1 Introduction

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Ethiopia is often perceived as a country of droughts, widespread poverty, and economic stagnation. Indeed the country experienced severe famines in both the 1970s and the 1980s, which resulted in a depletion of household assets and savings and caused excess mortality, estimated at 250,000 in 1972–74 and 590,000 in 1984–85 (Africa Watch 1991; de Waal 1997).[1] More localized food shortages have often been less documented, such as the one in Somali region during 1999–2000 whereby an estimated 100,000 people died following three consecutive years of drought (Hammond and Maxwell 2002). Other serious production shortfalls related to droughts, such as that in 2003, significantly reduced the food production and consumption of millions of households. Moreover, even in normal years, the level of food insecurity is high, with an estimated 44 percent of the population undernourished, 35 percent of children under five years of age underweight, and 11 percent of children dying before the age of five (von Grebmer et al. 2010).

Yet much of Ethiopia differs sharply from the grim view suggested by these figures. Most of the rural population resides in rainfall-sufficient areas in which harvests are normal in most years. Nationally, the available data suggest that food production and availability are increasing due to increases in area cultivated and, in 2005–09, increases in yield. Outside the agricultural sector itself, massive investments in roads and the spread of cell phone technology have greatly increased access to markets, urban centers, services, and information for tens of millions of rural Ethiopians. And per capita incomes increased by over 50 percent from 2001 to 2009 (World Bank 2010).

Indeed, the reality of Ethiopia's agriculture and food security situation is complex because of variations across space within Ethiopia as well as variations over time due to changes in policies, weather shocks, and other factors. A complete picture of Ethiopia's agriculture and food security must include both

1. Estimates of famine deaths vary widely. The Centre for Research on Epidemiology and Disaster (CRED 2011) reports that 100,000 people died in the 1972–74 famine and 300,000 people died in 1984–85.

the very serious acute and chronic food insecurity problems faced by many Ethiopians and the progress achieved in other areas and at the national level.

Moreover, the country faces major strategic questions regarding the role of agriculture in its overall development strategy. Agricultural Development–Led Industrialization has been a foundation of government economic policy since 1992. Up until the early 2000s, however, the relative stagnation of cereal yields suggested to many that significant expansion of smallholder production (particularly for cereals) was severely limited by relative land shortage in the Ethiopian highlands, limited potential for irrigation, inadequate marketing infrastructure, and a weak seed sector. In addition, because of Ethiopia's high costs for transport and marketing both internally and to external international markets, neither export nor import trade is profitable for most cereals (though imported wheat has been an exception in some years). Thus, there has been concern that agricultural growth alone (even with sizable growth linkages to the nonagricultural sector) cannot generate sufficient domestic demand to keep agricultural prices from falling substantially and putting a brake on further growth (World Bank 2006; Dercon, Hill, and Zeitlin 2009).

The official Central Statistical Agency (CSA) data indicating large increases in both cereal area cultivated and yields from 2003–04 to 2009–10 (Ethiopia, CSA 2005–10) have not settled the debate, however. The manner in which this gain in cereal productivity has been achieved remains a puzzle given land constraints, the uncertain effectiveness of agricultural extension, and the slow dissemination of improved seed varieties to complement increased fertilizer use (Dercon, Hill, and Zeitlin 2009). Equally important for future policy are whether further gains in productivity are realistic and the extent to which future agricultural growth can generate sufficient income growth (in both the agricultural and the nonagricultural sectors) to ensure there is sufficient demand to prevent a price collapse.

This book is designed to inform this policy debate by documenting the state of the agricultural and food economy of Ethiopia through the first decade of the 2000s and to highlight major structural features that will greatly influence the outcome of future development strategies in Ethiopia. In showing the complexity of Ethiopian agriculture, ongoing constraints to growth, the substantial progress achieved, and the scale of the food security challenge that remains, the book can provide a solid foundation for students, researchers, policy analysts, and decisionmakers. It builds on previous research documenting Ethiopia's political, economic, and agricultural transformation while aiming to provide a realistic and balanced foundation for the key aspects of major food policy issues in Ethiopia. It extends the discussion presented in *People of the Plow* (McCann 1995) to assess the dramatic investments in infrastructure and agricultural development (that have occurred since 1990) on current economic growth. Overall, the tone of the book is cautiously optimistic, bearing in mind the trends

and manifestations of previous food shortages and mismanaged food policy decisions documented in *Famine and Food Security in Ethiopia* (Webb and von Braun 1994).

The Long Path from Famine to Food Security

Although Ethiopia has experienced major food production shortfalls over the past two decades, it has managed to avoid large-scale, countrywide famines such as those in 1972–74 and 1984–85 (Table 1.1). In part, this can be explained using the lens of the basic components of food security: availability, access, and utilization (nutrition). The occurrence of a famine—a complete collapse in food security on a large scale—however, involves much more than the proximate cause of a drought or other disruption in food supply. A complex interaction of short- and long-term policies related to agricultural investments and markets, capacities of the government to respond, household coping strategies,

TABLE 1.1 Summary of major historical events in Ethiopia, 1890–2010

Time frame	Event
March 1896	Ethiopian army under Menelik II defeats Italian troops at the Battle of Adwa
March 1929	Ras (King) Tafari proclaimed as Emperor Haile Selassie
1936–41	Ethiopia occupied by Italian troops; Ethiopian imperial family exiled
1972–74	Droughts and famine in northern Ethiopia and parts of south[a] cause quarter million deaths
September 1974	Haile Selassie deposed by the military
1974–91	Mengistu Haile Mariam leads Derg government; state takes ownership of private land and enterprises
1984–85	Droughts and famine cause 1 million deaths
May 1991	Mengistu flees Ethiopia; Ethiopian People's Revolutionary Democratic Front (EPRDF) troops enter Addis Ababa
1991–present	EPRDF government led by Meles Zenawi
May 1993	Eritrea declares its independence following a referendum
May 1998–June 2000	War between Ethiopia and Eritrea
2005	Violence erupts after national elections
2005–10	Five-year plan: Plan for Accelerated and Sustained Development to End Poverty
2010	EPRDF wins national elections; new five-year Growth and Transformation Plan announced

SOURCES: Authors; Webb and von Braun (1994); Marcus (2002).

[a]Harerge, Bale, Sidamo, and Gamo Gofa regions.

and other factors were key to Ethiopia's previous famines. Moreover, chronic malnutrition and periodic localized severe food insecurity continue to affect tens of millions of Ethiopians.[2]

Adequate availability (supply) of food is a necessary but not sufficient condition for food security. Production shortfalls related to drought directly threaten food supply, but increases in public interventions (including distribution of food aid) and private trade can prevent a major decline in food supply. Even when there is adequate availability at the national or local level, poor households often do not have adequate access to food because they lack sufficient entitlements to food—that is, legal means to acquire sufficient food—such as their own production of food, other earned incomes, gifts, and government transfers.[3] In addition to availability and access, food security of individuals depends on their utilization of food (the amounts and types of food they eat) and various factors affecting the body's capacity to absorb nutrients, which in turn affect overall health. Thus, adequate nutritional outcomes for individuals depend not only on consumption of macronutrients (calories, proteins, and fats and oils) or micronutrients (for example, iron, vitamin A, and iodine) but on whether diarrheal disease or other health problems inhibit effective absorption of nutrients.[4]

The large-scale famines in Ethiopia in 1972–74 and 1984–85 involved collapses of all three components of food security. In both cases, droughts played a key role in reducing production and availability, and food aid and other imports were insufficient to offset the losses. But other broad factors were also major causes of these famines, including key government policies. In the case of the 1984–85 famine, military conflict, government policies on land reform and investment, and market failures were instrumental (Webb and von Braun 1994). Ongoing wars against the federal government by regional armies resulted in loss of life and serious injuries.[5] These conflicts also reduced the labor available for crop cultivation and diverted scarce public resources away from needed investments in agriculture, roads, telecommunications, and emergency response programs. Government land reform policies abolished private landownership in 1975 and placed ceilings on rights of access to private land, imposing a limit

2. Chapter 9 of this book provides an overview and chronology of food security and famine in Ethiopia since 1888, as well as the medium- and long-term policy forces behind food shortages and emergencies.

3. The concept of entitlements is due to Amartya Sen and his work on the Great Bengal Famine, which argued that the famine was due largely to a loss of purchasing power (entitlements) of many poor households rather than to a shortfall in supply of food. See Sen (1981).

4. See Devereux and Maxwell (2001) for a more detailed summary of the various aspects of food security.

5. The armies involved were those of the Eritrean People's Liberation Front and the Tigray Peoples' Liberation Front.

of 10 hectares per farm. Public investment in agriculture was allocated mainly to state farms and producer cooperatives instead of independent small farmers. Finally, market restrictions (regulation of and bans on interregional movement of grain and labor) forced sales of private traders' grain to the Agricultural Marketing Corporation at low fixed prices, and poor market infrastructure also contributed to a lack of market integration.

Since the 1984–85 famine, and particularly following the fall of the Derg regime in May 1991, government policy in Ethiopia has included substantial liberalization of agricultural markets, investment in agricultural research and extension, building of key transport infrastructure, and establishment of the Productive Safety Net Programme. These policy developments have contributed to major increases in national food production and enhanced food security. Production of the major cereals increased substantially in the 1990s and the first decade of the 2000s. Although increases in area cultivated accounted for most of the production increase from 1991–92 through 2003–04, yield increases have accounted for about half of the more recent surge in cereal production from 10 million metric tons in 2003–04 to more than 14 million metric tons in 2008–09.[6] Growth in production during the 1990s was nearly 2 percent lower than production gains during the 2000s. Growth in the area cultivated was near 6 percent in the 1990s, with insignificant yield increases, whereas in the 2000s improved intensification and yield growth of 3.5 percent were recorded, with an average area increase of 3 percent. Nationally, the proportion of people below the poverty line decreased from 45 percent in the mid-1990s to 39 percent in 2005. Rural poverty rates dropped from 48 to 39 percent, although the urban poverty rate rose slightly, from 33 to 35 percent, in the same period (Ethiopia, MoFED 2008). Nonetheless, according to estimates from 2005 national household survey data, the level of malnutrition in Ethiopia remains very high: an estimated 44 percent of the population in the country consumes fewer calories than the minimum dietary requirement (Schmidt and Dorosh 2009; von Grebmer et al. 2010).

The Historical and Geographical Context

Ethiopia's current food security and prospects for the future are very much shaped by the geography and history of the country. Located in East Africa, with borders connecting it to Sudan, Eritrea, Djibouti, Somalia, and Kenya, Ethiopia has been a landlocked country since the independence of Eritrea in May 1993. Geographically, Ethiopia is commonly described as "Three Ethiopias": the dry, semiarid lowlands that dominate the eastern third of the country; the rainfall-sufficient (mainly highland) areas in the western third of the coun-

6. All tons in this book are metric tons.

try; and the drought-prone highlands in northern and central Ethiopia. Most of the population resides in the latter two broad areas.[7] Throughout the country, the population is more concentrated along major road networks, but much of Ethiopia's population remains remote: 45 percent of the population lives more than five hours from a city of 50,000 (Schmidt and Kedir 2009).

These variations in geography and agroclimatic zones have important implications for the food economy of Ethiopia. The rugged terrain in much of the highlands makes transport and communication difficult. Rainfall varies significantly between mountains and valleys, even across short distances. With these large variations in altitude, rainfall, and connectivity, cropping patterns also vary sharply, and no single crop dominates Ethiopia's food consumption, as does rice in much of Asia, maize in Latin America, or wheat in many cooler climates. Instead, five cereals are cultivated on a wide scale: teff (an indigenous crop widely grown only in Ethiopia and Eritrea), wheat, maize, sorghum, and barley. Coffee, cultivated in the rainfall-sufficient southern highlands, is Ethiopia's major export crop. Livestock—mainly cattle, sheep, and goats—are the major sources of meat and livelihood of the pastoralist and agropastoralist populations.

Ethiopia's recorded history dates to a biblical account of a visit by the Queen of Sheba to King Solomon of Israel (10th century BC). According to the Kebre Negast (The glory of the kings), a history written in Ge'ez in the 14th century AD, King Solomon and Queen Makeda's son became Emperor Menelik I, Ethiopia's first emperor.[8] From the 1st to the 6th century AD, the kingdom of Axum in northern Ethiopia (in today's Amhara region) was a major economic and military power in the region, with significant interactions with Egypt and the Middle East. Until the 19th century, however, what is today Ethiopia was divided into small subnational groups, which in the highlands were each ruled by their own *ras* (literally, "head"). A series of emperors in the 19th century—Tewodros II (1855–68), Yohannes IV (1872–89), and finally Menelik II (1889–1913)—gradually united more and more groups, extending their control to most of the Ethiopian highlands by the end of the 20th century.

Ethiopia avoided colonization in the 1900s through a combination of the military advantages of defensive positions in the highlands, defeat of an Italian army at the Battle of Adwa in March 1896, and deft diplomacy under Menelik II that played British, French, and Italian interests against one another. Ethiopia retained its independence under Haile Selassie (crowned emperor in 1929),

7. Administratively, Ethiopia is divided into 11 regions largely based on ethnic groups, including three urban administrative areas (Addis Ababa, Dire Dawa, and Harari); the major regions are further subdivided into zones, *woredas*, and *kebeles*. To avoid confusion, this book uses the terms *regions* or *zones* only when referring to actual administrative areas.

8. Marcus (2002). See also Zewde (2002).

though it was occupied by the Italian army during World War II (from 1936 to 1941).

Under the long reign of Haile Selassie Ethiopia began to modernize, but rural Ethiopia, in general, remained isolated and very poor. Most land was formally owned by the state, churches, and the rural elite, with significant rents due from private small farmers for use of the land. There were few paved roads in the country. The electricity-generating capacity was only 4.7 watts per person nationally in 1972, and almost no electricity was available outside of a few major cities.

A series of droughts contributed to famines in much of Ethiopia from 1972 to 1974, and as the economic and social situation worsened, a group of officers later known as the Derg ("committee" in Amharic) gradually gained more power. Haile Selassie was increasingly seen as being out of touch with the suffering of the Ethiopian people, particularly after a television report by the British Broadcasting Corporation, originally aired in Britain in October 1973, was re-edited and shown in Ethiopia, showing scenes of the emperor feeding his dogs along with horrific scenes of famine in Wollo (northern Ethiopia).[9] The aging emperor was finally deposed on September 12, 1974, and ultimately succeeded by Mengistu Haile Mariam, who took power formally in 1977.

Under the Derg, Ethiopia adopted socialist economic policies, nationalizing land and private businesses and placing greater controls on markets and prices. Agricultural investments focused on large state farms. When a severe drought hit much of Ethiopia in 1984, a famine ensued. Although the international community responded with millions of dollars of food aid and other relief through various charity events and programs,[10] the famine led to more than half a million deaths.

The Derg regime nonetheless survived until 1991, when it was overthrown by forces of the Ethiopian People's Revolutionary Democratic Front (EPRDF), which marched on Addis Ababa from the north. The new government, led by Meles Zenawi, subsequently adopted a more liberal economic policy, allowing private-sector markets to operate more freely.

Eritrea, up until that point the northernmost part of Ethiopia, seceded in May 1993 following a referendum on independence. Initially, relationships between the two countries were peaceful, but a war confined largely to Eritrean territory broke out and lasted from May 1998 to June 2000. Since that time, economic and diplomatic ties have been disrupted, depriving Ethiopia of its only ports (Mitsiwa and Aseb on the Red Sea coast).

9. Gill (2010, 34–35).

10. These charities and events included Band Aid, formed by Bob Geldof in 1984; USAID (United States Agency for International Development) for Africa, for which Michael Jackson and Lionel Ritchie wrote "We Are the World"; and the Live Aid concerts held in 1985 in London and Philadelphia (Gill 2010, 12–13).

After the downfall of the Derg, Meles and the EPRDF won national elections in 1995 and 2000 by wide margins. The 2005 elections were very close, however, and violence erupted following announcement of the EPRDF victory. The EPRDF won handily in 2010, but Prime Minster Meles died soon thereafter, in July 2012.

Economic Reforms and Outcomes in the 1990s and 2000s

The immediate post-Derg period of the mid-1990s was marked by administrative decentralization in 1992 and substantial liberalization of the economy as restrictions on domestic food markets were removed, private enterprise was encouraged, export taxes were eliminated, and the currency was devalued by more than 100 percent in 1993 (from 2.5 to 5.5 birr/US$). Moreover, a new development strategy, Agricultural Development–Led Industrialization (ADLI), announced in 1992, dramatically shifted the focus of government investments away from industry and large farms to support broad-based growth of smallholder agriculture. This emphasis on smallholder agriculture based on the ADLI approach continued with the Sustainable Poverty Reduction Strategy of 2002 (Ethiopia, MoFED 2002) and the Plan for Accelerated and Sustained Development to End Poverty in 2006 (Ethiopia, MoFED 2006). In further support for private markets, the Ethiopian Commodity Exchange was launched in 2008, designed to provide a transparent and efficient market for agricultural products.

Economic liberalization in Ethiopia did not mean a complete withdrawal of the government from markets. Although initially the government liberalized the fertilizer sector, the market shares of individually owned private firms dropped from 30 percent in 1995 to zero in 1999. According to Jayne et al. (2003), these firms were replaced by "private" holding companies in 1999, which continued to dominate markets until 2007. Since 2008, the import of fertilizer has been controlled by the Agricultural Input Supply Enterprise, and the distribution is carried out by the cooperative unions.[11] In addition, land markets were not liberalized but rather remained under state control, with farmers receiving usufruct rights to agricultural land. The Ethiopian Grain Trading Enterprise, a public marketing enterprise, was established in 1992 to stabilize grain prices, though the volumes of its commercial imports, domestic purchases, and sales have been small relative to the overall cereal markets. More important have been public imports of food aid, generally distributed as direct transfers to households until the advent of the Productive Safety Net Programme in 2005, which introduced a work requirement for able-bodied individuals as a condition of food or cash transfers. In addition, a dramatic rise in domestic inflation in 2007 and 2008 led to occasional crackdowns on private traders deemed to be hoarding commodities or charging excessive prices.

11. Chapter 4 discusses these issues in greater detail and examines the systems and markets for seed, fertilizer, and extension in Ethiopia.

Overall, Ethiopia's economic performance in the past two decades has far surpassed its performance in the 1970s and 1980s. Real gross domestic product (GDP) grew only 1.2 percent between 1981 and 1991 but has since accelerated to 4.3 percent from 1991 to 2001 and to 8.2 percent from 2001 to 2009 (1.2). Over these three decades, the total population has more than doubled, from 36.3 million in 1981 to 82.8 million in 2009, though population growth slowed from 3.3 percent per year in the 1980s to 3.0 percent in the 1990s and 2.6 percent in the 2000s. Thus, per capita GDP, which fell by 2.0 percent per year in the 1980s, rose by 1.3 percent per year in the 1990s and 5.4 percent from 2001 to 2009. In constant (2000) US dollars, per capita GDP in 2009 is estimated at $201, which is almost 75 percent higher than the per capita GDP of $116 in 1991.[12]

Agricultural growth has made a major contribution to Ethiopia's impressive overall growth performance, accelerating from 1.3 percent per year in the 1980s to 2.9 percent in the 1990s to 6.2 percent in the 2000s (see Table 1.2). Nonetheless, the industrial sector (which includes processing of agricultural goods) and services grew even more rapidly than did agriculture. In fact, the share of agriculture in national GDP fell steeply between 1991 and 2001, from 64.1 percent to 47.7 percent (and to 47.3 percent in 2009).

Substantial investment, which increased from 11.1 percent of GDP in 1991 to over 20 percent in 2001, has been a major source of growth. Most of this investment, however, has been financed by foreign capital inflows and transfers (workers' remittances and private transfers). Gross domestic savings was only 9.7 percent of GDP in 2001 and just 2.3 percent of GDP in 2009.

Up until 2007, Ethiopia enjoyed considerable macroeconomic stability in the post-Derg period. Inflation, which averaged 7.0 percent per year in the 1980s, fell to 3.0 percent per year in the 1990s. Inflation surged to an annual average of 44 percent in 2008, though, as Ethiopia's money supply and international energy prices increased sharply. Tight monetary policy in late 2008 contributed to a sharp decline in inflation in 2009 and 2010, and a gradual depreciation of the birr relative to the US dollar and other currencies restored the real exchange rate to its levels of the early 2000s by mid-2010 (Ahmed and Dorosh 2009). The subsequent 19 percent devaluation of the birr from 14.1 to 16.8 birr/US$ between August and September 2010 further improved the incentives for production of tradable goods in Ethiopia's economy and may have signaled a greater emphasis on incentives for long-term economic growth.

Other economic and social indicators generally paint a picture of substantial progress in Ethiopia over the past two decades as well (Table 1.3). The country's electricity-generating capacity and the number of kilometers of paved roads increased by 123 and 52 percent, respectively, between 1991 and 2009. Most of the population still resides in rural areas, though the rate of urbanization (as measured using the official administrative definition) increased from only

12. All dollar amounts in this book are US dollars.

TABLE 1.2 Ethiopia: Selected economic variables, 1981–2009

Variable	1981	1991	2001	2009	Annualized growth rate (percent) 1981–91	1991–2001	2001–09
Population (millions)	36.3	50.0	67.3	82.8	3.3	3.0	2.6
GDP (constant 1980 US$, millions)	5,147	5,789	8,859	16,623	1.2	4.3	8.2
GDP per capita (constant 2000 US$)	141.9	115.9	131.7	200.7	–2.0	1.3	5.4
GDP (constant 1980 birr, billions)	41.9	47.2	72.2	135.5	1.2	4.3	8.2
Agricultural GDP (constant 1980 birr, billions)	22.4	25.6	34.1	55.0	1.3	2.9	6.2
Share of agriculture (percent of GDP)	60.7	64.1	47.7	47.3	0.5	–2.9	–0.1
Share of industry (percent of GDP)	10.6	8.7	13.0	14.1	–2.0	4.1	1.0
Share of manufactures (percent of GDP)	4.9	3.0	5.7	5.2	–4.7	6.5	–1.3
Share of services (percent of GDP)	28.8	27.3	39.3	38.6	–0.5	3.7	–0.2
Gross domestic savings (percent of GDP)	10.2	6.0	9.7	2.3	–5.2	5.0	–16.3
Gross capital formation (percent of GDP)	14.5	11.1	21.5	20.5	–2.7	6.8	–0.6
Exports of goods and services (percent of GDP)	7.6	4.1	12.0	9.9	–6.1	11.4	–2.3
Imports of goods and services (percent of GDP)	11.9	9.2	23.7	28.1	–2.6	10.0	2.1
Official exchange rate (birr/US$)	2.1	2.1	8.5	10.7	0.0	15.1	3.0
Consumer price index (2005 = 100)	27.3	53.8	72.5	206.2	7.0	3.0	14.0

SOURCE: World Bank (2010).

NOTE: GDP = gross domestic product.

TABLE 1.3 Ethiopia: Selected economic and social indicators, 1981–2009

Indicator	1981	1991	2001	2009	Annualized growth rate (percent) 1981–91	1991–2001	2001–09
Paved roads (thousands of kilometers)	n.a.	28.0	31.4	42.4	n.a.	1.2	3.8
Electricity-generating capacity (thousands of kilowatts)	175.5	331.5	417.0	737.7	6.6	2.3	7.4
Urban population (millions)	3.9	6.4	10.2	13.7	5.3	4.7	3.8
Urbanization rate (percent of population)	10.6	12.9	15.1	17.0	1.9	1.6	1.5
Life expectancy at birth (years)							
Females	45.2	48.9	53.4	56.7	0.8	0.9	0.7
Males	42.3	45.9	50.3	53.8	0.8	0.9	0.8
Total	43.7	47.4	51.8	55.2	0.8	0.9	0.8
Poverty headcount (percent) at US$1.25 a day (PPP)[a]	66.2	60.5	55.6	39.0	–0.4	–1.0	–3.3
Poverty headcount (percent) at US$2 a day (PPP)	89.9	84.6	86.4	77.6	–0.4	0.4	–1.8

SOURCE: World Bank (2010).

NOTES: Life expectancy at birth for 2009 is based on 2008 data; paved roads figure for 2009 is based on 2007 data; n.a. = not available; PPP = purchasing power parity.

[a]Poverty headcount data are for 1982, 1995, 2000, and 2005. Figures for changes in poverty are percentage points per year.

10.6 percent in 1981 to 17.0 percent in 2009. Life expectancy at birth rose from 42.3 to 53.8 years for males and from 45.2 to 56.7 years for females over the same period. Poverty estimates are not available for all years, but the available data also show a steady improvement in that area. World Bank (2010) estimates show the poverty headcount falling from 66.2 percent in 1982 to 60.5 in 1995 to 55.6 in 2000, followed by an even steeper drop to 39.0 percent in 2005.[13] Unfortunately, no nationally representative survey has been conducted since 2005, but the high reported levels of agricultural and overall GDP growth suggest that poverty rates may have continued to decline.

Regional Comparisons

Ethiopia is vastly different from its neighbors, particularly in terms of its large land area and population and its widely varying ecologies. Nonetheless, comparisons with neighboring countries provide a useful perspective on the huge development challenge facing the country.

Ethiopia has the largest population in the region (82.8 million people in 2009), approximately double that of Sudan and Kenya (42.3 and 39.8 million, respectively) and nine times larger than that of Somalia (9.1 million) (Table 1.4). In spite of the rapid economic growth of the past two decades, however, Ethiopia remains one of the poorest countries in East Africa. Ethiopia's growth in GDP per capita outpaced that of neighboring countries in the 2000s (5.7 percent per year compared to 4.3 percent in Uganda and 2.6 percent in Sub-Saharan Africa as a whole). Yet it remains one of the poorest countries in the region, with a GDP per capita of only $201 (2000) per person in 2009, 45 percent less than that of Uganda ($366 [2000] per person), less than half that of Kenya or Sudan, and less than one-third the average for Sub-Saharan Africa ($620 [2000] per person). Eritrea, Ethiopia's small neighbor to the north (population 5.1 million), is much poorer than Ethiopia, though, with a GDP per capita of only $130 (2000) per person.[14]

Agriculture accounts for a much higher share of GDP in Ethiopia (47.3 percent) than in neighboring Kenya (22.6 percent), Sudan (29.7 percent) or Uganda (24.7 percent) (see Table 1.4). This, in large part, reflects the low rate of industrialization and urbanization of Ethiopia relative to its neighbors. Few data are available on poverty for any of the countries in the region. Using a poverty line of $1.25 a day purchasing power parity, the World Bank estimates Ethiopia's poverty rate at 39 percent for 2004/05. Kenya's poverty rate was almost exactly half of Ethiopia's (19.7 percent); Uganda's poverty rate was higher than Ethiopia's (51.5 percent). Note, though, that poverty figures vary

13. Measured at the US$1.25-per-day poverty line.

14. For most countries of eastern Africa, and especially for Eritrea and Somalia, economic data are very scarce, adding considerable uncertainty to cross-country comparisons.

TABLE 1.4 East African countries: Selected indicators, 2009

Indicator	Ethiopia	Eritrea	Kenya	Somalia	Sudan	Uganda	Sub-Saharan Africa
Population (millions)	82.8	5.1	39.8	9.1	42.3	32.7	840.3
Population growth rate (percent, 2000–09)	2.6	3.8	2.7	2.4	2.1	3.3	2.5
GDP per capita (constant 2000 US$)	201	130	452	n.d.	536	366	620
GDP per capita growth rate (percent, 2000–09)	5.7	–3.3	1.7	n.d.	5.0	4.3	2.6
Agriculture, value-added (percent of GDP)	47.3	14.4	22.6	n.d.	29.7	24.7	12.3
Poverty headcount ratio at US$1.25 a day (PPP)	39	n.d.	19.7	n.d.	n.d.	51.5	n.d.
Hunger index	29.8	35.7	19.8	n.d.	20.9	15	21.7
Undernourished population	44	66	30	n.d.	20	15	27.5
Underweight children under five years of age	34.6	35.3	16.5	32.8	31.7	16.4	23.6
Under five mortality rate	10.9	5.8	12.8	20	10.9	13.5	14.0

SOURCES: von Grebmer et al. (2010); World Bank (2010).

NOTES: Data on the poverty headcount ratio for Ethiopia and Kenya are for 2005; data on GDP (gross domestic product) per capita for Eritrea are for 2008, and the growth rate is for 2000–08; n.d. = no data for the country.

widely depending on the poverty line used (the Ethiopian government does not use the $1.25-per-day poverty line in its official poverty estimates).

The estimated percentage of the population consuming inadequate calories in Ethiopia (44 percent) is significantly higher than that of Kenya (30 percent) and almost three times higher than that of Uganda (15 percent) but only two-thirds the rate in Eritrea (66 percent). Similarly, the percentage of children under five years of age who are underweight is more than double that of Kenya or Uganda (34.6 percent, as compared to 16.5 and 16.4 percent in the latter two countries). The under-five mortality rate, which is affected heavily by the incidence of malaria and other diseases as well as food intake, is lower in Ethiopia (10.9 percent) than in Kenya or Uganda, however, and below the rate for Sub-Saharan Africa (14.0).

The Plan of the Book

Part I of the book presents an overview and analysis of Ethiopia's food economy. Key to an understanding of the complex food production systems of a country as large as Ethiopia are the various development domains, as determined by agroecology, settlement patterns, and road networks (Chapter 2). Given the wide variations in elevation, rainfall, and market access in the country, patterns of crop production often vary sharply across short distances. Yet overall cereal production increased rapidly in the 2000s in much of the country due to both area and yield expansion (Chapter 3). Though increasing, the use of modern inputs such as fertilizer and improved seeds remains considerably low. In 2007/08, only about 40 percent of the total land allocated to cereal cultivation benefited from chemical fertilizers, and most of these chemical fertilizers went to maize and wheat. Besides, the amount of land in cereal cultivation declined from 2001/02 to 2007/08. The use of improved seeds in 2007/08 was negligible; they were applied over about 5 percent of the total cereal acreage.[15] In addition, irrigation has seldom been employed, with only 1 percent of cereal acreage irrigated in 2007/08. Expanded use of fertilizer is one major factor behind increases in land productivity, though the level of use of improved seeds remains low and indeed has suffered setbacks in recent years (Chapter 4).

Increased cereal production has greatly increased market volumes, and there is substantial evidence of greater market integration across major wholesale markets and reduced marketing costs and margins, in part due to investments in roads and improvements in telecommunications (Chapter 5). In addition, livestock (mainly cattle, sheep, and goats) and dairy also play major roles in Ethiopia's food economy and fulfill an important function in coping with

15. This low figure for improved seed use is based on official CSA farmer survey estimates that likely do not include seed of improved, open-pollinated varieties saved from their own previous year's harvest. Overall, some estimates suggest that the use of improved seed for wheat and maize cultivation may be as much as 50 to 70 percent (see Chapter 4, "Improved Seed Adoption," pp. 92–94).

shocks, accumulating wealth, and serving as a store of value in the absence of credit and savings markets. Yet, productivity in the livestock subsector in Ethiopia lags behind those in both its neighbors in East Africa as well as the least developed countries, and import bans by the Arab States of the Persian Gulf in some years resulted in major suffering for livestock keepers in both pastoral regions and central highlands. Thus, understanding the causes of low productivity and the problems with marketing is essential for appropriate policy formulation (Chapter 6).

Overall, gains in agricultural production and improvements in markets have contributed to increases in household consumption and reductions in poverty (Chapter 7). The wide diversity in consumption patterns across regions of Ethiopia and the tendency for nearly all household groups to consume more than just one cereal (as well as *enset*, especially in the Southern Nations, Nationalities, and People's Region) reduce reliance on a single staple and thereby reduce the risks associated with failure of a single crop. For pastoralists and agropastoralists in dry lowland parts of Ethiopia, livestock products (including dairy) are major sources of calories and incomes, but both poor and nonpoor households purchase a large share of their food.

Part II of the book discusses major agricultural and food policy interventions and includes a concluding chapter on key policy issues facing Ethiopia today. Like most other Sub-Saharan African countries, Ethiopia has committed itself to investing in sustainable agricultural growth as part of the Comprehensive Africa Agriculture Development Programme. Economywide analysis of continued gains in agricultural productivity (Chapter 8) shows not only that effective agricultural investments lead to gains in production levels that benefit net buyers but also that there is sufficient demand for food products to keep agricultural prices from falling so rapidly as to impoverish surplus-producing farmers. Assuming that agricultural growth reaches 6 percent per year, model estimates suggest that overall GDP growth will increase by 1 percentage point per year. This higher growth rate would lift an additional 3.7 million people above the poverty line by 2015. The model results also show, however, that rapid non-agricultural growth can produce similar reductions in overall poverty. Nonetheless, in the absence of effective disaster response policy and safety nets, increases in production and moderate reductions in food prices are not sufficient to substantially increase food security for many asset-poor households. Private-sector imports have been discouraged through restrictions on foreign exchange and uncertainties regarding government policy actions and food aid; as a result, public cereal stocks and food aid continue to be the major mechanisms for disaster response and cereal price risk management in Ethiopia (Chapter 9). Yet the success in addressing disasters cannot be attributed merely to cereal stocks and food aid. A key aspect of the country's success in addressing emergencies has been institutional development that has included well-managed grain reserves, early warning systems, and coordination between grain stocks and safety net programs, as well as innovative safety nets and overall

improvements in emergency management. In an effort to improve food security among the most vulnerable, the Productive Safety Net Programme (PSNP) aims to target the poor (in terms of assets and income) for a public works program and food-insecure households for a direct support program. Findings suggest that the PSNP has been able to target resources to the poorest households in rural areas using a combination of geographic and community-based targeting and that, compared to other safety net programs, the PSNP is better at supporting its desired population (Chapter 10).

Finally, in spite of the enormous progress of the past two decades, Ethiopia continues to face key challenges to raising incomes, reducing poverty, and achieving food security for all. Chapter 11 summarizes the key findings of the book and places them in the context of major policy choices regarding raising agricultural productivity, reducing poverty and chronic food insecurity, and instilling mechanisms to prevent severe increases in transitory food insecurity caused by droughts and other production and market shocks.

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