price differences, and updating/deflating price changes over time. The main challenge with this replication lies in the incomplete information regarding the creation of spatial deflators in 2016.

Consumption Aggregate Construction

Welfare measurement in Ethiopia is based on consumption. The debate over the choice of income and consumption as indicators of welfare—highlighted by Mancini & Vecchi (2022)—continues, with consumption often being favored as a more reliable indicator of current living standards, especially in developing countries where formal labor market participation and income data may be less available. Official poverty rates in Ethiopia are calculated based on household budget surveys that capture consumption or expenditure on food and non-food items, which form consumption aggregates. The construction of the consumption aggregate is structured around four main components: (1) food, (2) non-food nondurables, (3) durables, and (4) housing. The food component corresponds to the value of food consumed by households acquired through different means (purchased in the marketplace, home-produced, received in-kind or as gifts, and food consumed away from home). The non-food component captures the value of non-food items that are consumed by households and have a short lifespan, such as clothing, personal care products, and household supplies. The durables component includes the use value of durable goods, such as furniture, appliances, and vehicles, in a reference period. The housing component captures the cost of housing for households, either the rent for tenants or an estimated value of what homeowners would pay if they were to pay rent for their dwellings. The nominal consumption aggregate is constructed as the sum of the value of the four components. It is finally adjusted to December 2021 using within survey temporal deflators and for spatial variations in the cost of living using spatial price deflators. To ensure consumption reflects household welfare, adjustments are made for the varying caloric needs of household members based on age and gender. This is achieved by applying an adult equivalent scale to household consumption.

Food aggregates

The food component of household consumption encompasses various sources of food acquisition, including (1) market purchases; (2) own production; (3) in-kind receipts or gifts; and (4) food away from home. The HoWStat 2021 survey detailed the acquisition and consumption of 669 different food and non-alcoholic beverage items, collecting data biweekly using “last three days” and “last four days” recall periods for the first and second visits within a week. The survey also asked about the acquisition and consumption of 11 items of alcoholic beverages, cigarettes, and tobacco. However, following the recommendation of Deaton and Zaidi (2002) and the latest COICOP classification, these items are excluded from the food aggregate. Data on food consumed away from home, an increasingly relevant component of food consumption in Ethiopia (Worku et al., 2017), is collected within the same recall period and separate line items for breakfast, lunch/dinner, and drinks within the consumption module.

HoWStat 2021 also includes school meal data estimated by the ESS team based on data obtained from the Ministry of Education (MoE). While not a separate category, school meal expenditure is mapped to the different items in the survey. The food consumption aggregate is obtained by adding the consumption of food and non-alcoholic beverages from all the sources valued at survey prices. The HoWStat 2021 survey asks households to report the quantity of each food item consumed during the reference period then the monetary value of these quantities is estimated using local market prices – reported by households first or from prices from the market survey module when households do not report a price - forming the basis of the food consumption aggregate. It follows a consumption rather than acquisition approach. While one can conclude that household-level prices are used in the survey, the ESS also emphasizes that these prices are reasonably comparable to the local market prices, hence the quantities consumed are valued at prevailing prices in the enumeration area. The monetary valuation of food away from home consumption follows the same criteria used to value the consumption from food purchased. All values were standardized and converted to a monthly period, i.e., December 2021. The annual food expenditure aggregation is in line with the best practice suggested by the Mancini and Vecchi (2022) guidelines.

Non-food non-durables

Non-food nondurable categories considered in the construction of the welfare aggregate do not differ from best practices. Items classified under the non-food nondurables include (i) clothing and footwear, (ii) housing, water, electricity, gas, and other fuels (excluding actual rent and imputed rent), (iii) furnishings, household equipment and routine maintenance such as construction materials only for repairs and maintenance, (iv) transport and communication excluding purchase of vehicle and communication equipment, (v) personal care, (vi) recreation, sport, and culture, (vii) restaurants and accommodation services (excluding food consumed away from home), (viii) insurance (financial services are excluded), and (ix) other miscellaneous goods and services frequently purchased and consumed. Also included under the non-food nondurables category is alcohol, tobacco, and narcotics (e.g., chat). The HoWStat 2021 survey included data on transportation allowances for civil servant workers (calculated at 2837.51 Birr per person per year with several assumptions and rates). This data was not present in the 2015/16 survey; hence they were omitted from the non-food consumption aggregates to maintain comparability. As per the 2015/16 approach and as suggested by Mancini and Vecchi (2022), health and education expenditures are part of the total welfare aggregate. While the best practice in computing non-food aggregates is to exclude "lumpy" and relatively infrequent expenditures that do not reflect regular household consumption—such as expenses associated with special or extraordinary occasions (such as funerals or weddings), high-value jewelry, transfers to other households, donations to religious or charitable organizations, financial expenses—the 2016 consumption aggregates did not explicitly document the exclusion of these expenditures. To ensure comparability over time and mainly due to the lack of documented exclusion in 2016, these types of expenditures have been included in the 2021 consumption aggregates. The non-food nondurable consumption aggregate is computed using annualized estimates for consumption items measured with a monthly or 3 months recall period.

Durables component

The use value of durables is calculated by taking the full value of durable purchases in the survey as was done in 2016. The valuation of durable goods within consumption surveys is a nuanced process that requires careful consideration of the long-term benefits these goods provide as the utility offered

by durable goods often goes beyond the scope of a single survey cycle (Mancini & Vecchi, 2022). As such, it is the service flow—or the use value—of durable goods that contributes to welfare, rather than the initial purchase price. The information on durable goods and their characteristics is inconsistent between the 2015/16 and 2021 household surveys. The latter survey includes data on the ownership of household assets and their characteristics (including quantities, purchase price, age, and estimated current value). In contrast, the 2015/16 survey lacks detailed information on household assets, and neither the government report nor the previous poverty assessment provides the value of durables for that period. This discrepancy hinders the application of best practices for calculating the use value or service flow from durables for 2016. Consequently, it is not feasible to compute consumption flows from durables using the 2015/16 survey data, which impedes the comparison of the value of durables across survey periods. For the 2021 calculations, the survey reports the full purchase value of durable goods, which is used to estimate the durables component, consistent with the method used in 2016. The items considered "durables" are identified by mapping those listed in the expenditure section with those in the asset module and include (i) furniture and furnishing, carpets and other floor coverings, (ii) major kitchen, laundry, cleaning, and household appliances (such as air conditioners, washing machines, dryers, freezers, stoves, microwaves, among others), (iii) major tools and household equipment, (iv) information, communication, and recreation equipment (such as televisions, radios, DVD players, VCRs, computers, printers, faxes, among others), and (v) purchase of vehicles. Farm implements, other productive assets, and jewelry (considered an investment) are excluded from the computation of the "durables" component. Despite deviating from international best practices that recommend using the service flow of durables, this method was adopted due to the limitations of the available data and to maintain comparability in the estimation approach with 2016.

Housing component

Implicit rent based on the self-assessment method is used to compute the housing component for non-renters. The housing component of the consumption aggregate reflects the value of housing services used by households within a specific reference period. For renters, the housing component of the consumption aggregate is straightforwardly calculated as the actual rent paid. One method to estimate the housing component is to use self-reported imputed rent (implicit rent), which involves asking homeowners and non-market tenants to estimate the rent they would pay for their housing units. For non-renters, the housing component is estimated by soliciting their response to the question "How much rent would you charge monthly if you were to rent this accommodation?" or "If you were to pay rent for this dwelling, how much would you pay per month?". This method of self-assessment yields an implicit rent for owner-occupied housing, aligning with the methodology established in 2016. For subsidized housing, the actual rent paid is used. The ESS incorporates imputed rent into the expenditure data but introduced an adjustment for kebele rented houses in Addis Ababa and other urban areas in the 2021 survey which was not present in the 2016 survey. This adjustment is based on rental values from housing agencies and kebele house rental values. Another approach is to calculate rental equivalences using econometric models, such as hedonic regression or the Heckman selection model. However, these methods require a developed rental market and consistent rent information across all population groups to be fully effective. The rental market in Ethiopia is not developed and a greater share of renters are concentrated in urban areas. Moreover, this is not the approach used in 2016.

Adjustment for spatial and temporal price variations

Accurate comparisons of consumption levels across households require using consistent monetary units that reflect the same individual utility. The price level of commodities and services varies both over time (inflation) and across geographical locations (cost-of-living differences). Two households with identical nominal expenditures but facing different price levels will not be able to purchase the same quantity of goods; hence, their nominal expenditures do not equate to the same standard of living. To make meaningful welfare comparisons across individuals, it is necessary to account for these spatial and temporal differences. This is achieved by applying spatial and temporal priced deflators, which adjust the nominal figures to account for price disparities at different reporting periods and locations.

Within-survey spatial price adjustments were made to address differences in prices across locations. Spatial price indices at the reporting level or strata were calculated using the methodology used for spatial price adjustment in 2016 and before (PDC, 2018). Calculating spatial price indices at the reporting level (region) ensures a robust sample size of households, encompassing both urban and rural areas, which reduces the variance of mean prices and decreases the risk of insufficient household data for certain food or nonfood items. Laspeyres weighted price food and non-food spatial deflators, utilized in the previous government poverty reports (MoFED, 2002) are calculated and used for the spatial price adjustment. While the calculation of money metric utility requires that the nominal aggregate be deflated by a Paasche price index, the Laspeyres index is the deflator to use if the analyst prefers to work with the welfare ratio approach to measurement. However, these price indexes are of independent interest beyond their roles in deflating expenditures, simply for measuring prices (Deaton & Zaidi, 2002). The reporting level (or regional) relative price index—Laspeyres (relative to the national average) price index for food and nonfood items is calculated using the reporting level (regional) average price of each item, the average national price, and the national budget share of the item determined in 2011. The poverty basket was published in previous poverty estimation reports by the government and used in the 2015/16 poverty measurement. The basket encompasses both food and nonfood groups. The values of the Laspeyres deflator calculated using the price is consistent with one calculated using detailed list of items (CPI items). However, a comparison with the Paasche index shows that results are sensitive. An alternative approach to the spatial price deflator is to use the 2016 deflators, which necessitates matching the HoWStat 2021 data to reporting levels for HECS 2016 to use spatial deflators provided at the strata level in 2016. This is not an appropriate option since there are changes in prices across regions between 2016 and 2021 that should be reflected in the spatial price index.

The Laspeyres spatial deflator based on 2021 prices is selected over adopting the 2016 deflators because it also yields monetary poverty rates more consistent with the non-monetary indicators. The reporting levels (strata) were ranked based on poverty rates using the two spatial deflator options, as well as non-monetary poverty indicators such as MPI, education, health, food budget share, food security, and access to water and sanitation. The Spearman's rank correlation coefficient of the ranking on poverty estimates based in each spatial deflating approach on one hand, and the non-monetary poverty rankings on the other, indicates that the alignment between monetary and non-monetary indicator rankings is stronger when we use the 2021 prices that when the 2015/16 spatial deflators are used.

Within-survey temporal price adjustments were done using national CPI. After adjusting the nominal consumption aggregate for variation in cost of living across space, it is adjusted for price variations over

time. This step is crucial because the survey was conducted over a 1-year period from January 2021 to December 2021, during which the annual inflation rate reached 27 percent. Specifically, the food inflation rate was 31 percent, while the non-food inflation rate was 20 percent. The high inflation rates during the survey's implementation period underscore the necessity of temporal price adjustments. Without such adjustments, the calculated poverty levels could be significantly skewed. To address this, a temporal price deflator is applied using the official national food and non-food CPI deflators reported by the ESS with December 2021 as the reference month. These CPIs were recalculated excluding data from the Tigray region which were not correctly collected during the survey period due to insecurity reasons. The practice of using official food and non-food CPIs from the ESS aligns with the methodology employed in previous government reports and the most recent poverty assessment (World Bank, 2020). The sensitivity of poverty estimations for changes in temporal price deflators is assessed by comparing temporal deflators based on official CPI data and one computed using survey prices. The calculation of the survey-prices-based temporal deflator is based on the CPI basket and involves mapping the expenditure items from the survey (for 2011, 2016, and 2021) to the CPI basket items and using similar CPI weights (from December 2016 in this case). The survey-price-based temporal deflator is calculated consistently with the regional monthly CPI deflator for 2021 by taking national CPI weights and using regional prices for each item for each month. Based on this, we generate food and non-food deflators using December 2021 as the base period. The resulting temporal price deflators are consistent with the figures obtained using the official CPI data.

Poverty lines

The poverty line for 2021 is obtained using two alternatives: by updating the 2015 poverty line using CPI deflators and by re-costing the original poverty basket in average 2021 prices. The method used by the government for defining and measuring poverty since 1995/96 has been consistently detailed in previous government reports (MoFED, 2002, 2012; PDC, 2018). While alternative approaches exist for defining poverty lines, poverty assessments in Ethiopia predominantly utilize the cost of basic needs (CBN) method. This method begins by defining a food poverty line through a selection of a food bundle commonly consumed by the poor, ensuring it meets a set minimum caloric intake (2,200 kcal). Since its determination in 1996, the composition of the food basket has remained unchanged. To derive the overall poverty line, a food poverty line was first derived by costing the food basket at average national prices during the survey period. A non-food poverty line is added to the food poverty line to make up an overall poverty line by dividing the food poverty line by the food budget share of the poorest 25 percent to get the total poverty line (MoFED, 2002). Accordingly, the poverty lines for the first three surveys (1995/96, 1999/00, 2004/05) were determined to be Birr 1,075 deflated to 1995/96 constant prices. The poverty line was revised in 2011 by re-costing the items in the original food basket at prevailing prices and doing a similar adjustment for non-food consumption. The food and total poverty line were 1,985 and 3,781 Birr per adult equivalent per year, respectively (in December 2010 prices). For the 2015/16 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 (World Bank, 2020). The 2021 poverty line can be obtained using two alternative approaches: updating the 2015 poverty line using CPI and re-costing the existing poverty basket in 2021 prices. Under the first alternative, the food and non-food poverty lines from December 2015 are updated upwards using the national food and non-food CPI for December 2015 and December 2021. The second alternative involves costing the existing food poverty basket using average national 2021 prices (this gives the food poverty line) and adjusting for non-food allowance by dividing the food poverty line by the food budget share of the poorest 25 percent. The total of the two gives the national poverty line. Table A.1.1. summarizes the poverty lines in each survey year since 2010/11.

Table A.1. Food and total (absolute) poverty lines for Ethiopia (in Birr and average prices)

Year	2010/11	2015/16			2021	
Source or method	Published in 2011	Published in 2016	Re-costed poverty basket	CPI deflator based	Re-costed poverty basket	CPI deflator based
Food poverty line per adult per year	1,985	3,781	4,458	3,941	11,060	10,903
Total poverty line per adult per year	3,781	7,184	7,615	7,442	17,753	18,964

Source: NPC (2017) and World Bank Staff Calculations based on HoWStat 2021.

ANNEX 2: MULTIDIMENSIONAL POVERTY METHODOLOGY

Multidimensional poverty is calculated using the Global MPI methodology by Alkire et al. (2022) and available indicators in WMS 2015/16 and HoWStat 2021 datasets. The Multidimensional Poverty Index (MPI) covers three dimensions, health, education, and living standards, with nine indicators as depicted in Table A.2. A deprivation score is assigned to each individual based on his or her household's deprivation status based on the provided definitions, taking the value 1 if the household is deprived, and 0 otherwise. After adding the deprivation scores of each indicator to get the total deprivation score, people with a deprivation score of one-third (33 percent) or higher are identified as multidimensionally poor. In addition, those with a deprivation score of one-fifth (20 percent) or higher are vulnerable to multidimensional poverty, and people with a 50 percent or higher deprivation score are in severe multidimensional poverty. Hence, the incidence of multidimensional poverty (poverty headcount, H) is estimated as the ratio of the number of multidimensional poor people (q) to the total population (n). Moreover, the intensity of poverty, which measures average deprivation among multidimensionally poor is calculated as:

A = $\frac{\sum_i^q g_i}{q}$ where s_i -- the deprivation score of the ith multidimensional poor individual. Then, the multidimensional poverty index is generated as a product of poverty headcount and intensity (MPI = H * A) which ranges from 0 to 1, higher value representing a high level of deprivation. Finally, the contribution of dimensions d and indicators j to the MPI are calculated as:

$$Cont_d = \frac{\sum_{j \epsilon d} \sum_1^q c_{ij}}{n} \; /MPI \quad and \quad ContInd_j = \frac{\sum_1^q c_{ij}}{n} \; /MPI$$

Where, cj, censored headcount of indicator j refers to the proportion of people who are multidimensionally poor and deprived in indicator j.

Table A.2. Multidimensional poverty dimensions and indicators

Dimensions and indicators	Definition of deprivation	Weights
Health		**1/3**
Nutrition	Any child under age 5 years for whom there is nutritional information is undernourished. Child is undernourished if their z-score for either height-for-age (stunting) or weight-for-age (underweight) is below minus two standard deviations from the median of the reference population.	1/3
Education		**1/3**
Years of schooling	No household member aged 'school entrance age + six years or older' has completed at least six years of schooling. In Ethiopia, entry age is 7 years for primary school.	1/6
School attendance	Any school-aged child not attending school up to the age at which he/she would complete class eight. The age to complete 8th grade is 14 years.	1/6

Dimensions and indicators	Definition of deprivation	Weights
Living Standards		**1/3**
Housing	At least one of the three housing materials for roof, walls and floor are inadequate: the floor is of natural materials and/or the roof and/or walls are of natural or rudimentary materials.[1]	1/18
Asset	The household does not own more than one of these assets: radio, television, telephone, animal cart, bicycle, motorbike, or refrigerator, and does not own a car or truck.	1/18
Electricity	The household has no electricity (grid).	1/18
Drinking water	The household lacks access to improved sources of drinking water.[2]	1/18
Sanitation	The household lacks access to improved sanitation facilities.	1/18
Cooking fuel	The household cooks with firewood, charcoal, dung/manure, crop residue/leaves, sawdust.	1/18

Source: Alkire et al. (2022).

Notes: (1) Floor (mug/dung, bamboo/reed/wood planks); roof (thatch, wood and mud, bamboo/reed, plastic cover) or; Walls (wood and mud, wood and thatch, wood, stone, stone and mud, blocks (unplastered), parquet or polished wood, chip wood, bamboo/reed, plastic).

(2) Improved drinking water sources include piped water, protected wells/spring/boreholes, rainwater, and packaged or delivered water.

(3) Improved sanitation facilities are flush/pour flush toilets connected to piped sewer systems, septic tanks, or pit latrines; pit latrines with slabs (including ventilated pit latrines), and composting toilets, and not shared with other households.

ANNEX 3: ADDITIONAL DESCRIPTIVE STATISTICS AND REGRESSION RESULTS

Table A.3.1. Total and food poverty and calorie deficiency by location and region, 2016 and 2021

	Total poverty						Food poverty						Calorie deficiency					
	Total		Urban		Rural		Total		Urban		Rural		Total		Urban		Rural	
	2016	2021	2016	2021	2016	2021	2016	2021	2016	2021	2016	2021	2016	2021	2016	2021	2016	2021
National	25.0%	33.1%	16.1%	18.6%	27.1%	37.2%	27.3%	32.6%	17.3%	17.6%	29.6%	36.8%	26.4%	30.5%	18.6%	29.9%	28.2%	30.7%
Region:																		
Afar	28.7%	31.8%	11.6%	20.7%	32.6%	34.8%	47.7%	25.6%	12.7%	17.8%	55.8%	27.7%	37.0%	24.7%	43.3%	26.6%	35.5%	24.2%
Amhara	28.8%	34.2%	12.7%	20.1%	31.8%	37.6%	34.4%	33.1%	14.3%	17.4%	38.2%	36.9%	53.3%	32.4%	17.0%	32.4%	60.1%	32.3%
Oromia	25.6%	32.3%	16.2%	15.9%	27.1%	35.6%	22.7%	34.4%	13.4%	17.4%	24.2%	37.9%	21.3%	31.1%	22.1%	29.4%	21.2%	31.5%
Somali	22.7%	33.5%	25.3%	17.5%	22.3%	36.3%	28.3%	29.1%	31.1%	14.6%	27.8%	31.7%	16.8%	32.2%	16.3%	28.7%	16.9%	32.8%
Benishangul-Gumuz	28.2%	29.1%	18.4%	19.6%	30.6%	32.1%	25.6%	35.0%	20.6%	23.9%	26.9%	38.6%	26.3%	33.5%	18.0%	35.6%	28.3%	32.8%
SNNP	20.9%	37.6%	16.6%	27.1%	21.7%	40.1%	27.0%	36.5%	17.6%	29.1%	28.6%	38.1%	7.7%	29.5%	17.2%	30.0%	6.0%	29.3%
Sidama	26.3%	41.9%	13.5%	29.2%	29.3%	45.6%	29.0%	31.2%	17.1%	25.1%	31.8%	33.0%	28.6%	21.4%	24.7%	27.9%	29.5%	19.5%
Gambella	24.3%	36.4%	17.5%	27.5%	27.8%	41.4%	19.1%	30.6%	13.6%	21.5%	22.0%	35.9%	10.9%	27.1%	13.0%	27.1%	9.9%	27.1%
Harari	7.5%	8.1%	6.7%	6.7%	8.5%	9.8%	7.3%	15.1%	5.8%	8.6%	9.0%	23.3%	9.7%	26.3%	9.9%	33.4%	9.5%	17.4%
Addis Ababa	18.0%	12.5%	18.0%	12.5%	-	-	23.8%	7.8%	23.8%	7.8%	-	-	14.9%	28.2%	14.9%	28.2%	-	-
Dire Dawa	15.8%	14.2%	11.4%	14.8%	24.0%	13.1%	14.6%	20.4%	11.4%	15.4%	20.4%	29.5%	11.3%	25.4%	10.9%	29.8%	12.1%	17.4%

Source: World Bank staff calculations using HCES 2011, 2016, and HoWStat 2021.

Notes: Sidama was part of SNNP before 2021. The poverty rates for SNNP in 2011 and 2016 are calculated by including/excluding Sidama.

Table A.3.2. Composition of the population and the poor by location, region, and agroecology, 2021

	Total		Urban		Rural	
	Population Share	Share of poor	Population Share	Share of poor	Population Share	Share of poor
National	100%	100%	21.9%	12.3%	78.1%	87.7%
Region:						
Afar	2.0%	1.9%	0.4%	0.3%	1.6%	1.7%
Amhara	23.9%	24.6%	4.7%	2.8%	19.2%	21.8%
Oromia	40.0%	39.0%	6.8%	3.3%	33.2%	35.7%
Somali	6.5%	6.6%	1.0%	0.5%	5.6%	6.1%
Benishangul -Gumuz	1.2%	1.1%	0.3%	0.2%	0.9%	0.9%
SNNP	16.6%	18.9%	3.1%	2.6%	13.5%	16.3%
Sidama	4.4%	5.6%	1.0%	0.9%	3.4%	4.7%
Gambella	0.5%	0.6%	0.2%	0.2%	0.3%	0.4%
Harari	0.3%	0.1%	0.2%	0.0%	0.1%	0.0%
Addis Ababa	4.0%	1.5%	4.0%	1.5%	-	-
Dire Dawa	0.5%	0.2%	0.3%	0.2%	0.2%	0.1%
Agroecological zone:						
Drought prone highlands	15.8%	13.4%	3.7%	1.8%	12.1%	11.5%
Drought prone lowlands	9.1%	12.5%	1.0%	0.5%	8.2%	12.0%
Moisture reliable lowlands	3.4%	3.9%	0.6%	0.5%	2.8%	3.4%
Moisture reliable highlands	65.4%	65.0%	15.3%	8.7%	50.2%	56.3%
Pastoral	6.2%	5.2%	1.3%	0.7%	4.9%	4.5%

Source: World Bank staff calculations using HoWStat 2021.

Table A.3.3. Multidimensional poverty results by rural/urban and regions

	2016													
	National	Rural	Urban	Afar	Amhara	Oromia	Somali	Benishan-gul- Gumuz	SNNP	Sidama	Gambella	Harari	Addis Ababa	Dire Dawa
% of people deprived in Years of schooling	49%	57%	15%	62%	53%	51%	62%	47%	46%	44%	20%	31%	6%	34%
School attendance	25%	30%	4%	29%	14%	31%	43%	18%	28%	24%	10%	13%	2%	11%
Nutrition	30%	34%	16%	48%	28%	31%	35%	31%	32%	30%	20%	25%	10%	17%
Electricity	78%	93%	10%	73%	81%	81%	90%	81%	81%	74%	73%	19%	1%	31%
Sanitation	97%	99%	88%	98%	99%	99%	99%	100%	94%	100%	96%	94%	72%	91%
Drinking water	40%	48%	3%	39%	39%	44%	46%	20%	40%	50%	20%	17%	0%	9%
Housing	98%	100%	89%	96%	99%	99%	97%	99%	99%	99%	98%	88%	77%	66%
Cooking fuel	95%	100%	76%	100%	98%	98%	100%	100%	98%	99%	100%	73%	28%	82%
Asset	71%	80%	28%	77%	79%	68%	89%	70%	72%	70%	73%	34%	7%	44%
MPI	0.43	0.50	0.14	0.54	0.42	0.46	0.55	0.39	0.44	0.44	0.25	0.27	0.06	0.23
Headcount	72%	82%	28%	80%	73%	76%	87%	64%	72%	75%	48%	47%	13%	40%
Intensity	60%	61%	50%	67%	58%	61%	63%	60%	61%	58%	52%	56%	44%	57%
Severity	50%	58%	15%	66%	47%	52%	67%	40%	52%	48%	25%	32%	4%	23%
Vulnerability	16%	16%	16%	10%	19%	16%	9%	28%	17%	11%	39%	6%	5%	12%
Contribution to MPI														
Health	23%	22%	39%	30%	22%	23%	21%	26%	24%	23%	27%	31%	55%	25%
Education	28%	29%	21%	28%	26%	30%	32%	28%	28%	26%	19%	27%	13%	30%
Living Standards	48%	49%	40%	42%	51%	48%	47%	46%	48%	51%	54%	42%	31%	45%
Years of schooling	19%	19%	17%	19%	21%	18%	19%	20%	17%	17%	13%	19%	12%	23%
School attendance	10%	10%	5%	9%	5%	11%	13%	8%	11%	9%	6%	8%	1%	7%
Nutrition	23%	22%	39%	30%	22%	23%	21%	26%	24%	23%	27%	31%	55%	25%
Electricity	8%	9%	2%	7%	9%	8%	8%	8%	8%	8%	9%	4%	1%	7%
Sanitation	9%	9%	11%	8%	10%	9%	9%	9%	9%	10%	10%	10%	11%	10%
Drinking water	5%	5%	1%	4%	5%	5%	4%	3%	5%	6%	4%	3%	0%	2%
Housing	9%	9%	11%	8%	10%	9%	9%	9%	9%	10%	11%	10%	11%	9%
Cooking fuel	9%	9%	10%	8%	10%	9%	9%	9%	9%	10%	11%	9%	7%	9%
Asset	8%	8%	5%	7%	9%	7%	8%	7%	8%	8%	9%	6%	2%	8%

	2021													
	National	**Rural**	**Urban**	**Afar**	**Amhara**	**Oromia**	**Somali**	**Benishan-gul- Gumuz**	**SNNP**	**Sidama**	**Gambella**	**Harari**	**Addis Ababa**	**Dire Dawa**
% of people deprived in Years of schooling	45%	51%	22%	63%	43%	48%	68%	42%	41%	35%	19%	27%	10%	24%
School attendance	31%	37%	12%	47%	24%	34%	58%	28%	33%	28%	20%	19%	1%	14%
Nutrition	29%	31%	21%	45%	28%	30%	40%	35%	27%	23%	30%	24%	12%	26%
Electricity	70%	86%	13%	78%	75%	72%	88%	66%	69%	71%	70%	18%	2%	28%
Sanitation	85%	88%	71%	94%	89%	85%	84%	93%	84%	78%	84%	78%	59%	66%
Drinking water	31%	39%	5%	54%	34%	31%	42%	19%	34%	24%	14%	16%	0%	9%
Housing	95%	99%	81%	95%	98%	96%	94%	98%	99%	95%	96%	72%	61%	40%
Cooking fuel	95%	100%	76%	99%	97%	97%	99%	99%	99%	97%	98%	68%	21%	73%
Asset	68%	78%	32%	80%	76%	65%	88%	60%	70%	76%	77%	36%	11%	39%
MPI	0.41	0.47	0.19	0.58	0.40	0.43	0.59	0.40	0.40	0.35	0.31	0.25	0.07	0.23
Headcount	69%	77%	38%	86%	69%	72%	88%	67%	68%	62%	57%	42%	16%	43%
Intensity	60%	61%	51%	68%	58%	60%	68%	60%	58%	56%	55%	60%	44%	54%
Severity	45%	53%	19%	71%	45%	47%	70%	44%	44%	37%	34%	29%	5%	22%
Vulnerability	17%	18%	14%	6%	20%	17%	8%	23%	20%	25%	29%	10%	7%	11%
Contribution to MPI														
Health	24%	22%	36%	25%	24%	24%	22%	29%	22%	22%	32%	32%	58%	38%
Education	30%	31%	26%	31%	28%	31%	35%	28%	31%	30%	20%	29%	14%	24%
Living Standards	46%	47%	38%	43%	49%	45%	42%	42%	47%	48%	48%	39%	28%	39%
Years of schooling	18%	18%	16%	18%	18%	18%	19%	17%	17%	16%	10%	17%	12%	15%
School attendance	13%	13%	9%	13%	10%	13%	16%	12%	14%	13%	10%	12%	2%	9%
Nutrition	24%	22%	36%	25%	24%	24%	22%	29%	22%	22%	32%	32%	58%	38%
Electricity	8%	8%	3%	7%	8%	8%	8%	7%	8%	8%	8%	3%	1%	6%
Sanitation	8%	8%	9%	8%	9%	8%	7%	9%	8%	8%	9%	8%	9%	8%
Drinking water	4%	4%	1%	5%	4%	4%	4%	2%	4%	4%	2%	3%	0%	2%
Housing	9%	9%	10%	8%	9%	9%	8%	9%	10%	10%	10%	9%	9%	7%
Cooking fuel	9%	9%	10%	8%	9%	9%	8%	9%	10%	10%	10%	9%	5%	10%
Asset	7%	8%	6%	7%	8%	7%	7%	6%	8%	9%	9%	6%	3%	7%

Source: World Bank staff calculations using HoWStat 2021.

Table A.3.4. Poverty profile

	Expenditure quintiles					Monetary poverty		Multidimensional poverty	
	Poorest	Q2	Q3	Q4	Richest	Poor	Non-Poor	Poor	Non-Poor
Household characteristics									
Adult equivalent	5.2	4.6	4.1	3.5	2.6	4.9	3.4	4.1	3.3
Dependency ratio	1.3	1.1	1.1	0.9	0.6	1.3	0.8	1.2	0.6
Dwelling characteristics									
Access to electricity (%)	14.3	22.3	26.6	36.3	52.9	17.5	39.3	10.4	64.0
Improved water source (%)	58.9	63.1	65.7	71.9	80.8	60.6	73.2	52.6	92.4
Improved toilet facility (%)	13.8	16.7	22.2	26.5	37.2	14.4	29.0	11.0	43.8
Livelihoods									
Agricultural land ownership (%)	91.4	88.8	84.6	78.0	63.7	90.5	74.8	93.2	60.3
Land use right (%)	89.5	89.3	87.2	83.1	72.1	89.4	80.3	91.6	71.0
Livestock ownership (TLU)	3.0	3.3	3.2	2.8	2.0	3.1	2.6	3.4	1.9
Non-farm enterprise ownership (%)	9.0	11.1	14.3	17.2	20.1	9.6	17.3	10.7	21.3
Agriculture main income source (%)	83.1	80.4	75.6	67.1	49.9	82.1	63.5	84.9	46.6
Non-agriculture main income source (%)	13.4	16.2	20.5	27.9	43.7	14.5	31.4	11.7	46.9
Labor market									
Head employed (%)	89.2	90.7	90.6	90.1	89.8	90.0	90.1	90.8	89.1
Members employed (%)	66.3	70.2	70.7	71.0	74.0	68.2	71.9	71.8	69.8
Members employed in agriculture (%)	81.2	77.0	71.8	63.6	46.6	79.9	60.1	82.4	43.5
Members employed in industry (%)	3.8	4.3	4.6	5.6	6.1	3.8	5.5	2.9	7.8
Members employed in service (%)	15.0	18.7	23.6	30.8	47.4	16.3	34.4	14.7	48.7
Shocks									
Market shock (%)	14.9	15.2	16.6	17.1	17.9	15.2	17.0	17.4	15.5
Health shock (%)	5.8	5.4	5.0	5.2	5.5	5.7	5.3	5.9	4.8
Food shortage (%)	8.2	5.8	4.9	4.6	3.5	7.1	4.3	6.7	2.9
Days of conflict within 20km radius	8.1	9.2	10.9	12.0	15.2	8.6	12.8	7.6	17.0
Years with PDSI < 0	24.7	24.0	23.5	22.9	22.3	24.4	22.9	24.0	22.3
Proximity to public services, Km									
Food market	7.0	6.1	5.7	5.1	4.1	6.6	4.9	7.0	3.2
Livestock market	10.0	8.6	8.8	8.0	6.7	9.4	7.7	10.4	5.2
All-weather road	7.1	4.8	4.8	3.5	2.6	6.2	3.6	6.2	1.7
Bank	22.2	19.1	19.6	16.5	13.1	20.9	16.1	23.2	9.7
Primary school	2.5	2.2	2.3	2.2	1.7	2.3	2.0	2.7	1.3
Secondary school	11.5	9.7	9.9	8.9	7.0	10.7	8.5	11.8	5.5
Health post, clinic, center	8.3	6.9	6.6	6.0	4.8	7.8	5.7	8.1	3.8
Safety nets and aid									
SafetyNet program (PSNP)	15.8	10.9	10.7	8.3	4.5	13.8	7.6	12.4	5.0
Humanitarian aid	15.0	15.0	13.2	10.5	6.6	14.9	10.0	15.0	6.4
Other aid	7.6	6.6	6.6	4.8	3.5	6.9	4.9	6.5	4.1

Source: World Bank staff calculations using HoWStat 2021. PDSI stands for Palmer Drought Severity Index.

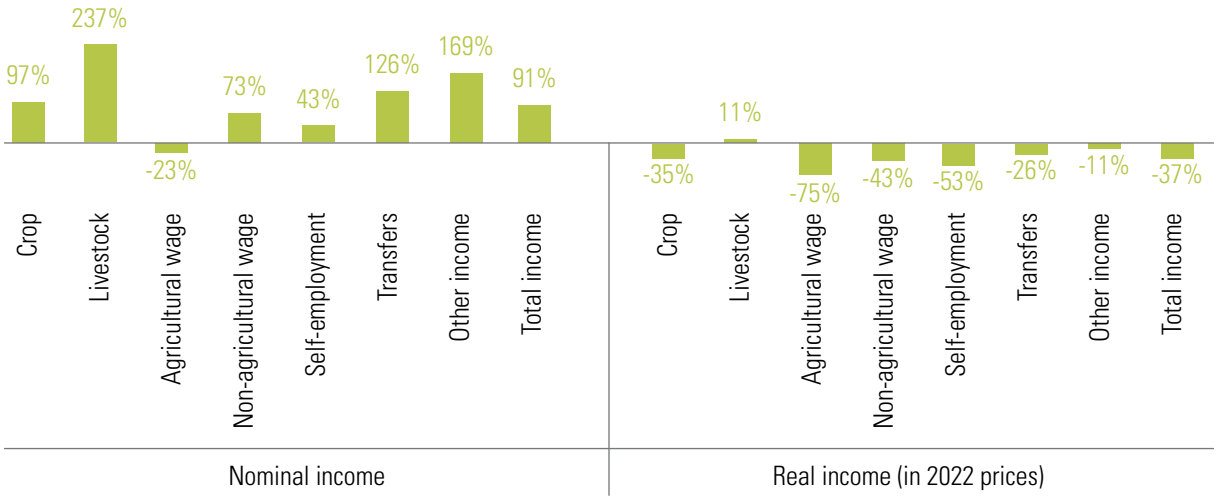
Table A.3.5. Inequality indicators and Pyatt's inequality decomposition

	HCES 2015/16	HoWStat 2021
Gini by residency		
National	0.32	0.29
Urban	0.38	0.29
Rural	0.28	0.27
Gini by region		
Afar	0.33	0.26
Amhara	0.34	0.27
Oromia	0.3	0.29
Somali	0.26	0.26
Benishangul-Gumuz	0.34	0.3
SNNP	0.32	0.3
Sidama	0.31	0.26
Gambella	0.34	0.31
Harari	0.35	0.26
Addis Ababa	0.36	0.27
Dire Dawa	0.37	0.27
Percentile ratios		
p90/p10	4.25	3.63
p90/p50	1.99	1.94
p10/p50	0.47	0.53
p75/p25	1.9	1.96
Generalized Entropy Indices GE(a)		
GE(-1)	0.2	0.15
GE(0)	0.18	0.13
GE(1)	0.2	0.14
GE(2)	0.29	0.17
Atkinson indices		
A(0.5)	0.09	0.07
A(1)	0.16	0.13
A(2)	0.29	0.23
Pyatt's Inequality decomposition		
Between	28.6	20.9
Overlap	14.7	19.6
Within	56.7	59.5

Source: Authors' estimates based on HCES 2015/16 and HoWStat 2021.

Notes: Pyatt's inequality decomposition follows methodology from Pyatt, G. (1976).

Figure A.3.1. Income growth by source of income, 2016 vs 2022



Source: Authors' estimates based on ESPS 2015/16 and 2021/22.

Notes: Income growth calculated only for those households with income.

Table A.3.6. Regression of conflict exposure on 2019 characteristics

	(1) Event Days	(2) Event Days	(3) Event Days	(4) Event Days
Log Consumption	1.53***	0.31	0.06	-0.27
	(0.45)	(0.40)	(0.41)	(0.38)
Female Household Head			0.15	0.02
			(0.53)	(0.54)
Household Size			0.00	-0.04
			(0.12)	(0.11)
Share Finished Primary			-0.30	-1.37
			(0.91)	(0.83)
Landed			-1.42	-0.29
			(1.17)	(1.08)
Zone Capital				-
Other Urban				-3.96*
				(2.17)
Rural				-4.88**
				(1.97)
Past Event Days				0.36***
				(0.11)
Past Fatalities				-0.03
				(0.02)
Region Fixed Effects	No	Yes	Yes	Yes
N	6,768	6,768	6,768	6,768
Sample Mean	6.38	6.38	6.38	6.38

Source: Authors' estimates based on ESS 2019.

Notes: All household characteristics are measured in ESS Wave 4 which was completed in August 2019. The outcome is the number of days with conflict events (battles, remote violence, and violence against civilians) within 20km between September 2019-December 2022 (ACLED). Past conflict covers a period of the same length through August 2019. Population weights applied. Standard errors clustered at the EA level.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

ANNEX 4: CORRELATES OF JOB QUALITY FOR THE URBAN WAGE EMPLOYED

We estimate a pooled cross-sectional regression model using a generalized specification of the following form:

$$JQI = \alpha + \beta X + \gamma Job + \rho Region + \delta Year + \varepsilon_i \quad (1)$$

where JQI measures the level of job quality of an urban wage worker and α is the intercept. The term X is a vector of individual characteristics such as age gender and education, and β, the associated vector of parameters to be estimated. The term Job is a vector of job characteristics such as job sector, occupational skill levels and detailed subsectors of employment, while γ is the associated vector of parameters to be estimated. We also control for $Region$ and $Year$ fixed effects, along with the respective ρ and δ vectors of parameters to the estimated. Here, ε is the residual term capturing anything else that the model does not take into account.

Table A.4.1. Correlates of job quality in urban areas

	(1)	(2)	(3)
	All	Men	Women
Female	-0.086***		
Youth	-0.146***	-0.141***	-0.135***
Educational attainment (Ref=No education)			
Less than primary	-0.175***	-0.239***	-0.103***
Completed primary	-0.104***	-0.153***	-0.069***
Completed secondary	0.060***	0.046***	0.046**
Higher education	0.426***	0.409***	0.434***
Job sector (Ref=Public)			
Private	-0.347***	-0.318***	-0.379***
Occupational skill level (Ref=Low)			
Medium	-0.015*	0.106***	-0.134***
High	0.531***	0.590***	0.498***
Sector of employment (Ref=Primary agriculture)			
Agricultural services	0.089*	0.105*	0.049
Manufacturing	0.156***	0.154***	0.127***
Mining and extractives	0.147**	0.190***	0.029
Construction	0.076***	0.091***	0.014
Public utilities	0.190***	0.173***	0.162***
Trade	0.103***	0.097***	0.096**
Transport	0.272***	0.258***	0.249***
Hospitality	0.022	-0.072*	0.052
Information & communication	0.097***	0.088**	0.105**
Finance & real estates	0.337***	0.323***	0.333***
Professional/technical	0.200***	0.190***	0.210***
Administrative & support	0.110***	0.085**	0.119**
Government	0.211***	0.204***	0.214***
Education & health	0.125***	0.144***	0.079**
Arts, entertainment & recreation	-0.019	-0.052	-0.004
Community/household activities	-0.260***	-0.176***	-0.324***
Extraterritorial organizations	0.117***	0.128***	0.087
Region (Ref= Oromia)			
Tigray	0.040***	0.049***	0.025

	(1)	(2)	(3)
	All	**Men**	**Women**
Afar	-0.062***	-0.052**	-0.077***
Amhara	0.002	-0.004	0.013
Somali	0.058***	0.081***	0.014
Benishangul-Gumuz	0.042**	0.028	0.058**
SNNPR	-0.029***	-0.037***	-0.017
Gambella	0.127***	0.135***	0.096***
Harari	0.060***	0.060***	0.051**
Addis Ababa	0.129***	0.121***	0.130***
Dire Dawa	0.021	0.040*	-0.016
Year of survey (Ref=2010)			
year=2011	-0.167***	-0.205***	-0.109***
year=2014	-0.030**	-0.048***	0.0004
year=2015	-0.001	-0.024	0.031
year=2016	-0.077***	-0.103***	-0.039*
year=2018	-0.110***	-0.137***	-0.071***
year=2020	-0.164***	-0.237***	-0.067***
Constant	1.354***	1.319***	1.305***
Observations	101,664	59,730	41,934

Notes: Authors' estimations using Ethiopia UEUS 2010-2020. The table reports estimate for working age adults between 15 and 64 years in wage employment.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP