



ETHIOPIA STRATEGY SUPPORT PROGRAM II (ESSP II)



THE RURAL-URBAN TRANSFORMATION IN ETHIOPIA

ESSP II – EDRI REPORT



The Rural-Urban Transformation in Ethiopia

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Ethiopia Strategy Support Program II (ESSP II)
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ABOUT ESSP II

The Ethiopia Strategy Support Program II is an initiative to strengthen evidence-based policymaking in Ethiopia in the areas of rural and agricultural development. Facilitated by the International Food Policy Research Institute (IFPRI), ESSP II works closely with the government of Ethiopia, the Ethiopian Development Research Institute (EDRI), and other development partners to provide information relevant for the design and implementation of Ethiopia's agricultural and rural development strategies. For more information, see <http://essp.ifpri.info>, <http://www.ifpri.org/book-757/ourwork/program/ethiopia-strategy-support-program> or <http://www.edri.org.et/>.

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Contents

Abstract.....	viii
1. Introduction and background	1
1.1. Introduction.....	1
1.2. The Ethiopian economy	5
1.3. Development strategy – economic policies	15
1.4. Land policies.....	18
1.5. Overview of welfare patterns.....	19
1.6. Summary	33
2. Urbanization and the spatial transformation of Ethiopia	35
2.1. City growth and urbanization.....	35
2.2. Road infrastructure and improving access to markets.....	38
2.3. Other infrastructure	41
2.4. Summary	43
3. Rural-urban migration	44
3.1. Rural-urban migration in Ethiopia: an overview	44
3.2. Data.....	47
3.3. Characterizing migration in Ethiopia.....	49
3.4. Internal migration model and results	60
3.5. Welfare implications of migration	70
3.6. Summary	74
4. Public investment policies.....	76
4.1. Overview of public investment scene	76
4.2. Research question and policy issues	80
4.3. Ethiopia's rural and urban economies	80
4.4. An economy wide rural-urban model of Ethiopia	83
4.5. Modeling results.....	85
4.6. Conclusion	94
5. Concluding observations	95
References	97

Tables

Table 1.1. Urbanization in selected countries.....	2
Table 1.2. Political events and economic policies of three political regimes in Ethiopia, 1960 to 2005	4
Table 1.3. Agricultural share in GDP in East African countries, 1980s-2000s.....	5
Table 1.4. Ethiopia, total area cultivated by farm size and agro-ecology	8
Table 1.5. Ethiopia, crop area and production (meher season), 2004/05 – 2007/08.....	9
Table 1.6. Ethiopia, cereal production and availability, 1961/62 – 2008/09.....	10
Table 1.7. Ethiopia, cereal area cultivated, decade averages.....	11
Table 1.8. Ethiopia, average annual number of animals over the last four decades by livestock species	12
Table 1.9. Ethiopia, annual values (million Birr) of livestock and livestock products exports 1970/71 to 2007/08	12
Table 1.10. Sectoral output and growth in Ethiopia, 1999/00 to 2008/09	13
Table 1.11. Ethiopia, exports and imports; 2000, 2005 and 2009.....	14
Table 1.12. Overview of current land tenure regime in Ethiopia	19
Table 1.13. Ethiopia, rural and urban real per capita expenditures, 1995/96, 1999/00 and 2004/05	21
Table 1.14. Ethiopia, poverty rates by rural and urban	21
Table 1.15. Ethiopia, trends in poverty headcount indices and changes in poverty headcount indices, by region, 1995/96 – 2004/05.....	22
Table 1.16. Ethiopia, calorie intake by region and quintile.....	23
Table 1.17. Ethiopia, recent trends in per capita calorie intake.....	24
Table 1.18. Wage rates in rural and urban areas, 1996-97 to 2009-10, Ethiopia	28
Table 1.19. Net primary school enrollment in East African countries	29
Table 1.20. Median real total expenditures per adult per month (ETB), EUHS sites: 1994, 1995 and 1997	32
Table 1.21. Poverty incidence, EUHS sites: 1994, 1995 and 1997.....	32
Table 1.22. Monthly per capita food expenditures, EUHS sites: 1994 and 2004.....	32
Table 2.1. Ethiopia, Agglomeration Index* – Percent of people considered urban by region	35
Table 2.2. Ethiopia, alternative urbanization estimates.....	36
Table 2.3. Ethiopia, urban population by city size (2007)	37
Table 2.4. Urbanization in East Africa, 2000 – 2005.....	38
Table 2.5. Ethiopia, percent population connected to a city of 50,000 people in 2007	40
Table 2.6. Electricity generation capacity 1958 to 2011* in Ethiopia.....	42
Table 2.7. Electricity use, 2002/03 to 2006/07 in Ethiopia	42
Table 2.8. Fixed line and cellular telephones 2003 to 2010 in Ethiopia	43
Table 3.1. Forms of migration in Ethiopia over time (percentage and absolute figures in thousands)	45
Table 3.2. Characteristics of ERHS migrants, Migrant Tracking Survey	55
Table 3.3. Occupations of migrants before and after ERHS village move, Migrant Tracking Survey.....	55
Table 3.4. Comparing household characteristics by migration status, 2004-05 ERHS.....	56
Table 3.5. Relationship between land rights and land holdings and moving decision, Migrant Tracking Survey	58

Table 3.6. Years of most important shocks coinciding with year of move, Migrant Tracking Survey.....	59
Table 3.7. Timing migrant movement with household shock exposure, ERHS 2009	59
Table 3.8. Comparing shock exposure of households by migration status (ERHS panel)....	60
Table 3.9. Determinants of migration, ERHS and Migrant Tracking Survey, 2009.....	63
Table 3.10. Determinants of rural-rural migration, ERHS and Migrant Tracking Survey, 2009	65
Table 3.11. Determinants of rural-urban migration, ERHS and Migrant Tracking Survey, 2009.....	66
Table 3.12. Determinants of migration, varying measures of drought, ERHS and Migrant Tracking Survey, 2009	68
Table 3.13. Remittance rates among internal migrants from rural areas, China, El Salvador, and South Africa.....	70
Table 3.14. Comparing reports of transfers sent by migrants to ERHS households with reports of transfers received by ERHS households, 2009	71
Table 3.15. Comparing food scarcity of households by migration status, ERHS panel	72
Table 3.16. Comparison of consumption among migrants with ERHS household consumption, 2004 and 2009	73
Table 3.17. Selected measures of happiness, household heads, by household migration status determined with migrant tracking survey, ERHS 2004/5 and 2009.....	74
Table 4.1. Government of Ethiopia expenditures (rural, urban and other), 1999/00 and 2007/08	77
Table 4.2. Subjective land rights, tenure security and investment in Ethiopia	80
Table 4.3. Ethiopia's economic structure, 2005	81
Table 4.4. Ethiopia's rural-urban economic structure, 2005.....	82
Table 4.5. Migration and agglomeration in the baseline scenario	86
Table 4.6. Macroeconomic results.....	87
Table 4.7. Regional wage ratios and migration flows	89
Table 4.8. Regional growth and agglomeration results.....	91
Table 4.9. Per capita welfare (equivalent variation) results	92
Table 4.10. Accelerated investment scenarios	92

Figures

Figure 1.1. Ethiopia, Real GDP (2000/01 Birr), 1999/00 – 2008/09	6
Figure 1.2. Agricultural share in GDP in East African countries, 1980 – 2008	6
Figure 1.3. Ethiopia, agro-ecological zones.....	7
Figure 1.4. Ethiopia, total Area cultivated by farm size and agro-ecology, 2007/08 ^a	8
Figure 1.5. Ethiopia, per capita cereal consumption and imports, 1961/62 to 2008/09	10
Figure 1.6. Ethiopia, merchandise exports (2008 US dollars), 1997 – 2009	14
Figure 1.7. Ethiopia, merchandise imports (2008 US dollars), 1997 – 2009	15
Figure 1.8. Ethiopia, poverty (percentage), 1995/96 – 2004/05	22
Figure 1.9. Self-reported perceptions of poverty, Ethiopia	23
Figure 1.10. Ethiopia hunger index, 2000 – 2005	24
Figure 1.11 (A and B). Kernel density of per capita food expenditure, Ethiopia	25
Figure 1.12. Median real wage rates, rural and Addis Ababa: 1996-97 to 2009-10	26
Figure 1.13. Nominal median wage rates, rural and Addis Ababa, 1996-97 to 2008-09	27
Figure 1.14. Net primary school enrollment in East African countries (all children).....	29
Figure 1.15. Net primary school enrollment in East African countries (girls only).....	30
Figure 1.16. School enrollment – children 7-14 years, Ethiopia, 1994, 2004, 2009	30
Figure 1.17. Asset ownership over time, Ethiopia, 1994, 2004, 2009	31
Figure 2.1. Ethiopia, alternative urbanization estimates	36
Figure 2.2. Ethiopia, travel time 1984 and 2007	39
Figure 2.3. Ethiopia, electricity generation capacity 1958 to 2011*	41
Figure 3.1. Locations and migration prevalence from ERHS villages, Migrant Tracking Survey, 2009	50
Figure 3.2. Travel time to nearest city of 50,000 people	51
Figure 3.3. Destinations of migrants from ERHS villages, Migrant Tracking Survey	52
Figure 3.4. Typology of migration, by definition of urban, Migrant Tracking Survey	53
Figure 3.5. Migration in Ethiopia over time	53
Figure 3.6. Share of internal migrants in Ethiopia over time	54
Figure 3.7. Public works access by migration rates.....	62
Figure 3.8. Direct Support Access by Migration Rates	62
Figure 4.1. Government of Ethiopia expenditures (rural, urban and other), 1996/97 to 2007/08.....	78
Figure 4.2. Population shares in the baseline and urbanization scenarios.....	89

Boxes

Box 1.1. Development plans in Ethiopia: Inventory and present state	34
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Foreword

The Plan for Accelerated and Sustained Development to End Poverty (PASDEP) was the most recent macro growth policy in Ethiopia (2005/06 - 2009/10) and the principle of Agricultural-Development-Led-Industrialization (ADLI), which pays a particular focus on peasant agriculture, was its foundation. ADLI was adopted in mid - 1990's and has guided government programs since then. PASDEP emphasized the need to strengthen rural-urban linkages in order to reduce the negative impact of rural-urban migration and maximize growth and its impact on poverty reduction. PASDEP recognized the central role of improving infrastructure, human capital, and credit markets in rural areas in facilitating rural-urban linkages. The policy addressed rural transformation in relation to power generation, observing that electricity is an essential component of rural transformation, providing the basis for businesses and production in small- to medium-sized towns, and inputs into agriculture by driving irrigation pumping, commercial agricultural production, and processing.

Following the relative success of PASDEP, the Government of Ethiopia has developed the next macro development agenda – the Growth and Transformation Plan (2010/11-2014/15). The GTP maintains ADLI as a foundation of policy development, and targets an economic growth rate of 14.9 percent. This growth target is higher than that in PASDEP. ADLI continues as a foundation of development and the GTP also aims to create favorable conditions for the industry to play a key role in the economy. The policy provides for investment in expansion of infrastructure development (roads, electricity production, railway lines, and telephone infrastructure), as well as in rural and human capital development. As these investment decisions are made and executed, there will likely be various tradeoffs.

I am pleased to see this timely research output from the joint work of EDRI and IFPRI. Through analysis of available data, this new research report highlights many of the complexities of the Ethiopian economy and aims to provide inputs into evidence-based policymaking.

Finally, thanks are due for the financial support to the Ethiopia Strategy Support Program-II by a consortium of donors comprising the United States Agency for International Development (USAID), the UK Department for International Development (DFID), the Canadian International Development Agency (CIDA), and the Development Cooperation of Ireland (IRISH AID).

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Acronyms

ADLI	Agricultural-Development-Led-Industrialization
AIDS	Acquired Immune Deficiency Syndrome
CES	constant elasticity of substitution
CET	constant elasticity of transformation
CGE	computable general equilibrium
CNRS	China National Rural Survey
COMESA	Common Market for Eastern and Southern Africa
CPI	consumer price index
CSA	Central Statistics Authority
CV	coefficient of variation
DCGE	dynamic computable general equilibrium
DHS	Demographic and Health Survey
DPPA	Disaster Prevention and Preparedness Agency
EC	Ethiopian Calendar
EDRI	Ethiopian Development Research Institute
EGTE	Ethiopian Grain Trading Enterprise
ERHS	Ethiopian Rural Household Survey
ESSPII	Ethiopian Strategy Support Program 2
ETB	Ethiopian Birr
ETC	Ethiopian Telecommunications Corporation
EUHS	Ethiopian Urban Household Survey
EV	equivalent variation
FAO	Food and Agriculture Organization
FDI	foreign direct investment
FGT	Foster, Greer, and Thorbecke index
GDP	gross domestic product
GNI	gross national income
GTP	Growth and Transformation Plan
HDI	human development index
	Household Income and Consumption Expenditure Survey
HICES	
HIV	Human immuno-deficiency virus
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
ISI	import substitution industrialization
ITU	International Telecommunication Union
LFS	Labor Force Survey
LPM	linear probability model
LSMS	Living Standard Measurement Survey
MoFED	Ministry of Finance and Economic Development
MoWUD	Ministry of Works and Urban Development
NBE	National Bank of Ethiopia
NEIP	National Extension Intervention Program
NELM	New Economics of Labor Migration
NUDP	National Urban Development Policy

PADETES	Participatory Demonstration and Training Extension System
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
PDRE	People's Democratic Republic of Ethiopia
PSNP	Productive Safety Net Program
RDPS	Rural Development Policies and Strategies
RRC	Relief and Rehabilitation Commission
RSDP	Road Sector Development Program
SAM	social accounting matrix
SDPRP	Sustainable Development and Poverty Reduction Program
SME	small and medium enterprises
SNNPR	Southern Nations, Nationalities, and People's Region
TFP	total factor productivity
UDP	Urban Development Package
UGGP	Urban Good Governance Package
UN	United Nations
USAID	United States Agency for International Development
USD	United States Dollar

Abstract

Although Ethiopia's economy has grown rapidly over the past decade and urbanization is increasing, the country's economic and spatial transformation has only just begun. Ethiopia's share of agriculture in GDP in 2006 (48 percent) was the highest in the world, and more than double the average for low income countries (20 percent). Likewise, Ethiopia remains one of the least urbanized countries in the world (16 percent urbanization, compared to an average of 30 percent in Sub-Saharan Africa).

Nonetheless, important changes are underway. Agricultural growth accelerated in the second half of the first decade of the 2000s so that real agricultural GDP growth averaged 6.2 percent from 1998/99 to 2007/08. At the same time, inflows of foreign aid, workers' remittances and private transfers funded a surge in investment and a boom in the construction sector. Measuring urbanization in terms of spatial agglomerations of people in and near cities of 50,000 or more shows that urbanization growth rates between the population census years 1984 and 2007 are much higher (between 8 and 9 percent) than estimates based on official definitions of urban (4.2 percent).

As Ethiopia moves forward, it faces key development policy decisions. Since the late 1990s, the country has followed an Agricultural Development Led Industrialization (ADLI) policy emphasizing investments to increase agricultural productivity and spur growth linkages with the rest of the economy. At the same time, government policy has been designed to slow rural-urban migration through regulations prohibiting sale of land, loss of land rights for those who leave rural areas, and registration requirements for new migrants.

Allocation of public investments across sectors and across rural-urban space, together with land policies and various regulations on labor mobility, will likely be major determinants of the growth path of Ethiopia's economy and the extent of poverty reduction in the coming decade. This study shows that investments in increasing agricultural productivity, particularly in favorable agro-ecological environments and in a context of industrial productivity growth at rates similar to those in 2005-2009, still provide the best pathway for overall reductions in poverty in Ethiopia. Moreover, removing existing constraints to internal migration may speed the spatial and structural transformation of Ethiopia, promoting economic growth and urban industrial development. The key is a judicious balance of public investments to promote agricultural growth, while providing enough urban infrastructure and services to prevent a rise in urban congestion costs. In this way, Ethiopia may accelerate its development, achieving both rapid overall growth and rapid poverty reduction in rural and urban areas.

Key Words: Rural-urban transformation, economic development, infrastructure, poverty

1. Introduction and background

1.1. Introduction

As an economy grows, its structure and the location of its economic activity tends to change from a rural agriculture-based economy to a more diversified economy with much larger urban industrial and service sectors. This transition from agriculture to industry and services, first documented by Simon Kuznets in his studies of economic growth in the 1950s (Kuznets 1973), is the usual pattern of economic development, and typically involves growth in the economic output of cities relative to small towns and rural areas. Early stages of this transition need not involve movement of activities or people, however, as rural households increasingly earn incomes from rural non-agricultural activities (e.g. in agricultural processing, construction, commerce and private services) (Haggblade, Hazell and Reardon 2007).

Nonetheless, per capita incomes and levels of urbanization are strongly correlated, in part because of gains in total factor productivity derived from the positive agglomeration effects achieved by firms through technical knowledge and benefit from larger pools of skilled labor and large markets for their products. Moreover, urbanization can permit governments to provide key social services (health and education) at lower per person costs.¹ Of course, rapid urbanization does not necessarily produce growth or improve household welfare. In the absence of sound overall macro-economic policy, sufficient investments in infrastructure, and adequate provision of social services and well-functioning institutions (including public security and judicial institutions), rapid rural-urban migration can result in sprawling slums of underemployed poor people.

These issues of economic growth, urbanization and migration are crucial for Ethiopia, one of the least urbanized countries in the world (Table 1.1). Using the Ethiopian government's official (administrative) definition of urban, the share of urban residents in the total population was only 16 percent according to the 2007 Population and Housing Census.² Consistent with the low rate of urbanization, industrial and service sectors account for only 52 percent of gross domestic product (GDP) in 2006 (World Bank 2010), and the share of value added generated in urban areas is estimated at merely about 22 percent in 2005 (Mellor and Dorosh 2010).

In part, this spatial and economic structure reflects Ethiopia's geographical characteristics. The landscape includes semi-arid highlands that comprise most of the agricultural production activities, and pastoralist lowlands that are prone to drought with variable rainfall. Productivity is low even in rainfall-sufficient areas of highland Ethiopia, and agricultural production is characterized by fragmented and dispersed land holdings (the average farm size is 0.81 hectares (IFPRI and CSA 2006) with limited irrigation potential.³ A high share of farms generates only small surpluses for market sales. Nonetheless, agricultural output has increased rapidly in the past two decades, in part due to increased fertilizer use.⁴

¹ For instance, there is evidence of a positive and large correlation between the Human Development Index (HDI) and the extent of urbanization (UN 2006).

² The percentage share of the urban population derived from the latest population census is 16.2 percent (Population Census Commission 2008).

³ Highland systems in Ethiopia tend to have smaller catchments and feed from gravelly rivers in the upper part of basins. Flash floods are more common and difficult to predict than are floods in lowland systems. Command areas are relatively small, defined by fluctuating topography.

⁴ The rugged terrain also inhibits urban growth, particularly in the highlands, where jagged topography, vulnerable ecological environments, and limited access to water can constrain expansion of cities development.

Table 1.1. Urbanization in selected countries

Region/Country	Percentage urban (%)				Annual rate of change of percentage urban (%)			
	1950	1970	1990	2005	1950-1955	1965-1970	1985-1990	2000-2005
Africa	14.5	23.6	32.0	37.9	2.43	2.04	1.36	1.05
Eastern Africa	5.3	10.4	17.9	22.1	3.37	3.46	1.93	1.31
Ethiopia	4.6	8.6	12.6	16.1	3.37	2.48	1.94	1.50
Kenya	5.6	10.3	18.2	20.7	2.77	3.59	1.41	1.00
Least developed countries	7.3	13.1	21.0	27.0	2.59	3.38	1.85	1.68
Less developed regions, excluding China	20.2	28.7	38.0	43.4	1.78	1.69	1.13	0.85
Sub-Saharan Africa	11.1	19.5	28.2	35.0	2.72	2.53	1.69	1.32
Uganda	2.8	6.7	11.1	12.5	4.50	3.81	3.82	0.76
United Republic of Tanzania	3.5	7.9	18.9	24.2	4.67	5.28	2.38	1.63
World	29.1	36.0	43.0	48.6	1.20	0.72	0.96	0.83

Source: World Population Prospects: the 2006 Revision and World Urbanization Prospects: the 2007 Revision, Population Division, Department of Economic and Social Affairs of the United Nations Secretariat, accessed at <http://esa.un.org/unup>, on March 09, 2009.

Ethiopia's spatial and economic structures are also consistent with a high correlation of levels of urbanization and economic output observed across countries. In part, this is because urbanization permits increases in productivity through economies of scale and positive agglomeration effects (Krugman 1991). An inverse correlation between the share of agriculture in output and the level of output also reinforces a link between urbanization and the structural shift away from agriculture towards industry and services. This declining share of agriculture occurs in part because of the income-inelastic demand for most agricultural products.⁵

In addition to the influence of geography and structural economic features associated with low levels of income, however, there is evidence that government policies have slowed the rural-urban transformation through land regulations and restrictions on labor mobility. Government investment policies, particularly those related to levels and location of investments in roads, electricity and telecommunications, greatly influence the relative pace of income growth in rural and urban areas. Thus, there appears to be substantial scope to influence the rate of urbanization, and with it, the structure of output and employment, as well as levels and distribution of income.

Much urban economic theory contends that urbanization emerges from the transformation of agriculture. A region where agricultural productivity is quickly increasing is often where urban centers are growing the most rapidly as well (Montgomery et al. 2003). But agricultural growth could ultimately be constrained by inadequate demand. For example, Hine (2005) argues that much of Ethiopia's development problems are due to the low percentage of urban population: "58 million rural dwellers will not get rich trying to compete to sell food to 11 million urban dwellers". Small cities and rural towns also provide important inputs to agricultural processes. Unless farmers are able to respond to demand from urban consumers, through access to natural resources, credit, labor and inputs, local markets are limited to small turnover (Tacoli and Satterthwaite 2003). The issues for Ethiopia may be much more complex than suggested by these basic calculations, but nonetheless, there appears to be ample room for expanded urbanization to accelerate economic growth.

Another leading driver for economic transformation in the Ethiopian economy is the increasing demand of public service provision. Given the overwhelming percentage of people living in dispersed and difficult to access areas, public services such as schools and health centers are very expensive to provide and maintain, especially in rural areas. For

⁵ As household incomes rise, the share of total incomes spent on food (and agricultural products) tends to fall. This economic regularity is known as Engel's Law.

example, although education has expanded to rural areas considerably during the last two decades, still approximately 75 and 50 percent of women and men respectively in rural areas had no formal education in 2005 and 97 percent of women in rural areas gave birth at home⁶ (CSA and ORC Macro 2006). Ethiopia may thus need to facilitate increases in economic density in order to create networks of small towns and urban centers that provide a framework for rural service provision.

Changes in government during the last fifty years have shaped development objectives and outcomes, and in doing so affected the economic and demographic geography of the country. Ethiopia experienced three distinct political regimes during the last half of the 20th century (Table 1.2). The monarchic regime lasted from 1950 until 1974. One important characteristic of this regime was that it oversaw a complex land tenure system where the state and church maintained control over a majority of agricultural land. After 1974, the Derg government nationalized rural land, abolished tenancy, took state control of commercial farms, and redistributed lands. Numerous controls were also placed on movement of agricultural goods and on agricultural prices during this period. With the fall of the Derg regime in 1991, the new government adopted structural adjustment programs, abolished agricultural price controls, and followed an Agricultural Development Led Industrialization (ADLI) policy emphasizing investments to increase agricultural productivity and spur growth linkages with the rest of the economy. Many restrictions on land transactions remained, however, and landholders in Ethiopia are still not allowed to sell, exchange, or mortgage land.

As Ethiopia moves forward with its next five year plan, the Growth and Transformation Plan (GTP), 2010/11-2014/15, it faces key questions regarding the appropriate balance of investments across sectors and across space, land policies and various regulations on labor mobility. These policy choices will be major determinants of the growth path of Ethiopia's economy and the extent of poverty reduction in the coming decade. This monograph examines various aspects of the rural-urban transformation in Ethiopia in light of these key policy choices.

The following sections provide background information. A short overview of the Ethiopian economy is presented, focusing on agriculture and industry, followed by a description of the economic and land policy environment. Finally, the evolution of urban and rural welfare in Ethiopia is assessed.

⁶ Access to school / education and cultural preferences of education attainment and childbirth practices are not disaggregated in these data.

Table 1.2. Political events and economic policies of three political regimes in Ethiopia, 1960-2005

Political Regime	Major Political Events	Broad Economic Policies	Agricultural Sector Policy		Food Security
Monarchic Regime (1950-1974)			Input Market	Output Market	
	<ul style="list-style-type: none"> Conquered many southern regions; Failed coup attempt in 1960 Insurgencies by the Eritrean Liberation Front Land tax bills opposed by aristocracy and reduced monarch power base Administrative change in 1955 constitution 	<ul style="list-style-type: none"> Export promotion in the 1950s with elaborate incentive package including tax holidays to attract FDI; Import substitutions in the 1960s with prohibitive taxes; import tax rates (ad-valorem) range from 5% -100%; 	<ul style="list-style-type: none"> In the south, land equally distributed between churches, state, and local people. Granted more land to military and coup sympathizers; Communal lands non-transferable Large and privileged state farms exist Farmer's rent as high as 50 percent of the produce 	<ul style="list-style-type: none"> Prices determined by the market forces locally, but the import taxes were prohibitively high for selected import competing commodities 	<ul style="list-style-type: none"> Famine broke out in 1972 and lasted until the regime fell in 1974; claimed approximately a half million Ethiopian lives; Average food gap was 2-3 million tons.
	<ul style="list-style-type: none"> Intense power struggle between 1974 and 1977. Within six months, the Derg state chief was killed. Mengistu came out as the Derg leader in February 1977 Due to civil strife, Derg was forced to introduce short-lived mixed economy in 1990 When Soviet support decreased in the late 1980s, Mengistu's Derg regime collapsed in May 28, 1991. 	<ul style="list-style-type: none"> Aligned with the Soviet; and adopted central planning policies In 1987, the nation officially became peoples' democratic republic of Ethiopia (PDRE). Tightly controlled foreign exchange and the difference between official and black market rate reached as high as 250 percent Import tax rates (ad-valorem) range from 5% to 200%. 	<ul style="list-style-type: none"> Land reform: nationalization of private and church properties Labor sales and mobility prohibited Fertilizer import, distribution, and pricing controlled by government in 1984 Agricultural inputs distribution controlled by public enterprises No tariffs on import of agricultural inputs, but high tariffs on others Cooperatives favored in terms of access to inputs. 	<ul style="list-style-type: none"> Enforced production quota, set prices of most commodities Restrictions on goods and labor movement across regions Marketing controlled by the state owned enterprises; Agricultural income tax rate was progressive and as high as 89 percent High taxation on exports of main crops, as high as 100 percent of farm gate price. 	<ul style="list-style-type: none"> Chronic food insecurity throughout 1980s; Devastating famine in 1984: nearly a million people died. Average food gap increased to 5.47 million tons; Ethiopian Relief and Rehabilitation commission was established to handle relief and disaster management.
	<ul style="list-style-type: none"> Eritrea becomes independent in 1993 and Ethiopia is land locked A new constitution adopted and first multi-party election held in 1994 War with Eritrea began in 1998 and lasted until 2000; National assembly election held in 2000; Second multi-party parliamentary election held in 2005. 	<ul style="list-style-type: none"> Agricultural Development Led Industrialization (ADLI) was announced in 1992 Decentralization in 1992 The currency was devalued by more than 100 percent in 1993 (2.5 to 5.5 ETB / US\$) and further devaluation in 1996 (6.50 ETB/US\$) Ethiopia became member of the COMESA in 1994 Harmonization of tariffs in line with COMESA agreements in 2002 In 2002, Sustainable Poverty Reduction Strategy (PRSP) was introduced. 	<ul style="list-style-type: none"> Agricultural input market liberalized in 1992, while land remained public in the hands of the Government (no sale or exchange except lease and rent); Agricultural input marketing is dominated by a few types of inputs; fertilizer and seed, still dominated by the public sector Maximum duty rate in 1993 reduced from 230% to 80%. 	<ul style="list-style-type: none"> Output market liberalized and quota system lifted Major price collapse for agricultural products in 2002 Public marketing enterprise – Ethiopian Grain Trading Enterprise (EGTE) established in 1992 with responsibility to stabilize the national grain market. Government cancelled all taxes levied on export of goods, including major export products while a 5% sales tax is paid on selected agricultural products. The maximum tariff on import was reduced to 50% down from 230%. Agricultural income tax is allocated by regional states 	<ul style="list-style-type: none"> The food insecurity situation is worsened and food insecure population reached about 14 million in 2003 The RRC became DPPA in naming, with additional function to handle early warning systems Food deficit has widened and drought cycles shortened Safety net program introduced in 2003.

Source: Adapted from Rashid et al. (2009).

1.2. The Ethiopian economy

In spite of rapid growth in the past decade, Ethiopia remains one of the world's poorest countries with a per capita gross national income of \$930 in 2009, 21 percent below the average of low income countries (\$1,174) (World Bank 2010)⁷. Ethiopia's share of agriculture in GDP in 2008 (44 percent) is one of the highest in the world, and much larger than the average for low income countries (26 percent) (World Bank 2007). Table 1.3 shows that Ethiopia's share of agriculture in total GDP has been consistently about 10 percentage points above the average for East Africa. Agriculture accounted for 56.5 and 58.4 percent of GDP in Ethiopia in the 1980s and 1990s, respectively, before declining to 45.6 percent in the 2000s. Other countries in East Africa experience much more rapid decline in the share of agriculture in GDP, particularly fast-growing Uganda, which reduced this share from 57.6 percent in the 1980s to only 26.2 percent in the 2000s (Figure 1.1)⁸.

Table 1.3. Agricultural share in GDP in East African countries, 1980s-2000s

	1980s	1990s	2000s
Ethiopia	56.5	58.4	45.6
Burundi	58.1	50.8	39.2
Kenya	32.4	30.7	27.9
Rwanda	40.2	40.6	38.0
Sudan	35.4	42.1	35.2
Uganda	57.6	47.9	26.2
East Africa	46.7	45.1	35.4

Source: Calculated from World Bank, World Development Indicators.

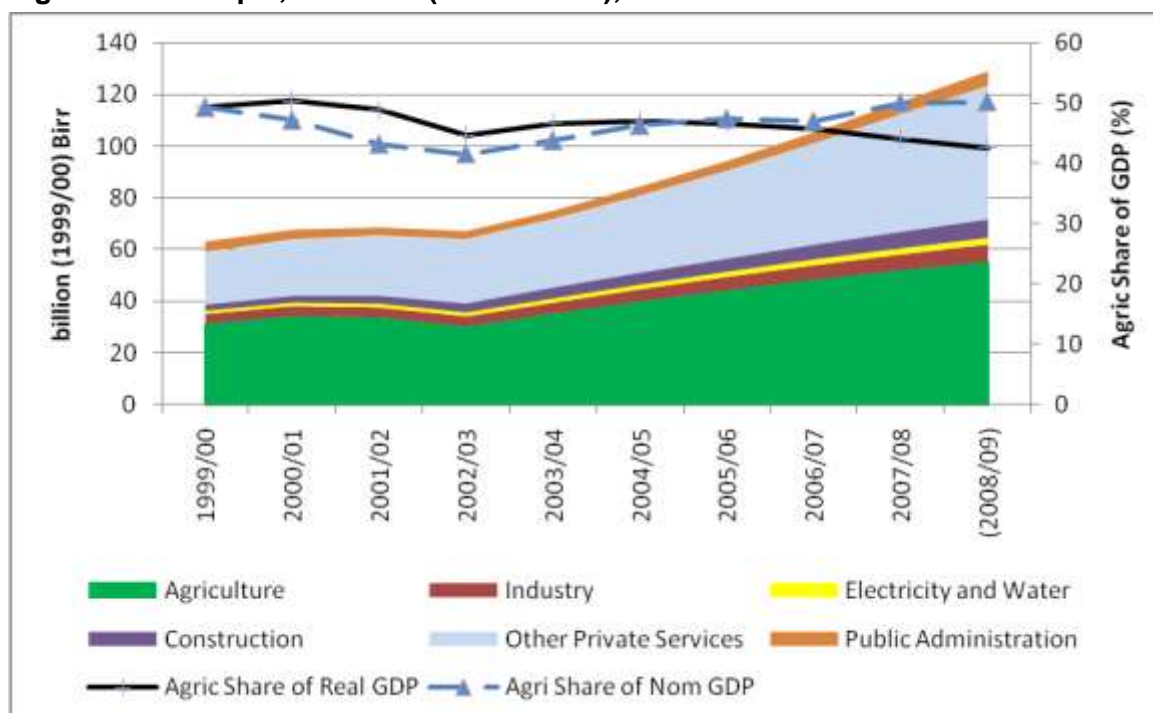
In the last decade, the share of agriculture in Ethiopia's GDP declined by 5%. While real agricultural GDP growth averaged 6.2 percent over this period, real GDP growth was even higher, at 7.7 percent per year⁹ (Figure 1.2). These data thus show overall that the structural transformation of Ethiopia's economy has clearly begun, but there remains a striking difference between Ethiopia's overwhelmingly agriculture-dominant economy and the economies of most other developing countries.

⁷ GNI figures are reported in Purchasing Power Parity, current international dollars, from the World Bank database

⁸ Because agricultural prices rose substantially relative to average prices in the economy, the share of agriculture in total GDP measured in current (nominal) prices rose sharply in 2007/08 and 2008/09. Measured using constant prices, the share of agriculture in real GDP actually fell steadily between 2004/05 and 2008/09 from 47.0 to 42.6 percent. It is important to note that the shares of agriculture in total GDP measured using 1999/00 prices are similar to those reported in the World Bank World Development Indicators (World Bank 2010)

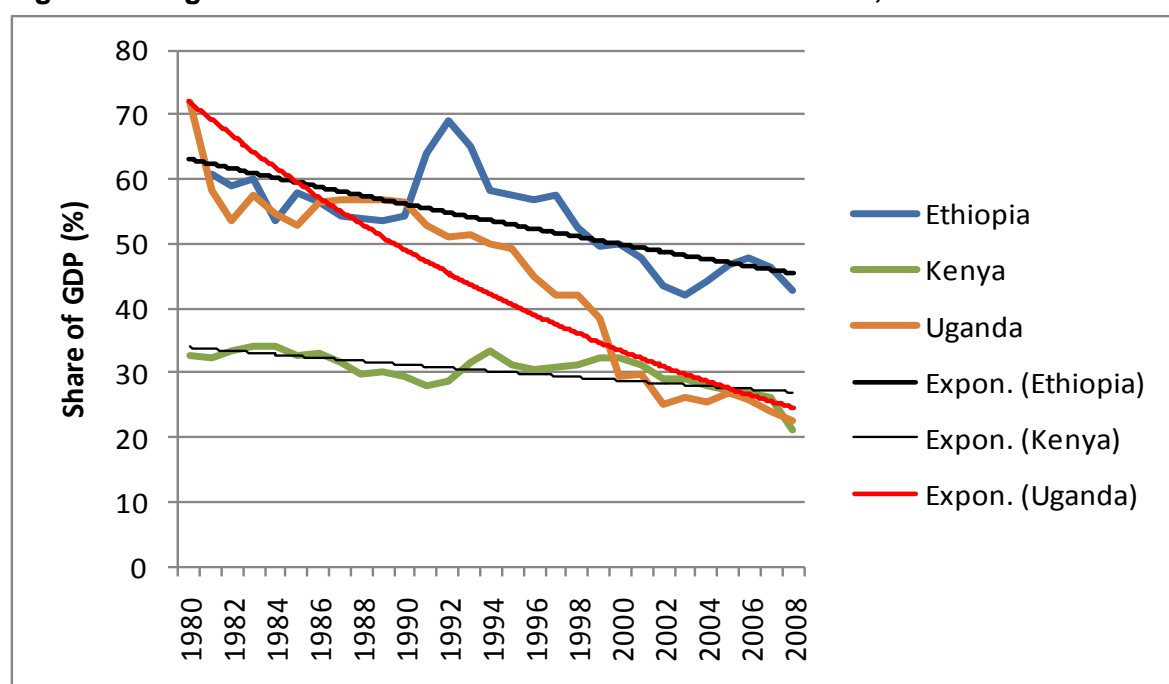
⁹ These growth rates are estimated using logarithmic trend regressions.

Figure 1.1. Ethiopia, real GDP (2000/01 Birr), 1999/00–2008/09



Source: Computed Based on Ministry of Finance and Economic Development (MoFED) from CSA website
http://www.csa.gov.et/surveys/National%20statistics/national%20statistics%202008/Scetion%20J_National%20Account.pdf

Figure 1.2. Agricultural share in GDP in East African countries, 1980–2008

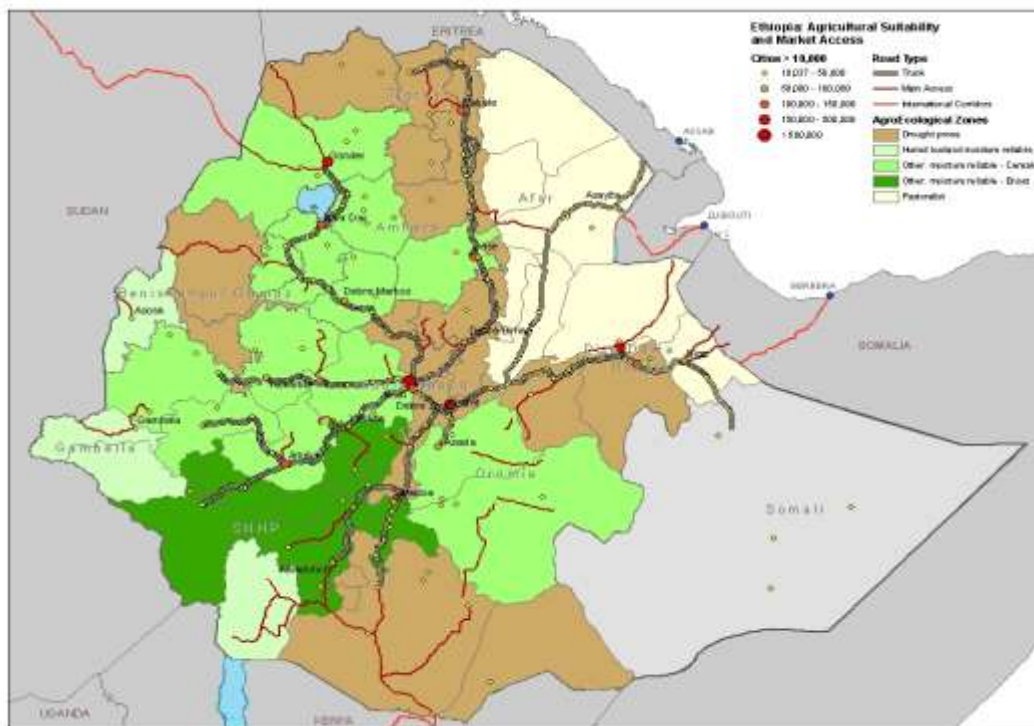


Source: Calculated from World Bank, World Development Indicators data.

1.2.1. Ethiopia's agricultural sector: structure and constraints

Agricultural production patterns vary markedly across Ethiopia according to agro-climatic conditions, in particular, widely varying rainfall (which is generally higher in western Ethiopia than in the east) and elevation (which ranges from 100 meters below sea level to 4550 meters above sea level at its highest peak). Three broad agro-ecological zones (rain sufficient areas, drought prone highlands, and pastoralist lowlands) characterize the landscape, and these “Three Ethiopia’s” are officially recognized in planning documents. The rain-sufficient areas can be further subdivided into the humid lowlands, the rainfall sufficient highland cereal-dominant areas, and the rainfall sufficient highland enset-based cropping systems¹⁰ (Figure 1.3).

Figure 1.3. Ethiopia, agro-ecological zones

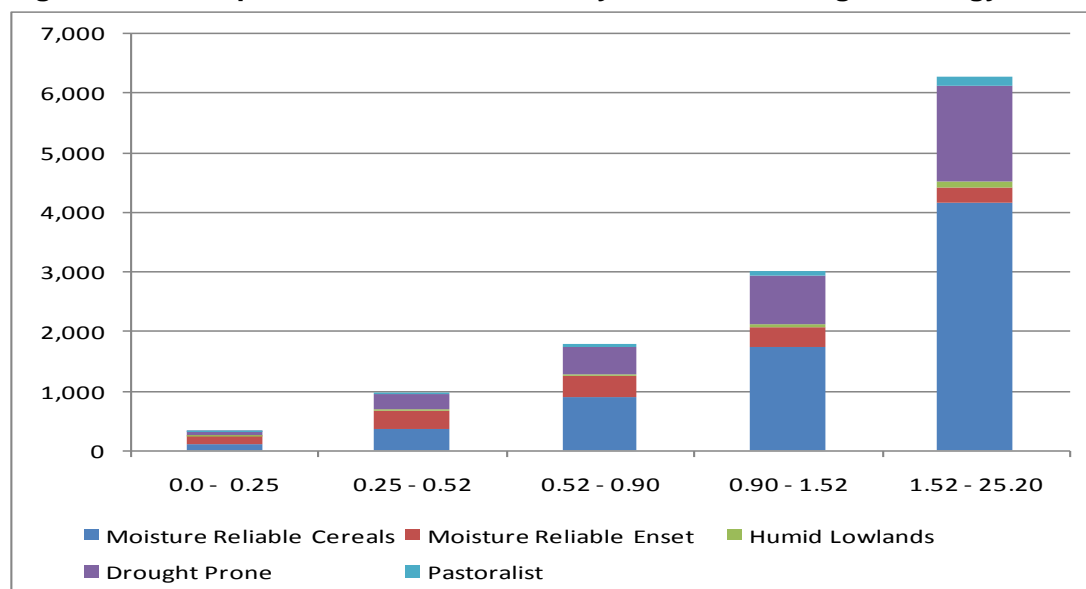


Source: EDRI 2009.

A large number of farmers (accounting for 48 percent of all farmers) reside in the moisture reliable cereal-based highlands, though farmers which produce on medium-sized plots are also numerous in the drought-prone highlands (20 percent of all farmers) (Figure 1.4). In the moisture-reliable enset-based highlands, population pressure has diminished farm size to the extent that out-migration has become a major pathway out of poverty.

¹⁰ Numerous other categorizations, including the traditional agro-ecological zones based on rainfall and elevation variations as well as more finely defined agro-ecological zones developed by the Ministry of Agriculture and Rural Development can be found in the IFPRI – CSA Atlas of the Ethiopian Rural Economy (2006).

Figure 1.4. Ethiopia, total area cultivated by farm size and agro-ecology, 2007/08^a



Note: ^a Each farm size interval (quintile) contains 20 percent of Ethiopia's small farms, approximately 2.57 million farms.

Although the majority of farmers in Ethiopia are small farmers, most of the area cultivated is done by medium-sized farmers. Sixty percent of smallholders in Ethiopia cultivate less than 0.90 hectares of land. While 40 percent of the farmers cultivate less than 0.52 hectares, they manage only 11 percent of total area cultivated. On the other hand, medium-size farms, defined as those cultivating 0.90 hectares or more, account for 75 percent of the total land cultivated (Table 1.4).

Table 1.4. Ethiopia, total area cultivated by farm size and agro-ecology

Farm size (hectares)	Moisture Reliable Cereal	Moisture Reliable Enset	Humid Lowland	Drought prone	Pastoralist	Total
(thousand hectares)						
0.0 - 0.25	111.7	133.2	6.5	76.9	6.8	335.1
0.25 - 0.52	364.3	298.7	17.1	271.2	22.1	973.4
0.52 - 0.90	884	355.7	31	474.3	39.4	1784.4
0.90 - 1.52	1739.5	330	47	824.8	70.5	3011.8
1.52 - 25.20	4153.2	272.4	94.4	1617.8	140.3	6278.1
Total	7252.7	1390	196	3265	279.1	12382.8
(percentage of national total)						
0.0 - 0.25	0.9	1.1	0.1	0.6	0.1	2.7
0.25 - 0.52	2.9	2.4	0.1	2.2	0.2	7.9
0.52 - 0.90	7.1	2.9	0.3	3.8	0.3	14.4
0.90 - 1.52	14.0	2.7	0.4	6.7	0.6	24.3
1.52 - 25.20	33.5	2.2	0.8	13.1	1.1	50.7
Total	58.6	11.2	1.6	26.4	2.3	100.0

Source: Calculations from the Agriculture Sample Survey of 2007/08, Central Statistical Agency (CSA)

Note: Each farm size interval (quintile) contains 20 percent of Ethiopia's small farms, approximately 2.57 million farms.

Cereals dominate Ethiopia's agricultural production, accounting for almost three-quarters of area cultivated (Table 1.5). Pulses and oilseeds together account for another 19 percent of area cultivated with coffee (3 percent), root crops, chat (a mildly narcotic export crop) and other crops accounting for the remaining 7 percent.¹¹ Almost all cereal production in Ethiopia is by smallholders, and 96 percent of total production of the four major cereals occurs during the main rainy season (the meher season).

Table 1.5. Ethiopia, crop area and production (meher season), 2004/05–2007/08¹²

Average – 2004/05 – 2007/08					
Crop	Number of holders	Area Cultivated in hectares		Production in quintals	
		Level	Share in total area cultivated (%)	Level	Share in total production (%)
Grain	11,519,148	10,382,365	92.7	140,902,733	79.8
Cereals	11,156,837	8,230,211	73.4	120,629,724	68.3
Teff	5,462,782	2,337,850	20.9	24,079,480	13.6
Barley	3,842,462	1,024,390	9.1	13,264,217	7.5
Wheat	4,118,164	1,439,098	12.8	22,933,077	13.0
Maize	7,287,931	1,595,238	14.2	33,142,865	18.8
Sorghum	4,253,534	1,429,886	12.8	22,161,808	12.5
Pulses	6,377,027	1,384,499	12.4	14,955,466	8.5
Oilseeds	3,127,131	767,655	6.9	5,317,543	3.0
Vegetables	4,936,741	106,585	1.0	4,248,252	2.4
Root crops	4,757,733	174,826	1.6	14,732,919	8.3
Fruit crops	2,658,415	51,078	0.5	4,034,590	2.3
Chat	2,068,262	141,881	1.3	1,264,269	0.7
Coffee	3,049,120	305,940	2.7	2,106,711	1.2
Hops	1,685,422	23,457	0.2	263,111	0.1

Source: Seyoum Taffesse et al. 2010 computation using CSA data (CSA (July 2006), CSA (July 2007), and CSA (June 2008).

From the 1960s through the 1980s, cereal production in Ethiopia was characterized by slow or negative growth, and wide annual fluctuations (Table 1.6 and Figure 1.5).¹³ As a result, per capita availability of cereals fell between the 1960s and the 1980s, even though net imports increased from 20 thousand tons per year to 520 thousand tons per year (Table 1.7). Investments by the government¹⁴, relatively good weather and peace in most of the country (particularly after the fall of the Derg regime in 1991) contributed to accelerated growth in cereal production in the 1990s. This growth was due to increases in area cultivated (by

¹¹ Note that the share of crops will change if the value of output is considered.

¹² CSA defines a **holder** as: "... a person who exercises management control over the operation of the agricultural holding and makes the major decision regarding the utilization of the available resources. He/she has primary technical and economic responsibility for the holding. He/she may operate the holding directly as an owner or a manager. Under conditions of traditional agricultural holding the holder may be regarded as the person, who with or without the help of others, operates land and/or raises livestock in his/ her own right, i.e. the person who decides on which, where, when, and how to grow crops or raise livestock or both and has the right to determine the utilization of the products." See for instance CSA (June 2008).

¹³ Data on national cereal production levels and trends for Ethiopia are not without controversy. Data from the Food and Agricultural Organization (generally derived from the Ministry of Agriculture and Rural Development or its predecessors) have indicated more rapid growth in recent years. In 2009, however, the Government of Ethiopia designated the agricultural production data from the Central Statistical Agency (CSA) as the official data. Unless otherwise noted, we use CSA data in this chapter for all production data since 1981.

¹⁴ In 1994/95 the Ethiopian Government launched the Agricultural Development Led Industrialization (ADLI) development strategy, focused on increasing the productivity of smallholder farmers through the increased use of fertilizers and improved seeds, investments in roads and other infrastructure and improvements of various public services (such as primary health care, primary education and water supply).

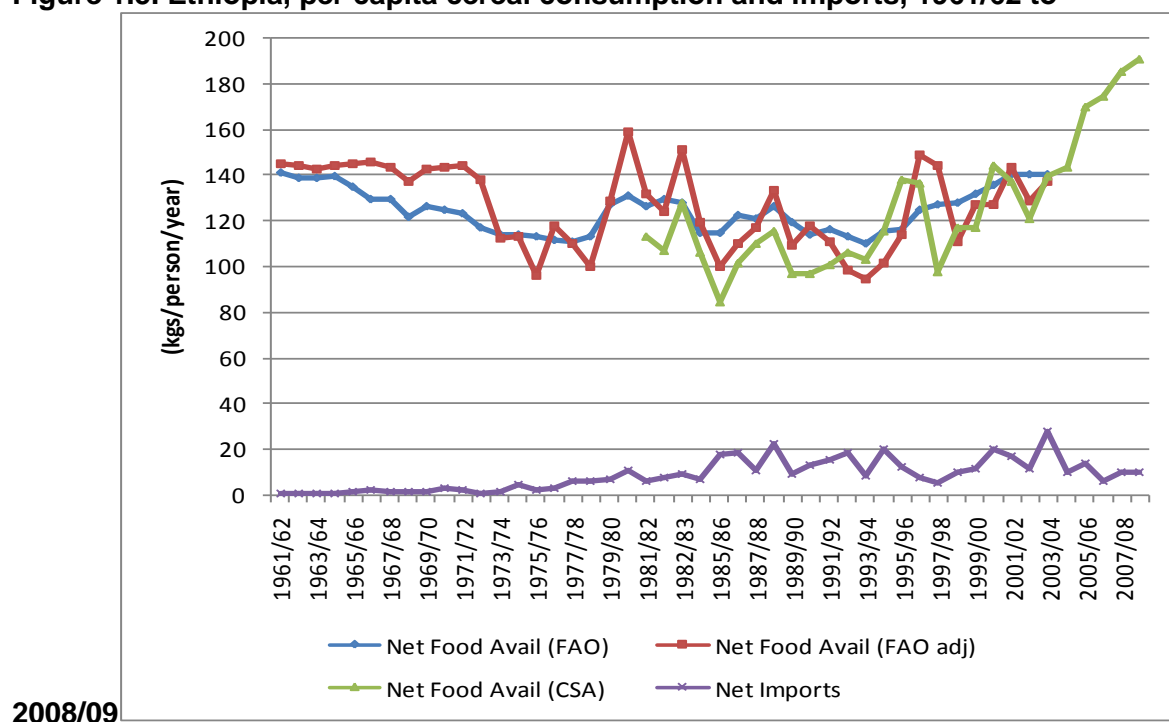
almost 6 percent per year), as yields declined by 0.5 percent per year. Subsequently, growth in area cultivated slowed to 3.1 percent per year from 1999/00 to 2008/09. However, yields increased by 3.5 percent per year in this period, so that growth in cereal production accelerated further to 7.0 percent per year.¹⁵

Table 1.6. Ethiopia, cereal production and availability, 1961/62–2008/09

	Production ('000 tons)	Net Imports ('000 tons)	Net Availability ('000 tons) (FAO Production Data)	Food Availability ('000 tons)	Population (mns)	Availability per capita (kgs/person)
1961/62-1969/70	4,532	20	4,045	3,628	27.3	133.4
1970/71-1979/80	4,628	111	4,411	4,023	34.4	116.9
1980/81-1989/90	5,628	520	5,797	5,384	43.7	123.4
1990/91-1999/00	6,869	656	7,337	6,897	57.4	119.8
2000/01-2003/04	8,850	1,241	9,999	9,492	73.5	111.4
(CSA Production Data)						
1981/82-1989/90	4,886	533	5,175	4,761	44.4	107.0
1990/91-1999/00	6,672	656	6,995	6,555	57.4	112.9
2000/01-2003/04	9,020	1,241	9,810	9,303	68.1	135.4
2004/05-2008/09	10,397	618	10,495	9,937	77.1	173.0
2000/01-2008/09	10,940	867	11,260	10,725	73.5	156.3

Source: Calculated from FAO Food Balance Sheets (various years) and CSA production data.

Figure 1.5. Ethiopia, per capita cereal consumption and imports, 1961/62 to



Source: FAO Food Balance Sheets and authors' calculations.

In spite of marked shifts in policies and availability of technology, the composition of cereal production, driven to a large extent by suitability to Ethiopia's varied agro-ecologies, has changed relatively little over the past five decades (Table 1.7). Teff accounted for the largest share (28.1 percent) from 2000/01 to 2008/09, followed by maize (20.6 percent), sorghum (17.5 percent), wheat (16.5 percent) and barley (12.5 percent). There has been, however, a

¹⁵ Production and yield growth was particularly rapid from 2004/05 to 2008/09 (10.6 and 5.7 percent, respectively), but the reasons for such a rapid increase in this period are not entirely clear, as econometric analysis of yields at the farm level data show only limited fertilizer responsiveness (Asrat et al. 2010).

gradual decline in the shares of teff and barley from the 1960s to the first decade of the 2000s (a decline by 5.8 and 2.9 percentage points, respectively), while the share of maize increased by 7.8 percentage points.

Considering the 2000s, wheat and sorghum area cultivated grew most rapidly (by 4.9 and 4.6 percent per year, respectively), while maize area cultivated increased by only 1.6 percent per year. In this same period, yields of all five major cereals increased, with growth rates averaging 2.9 and 3.0 percent per year for maize and wheat, and 4.3 and 4.8 percent per year for sorghum and teff. Given these increases in area as well as yields, production of all the major cereals surged, with teff (8.9 percent), sorghum (8.6 percent) and wheat (8.3 percent) having the fastest annual growth rates. Growth in maize production, 6.8 percent per year in the 1980s and 5.5 percent per year in the 1990s, slowed to only 4.2 percent in the 2000s after a collapse in domestic maize prices helped slow and even reverse adoption of hybrid maize technology (Howard et al. 2003).

Table 1.7. Ethiopia, cereal area cultivated, decade averages

	<u>Teff</u>	<u>Wheat</u>	<u>Maize</u>	<u>Sorghum</u>	<u>Barley</u>	<u>Other</u>	<u>Total</u>
	(million hectares)						
1961/62-1969/70	2.11	0.97	0.80	1.09	0.96	0.30	6.23
1970/71-1979/80	1.67	0.78	0.83	0.87	0.84	0.27	5.25
1980/81-1989/90	1.23	0.52	0.84	0.71	0.86	0.15	4.30
1990/91-1999/00	1.76	0.75	1.12	0.95	0.73	0.29	5.60
2000/01-2008/09	2.17	1.27	1.59	1.35	0.96	0.38	7.72
	(Shares of Total Cereal Area Cultivated)						
1961/62-1969/70	33.9%	15.6%	12.8%	17.4%	15.4%	4.9%	100.0%
1970/71-1979/80	31.8%	14.8%	15.7%	16.6%	15.9%	5.1%	100.0%
1980/81-1989/90	28.7%	12.0%	19.5%	16.4%	19.9%	3.4%	100.0%
1990/91-1999/00	31.3%	13.4%	20.0%	17.0%	13.1%	5.2%	100.0%
2000/01-2008/09	28.1%	16.5%	20.6%	17.5%	12.5%	4.9%	100.0%

Source: 1961/62-1979/80 data are from FAO. 1980/81 – 2008/09 data are from CSA Agricultural Sample Surveys.

Ethiopia's livestock sub-sector is among the largest in Africa, and it plays a significant role in the economy at both the national and household levels. Between 1995/96 and 2005/06, the livestock sub-sector averaged 24 percent of agricultural GDP and 11 percent of national GDP (NBE 2005/06). The livestock population trends are given in Table 1.8 (excerpted from Negassa et al. 2010). The population of livestock is growing in Ethiopia, although animals per capita have declined (World Bank 2009). There is an uneven geographic distribution of livestock. There are substantial inter-breed productivity differences with imported breeds producing much greater yields than domestic breeds. However, the breed of livestock has not improved over time. Consequently, livestock productivity in Ethiopia is overall estimated to be among the lowest in the world.

Table 1.8. Ethiopia, average annual number of animals over the last four decades by livestock species

	FAO						CSA			
	1970-1979		1980-1989		1990-1999		2000-2008		2001/02-2008/09	
	Number ¹	Growth Rate ²	Number ¹	Growth Rate ²	Number ¹	Growth Rate ²	Number ¹	Growth Rate ²	Number ¹	Growth Rate ²
Cattle	26.2	-0.38%	27.2	1.05%	31.4	1.84%	40.5	4.21%	42.7	3.88%
Sheep	23.4	-0.39%	23.4	0.36%	15.2	-7.14%	18.5	12.45%	20.7	10.44%
Goats	17.3	-0.23%	17.6	0.40%	11.5	-7.54%	15.0	13.38%	17.3	9.48%
Poultry	50.7	0.85%	54.4	1.40%	37.7	-7.65%	35.3	0.11%	36.2	-0.16%

Source: FAO: <http://faostat.fao.org>; CSA (various years).

Notes: ¹ Number: annual total number averaged over the time period (million of heads)

² Growth rate: calculated from logarithmic regressions (%)

Table 1.9. Ethiopia, annual values (million Birr) of livestock and livestock products exports 1970/71 to 2007/08

	1970/7 - 1979/80	1980/81- 1989/90	1990/91- 1999/00	2000/01- 2007/08	Whole period
Live animals					
Mean value	139	53	10	98	73
Annual growth rate (%)	-8.1	3.3	16.5	140.1	-4.1
Export share (%)	3.1	2.0	0.3	1.4	1.8
Meat and meat products					
Mean value	78	16	19	80	46
Annual growth rate (%)	-26.6	-17.6	90.9	55.2	-1.5
Export share (%)	1.8	0.6	0.6	1.2	1.1
Hides and skins					
Mean value	410	338	361	644	422
Annual growth rate (%)	3.9	1.2	10.8	-1.2	1.4
Export share (%)	9.3	12.8	10.6	9.4	10.2
Share of livestock in total exports (%)	14.2	15.5	11.5	12.0	13.1

Source: Raw data was compiled by the National Bank of Ethiopia (NBE 2005/06).

Notes: The average annual growth rates were calculated for each period and for the whole period by fitting a least-squares trend regression line to the logarithmic annual value of the variable in the relevant period. The average annual growth rate is computed by taking the antilog of the coefficient on the trend line and subtracting 1 and multiplying the whole by 100. The coefficient of variation was computed in two different ways. First, the usual coefficient of variation (CV) was obtained by dividing the standard deviation by the mean and multiplying by 100. Second, the trend adjusted coefficient of variation (CV_t) was computed by multiplying the normal CV with the square root of 1 minus the coefficient of determination (R²) obtained by regressing a given variable on trend variable. Values are in constant 2005 prices, using the IMF CPI for Ethiopia.

1.2.2. Industry and services

Industry, including mining, electricity and water, and construction, accounted for 10.7 percent of GDP in 2008/09. The construction sector, accounting for 5.0 percent of GDP and nearly half of the industrial sector, grew very rapidly in the 1999/00 to 2008/09 period, spurred by inflows of foreign aid, workers' remittances and private transfers that funded a surge in investment in the mid-2000s. Large and medium scale manufacturing (2.7 percent of GDP) also increased rapidly, growing by 8.1 percent over the same period (Table 1.10). However, much of the manufacturing in Ethiopia is directly linked to agriculture. Milling and food processing account for 43 percent of manufacturing value added. Much of Ethiopia's industry is also concentrated in and around Addis Ababa, due largely to the presence of a large market for industrial products and access to imported inputs through transport links via Dire Dawa to Djibouti.

Table 1.10. Sectoral output and growth in Ethiopia, 1999/00-2008/09

	2008/09 (bn Birr)	2008/09 Share of GDP (percent)	Growth Rate 1999/00-08/09 (percent)
Agriculture	160.6	50.3%	7.0%
Industry	34.0	10.7%	9.2%
Mining	1.3	0.4%	4.2%
Large, Medium Scale Manufacturing	8.6	2.7%	8.1%
Small Scale, Cottage Industries	4.0	1.3%	5.8%
Electricity and Water	4.0	1.3%	7.6%
Construction	16.1	5.0%	12.3%
Other Private Services	114.2	35.8%	11.2%
Public Administration	10.3	3.2%	4.2%
Total	319.2	100.0%	8.6%
	2008/09 (bn 1999/00 Birr)	2008/09 Share of GDP (percent)	Growth Rate 1999/00-08/09 (percent)
Agriculture	55.1	40.7%	7.0%
Total	135.5	100.0%	8.6%

Source: Author's calculations from Ministry of Finance and Economic Development National Accounts Data.

Services accounted for over one-third of GDP, much of this from trade (11 percent of GDP) and transport and communications (6 percent of GDP). Exports of manufactured products, largely textiles, remain very small, though exports of coffee (47 percent of exports in 2009) and other processed agricultural products (meat, hides and skins, etc.) have increased rapidly (Table 1.11 and Figure 1.6). Manufactured exports have taken off quickly in recent years, growing by 36.4 percent per year over the 2005-09 period, after stagnating from 2000 to 2005. Ethiopia's share of merchandise exports remains small, however: only 8.7 percent. Moreover, manufactured imports, which accounted for 72 percent of total merchandise imports in 2009, were over 40 times the value of manufactured exports: USD (2008) 5.72 billion as compared to USD (2008) 0.49 billion (Figure 1.7).

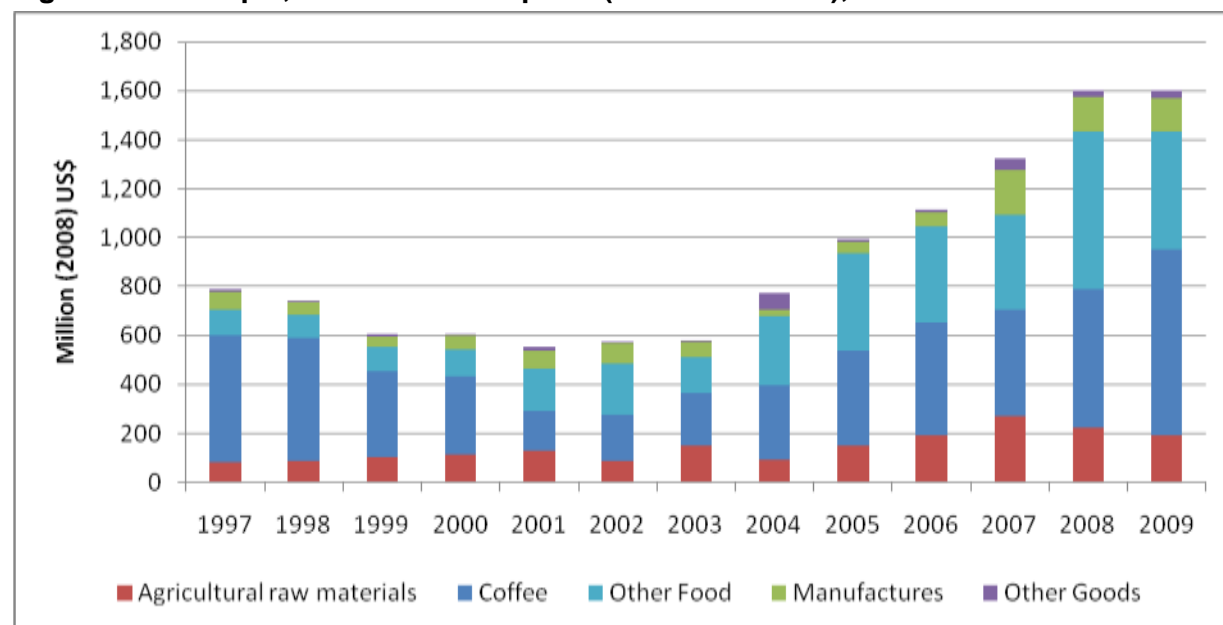
Table 1.11. Ethiopia, exports and imports; 2000, 2005 and 2009

	2000 (mn 2008 US\$)	2005 (mn 2008 US\$)	2009 (mn 2008 US\$)	Annual Growth Rate 2000-05	Annual Growth Rate 2005-09
Exports					
Agricultural*	114	152	191	3.1%	6.3%
Coffee	319	385	760	8.5%	16.9%
Other Food	110	399	481	24.2%	9.1%
Manufactures	59	46	139	-11.6%	36.4%
Other Exports	6	14	31	27.6%	30.0%
Subtotal	608	996	1,602	10.5%	14.0%
Service Exports	484	870	1,682	15.8%	21.4%
Total Exports	1,091	1,865	3,283	13.0%	17.6%
Imports					
Food	110	484	868	30.0%	23.8%
Fuel	317	688	1,267	15.3%	20.0%
Manufactures	1,119	3,275	5,716	22.6%	15.4%
Other Exports	32	103	140	20.8%	8.1%
Subtotal	1,578	4,550	7,991	21.9%	17.1%
Service Imports	599	1,299	2,198	17.5%	18.6%
Total Imports	2,177	5,849	10,189	20.8%	17.4%
Merchandise Trade Deficit	970	3,555	6,390	26.9%	17.9%
Deficit Goods and Services	1,085	3,983	6,906	26.5%	17.3%

Notes: Nominal US dollars figures were converted to 2008 US dollars using the US consumer price index as a deflator.

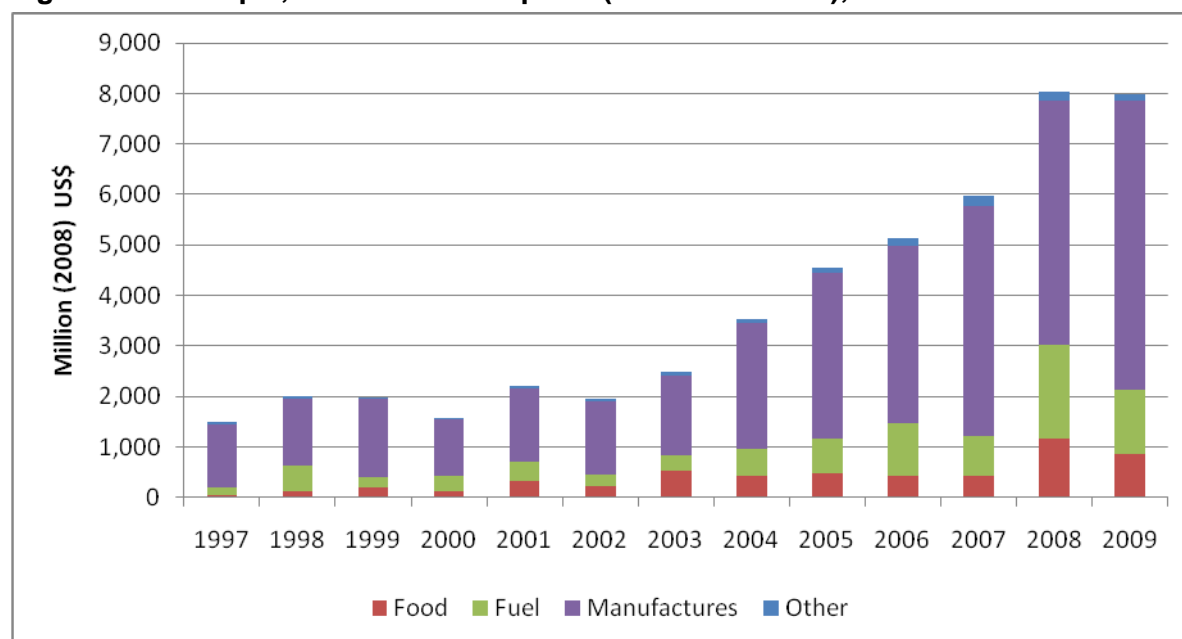
* Agricultural raw materials.

Figure 1.6. Ethiopia, merchandise exports (2008 US dollars), 1997–2009



Source: World Bank (2010) data base.

Figure 1.7. Ethiopia, merchandise imports (2008 US dollars), 1997–2009



Source: World Bank (2010) data base.

1.3. Development strategy – economic policies

Macroeconomic policy frameworks, outlined in formal poverty reduction strategies, continue to shift over time from a focus on industrial growth to agricultural growth, but the pendulum is swinging back towards industry again in recent years. Separate policies have also been designed for rural and agricultural development, and urban development. An overview of the development strategies under the current regime is given in Box 1.1.

1.3.1. Macroeconomic policy frameworks

During the regimes of Haile Selassie and the Derg, Ethiopia's development strategy was based on Import Substitution Industrialization (ISI), a strategy focused on industry, to the neglect of agriculture, particularly peasant agriculture. Ironically, primacy was given to industry in a context where the economy still depended on agriculture for its capital accumulation, food supply, raw materials, foreign exchange generation, and market demand. The ISI strategy, however, failed to produce high overall GDP growth rates and instead contributed to slow growth of food and industrial crops, foreign exchange, and savings. The growth process of the economy during that period was thus constrained by the limited attention given to agriculture.

The Meles regime made a radical shift from a policy of “industry first” to a policy of “agriculture first” with a particular focus on peasant agriculture known as Agricultural Development Led Industrialization (ADLI) in the late 1990s. Under the ADLI strategy, the agricultural sector was to be the leading sector in economic development, and spur industrialization through creation of demand for inputs, processing of agricultural outputs and consumer goods. ADLI thus provided the guiding framework for two successive macro policy frameworks for growth and development: the Sustainable Development and Poverty Reduction Program (SDPRP), which covered the years 2002/03 - 2004/05, and the Plan for Accelerated and Sustained Development to End Poverty (PASDEP), for the years 2005/06 - 2009/10.

ADLI was one of the four pillars of the SDPRP. The other pillars included justice system and civil service reform, decentralization, and empowerment and capacity building in public and private sectors (MoFED 2006:38). However, the overwhelming focus on agriculture resulted in a strategy that did not give adequate attention to the nonagricultural sector and urban areas (an urban development policy was not issued until 2005), was not definite in terms of timeline (the need to shift to nonagriculture), and did not give enough attention to markets and to the demand side of production. In short, the strategy's potential to fully form a basis for rural-urban linkages and the rural transformation was limited. The SDPRP did recognize, however, that agricultural and rural development will not be rapid and sustainable unless complementing and simultaneous development initiatives are taken in nonagriculture sectors such as road and transport services, development of small and medium industries, education, health, and water supply.

PASDEP continued to focus on the ADLI strategy. The PASDEP document (MoFED 2006) reiterated the need to strengthen rural-urban linkages with the purpose of reducing the negative impact of rural-urban migration, maximizing growth and its impact on poverty reduction, and taking full advantage of the synergies through market integration, facilitating mobility of labor, and access to income-earning opportunities between towns and surrounding rural areas. The document further recognized the role of improving rural access roads, improving telecommunication access, expansion of general education and technical-vocational training, development of small-scale credit markets, and rural electrification as key instruments to facilitate rural-urban linkages. Rural-urban linkages were also considered one of the pillars of the urban development strategy whereby development of small towns was taken as a major entry point. PASDEP addressed rural transformation in relation to power generation, observing that electricity serves as an essential component of rural transformation by providing the basis for businesses and production in small- to medium-sized towns, and as an input into agriculture by driving irrigation pumping, commercial agricultural production, and processing.

However, neither of these broad strategies placed specific emphasis on rural-urban linkages and the rural-urban transformation as distinct development agendas in the macro policy framework. In part this lack of focus reflects traditional development debates and policies focusing on economic sectors (agriculture and industry), rather than on geographic areas (rural and urban), along with an implicit assumption that agriculture can be equated with rural and industry can be paralleled to urban.

Although rural-urban transformation was not emphasized in earlier documents, rural-urban migration was discussed in both the SDPRP and PASDEP. In particular, rural-urban migration is linked with natural resource degradation, ethnic conflicts, economic instability (MoFED 2002, 56), urban population growth and associated problems (MoFED 2002, 125; and MoFED 2006, 40,161,167), and the spread of HIV/AIDS (MoFED 2006, 120). To a large extent, rural-urban migration was perceived as a threat to economic growth and social welfare instead of a means of livelihood diversification and an opportunity to enhance economic growth and aid the development process.

1.3.2. Rural/Agricultural development policies

Rural development policies in Ethiopia include most importantly the Rural Development Policies and Strategies (RDPS), Food Security Strategy, Food Security Program, Productive Safety Net Program, Participatory Demonstration and Training Extension System (PADETES), Sasakawa Global 2000, and National Extension Intervention Program (NEIP).

The main focus of the RDPS is on the smallholders. It envisages that productivity of smallholder agriculture will be improved through distribution of improved seeds, fertilizers,

farm implements, and pesticide to farmers; provision of improved extension services; construction of small-scale irrigation schemes; minimization of post-harvest losses; and development of livestock resources through improved feed base and veterinary services, and increased use of improved breed and livestock products. Further, the RDPS intends to address the issues of proper use of land, expanding rural infrastructure (health, education, access to safe water, and rural roads), improving smallholders' access to the rural financial system, and developing and strengthening rural institutions. Critics have pointed out that while RDPS tries to address the supply side problems, it has paid little attention to the demand side, institutional issues, and the interaction of the rural and urban sectors (Gete et al. 2008; Seid 2009). The PADETES food security program and the extension program were introduced in order to increase food production via increased use of modern inputs, investment in rural infrastructure and technology transfer.

1.3.3. Urban development policies

The critique directed against ADLI was that it did not give adequate attention to the urban sector, which was acknowledged by the government in its National Urban Development Policy (NUDP), issued three years after the SDPRP was introduced. The main strategic actions to enhance urban development and management during the SDPRP period were in urban governance, infrastructure, housing, land management, employment opportunities, and urban environment. However, there was no major investment program in urban areas except in Addis Ababa (See MoFED 2002, 125-127).

The core principles of the NUDP are the following (MoWUD 2006, 11-12): Strengthen urban-rural and urban-urban linkages for sustainable development; Expand the growth opportunities of all urban centers through balanced development of urban centers; Reduce urban poverty and unemployment; Increase participation of the community in different aspects of urban development; Create strong partnership with the private sector; and Decentralize urban governance. The NUDP highlights the need for rapid development in urban centers through expansion of small and micro enterprises; construction of low cost houses; facilitating access to land; supplying related infrastructure for private sector investments and urban residents including the poor; and expansion of social services (MoWUD 2006, 16-35). The NUDP clearly states that the role of urban centers as market, service, and industry centers is critical for rapid and sustainable rural development (MoWUD 2006, 13-14).

In order to facilitate the implementation of NUDP, the Urban Development Package (UDP) and the Urban Good Governance Package (UGGP) were developed by the newly formed Ministry of Works and Urban Development. While the UDP outlines the investments that the government intends to make in urban areas during the PASDEP period, UGGP outlines the institutional development, systems reforms and capacity building measures to promote good urban governance and facilitate rapid and sustained urban development.

Unlike the SDPRP, PASDEP explicitly embraced a comprehensive urban development agenda with the objective of achieving the goals of the NUDP. At the same time, it recognized that the scale of the needs implies that subsidies are not feasible, and that urban development should take place on a financially sustainable basis. The urban development strategy under PASDEP has four pillars: Support for SMEs and job creation; Integrated housing development; Improved access to land infrastructure and services; and Promoting urban-rural and urban-urban linkages.

1.4. Land policies

1.4.1. Rural and urban land policies: legal framework

One of the important institutional factors that can significantly influence agricultural growth and rural transformation in a country is the property rights structure (Deininger and Jin 2006). The legal framework for rural land acquisition, transfer, redistribution, depriving of holding rights, administration and security in Ethiopia is provided by the 1995 Constitution and Proclamation No. 456/2005. According to Ethiopian law, the Constitution and the Proclamation promises that any citizen engaged in agriculture for a living and 18 years or older will be given land free of cost. The legal framework to land provision clearly states that the right to ownership of land is vested in the state and the public. Hence, it is impossible to sell or exchange land holding in Ethiopia. Land administration is further the responsibility of regional governments, and thus, there is no independent body to oversee land matters at the federal level.

Major features of Ethiopia's land laws that have relevance to rural-urban migration and rural transformation are summarized in Table 1.12. Key topics include: 1) acquisition of rural land, 2) transfer of rural land holding and use rights, 3) redistribution and consolidation of farmland, and 4) conditions for deprivation of rights of land holding. Similar to rural land ownership, urban ownership is administered the same way as rural land: the state and the people of Ethiopia own all urban land, and the law forbids sales or exchanges of urban land.

Table 1.12. Overview of current land tenure regime in Ethiopia

Aspect of Land Tenure Policy	What the Law Says	
	Federal	State
Acquisition of Land		
Ways to Acquire Land	-distribution, redistribution, donation, inheritance for farmers; investors can lease/rent	-not regulated by state
Time Limit	-only investors have a time limit	-not regulated by state
Size Limit	-farm plots must be at least a certain size	-states and regions decide the minimum size (distinguished by irrigation status)
Residency Requirements	-no residency requirement: government proclamation applies to ANY rural land	-must be a rural resident of the region to receive rural land for free (contradicts federal law)
Regional Differences		-“rural” residency requirement somewhat relaxed in Amhara
Transfers		
Permissible Transfers	-inheritance, donation to family, rent/lease to other farmers	-not regulated by state
Rent/Lease Restrictions	-only to other farmers/investors (rural or urban) willing to engage in agriculture, and for fixed period	-states decide on the time limit for rent/lease, and size of plot (varies by region); some states stipulate permissible use of rented land
Inheritance Restrictions	-inheritor must be regional resident, willing to engage in agriculture, and minimum size requirement must be enforced; in case of divorce, the land holder cannot transfer land if she or he earns more than the minimum salary of government employee; other than divorce, inheritance only applies upon death of land holder	-minimum plot size is dictated by irrigation status; rural residency requirement varies at state level for inheritance
Donation Restrictions	-recipient must be regional resident and family member , willing to engage in agriculture	- rural residency requirement varies at state level for donation
Redistribution and Consolidation		
Criteria	-only upon community agreement, except for irrigable land	-not regulated by state
Size Requirement	-redistributed land must meet minimum size requirement	-states determine minimum size
Consolidation	-land consolidation is “encouraged”	
Loss of Land Holding Rights: Results from failure to use and protect the land		
Criteria	-federal provision exists for loss of land rights due to non-use or lack of protection; states decide the conditions	-states determine the specific conditions -leaving land unused 1-3 years (varies) - non-farming activity/ income

Source: Author's compilation

1.5. Overview of welfare patterns

For an overall picture of Ethiopia's growth over time, it is important to explore how rural and urban welfare indicators have evolved. Consumption, expenditure and wages are indicators that represent the wellbeing of people. In this section, data from nationally representative surveys, panel datasets and secondary research is synthesized to indicate how welfare in rural and urban Ethiopia has evolved.

1.5.1. Description of data sources

The results on welfare patterns presented here are summarized from several sources including the Household Income, Consumption, and Expenditure Survey (HICES), the Ethiopian Rural Household Survey (ERHS), Ethiopian Urban Household Survey (EUHS), and the Demographic and Health Surveys (DHS). The data spans 1994 through 2005. The HICES is a nationally representative survey based on survey sample data drawn from 21,600 households (CSA 2008). Three rounds of HICES data (1995/96, 1999/00, 2004/05) were used in this study. The ERHS is a panel dataset based on households in villages in rural Ethiopia. From 15 villages across Ethiopia, 1470 households are being surveyed periodically. ERHS data from 1997, 1999, and 2004 were used in tracking the welfare of rural and urban households. The Ethiopian Urban Household Survey (EUHS) is a panel dataset spanning 1994, 1995, and 1997. It collected data from the same 1500 households in each round, from seven major cities in Ethiopia. The survey design was intended to represent the “socio-economic characteristics of the country’s major towns” (Kedir and McKay 2003). Internationally standardized DHS data was used in this study from the 2000 and 2005 rounds of the survey. The DHS obtained data from over 13,000 representative households in Ethiopia.

1.5.2. Trends in total expenditures and poverty

Data from the HICES from 1995/96, 1999/00 and 2004/05 show that average per capita expenditures in urban areas were significantly higher than in rural areas though the gap narrowed from 1995/96 to 2004/05 (Table 1.13). In 1995/96, average per capita expenditures in urban areas were 58 percent higher than in rural areas. Both urban and rural per capita expenditures fell in real terms between 1995/96 and 1999/00, however, and the ratio of urban to rural average per capita expenditures fell from 1.58 to 1.53. Then in 2004/05, rural expenditures per capita increased sharply to 1,117 Birr/person/month, 13.8 percent higher than in 1995/96, while urban per capita expenditures rose relative to 1999/00, but were still 1.8 percent below the level in 1995/96.

Table 1.13. Ethiopia, rural and urban real per capita expenditures, 1995/96, 1999/00 and 2004/05

	1995/96	1999/00	2004/05	Change 95/96-99/00	Change 99/00-04/05	Change 95/96-04/05
Q1 Urban (Birr/person/month)	584	615	689	5.3%	12.1%	18.0%
Q1 Rural (Birr/person/month)	501	500	646	-0.1%	29.1%	28.9%
Ratio Q1 Urban: Rural	1.17	1.23	1.07	6.2%	-16.1%	-9.9%
All Urban (Birr/person/month)	1550	1342	1522	-13.5%	13.4%	-1.8%
All Rural (Birr/person/month)	982	878	1117	-10.6%	27.3%	13.8%
Ratio All Urban: Rural	1.58	1.53	1.36	-5.1%	-16.6%	-21.8%

Source: Calculated from CSA HICES data.

Note: Q1 is poorest quintile

Patterns for per capita expenditures of the poorest 20 percent (the 'poorest quintile') of urban households and the poorest 20 percent of rural households are broadly similar. The poorest quintile of urban households was on average 17 and 23 percent richer than the poorest quintile of rural households in 1995/96 and 1999/00, respectively. Expenditures per capita of the poorest households rose faster for rural households than for urban households from 1999/00 to 2004/05, so that the ratio of expenditures per capita of the urban and rural bottom quintiles narrowed from 1.23 in 1999/00 to 1.07 in 2004/05 (Table 1.13).

Data from the same survey show that rural poverty fell steadily from 47.5 percent in 1995/96 to 45.4 percent in 1999/00, and then more steeply to 39.3 percent in 2004/05 (Table 1.14 and Figure 1.8). During this same period, urban poverty increased, from 33.2 percent in 1995/96 to 36.9 percent in 1999/00, before falling slightly to 35.1 percent in 2004/05. Given that the rural population accounted for about 85 percent of national population in this period, national poverty rates closely tracked rural poverty rates, falling from 45.5 percent in 1995/96 to 38.7 percent in 2004/05.

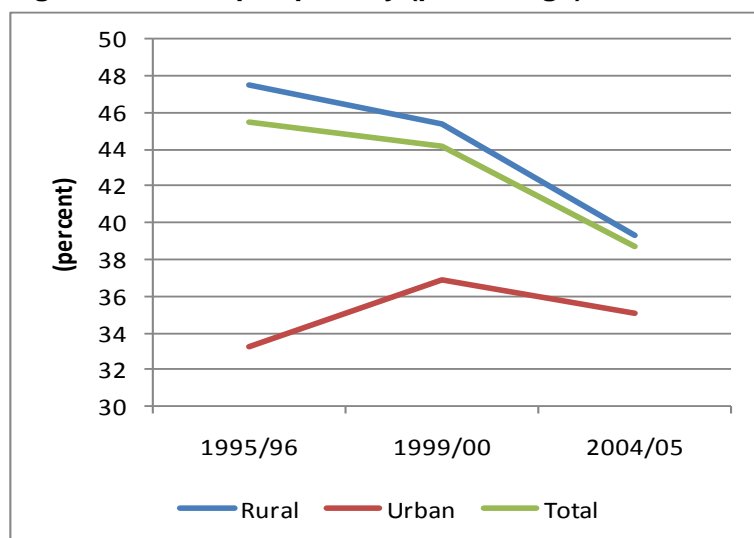
Table 1.14. Ethiopia, poverty rates by rural and urban

	1995/96			1999/00			2004/05		
	P0	P1	P2	P0	P1	P2	P0	P1	P2
Rural	47.5	13.4	5.3	45.4	12.2	4.6	39.3	8.5	2.7
Urban	33.2	9.9	4.1	36.9	10.1	4.5	35.1	7.7	2.6
National	45.5	12.9	5.1	44.2	11.9	3.9	38.7	8.3	2.7

Source: Ethiopia Central Statistical Agency, Household Income, Consumption and Expenditure Survey (HICES) data.

Note: P0 denotes % of population below the poverty line; P1 measures the average depth of poverty; P2 is a measure of the severity of poverty.

Figure 1.8. Ethiopia, poverty (percentage), 1995/96 – 2004/05



Source: CSA, Household Income, Consumption and Expenditure Survey (HICES) data.

Levels and trends in poverty rates vary substantially across regions (Table 1.15). Rural poverty declined significantly between 1995/96 and 2004/05 in three of the largest regions of Ethiopia – SNNPR (-32.4 percent), Amhara (-28.8 percent), Tigray (-11.9 percent), but increased in Oromiya (by 7.3 percent). Likewise, poverty rose in Addis Ababa by 8.8 percent. These regional differences in poverty trends are likely due in part to differences in agro-ecologies, weather (especially droughts) and degree of access to roads and other infrastructure.

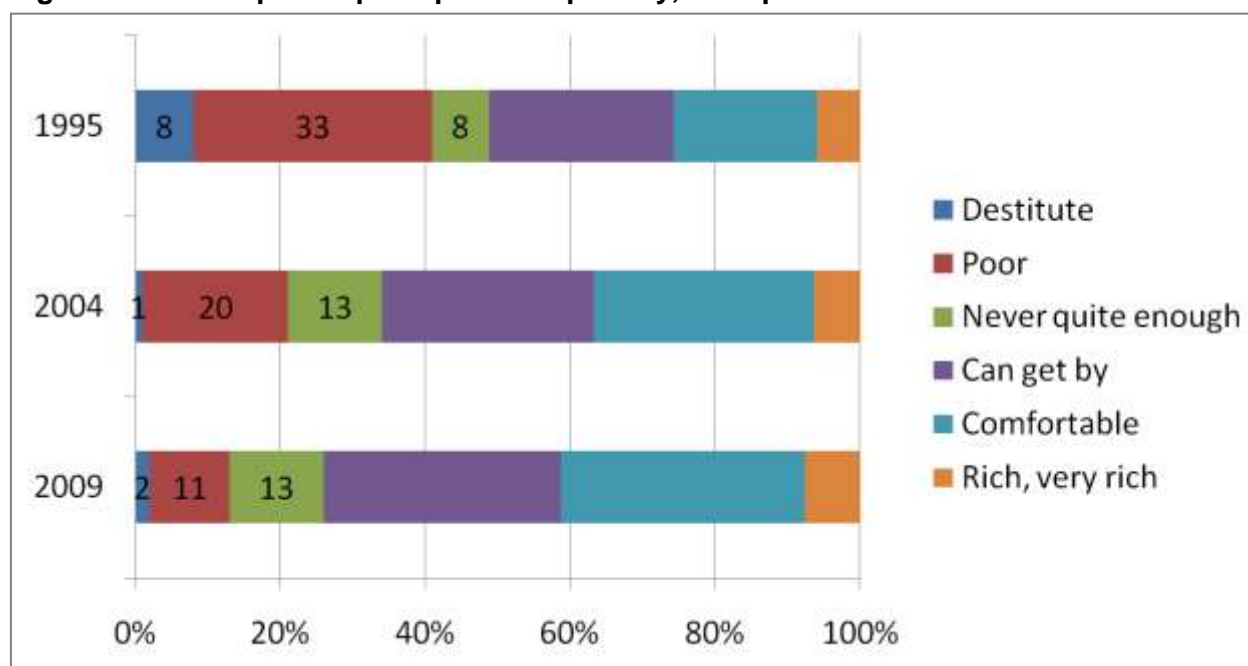
Table 1.15. Ethiopia, trends in poverty headcount indices and changes in poverty headcount indices, by region, 1995/96 – 2004/05

Region	1995/96			1999/00			2004/05			Change (%) between 1995/96-2004/05		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Tigray	0.579	0.457	0.561	0.616	0.607	0.614	0.510	0.367	0.485	-11.9	-19.7	-13.6
Afar	0.518	-	0.3331	0.680	0.268	0.560	0.429	0.279	0.366	-17.2	-	-
Amhara	0.567	0.373	0.543	0.429	0.311	0.418	0.404	0.378	0.401	-28.8	1.3	-26.1
Oromiya	0.347	0.276	0.340	0.404	0.359	0.399	0.372	0.346	0.370	7.3	25.2	8.7
Somali	0.346	-	0.309	0.441	0.251	0.379	0.452	0.353	0.419	30.5	-	-
Benishangul Gumuz	0.476	0.345	0.468	0.558	0.289	0.540	0.458	0.345	0.445	-3.8	-0.1	-4.9
SNNP	0.565	0.459	0.558	0.517	0.402	0.258	0.382	0.383	0.382	-32.4	-16.5	-31.5
Harari	0.133	0.291	0.220	0.149	0.350	0.258	0.206	0.326	0.270	54.5	12.1	22.9
Addis Ababa	0.404	0.300	0.302	0.271	0.362	0.361	0.299	0.326	0.325	-26	8.6	7.7
Dire Dawa	0.366	0.246	0.295	0.332	0.331	0.331	0.393	0.329	0.352	8.8	33.6	19.2
Total	0.475	0.332	0.455	0.454	0.369	0.442	0.393	0.351	0.387	-17.2	5.8	-14.9

Source: Woldehanna, T., J. Hoddinott, and S. Dercon (2008)

Data from the 15 sites across Ethiopia from the Ethiopian Rural Household Survey (ERHS) shed some additional light on recent poverty trends. Rural households in the sample generally perceived themselves to be better off in 2009 than in 1994 (Figure 1.9). For example, in 1994, 41 percent of households considered themselves to be “destitute” or “poor”, compared to only 21 percent in 2004 and 13 percent in 2009. Conversely, the percentage of households reporting themselves to be “comfortable”, “rich” or “very rich” rose from slightly over one-fourth in 1994 to more than 40 percent in 2009.

Figure 1.9. Self-reported perceptions of poverty, Ethiopia



Source: ERHS 1995, 2004, 2009

1.5.3. Food consumption patterns

From 1995/96-2004/05 the HICES data show that per capita calorie intake was rising countrywide. Rural calorie intake was higher in the later rounds of the survey (Table 1.16). However, the recent rounds of the ERHS show some indications of a negative impact of the recent episode of rising real prices on households, in that there has been a decline in calorie intake between 2004 and 2009 (Table 1.17). The distribution of this decline is not uniform and we note a conversion process over this period. While the calorie intake remained low across all quintiles, the bottom two quintiles improved, and the top three deteriorated. Given the (rather) small sample size, however, firm conclusions at the national level cannot be drawn.

Table 1.16. Ethiopia, calorie intake by region and quintile

	Per capita calorie intake - HICE		
	1995/96	1999/00	2004/05
Countrywide	1,864	2,126	2,265
Urban	2,058	1,663	1,996
Rural	1,838	2,199	2,309
Quintile 1	1,293	1,577	1,568
Quintile 2	1,662	2,090	2,216
Quintile 3	1,883	2,406	2,573
Quintile 4	2,430	2,682	2,934
Quintile 5	3,280	2,658	2,997

Source: HICES 1995/96-2004/05

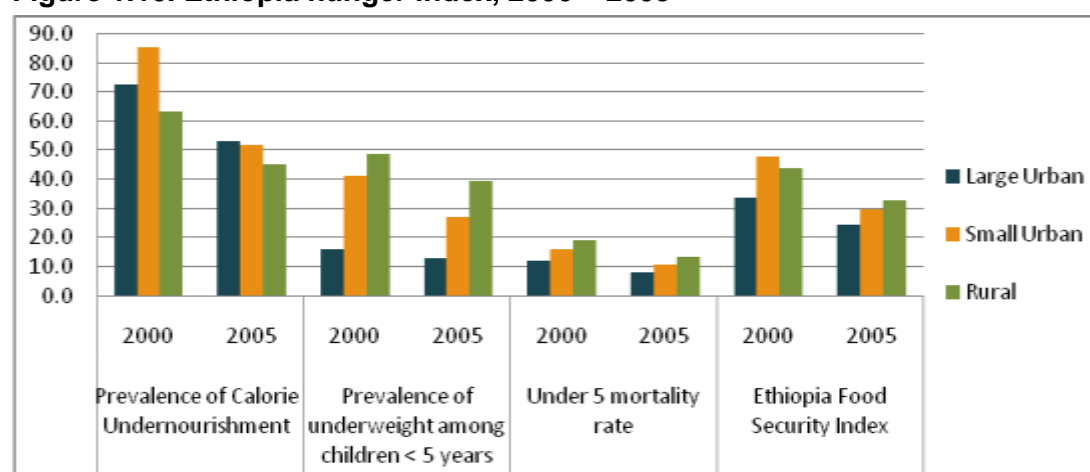
Table 1.17. Ethiopia, recent trends in per capita calorie intake

ERHS Site	Per capita calorie (2004)	Per capita calorie (2009)	Change from 2004 to 2009 (%)
All Sample	1,004.5	844.2	-16.0
Quintile 1	305.1	363.1	19.0
Quintile 2	577.4	602.4	4.3
Quintile 3	852.0	782.9	-8.1
Quintile 4	1,191.3	1,023.3	-14.1
Quintile 5	2,524.4	1,794.0	-28.9

Source: ERHS 2004, 2009

Access to sufficient food and nutrients is essential for household welfare, as well as for accomplishing other development objectives. Recognizing the various dimensions of food insecurity, Schmidt and Dorosh (2009) calculated an Ethiopian Regional Hunger Index, which equally weights the proportion of people who are food energy deficient, the prevalence of underweight children under the age of five, and the mortality rate among children less than five years of age. Findings indicate that between 1999/00 and 2004/05, there were substantial improvements in both urban and rural areas. In large urban areas, defined as Addis Ababa, Dire Dawa and Harari, the undernourishment rate fell 20 percentage points. This compares to a drop in rural areas of 18 percent points, from 63 percent to 45 percent undernourished. In 2000, the undernourishment rate among small towns (all areas defined as urban in the HICE except Addis Ababa, Dire Dawa and Harari) was 85 percent; this rate fell an impressive 34 percentage points between 2000 and 2005 (Figure 1.10).

Figure 1.10. Ethiopia hunger index, 2000 – 2005



Source: Index numbers calculated from Household Income Consumption Expenditure Survey, and the Demographic and Health Survey from 1999/00 and 2004/05

Notes: *The calculated calorie-based undernutrition for Ethiopia is based on the undernourishment cutoff of 1,990 kilocalories per day;

**Proportion of underweight children less than five years of age is calculated as a weight-for-age was less than two standard deviations

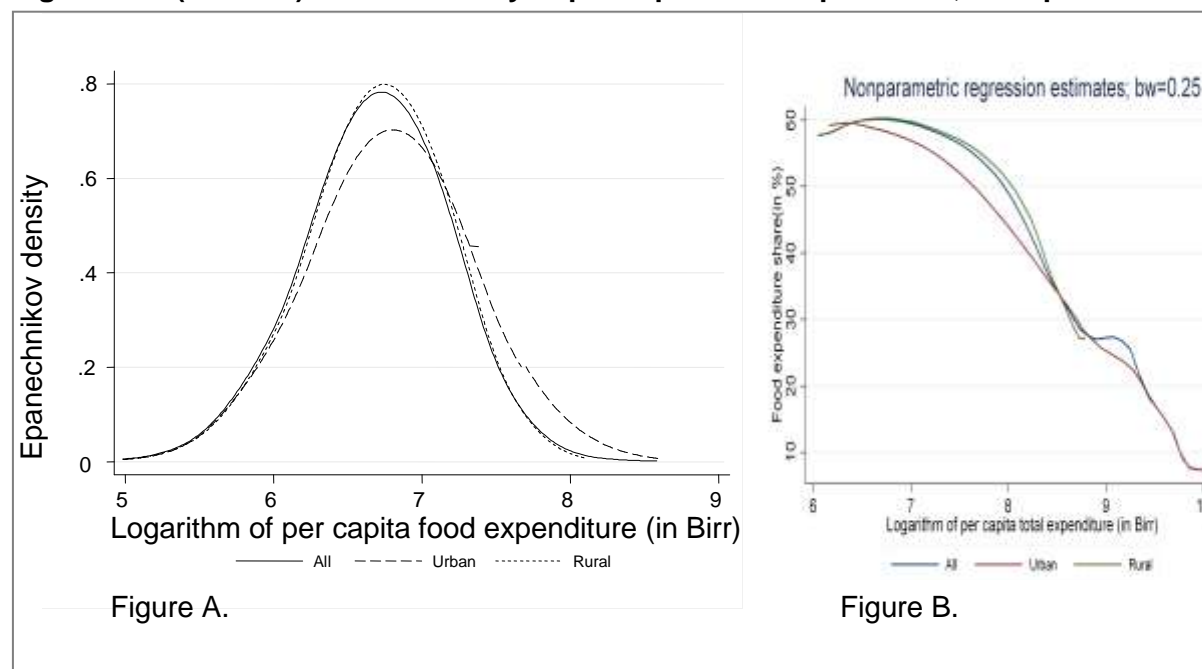
Although urban areas have a higher prevalence of undernourishment in 2005, rural areas have a higher proportion of underweight children and child mortality. This may be attributable to the limited access of clean water and healthcare facilities in rural areas. A major contributing factor to child underweight and mortality rates in Ethiopia is pneumonia and diarrhea contraction among children (World Bank 2005). Several studies of food insecurity coping strategies in rural Ethiopia found that parents usually protect their children from serious calorie undernourishment in rural areas, but underweight measures persist due to continual contraction of diarrheal diseases and limited access to healthcare centers. Given rapid agriculture-led economic growth between 2004/05 and 2008/09, it is expected that

when new nationally representative household survey data are available, these indices will show improvement.

The HICES datasets show that food consumption expenditures have declined from 60 percent in 1995/96 to 56 percent in 2004/05 (Woldehanna et al. 2008). Expenditures on some non food items have grown rapidly, by as much as 25.7 percent in rural areas, and by as much as 97.9 percent in urban areas in the same period (Woldehanna et al. 2008). The decline in food expenditure slightly varies across rural-urban locations. Figure 1.11 presents the density of per capita food expenditure by rural-urban locations. While the national food consumption pattern is clearly dominated by the rural consumption distribution, rural households on average spent more on food (in a more egalitarian way) than their urban counterparts. This is depicted in Figure 1.11 A, as the distribution for rural per capita consumption has a higher mean (but with less spread) than the urban one.

The average pattern conceals considerable heterogeneity across income (expenditure) levels in both rural and urban areas. Figure 1.11 B presents a nonparametric Engel curve that captures such heterogeneity, depicting per capita total expenditure against per capita food expenditure. As expected, the share spent on food falls as household per capita consumption expenditure rises. That is, while households at the lower end of the distribution allocate over 60 percent of their budget on food, households at the top end spend less than 20 percent.¹⁶ Again, figure 1.11 B, shows that among those at the lower end of the income distribution, rural households spend more on food, and the decrease in food share as income rises is lower for rural than urban households. However, at the upper end of the income distribution, the share of food to total household expenditure of both rural and urban households overlaps. This overlap may indicate the convergence in overall consumption patterns across the nation's higher income groups, regardless of geography.

Figure 1.11 (A and B). Kernel density of per capita food expenditure, Ethiopia



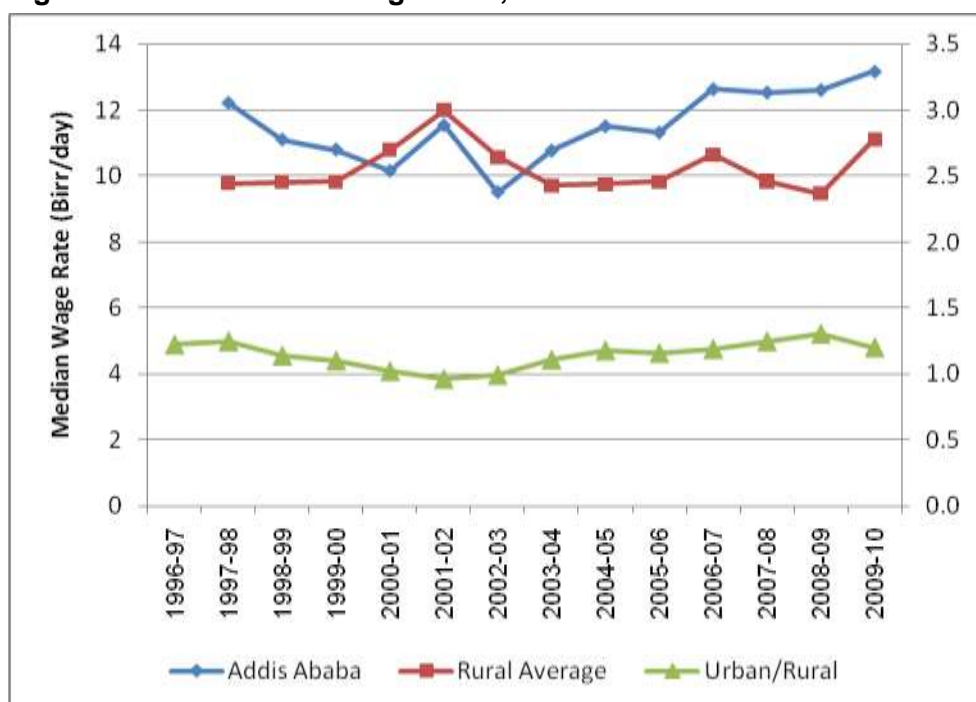
Source: Author's calculations

¹⁶ Although expenditure shares are considered here, this pattern can be viewed as consistent with Engel's law given the strong positive correlation between expenditure and income.

1.5.4. Wage data

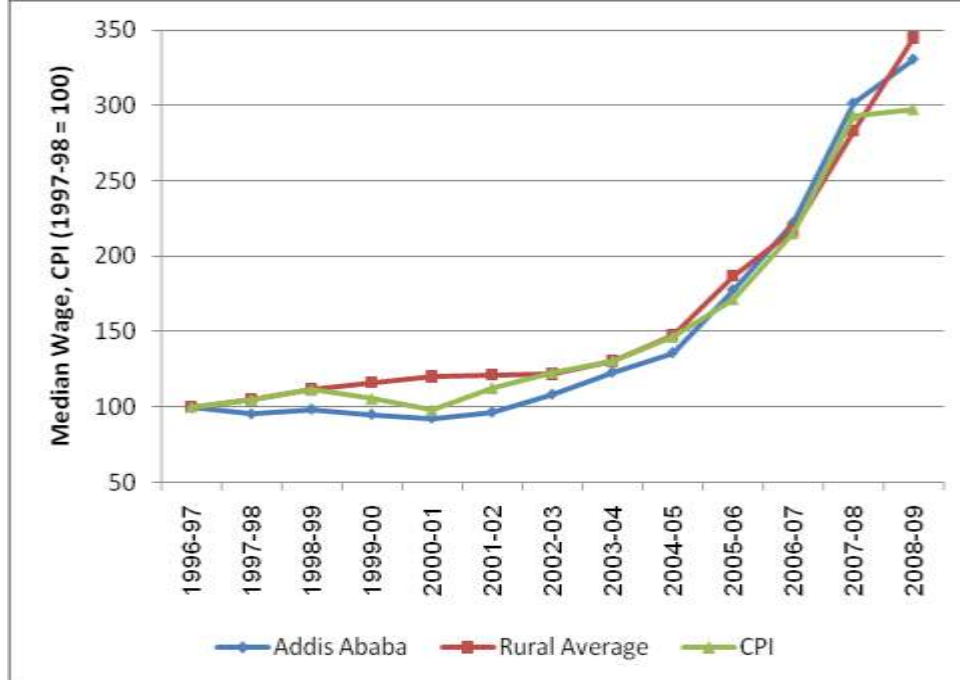
Data on wage rates can be used to determine returns to labor, and enables a study of real income - of often the poorest people - over time. We use the nominal daily wage of a wage laborer (Birr/day) from the CSA database. The annual averages of monthly median wages across rural and small urban centers in Ethiopia were computed. Three periods can be distinguished (Table 1.18, Figure 1.12, Figure 1.13): 1/ A period of stability: 1997/98-2005/06; 2/ A period of high inflation and a widening gap between rural and urban: 2006/07 – 2007/08; 3/ A period of increasing real wages: 2008/09-2009/10. Overall, between 1997/98 and 2009/10, real “rural” wages rose 13.6 percent while real Addis wages rose by 7.8 percent. For the majority of this period (1997/98-2005/06), there was no significant upward or downward trend in the wages of the rural regions and Addis Ababa. In the 2005/06-2008/09 period, the first major divergence in “rural” and Addis wages appear, with Addis wages exceeding rural wages substantially. The most recent year of data shows a pattern of recovery, with inflation going down and real “rural” wages going up more than real Addis wages.

Figure 1.12. Median real wage rates, rural and Addis Ababa: 1996/97 to 2009/10



Notes: Data are CSA monthly data for wage laborers including 58 sites for which at least 111 observations out of a possible 135 from July 1996 through June 2008. Some outliers were removed. Addis Ababa monthly data are the median values across 4 sites; rural monthly data are the median values across 52 sites. Years shown are fiscal (July-June) years. Wages are deflated by the monthly national consumer price index.

Figure 1.13. Nominal median wage rates, rural and Addis Ababa, 1996/97 to 2008/09



Source: Author's calculations

Table 1.18. Wage rates in rural and urban areas, 1996/97 to 2009/10, Ethiopia

	Addis median Birr	Harari median Birr	Dire Dawa median Birr	Rural median Birr	Addis/Rural medians	National CPI (Dec 2006 = 100)	Addis median 2006 Birr	Harari median 2006 Birr	Dire Dawa median 2006 Birr	Rural median 2006 Birr
1996/97	6.83	7.76	9.92	5.60	1.22					
1997/98	7.21	7.29	9.48	5.76	1.25	58.98	12.22	12.38	16.08	9.77
1998/99	6.85	7.33	8.55	6.06	1.14	61.80	11.10	11.87	13.85	9.82
1999/00	7.08	7.62	9.10	6.45	1.10	65.65	10.80	11.63	13.87	9.82
2000/01	6.83	7.30	9.02	6.70	1.02	62.18	10.15	11.76	14.54	10.78
2001/02	6.65	7.49	9.71	6.92	0.96	57.69	11.54	12.99	16.83	11.99
2002/03	6.94	7.99	9.69	7.00	0.99	66.38	9.50	12.08	14.65	10.57
2003/04	7.80	8.82	10.00	7.03	1.11	72.38	10.76	12.19	13.82	9.72
2004/05	8.85	9.17	10.00	7.51	1.18	77.03	11.51	11.93	12.96	9.75
2005/06	9.78	9.54	10.42	8.51	1.16	86.47	11.32	11.03	12.03	9.83
2006/07	12.80	11.72	12.50	10.77	1.19	101.18	12.64	11.53	12.36	10.65
2007/08	16.01	16.30	15.00	12.52	1.25	126.94	12.54	12.39	11.71	9.84
2008/09	21.75	25.42	21.11	16.32	1.30	173.10	12.61	14.70	12.23	9.46
2009/10	23.85	27.67	25.06	19.89	1.20	175.52	13.17	15.63	14.24	11.11
2006/07 vs 9798	77.6%	60.8%	31.9%	86.9%	-4.7%	71.5%	3.4%	-6.8%	-23.1%	9.0%
(logarithmic)	5.7%	4.8%	2.9%	5.6%	0.2%	5.4%	0.4%	-0.6%	-2.4%	0.2%
2005/06 vs 97/98	35.7%	30.9%	9.9%	47.6%	-7.1%	46.6%	-7.4%	-10.8%	-25.1%	0.6%
(logarithmic)	3.7%	3.6%	1.9%	4.1%	-0.3%	4.2%	-0.5%	-0.5%	-2.2%	-0.1%
2008/09 vs 05/06	122.3%	166.4%	102.7%	91.8%	12.5%	100.2%	11.4%	33.3%	1.7%	-3.8%
(logarithmic)	30.0%	38.7%	25.9%	23.4%	4.1%	26.0%	3.2%	9.8%	0.0%	-1.9%
2009/10 vs 08/09	9.7%	8.9%	18.7%	21.9%	-7.9%	1.4%	4.4%	6.3%	16.4%	17.4%
2009/10 vs 97/98	230.9%	279.7%	164.4%	245.1%	-3.7%	197.6%	7.8%	26.3%	-11.4%	13.6%
(logarithmic)	11.1%	11.2%	7.7%	9.8%	1.1%	9.6%	1.4%	1.3%	-1.8%	0.0%

Notes: Data are CSA monthly data for wage laborers including 58 sites for which at least 111 observations out of a possible 135 from July 1996 through June 2008. Some outliers were removed. Addis Ababa monthly data are the median values across 4 sites; rural monthly data are the median values across 52 sites. Years shown are fiscal (July-June) years. Wages are deflated by the monthly national consumer price index.

1.5.5. Human capital and rural welfare improvements

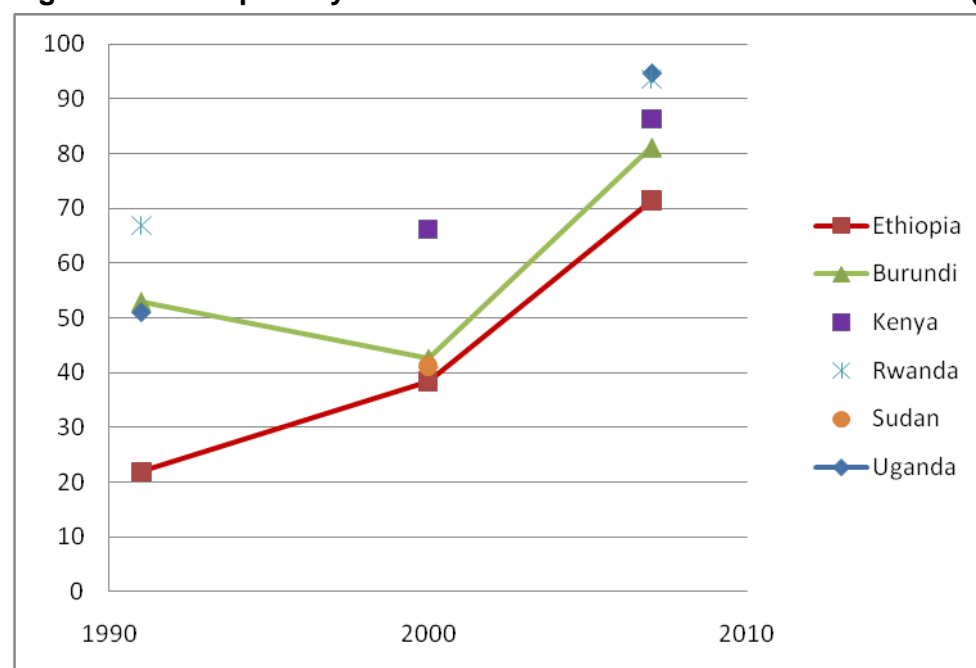
Welfare improvements can be understood through various other measures such as asset ownership, school enrollment, and access to healthcare. Education has expanded rapidly in Ethiopia. In particular, net primary school enrollment rates show dramatic improvement in the past two decades, but they are still low in comparison with other countries in East Africa. In 1991 only 22 percent of children of primary school age were enrolled in school (Table 1.19 and Figure 1.14). By 2007, this figure had more than tripled to 71 percent. Nonetheless, net primary school enrollment remains significantly below that of Kenya (86 percent), Rwanda (94 percent) and Uganda (95 percent).

Table 1.19. Net primary school enrollment in East African countries

	All Children			Girls		
	1991	2000	2007	1991	2000	2007
Ethiopia	21.9	38.4	71.4	18.8	32.5	68.5
Burundi	53	42.6	81.2	48.8	38.8	80.3
Kenya	---	66.2	86.3	---	67.1	86.3
Rwanda	66.9	---	93.6	65	---	94.9
Sudan	---	41.2	---	---	37.2	---
Uganda	51.1	0	94.6	46.2	0	96.1

Source: World Bank (2010), World Development Indicators 2009.

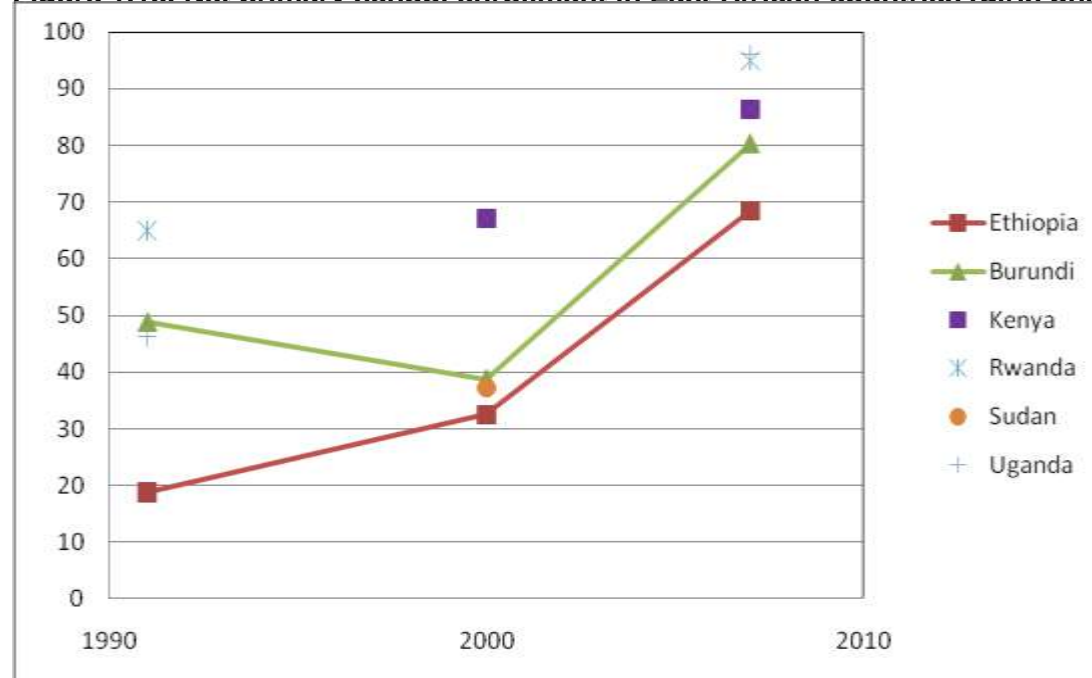
Figure 1.14. Net primary school enrollment in East African countries (all children)



Source: World Bank, World Development Indicators (2010).

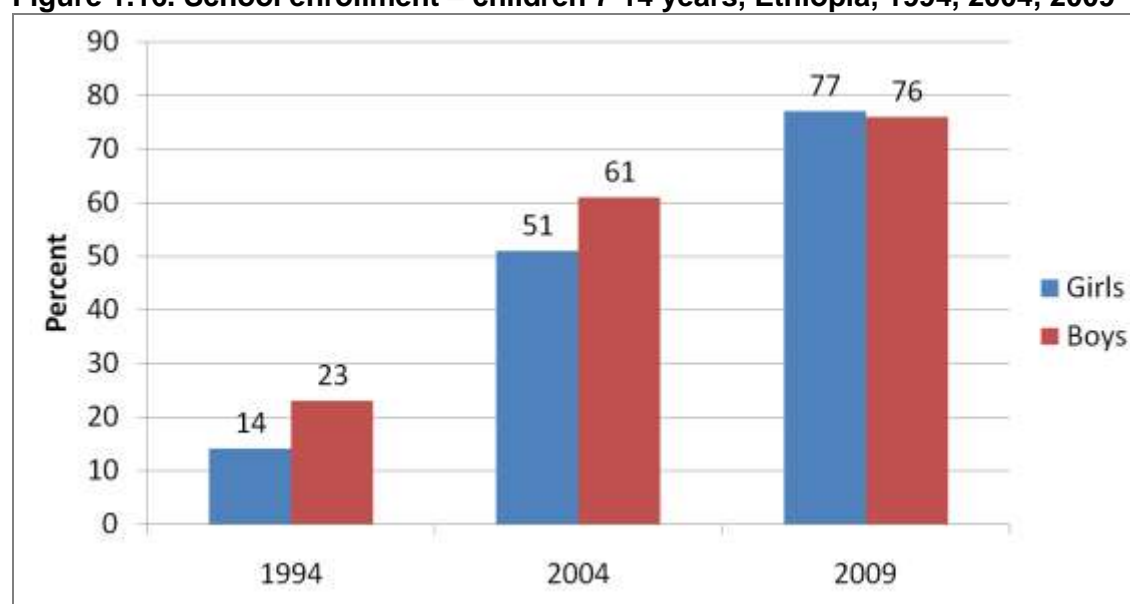
There is little evidence of a significant gender gap in net primary school enrollment, as net enrollment rates for girls were only slightly below the overall average in both 1991 (18.8 percent for girls and 21.9 percent for all children) and in 2007 (68.5 percent for girls and 71.4 percent for all children), (Figure 1.15, Figure 1.16). This increase in primary school enrollment may reflect that the level of human capital is rising, boding well for increased labor productivity and health outcomes (education, particularly female education, is associated with better maternal and child nutrition, and lower mortality rates).

Figure 1.15. Net primary school enrollment in East African countries (girls only)



Source: World Bank, World Development Indicators (2010).

Figure 1.16. School enrollment – children 7-14 years, Ethiopia, 1994, 2004, 2009

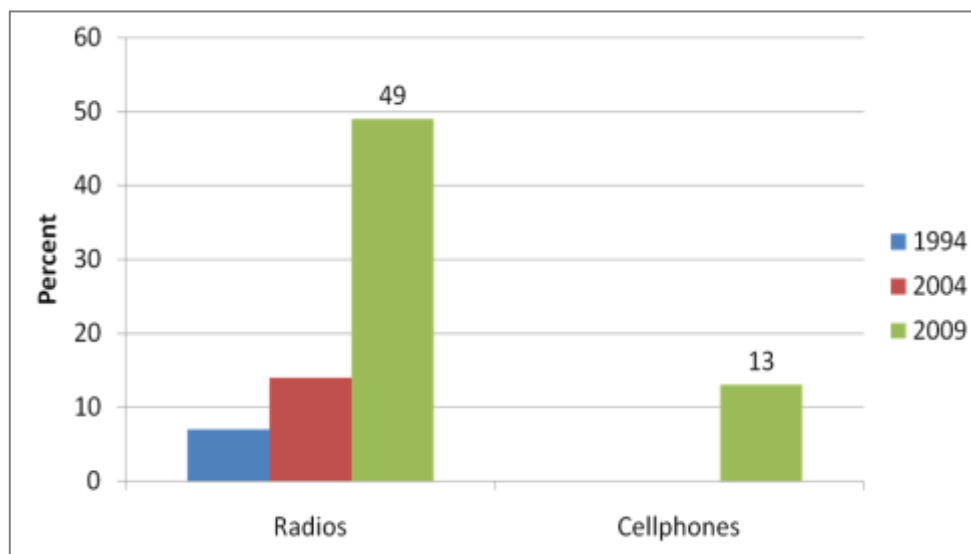


Source: ERHS 1994, 2004, 2009

Overall, asset ownership is growing in Ethiopia, with faster growth in the rural areas (albeit from a lower base). For example, the HICES, DHS, and ERHS data all show that radio

ownership in Ethiopian households go from under 10 percent in 1994 to almost 50 percent in 2009 (Figure 1.17). Also, 13 percent of households reported owning a cell phone in 2009.

Figure 1.17. Asset ownership over time, Ethiopia, 1994, 2004, 2009



Source: WMS-HICES (1995/96 – 2004/05); DHS (2000-2005), ERHS (1999-2004)

The HICES data show that the average size of households went up for the poorest quintile, remained steady for the middle two quintiles, and had a declining trend for the top two quintiles. Correspondingly, the average household size rose by 1 in the poorest quintile, and declined by about the same size in the top two quintiles. A similar pattern is displayed in the average number of children. Poorer households have larger and growing household size in general, partly because they have more children and thus leading to a rising dependency ratio.

1.5.6. Urban welfare patterns

Bigsten et al. (2003) study the evidence from the EUHS and other surveys, and assert that the magnitude of rural and urban poverty between 1994 and 1997 was comparable.¹⁷ They find that while poverty declined, urban poverty declined less than rural poverty, indicating that the policy environment favored rural growth (Bigsten et al. 2003). The authors also recognize that the EUHS captured regional variations in poverty, showing that different urban areas experienced different changes in poverty depending on the particular sector of economy they specialized in. For instance, Awassa and Jimma depended on crops trade and thrived as coffee exports boomed. On the other hand, Dire Dawa was a business town and an entry point for illegal border trade, so it was hurt by liberalized trade policy (Bigsten et al. 2003). Bigsten et al. (2003) is among the few studies that find that urban poverty declined between the two later years of the survey, 1995 and 1997, and this can be explained by the methodology the authors used (Kedir 2005).

Kedir and McKay (2003) and Kedir (2005) also use the EUHS to study urban poverty. They make a distinction between “chronic” and “transient” poverty where chronically poor are defined as those below the poverty line in all three waves of the survey.¹⁸ Others are classified as suffering from transient poverty. Their analysis shows that urban poverty

¹⁷ They use the Foster, Greer, and Thorbecke (FGT) index for poverty headcount, and a poverty line based on food and non-food components of consumption expenditure.

¹⁸ This study differs from other studies in that they address the issue of price changes over time and space, when measuring a welfare indicator by using Laspeyres price indices. The authors use CSA data on city level average prices of 42 food and 14 non-food items and commodity weights to construct this index. The welfare measure in this study is the “total household consumption expenditure per adult equivalent” where an adult equivalence scale is used to compute the final measure (Kedir 2005).

increased between 1994 and 1997, with 21.5% of urban households being chronically poor, that is, poor in all three survey years. The median consumption expenditure per adult per month fell from ETB 100.46 to ETB 73.4 over the survey period. The median real total expenditure and poverty incidence as measured by them are given in Table 1.20 and Table 1.21. The authors also find considerable regional variation in poverty.

Table 1.20. Median real total expenditures per adult per month (ETB), EUHS sites: 1994, 1995 and 1997

Location	1994	1995	1997
Addis Ababa (n=669)	84.48	80.37	74.76
South (n=220)	114.69	85.08	74.69
North (n=156)	102.22	72.37	70.75
All Urban (n=1045)	100.46	79.27	73.4

Source: Kedir and McKay 2003

Notes: South = Awassa, Dire Dawa and Jimma; North = Bahir Dar, Dessie and Mekele.

Table 1.21. Poverty incidence, EUHS sites: 1994, 1995 and 1997

Location	1994	1995	1997
Addis Ababa	38.1	41.6	43.2
South	25.9	35.9	40.0
North	30.1	42.3	45.5
All Urban	34.4	40.5	42.9

Source: Kedir and McKay 2003

Notes: South = Awassa, Dire Dawa and Jimma; North = Bahir Dar, Dessie and Mekele.

Kuma (2010) uses the 1994 and 2004 rounds of the EUHS data to study the trend of food consumption pattern in Ethiopia. Table 1.22 presents the data on monthly per capita food expenditure for the four income quintiles. In 1994, the richest quintile spent, on average, 9 times more on food per capita per month than the poorest quintile. By 2004, the difference had fallen to under 8 times. The poorest quintile had the biggest growth in food expenditure – 35.6 percent growth in food expenditure on average, between 1994 and 2004 (Kuma 2010).

Table 1.22. Monthly per capita food expenditures, EUHS sites: 1994 and 2004

Quartile	1994	1994	2004	2004	1994 to 2004
	Mean	St. Dev.	Mean	St. Dev.	Percent Change
1st (poorest)	18.2	7.6	24.7	8.4	35.5
2nd	41.6	7.0	47.9	7.2	15.2
3rd	71.3	10.4	79.1	11.4	10.9
4th (richest)	163.3	94.9	191.2	156.0	17.1

Source: Kuma 2010

While urban poverty and welfare situation is improving, there are opportunities for greater progress. Urban poverty worsened slightly in the late 90's, but improved in the following decade. Chronic poverty in urban areas is an important issue that requires specialized attention. According to the Ethiopian Regional Hunger Index, urban areas are faring better than rural areas.¹⁹

¹⁹ The studies that use the EUHS suffer from one common weakness: the sampling frame of the survey did not allow inclusion of homeless people. Homelessness is an emerging problem for Ethiopia's urban areas (Kedir and McKay 2003) but this phenomenon remains to be investigated.

1.6. Summary

Ethiopia remains one of the world's poorest countries with a per capita gross national production that is 21 percent below the average of low income countries. Moreover, Ethiopia's share of agriculture in GDP is one of the highest in the world, and much larger than the average for low income countries. Industry, including mining, electricity and water, and construction, accounted for 11 percent of GDP in 2008/09. Services accounted for over one-third of GDP, much of this from trade (11 percent of GDP) and transport and communications (6 percent of GDP).

Agricultural production patterns vary markedly across Ethiopia according to agro-climatic conditions, in particular, widely varying rainfall and elevation. Cereals dominate Ethiopia's agricultural production, accounting for almost three-quarters of area cultivated, and almost all cereal production in Ethiopia is by smallholders. From the 1960s through the 1980s, cereal production in Ethiopia was characterized by slow or negative growth, and wide annual fluctuations. However, accelerated growth in cereal production was noted in the 1990s. Composition of cereal production, driven to a large extent by suitability to Ethiopia's varied agro-ecologies, has changed relatively little over the past five decades, with teff and maize accounting for the largest share in cereal production.

Ethiopia's livestock sub-sector is among the largest in Africa, and it plays a significant role in the economy at both the national and household levels. However, Livestock productivity in Ethiopia tends to be among the lowest in the world as livestock production systems are not oriented towards commercialization, and improved breeds are not widespread.

The macro policy environment in Ethiopia has evolved significantly over time, with a marked shift from import substitution industrialization towards agricultural development led industrialization. Further shifts are occurring as the importance of concurrent rural and urban development is recognized.

Overall, welfare indicators in Ethiopia have generally improved in the last decade. First, rural expenditures per capita are growing, and while the rural poverty rate is higher than urban poverty, the data suggests that the gap is narrowing. The data also suggests substantial regional variation in the poverty rates. Second, per capita calorie intake has improved in Ethiopia and the Ethiopian Regional Hunger Index indicates that between 1999/00 and 2004/05 there were improvements in both urban and rural areas of index variables. Third, real wages have remained fairly static until recently when an upward trend is seen. However, rural wages are growing faster than urban ones. Fourth, human capital has also improved, with greater primary school enrollment rates and virtually no gender gap in enrollment figures. Finally, there is evidence that asset ownership has improved as well.

The next chapter discusses urbanization and investments in infrastructure that have brought about great improvements in connectivity and linkages between rural and urban areas followed by an analysis of levels of rural-urban migration and its determinants in Chapter 3. Chapter 4 presents an economy-wide analysis of the implications of alternative public investment choices, taking into account rural-urban migration and possible positive agglomeration effects of increased urban population. The final chapter concludes with policy implications and key areas for further analysis.

Box 1.1. Development plans in Ethiopia: Inventory and present state

Sustainable Development and Poverty Reduction Program (SDPRP)

- Macro policy framework for growth and development , effective from 2002/03-2004/05
- Recognizes agriculture's leading role in social and structural transformation of economy towards urbanization and industrialization, i.e. based on ADLI
- SDPRP does not pay adequate attention to non-agricultural sector, urban areas, markets, and demand side of production
- The policy does not address rural-urban migration substantially, and only in the light of problems associated with migration

Plan for Accelerated and Sustained Development to End Poverty (PASDEP)

- Successor of SDPRP, effective from 2005/06-2009/10
- Also pursues Agricultural Development Led Industrialization
- PASDEP reiterates the need to strengthen RULs; the policy itemizes rural sectors that require investment (rural roads, telecomm, general education and vocational training, small scale credit markets, rural electrification)
- Like other policies, PASDEP does not address rural-urban migration substantially, and only in the light of problems associated with migration
- In terms of urban development, PASDEP is stronger than SDPRP, and unlike SDPRP it embodies the development agenda of NUDP (below)

National Urban Development Policy (NUDP)

- Urban development policy, implemented in March 2005.
- NUDP embraces the following principle: rural development is the basis of, and also determines the direction and rate of urban development
- Operates on six core principles (strengthen urban-rural and urban-urban linkages, develop urban centers, reduce urban poverty and unemployment, community participation in development, partnership with private sector, decentralized urban governance)
- NUDP places clear emphasis on the crucial role of urban centers for rural development, and economic interdependence between rural and urban areas
- Urban Development Package (**UDP**) and Urban Good Governance Package (**UGGP**) were developed to facilitate the implementation of NUDP

Rural Development Policies and Strategies (RDPS)

- Rural development policy developed by the current government
- Places a strong focus on smallholders
- Focuses on enhancing combination of capital and labor through delivery of improved seeds, fertilizers, farm implements, and pesticides etc.
- RDPS is involved in expanding rural infrastructure, institutions and financial system
- Criticized for treating rural and other sectors independent of each other

Participatory Demonstration and Training Extension System (PADETES)

- PADETES's objective is to increase food production via modern inputs, investment in rural infrastructure, and technology transfer
- Like other rural policy guidelines, PADETES does not foster links between rural and other sectors

Growth and Transformation Plan (GTP)

- Successor of PASDEP, effective from 2010/11-2014/15
- GTP concentrates on a locally driven economy and targets an economic growth of 14.9%
- GTP maintains agriculture as a major source of economic growth but it want to create favorable conditions for the industry to play a key role in the economy; it provides an expansion of infrastructure development (electricity production, railway lines and telephone infrastructure)

Source: Author's compilation based on MoFED's Publications

2. Urbanization and the spatial transformation of Ethiopia

Of the estimated 73 million people living in Ethiopia in 2007, roughly 84 percent live in rural areas (using the official estimate) and derive their income primarily from agriculture based activities. According to the agglomeration index²⁰ 14 percent of the total population live in urban areas (Table 2.1). These urban areas are mainly situated in the highland areas which comprise 35 percent of Ethiopia's territory. Given the important revenue generated from agricultural activities (48 percent in 2006) in Ethiopia, policymakers have focused primarily on Agricultural Development Led Industrialization (ADLI) in recent years, but continuous growth of urban centers – currently growing at up to 3.7 percent per year on average requires a better understanding of the dynamic geographic and economic transformations occurring throughout the country.

Table 2.1. Ethiopia, Agglomeration Index* – Percent of people considered urban by region

Regions	Total Population (thousands)	Percentage Urban	Total Population (thousands)	Percentage Urban	Total Population (thousands)	Percentage Urban
	1984**		1994		2007	
Addis Ababa	1,423	61.2	2,113	85.5	2,738	99.3
Afar	780	-	1,061	-	1,411	-
Amhara	10,686	2.0	13,834	3.7	17,214	7.5
Benishangul – Gumuz	351	-	460	-	671	-
Dire Dawa	158	20.3	252	58.2	343	66.3
Gambella	172	-	182	-	307	-
Harari	82	55.2	131	76.2	183	86.0
Oromiya	14,016	1.7	18,733	4.6	27,158	9.2
SNNPR	7,501	-	10,377	2.2	15,043	21.1
Somali	2,006	0.2	3,199	1.6	4,439	1.9
Tigray	2,692	2.0	3,136	3.8	4,314	8.0
Ethiopia	39,869	3.7	53,477	7.1	73,919	14.2

Source: Schmidt and Kedir (2009)

Notes: * Population density per square kilometer (derived by GRUMP and LandScan for the year 2000), a major component in the agglomeration index, was projected using a growth rate of 3% per annum to adjust for different census years.

**Population figures for 1984 were approximated due to changes in administrative boundaries after 1984. In order to maintain consistency across all years, we geographically allocated population to the current regional boundaries

2.1. City growth and urbanization

The recent publication of Ethiopia's 2007 census (Population Census Commission 2008), reports urban population figures at the city level and allows for greater insight of how Ethiopia's demographic landscape has evolved. Schmidt and Kedir (2009) provide an analysis of city growth and expansion using city population, infrastructure networks, and population density in order to provide a standardized comparison of urban growth over the last 3 census periods (1984, 1994 and 2007).

Urban estimates from the 2007 census are similar to those estimated by Schmidt and Kedir (2009) for 2007 using the agglomeration index methodology, yet when comparing urban growth over time, these estimates show an important difference (Table 2.2 and Figure 2.1). This difference is primarily derived from the definition of 'urban area' used for the two estimates. The Central Statistical Agency (CSA) measures urban areas as all administrative capitals of regions, zones and woredas, as well as localities with at least 1,000 people who are primarily engaged in non-agricultural activities, and/or areas where the administrative official declares the locality to be urban. In comparison, the agglomeration index provides a

²⁰ The agglomeration index uses three indicators to determine city populations: population size of a major city, population density within and around the major city, and travel time to a major city

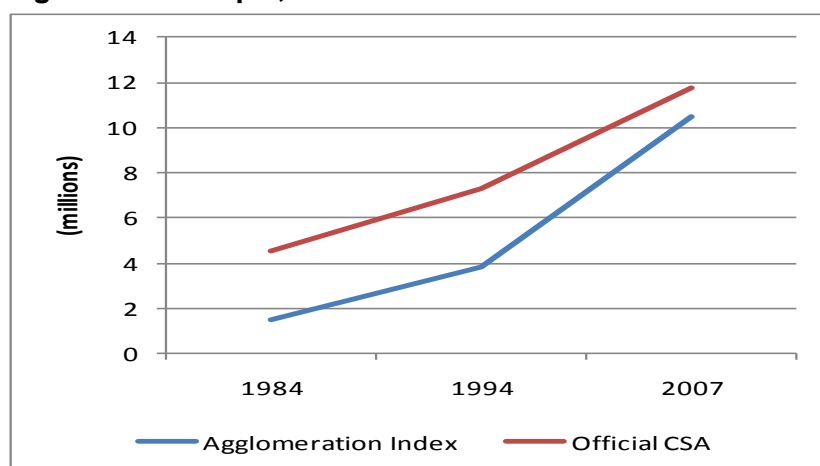
measure of the economic significance of urban areas rather than a definition of urban based on political status, administrative boundary, or presence of particular urban services or activities. The agglomeration index used here categorizes locations as urban if population density is greater than 150 people per km², and if locations are within 1 hour travel time from a city of at least 50,000 people.

Table 2.2. Ethiopia, alternative urbanization estimates

Year	Official Estimate	Agglomeration Index
	(percent)	(percent)
1984	11.4%	3.7%
1994	13.7%	7.1%
2007	15.9%	14.2%
	(mns people)	(mns people)
1984	4.55	1.48
1994	7.33	3.80
2007	11.72	10.50
	(growth rate)	(growth rate)
1984-1994	4.9%	9.9%
1994-2007	3.7%	8.1%
1984-2007	4.2%	8.9%

Source: CSA population estimates; Schmidt and Kedir (2009).

Figure 2.1. Ethiopia, alternative urbanization estimates



Source: CSA population estimates; Schmidt and Kedir (2009).

Whereas CSA estimated 1984 urbanization at 11.4 percent, the agglomeration index calculated urbanization at 3.7%. Between 1984 and 1994, and between 1994 and 2007, the percent urban doubled according to the agglomeration index. Evaluating Ethiopia's urban growth using the agglomeration index methodology shows that urbanization growth rates are much higher (between 8 and 9 percent) than those calculated by the CSA (Table 2.2).

The urban population that resides in the largest city (Addis Ababa) makes up 24.1 percent of urban population. When assessing urban population by city size, large cities (defined as Addis Ababa, Dire Dawa, and Harari) comprise 42.5 percent of urban population in Ethiopia, while small cities (ranging from 20,000 to 50,000 people) make up 57.5 percent of total population (Table 2.3). When assessing total share of population in large cities, only 4 percent of the population live in the three large city areas (Addis Ababa, Dire Dawa, and Harari), and only 5.4 percent of the population live in cities greater than 20,000 people. These numbers suggest that Ethiopia has ample space to expand and grow its primary and secondary cities.

Table 2.3. Ethiopia, urban population by city size (2007)

	Population Census (thousands)	Population Census (share of total)	Population Census (share of cities)	Agglom Index ^d (thousands)	Agglom Index (share of total)
Large Cities^a	3,070	4.0%	42.5%	4,545	6.0%
Small Cities^b	4,146	5.4%	57.5%	6,136	8.2%
50,000+	2,379	3.1%	33.0%	3,522	4.7%
20,000 - 50,000	1,766	2.3%	24.5%	2,615	3.5%
Other Urban^c	5,132	6.6%	---	---	---
Total Urban	12,348	16.0%	---	10,681	14.2%
Rural	64,825	84.0%	---	64,536	85.8%
Total Population	77,173	100.0%	---	75,217	100.0%

Source: World Bank Development Report 2009, World Development Indicators.

Notes: Average agglomeration for 2000 is calculated using 2005 population weights.

^a Addis Ababa, Dire Dawa and Harare

^b Other cities with populations greater than 20,000.

^c All other urban areas.

^d Total urban population is agglomeration index for 2007 (14.2%) from Schmidt and Kedir (2009) multiplied by the 2005/06 population (Annual population growth is 2.8 percent).

Urban growth has been rapid over the last 3 decades. Since the previous census in 1994, new cities were created, and economically viable cities have experienced large growth in population count and density. Currently, all of the cities with at least 50,000 people are geographically located in the four major regions (Amhara, Tigray, Oromiya, and SNNPR), with the exception of Jijiga city in Somali region, which is in the northern area of Somali, bordering Oromiya. Given that growth in the number of cities with at least 50,000 people mainly occurred in the four major regions, increased urbanization rates are primarily confined to these regions.

Table 2.4. Urbanization in East Africa, 2000 – 2005

	Total Population 2005 (mns)	Urban Population 2005 (mns)	Agglom. Index 2000 (percent)	Urbanization		Pop Cities > 1mn 2005 (% tot pop)	Pop. Largest City 2005 (% urban pop)
				2000 (percent)	2005 (percent)		
Ethiopia	71	11	11.9	14.9	16.0	3.8	24.1
Burundi	8	1	31.7	8.6	10.0	0	n.a.
Kenya	34	7	25.4	19.7	20.7	7.8	37.6
Rwanda	9	2	14.3	13.8	19.3	0	43.7
Sudan	36	15	31.9	36.1	40.8	12.2	30.0
Uganda	29	4	28.0	12.1	12.6	4.6	36.2
East Africa	187	39	21.7	19.1	21.0	5.9	
Nigeria	132	63.6	40.8	43.9	48.2	13.3	16

Source: Calculated according to the population census and national definition of urban and rural: World Bank, World Development Report data.

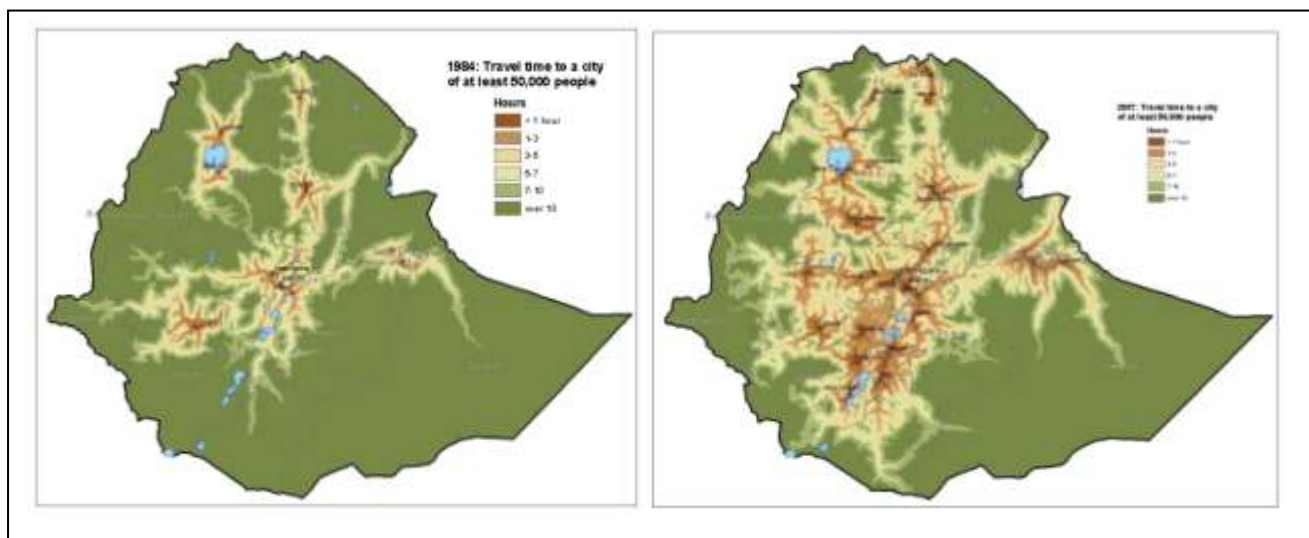
Although Ethiopia's agglomeration index suggests significant levels of urban clustering and growth over time, when comparing to other countries in the region, Ethiopia remains one of the least urbanized in East Africa. In 2000, agglomeration in Ethiopia was measured at 11.9 percent, while most other East African countries were between 25 and 32 percent. Overall, Ethiopia's agglomeration index is 10 percentage points below the average agglomeration index for East Africa (Table 2.4).

2.2. Road infrastructure and improving access to markets

City creation and growth in Ethiopia seems due in large part to improved transportation infrastructure between major cities in the highlands. Upgraded and maintained transportation corridors, as well as increased population density on these corridors, created urban areas that currently resemble networks in comparison to the isolated communities typical of the 1984 urban landscape. For example, Addis Ababa was primarily confined to its city administrative boundaries in 1984. By 1994, its urban network expanded, creating an urban corridor to the southeast, linking to Adama (previously Nazreth) - another city of 50,000 people in Oromiya region. Population growth and improved transportation infrastructure in Shashamene town and Awasa town also facilitated linkages to form an urban network between Oromiya and SNNP Regions (see Schmidt and Kedir 2009). By 2007, urban linkages are clearly visible throughout Oromiya, SNNPR, and Amhara regions. Underlying this growth is the improvement of transportation to market centers.

In 1984, 40 percent of the population was over 10 hours from a city of at least 50,000 and 82 percent were over 5 hours away from a large city (Figure 2.2). Only three regions in 1984 (as well as the urban administration areas) had populations that were within 1 hour of a large city, but only 2.5 to 4 percent of the population in these regions fell into this category. By 1994, 31 percent of total population was over 10 hours travel time from a major city and 67 percent was over 5 hours from a major city; five of the nine administrative units had populations that could reach a city within an hour.

Figure 2.2. Ethiopia, travel time 1984 and 2007



Source: Schmidt and Kedir 2009

Given the limited infrastructure during the eighties and early nineties, the Ethiopian government prioritized transportation infrastructure investment in order to enhance linkages between major cities. A 10-year Road Sector Development Program (RSDP) was formulated to improve the quality and size of road infrastructure, beginning in 1997. The construction and rehabilitation of roads outlined in the RSDP improved travel time within the country considerably. Currently, only 3.2 percent of the population in Amhara, and 4.5 percent in SNNPR are more than 10 hours from a major city (Table 2.5 and Figure 2.2). SNNPR showed the most improvement in travel time, by connecting 45 percent more people to a city within 3 hours travel time. In Tigray and Oromiya, 21 percent of the population improved market access from over 10 hours to between 3 and 10 hours travel time to a major city. At present, every region except Gambella has a city of at least 50,000 people, and many of these cities have expanded transportation networks in order to harness the potential of economic corridors between cities. Although urban centers are linking to other large cities through improved infrastructure, only 5 to 13 percent of the population in any region, including the major 4 regions where primary roads stretch between urban centers, are within one hour travel time to a city of at least 50,000.

Table 2.5. Ethiopia, percent population connected to a city of 50,000 people in 2007

Region	Access < 1 hour	Access 1 - 3 hours	Access 3 - 5 hours	Access 5 - 10 hours	Access > 10 hours
Tigray	10.89	15.36	12.48	53.71	7.57
Afar	-	-	1.77	9.73	88.49
Amhara	5.05	22.72	37.06	31.98	3.20
Oromiya	9.03	18.06	36.39	27.84	8.68
Somali	7.99	-	-	13.57	78.44
Benishangul-Gumuz	-	-	-	29.15	70.85
SNNPR	12.55	52.65	12.28	18.05	4.47
Gambella	-	-	-	-	100
Harari	100	-	-	-	-
Addis Ababa	100	-	-	-	-
Dire Dawa	100	-	-	-	-
Ethiopia	12.48	23.56	25.73	26.03	12.20

Source: Schmidt and Kedir 2009

It is important to note, however, that population densities and quality/density of transportation infrastructure affect diverse regions in different manners. In Ethiopia, the central and peripheral regions represent two very different economic, geographic and demographic landscapes. While in the main central regions (Amhara, Oromiya, SNNPR, and Tigray), higher population densities and a more integrated road network is characteristic of the economic landscape, in the peripheral regions, limited road access and dispersed settlements creates larger challenges for linking remote populations to the benefits of agglomeration economies. Improving transportation infrastructure along main access roads will benefit those already in densely populated areas, but maintaining and building select rural road infrastructure in areas with economic (agricultural) potential will be critical for poverty reduction and economic growth strategies in the more rural remote areas.

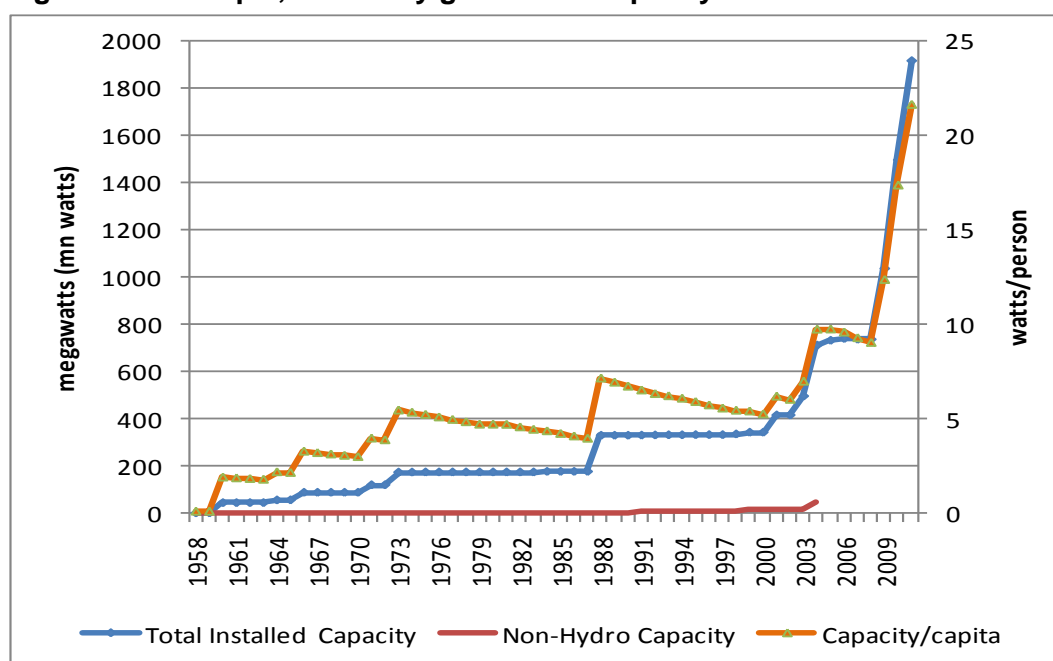
The upgrading of major roads not only facilitates access to urban areas for populations living on these corridors, but also continues to draw people to these networks in search of greater mobility and increased economic benefits. It is clear that the investments done under the RSDP improved access to major cities and enhanced links between cities. Although investments in key transportation corridors are important for urban growth, the main beneficiaries of these investments tend to be people already living in more densely populated, connected regions. Peripheral areas with limited market access and lower population densities will remain left out of the urban economic linkages developing in the central areas of the country. Between the years of 1994 and 2007, the government invested in several key gravel roads that improved access for rural populations on the periphery. The new gravel roads that were built between Harari and smaller towns in Somali region eased access constraints considerably. Earth roads that were rehabilitated also increased access in the far reaches of Somali region.

2.3. Other infrastructure

2.3.1. Electricity generation

Massive investments in hydro-electric power have positively affected Ethiopia's economy and opened up the potential for significant increases in productivity and output. Ethiopia increased its electricity generating capacity 29-fold between the 1960s (65 megawatts average in 1960s) and 2011 (1917 megawatts); an increase of 8.9 times on a per capita basis (Table 2.6 and Figure 2.3). The comparison with 1959 is even more striking, as there was essentially no electricity generation in Ethiopia at that time -- only 2.3 megawatts of diesel-powered capacity. The introduction of hydro-electric power in the subsequent decades, and especially the large surge in capacity since 2005, has raised electricity generating capacity enormously.

Figure 2.3. Ethiopia, electricity generation capacity 1958 to 2011*



Source: Calculated using CSA Survey of Manufacturing (various years) and Ethiopian Electric Power Corporation data.
 Notes: * Figures for 2008-2010 based on additional capacity from Tekeze I (300 Mw) in 2009; and Tana Beles (460 Mw) in 2010. 2011 figures is 2010 figure plus Gile Gibe II (420 Mw) for which the tunnel collapsed in December, 2009.

Actual electricity use is generally only about 35 to 45 percent of theoretical generating capacity, however, largely because through much of the year there is insufficient water behind the hydro-electric power dams for full-scale operation. Domestic use accounted for 30 percent of total use in 2006/07; commercial and industrial use accounted for 20 and 28 percent, respectively (Table 2.7). Overall, electricity use grew at an average rate of 12.5 percent per year from 2002/03 to 2006/07, with the highest growth rate for street lighting (27.1 percent per year).

Survey evidence suggests that the productivity effects of electrification could be very large, particularly, as measured by output per worker. A 2008 survey data of small-scale handlooms in Addis Ababa and SNNPR (Ayele et al. 2009) indicates that productivity per worker is about 40 percent higher for electrified versus non-electrified firms in SNNPR. This productivity effect is achieved in large part because in towns with electricity access, producers work longer hours and firms share workspaces with electric lights at lower rental cost. Workers in non-electrified rural villages on average worked only 7.2 hours per day, whereas their counterparts in other electrified (but rural) villages worked 10.7 hours per day.

Table 2.6. Electricity generation capacity 1958 to 2011* in Ethiopia

Year	Capacity hydro-electric (megawatts)	Capacity other (megawatts)	Capacity total (megawatts)	Capacity per capita (watts / person)
1959	-	2.3	2.3	0.1
1960-69	62.8	2.5	65.4	2.4
1970-79	152.9	3.0	155.9	4.7
1980-89	202.8	4.7	207.5	4.9
1990-99	325.2	9.0	334.2	6.0
2000-04	452.6	25.0	477.6	6.9
2005-09	747.2	50.2	797.4	10.0
2010	1,447.5	50.2	1,497.7	17.4
2011*	1,867.5	50.2	1,917.7	21.7

Source: Calculated using CSA Survey of Manufacturing (various years) and Ethiopian Electric Power Corporation data.

Notes: Figures for 2008-10 based on additional capacity from Tekeze I (300 Mw) in 2009; and Tana Beles (460 Mw) in 2010. 2011 figures is 2010 figure plus Gile Gibe II (420 Mw) for which the tunnel collapsed in December, 2009.

Table 2.7. Electricity use, 2002/03 to 2006/07 in Ethiopia

	<u>Domestic</u>	<u>Commercial</u>	<u>Street Light</u>	<u>Industrial</u>	<u>Subtotal</u>	<u>Non-Sales</u>	<u>Total</u>
Usage (mn KWH):							
2002/03	600	402	17	688	1,707	357	2,064
2003/04	654	455	22	716	1,847	470	2,316
2004/05	726	521	29	793	2,069	519	2,589
2005/06	786	573	33	970	2,361	535	2,897
2006/07	1,002	665	46	924	2,637	684	3,321
Share of Total:							
2006/07	30.2%	20.0%	1.4%	27.8%	79.4%	20.6%	100.0%
Growth rate:							
2002/03 - 2006/07	12.9%	13.2%	27.1%	9.3%	11.8%	15.4%	12.5%
Ave. Price (birr/kw-hour)							
2006/07	0.413	0.665	0.477	0.491	0.505	-	-

Source: CSA Survey of Manufacturing (various years); authors' calculations.

2.3.2. Expansion of telephone services

Not only is Ethiopia increasing its physical infrastructure such as roads and electricity lines, it is also expanding its communication infrastructure. In 2003, 405,000 fixed telephone lines were in place, and only 50,000 cell phone subscriptions existed throughout the country (Table 2.8). By 2008, cell phone subscription catapulted to 3.16 million subscribers and fixed telephone lines more than doubled. Infrastructure plans report that cell phone subscriptions more than doubled by 2009, and reached as many as 9.9 million users by 2010. Fixed line infrastructure is projected to grow as well, but at a slower pace, quadrupling by 2010 from 2008 levels.

While communication technology continues to expand at a rapid pace within Ethiopia, when comparing rates of cellular subscription to Sub Saharan Africa, Ethiopia falls behind. The share of population within a connected area in Ethiopia is 5.3 percent, in contrast to 32.5 percent of the population in Africa with cellular subscriptions in connected areas.

Table 2.8. Fixed line and cellular telephones 2003 to 2010 in Ethiopia

	2003	2008	2009*	2010*
Main (fixed) telephone lines ('000)				
Ethiopia	405	909	3,000	4,400
Africa	9,553	10,617	-	-
Mobile cellular subscriptions ('000)				
Ethiopia	51	3,168	7,500	9,900
Africa	35,251	245,608	-	-
Mobile cellular subscriptions (per 100 people)				
Ethiopia (share of total population)	0.1	3.9	9	11.5
Ethiopia (share in connected area)	0.1	5.3	-	-
Africa (share in connected area)	3.7	32.5	-	-

Sources: ITU (2009). *Information Society Statistical Profiles 2009 - Africa*, International Telecommunication Union (ITU).; Ethiopian Telecommunications Corporation (ETC). ETC Strategic Plan. <http://www.ethionet.et/aboutus/visionmission.html>

2.4. Summary

During the last two decades, Ethiopia has expanded and improved key infrastructures. Since 1994, new cities were created and cities with economic potential experienced large growth in population as well as density. Transportation corridors were improved in the highlands, with associated growth in population density along these corridors. Also urban clustering has taken place along these transportation corridors. Massive investments in hydro-electric power have contributed to economic growth and raised Ethiopia's potential for significant increases in productivity and output. Telecommunications sector saw major improvements, as fixed telephone line infrastructure more than doubled from 2003 to 2008, and cell phone subscription catapulted to 3.16 million subscribers in 2008 from only 50,000 in 2003.

3. Rural-urban migration

3.1. Rural-urban migration in Ethiopia: an overview

The migration of labor out of agriculture is a primary feature of the economic development process. Both historically, and in the present, the share of labor working in agriculture within a country declines as per capita GDP increases (Taylor and Martin 2001). In fact, if predominantly agricultural economies are to take full advantage of the geographically concentrated increasing returns to scale in industrial production (Krugman 1991), farmers must migrate to provide the industrial sector with labor. A similar argument can be made about the agglomeration effects in the service sector, which also grows rapidly relative to the agricultural sector as economies grow. Therefore, migration is necessary for economic development to occur.

The limited economic linkage between rural and urban areas and the lack of growth in nonfarm activities discourage rural-urban migration. If there is no improvement in agriculture, increasing landlessness and small and fragmented land holdings push farm labor into seasonal out-migration by default. According to the limited literature available, it seems that seasonal out-migration from rural to rural and rural to urban areas is common among farmers attempting to find additional income.

3.1.1. Migration trends

Over time, the share of the Ethiopian population that has migrated from outside their woreda of current residence has increased from 11.4 percent of the population (4.54 million people) in 1984 to 12.9 percent of the population in 1994 (6.92 million people) to 16.5 percent of the population (12.21 million people) in 2008 (Table 3.1). Most of this migration, surprisingly, is not rural-urban migration, even using the CSA official definition of urban that includes many small towns as urban areas. About half of all migrants are rural to rural migrants, though the share of rural-rural migrants in the total number of migrants has gradually declined from 56 to 49 to 47 percent across the three population census years. Rural to urban migration over the same period has risen from 1.30 million people in 1984 to 3.26 million in 1998, but the share of rural-urban migrants in total population is still small, having risen from 3.3 percent in 1984 to only 4.4 percent in 1998 (Table 3.1).

While the total number of internal migrants in Ethiopia is growing, interesting changes are taking place in their composition. Two important features of the above table are the change in the proportion of rural out-migrants, and a considerable shift in the forms of migration. Rural out-migration is on the rise. Urban out-migration is declining, with urban-rural migration decreasing the most. Only 16.2 percent (14.2 percent using agglomeration index) of the 73.92 million people of the country lived in urban centers in the year 2007 according to the census, indicating that there is limited and low-level rural-urban migration. The level of urbanization in the three most populous regional states, which account for 80.4 percent of the total population of the country, is only 11.8 percent, which further reveals low rural-urban migration.

Table 3.1. Forms of migration in Ethiopia over time (percentage and absolute figures in thousands)

Forms of migration	1984 Census	1994 Census	1999 Labor Force Survey	2005 Labor Force Survey	2008 Census
Rural-rural	56%	49%	38%	40%	47%
	2,536	3,382	4,023	4,507	5,727
Rural-urban	29%	25%	24%	26%	27%
	1,304	1,715	2,514	2,930	3,261
Urban-rural	2%	7%	16%	14%	7%
	91	505	1,680	1,578	806
Urban-urban	14%	19%	23%	20%	20%
	614	1,307	2,482	2,254	2,418
Total	100%	100%	100%	100%	100%
	4,545	6,917	10,698	11,268	12,212
Total Population	39,869	53,477	60,031*	68,965*	73,919

Source: CSA 1999.

Note: * Total population numbers were extrapolated using census data, and not sourced from the Labor Force Surveys.

3.1.2. Determinants of migration

Migration can have important impacts on the well being both of migrants themselves and the households that they leave behind. Migration can be poverty reducing, as the household has one less mouth to feed and migrants who leave for work can send back remittances. However, migration also implies the loss of what is often an able-bodied worker. In rural areas, household agricultural productivity may decline when migrants leave. Furthermore, initial participation in migration involves start-up costs, akin to starting a business. Migrants need money to fund their travel, and in the interim when they are searching for employment. Alternatively, they can rely on a social network to provide them with shelter, food, and employment. Start-up costs and a lack of social capital can hinder the migration of poor households. The costs can decline in the event of chain migration, where resulting social networks in destinations reduce information costs about employment and destinations as migration increases (Carrington, Detragiache, and Vishwanath 1996). As a result, understanding local mobility is potentially important to shaping poverty reduction policy.

Thus far urbanization and migration in Ethiopia may have remained constrained by lack of labor mobility. Slow urban growth rates may be in part due to lack of land tenure laws and transparent rural land rights. Institutions that secure land rights lay the foundation for incentivizing rural populations to seek non-farm opportunities in order to supplement agricultural incomes. In Ethiopia, there are only limited opportunities for transfer of land rights in rural areas. Land is nationally owned, where local governments are able to reallocate land periodically, but most households maintain the use right of their land allotment by continuing to farm, providing adequate care to the land, and remaining a resident in the kebele (Rahmato 2008). Recent policies have promoted household land security by permitting land transfers to family members; transfers outside of the family are still rare. Earlier work in Ethiopia demonstrates that improvements in land security through land transfer rights has a positive impact on productivity-enhancing investment (Deininger and Jin 2006; Dercon and Ayalew 2007). Similar impacts on the household allocation of

labor off of the farm are anticipated, as individuals can secure the land by transferring it to other family members and explore alternative employment opportunities outside of the village. Promoting land security may also influence diversification of economic activity through migration from rural to urban areas.

The process of migration and the motivations for migrants to remit are often not well understood. The migration decision is influenced by several interlinked factors. Migrants may be attracted by higher wages in potential destinations (e.g., Harris and Todaro 1970), but they also may be motivated by other household level factors, such as the need to diversify the household income generation portfolio (e.g., Stark 1991). Migration may be either directly or indirectly hindered by government policies that restrict mobility. From the perspective on internal migration, a good example of the former type of policy was the *hukou* policy set up by China in the 1950s (e.g. Fan 2007), which created barriers against movement from locality to locality for residents. An example of the latter would be land tenure security; if farmers fear that their land will be expropriated while they were away, then the probability that households or members thereof would migrate might decline (e.g. Yang 1997; de Brauw and Mueller 2009). Recent work by Gete et al. (2008, 27) on seasonal migration from Amhara region reports that seasonal out-migration of labor from Amhara region is predominantly carried out by young single men (55.4 percent of respondents) who are dependent family members and have not yet established their own family. Young dependent family members have no land use right and hence their movement is not constrained by the land policy. Respondents cited the following as underlying reasons of seasonal migration: the lack of sufficient means of subsistence (81 percent), shortage of farm land (79.5 percent), availability of employment opportunities (61.5 percent), and indebtedness (55 percent).

Because information on the motivations and effects of migration behavior is often incomplete, the role of migration in the economy is often unclear. Data rarely link information about source households with migrants that left households; rather, surveys that collect information about migration either collect information from one source or the other. In practice, surveys either ask the source households for information about migrants, or ask migrants at destinations for information about their experiences. However, in both cases important information can be missed. In the former case, information about the exact destinations of migrants may not be included, and or incomplete when households do not know exact information about the migrant's whereabouts. From the latter perspective, information collected from migrants at the destination reveals their employment status and how they relate to the populations they join. These tracking studies, though, often lack information on similar individuals that remained in the origin. Moreover, a rich description of migrant flows is not possible, as less frequent destinations may not be included in the sample frame.

In this chapter, we use a unique matched sample to study migration in Ethiopia. One of the advantages of our study is that we can ascertain the spatial composition of internal migration from the sample villages. We further attempt to understand the determinants of migration, and how migration affects the welfare of both migrants and those left behind. Traditional studies of migration, that focus on either migrants at the destination or reports about migration from the source, typically do not provide the type of detailed information about migrant flows or welfare comparisons that we can provide here.

Ethiopia makes a compelling place to study internal migration for several reasons. First, Ethiopia is largely a rural country. According to the World Bank (2009), Ethiopia has one of the lowest urbanization rates in sub-Saharan Africa, as only 17 percent of its population lives in urban areas, relative to an average of 36 percent for the rest of sub-Saharan Africa. Understanding future population shifts can project where will be the future hot spots in Ethiopia to inform the government where resources should be diverted to accommodate the growing population. Second, recurrent droughts afflict households. In other contexts,

migration has been used to diversify income risk and relieve own food scarcity constraints. Such information can inform the design of social protection programs, where it may be more beneficial in the long run to facilitate private adaptation to risk. Third, the lack of available land constrains productivity. Households expand over time, and yet allotment of land is fixed and continues to be divided between household members posing productivity constraints on generations to come. The rural out-migration of household members can alleviate the constraints on productivity posed by land scarcity. The matched migrant sample includes information about the source household *and* migrants that were tracked from those households, which provides a rich set of information from the perspective of both the household and the migrant, as well as a description of specific migrant flows over space.

This chapter has two major objectives. First, we provide a robust description of migrants found to have left households in the ERHS panel between the 2004/05 and 2009 rounds. The description includes information about actual migrant flows, from information collected through the tracking process, migrant demographics, remittances, and the potential welfare improvements, with a focus on relaxing food constraints. Second, we use the descriptive component to inform an analysis of the determinants of migration behavior. This section again takes advantage of information from both the household and migrant survey.

The chapter proceeds as follows. In the second section, we provide a robust description of the data set primarily used in our analysis. In the third section, we describe internal migration in Ethiopia, using secondary sources and the matched data, migrant tracking and the ERHS panel surveys. In the fourth section, we estimate models describing the determinants of migration at the household level, to help us understand which factors are important in a comparative sense. In the fifth section, we discuss how migration affects the welfare of households left behind as well as the welfare of migrants after migrating. The sixth section concludes with a summary and a discussion of the implications of our findings for policy.

3.2. Data

3.2.1. *Ethiopian Rural Household Survey*

This study is primarily based on two data sources: the Ethiopia Rural Household Survey (ERHS), and a migrant tracking survey that tracks individuals who left the ERHS households since the 2004/05 round of the ERHS in 2009. The ERHS is a panel dataset collected by Addis Ababa University, the University of Oxford, and the International Food Policy Research Institute. It tracked households in 15 villages for seven rounds between 1994 and 2009, the most recent two occurring in 2004 and 2009. The ERHS is a very comprehensive survey that involved several visits to each household during each round of data collection, and therefore it is well equipped to measure several aspects of rural life.²¹ For the purposes of this study, it is important to note that the dataset includes detailed information on household characteristics including measures of asset wealth, perceptions of poverty, agriculture production, practices and issues, consumption, information about attitudes regarding gender, shocks, and social networks.

To study migration, we focus on the 2004 and 2009 rounds of the ERHS. To use all of the available data, we include data from 3 villages that were added to the ERHS in 2005 and were included in the 2009 round.²² Therefore, our study includes households from 18 villages. All of the villages are from different Peasant Associations (PAs), the smallest local administrative unit, with the exception of Debre Berhan, which is considered one village even though it spans four different PAs. Figure 3.1 displays the *woredas*²³ in which the ERHS

²¹ Due to the relatively low mobility of households and the persistence of the survey team, the ERHS has remarkably low attrition across survey rounds (between 1 and 2 percent per year) (Dercon, Hoddinott, and Woldehanna 2007).

²² Hereafter, we refer to the sixth round as the 2004/05 round to reflect we use all 18 villages.

²³ A *woreda* is an administrative unit (larger than a PA) equivalent to a district.

villages are located. Although the ERHS is not nationally representative, four of the ten regions of Ethiopia (other than Addis Ababa) are represented in the data set that are home to 86 percent of Ethiopia's population (Population Census Commission 2008).

3.2.2. Migrant Tracking Survey

One of the primary innovations of this study is the inclusion of a migrant tracking study. After the 2009 ERHS, enumerators revisited all of the 18 villages in the sample to administer a short census among ERHS households designed to specifically identify migrants. Migrants were then tracked to their destinations, and among migrants who were found a longer survey was completed.²⁴ In the remainder of this subsection, we describe the migrant tracking survey and its protocols in more detail.

A census of ERHS households was initially conducted in October 2009. Enumerators visited the household head, and he or she was asked to identify individuals who had migrated since the 2004/05 round of the ERHS.²⁵ Of the 1,606 ERHS household heads present in the 2004/05 round which were included in the study, 1593 households were found in the census.²⁶

The tracking questionnaire asked each household head to list any household members aged 10 years and above who had moved out of the ERHS village to another PA for at least three months. These individuals were noted as potential migrants, and the household head was also asked to then describe some demographic characteristics about each individual (age, gender, education level). To aid the screening process, household heads were then asked to specify the reason that each migrant left the household. As we are specifically interested in the economic motivations for migration, we restricted our sample to those individuals who were both family members and who reported moving due to loss of land, for employment, for schooling and who stayed in their destinations for employment, to follow another family member, or for a resettlement program.²⁷

When entire households had migrated out of the ERHS village, enumerators asked the PA head to fill out the tracking questionnaire, to learn details about where the household had migrated. The migration filter was applied to the households in the same way as it was applied to individuals. We attempted only to track households if they left for economic reasons (e.g., employment).

After establishing a list of migrants from each ERHS household, after the screening process, we found that 377 households had a migrant who left for employment. Of those, migrants from 60 households had members that solely lived outside of Ethiopia, leaving 317 households with "internal" migrants. Our average tracking success rate was 77 percent, though there was quite a bit of heterogeneity by village.²⁸ In total, we tracked 313 individual migrants from 244 ERHS households. Twenty-two of the 244 households were migrant households; e.g., the whole household moved. The count of 313 individual migrants only includes migrants who were asked to complete a questionnaire, which either were individual migrants in a new location or the heads of entire households that migrated.

²⁴ Because we link the tracking survey to the ERHS households, the migrants can be compared directly to individuals who did not migrate within and across ERHS households. We can also use contemporaneous and past information about the migrants and their households to provide a richer description of migration in the sample.

²⁵ If the household head could not be found, but the household remained present in the village, the census was administered to another household member who was deemed most knowledgeable about the household's membership.

²⁶ There were migrants tracked from two additional households missing tracking surveys.

²⁷ We focus on family members as relatives are more likely to affect household welfare directly by sending remittances. In piloting, the tracking strategies, we also found following non-family members to be particularly more difficult as the household paid less attention to the whereabouts of unrelated, transient individuals (e.g., itinerant farm workers).

²⁸ For example, the tracking rate was worst in Adele Keke, where only 4 of the 9 migrants could be located, and best in Turfe Ketchema, where 10 of the 11 migrants were found.

3.3. Characterizing migration in Ethiopia

While many sub-Saharan African countries have experienced substantial urbanization since the independence movement began in the 1960s, by several measures Ethiopia is an exception. Despite a population of 74 million in 2007 (Population Census Commission 2008), there is only one city in Ethiopia with over 500,000 inhabitants (Addis Ababa), and only three cities with populations between 150,000 and 500,000 (Schmidt and Kedir 2009). Furthermore, over the past 20 years, Ethiopia's urbanization rate has lagged that in the rest of sub-Saharan Africa (Table 1.1). Since rural-urban migration is necessary for urbanization to occur, understanding how movement presently occurs in Ethiopia can help shed light on how one might expect urbanization to take place in the future.

In this section, we first describe variation in both the source and destination of migrants from ERHS villages, and we attempt to therefore understand how much migration in Ethiopia is actually rural-to-urban migration, which is necessary for urbanization. In the second subsection, we describe characteristics of migrants themselves, to provide context for the following discussion of the determinants of migration.

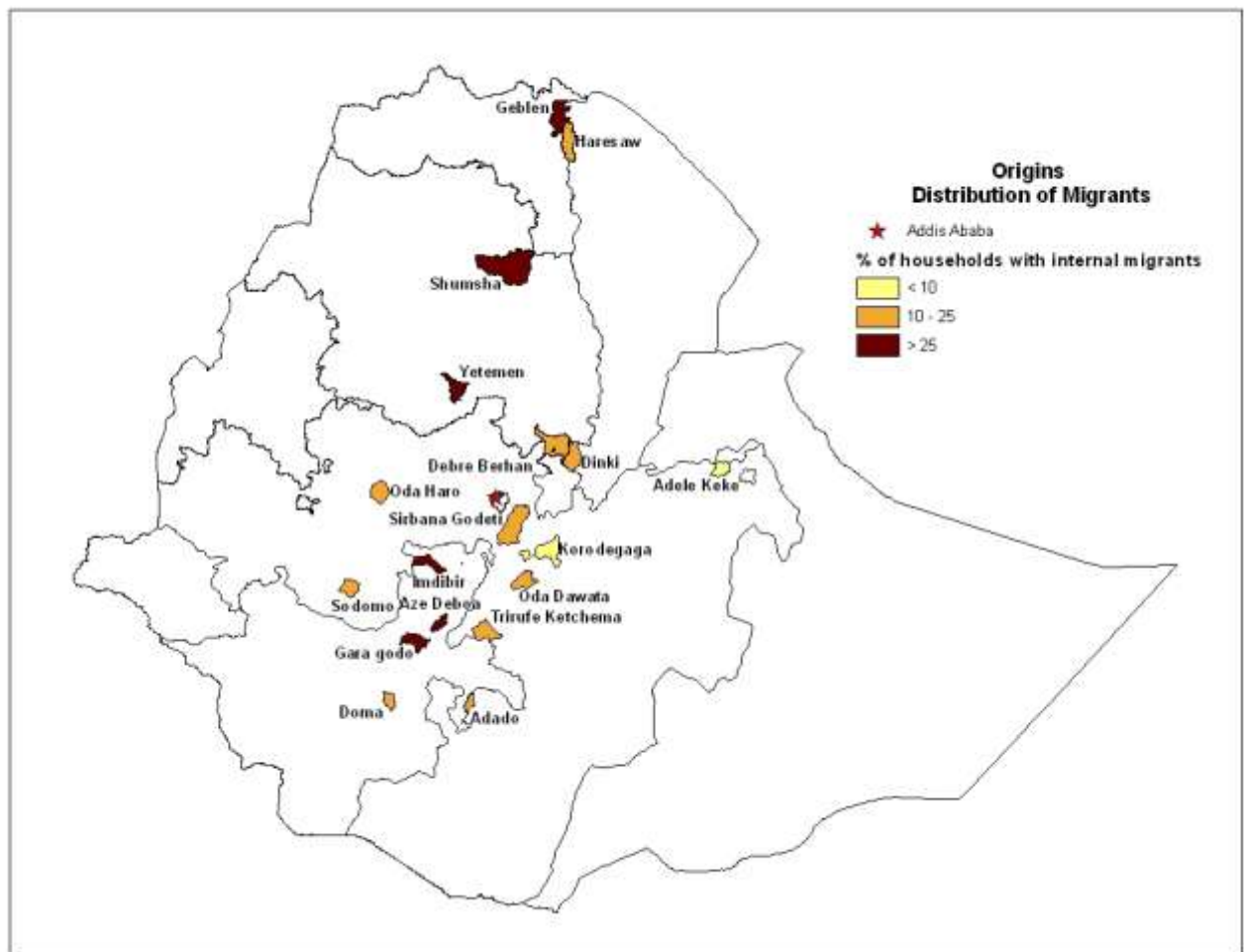
3.3.1. Movement of migrants in Ethiopia

Migration rates varied a great deal across the ERHS villages (Figure 3.1). While at least one migrant has left each of the ERHS villages, some villages have very little migration whereas migration is substantial from other ones. To illustrate, note that in four of the eighteen villages, at least one migrant had left more than 30 percent of sample households.

The data also demonstrate that mobility costs do not fully explain migration (Figure 3.2). To provide a sense of mobility costs involved for each site, we overlay the ERHS village woredas with the travel time to the nearest city of 50,000 people. If mobility costs, in terms of time, were strongly correlated with migration rates, one would expect that migration rates would be higher from woredas closer to larger cities. However, we find that migration rates are high from some villages far from cities, and sometimes low close to cities. For example, the Shumsha village, located in the Bugina woreda, is located in a woreda which is further than 3 hours from a city of 50,000 or more, yet 30 percent of the ERHS households surveyed reported having at least one internal migrant. On the other hand, the entire woreda encompassing Adele Keke is less than 3 hours from a city of 50,000 or more and yet only 10 percent of households reported an internal migrant, the lowest migration rate of all sites surveyed save Korodegaga, in which only 7 percent of households reported internal migrants. Variation in migration is clearly influenced by factors other than village locations.

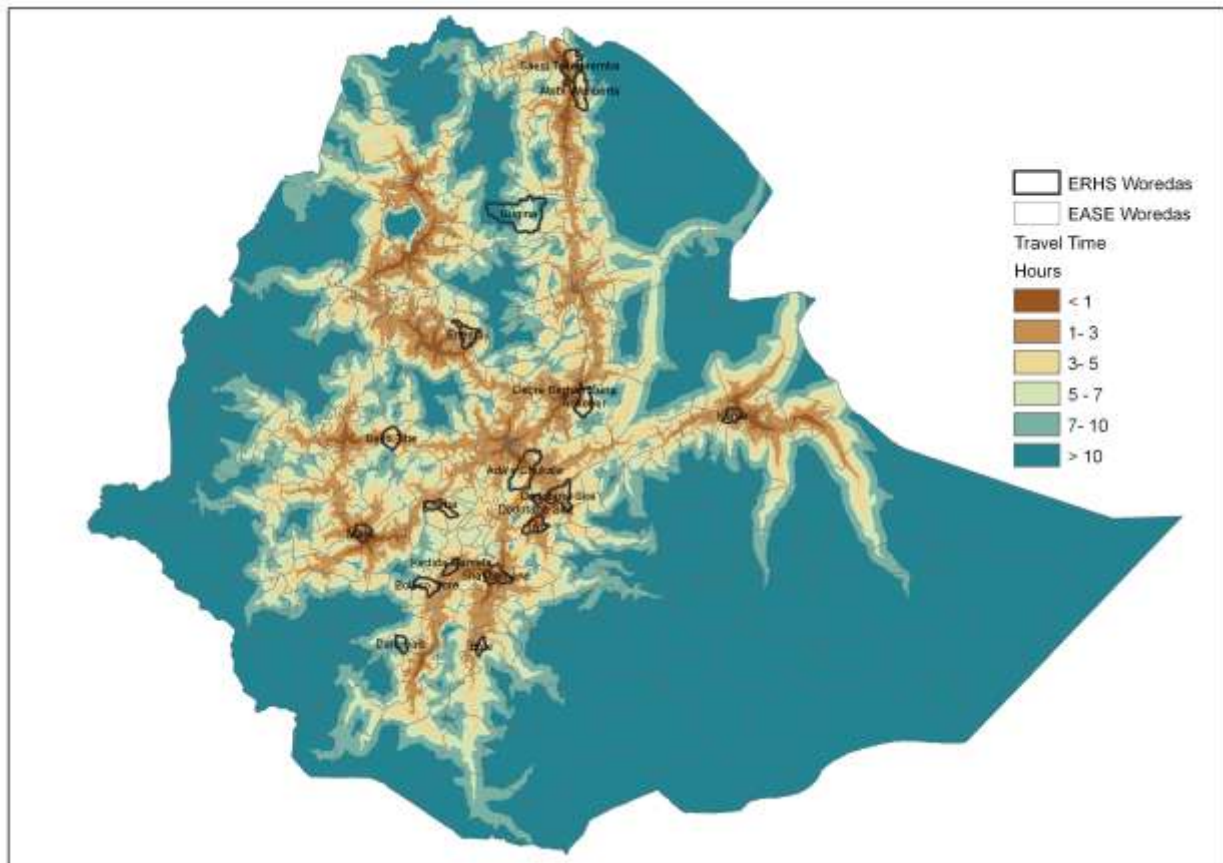
To understand to what extent migration from the ERHS villages is rural-to-urban versus other types of migrations, we next attempt to decompose migration rates by destination type, meaning "rural" or "urban". Categorizing internal migration in Ethiopia as either rural-to-urban or rural-to-rural is actually complicated, in part because there is no universal definition of "urban" that truly captures various levels of urbanization across a country (World Bank 2009). One significant hint as to the composition of migration from ERHS villages is that destinations are remarkably diverse; they span 106 woredas across 10 regions (Figure 3.3). As a result, much migration is likely rural-to-rural migration in Ethiopia, which implies migration is not causing much urbanization. However, to quantify flows as either rural-to-urban or rural-to-rural, we have to first define "urban".

Figure 3.1. Locations and migration prevalence from ERHS villages, Migrant Tracking Survey, 2009



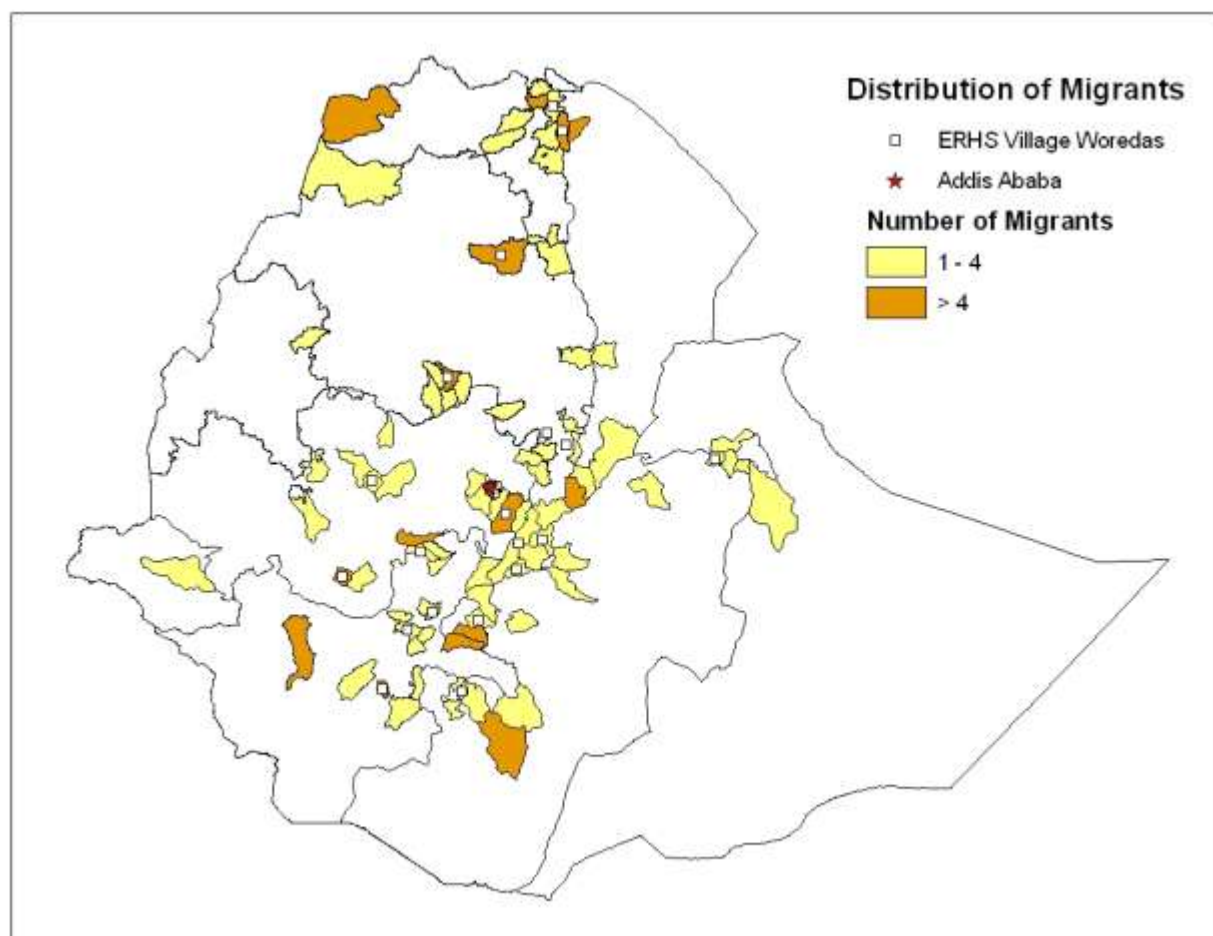
Source: Author's calculations based on Migrant Tracking Survey

Figure 3.2. Travel time to nearest city of 50,000 people



Source: EASE (2004), as quoted in Schmidt and Kedir (2009).

Figure 3.3. Destinations of migrants from ERHS villages, Migrant Tracking Survey



Source: Author's calculations based on Migrant Tracking Survey

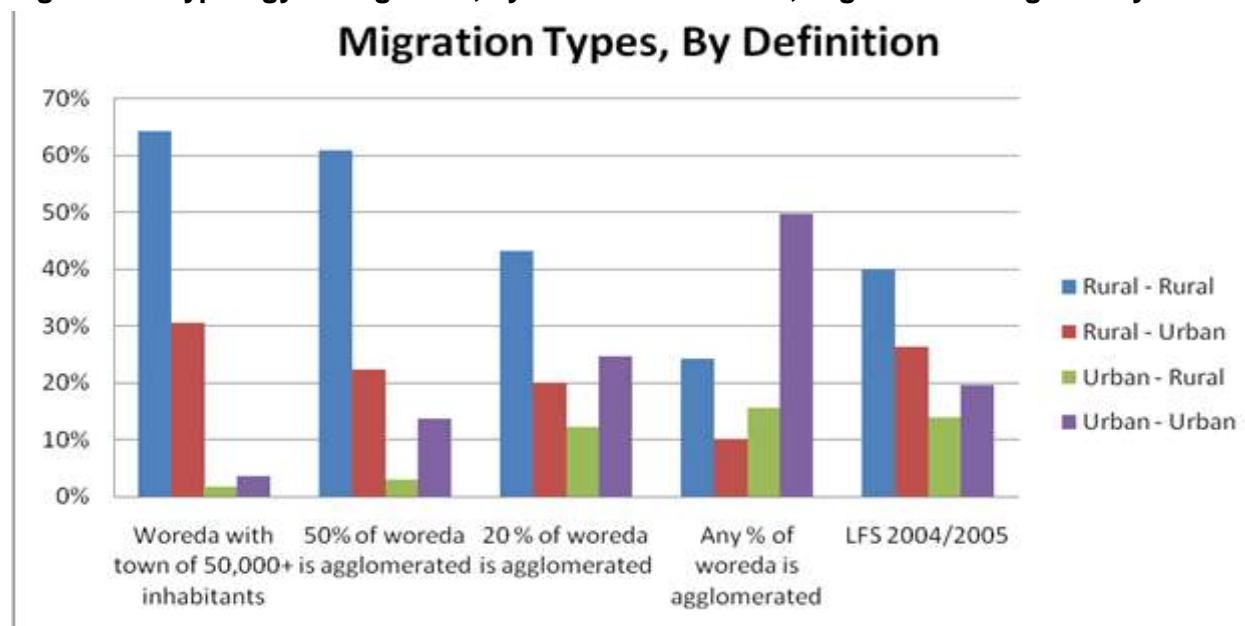
It is particularly difficult to define “urban” in Ethiopia, given the small number of large cities. We therefore demonstrate how migration rate calculations are sensitive to defining urban areas in two different ways, and then compare these rural-urban migration rates to rates computed from the 2004-5 Labor Force Survey (LFS; Figure 3.4).²⁹ The strictest definition of urban qualifies cities with at least 50,000 people. The last three definitions are based on an agglomeration measure developed by Schmidt and Kedir (2009).³⁰ We classify urban based on the percent of land area that is agglomerated in each woreda: 50 percent of area agglomerated, 20 percent of area agglomerated, and any percent of area agglomerated. The migration rates computed under the 20 percent area agglomerated definition most resemble those calculated from the LFS (CSA 2006).³¹ Not surprisingly, as the definition of urban becomes more inclusive, more migration is categorized as rural-urban, urban-urban, or urban-rural.

²⁹ The LFS is nationally representative.

³⁰ The agglomeration index identifies a 1 km² area in a GIS dataset as urban or rural based on the conjunction of two factors: travel time of 1 hour or less to a city of 50,000 people or less and a population density of 150 people per square kilometer. Schmidt and Kedir have calculated this agglomeration index for every square kilometer of Ethiopia's countryside, and aggregated it to the woreda level.

³¹ The Ethiopia Central Statistical Authority defines urban as a locality with a population of 2,000 or more, or as a locality of less than 2,000 inhabitants whose primary occupation is not agricultural. Therefore, the national definition of urban comprises a wide range of city and towns which may or may not be considered urban by an international audience. Particularly with respect to migration within Ethiopia, it is important to bear in mind that migration from a town with 2,000 inhabitants to a second town with just over 2,000 inhabitants represents quite a different type of migrant than moving from a town with 2,000 inhabitants to a city with over 100,000 inhabitants.

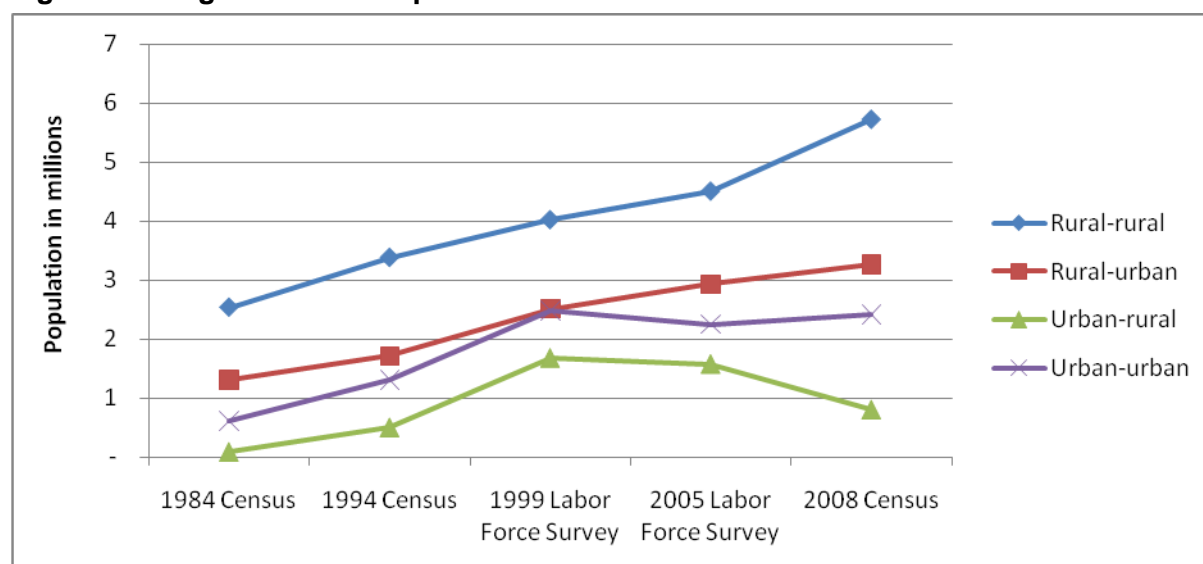
Figure 3.4. Typology of migration, by definition of urban, Migrant Tracking Survey



Source: Author's calculations

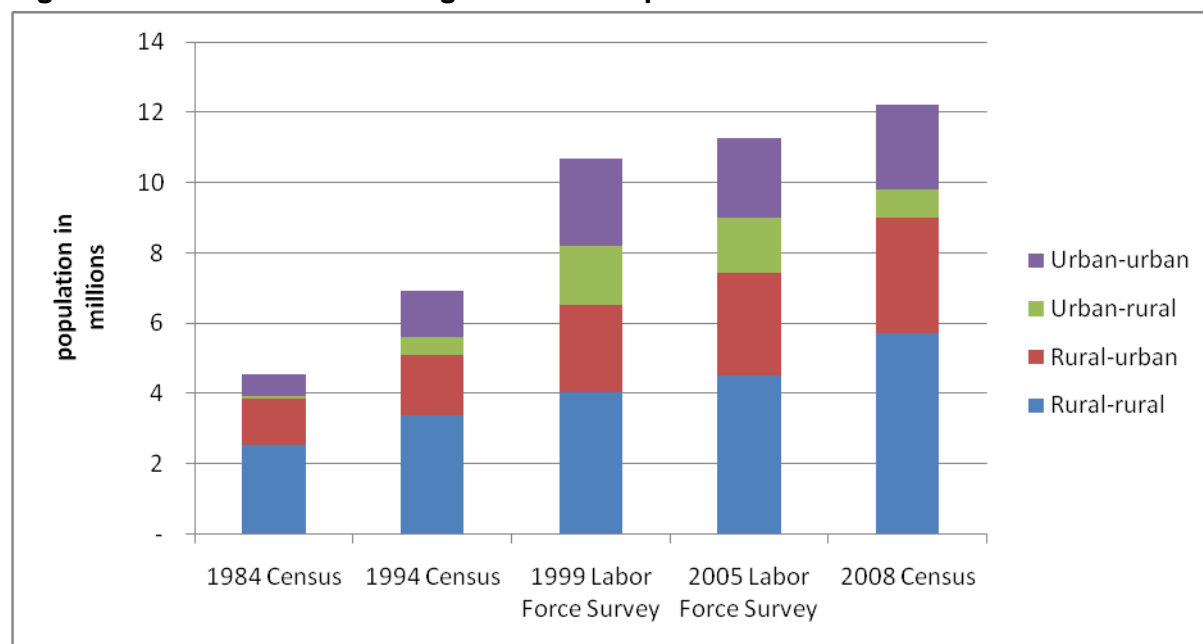
One of the most striking aspects of Figure 3.4 is that regardless of the definition of rural and urban, the modal type of migration is rural-rural migration. Perhaps because of the low level of urbanization in Ethiopia, when people migrate they use connections to other more local places, which often does not include one of the larger cities in Ethiopia. The trends in migration pattern, as well as the share of each type of migration are presented in figures 3.5 and 3.6. As much migration is rural-rural, it may have different motivations than rural-urban migration, and therefore we, in the regression analysis to follow, separately estimate the determinants of rural-urban and rural-rural migration using both the 50,000 inhabitants and 20 percent area agglomerated urban definitions.

Figure 3.5. Migration in Ethiopia over time



Source: Author's Calculations

Figure 3.6. Share of internal migrants in Ethiopia over time



Source: Author's Calculations

3.3.2. Migrant characteristics

Before studying the determinants of migration, it is worth discussing the individual characteristics of migrants and the households that they leave. In this subsection, we describe migrant characteristics taken from the tracking survey, and then compare migrant source households to non-migrant households in the primary ERHS data set.

Migrants in the tracking survey tend to be younger, single males at the time surveyed (Table 3.2). Just under two-thirds of the located migrants are male, and over half (57.2 percent) of them are single. Almost half of them (47.6 percent) are between the ages of 19 and 25, and 35.8 percent of them are between 26 and 40, so most of the tracked migrants are young and of prime working age. Migrants tend to also have at least a primary school education. Whereas a few migrants have no schooling at all (14.7 percent), the majority have 5 years of schooling or more (65.5 percent) which is considerably more than similar individuals in the 2009 round of the ERHS (33.7 percent).³² We find that a wide range of ethnic groups are represented among the migrants that were found, which reflects the ethnic diversity of the ERHS sites more generally. The majority of migrants are Orthodox Christian (53 percent). Some migrants also belong to community groups, such as *iddirs* (burial societies), *iqqubs* (Ethiopian Rotating Credit and Savings Associations), *mehabirs* (social organizations), or labor organizations, though one can neither conclude that such membership is necessary nor sufficient to migrate.

³² We use the 2009 round of the ERHS restricting individuals to continuing household members between the ages of 18 and 65 for comparison of education levels.

Table 3.2. Characteristics of ERHS migrants, Migrant Tracking Survey

	Percentage		Percentage
Male	62.0	Ethnic Group	
Age (years)		Amhara	30.4
Less than 10	0.3	Oromo	20.0
10-18	8.6	Tigrayan	12.5
19-25	47.6	Kembata	10.9
26-40	35.8	Wolaita	9.9
over 40	7.7	Other	16.3
Marital Status		Religion	
Married, single spouse	32.0	Orthodox Christian	53.0
Single	57.2	Protestant	26.8
Divorced/Widowed/Other	10.8	Muslim	15.3
		None/Other	4.9
Completed education		Social Networks	
None	14.7	Belongs to <i>iddir</i>	20.1
<5 years	17.9	Belongs to <i>iqqub</i>	16.0
Between 5 and 8 years	30.4	Belongs to <i>mehabir</i>	8.0
Between 9 and 12 years	17.9	Belongs to labor org.	5.8
Completed higher education (not university)	13.4		
Completed university education	3.8		
Literacy program/Religious school/Other	1.9		
		<i>Observations</i>	313

Source: Author's calculations based on Migrant Tracking Survey

We next compare the occupations of migrants prior to and after their moves, using the self-reported data from the tracking survey (Table 3.3). Migration clearly usually leads to occupational change, though some former students may migrate to their first type of employment. Prior to leaving, three of every four migrants were either working on the farm (43.0 percent) or in school (32.4 percent). After migrating, only a small percentage of migrants work on the farm (14.1 percent). Instead, the majority of migrants are employed in many different types of wage earning employment.

Table 3.3. Occupations of migrants before and after ERHS village move, Migrant Tracking Survey

	Prior to Migration	Post-Migration
Farm worker	43.0	14.1
Daily laborer	3.5	23.3
Domestic work/Housekeeper	9.6	12.8
Self-Employed	5.1	16.6
Teacher	1.6	12.1
Student	32.4	0.6
Other Salaried Employment	1.3	11.2
Other/Unemployed	3.5	9.3
Number of Obs.	312	313

Source: Author's calculations based on Migrant Tracking Survey

To begin to evaluate whether migrant households may be inherently different in terms of ability or wealth endowments than non-migrant households, we next compare asset, land, and demographic characteristics of migrant and non-migrant households (Table 3.4).³³ We find suggestive evidence of negative selection, as migrant households have less land than non-migrant households. Migrants tend to come from households with a greater number of males of prime working age, between 16 to 40 years old. They also tend to come from households with older household heads (54 years old versus 50 years old), who rely less on agriculture as their primary source of income. Household head's ethnicity and religion also differentiate migrant and non-migrant households. Though migrant households appear negatively selected in terms of wealth, they are likely to have an access to an external network, which suggests the transaction costs may deter migration behavior when such networks are not available. Taken as a whole, these underlying differences suggest that inadequate economic situations, issues related to land scarcity, and external support may motivate migrants' to move elsewhere, given that migrant households both have less land, more members, and support outside of the village.

Table 3.4. Comparing household characteristics by migration status, 2004-05 ERHS

	Non-migrant households		Migrant households		Diff. in means T statistic
	Mean	Std Dev.	Mean	Std Dev.	
Characteristics of Household Head					
Head is female (1=yes)	0.26	0.44	0.24	0.43	0.67
Head is literate	0.39	0.49	0.33	0.47	1.56
Age of Household Head	50.2	14.8	54.20	13.49	-3.97***
Head has non-agricultural occupation	0.03	0.18	0.08	0.27	-2.47**
Head primarily does domestic work	0.17	0.38	0.13	0.34	1.77*
Head's ethnicity is Amhara	0.28	0.45	0.27	0.44	0.01
Head's ethnicity is Oromo	0.34	0.47	0.24	0.43	2.81***
Head's ethnicity is Tigrayan	0.09	0.29	0.12	0.32	-0.97
Head's ethnicity is Gurage	0.04	0.19	0.08	0.27	-1.47
Head's ethnicity is Kembata	0.04	0.19	0.10	0.29	-2.48**
Head's ethnicity is Gedeo	0.09	0.28	0.05	0.21	2.11**
Head's religion Orthodox Christian	0.52	0.50	0.54	0.50	-0.62
Head's religion Orthodox Muslim	0.26	0.44	0.15	0.36	2.87***
Head's religion Orthodox Protestant	0.17	0.38	0.23	0.42	-1.41
Males ages 16 through 40	0.92	0.86	1.26	1.04	-5.09***
Females ages 16 through 40	1.02	0.80	1.06	0.92	-0.63
Tropical livestock units	3.30	3.44	3.72	4.02	-1.39
Ln(land)	0.19	0.95	-0.05	1.13	2.75***
Head's parent official in kebele or elsewhere	0.16	0.37	0.16	0.37	0.14
Household iddir membership outside of village	0.08	0.28	0.12	0.33	-1.38
Support network outside of village	0.19	0.39	0.28	0.45	-2.88***
Number of Obs.		1212		221	

Source: ERHS, 6th round, for variables and ERHS migrant tracking survey for categorization of households.

³³ We were not able to track all migrants, and we might be concerned about differences between households that include tracked migrants and migrants that could not be tracked. We evaluated the differences according to three groups of households (households with no migrants, households with at least one tracked migrant, and households without a single tracked migrant) and find very few statistical differences between the households with at least one tracked migrant and households without a single tracked migrant.

3.3.3. Determinants of internal migration

There are several competing hypotheses in the migration literature that attempt to explain the individual or household decision making process that determines migration behavior. In this study, we focus on understanding which factors drive households to send a household member to live elsewhere in Ethiopia. There are four important factors we want to highlight: the wage differential between the source village and the destination, migrant networks, and two factors follow from the New Economics of Labor Migration (NELM), which stem from the idea that migration often occurs to overcome capital market imperfections; here, we focus on migration that might have been influenced by either land scarcity or income risk (Stark 1991).³⁴

Before discussing those factors, it is worth considering two factors that are often determinants of migration briefly – the wage differential and migrant networks. If households perceive that wages are higher in some distant market than the value marginal product of labor at home, the likelihood of sending away a migrant increases. There are two concepts encompassed in the wage differential that are almost impossible to measure well – the wages faced at the potential destinations and the value marginal product of labor in the household. The destination wages are difficult to measure because the actual destinations that potential migrants choose or do not choose between are not known to the analyst, and the value marginal product of labor in the household is difficult to estimate because households often participate in multiple forms of production and few household members work for wages, particularly in rural areas. Therefore we proxy for wage differentials, or at least lower value marginal products of labor on the farm, by including household demographic characteristics and the education level of the household head in regressions. If local labor markets are thin, larger numbers of working age household members proxy for lower value marginal products of labor within the household, whereas educated members proxy for higher value marginal products of labor.

Migrant networks are often an important determinant of migration. Networks outside the village can reduce the costs associated with migration such as the uncertainty of employment, income, and other moving costs (Carrington, Detragiache, and Vishwanath 1996; Taylor and Martin 2001). As a result, we would expect households with better social networks outside of villages to have higher migration rates.

3.3.4. Land as a determining factor of migration

We consider how land holdings and rights might affect the decision of whether or not to move. We begin by considering property rights over land (Table 3.5). While 18.3 percent of migrants claim their land was registered under their name prior to the move, only 1.9 percent of migrants indicated that their departure affected the right to use land in the ERHS village. Moreover, most of the migrants have transferable land rights prior to the move. Over three fourths of migrants (77.6 percent) claim having the right to transfer land, and 87.5 percent note that their land was certified. Since migrants suggest that they continue to have fairly strong property rights over land, property rights may not play a large role in migration decisions. Land scarcity, in turn, appears more relevant to the migration decision (Table 3.6, row 9). About, 40 percent of migrants state land shortages influenced their decision to move. This finding is consistent with the comparison of averages among migrant and non-migrant households (Table 3.3); migrant households have less land on average. Therefore, the

³⁴ Government policies also likely influence migration behavior, however, it is unclear which channels they affect or how these policies are enforced. For example, the National Population Policy of Ethiopia (1993) discourages rural-urban migration and states explicitly the need to balance the population spatially but the mechanism used to enforce this is not specified. Similarly, the National Urban Planning Institute (2003) mentions historical policies that prevented the hiring of labor which can reduce the incentives for individuals to migrate to other rural areas, but it remains unclear the extent these practices exist today.

descriptive statistics combine to suggest that land scarcity rather than land property rights may be a key determining factor in whether or not households decide to send out migrants.

Table 3.5. Relationship between land rights and land holdings and moving decision, Migrant Tracking Survey

	Percentage	Number of Obs.
Family had right to use land in the ERHS village prior to move	93.9	312
Migrants' departure affected the right to use land in the ERHS village	1.9	313
Land registered in migrant's name prior to his move	18.3	311
Migrant or his family had the right to transfer land to someone else when moved	77.6	313
Conditional on having right to transfer land, can transfer land to anyone	15.6	243
Conditional on having right to transfer land, can transfer land to child	82.7	243
Conditional on having right to transfer land, can transfer land to other relative	1.7	243
Family's land is certified	87.5	313
Having shortage of land impacted decision to move	39.9	313
Conditional on shortage of land affecting move, migrant motivated to try to acquire land in another location	16.9	124
Conditional on shortage of land impacting move, migrant motivated to try to work elsewhere	75.0	124
Conditional on shortage of land impacting move, migrant motivated to try to acquire land in another location or work elsewhere	8.1	124

Source: Author's calculations based on Migrant Tracking Survey

3.3.5. Risk as a determining factor of migration

Households in rural Ethiopia face numerous risks to income. Severe and frequent droughts warrant government protection in the form of food aid or safety net programs (Gilligan and Hoddinott 2007; Gilligan et al. 2009). Other shocks, such as the illness of family members, have generated additional informal mechanisms for risk sharing such as *iddirs*, or burial societies (Dercon et al. 2008). Migration may be used to mitigate the potential damages caused from shocks by sending migrants to work or live elsewhere (Rosenzweig and Stark 1989). Since remittance transactions are low (as we will show shortly), it is more likely that migrants depart to facilitate the household's ability to smooth consumption when facing a transitory shock.

We examine whether the timing of the migrant's move coincided with the shocks realized by the individual migrant (Table 3.5) or the ERHS household (Table 3.6). Approximately 20 percent of migrants moved the year that they claim to experience a rise in food prices, and only 7.4 percent of the moves coincide with the year of a drought. Shocks do not appear to be a strong determinant of migration, at least in an *ex post* sense. We conduct the same exercise timing the most important ERHS household shocks (from the 2009 round) with the year the migrant moved (Table 3.7).³⁵ We find fewer migrants move the year the household reports experiencing a food price increase, but the portion that do move is still large (17.3 percent). A greater number of moves coincide with the time a household experiences a drought than when a migrant reports facing a drought (13.7 percent). These figures suggest that households may be responding to shocks by sending members to migrate elsewhere.

³⁵ We consider any of the three most important year-specific shocks experienced by the ERHS household in the five years prior to 2009.

Table 3.6. Years of most important shocks coinciding with year of move, Migrant Tracking Survey

Shock	Moved year of shock		Moved year after shock	
	Frequency	%	Frequency	%
Food price rise	45	14.4	17	5.4
Death of family member	7	2.2	7	2.2
Illness of family member	10	3.2	10	3.2
Pests or diseases affecting crops/livestock	4	1.3	2	0.6
Drought	10	3.2	13	4.2
Total Migrants	313		313	

Source: Author's calculations based on Migrant Tracking Survey

Table 3.7. Timing migrant movement with household shock exposure, ERHS 2009

Shock	Moved year of shock		Moved year after shock	
	Hh. Freq.	%	Hh freq.	%
Food price rise	26	8.3	28	9.0
Death of family member	13	4.2	10	3.2
Illness of family member	10	3.2	13	4.2
Pests or diseases affecting crops/livestock	15	4.8	11	3.5
Drought	19	6.1	24	7.7
Total Migrants	313		313	

Source: Author's calculations based on Migrant Tracking Survey

Next, we test whether there are significant differences between household exposures to shocks by migration status (Table 3.8). Specifically, we compare the proportion of ERHS households reporting specific shocks by year and migration status. The results show that fewer non-migrant households report experiencing a drought in EC 2000, and the difference in prevalence between migrant and non-migrant households is statistically significant. The other difference was for households that had experienced an illness or death of a family member in the last five years.

The evidence comparing exposure to shocks by migration status suggests a potentially interesting motivation for migration. It is possible that households eject a family member as food becomes scarce.³⁶ Alternatively, households may send migrants elsewhere to help cope with the shock *ex post* by sending back remittances, instead of sending them out *ex ante*, as insurance. However, given that monetary transactions between migrants and ERHS households are rare, this possibility seems unlikely for the average household in Ethiopia.

³⁶ Few migrants receive transfers from the ERHS, thus, households do not appear to pay migrants to leave, which would be an extension of the "ejection" hypothesis. Only 15 of the 211 non-remitting migrants are received a transfer from the ERHS household in the past 12 months.

Table 3.8. Comparing shock exposure of households by migration status (ERHS panel)

	No migrants		Tracked migrants		T stat diff. in means
	Mean	SD	Mean	SD	
Drought 2001	0.02	0.12	0.02	0.15	-0.68
Drought 2000	0.24	0.43	0.34	0.47	-2.76***
Drought 1999	0.03	0.18	0.04	0.20	-0.53
Drought 1998	0.02	0.12	0.01	0.09	1.03
Drought 1997	0.01	0.10	0.01	0.09	0.25
Drought 1996	0.00	0.04	0.00	0.07	-0.61
Rise in food prices 2001	0.11	0.31	0.10	0.29	0.49
Rise in food prices 2000	0.40	0.49	0.44	0.50	-1.38
Rise in food prices 1999	0.06	0.23	0.06	0.24	-0.32
Rise in food prices 1998	0.00	0.06	0.01	0.09	-0.94
Rise in food prices 1997	0.00	0.05	0.00	0.00	1.76*
Rise in food prices 1996	0.00	0.04	0.00	0.00	1.03
Death or illness in last five years	0.34	0.47	0.42	0.49	-2.22**
Households	1212		221		

Notes: T-statistics uses village-clustered standard errors. *** p < 0.01, ** p < 0.05, * p < 0.10.

Source: Author's calculations

3.4. Internal migration model and results

To estimate the determinants of migration, we follow the literature and model factors that influence the decision of household h to send a migrant and the number of migrants selected after 2004/05 in a multivariate framework:

$$M_{h,2009} = \alpha + X_{h,2004}\beta + Shock_h\delta + \sum_{j=1}^J V_j + \varepsilon_{h,2009} \quad (1)$$

The dependent variables are calculated from the 2009 migrant tracking survey. X is a vector of household characteristics from the 2004/05 round of the ERHS panel survey. We include the following characteristics of the household head: indicator variables for female heads, whether the age is over 40 years, primary occupation (non-agricultural occupation, disabled or not in labor force, or primarily domestic work including housewife, where farming is the omitted category), literacy,³⁷ and ethnic background (Oromo, Tigrayan, Gurage, and Other, where Amhara is the omitted category).³⁸ To control for demographic differences, we include variables measuring the number of male and female household members of prime working age (16 through 40 years). We also include two measures of household wealth, household livestock holdings, measured in tropical livestock units, and the logarithm of land holdings, measured in hectares. To control for the availability of social networks outside the village, we include a variable which describes whether at least one of the five most important people the household relies on for support resides outside of the village. Finally, we account for the possibility that observable or unobservable village characteristics affect household migration decisions by including a complete set of village dummy variables, V . We estimate whether or not households send out migrants and the number of migrants sent out using ordinary least squares, accounting for potential within-neighborhood correlation of outcomes by clustering the standard errors at the neighborhood level, where neighborhoods lie within villages.³⁹

³⁷ Literacy is assumed if the head of household completed an adult literacy program or at least the third grade.

³⁸ There are several ethnic groups in our sample. We focus on the four ethnic groups that have been reported to be the most mobile according to the 1994 Population Census, Amhara, Oromo, Tigrayan, and Gurage (Basso et al. 2001).

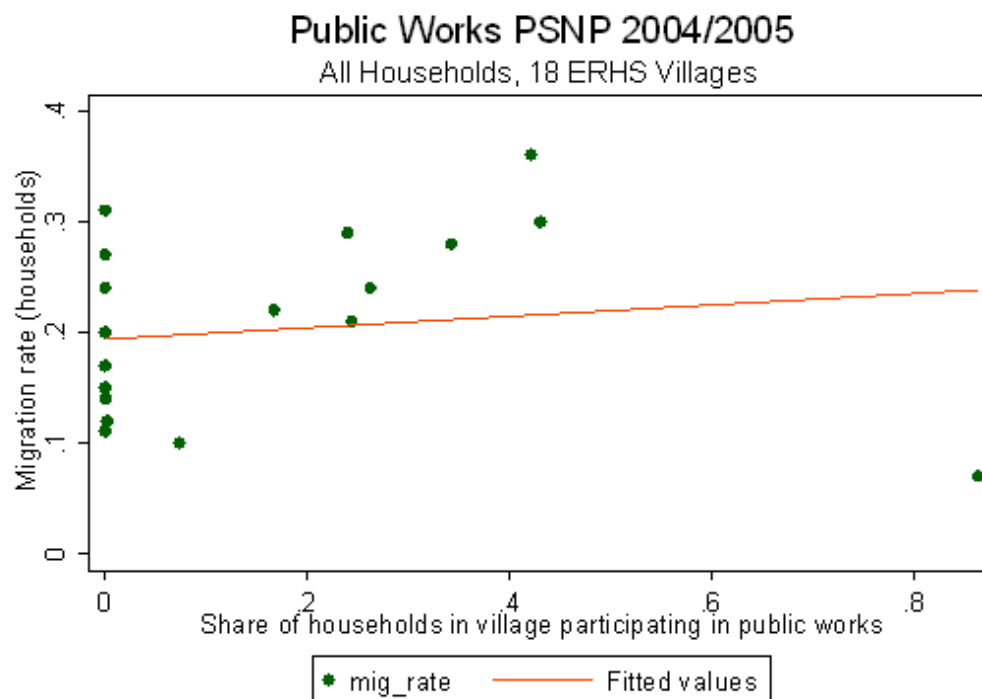
³⁹ For the migration indicator variable, the estimation strategy essentially uses a linear probability model (LPM), rather than a non-linear model such as a logit or a probit. The advantage of the LPM is that it does not impose arbitrary restrictions on the error term, and produces accurate predictions of the probability for the values of variables close to the sample average

In addition to land constraints, we evaluate the role risk plays on migration by including measures of risk, *Shock*. The shock information is taken from the ERHS 2009 round, where the household reports the three major shocks they have experienced in the last five years and their specific years. We posit income risk associated with droughts mostly threatens rural household livelihoods in Ethiopia. The relevant drought to our sample of migrants, as shown earlier, is the drought of 2008, or 2000 according to the Ethiopian calendar (EC). We also control for other competing idiosyncratic shocks that have been tied to income risk elsewhere such as a death or illness in the family (Yang 2008). It has been shown that burial societies in Ethiopia are devoted to mitigating damages from such risk (Dercon et al. 2008). Because droughts are covariate shocks, there are fewer mechanisms available for households to cope with such risk and can render migration a more palatable risk management strategy than in the case of idiosyncratic shocks.⁴⁰

(Wooldridge 2002). Furthermore, coefficient estimates are easily interpreted as marginal effects. Finally, a disadvantage of the LPM is in its limitations to predict probabilities for values of the explanatory variables close to 0 and 1, as it does not restrict predictions to be between 0 and 1 as in other models.

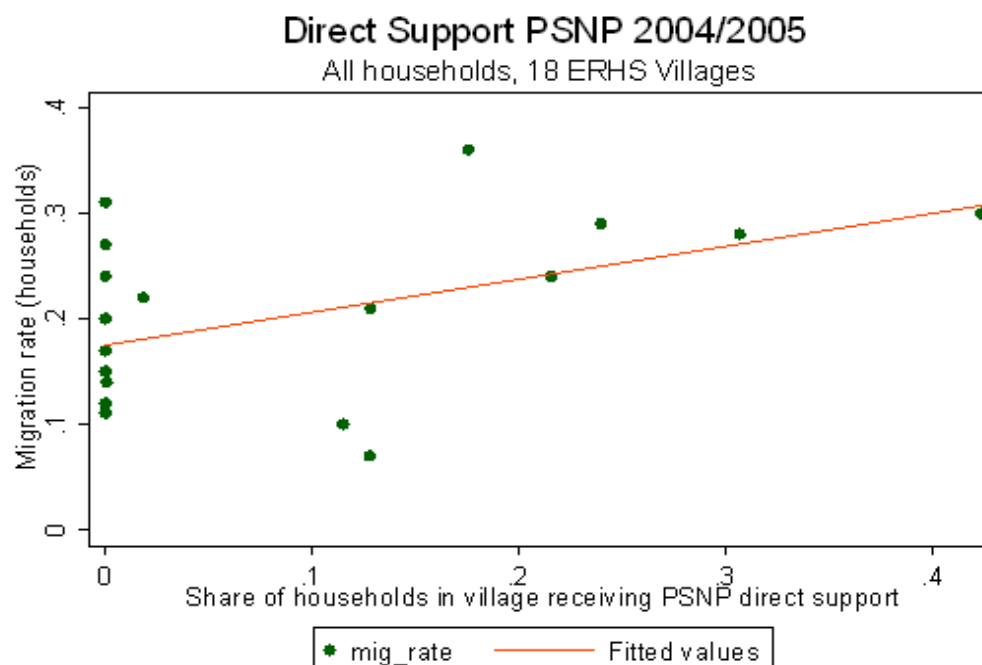
⁴⁰ It is possible that our drought parameter estimate will suffer from bias without controlling for participation in social protection programs. Gilligan, Hoddinott and Taffesse (2009) find that participants of the Protective Safety Nets Program (PSNP) are more likely to meet a minimum level of consumption. If liquidity constraints affect mobility, then access to PSNP could affect the household's use of migration in response to risk. While we are unable to identify the impact of PSNP access on migration using our current framework, we graph the share of households with migrants on the share of households in 2004/05 that had access to public works (Figure 3.7) and direct support (Figure 3.8). Access to public works has little effect on migration rates. Direct support appears to increase migration. This suggests that our drought parameter may suffer from positive bias. Moreover, it suggests that liquidity constraints may explain the low mobility in Ethiopia, since cash transfers provide additional resources to finance migration or reduces the opportunity cost of sending migrants elsewhere. We intend to evaluate the role of social protection policies on migration more explicitly in future work.

Figure 3.7. Public works access by migration rates



Source: Author's Calculations

Figure 3.8. Direct support access by migration rates



Source: Author's Calculations

We initially estimate equation (1) using both the migrant household indicator variable and the number of migrants as dependent variables (Table 3.9).⁴¹ The results are largely consistent with the hypotheses that we presented in the descriptive component of the report. First, we find evidence that demographic characteristics matter. Households with older household heads are more likely to send out migrants; they are also more likely to have children in the proper demographic age range to migrate. The former finding is consistent with findings based on the 1994 Population Census (Basso et al. 2001). Second, the number of male members between the ages of 16 and 40 increases both the probability of migration and the number of migrants. In households with more members of prime working age, the shadow cost of agricultural labor is lower, and therefore the opportunity cost of sending out migrants is lower.

Table 3.9. Determinants of migration, ERHS and Migrant Tracking Survey, 2009

	(1) At least one migrant	(2) Number of migrants
Female headship	0.00994 (0.0340)	0.0367 (0.0497)
Head's age greater than 40 years	0.110*** (0.0278)	0.172*** (0.0366)
Head has non-agricultural occupation	0.119** (0.0586)	0.135 (0.0833)
Head is disabled or not in labor force	-0.0423 (0.0491)	-0.0849 (0.0611)
Head primarily does domestic work	-0.0554 (0.0366)	-0.120** (0.0517)
Head is literate	-0.0171 (0.0258)	-0.0304 (0.0336)
Head's ethnicity is Oromo	0.0806** (0.0346)	0.0901 (0.0583)
Head's ethnicity is Tigrayan	0.126** (0.0499)	0.167** (0.0762)
Head's ethnicity is Gurage	-0.0649 (0.0509)	-0.125 (0.0813)
Head's ethnicity is Other	0.105* (0.0553)	0.0657 (0.0791)
Support network outside of village	0.0505** (0.0245)	0.0613* (0.0346)
Tropical livestock units	0.00304 (0.00421)	0.00418 (0.00485)
Ln(land)	-0.0333*** (0.0109)	-0.0481*** (0.0161)
Males ages 16 through 40	0.0657*** (0.0133)	0.108*** (0.0216)
Females ages 16 through 40	0.00199 (0.0137)	0.0280 (0.0201)
Drought 2000 major shock	0.0425 (0.0293)	0.0560 (0.0395)
Death or illness major shock last five years	0.0257 (0.0211)	0.0416 (0.0296)
Households with migrants	221	221
Observations	1433	1433
R-squared	0.096	0.110

Notes: Neighborhood-clustered standard errors in parentheses. Village fixed effects included.

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

Source: Author's calculations based on ERHS and Migrant Tracking Survey

Consistent with the migration literature, we find that social networks are a positive, significant determinant of migration. Households with social networks that extend beyond the village

⁴¹ It is worth noting that the signs on coefficients estimated using the LPM, logit, and probit are always the same, and marginal effects estimated from the logit and probit model near the mean of the explanatory variable are also almost the same as those estimated using the LPM.

are more likely to send out migrants. As a result, the cost of migrating for such households is lower, assuming that those networks are used in securing employment or a place to live in the destination.

We find evidence that land constraints are important to predicting the probability and intensity of migration, holding other things constant. The more land a household had access to, the less likely they are to have sent out migrants. This finding suggests again that opportunity costs may affect migration a great deal; if landholdings are lower, the marginal product of labor on the farm is lower holding other factors constant, and so households may be more inclined to send out migrants.

The head of household's age, ethnicity, and primary occupation (only in (1)) affect migration decisions. Our migrant households tend to have older household heads. The Oromo (only for the migration dummy outcome), Tigrayan, and other ethnic households (only for migration dummy outcome) are more likely to migrate than households of Amharan background.

Finally, our initial regression results show that land constraints are a more important story in determining migration than shocks faced by households. Vulnerability to the major drought in the past five years, which took place in EC 2000, or having a death or illness related shock in the last five years bears no consequences on the decision to send a migrant or the number of migrants. Note that we do not define the migration decision as occurring after one of these shocks, so the test here is not a clean test of the causality of migration as an ex post risk reduction strategy. However, we did not find significant correlations between the drought variable as specified here and more recent migration, either. It could also be that the timing of the exposure to the shock will vary for the household (e.g., some households will immediately be affected and others with savings may be affected by the shock more slowly). Therefore, we explore how sensitive the risk parameter estimates are to the specification of the drought variable shortly.

Next, we explore whether the determinants of migration and the determinants of the number of migrants per household differ when we specify migration as only rural-rural migration (Table 3.10). We first use the more expansive definition of rural, which includes all areas with populations under 50,000 (rows 1-2). In rows 3 and 4, we use the more restrictive definition of rural, which includes areas that are less than 20 percent agglomerated. Although we have much lower migrants when using the latter definition of rural, results largely do not differ for the two definitions. We find that the head of household's age, primary occupation, and ethnicity are significant determinants of rural-rural migration. However, the type of primary occupation that matters differs by model. The Oromo ethnicity parameter is positive and robust across specifications, as is the Tigrayan ethnicity parameter (under urban definition 1). Access to networks and initial male labor endowment continue to have a robust, positive effect on migration. Interestingly, the estimated coefficient on land per capita loses its significance for the first definition of rural, and the magnitudes of the coefficients change by the second definition. Meanwhile, the estimated coefficient on the variable indicating drought in EC 2000 is positive and significant for the first definition of rural, but not the second. These results at least suggest that drought is important for determining a certain type of migration; migrants who go to another rural area, by its broadest definition, may be seeking any type of employment when the household's agricultural production is stressed. Land scarcity may similarly only play a role in determining a certain class of migration. However, it is worth noting that in these regressions rural-urban migrant households have been reclassified into the non-migrant category. In other words, the regression is estimating the determinants of rural-rural migration alone, not controlling for other types of migration. As a result, some of the estimated determinants of migration overall may not be as apparent for rural-rural migration if they are also important determinants of rural-urban migration.

Table 3.10. Determinants of rural-rural migration, ERHS and Migrant Tracking Survey, 2009

	(1) At least one rural-rural migrant 1	(2) Number of rural-rural migrants 1	(3) At least one rural-rural migrant 2	(4) Number of rural-rural migrants 2
Female headship	-0.00921 (0.0277)	0.0119 (0.0426)	0.0201 (0.0259)	0.0398 (0.0364)
Head's age greater than 40 years	0.0830*** (0.0241)	0.109*** (0.0295)	0.0565** (0.0224)	0.0760*** (0.0278)
Head has non-agricultural occupation	0.0593 (0.0465)	0.0515 (0.0580)	-0.0184 (0.0277)	-0.0409 (0.0313)
Head is disabled or not in labor force	-0.00690 (0.0423)	-0.0370 (0.0431)	0.00964 (0.0380)	-0.0129 (0.0383)
Head primarily does domestic work	-0.0269 (0.0286)	-0.0642 (0.0481)	-0.0485* (0.0269)	-0.0826** (0.0407)
Head is literate	-0.00858 (0.0221)	-0.0162 (0.0270)	-0.00473 (0.0179)	-0.0133 (0.0226)
Head's ethnicity is Oromo	0.0616** (0.0295)	0.0704* (0.0361)	0.0455** (0.0214)	0.0567** (0.0281)
Head's ethnicity is Tigrayan	0.116*** (0.0373)	0.147*** (0.0534)	0.0448 (0.0436)	0.0596 (0.0523)
Head's ethnicity is Gurage	-0.0153 (0.0454)	-0.0313 (0.0661)	-0.0144 (0.0433)	-0.0300 (0.0586)
Head's ethnicity is Other	0.0168 (0.0338)	0.00152 (0.0349)	0.0345 (0.0313)	0.00560 (0.0394)
Support network outside of village	0.0438* (0.0226)	0.0597** (0.0288)	0.0348* (0.0197)	0.0471* (0.0239)
Tropical livestock units	-0.000852 (0.00276)	8.89e-05 (0.00323)	-0.000916 (0.00205)	0.000130 (0.00257)
Ln(land)	-0.0197 (0.0121)	-0.0233 (0.0141)	-0.00925 (0.00760)	-0.0134 (0.00967)
Males ages 16 through 40	0.0355*** (0.0101)	0.0498*** (0.0153)	0.0237** (0.00917)	0.0343** (0.0144)
Females ages 16 through 40	0.000824 (0.00988)	0.0188 (0.0140)	0.00140 (0.00862)	0.0164 (0.0139)
Drought 2000 major shock	0.0512** (0.0235)	0.0738*** (0.0278)	0.00651 (0.0167)	0.0235 (0.0210)
Death or illness major shock last five years	-0.00519 (0.0174)	0.00962 (0.0214)	-0.0185 (0.0142)	-0.00580 (0.0170)
Households with migrants	143	143	92	92
Observations	1433	1433	1433	1433
R-squared	0.064	0.071	0.105	0.103

Notes: Neighborhood-clustered standard errors in parentheses. Village fixed effects included. *** p<0.01, ** p<0.05, * p<0.1

Source: Author's calculations based on ERHS and Migrant Tracking Survey

To similarly study rural-urban migration, we use the same two definitions of “urban” to construct measures of the determinants of rural-urban migration (Table 3.11). Very few variables are significantly related to rural-urban migration; we still find that the age of the household head and the initial male labor endowment of working age affect migration. There are likely two factors that lead to the abundance of insignificant coefficients. First, few households have rural-urban migrants. Second, we are not controlling for other types of migration, so factors that also influence other types of migration may be confounded. One non-result is particularly interesting; we find that social capital does not appear to have a relationship with migration, which may be attributed to the lack of strong networks in urban areas. We find no significant relationship between either land scarcity or drought exposure and rural-urban migration, but these results may have to do with confounding factors from rural-rural migration. That said, we do find that if a family member died in the past five years, by the first definition of “urban” there is a positive association with migration.

Table 3.11. Determinants of rural-urban migration, ERHS and Migrant Tracking Survey, 2009

	(1) At least one rural-urban migrant 1	(2) Number of rural-urban migrants 1	(3) At least one rural-urban migrant 2	(4) Number of rural-urban migrants 2
Female headship	0.00824 (0.0176)	0.00604 (0.0212)	-0.00610 (0.0189)	-0.00225 (0.0230)
Head's age greater than 40 years	0.0352*** (0.0122)	0.0513*** (0.0165)	0.0314*** (0.00944)	0.0386*** (0.0114)
Head has non-agricultural occupation	0.0101 (0.0335)	0.00781 (0.0420)	-0.00424 (0.0282)	-0.0176 (0.0301)
Head is disabled or not in labor force	-0.00890 (0.0414)	-0.0311 (0.0436)	-0.0168 (0.0363)	-0.0278 (0.0349)
Head primarily does domestic work	-0.0265 (0.0207)	-0.0337 (0.0244)	-0.0174 (0.0164)	-0.0228 (0.0209)
Head is literate	-0.000906 (0.0149)	-0.00269 (0.0165)	-0.0100 (0.0116)	-0.0121 (0.0133)
Head's ethnicity is Oromo	0.0248 (0.0314)	0.0352 (0.0437)	0.0238 (0.0274)	0.0354 (0.0415)
Head's ethnicity is Tigrayan	0.0201 (0.0366)	0.0600 (0.0548)	0.0517 (0.0437)	0.0564 (0.0461)
Head's ethnicity is Gurage	-0.0552** (0.0266)	-0.0788* (0.0410)	-0.0165 (0.0502)	-0.0245 (0.0664)
Head's ethnicity is Other	0.0848 (0.0580)	0.0881 (0.0779)	0.00103 (0.0243)	-0.0171 (0.0392)
Support network outside of village	0.0150 (0.0123)	0.00462 (0.0150)	0.00684 (0.0119)	0.00512 (0.0142)
Tropical livestock units	0.00242 (0.00174)	0.00250 (0.00255)	0.000905 (0.00146)	0.000514 (0.00192)
Ln(land)	-0.00784 (0.00650)	-0.00882 (0.00828)	-0.00214 (0.00628)	8.90e-05 (0.00741)
Males ages 16 through 40	0.0295*** (0.00926)	0.0411*** (0.0130)	0.0123 (0.00771)	0.0156 (0.00993)
Females ages 16 through 40	0.00234 (0.00973)	0.00397 (0.0120)	0.00321 (0.00626)	0.00416 (0.00677)
Drought 2000 major shock	0.00371 (0.0211)	-0.0113 (0.0236)	0.0133 (0.0144)	0.00936 (0.0151)
Death or illness major shock last five years	0.0270** (0.0123)	0.0372** (0.0169)	0.0114 (0.0107)	0.0137 (0.0131)
Households with migrants	71	71	51	51
Observations	1433	1433	1433	1433
R-squared	0.106	0.094	0.127	0.118

Notes: Neighborhood-clustered standard errors in parentheses. Village fixed effects included. *** p<0.01, ** p<0.05, * p<0.1.
Source: Author's calculations based on ERHS and Migrant Tracking Survey

To this point, we find that land scarcity appears to be a more important determinant of migration than shocks, and particularly the drought that occurred in EC 2000. To confirm this

finding, we test various definitions of the drought variable (Table 3.12). First, we use the self-reported household measures but change the timing of the shock to whether the household experienced a drought within the last five years, and in years EC 2000 or 2001. Neither measure is significantly related to the migration variables. We also try a more aggregated measure; we calculate the share of households in each neighborhood that reported the EC 2000 drought as one of the three major shocks experienced in the past five years.⁴² We find that the neighborhood measure is both positively and significantly associated with migration. There are two potential explanations for this result. First, it might be that using the household reports essentially mis-measures the importance of the drought shock in EC 2000. Second, it could be that the neighborhood measure is simply more important to explaining migration. A large neighborhood level shock might affect both local opportunities, if any exist, and it might stress any informal local risk sharing arrangements, again if any exist. As a result, households with access to social networks outside the village might use them. We cannot differentiate between these two explanations.

In summary, the empirical modeling finds four important determinants of internal migration at the household level in Ethiopia. First, we find that demographic factors are positively associated with migration; households with more male members of prime working age send out more migrants. Second, we find that social networks are important; households with access to social networks outside the village are more likely to send out migrants. Third, we find that household land per capita is negatively associated with migration, implying negative selection on wealth. Finally, we find that when we construct a measure of the severity of the drought shock at the neighborhood level in EC 2000, it has a positive association with migration. It could be that the neighborhood shock is better at predicting household migration than the individual level shock because it better reflects the intensity of the rainfall shock. If so, this result demonstrates that shocks can affect the probability of migration.

⁴² In the last specification, we exclude households without specific neighborhood information and from less represented neighborhoods; we require that at least five households came from the same neighborhood to ensure that the estimated proportion of neighborhood households experiencing the shock is not too high variance. As a result, the overall sample is smaller and the number of migrant households in the sample declined from 221 to 176.

Table 3.12. Determinants of migration, varying measures of drought, ERHS and Migrant Tracking Survey, 2009

	(1) At least one migrant	(2) Number of migrants	(3) At least one migrant	(4) Number of migrants	(5) At least one migrant	(6) Number of migrants
Female headship	0.0236 (0.0321)	0.0490 (0.0461)	0.0235 (0.0322)	0.0490 (0.0461)	0.0479 (0.0378)	0.0850 (0.0546)
Head's age greater than 40 years	0.0977*** (0.0276)	0.159*** (0.0365)	0.0981*** (0.0274)	0.159*** (0.0363)	0.113*** (0.0320)	0.174*** (0.0417)
	0.127**	0.145*	0.127**	0.145*	0.184**	0.208**
Head has non-agricultural occupation	(0.0568)	(0.0781)	(0.0568)	(0.0780)	(0.0708)	(0.0995)
	-0.0536	-0.0953*	-0.0542	-0.0959*	-0.0241	-0.0705
Head is disabled or not in labor force	(0.0455)	(0.0568)	(0.0457)	(0.0568)	(0.0555)	(0.0691)
Head primarily does domestic work	-0.0619* (0.0356)	-0.124** (0.0495)	-0.0626* (0.0356)	-0.125** (0.0494)	-0.0706* (0.0421)	-0.151** (0.0579)
Head is literate	-0.0132 (0.0250)	-0.0259 (0.0324)	-0.0134 (0.0250)	-0.0261 (0.0324)	0.0165 (0.0273)	0.00322 (0.0355)
Head's ethnicity is Oromo	0.0889** (0.0355)	0.0995* (0.0584)	0.0899** (0.0353)	0.101* (0.0582)	0.0965*** (0.0346)	0.0832 (0.0578)
Head's ethnicity is Tigrayan	0.149*** (0.0514)	0.188** (0.0747)	0.150*** (0.0520)	0.190** (0.0748)	0.131*** (0.0471)	0.158** (0.0757)
Head's ethnicity is Gurage	-0.0593 (0.0518)	-0.113 (0.0818)	-0.0594 (0.0518)	-0.113 (0.0823)	-0.0144 (0.0464)	-0.0865 (0.0836)
Head's ethnicity is Other	0.123** (0.0572)	0.0836 (0.0789)	0.125** (0.0567)	0.0855 (0.0783)	0.123** (0.0613)	0.0809 (0.0863)
Support network outside of village	0.0508** (0.0239)	0.0614* (0.0334)	0.0508** (0.0239)	0.0614* (0.0334)	0.0580** (0.0272)	0.0709* (0.0385)
Tropical livestock units	0.00323 (0.00418)	0.00435 (0.00481)	0.00319 (0.00418)	0.00431 (0.00481)	0.00636 (0.00451)	0.00671 (0.00521)
Ln(land)	-0.0328*** (0.0115)	-0.0478*** (0.0162)	-0.0327*** (0.0114)	-0.0477*** (0.0162)	-0.0356*** (0.0108)	-0.0522*** (0.0173)
Males ages 16 through 40	0.0619*** (0.0133)	0.104*** (0.0216)	0.0618*** (0.0134)	0.103*** (0.0217)	0.0772*** (0.0140)	0.129*** (0.0229)
Females ages 16 through 40	0.00441 (0.0133)	0.0305 (0.0196)	0.00446 (0.0133)	0.0306 (0.0196)	-0.00356 (0.0151)	0.0183 (0.0211)
Drought major shock last five years	0.0271 (0.0250)	0.0273 (0.0318)				
Drought 2000 or 2001 major shock			0.0277	0.0282		

	(1) At least one migrant	(2) Number of migrants	(3) At least one migrant (0.0250)	(4) Number of migrants (0.0353)	(5) At least one migrant	(6) Number of migrants
Share of households in village reporting drought 2000					0.120** (0.0521)	0.197*** (0.0735)
Death or illness major shock	0.0260 (0.0208)	0.0414 (0.0287)	0.0251 (0.0207)	0.0405 (0.0287)	0.0405* (0.0224)	0.0467 (0.0318)
Observations	1483	1483	1483	1483	1164	1164
R-squared	0.092	0.107	0.092	0.106	0.132	0.134

Notes: Neighborhood-clustered standard errors in parentheses. Village fixed effects included in all regressions. *** p<0.01; ** p<0.05; * p<0.1.

Source: Author's calculations based on ERHS and Migrant Tracking Survey

3.5. Welfare implications of migration

In this section, we consider both the economic linkages between migrants and households left behind, from a descriptive perspective. The main benefits to the source household from migration, at least while the migrant is away, come in the form of migrant remittances, so we begin by describing remittance patterns in the ERHS. Second, we study both whether migrant households are better off post-migration than non-migrant households, and we study whether or not migrants are better off than non-migrant members of migrant households after migration occurs. Although it is not possible to accurately measure differences in income, we can measure aspects of diet and subjective happiness that give strong indications as to whether or not migrants or migrant households are better off.

3.5.1. Migrant remittances

From the perspective of maximizing the total income of the entire source household, households may send out migrants expecting that migrants will remit money or gifts back to the households. In countries with strong patterns of international migration, remittance rates among households with recent out-migrants often exceed 80 percent (e.g. Taylor and Wyatt 1996, for Mexico-US migration). In many countries with relatively established migration patterns, migrants associated with source households often remit at relatively high rates (Table 3.13). In a nearly nationally representative sample collected in rural China in 2000, 66.4 percent of internal migrants remitted money or goods in-kind to the source household (author's calculation; for survey description see Rozelle et al. 1999). The rate is nearly identical among a sample of poor households collected in El Salvador in 2008; 70.8 percent of internal migrants remitted to the household (de Brauw 2011).⁴³ We find a much lower rate in the rural subsample of the 1993 LSMS collected in South Africa (World Bank 1993); there, only 29.7 percent of internal migrants remitted. However, it is not as clear that finding work was the major activity of migrants in South Africa, and the survey took place at a tumultuous time in South Africa's history, which might have affected remittance rates.

Table 3.13. Remittance rates among internal migrants from rural areas, China, El Salvador, and South Africa

	China CNRS, 2000	El Salvador Red Solidaria Evaluation Survey, 2008	South Africa 1993 LSMS
Number of Migrant Households	542	328	512
Percent Receiving Remittances	66.4	70.8	29.7

Notes: China National Rural Survey was conducted in late 2000 in 6 provinces of rural China. El Salvador Red Solidaria evaluation survey was conducted in early 2008 in 50 rural municipios that are designated as either poor or severely poor. The South Africa LSMS is a nationally representative living standards survey and the rural subsample is used here. In all three cases, efforts were made to use definitions of migration similar to the definition used for Ethiopia in this case, and households that only had access to international migrants were excluded.

Similar to South Africa, we find low remittance rates among migrants in the ERHS tracking survey. Only 33 percent of the tracked migrants sent remittances back to their source households (Table 3.14).⁴⁴ Conditional on remitting, average remittances were 716 Birr. Given low remittance rates, one might wonder if financial flows move from source households to migrants; however, we find that very few migrants report receiving gifts or money in the past 12 months (21 out of 244). Therefore, quite clearly financial flows between migrant households and migrants are less frequent than one might expect. Although it is tempting to immediately conclude that remittance rates are much lower among internal

⁴³ In the El Salvador sample, 85 percent of international migrants remitted to households, so remittance rates among internal migrants are actually relatively low.

⁴⁴ This percentage includes the twenty-two households that migrated since 2004-5, and allows for multiple migrants that live in distinct households.

migrants than elsewhere, it is important to note that 2009 was marked by rapid inflation and high food prices in a relative sense, and as a result migrants might have had less ability to remit. We further verify remittance flows from internal migrants are lower than in most countries, by measuring the proportion of households that received remittances from individuals living outside of their village in the 2004-5 and 2009 ERHS rounds. We find remittances remain relatively low, however, have increased over time. For example, 1.77 percent of households received remittances from individuals residing outside of their village in 2004-5 compared to 3.49 percent of households in 2009.

Table 3.14. Comparing reports of transfers sent by migrants to ERHS households with reports of transfers received by ERHS households, 2009

	Migrant Tracking Survey	ERHS 2009
Total Transfers Received	243.7 (650.0)	203.1 (789.8)
Number Reporting Positive Transfers	84	83
Total Transfers received, conditional on positive transfer	716.4 (953.5)	590.0 (1263.1)
Remittances Received/Sent	114 (439.9)	73.1 (324.0)
Number Reporting Positive Remittances	33	36
Remittances, Conditional on Positive Remittances	772.7 (905.4)	540.1 (732.7)
Value of Gifts Received/Sent	127.6 (411.2)	65.8 (301.8)
Number Reporting Positive Gifts	56	44
Value of Gifts Received/Sent, Conditional on Positive Gifts	555.8 (710.3)	364.7 (634.9)

Notes: Standard deviations in parentheses.

Source is migrant tracking survey in column 1 and ERHS in column 2.

We confirm remittance flows back to origin households are infrequent by comparing the ERHS household data with the migrant tracking data (Table 3.14). We cannot trace exactly the flows from migrant to household in the ERHS data, because the individual from whom transfers were received was not recorded. However, we can attempt to match up the self-reported transfers sent from migrants to ERHS households with transfers ERHS households report receiving. Discrepancies could occur if households also received transfers from individuals who were not considered migrants by our definitions, if transfers were received from individuals who migrated previous to the 2004/05 survey round, or due to some time elapsed between the migration survey (October-November 2009) and ERHS survey (April-June 2009). We find the remittance rates between data sources are remarkably similar (Table 3.14, column 2). That said, households report receiving much lower transfers than those reported by migrants. Whereas migrants report average total transfers to ERHS households of 716 birr, households from which migrants were tracked report an average of 590 Birr. Had the average been higher, we might have thought that households were receiving additional transfers. But because the average is lower than among migrants, it suggests that the difference between migrant and ERHS reports may be from differences in memories about transfer amounts or the sensitivity of timing to transfers receipts.

3.5.2. Comparing measures of well being by migration status

Households that send out migrants have less land per capita than other households, *ceteris paribus*, yet few households receive remittances. These two facts might seem opposed; one might expect migrants to send back money if the household they left is clearly quite poor. But migrants may lead to a different benefit among source households – they may help relax

constraints on food consumption, since there is one less mouth in the household to feed after the migrant leaves. To investigate whether migration might help relax credit constraints, we compare measures of vulnerability to food scarcity collected in both the 2004/05 and 2009 ERHS rounds by migration status. There are few significant differences in vulnerability to food scarcity by migration status (Table 3.15). Migrant households incur greater losses over time. By the 2009 round, migrant households report having food scarcity issues for 3.43 months compared to 2.97 months for non-migrant households. We also find a statistical difference in the consumption of particular food items where migrant households reported eating less cereal items (teff, barley, wheat, maize, and sorghum). It should be noted that migrant households also appear to eat more meat (mutton, chicken, and beef) and animal products (meat items plus eggs, butter, milk, and yogurt), however, the critical value for a statistical difference in those variable means is 15 percent. Our findings suggest that households may relocate members to relax consumption constraints, as the consumption patterns of migrant households are the same if not worse than non-migrant households.

Table 3.15. Comparing food scarcity of households by migration status, ERHS panel

ERHS Round	No migrants			Tracked Migrants			T test
	ERHS Round			ERHS Round			Diff.
	2004/5	2009	Hhs	2004/5	2009	Hhs	in mean
	Mean	Mean		Mean	Mean		change
Months had problems satisfying food needs last year	2.48	2.97	1160	2.44	3.43	214	-1.86*
Suffered shortage of food to eat during last rainy season	0.60	0.60	1247	0.60	0.63	228	-0.73
During worst month, number of times a day adults eat	1.99	1.75	716	2.01	1.81	149	-0.44
During worst month, number of times a day kids eat	2.45	2.06	680	2.46	2.02	142	0.42
During worst month, number of times a day adults eat	2.95	2.62	720	2.97	2.99	149	-1.55
During best month, number of times a day kids eat	3.32	2.88	683	3.37	2.85	145	0.54
Times in last week consumed meat		0.41	1301		0.61	236	-1.60†
Times in last week consumed animal products		2.80	1301		3.37	236	-1.55†
Times in last week consumed cereals		11.18	1301		9.94	236	2.24**†

Notes: T-statistics uses village-clustered standard errors. Migrant households not present in round 7 are omitted.

*** p < 0.01, ** p < 0.05, p < 0.10.

† Differences in mean levels.

Source: Author's calculations based on ERHS

Although we do not have a good overall wealth measure available to compare welfare levels among migrants and the households they leave behind, we can use data on specific types of food consumption that reflect improved well-being. Levels of consumption of specific types of animal products are strong indicators of overall welfare in Ethiopia, as consumption of these products is relatively infrequent. We measure whether or not migrants reported consuming either meat or other animal products in the migrant tracking survey, and we do the same for ERHS households in both the 2004/05 and 2009 surveys.⁴⁵ In the measure of animal products, we add eggs and dairy products to meat. We first compare the frequency of consumption among migrants and the households they left behind (Table 3.16, columns 1-3). We find that migrants eat significantly more meat and other animal products than

⁴⁵ The food consumption table was not filled out in about one-third of the migrant surveys (84 of 224). In most of these cases, migrants reported purchasing meals outside the home, or having eaten meals almost exclusively provided by their employers. Since the non-response rate is relatively high, we provide descriptive statistics that use inverse probability weighting to account for the missing data (Wooldridge 2007). To construct weights for the evaluation, we estimate a probit model where the dependent variable is an indicator for whether the migrant reported consumption data. The explanatory variables that we include in the model are categorical variables for gender, age, education, occupation prior to the move, and urban destination, distance travelled and its squared term, and regional destination and origin dummy variables. The model explains 17 percent of the variation in reporting consumption in the tracking survey according to the pseudo R-squared. The predicted probabilities are then inverted and used as weights for the descriptive statistics. The intuition is that the households who are less likely to have reported consumption but did so receive more weight in the descriptive statistics than households who are more likely to have reported consumption.

members of migrant households, and the consumption frequency of grains is similar. For example, we find that over the past 7 days, 40 percent of migrants ate meat, whereas only 13 percent of households ate meat.⁴⁶ The frequency of consumption of meat is also significantly higher among migrants than among household members. These statistics suggest that at least in terms of diet, migrants are better off than current household members.

Table 3.16. Comparison of consumption among migrants with ERHS household consumption, 2004 and 2009

	2009			Difference, 2004 and 2009		
	Average, Migrants	Average, Migrant Households	t statistic, difference in means	Average, Migrants (2009)	Average, Migrant Households (2004)	t statistic, difference in means
Consumption of food items in past 7 days						
Meat	0.40	0.13	7.02***	0.40	0.20	4.61***
Animal Products	0.67	0.44	4.90***	0.67	0.50	3.62***
Grains	0.95	0.94	0.23	0.94	0.81	4.37***
Frequency of consumption, past 7 days (2009 only)						
Meat	0.83	0.42	3.25***			
Animal Products	3.12	3.33	-0.53			
Grains	8.42	10.03	-3.35***			
Number of Migrants		239			245	

Notes: t statistics are based on standard errors that are clustered at the village level. 2009 comparison refers to migrants from migrant tracking survey and migrant households to data from the 2009 ERHS survey. 2009 and 2004 comparison refers to migrants from migrant tracking survey and migrant households from the 2004/5 ERHS survey.

Averages among migrants are weighted using inverse probability weighting to account for missing data.

*** indicates significance at the 1 percent level.

Source: Author's calculations based on ERHS

We also compare migrant consumption frequencies among migrants in 2009 to consumption frequencies in the 2004/05 ERHS, when they were still members of the household (Table 3.16, columns 4-6). The intuition behind this comparison is to somewhat crudely observe whether the migrant is better off, again in terms of consumption of animal products, than they had been five years ago. We find that now, migrants are more likely to have reported eating meat, other animal products, and cereals than their households had been in the 2004/05 survey. These statistics combine to suggest that at least in terms of diet, migrants are better off overall than they both had been in the previous survey round and than they would be if they continued to live in the ERHS household.

Last, we examine changes in measures of subjective happiness among household heads of both migrant and non-migrant households, when data is available in both rounds (Table 3.17). By several measures, the data suggest that heads of migrant households are not better off than heads of non-migrant households. For example, the percent of heads agreeing with the statement, "I am richer than my father was at my age" increases by 12 percentage points between the 2004/05 and 2009 rounds among non-migrant households, but does not change among migrant households (row 2), and the difference in changes in answers is significant at the 5 percent level. We also find a significant difference in the change in answers to the statement, "I am satisfied with my life," and in answers to the statement "Taken all together, I would say I am happy", the latter at the 10 percent level. Finally, even though migration can be a strategy for ex ante risk coping (e.g. Giles 2006), heads of non-migrant households are both more likely to state they can obtain 100 birr within a week in an emergency, and the growth in the proportion of heads of non-migrant households answering this way is significantly higher than growth among heads of migrant households. This latter result might hint that one way to improve linkages would be to improve access to rural financial services, even rudimentary ones; it could be that migrants simply do not have secure and/or affordable methods of sending back remittances.

⁴⁶ Statistics are similar without inverse probability weighting as well.

Table 3.17. Selected measures of happiness, household heads, by household migration status determined with migrant tracking survey, ERHS 2004/5 and 2009

Statement	No migrants		Tracked Migrants		t test, difference in change is zero
	ERHS Round		ERHS Round		
	2004/5	2009	2004/5	2009	
	Mean	Mean	Mean	Mean	
In the last month, things are going well for me	0.22	0.23	0.22	0.23	-0.004
I am richer than my father was at my age	0.20	0.32	0.30	0.30	2.50**
My life is close to ideal	0.16	0.25	0.16	0.21	1.19
The conditions of my life are excellent	0.14	0.22	0.16	0.15	2.50**
I am satisfied with my life	0.23	0.28	0.27	0.23	2.32**
So far I have gotten the important things I want in life	0.15	0.21	0.15	0.20	0.40
If I could live my life over, I would change almost nothing	0.24	0.21	0.22	0.16	0.51
Taken all together, I would say I am happy	0.66	0.75	0.71	0.69	1.75*
Compared to other households in this village, I am rich	0.14	0.12	0.14	0.13	-0.34
Thinking about my own household circumstances, I would describe my household as rich	0.07	0.08	0.05	0.09	-0.88
I can obtain 100 Birr within a week in an emergency	0.61	0.74	0.64	0.69	1.76*
Compared to a year ago, the overall economic situation of the household is much better	0.39	0.38	0.37	0.32	0.93
Three years ago, I was rich	0.11	0.11	0.15	0.13	0.50
Five years ago, I was rich	0.14	0.18	0.14	0.21	-0.87
In general, I would describe my household as able to meet their needs	0.51	0.50	0.53	0.44	1.45
Sample Size		982		182	

Notes: Variables not available for all households in ERHS surveys.

t-statistics uses village-clustered standard errors. *** p < 0.01, ** p < 0.05, p < 0.10.

Source: Author's calculations based on ERHS and Migrant Tracking Survey

Therefore, we largely find that non-migrant households appear to not only be better off than migrant households along several dimensions, but living standards also appear to improve more among non-migrant households than migrant households. Non-migrant households are slightly more food secure than migrant households, and their heads more likely to agree with statements about subjective happiness than heads of migrant households. Whereas the welfare of migrants appears to have increased, the welfare of members of migrant households seems not to have increased as much.

3.6. Summary

In this chapter, we have used innovative data from a migrant tracking study conducted in the ERHS villages and from the ERHS panel survey to study the patterns and motivations of internal migration from the ERHS villages in Ethiopia. We find that while migration is widespread, it is not very frequent and migrants tend to go to quite varied destinations. Furthermore, by any definition, the modal form of migration is rural-to-rural migration, and rural-to-urban migration is somewhat rare. Since rural-to-urban migration is necessary for urbanization, these data indicate that the slow pattern of urbanization may continue. From a development planning perspective, this pattern suggests that one should be cautious before attempting to rely on agglomeration economies for the future development of the manufacturing or service sectors. Moreover, providing and expanding public services to

many Ethiopians will likely continue to be cost prohibitive, since rural residents will remain in rural areas in large number at least in the medium term.

We also find evidence of some interesting relationships between the propensity to migrate and its determinants. We find some results consistent with the migration literature; for example, households with better networks outside the village are more likely to have sent out migrants. However, we also find that migrant households appear to be negatively selected in terms of land holdings; households with more land are less likely to send out a migrant, holding other things constant. We also find suggestive evidence that households also send out migrants in response to community level weather shocks. These results suggest migration is seemingly quite insurance related. Households with relatively low land holdings lack a buffer against shocks, and households who then are affected by a community wide shock are more likely to send out migrants as a form of *ex post* diversification. With better insurance against shocks, households might be even less inclined to send out migrants.

Finally, we find that by suggestive and subjective measures, migrants are better off after they leave the ERHS household. First, their welfare is greater after migration relative to prior to migration. Second, their welfare is greater than the household members they leave behind. Additionally, non-migrant households' members still appear to be better off by several measures than migrant household members, even in 2009. Despite the living standards gap between migrants and the households they left, we find that remittances are not frequent. There are several reasons that remittance flows might be lower than expected. It could be that it was a poor year for migrants at the destination, due to inflation and/or high food prices, and as a result they did not send back remittances. Migrants may not have access to good or economical methods of sending remittances home. Social norms may further exist that hinder remitting by migrants. Finally, it could be that poor households are simply "ejecting" members to find work away from the source household. This hypothesis, if true, implies that through migration remaining family members free up resources for themselves. Comparisons of food scarcity measures by migration status, suggest that differences in household consumption changes are almost zero.

Finally, we do note that migrants realize benefits to migrating, and as a result one would expect migration to continue in the future. If individuals benefit from migrating out of their village, then this further supports the need to design policies or interventions that can reduce the barriers to migration to enhance over all welfare and reduce poverty.

In the following chapter 'Public Investments Policies', an economy-wide analysis of the implications of alternative public investment choices is presented, taking into account rural-urban migration and possible positive agglomeration effects of increased urban population.

4. Public investment policies

Poverty reduction strategies in Ethiopia have relied primarily on agricultural and rural development investments. This is due to the overwhelming numbers of inhabitants that derive their livelihoods from rural activities. In 2006/07, output of agricultural sectors (much of which is concentrated in Ethiopia's urban areas) contributed 46 percent to GDP whereas agricultural sectors contributed 15 percent in SSA as a whole, and 25 percent of GDP in low income countries in 2005 (Arndt et al. 2009, MoFED 2005). Although the majority of the population lives in rural areas, the government of Ethiopia has identified the need to not only enhance rural – urban linkages, but also address the overwhelming need for urban planning and infrastructure improvement. The Ministry of Finance and Economic Development (MoFED) of Ethiopia contends that “while the focus of much pro-poor development must inevitably remain rural-based, urban development will play a more central role in the next phase of Ethiopia's development” (MoFED 2006).

The Ministry of Finance and Economic Development outlined the challenges facing Ethiopia's urban centers. According to MoFED, 70% of the urban population is considered slum dwellers on the basis of quality of housing, overcrowded living spaces, access to and quality of infrastructure, and security of tenure. Poverty levels in large cities are especially acute. Sixty percent of residents in Addis Ababa are estimated to be living below the poverty line (Meheret 1999). Overall, while rural poverty rates have dropped from 48 to 39 percent from 1995 to 2005, urban poverty rates have increased from 33 to 35 percent over the same period (see Table 1.14). These figures suggest that although investment in agriculture remains a priority, investments in urban areas may need to be re-evaluated to address underperformance in poverty indicators in the cities.

4.1. Overview of public investment scene

It is against this setting that the Government of Ethiopia drafted the National Urban Development Policy (NUDP) which became operational in 2005. Two principal packages make up this policy; the Urban Development Package and the Urban Good Governance Package. A set of initiatives and targeted programs were also outlined under the NUDP which include: strengthening of urban-rural and urban-urban linkages for sustainable development; expanding growth opportunities through balanced development of urban centers; reducing urban poverty and unemployment; increasing participation of the community in different aspects of urban development; constructing strong partnerships with the private sector; and creating more decentralized urban governance. The NUDP highlights the need for expansion of small and micro enterprises in urban areas, construction of low cost houses, improved access to land for private sector investments and urban residents including the poor, and expansion of social services (MoWUD 2006).

In addition to the NUDP, the PASDEP also outlines an urban development strategy with four main pillars. These pillars include: reducing urban unemployment to less than 20%, developing integrated housing in order to reduce slums in Ethiopia's main cities by 50%, improving access to urban land infrastructure and services, and promoting urban-rural and urban-urban linkages. As a strategy to promote rural-urban linkages, the PASDEP outlined small town development as a key instrument to enhance forward and backward linkages. The target includes developing 600 small towns (towns with less than 20,000 people) between 2005/06 and 2009/10.

Of course, rapid urbanization does not necessarily produce growth or improved household welfare. In the absence of sound overall macro-economic policy, sufficient investments in infrastructure, adequate provision of social services and well-functioning institutions (including public security and judicial institutions), rapid rural-urban migration can result in

sprawling slums of underemployed poor people. However, slow urbanization in Ethiopia over the last several decades is somewhat puzzling, when seen in light of other recent developments in the country. Since the fall of the Derg, a federal government structure was put in place that has invested in large public infrastructure, (primarily roads, but also on electricity and telecommunications) during the last ten years which raised rural-urban connectivity and expanded the educational system. In addition to improvements in infrastructure and education, the government has sought a more liberal policy towards markets and resource flows (Rashid et al. 2009), and acknowledges the significance of urbanization and rural-urban linkages for economic growth and poverty reduction.

Overall, the allocation of government spending between rural and urban sectors has reflected the spending priorities of the Agricultural Development Led Industrialization policy. Defining rural expenditures as those on agriculture and road construction outside of Addis Ababa, and urban expenditures as those on urban development and all Addis Ababa expenditures, total identifiable urban expenditures in 2007/08 were 7.5 billion birr, 11.6 percent of total spending (Table 4.1). Total identifiable rural expenditures were 18.6 billion birr, 28.8 percent. “Other” expenditures, including all other categories of expenditures (e.g. education, health, defense, etc.) accounted for the remaining 60 percent of spending.⁴⁷

Table 4.1. Government of Ethiopia expenditures (rural, urban and other), 1999/00 and 2007/08

	1999/00 (bn 07/08 birr)	1999/00 (share)	2007/08 (bn 07/08 birr)	2007/08 (share)	Growth Rate
Recurrent	36.1	79.0%	31.1	48.8%	-7.2%
Urban	1.2	2.7%	1.9	2.9%	22.9%
Rural	1.4	3.1%	3.2	5.0%	49.0%
Other	33.5	73.2%	26.0	40.8%	-11.8%
Capital	9.6	21.0%	32.7	51.2%	84.6%
Urban	1.6	3.5%	5.6	8.7%	86.8%
Rural	3.9	8.5%	15.2	23.8%	97.5%
Other	4.1	9.0%	11.9	18.7%	70.5%
Total	45.7	100.0%	63.7	100.0%	18.1%

Source: Author's calculations from Ministry of Finance and Economic Development Data.

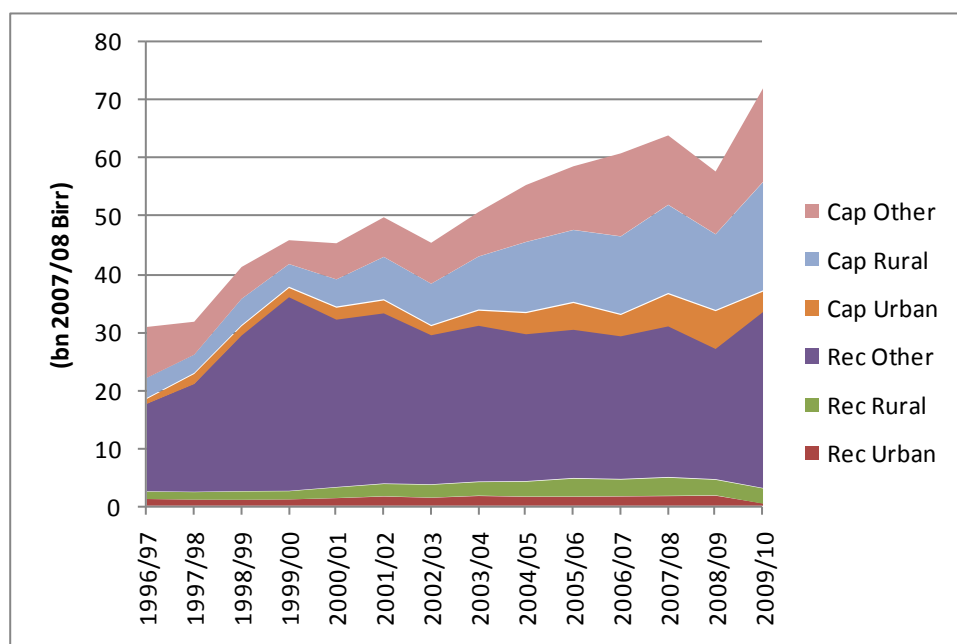
Notes: Urban includes urban development and all Addis Ababa expenditures.

Rural includes agriculture and road construction outside of Addis Ababa.

Over time, government spending has shifted towards investment. Capital (investment) expenditures rose rapidly between 1999/00 and 2007/08 for both rural and urban investments, as well as for “other” investments (Figure 4.1). With recurrent expenditures actually declining in real terms, the share of capital expenditures in the overall budget rose from 21.0 percent to 51.2 percent.

⁴⁷ Further analysis could be undertaken to determine the rural-urban split of some of these categories (particularly education and health).

Figure 4.1. Government of Ethiopia expenditures (rural, urban and other), 1996/97-2007/08



Source: Author's Calculations

Notes: Urban includes urban development and all Addis Ababa expenditures.

Rural includes agriculture and road construction outside of Addis Ababa.

2004/05 to 2008/09 are "pre-actual" figures;

Although Ethiopia is developing the infrastructure, human capital and market processes to spur agglomeration economies, urbanization and industrialization is unachievable without sufficient increases in agricultural productivity. Agricultural surplus at the household level is critical to enabling farmers to release family labor to staff growing factories in the cities, while also maintaining food production at home (Rondinelli 1988). Strong agricultural policies that promote efficient and productive farming practices and hence income earning potentials of farmers in the rural areas are key to promoting urbanization. Ethiopia has underlined the importance of Agricultural Development Led Industrialization (ADLI) through initiatives such as the Rural Development Policies and Strategies (RDPS), Food Security Strategy, Food Security Programme, Productive Safety Net Program, Participatory Demonstration and Training Extension System (PADETES), Sasakawa Global 2000 and the National Extension Intervention Program (NEIP).

The RDPS, as well as the extension and food security programs, aims at providing smallholder farmers with agricultural inputs to promote more intensive production strategies, while also providing drought prone areas with cash and/or food transfers in order to prevent asset depletion during hunger periods. Specifically, different agricultural development packages aim to provide improved seeds and fertilizers, enhanced farm implements and pesticides, expanded extension services, construction of small scale irrigation schemes, minimization of post-harvest losses, and development of livestock resources through improved feed base and veterinary services. Furthermore, RDPS aims to educate rural inhabitants on proper use of land, expand rural infrastructure (health, education, access to safe water, and rural roads), organize accessible rural financial systems for smallholders, and develop and strengthen rural institutions.

Although the RDPS provides input packages to enhance production, the institutional arrangement for the distribution of agricultural inputs and credit may be hindering effective distribution mechanisms. While retail price of fertilizer is liberalized, the institutional arrangement for delivery is controlled by the regional governments and input enterprises.

Credit for fertilizer and delivery of fertilizer are usually organized under one transaction (Dercon et al. 2009). Regardless of the size of the harvest (even where there is crop failure) the credit has to be paid and there is no insurance mechanism or provision for postponement. Coupled with the devaluation and removal of subsidy, this has in fact exposed smallholders to unfavorable relative price movement, high rise in prices of fertilizer relative to crops' prices, and increased the risk involved in using fertilizer (Alemu Zewdu and Malek 2010).

In addition to agricultural input packages and extension and food security programs, an important policy reform needed in order to assure greater labor mobility and enhanced rural-urban linkages is the land tenure and certification program. In order to address uncertainties of land rights, the government set forth a land registration and certification program in 2004/05. Even with this new system, a work commissioned by USAID in 2004 found that rural landholders do not perceive a strong system for tenure rights and contend that although they have land certification papers, they are not protected from government expropriation and periodic land redistribution. Given continued uncertainty, the land certification program has shown little effect at incentivizing agricultural investment and migration thus far. A study completed by Deininger and Jin (2006) assessed farmers perception of land rights and found that most farmers would prefer higher levels of land tenure security. They found that a large share of farmers would change their farming practices and undertake more investments if more tenure security was provided (Table 4.2). Urbanization requires increases in agricultural production as well as labor mobility to seek opportunities of income diversification. If farmers perceive disincentives to migration, they will not respond to economic forces, and efficiency gains from greater economic and geographic interaction are lost.

Looking forward, it is important that Ethiopia set in place the policies needed to incentivize city growth while also supporting the agricultural backbone of the Ethiopian economy. If designed and managed properly, Ethiopia has the opportunity to further develop market centers and cities that provide effective linkages to rural areas and vice versa. Within large cities, demands of good urban governance and accountability, as well as efficient and effective mechanisms for providing key services and infrastructure will be necessary in order to reduce urban poverty. Rural areas will need consistent basic service provision, as well as secure land rights in order to incentivize more efficient and effective linkages to markets. By developing a more holistic strategy that takes into account both the need for rural capacity building and income portfolio diversification, as well as urban development and demand-supply linkages, it is expected that many of the demands echoing from Ethiopia's cities and hinterlands could be recognized.

Table 4.2. Subjective land rights, tenure security and investment in Ethiopia

	Region					
	National	Tigray	Amhara	Oromiya	SNNPR	Others
Land tenure security						
Woreda had redistribution since 1990	9%	14%	18%	6%	4%	4%
Affected by redistribution since 1990	8%	17%	20%	4%	2%	4%
Expects redistribution next 5 years	9%	10%	10%	10%	6%	12%
Expects no redistribution	27%	42%	26%	23%	30%	37%
Has land conflict with authorities	23%	23%	23%	26%	14%	22%
Perceives right to rent/sharecrop	91%	98%	89%	92%	85%	95%
Perceives right to mortgage/inherit	23%	18%	32%	18%	26%	35%
Perceives right to sell	4%	1%	1%	4%	3%	12%
Land tenure preferences						
Prefers higher tenure security	48%	61%	43%	51%	41%	48%
Prefers private ownership	31%	22%	38%	31%	30%	26%
Prefers redistribution	4%	10%	4%	3%	5%	4%
Would invest if land privatized	47%	29%	47%	49%	44%	68%
• build terraces	38%	24%	41%	39%	35%	56%
• plant trees	13%	12%	19%	14%	7%	8%
• adopt other improvements	11%	6%	10%	12%	15%	11%
Actual investment since 1999						
Built or maintained terraces	47%	81%	88%	34%	31%	20%
Planted trees	39%	50%	43%	41%	36%	8%

Source: Deininger and Jin (2006) and EEA/EEPRI (2001)

4.2. Research question and policy issues

This chapter examines the implications of more rapid urbanization in Ethiopia for economic development and structural transformation using a dynamic computable general equilibrium (DCGE) model designed to capture the economic linkages between Ethiopia's rural and urban areas. The country's regional economic structure is described first, using the database compiled for the model, along with special aspects of the model regarding regional production and trade, rural-urban migration, and industrial agglomeration. Then, model results for the three growth strategies are presented, followed by policy implications.

4.3. Ethiopia's rural and urban economies

In developing the rural-urban DCGE model of Ethiopia, we first constructed a rural-urban social accounting matrix (SAM), which is a database that provides a complete picture of Ethiopia's real economy for the year 2005. The SAM was based on an earlier national SAM produced by EDRI (2009), which reconciled a wide range of data sources, including national accounts, supply-use tables, government budgets, and the 2005 Household Income and Consumption Expenditure Survey (HICES). These data were first arranged within a consistent accounting framework containing the incomes and expenditure flows of the government and many producers and households. However, due to different collection methods and accuracies it was necessary to reconcile the information from these data sources. Cross-entropy estimation was used to balance the SAM with as few changes to the original data as possible (see Robinson, Cattaneo, and El-Said 2001). In this section we use the SAM to describe the structure of Ethiopia's rural and urban economies.

4.3.1. National economic structure

Agriculture has performed well over the last few years and has remained the most important sector in the economy. In 2005, agriculture accounted for almost half of the national GDP and four-fifths of total employment (see Table 4.3). Agricultural exports also account for more than two-fifths of total export earnings and two-thirds of goods exports. Coffee, oilseeds and chat are the main export crops, together with certain livestock products. However, there is little downstream value-addition of these crops, with processed agricultural products (e.g., foods) accounting for only a small share of both GDP and total exports.

Table 4.3. Ethiopia's economic structure, 2005

	Share of total (%)			Export intensity (%)	Import intensity (%)
	GDP	Exports	Imports		
Total GDP	100.00	100.00	100.00	6.69	25.60
Agriculture	48.09	46.43	5.41	8.05	4.14
Crops	28.96	39.23	4.61	10.31	5.75
Livestock	14.40	4.55	0.00	3.79	0.00
Other	4.74	2.65	0.80	5.29	4.99
Manufacturing	4.81	16.97	70.50	7.37	67.06
Agro-processing	2.38	4.39	3.23	3.14	15.71
Other	2.43	12.58	67.27	11.97	80.94
Other industry	6.67	0.63	0.24	0.40	0.52
Private services	31.18	35.97	23.84	9.28	16.60
Public services	9.25	0.00	0.00	0.00	0.00

Source: Authors' calculations based on an adjusted version of the 2005 social accounting matrix of Ethiopia (EDRI, 2009).
Notes: Export-intensity is the share of exports in domestic production; import-intensity is the share of imports in domestic demand.

Manufacturing has also grown rapidly in recent years, but it still accounts for less than five percent of national GDP, half of which is in agro-processing. Manufactured exports include mainly textiles and leather, although both subsectors remain small. Most manufactured goods in the country are imported, especially capital goods. For instance, almost all machinery demand in Ethiopia is supplied by imports. The rest of the private sector is dominated by construction and trade services. Finally, the government accounts for almost ten percent of national GDP and is the largest employer of skilled labor in the country.

At the macro-level, Ethiopia's dependence on imported capital goods is reflected in the country's large trade deficit (25 percent of GDP), with total import demand three times larger than export earnings (see Table 1.12). According to EDRI (2009), the external deficit is mostly offset by foreign donor grants (6.6 percent of GDP), private remittance flows (8.3 percent of GDP), and by foreign borrowing by the public sector to finance capital investments (8.9 percent of GDP). Foreign grants are especially important for the public sector as they finance almost half of total current expenditures (i.e., consumption spending and social transfers). Similarly, foreign remittances generate 7.5 percent of total household incomes and a much larger share for non-poor urban households.

4.3.2. Distinguishing cities, towns and rural areas

To capture rural-urban linkages and the spatial impacts of alternative investment strategies, we disaggregated the national economy into three sub-national regions. We first divided the country into rural and urban areas. The former comprises mainly agriculture and some manufacturing and services, such as local food processing, construction and trade. We then used the Industrial Census and HICES to separate out the country's major cities or metropolitan areas, which included the capital city, Addis Ababa, as well as the large regional hubs of Dire Dawa and Harari. Together these cities account for 3.6 million people out of Ethiopia's total population of 71 million in 2005. Since these cities form the core of Ethiopia's formal industrial economy, we treat them as a separate region in the model. The remaining urban centers have a total population of 7.1 million people (i.e., 10 percent of the

population). Therefore, the three regions in the model are (i) urban cities; (ii) urban towns; and (iii) rural areas.

4.3.3. Rural-Urban characteristics

Using the 2005 HICES and 2003 Industrial Census, we disaggregated production and employment across the three regions in the model for each of the 69 sectors in the Ethiopia SAM. The regional SAM indicates that, while rural areas contain 84.9 percent of Ethiopia's total population, they account for only 53.3 percent of national GDP (see Table 4.4). As such, per capita consumption is low in rural areas at US\$121 per year compared to the national average of US\$186 (unadjusted for purchasing power). Low consumption levels are also reflected in higher poverty headcount rates, with 41.8 percent of the country's population living in the bottom two quintiles residing in rural areas. Agriculture is heavily concentrated in rural areas, with an underrepresentation of industry and services compared to the national economic structure. As such, there is a higher concentration of lower-skilled workers in rural areas, including the country's large workforce of unpaid family members.

Table 4.4. Ethiopia's rural-urban economic structure, 2005

	Rural	Towns	Cities	Ethiopia
Population (millions)	60.3	7.1	3.6	71.0
Poor population (millions)	25.2	2.5	0.7	28.4
Consumption per capita (\$US)	121.3	510.9	629.6	186.0
Population share (%)	84.9	10.0	5.1	100.0
Poor population share (%)	88.7	8.9	2.5	100.0
Poverty rate (%)	41.8	35.5	19.2	40.0
Workers (millions)	22.3	2.6	1.3	26.2
Skilled	0.1	0.4	0.2	0.7
Semi-skilled	0.9	1.2	0.8	2.9
Unskilled	6.1	1.0	0.4	7.5
Family farmers	15.2	0.0	0.0	15.2
Total GDP shares (%)	53.3	26.4	20.4	100.0
Agriculture	90.2	9.8	0.0	100.0
Industry	15.0	36.0	49.0	100.0
Services	20.2	43.3	36.5	100.0

Source: Authors' calculations based on an adjusted version of the 2005 social accounting matrix of Ethiopia (EDRI, 2009) and the 2005 Household Income and Consumption Expenditure Survey (HICES).

Notes: 'Cities' include Addis Ababa, Dire Dawa and Harari; 'Towns' include all remaining urban centers.

Per capita consumption is in unadjusted dollars

Even though urban towns account for 7.1 percent of the population, they generate more than a quarter of national GDP. As such, per capita consumption in towns is well above the national average at US\$511 (i.e., almost four times the rural average). Although some agricultural production takes place within the boundaries of urban towns, it is the industrial and service sectors that are most important. Accordingly, of the ten percent of Ethiopia's workforce that work in towns, most have semi-skilled or skilled occupations (e.g., professionals, technicians and transport operators).

Although the three major cities contain only 5.1 percent of the population, they generate 20.4 percent of national GDP, and thus form the industrial core of Ethiopia's economy. Most of Ethiopia's small manufacturing sector is based in cities, especially the formal sector production.

Services, such as hotels, banking and finance, make up more than half of the city economy. Average per capita consumption is highest in the cities at US\$630 per year. This is more than five times larger than consumption amongst rural households, and reflects the sharp divide between rural and urban areas in Ethiopia. This rural-urban divide has been exacerbated by particularly fast growth in urban industry, especially construction within major cities, and the relatively slow pace of internal rural-to-urban migration.

In the next section we develop an economy wide model based on the 2005 rural-urban SAM that will allow us to examine alternative internal migration scenarios and reallocations of public capital investments across rural areas, towns and cities.

4.4. An economy wide rural-urban model of Ethiopia

In order to assess the growth and distributional impacts of alternative regional investment options we developed a DCGE model of Ethiopia. The model is recursive dynamic and is run over the 20-year period 2005-2025. This means that the model is solved as a series of equilibriums with economic actors optimizing their behavior within each period (i.e., there is no inter-temporal or long-run optimization). Given this assumption of adaptive expectations, the model can be separated into a within-period component, in which producers and consumers maximize profits and utility, and a between-period component, when the model is updated to reflect changes in the population and labor force, capital and technology accumulation, and agglomeration economies.

The model is initially calibrated to the 2005 rural-urban SAM, which provides information on demand and production for 69 detailed sectors in each of the three regions (cities, towns and rural areas) identified in the previous section. Based on this SAM, the production technologies in each sector and region are calibrated to their current situation (i.e., 2005) including producers' use of primary inputs, such as land, labor and capital, and intermediate inputs. To capture differences in labor markets, the model classifies employed labor into four occupation-based skill categories: skilled (e.g., managers and professionals), semi-skilled (e.g. technicians and traders), unskilled workers (e.g., farmers and laborers), and unpaid family farm workers. With the exception of family labor, workers are assumed to be fully-employed with flexible nominal wages. Family farm labor has an upward sloping labor supply curve to capture underemployment and incentives from rising wages. Information on both paid and unpaid employment and on wages by sector and region was taken from the 2005 HICES.

Within each period workers in the model can migrate across sectors within cities, towns and rural areas, but between periods they can migrate between these regions in response to wage differentials. As with labor, capital can also move freely across sectors within regions. Between-periods we capture the accumulation of private and public capital, which depends on previous period investments financed by domestic savings and foreign inflows (e.g., donor grants). New private capital stocks are allocated across regions and sectors according to current profit rate differentials, such that regions whose capital is earning above average profits receive a larger share of new capital stocks. The regional allocation of new public capital is determined exogenously based on current patterns. The final factors in the model, agricultural land and livestock, are used exclusively in rural areas and are endogenously allocated across crops in order to maximize returns.

An important factor determining a sector's contribution to economic growth is its linkages with other sectors in its own and other regions. The model captures production linkages by explicitly defining a set of nested constant elasticity of substitution (CES) production functions allowing producers in each region to generate demand for both factors and intermediates. The model also captures forward and backward production linkages between sectors. However, while we include differences in regional production patterns, we assume that there is a national commodity market for traded commodities in Ethiopia. This is equivalent to assuming that producers in cities, towns and rural areas supply their products to a central market and that a national price adjusts to equate demand and supply at the national rather than the regional level. We do allow regional markets for certain non-traded commodities, such as construction and trade services. For these commodities there is a

unique regional price that equates regional demand and supply. Foreign import competition and export opportunities is modeled by allowing national-level production and consumption to shift between domestic and foreign markets depending on the relative prices of imports, exports and domestic goods. More specifically, the decision to supply domestic or foreign markets is governed by a constant elasticity of transformation (CET) function, while substitution possibilities exist between imports and domestically supplied goods under a CES Armington specification.

Incomes from production, trade and employment accrue to different households according to employment and wage data from HICES. Households in the model are disaggregated across the three regions and poor/non-poor groups (i.e., inside or outside of the bottom two per capita expenditure quintiles in 2005). Differences in household income and expenditure patterns are important for capturing distributional change, since incomes generated in different sectors will accrue to different households depending on their location and factor endowments. Households in the model receive income through the employment of their factors of production, and then pay taxes, save and make transfers to other households. Disposable income is then allocated to commodity consumption based on a Stone-Geary utility function (i.e., a linear expenditure system of demand).

The model makes a number of assumptions about how the economy maintains macroeconomic balance (i.e., closure rules). For the current account, a flexible exchange rate maintains a fixed level of foreign savings. This means that the government cannot increase foreign debt to pay for new investments and that export earnings are needed to pay for any additional imports. For the government account, tax rates are fixed and recurrent expenditure grows at a fixed rate. The fiscal deficit therefore adjusts to ensure that public expenditures equal receipts. By contrast, investment is endogenously determined such that investment demand equals available savings (determined by fixed private savings rates as with a savings-driven investment closure).

Three factors determine each region's annual total factor productivity (TFP) growth rate. The first is an initial TFP growth rate, which is determined exogenously in order for the model to broadly track Ethiopia's long-term growth trends after accounting for changes in total factor supplies. The second factor takes into account agglomeration effects caused by changes in the density of economic activity within a particular region. Following Henderson and Wang (2005), we assume that agglomeration spillovers are a function of a region's population density. Combined with the model's treatment of internal migration, this simple specification implies that a region's TFP growth rate accelerates if it is net recipient of migrant workers (i.e., if its population expands faster than its initial growth rate). Given the sparse population of rural areas and the concentration of industry in urban areas, we only allow agglomeration effects to take place in towns and cities. The third and final source of TFP growth is the concentration of public capital amongst urban residents. Thus, TFP growth accelerates more rapidly in regions where per capita public capital stocks are expanding. This per capita measurement therefore captures some of the adverse congestion effects caused by migration into urban centers.

In summary, the CGE model incorporates rural-urban growth linkages and distributional change by (i) disaggregating production patterns and technology across sectors and rural/urban areas; (ii) allowing rural-urban labor migration, agglomeration and congestion effects; (iii) capturing region-specific transaction costs and specifying regional markets for non-traded commodities; (iv) capturing income-effects through regional factor markets and price-effects through national commodity markets; and (v) translating these two effects onto different households in each region according to their factor endowment and income and expenditure patterns. This allows the model to capture the economic growth and distributional effects associated with alternative investment scenarios.

4.5. Modeling results

The model is used to examine the impact of two sets of simulations: (i) accelerating existing rural-to-urban migration rates; and (ii) increasing the allocation of public investment to cities, towns and rural areas. However, it is first necessary to construct a Baseline scenario, which provides a counterfactual to which the alternative growth scenarios can be compared.

4.5.1. Baseline scenario

The CGE model is not a projection model and so it cannot predict what will happen in Ethiopia over the next twenty years. Rather, the Baseline scenario provides a counterfactual for other simulations. However, we calibrate this scenario to track broad growth and demographic trends, for such variables as population and labor supply, migration, and total factor productivity. First, we assume that Ethiopia's total population grows at two percent per year during 2005-2025 (see Table 4.5). We also assume that the total supply of skilled, semi-skilled and unskilled labor grows at two percent per year, and we assign a wage-elasticity to family labor such that the supply of these workers also grows at around two percent. This means that the national dependency ratio remains broadly constant over time. Although we initially assign the same labor supply growth rates in all regions, over time these diverge as workers migrate between regions. Thus, while the total population and workforce growth rate is largely fixed, the model endogenously reallocates labor and populations between regions.

Secondly, for migration, we assume that current regional wage differentials generate the levels of internal migration observed in Ethiopia during the late 1990s (as reported in Golini et al. 2001). This implies a net annual inflow of around 33,200 migrants into major cities. Most workers who migrate to cities come from smaller towns (i.e., 21,700 migrants per year), while the remaining migrants come from rural areas. Migration from rural areas to towns is considerably larger than to cities (i.e., 55,700 workers). However, this is offset by outflows to cities, such that towns experience a smaller net inflow of migrants each year. In the model we initially calibrate migration flows to capture these observed migration flows, and then let annual migration rates adjust to reflect changes in relative regional wages.⁴⁸ As mentioned earlier, inward migration will cause population growth in cities and towns to exceed the population growth rates in rural areas. Given our specification of urban agglomeration effects, this inward migration will also accelerate TFP growth in urban centers.

⁴⁸ The migration rate in year t (from region 1 to region 2) is equal to the initial migration rate multiplied by the regional wage differential (normalized to remove the initial wage differential).

$$mr_{r1 \rightarrow r2}^t = mr_{r1 \rightarrow r2}^0 \times \left(\frac{w_{r2}^t / w_{r2}^0}{w_{r1}^t / w_{r1}^0} \right)^\epsilon$$

Table 4.5. Migration and agglomeration in the baseline scenario

	Initial	Ethiopia	Rural	Towns	Cities
Annual GDP growth rate (%)	100.0	5.40	3.92	5.23	8.17
Labor employment growth	44.0	1.87	1.56	2.86	4.12
Skilled	6.5	2.00	0.93	1.72	3.17
Semi-skilled	16.1	2.00	0.78	1.84	3.27
Unskilled	9.4	2.00	1.14	4.17	6.00
Family farmers	11.9	1.77	1.77	0.00	0.00
Crop land expansion	15.7	1.00	1.00	0.00	0.00
Livestock accumulation	5.4	1.00	1.00	0.00	0.00
Private capital accumulation	34.9	6.77	7.96	5.92	6.82
Public capital accumulation	-	6.50	6.60	5.61	6.62
TFP growth	-	1.18	1.08	0.69	2.07
Agglomeration	-	0.11	0.00	0.19	0.27
Public capital	-	0.10	0.00	0.22	0.20
Exogenous	-	0.97	1.08	0.28	1.60
Net annual migration (workers)	-	0	-55,724	22,533	33,191
Outflows	-	77,406	55,724	21,682	0
Inflows	-	77,406	0	44,215	33,191
In-migrants share of workforce (%)	-	0.00	-0.26	0.75	1.86
Population growth rate (%)	70,992	2.00	1.80	2.65	3.64
Poor	28,394	2.00	1.79	3.28	3.98
Non-poor	42,598	2.00	1.81	2.27	3.56

Source: Results from the Ethiopia Rural-Urban DCGE model.

Finally, given recent sector growth trends, we calculate that initial TFP growth is higher in cities than in towns. Furthermore, despite agriculture's strong performance in recent years, we assume that agricultural productivity growth will slow down over the next two decades. However, based on our growth accounting, exogenous productivity in rural areas will still grow faster than TFP growth in towns in the baseline scenario.

Given the above assumptions, Ethiopia's economy grows at 5.4 percent per year during 2005-2025 under the Baseline scenario (see second column of Table 4.6). This is driven by industry and private services, which grow at over six percent per year. Due to its slower productivity growth, agriculture grows below the national average at 3.3 percent. Government recurrent spending grows at a fixed rate of 5.5 percent per year, thus maintaining a constant share of national GDP.

Table 4.6. Macroeconomic results

	Initial, 2005 (%)	Baseline scenario	Urbanization scenarios			Investment scenarios		
			Double	Triple	Quadruple	Cities	Towns	Rural
			Average annual growth rate, 2005-2025 (%)					
			Point deviation from baseline result					
Total GDP	100.0	5.40	0.18	0.29	0.38	0.23	0.18	-0.08
Agriculture	48.1	3.28	-0.03	-0.06	-0.09	-0.26	-0.23	0.84
Manufacturing	4.8	6.67	0.36	0.59	0.75	0.38	0.25	-0.66
Agro-processing	2.4	5.79	0.18	0.29	0.35	0.19	0.24	-0.34
Other	2.4	7.42	0.48	0.79	1.03	0.52	0.25	-0.91
Other industry	6.7	6.34	0.25	0.41	0.52	0.32	0.31	-0.43
Private services	31.2	7.20	0.32	0.53	0.68	0.56	0.48	-0.76
Public services	9.2	5.84	0.06	0.10	0.13	0.08	0.01	-0.06
Public consumption	12.0	5.50	0.00	0.00	0.00	0.00	0.00	0.00
Private consumption	86.7	5.01	0.11	0.18	0.22	0.08	0.09	0.13
Investment demand	24.7	5.69	0.19	0.31	0.40	0.31	0.31	-0.36
Export demand	12.1	8.03	0.46	0.75	0.97	0.69	0.54	-0.75
Import supply	-35.5	6.14	0.22	0.37	0.48	0.34	0.27	-0.25
Final year value, 2025								
Consumer price index	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Food	1.000	1.032	1.043	1.050	1.055	1.062	1.071	0.942
Non-food	1.000	0.965	0.954	0.946	0.940	0.932	0.923	1.063
Real exchange rate	1.000	1.034	1.030	1.024	1.019	1.020	1.030	1.018

Source: Results from the Ethiopia Rural-Urban DCGE model.

Slower agricultural growth affects agro-processing, whose production partly depends on domestically produced agricultural inputs. Non-food manufacturing is therefore a more significant driver of overall manufacturing growth in the Baseline scenario. These heavier manufacturing sectors are more capital-intensive and generate demand for investment goods, such as machinery and construction. Accordingly, investment demand and nonagricultural imports both grow faster than national GDP and capital stocks grow faster than other factors under the Baseline scenario. Real private consumption spending is also offset by rising food prices caused by slower agricultural growth (see the bottom of Table 4.6).

GDP growth is unevenly distributed across cities, towns and rural areas. For instance, while GDP in cities grows at 8.2 percent per year, rural areas grow only half as fast (see Table 4.5). This causes the returns to labor to diverge across regions. Stronger industrial growth in cities maintains the regional wage gap, causing 33,200 workers to migrate each year to cities during 2005-2025. This is equal to 1.9 percent of cities' total workforce. As such, while the national population grows at two percent per year, it grows faster in cities due to in-migration, eventually averaging 3.6 percent under the Baseline scenario. Population growth in towns is also above the national average at 2.7 percent per year.

In-migration causes positive agglomeration effects in towns and cities, which stimulates faster TFP growth. For example, within towns, agglomeration accounts for about one third of total productivity growth in the Baseline scenario. This is bolstered by positive TFP gains from rapid public capital investment, which grows faster than the population in all regions and at 6.5 percent nationally. However, at the national level, these agglomeration and public investment effects are small relative to exogenously imposed TFP growth, even in cities where there is both rapid population growth and large inward migration. Here agglomeration effects contribute only 0.3 percentage points to the average total annual TFP growth rate of 2.1 percent (i.e., 14 percent of productivity growth).

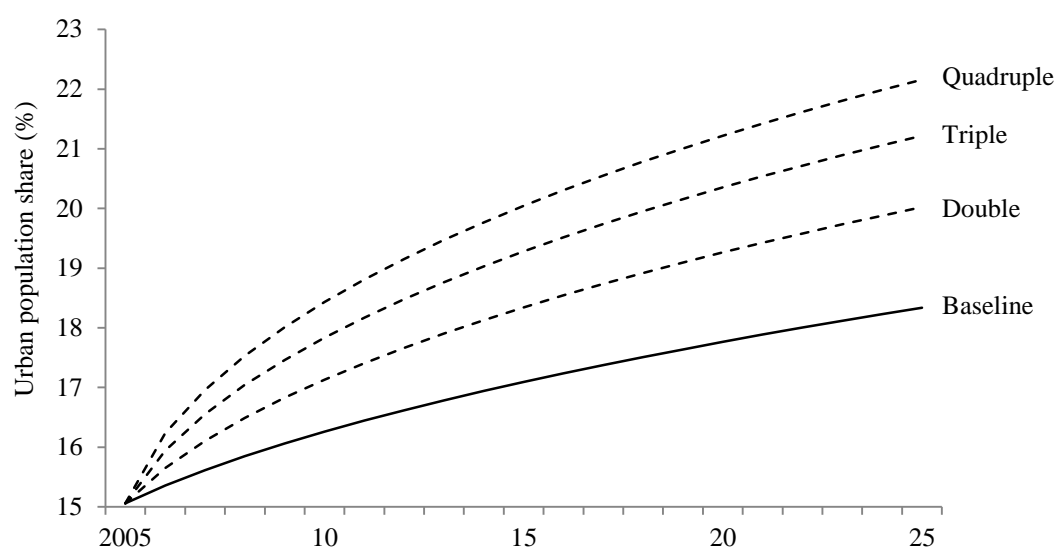
In summary, the Baseline scenario is broadly consistent with Ethiopia's long-term growth performance. Based on estimated rural-urban migration rates for Ethiopia, the country becomes slightly more urbanized over the next two decades, with the urban population share rising from 15.1 percent in 2005 to 18.3 percent by 2025. While rural areas also benefit from overall economic growth, agriculture's poorer performance relative to other sectors causes rural GDP to grow below the national average. Thus, in terms of average per capita GDP, the Baseline scenario reflects a widening rural-urban divide, underpinned in part by relatively slow migration from rural to urban areas. Within this context, we now examine the effect of accelerating urban migration rates.

4.5.2. Urbanization scenarios

Urbanization rates in Ethiopia are well below those of most other African countries (World Bank 2010). Moreover, the results from the Baseline scenario suggest only modest increases in the share of the population living in urban areas over the next two decades. This is despite faster growth in urban centers and a clear rural-urban earnings differential. Numerous studies have examined migration behavior in low-income countries, and found that the decision not to migrate to urban centers may be influenced by low education levels, weak social networks in destination regions, and insufficient wealth to finance the migration process. These factors may well explain part of the low migration rates observed in Ethiopia. However, one policy-related factor that may be further limiting internal migration in Ethiopia is the prevailing land tenure system, which ties physical residency of individuals to land use rights. Thus, individuals are less likely to migrate to urban centers if it involves forgoing the right to farm land, especially if it is also uncertain whether new land would be allocated to them if they return.

In the next set of simulations we explore the implications of exogenously increasing current rural-to-urban migration rates (i.e., above the migration rates used in the Baseline scenario). We then allow the DCGE model to trace through the economic implications of this accelerated urbanization on economic growth and household welfare. For example, based on survey evidence from the late 1990s, 1.13 and 0.34 percent of rural workers moved to towns and cities each year. Similarly, 0.45 percent of workers in small towns moved to cities each year during 1994-1999. This evidence provided the DCGE with an initial estimate of migration rates for 2005-2006. We now run three additional scenarios where we double, triple and quadruple the initial migration rates between these regions. The resulting national urbanization rates for each scenario for 2005-2025 are shown in Figure 4.2.

Figure 4.2. Population shares in the baseline and urbanization scenarios



Source: Results from the Ethiopia Rural-Urban DCGE model.

As mentioned earlier, the national urbanization rate reached 18.3 percent by 2025 in the Baseline scenario. This increases further to 20.0, 21.2 and 22.2 in the Double, Triple and Quadruple scenarios, respectively. Increasing the initial migration rate does not lead to proportional increases in final year urbanization rates. This is because the incentive to migrate to urban centers is lowered by heightened competition over jobs and the resulting decline in real wages that new migrants can expect in urban areas. This is evident in Table 4.7, which reports changes in regional wage ratios and migration flows, and shows how the rural-urban wage gap narrows as migration rates increase. Moreover, the number of migrants leaving rural areas increases by 28,000 when initial migration rates are doubled, by a further 19,000 when they are tripled, and then by only 15,000 when they are quadrupled. Similarly, the average wage differential between towns and cities also narrows due to town-to-city migration.

Table 4.7. Regional wage ratios and migration flows

	Initial ratio, 2005	Baseline scenario	Urbanization scenarios			Investment scenarios		
			Double	Triple	Quadruple	Cities	Towns	Rural
Wage ratios (final year, 2025)								
Rural / Urban	0.205	0.286	0.315	0.335	0.350	0.287	0.288	0.275
Rural / Towns	0.241	0.328	0.350	0.361	0.367	0.333	0.329	0.315
Rural / Cities	0.159	0.239	0.279	0.309	0.334	0.238	0.241	0.230
Towns / Cities	0.658	0.729	0.799	0.858	0.909	0.716	0.733	0.730
Annual migration flows (workers)								
Rural	-	-55,724	-83,377	-102,680	-117,623	-55,249	-55,530	-57,295
Towns	-	22,533	27,497	28,748	28,528	21,604	22,452	23,840
Inflows	-	44,215	67,324	83,931	97,022	43,670	44,055	45,535
Outflows	-	21,682	39,827	55,183	68,493	22,066	21,604	21,695
Cities	-	33,191	55,880	73,932	89,095	33,645	33,078	33,455

Source: Results from the Ethiopia Rural-Urban DCGE model.

Notes: Reported wage ratios and migration flows combine results for all skill and occupation groups in the model.

Accelerated migration to urban centers reduces the supply of labor in rural areas, which slows the rate of agricultural GDP growth relative to the Baseline scenario (see Table 4.6). Conversely, urban-based industry and services benefit from increased labor supplies and lower real wages. The weak link between agriculture and downstream processing means

that the agro-processing sector grows faster in the Urbanization scenario, despite slower agricultural growth. However, agro-processing grows more slowly than other manufacturing subsectors. Overall, increasing rural-to-urban migration rates causes national GDP growth to accelerate. For example, average annual GDP growth, which was 5.4 percent in the Baseline scenario, increases by 0.4 percentage points to 5.8 percent in the Quadruple scenario. However, despite faster national growth, slower agricultural growth further increases real food prices, thereby offsetting some of the gains for private consumers. This is reflected in the smaller increase in private consumption spending relative to the overall increase in national GDP growth rates.

Table 4.8 reports changes in regional GDP and identifies the sources of economic growth. Rural GDP declines only slightly despite large outflows of migrant workers to urban centers. This is because declining labor supplies are partly offset by greater capital investment throughout the country as national incomes and savings rise. Capital accumulation rates therefore rise in all three regions in the model, which is the main driver behind faster overall economic growth. By contrast the additional farm labor drawn into employment has only a modest contribution. Moreover, TFP growth declines slightly despite positive agglomeration effects in towns and cities. This is because the crowding of public capital in urban areas adversely affects urban productivity growth. These congestion effects are most pronounced in cities where they are sufficient to reduce overall TFP growth. This suggests a need for supporting public investments in urban centers in order to realize the full economic growth gains from accelerated urbanization.

Table 4.8. Regional growth and agglomeration results

	Initial p.c. consumption, 2005 (\$US)	Baseline scenario	Average annual EV growth rate, 2005-2025 (%)					
			Point deviation from Baseline result					
			Urbanization scenarios			Investment scenarios		
			Double	Triple	Quadruple	Cities	Towns	Rural
National GDP	100.0	5.40	0.18	0.29	0.38	0.23	0.18	-0.08
Labor	44.0	1.87	0.03	0.04	0.05	-0.02	-0.01	0.08
Capital	34.9	6.77	0.28	0.46	0.59	0.41	0.42	-0.52
TFP growth	-	1.18	0.00	0.00	-0.01	-0.06	-0.05	0.21
	-	0.11	0.02	0.03	0.04	0.00	0.00	0.00
Agglomeration								
Public capital	-	0.10	-0.02	-0.04	-0.05	0.05	0.06	-0.13
Exogenous	-	0.97	0.00	0.00	0.00	-0.11	-0.12	0.34
Rural GDP	100.0	3.92	-0.01	-0.02	-0.04	-0.16	-0.16	0.67
Labor	44.3	1.56	-0.12	-0.21	-0.28	-0.02	-0.01	0.09
Capital	16.0	7.96	0.41	0.68	0.87	0.40	0.39	-0.57
TFP growth	-	1.08	0.00	0.00	0.00	-0.22	-0.22	0.65
Exogenous	-	1.08	0.00	0.00	0.00	-0.22	-0.22	0.65
Towns GDP	100.0	5.23	0.12	0.18	0.22	0.16	0.62	-0.64
Labor	43.5	2.86	0.20	0.27	0.29	-0.03	0.00	0.05
Capital	56.5	5.92	0.24	0.41	0.53	0.34	0.43	-0.48
TFP growth	-	0.69	0.00	-0.01	-0.01	-0.04	0.27	-0.27
	-	0.19	0.01	0.02	0.02	0.00	0.00	0.00
Agglomeration								
Public capital	-	0.22	-0.02	-0.02	-0.02	-0.04	0.27	-0.27
Exogenous	-	0.28	0.00	0.00	0.00	0.00	0.00	0.00
Cities GDP	100.0	8.17	0.44	0.73	0.95	0.71	0.23	-0.69
Labor	43.8	4.12	1.11	1.86	2.42	0.02	0.00	0.01
Capital	56.2	6.82	0.20	0.32	0.40	0.49	0.43	-0.51
TFP growth	-	2.07	-0.02	-0.03	-0.04	0.30	-0.05	-0.28
	-	0.27	0.07	0.12	0.15	0.00	0.00	0.00
Agglomeration								
Public capital	-	0.20	-0.09	-0.15	-0.19	0.29	-0.04	-0.28
Exogenous	-	1.60	0.00	0.00	0.00	0.00	0.00	0.00

Source: Results from the Ethiopia Rural-Urban DCGE model.

Notes: Land and livestock factors' contributions to economic growth are not shown since factor supplies remain constant across scenarios.

Finally, Table 4.9 reports changes in household 'equivalent variation' (EV) which is a measure of welfare that controls for changes in consumer prices. Along with economic growth, accelerated urbanization in Ethiopia improves national household welfare, with per capita EV increasing by 0.17 percentage points above the Baseline in the Quadruple scenario. However, this national average hides wide variation in gains across poor and non-poor household groups and across regions. For example, more rapid migration to urban centers drives down the welfare of urban households, especially those in the poorer household groups, which migrants are most likely to join. Conversely, rural households benefit from faster urbanization, because (i) agricultural revenues increase with rising food prices; (ii) there are greater returns to their non-labor assets, such as land and agricultural capital; and (iii) a smaller rural population increases overall per capita consumption for those inhabitants remaining in rural areas. However, despite some gains for rural poor households, most of the welfare gains accrue to non-poor households, due to declining welfare for poorer urban households.

Table 4.9. Per capita welfare (equivalent variation) results

	Initial p.c. consumption, 2005 (\$US)	Baseline scenario	Average annual EV growth rate, 2005-2025 (%)					
			Point deviation from Baseline result					
			Urbanization scenarios			Investment scenarios		
			Double	Triple	Quadruple	Cities	Towns	Rural
National	186.0	2.88	0.09	0.14	0.17	0.04	0.06	0.17
Poor	91.5	2.30	0.03	0.04	0.04	-0.04	-0.01	0.27
Non-poor	249.0	3.02	0.10	0.16	0.20	0.06	0.07	0.15
Rural areas	121.3	2.58	0.16	0.26	0.33	-0.04	-0.02	0.27
Poor	88.0	2.39	0.13	0.22	0.28	-0.05	-0.03	0.30
Non-poor	145.2	2.65	0.16	0.27	0.34	-0.03	-0.01	0.26
Towns	510.9	2.65	-0.07	-0.07	-0.05	0.08	0.16	0.05
Poor	118.4	1.62	-0.50	-0.83	-1.08	0.00	0.09	0.14
Non-poor	727.2	3.07	0.20	0.43	0.65	0.09	0.17	0.04
Cities	629.6	2.14	-0.70	-1.19	-1.57	0.23	0.13	0.01
Poor	120.8	1.56	-0.61	-0.99	-1.27	0.13	0.05	0.08
Non-poor	750.8	2.24	-0.71	-1.23	-1.63	0.23	0.13	0.01

Source: Results from the Ethiopia Rural-Urban DCGE model.

Notes: 'Equivalent variation' is a welfare measure that controls for changes in prices. Per capita consumption is in unadjusted dollars.

Our results suggest that encouraging urbanization in Ethiopia, possibly via land tenure reforms, could lead to accelerated economic growth, an improvement in rural welfare, and a decline in the rural-urban divide. However, without significant investments to support urbanization, the welfare gains for poorer households are diminished, leading to an urbanization of poverty and a widening of inequality within urban areas. In the next section we examine the implications of reallocating public investment in favor of urban centers.

4.5.3. Public investment scenarios

The allocation of new public capital in Ethiopia favors the country's three major cities. This is evident by comparing the distribution of new capital shown in Table 4.10 and the population shares in Table 4.4. While rural areas contained 84.9 percent of the national population in 2005, only 81.4 percent of the government's capital investments were directed towards this region. Similarly, towns accounted for 10.0 percent of the population yet received 9.6 percent of public capital. By contrast, 9.0 percent of public investment was directed towards the country's three largest cities, despite them containing only 5.1 percent of the population. However, this concentration of investment in major cities is not atypical of African countries. It also does not adequately convey the government's large investment in rural infrastructure over the last ten years, which has undoubtedly underpinned rapid agricultural growth.

Table 4.10. Accelerated investment scenarios

	Allocation of new public capital investment (%)			
	Cities	Towns	Rural	Ethiopia
Baseline	9.0	9.6	81.4	100.0
Cities scenario	19.0	8.5	72.5	100.0
Towns scenario	8.0	19.6	72.4	100.0
Rural scenario	4.2	4.4	91.4	100.0

Source: Results from the Ethiopia Rural-Urban DCGE model.

In this section we run three scenarios that explore the implications of reallocating more public investment towards either urban centers or rural areas (i.e., without increasing the overall amount of public investment in the economy). In the first simulation ('Cities') we reallocate 10 percent of public capital away from towns and rural areas towards cities (see Table 4.10). This raises the investment share for cities from 9 to 19 percent, and proportionally reduces the investment shares for towns and rural areas. This reallocation accelerates public capital accumulation within cities, thereby alleviating some of the congestion effects identified in the Urbanization scenarios. Similarly, in the second

simulation ('Towns') we redirect 10 percent of new public capital towards towns at the expense of cities and rural areas. Finally, the third simulation ('Rural') shifts investment towards rural areas and away from towns and cities. This increases the TFP growth rate of the agricultural sector.⁴⁹

Allocating a larger share of public resources towards urban centers in the 'Cities' and 'Towns' simulations accelerates TFP growth in each region by increasing per capita public capital stocks (see Table 4.8). However, limited resources imply trade-offs between scenarios. For example, when resources are directed towards cities it lowers TFP growth in towns. This is because in these scenarios, we assume that there is no new public capital available at the national-level, implying that any additional investment in one region must be exactly offset by declining investment elsewhere. Falling TFP growth in towns or cities is, however, more than offset by accelerated private capital accumulation generated by faster national economic growth. In the two urban scenarios, economic growth is driven by a more rapid expansion of the nonagricultural sector (see Table 4.6). By contrast, declining investment in rural areas (due to investment displacement) leads to slower agricultural growth rates and higher food prices, thus constraining any additional private consumption growth.

The reverse is true for the 'Rural' scenario, under which a larger share of public resources are directed towards rural areas. Increased rural investment encourages faster agricultural growth and greatly reduces real food prices. This is, however, more than offset by declining urban investment and the negative effect this has for industrial and service sector growth (see Table 4.6). This shift out of urban nonagricultural growth substantially reduces demand for imported goods. This prompts an appreciation of the real exchange rate relative to the Baseline scenario. Since almost half of government current expenditure is financed by foreign grants, the appreciation reduces the value of these grants in local currency. Falling grant incomes widens the government's fiscal deficit and crowds-out private investment. This causes private capital accumulation rates to decline, which hurts both rural and urban areas alike (see Table 4.8). Overall, there is a slight decline in national GDP growth as more public resources are directed towards rural areas.

Although shifting resources towards urban centers generates faster rates of national economic growth, it has the opposite effect on household welfare (see Table 4.9). Faster economic growth in the two urban-oriented scenarios increases aggregate private consumption spending. However, this is offset by higher prices for foods, which comprise a large share of households' baskets. Thus, while economic growth declines in the 'Rural' scenario, it still generates larger improvements in national private consumption than either of the urban scenarios. Moreover, faster agricultural growth leads to significant welfare improvements for poorer households, whereas urban investment favors non-poor households. Thus, while increasing urban investment favors economic growth, it reduces the 'inclusiveness' of that growth. By contrast, rural agriculture-led growth is more effective at reducing poverty, despite slower economic growth.

⁴⁹ We assume a spending-to-TFP growth elasticity of 0.15, which is consistent with the returns to public spending on agriculture estimated by Benin and Randriamamonjy (2008) using cross-country regressions for 18 Sub-Saharan African countries. We also assume that capital investment comprises half of total agricultural spending. Reallocating 10 percent of new public capital towards agriculture causes rural capital stocks to expand at an additional 13 percent per year relative to the baseline. Thus, the reallocation of capital causes agricultural TFP growth rates in rural areas to increase by almost one percentage points (i.e., $0.15 \times 13 \times 0.5 = 0.975$).

4.6. Conclusion

Even though economic growth in Ethiopia has been stronger in cities and towns, the country still has one of the lowest levels of urbanization in Sub-Saharan Africa. At least part of the small internal migration flows can be attributed to domestic policies, such as land tenure. We examined the implications of accelerating the pace of urbanization, as well as reallocating public investment towards cities, towns or rural areas. This was done using a DCGE model calibrated to an adapted version of a recently developed SAM for Ethiopia. The model captures economic linkages between rural and urban areas, including internal migration flows, and urban agglomeration and congestion effects on productivity growth.

Simulation results suggest that, under a business-as-usual or baseline growth path, urbanization levels in Ethiopia will remain low at about 18 percent by 2025. Alternatively, accelerating the pace of urbanization, possibly via land tenure reforms, generates faster economic growth, as well as improvements in rural welfare and a declining rural-urban divide. However, without significant investments to support urbanization, the welfare gains for poorer households are diminished, leading to an urbanization of poverty and a widening of inequality within urban areas.

Results also suggest that reallocating public investment towards urban centers encourages faster rates of economic growth, both at urban- and national-levels. However, an urban-oriented investment plan is less effective at improving the welfare of poorer household groups in both rural and urban areas. This is because shifting resources away from rural areas reduces agricultural growth, increases real food prices, and thereby lowers real consumption levels for poorer households. By contrast, while investing more resources in agriculture slows the pace of national economic growth, it is more “inclusive” insofar as it significantly improves the welfare of poorer rural and urban households.

Overall, we conclude that constraints to internal migration may hinder structural transformation in Ethiopia, by lowering economic growth and constraining urban industrial development. However, rising congestion costs will limit the effectiveness of a purely urban-led growth strategy. Moreover, reallocating public resources to overcome urban congestion will incur substantial opportunity costs by reducing the ability of economic growth to reduce poverty. Rather, investing public resources in agriculture not only reduces poverty and the rural-urban divide, but it does so without undermining urban households’ welfare or significantly slowing the pace of urbanization. Thus, combining reforms that overcome prevailing limits on internal migration together with increased investment in rural areas (even at the cost of urban investment) produces outcomes most likely to support future development and structural transformation in Ethiopia.

5. Concluding observations

Many observers of Ethiopia's economy see insufficient demand for agricultural goods in urban (and international) markets as a major constraint on overall economic growth. Increasing land pressure (within the context of already small land holdings), as well as environmental degradation also threaten per capita on-farm incomes. The average size of farms is 0.81 hectares (IFPRI and CSA 2006) and most land holdings are fragmented across an average of 3.3 different geographic plots (CSA 2003). Moreover, limited transportation networks between rural and urban areas make transportation costs high and inhibit the flow of goods, people and information.

Overcoming these constraints is key to maintaining high economic growth and rapidly reducing poverty in Ethiopia. Although agriculture has been the foundation for economic growth throughout Ethiopia's history and will continue to be central to future economic growth and poverty reduction, benefits may be gained from fostering more rapid urban growth and greater rural – urban linkages. Indeed, unless policies actively impede urbanization, Ethiopia will most likely have urbanization rates of 30 percent or more within the next two decades. Public investments and other development policies will play a huge role in whether this urbanization ultimately increases economic growth and helps reduce poverty or actually impedes equitable economic development.

During the past 20 years, the government heavily invested in transportation infrastructure in order to build, improve, and maintain important arteries between major cities. These improvements have had a drastic impact on communication and mobility of goods between large cities, forming agglomeration economies and urban networking, but rural populations that are far from these major arteries remain distant from economic opportunities outside of the agricultural sector. Despite growing efforts by the federal government and regional states, the rural road network remains limited with a third of Ethiopia's population further than five hours from a city of 50,000 people. In order to enhance rural – urban linkages, key roads and transportation links in the rural hinterlands where agricultural potential is high should be assessed and evaluated for possible growth linkages to urban areas.

Facilitating labor movement, in the form of providing more secure land rights, greater access to education and healthcare, and improved access to rural markets will allow rural inhabitants to diversify incomes as well as provide stronger linkages to urban centers and greater potential for agricultural intensification through improved access to key inputs. As agricultural productivity and rural demand for goods and services increase, a niche is created for small towns to support these needs, thereby producing jobs in the non-farm rural sector (Tacoli 2003, 1998). Small towns can also render urban markets more accessible, by reducing the transaction costs of distributing goods due to their proximity to urban areas. Additionally, the rural non-farm sector provides a source of risk diversification, for example, by adding employment opportunities for local artisans.

Promoting income diversification activities in rural areas and fostering small businesses and micro-industries in the small town and urban areas will enhance the economic outcomes in all spatial spheres, but these benefits do not come without costs. A critical element to improving livelihoods in the rural and urban areas is providing residents with the necessary tools and public services to foster innovation and effective income earning opportunities. This includes provision of public health and education services to rural communities through small town networks and agricultural / health extension agents. Urban infrastructure development and job creation will also be critical to accommodate migrants in search of opportunities in burgeoning cities. Hasty urbanization may lead to urban sprawl and slums, whereas constrained migration will lead to missed opportunity and increased rural hardship. A balance is necessary in order to reap the benefits of enhanced rural – urban linkages. Assessing current economic and demographic developments, as well as ongoing

government policies and investment priorities provide evidence to believe that further linkages and urban growth in Ethiopia are possible and profitable. Investments, services and policies that aim at expanding agricultural income diversification, while supporting small town and urban growth initiatives could be supported in order to maintain positive economic growth outcomes.

As Ethiopia moves forward, it faces key development policy decisions. Since the late 1990s, the country has followed an Agricultural Development Led Industrialization (ADLI) policy emphasizing investments to increase agricultural productivity and spur growth linkages with the rest of the economy. At the same time, government policy has been designed to slow rural-urban migration through regulations prohibiting sale of land, loss of land rights for those who leave rural areas, and registration requirements for new migrants.

Allocation of public investments across sectors and across rural-urban space, together with land policies and various regulations on labor mobility, will be major determinants of the growth path of Ethiopia's economy and the extent of poverty reduction in the coming decade. This study has shown that investments in increasing agricultural productivity, particularly in favorable agro-ecological environments and in a context of industrial productivity growth at rates similar to those in 2005-2009, still provide the best pathway for overall reductions in poverty in Ethiopia. Moreover, removing existing constraints to internal migration can speed the spatial and structural transformation of Ethiopia, promoting economic growth and urban industrial development. The key is a judicious balance of public investments to promote agricultural growth and provide enough urban infrastructure and services to prevent a rise in urban congestion costs. In this way, it is hoped that Ethiopia can accelerate its development, achieving both rapid overall growth and rapid poverty reduction in rural and urban areas.

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