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Urban Food Retail in Africa: The case of Addis Ababa, Ethiopia

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TABLE OF CONTENTS

Abstract 1
1. Introduction 1
2. Background 3
3. Taxonomy of Food Retail in Addis Ababa 3
4. Data 6
   4.1. Sample 6
   4.2. Descriptive Statistics 7
5. Market Share of Retail Outlets 10
6. Modern versus Traditional Retail 14
   6.1. Quality Comparisons 14
   6.2. Price Comparisons 16
7. Conclusions and Policy Implications 20
References 22

LIST OF TABLES

Table 4.1—Sample set-up 7
Table 4.2—Descriptives of the sampled outlet types 8
Table 4.3—Price variation 9
Table 5.1—Importance of different outlets (%) 11
Table 5.2—Characteristics of modern retail 13
Table 5.3—Price control problems with sugar, palm oil, and wheat outlets 14
Table 6.1—Quality regressions 15
Table 6.2—Hedonic price regression for cereals, fruits and vegetables, and processed food 17
Table 6.3—Matching estimates prices cereals 18
Table 6.4—Matching estimates prices fruits and vegetables 19
Table 6.5—Matching estimates prices processed foods 20

LIST OF FIGURES

Figure 3.1—Urban cereal distribution in Addis Ababa 4
Figure 3.2—Urban distribution of fruits and vegetables in Addis Ababa 5
Figure 3.3—Urban distribution of processed food in Addis Ababa 6
Figure 5.1—Cumulative density functions of start-up years 12

ABSTRACT

We study food retail in Addis Ababa, one of the biggest cities in Africa. Based on a primary survey of food retail outlets selling cereals, fruits and vegetables, and processed foods, we note high variation in quality and prices in the city and an increasing differentiation in food retail markets in recent years. On the high-end, we see the emergence of domestic (as foreign direct investment in retail is not allowed) private modern retail outlets that deliver high quality products at high prices and that focus mostly on wealthier areas and consumers. At the other side, we see cooperative retail that delivers food at controlled and subsidized prices. The latter shops are characterized by typical price control policy problems, reflected in regular lack of supplies and queuing. It seems that food retail markets would be improved by stimulating the emergence of a competitive private retail sector, the abolishment of price controls, and targeted subsidies or safety nets for the poor.

Keywords: urban markets, food retail, modern private retail, cooperative retail, Ethiopia

1. INTRODUCTION

Urban food retail markets in developing countries are receiving increasing attention in the international literature, as well as from policy makers. This interest seems to be driven by a number of factors. First, urban food retail is quickly growing in importance in these countries. This is caused by rapid urbanization all over the world—it is estimated that more than half of the world population was living in cities in 2010, up from 30 percent in the 1950s (UN Population Division 2010)—and an increasing number of people are relying on these retail markets to obtain their food. The efficient organization of these markets plays therefore a crucial role in assuring food security to a growing number of poor people living in urban areas (Ravallion, Chen, and Sangraula 2007). The growth of these markets is also an increasing source of urban employment in a large number of countries.[1]

Second, given that food price changes are often a source of unrest and instability, especially in cities as recently seen during the global food price crisis (Headey, Malaiyandi, and Fan 2010), governments are concerned by the functioning of these urban food markets and often try to intervene in them.[2] As policies might be put in place to assure low food prices to urban constituencies, governments are keen to know how these urban markets function and how interventions should best be implemented, so as to keep food affordable for urban consumers. Moreover, policy interventions in these markets are also driven by a lack of trust by governments in food traders who are often seen as hoarders who cause price volatility and deliver few services to the food system.

Third, modern retail, be it private (supermarkets) or public (fair price shops, cooperatives)[3], is rapidly emerging in developing countries (Reardon and Timmer 2012, 2007; Reardon et al. 2003). The emergence of modern retail has often important impacts on prices and quality offered in urban retail markets. For example, Minten and Reardon (2008) show that modern private retail in developing countries delivers higher quality food, but also at higher costs especially in early stages of the supermarket revolution (except for processed foods). However, prices quickly drop when these supermarkets are able to achieve economies of scale in later waves of the supermarket development. The emergence of modern retail might also have important implications on the structure of the value chains and there is a vehement debate in the literature on the benefits for farmers from that trend (Reardon et al. 2009).

Despite the large interest in urban food markets, there are however still relatively few good studies that have empirically documented the functioning of retail markets in developing countries, especially in Africa.[4] The lack of interest in Africa seemingly stems from much lower urbanization rates than in the rest of the world. However, urbanization is rapidly increasing in Africa as well: the urbanization rate is projected to be as high as 60 percent in 2050 (UN Population Division 2010). Our paper therefore contributes to fill this lacuna by studying urban food retail markets using new and unique data for Africa.

In this analysis, we look in particular at the case of Addis Ababa, a city of more than 3 million people and the capital of Ethiopia, one of the most populous countries in Sub-Saharan Africa. To better understand urban food retail, we rely on a large primary survey. Based on a stratified sampling scheme representative for the city as a whole, 1,226 urban food

[1] Interventions aimed at changing the structure of the retail sector, possibly leading to employment changes, have therefore been increasingly met with resistance, as recently seen in India (Reardon and Minten 2011).

[2] It has been argued that there is in most countries an urban bias in food policies because of political economy reasons as urban populations are easier to organize politically and they thus have more influence on food and agricultural policy design than rural and/or farmer populations (Pinstrup-Andersen 1988; Anderson, Cockburn, and Martin 2010).

[3] It is often argued that government or cooperative food retail chains are a type of modern retail as they are chain stores and as they have often similar procurement mechanisms.

[4] For examples of such studies, see e.g. Schipmann and Qaim (2011); Gorton, Sauer, and Supatpongkul (2011); Minten (2008); Minten, Reardon, and Sutradhar (2010); and Tschirley et al. (2010).

retail outlets were interviewed in March and April 2012. We interviewed retailers for the main cereals (teff, wheat, sorghum, and maize), major fruits and vegetables (tomato, potato, banana, onion, and orange), and processed products (edible oil, *shiro* [chick pea flour], *berbere* [a milled mixture of hot red pepper and other spices], and sugar). The implemented survey focused on quality on offer, prices charged, and turnover of food products sold by retail outlets.

We use these data to answer three main research questions. First, what is the structure of urban food distribution? Second, what is the quality and price at which different outlets sell and what are determinants that drive food price formation? Third, what are the potential implications of the emergence of modern—public (further referred to as 'cooperative') and private—retail outlets on prices and quality of food in the market?

Addis Ababa is especially an interesting case study of urban food retail because of a number of government policies. First, Ethiopia does not allow Foreign Direct Investment (FDI) in food retail and there is thus no presence of multinational supermarkets that are commonly found in a large number of other African cities. Second, it intervenes in food retail through price controls and subsidies for a number of foods as well as government support in the set-up of consumer cooperatives and marketing cooperatives in the city. Third, with the aim to improve their tax base so as to finance its ambitious development agenda, the government has recently enforced a Value Added Tax (VAT) that is affecting a number of food retail outlets in the city.

We find increasing differentiation in food retail markets in recent years. Despite the prohibition of FDI in food retail, a domestic modern private retail sector is quickly emerging. However, its share is still very small and, in contrast to roll-outs of modern retail in other countries, it has not yet entered the cereal sector, which remains in the hands of local flour mills, cereal shops, and cooperative retail outlets. The importance of cooperative retail is growing even more rapidly. It is especially important for those products where supply chains are controlled by the government. We further find that outlets that pay VAT charge significantly higher prices, controlling for quality. On the high-end, domestic private modern retail outlets deliver high quality products at significantly higher prices, ceteris paribus. At the other side, we see cooperative retail that delivers food at significantly lower—and subsidized—prices. However, the latter shops are characterized by typical price control problems, reflected in regular lack of supplies and queuing.

Our findings point to several policy implications. First, the rationing issues point to problems with the untargeted price control policy for the three—mostly imported—food products. Rationing because of price controls often leads to a non-price mechanism for the allocation of goods, with important efficiency implications (see e.g. Alderman 1987). It seems that the selection of self-targeted foods for subsidies or a policy of effective and well-targeted safety nets should be considered to assure sufficient food to poor people at lower fiscal costs without the creation of market distortions in agricultural and food markets (Coady, Grosh, and Hoddinott 2004). This is an important issue given that the overall subsidies on imported wheat lead to disincentives for the local wheat sector.

Second, it seems that Ethiopia might be missing out on investments by large (potentially multinational) retailers. Several types of benefits might come from such investments. They might be able to increase consumer choice, ensure stability in supply, allow for one-stop shopping, and deliver products at cheaper prices because of the economies of scale of these large retailers. Ethiopia might also miss out from important technological spillovers from modern retail on local markets (Schipman and Qaim 2010).

Third, the imposition of VAT seems to drive a wedge between the formal and informal sector as we find that only 7 percent of the food retail outlets pay VAT. Better understanding of the imposition of VAT and their distributional effects seems needed. That understanding might help in the design of policies to mitigate their effects on poor urban people.

The structure of the paper is as follows. Section 2 provides some background information on food retail in Ethiopia and in Addis Ababa in particular. In Section 3, we discuss the taxonomy of food retail in Addis Ababa. Section 4 describes the sampling and data collection process. In Section 5, we present the findings on the share of different retail outlets in the markets for different products. In Section 6, the results on price and quality comparisons between modern and traditional retail outlets are presented. We finish with the conclusions in Section 7.

2. BACKGROUND

Addis Ababa is the capital and the largest city of Ethiopia. It was estimated, based on the population and housing census in 2007, that 2.74 million people resided in Addis Ababa (CSA 2008). However, as the city is rapidly growing and with the surrounding built-up area included, the population of the metropolitan area now amounts to more than 3 million.[5,6] Three main food retail policies determine the food retail landscape in Addis Ababa: (1) The government does not allow foreign direct interventions in food retail; (2) The government intervenes in different ways in food markets; (3) There has been an increasing emphasis on tax collection from food retail, in particular the Value Added Tax (VAT). Each of these policies is discussed in more detail below.

First, the Investment Proclamation of 2002 (amended in 2003) and the Regulations on Investment Incentives and Investment Areas Reserved for Domestic Investors of 2003 (amended in 2008) constitute the main legal framework for both foreign and domestic investment in Ethiopia (GoE 2003, 2008). The latter regulation lists the areas of investment reserved for domestic investors and includes retail trade among them. Therefore, Foreign Direct Investment (FDI) is not allowed in retail trade in Ethiopia. Despite the ban, a domestic modern retail sector is emerging. The emergence of modern retail is especially occurring in the bigger cities of Ethiopia, although the sector growth remains slow in comparison with other African countries (e.g. Kenya) (Mussa and Greenhalgh 2007).

Second, the Ethiopian government is concerned with the functioning of food markets and regularly intervenes in them. It perceives food markets to be functioning imperfectly and to be characterized by 'unhealthy competition' or 'market disorder' (New Business Ethiopia 2011). With the objective of protecting customers, especially given high food inflation in recent years (Headey et al. 2012), recent interventions have taken the form of price caps and direct distribution of some products. The government also often limits the amount of products to be traded. On January 6, 2011, the government announced a list of 18 products[7] for which it fixed prices (New Business Ethiopia 2011). However, as a number of products were becoming in short supply, most of the price caps were lifted in late May 2011. The government further intervened in food markets by importing wheat, sugar, and palm oil to be distributed at controlled and subsidized prices (FAO/WFP 2012). This policy was argued to be part of the government's effort of controlling inflation and of stabilizing food costs. It was estimated that the government spent 2.4 billion ETB (Ethiopian Birr) (or 137 million USD) on the three commodities in the last eight months of 2011 (Fortune, March 25, 2012). Wheat was subsidized at the rate of 2,000 ETB per ton (114 USD/ton), lowering the price by about a quarter compared to the price at which wheat is bought on international markets.[8]

Third, a Value Added Tax (VAT) was introduced in January 2003. It was designed to replace the sales tax, which served for more than four decades and which was mainly collected at manufacturing level (Yohannes and Sisay 2009; Yesegat 2008). The VAT rate is set at 15 percent. While the VAT system has been put in place for a while, the government has in recent months become more severe in cracking down on those traders and businesses that were working outside the system. There are also some exemptions to the VAT imposition. For example, all cereal products are exempt. Small businesses were also not expected to pay VAT: the threshold above which VAT must be paid by a business is set at a total value of 500,000 ETB of annual transactions.

3. TAXONOMY OF FOOD RETAIL IN ADDIS ABABA

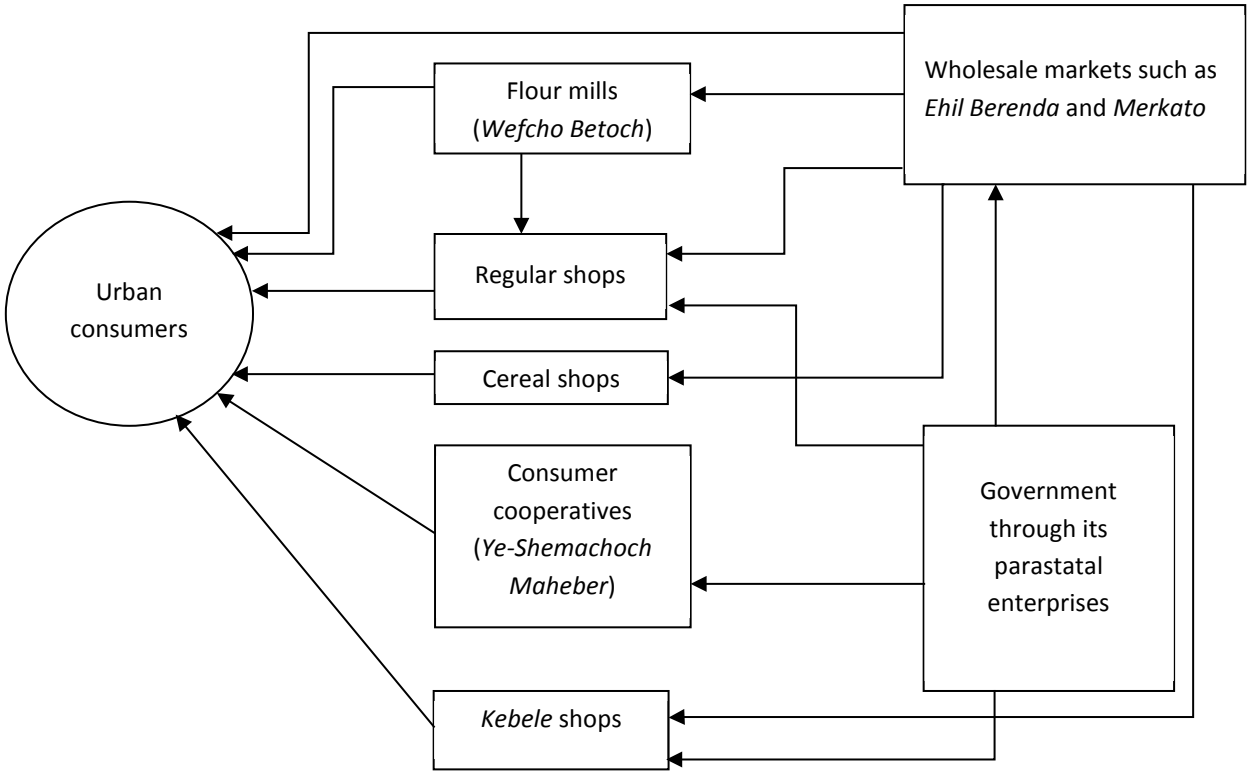
There is a large diversity in types of food retail outlets in Addis Ababa. We can broadly categorize them in three groups: traditional retailers, public cooperatives, and private modern retailers. The traditional retailers include, among others, regular shops, flour mills, fruit and vegetable grocery shops, cereal shops, *baltena* shops (local shops that sell all kind of traditional flour products, based on milled spices, pulses, cereals, and others), and microsellers (*gulits*). The public cooperatives engaged in the distribution of food in Addis Ababa are consumer cooperatives, *kebele* shops, and *Etfruit* shops. In this paper, we define modern retail outlets as those that allow self-service for customers and that have at least one cash register machine. The rest of the locally called supermarkets and minimarkets are classified as minimarkets in the traditional retailers group. The three figures below show how the urban food distribution system for the three food categories of interest (cereals, fruits and vegetables, and processed foods) is organized. For the purpose of simplicity and given that similar distribution systems exist for products within each category, we present the flow of cereals (Figure 3.1), fruits and vegetables (Figure 3.2), and processed foods (Figure 3.3) separately.

[5] The population of Addis Ababa was growing at a rate of 2.1 percent per year between 1994 and 2007 (CSA 2008). If the same growth momentum is assumed to have persisted in the last couple of years, the population would have surpassed the 3 million mark in 2012.
[6] However, that number is disputed and some researchers estimate Addis Ababa's population to be significantly larger (e.g. UN-Habitat 2008).
[7] Including e.g. rice, bread, edible oil, sugar, wheat flour, oranges, but also bottled beer.
[8] As stated by the head of the Ethiopian Grain Trading Enterprise (Ethiopian News Agency, June 25, 2012)

Figure 3.1 below shows how cereals are distributed from the wholesale markets to consumers in Addis Ababa. A consumer in the city has several retail options. While modern retailers have not yet entered the distribution of cereals in an important way, many traditional retailers and public cooperatives are heavily engaged in the distribution of cereals. *Ehil berenda* ("cereal street") is one of the main traditional outdoor markets where consumers as well as retailers buy cereals.[9] It serves as both wholesale and retail market. Traditional retailers like flour mills (*Wefcho-Betoch*), regular shops, and cereal shops buy cereals from these big wholesale markets and sell it directly to urban consumers. There are two types of regular shops: the small ones are called *kiosk*s; the *Makefafeyawoch* ('distributors') are relatively larger in size.

Consumers may also buy cereals from cooperatives, such as consumer cooperatives and *kebele* shops. *Kebele* shops have particularly been present in Addis Ababa since the socialist regime in the 1970s. Recently, however, their number has significantly declined. In contrast, a new form of public retail outlet, called consumer cooperatives, are now coming up. These retail outlets appear to have displaced the *kebele* shops as the government's preferred instrument to distribute subsidized food items, such as wheat, palm oil, and sugar.

Figure 3.1—Urban cereal distribution in Addis Ababa

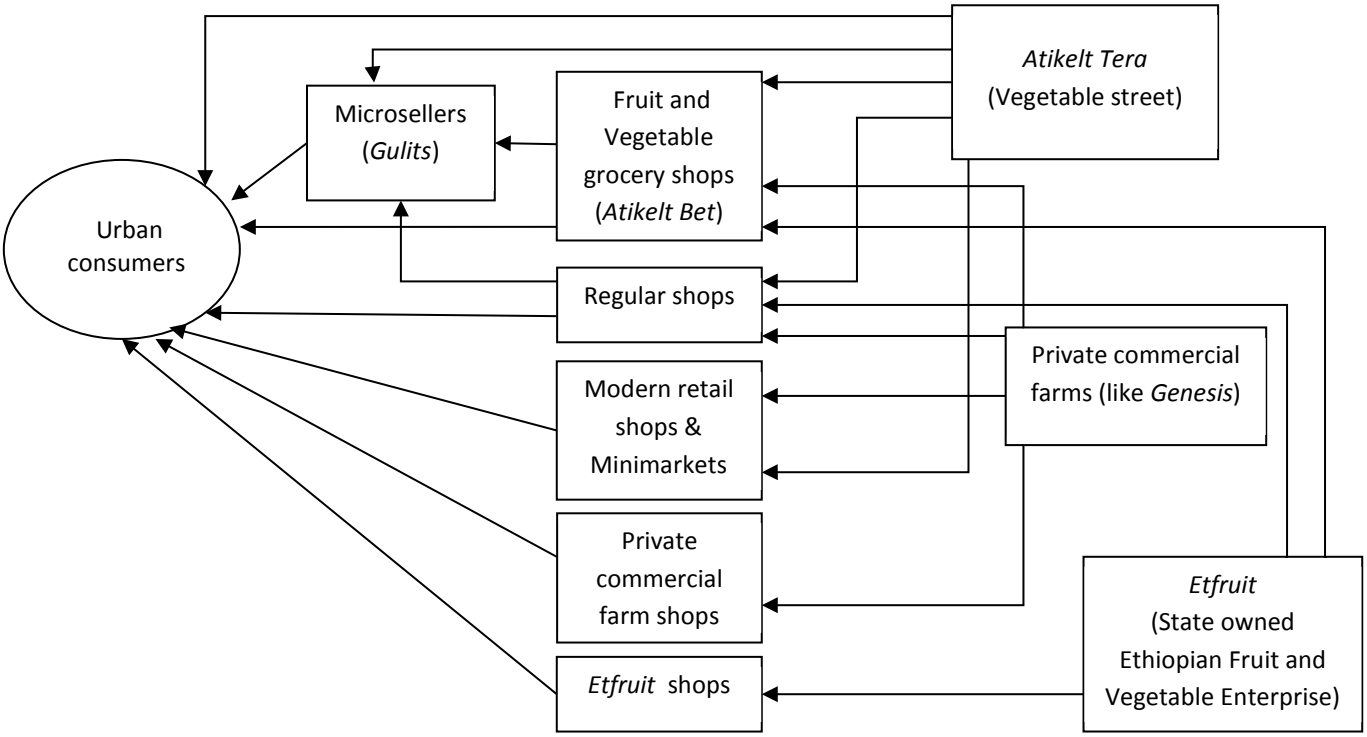


Source: Authors' analysis

[9] Other wholesale markets include 'Merkato' and relatively smaller markets such as Kera, Zenebe work, Gerji , Saris, Kotebe, Ferensay Legasion, Shola (Yeka), Asko, Addisu-Gebeya, Efoyita Gebeya, Akaki, etc.

Figure 3.2 shows how fruits and vegetables flow from the wholesale markets to the urban consumers. We find a large number of categories of retailers engaged in distribution: regular shops, fruit and vegetable grocery shops, microsellers (*gulits*), private commercial farm shops[10], *Etfruit* shops, and modern retail shops. Unlike the case of cereal markets, there are only a few wholesale markets, of which *Atikelt Tera* is the biggest. This market serves as both a wholesale and retail market for fruits and vegetables. Traditional retailers such as local fruit and vegetables grocery shops and microsellers buy from this wholesale market and sell it to consumers. The local fruit and vegetables groceries buy fresh produce not only from *Atikelt Tera*, but also from private commercial farms. Some private commercial farms have their own retail outlets where they sell their own produce. Another outlet type in Addis Ababa is *Etfruit*. It is the primary marketing enterprise for the production sourced from state farms (Mussa and Greenhalgh 2007). *Etfruit* has about 60 outlets in Addis Ababa. Modern retail shops and minimarkets are also engaged in trading fruits and vegetables. They usually get their supply from private commercial farms and from *Atikelt Tera*.

Figure 3.2—Urban distribution of fruits and vegetables in Addis Ababa

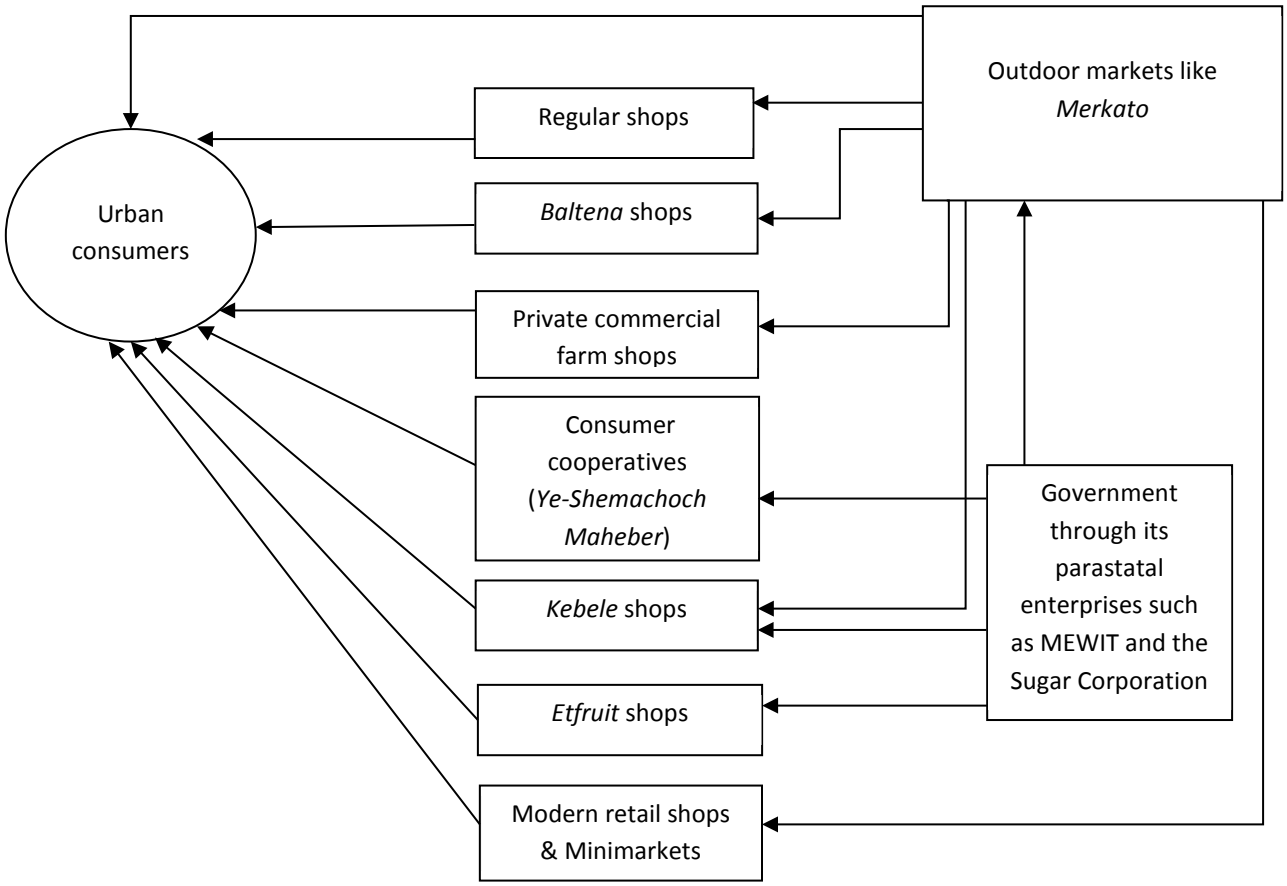


Source: Authors' analysis

[10] Private commercial farm shops are few in number in Addis Ababa and some of them do not fulfill the criteria of being modern retail outlet based on our definition of modern retail outlets.

In the case of processed foods, consumers have a relatively large number of options compared to cereals or fruits and vegetables. Many of the traditional outlets, the public cooperatives, and also the modern retail outlets are engaged in the distribution of processed foods (Figure 3.3). The wholesale markets, notably *Merkato*, serve both as wholesale and retail markets for processed foods. Traditional retailers such as regular shops, *baltena* shops, and some private commercial farm shops buy processed food from the wholesale markets and sell it to urban consumers. Most *baltena* shops prepare processed products themselves. Public cooperatives, such as consumer cooperatives, *kebele* shops, and *Etfruit* outlets, also distribute processed foods, especially edible oil and sugar. They mainly get their supplies through parastatal enterprises such as MEWIT (Merchandise Wholesale and Import Trade Enterprise) and the Sugar Corporation. Edible oil—specifically palm oil—and sugar distribution are controlled by the government. The government mostly uses the *kebele* shops, consumer cooperatives, and *Etfruit* outlets to distribute these products.

Figure 3.3—Urban distribution of processed food in Addis Ababa



Source: Authors' analysis

4. DATA

4.1. Sample

Considering the importance of different commodities within each food category as well as the availability of products at the time of the survey, we chose to examine four main cereals (teff, wheat, maize, and sorghum), five fruits and vegetables (tomato, potato, onion, banana, and orange), and four processed foods (edible oil, sugar, *shiro*, and *berbere*). Each of these products is of a considerable importance in the diet of urban consumers (Berhane et al. 2012).

To select a representative sample of food retail shops for these food items, we relied on a stratified sampling scheme. Based on the map of the city, we created five geographical strata with two neighboring similar sub-cities in each stratum. We then randomly selected one sub-city from each stratum, giving us in total five sub-cities to work with. Next, we collected information from the city's Trade and Industry Office which provided us complete lists of formal food outlets in each sub-city. For the informal outlets (i.e. microsellers), a census of all the outlets at a localized level was done. Once we had these lists, we then randomly selected outlets to be interviewed. The survey was conducted in March and April 2012. Detailed information was collected on, among others, turnover, price, and quality of products.

The following methodology was implemented for the sample set-up of the survey. In each selected sub-city, four *kebeles*[11] were selected randomly. Within the selected *kebeles*, two *ketenas* were selected randomly. Depending on the food categories and taking into account the relative number of the different food retail outlets, the following sampling scheme was set up (Table 4.1): (a) *At the sub-city level.* All the so-called supermarkets and minimarkets, consumer cooperatives, *kebele* shops, *Etfruit* shops, and private commercial farm shops in the selected sub-cities were surveyed. (b) *At the kebele level.* All the flour mills were surveyed. 10 regular shops, 10 fruit and vegetable grocery shops, 5 cereal shops, and 5 *baltena* shops were randomly selected and surveyed. (c) *At the ketena level.* Three informal microsellers of fruits and vegetables were randomly selected and interviewed. In total, 1,226 retail outlets were interviewed. Table 4.1 gives an overview of the selected outlets in each category. When estimates are done on the share of different outlets for the city as a whole, appropriate sampling weights were calculated and used for extrapolation.

Table 4.1—Sample set-up

Retail outlet type	Sampled number of observations	Number of outlets in the city as a whole	Sampling strategy
Supermarkets*	160	627	All in in the sub-city
Consumer cooperatives	109	221	
Private commercial farm shops	2	4	
Kebele shops	7	14	
Etfruit shops	29	63	
Flour mills	264	1,084	All in the selected *kebeles*
Regular shops	201	20,182	10 randomly sampled in each *kebele*
Fruits and vegetable grocery	187	3,526	
Cereal shops	61	1,851	5 randomly sampled in each *kebele*
Baltena shops	99	1,362	
Microsellers (*gulits*)	107	5,083	3 in each *ketena*
Total	*1,226*	*34,019*	

Source: Authors' calculations
Notes: Data for the five sample sub-cities were obtained for most outlets from the Trade and Industry Office; then population figures of sub-cities are used to extrapolate the numbers to the city as a whole. The census for microsellers was done in two *ketenas* per *kebele*; those numbers were first extrapolated to the *kebele* based on the number of *ketenas* in that *kebele* and to the sub-city based on the number of *kebeles* in the sub-city; then it was extrapolated to the city as a whole using population figures of sub-cities.
* Applying our definition of modern retail (self-service and at least one cash register), from all surveyed 160 supermarkets, 52 outlets were classified as modern retail shops; the rest were classified as minimarkets.

4.2. Descriptive Statistics

We start with some simple descriptive statistics for the sampled retail outlets (Table 4.2). Most owners of the different retail outlet types are men. There are two exceptions to this, i.e. the *baltena* shops and the microsellers with 79 percent and 89 percent women owners, respectively. While there is not a big variation in the average age of the owner (between 37 and 46 years averaged by outlet type), we find however that the years of formal schooling vary significantly between outlet owners. Microsellers have had the least schooling (3 years), while owners/managers of private commercial farm shops have the longest education (15 years). Next are the modern retail shop owners and *Etfruit* shop managers with 12 years of schooling, followed by the minimarket owners and consumer cooperative owners/managers with 10 years of schooling. Table 4.2 further shows that private commercial farm shop owners/managers and consumer cooperative owners/managers have the least experience (less than 2 years), while *Etfruit* shop managers have most (on average 14 years). *Kebele* shops have existed longest, while consumer cooperatives are the most recent arrival in the retail market landscape in Addis Ababa. As the average start-up year of the outlets mostly coincides with the length of the average experience of the owner, this seemingly indicates that most outlets were started by the current owner.

[11] *Kebeles* are the second administrative level for the city under a given sub-city (recently *kebeles* have been re-organized to *woredas* with slight changes in geographical coverage). *Ketenas* are the next more-local administrative level.

Table 4.2—Descriptives of the sampled outlet types

		Unit	Mini-market	Consumer coopera-tive	*Kebele* shop	Flour mill	Cereal shop	Regular shop	F&V grocery shop	Private commercial farm shop	F&V micro-seller	*Etfruit* shop	*Baltena* shop	Modern retail shop	Total
Number of observations			108	109	7	264	61	201	187	2	107	29	99	52	1,226
Background owner															
Gender (% of female owners)		Percent	32	0	-	16	36	34	47	50	89	0	79	38	42
Age in years		Average	38	46	-	41	42	37	37	45	38	42	41	44	39
Years of formal schooling		Average	10.2	10.0	-	7.2	6.4	7.5	6.7	15.5	2.8	12	8.7	12.1	7.4
Experience in years		Average	6.5	1.8	-	7.6	7.4	8.5	7.1	1.4	6.9	14	5.6	9.6	7.4
Background of the retail outlet															
Start-up year		Average	2006	2007	1986	2004	2005	2003	2005	2003	2004	2004	2006	2002	2004
Number of people employed		Average	3.6	6.8	5.4	2.8	1.4	1.7	2.1	8	1.2	2.2	1.8	10.0	3.0
Area of the shop (m2)		Average	22	74	90	59	13	11	13	289	2	30	7	74	34
% of shops that provides home		Percent	4	5	14	62	15	2	5	50	2	0	2	13	17
% of shops that provides credit		Percent	31	3	0	69	62	58	34	100	39	0	41	24	44
% of shops that provides discounts		Percent	5	11	29	15	28	11	19	50	5	0	17	19	14
% of shops that are also wholesalers		Percent	4	59	29	2	2	1	4	50	3	24	0	17	9
Type of weighing scale used by outlets:	Mechanical	Percent	78	98	86	100	79	97	86	50	23	76	81	58	83
	Electronic	Percent	15	2	0	0	0	0	1	50	4	24	3	23	4
	None	Percent	7	0	14	0	21	3	13	0	74	0	16	19	13

Source: Authors' calculations from Addis Ababa Food Retail Survey 2012.
Notes; F&V = Fruit and Vegetable.

The average shop area varies between 3 and 90 m^2. Private commercial farm shops, *kebele* shops, consumer cooperatives, and modern retail shops are relatively larger. They also have the largest number of employees, with modern retailers employing the highest number of people (10 on average). Private commercial farm shops, consumer cooperatives, and *kebele* shops are also relatively important employers (with on average 8, 7, and 5 employees respectively). Most outlets use a mechanical weighing scale. An electronic scale is only used by one quarter of the *Etfruit* shops and modern retail shops, and 15 percent of the minimarkets. It is surprising to note that one out of five cereal shops do not own any scale. More than half of the consumer cooperatives, as well as 29 and 24 percent of the *kebele* and *Etfruit* shops, respectively, are also wholesalers. Very few of the privately-owned retail shops are also wholesalers. However, modern retail shops are a bit different in this way with 17 percent of the shops reporting to be a wholesaler as well.

Looking at the different services offered to the customers, we find that there exists a large variation among outlet types in the provision of home delivery and credit. In general, few shops provide home delivery, with the exception of flour mills: more than 60 percent of the flour mills provide this service to its customers. The share of flour mills, cereal shops, and regular shops that provide credit is significantly higher than the share of modern retail shops and minimarkets. Cooperatives (consumer cooperatives, *kebele* shops, and *Etfruit* shops) seldom provide any credit to consumers. Giving discounts—e.g., to regular customers—is not a common practice among food retailers: the share of shops that offer discounts ranges from 0 percent of the *Etfruit* shops to 29 percent of the *kebele* shops. Also, one of the two surveyed private commercial farm shops provides discounts.

For each retail outlet, prices were asked for all the varieties and types of the studied food products that the outlet was selling at the time of the survey. Table 4.3 shows how these prices vary in our dataset. As could be expected, processed products are in general much more expensive than cereals, fruits, and vegetables. *Berbere* and edible oil are the most expensive products. The lowest prices per kg are observed for maize and potato. The lowest price variation, as seen by the coefficient of variation, is noted for sugar, seemingly as prices are set by the government. However, some variation is noted indicating that some of the sold sugar does not fall under this price regime. The largest price variation in relative terms is noted for maize and for edible oil. In the case of oil, this seems to reflect the large diversity of oils that is found in the retail market in Addis Ababa.

Table 4.3—Price variation

	Number of observations	Mean in ETB/kg	Median in ETB/kg	Standard deviation	Coefficient of variation
Cereals					
Teff	1042	11.9	12.00	1.45	0.12
Wheat	608	9.47	9.00	3.30	0.35
Maize	453	6.74	6.00	5.00	0.74
Sorghum	338	8.00	8.00	0.93	0.12
Fruits & Vegetables					
Potato	300	6.77	7.00	1.79	0.26
Tomato	332	10.10	10.00	2.51	0.25
Banana	201	8.30	8.00	0.99	0.12
Onion	390	9.01	9.00	1.62	0.18
Orange	105	16.86	18.00	4.34	0.26
Processed food					
Edible oil	1247	47.18	43.00	32.31	0.68
Shiro	864	37.98	40.00	14.07	0.37
Berbere	634	78.68	80.00	16.45	0.21
Sugar	342	14.52	14.50	1.08	0.07

Source: Authors' calculations from Addis Ababa Food Retail Survey 2012.
Note: At the time of the survey, ETB 17.3 = USD 1.00.

5. MARKET SHARE OF RETAIL OUTLETS

Table 5.1 shows the relative importance of different types of retail outlets for the studied food products. We see large differences by product type. The flour mills dominate the urban cereal markets. 61 percent, 64 percent, and 64 percent of teff, maize, and sorghum respectively is sold by the flour mills. The other important outlets are cereal shops where consumers buy cereals in grain or in flour form. Those who buy in grain form usually then bring their produce to mills afterwards. Seemingly few people mill at home. Addis Ababa consumers generally prefer not to buy prepared flour but like to first verify the quality of cereals before milling. In contrast with other countries, the direct sale of cereals in flour form is therefore limited.[12]

Wheat is an exception to this pattern of consumers purchasing cereals from flour mills and cereal shops. 75 percent of all the wheat, mostly imported, is sold by the consumer cooperatives. Flour mills and cereal shops combined are responsible for only 17 percent of the wheat retail market. At the time of the survey, most of the wheat sold in Addis Ababa was imported through government channels, which prefer to sell it through consumer cooperatives. It is also interesting to note that about 8 percent of all teff sold in the city is done through consumer cooperatives. This teff is usually directly procured from producer cooperatives in nearby regions, bypassing wholesale traders and brokers.

Microsellers are the most important retail outlets in the case of most vegetables. They account for 37 percent, 31 percent, and 34 percent of all the potato, tomato, and onion, respectively, sold in the city (Table 5.1). Regular shops and fruit and vegetable grocery shops are the outlets taking care of most of the rest of vegetable distribution. The role of cooperatives in vegetable distribution is negligible. The major outlets for fruits are fruit and vegetable grocery shops. They account for 65 percent and 78 percent of the distribution of bananas and oranges, respectively. The *Etfruit* shops have a small share of the total distribution of these two fruits, estimated at 4 percent and 6 percent of the total distribution of banana and orange, respectively.

Regular shops are most often in the lead for the distribution of processed foods: they account for 41 percent, 21 percent, 50 percent, and 67 percent of the urban distribution of edible oil, sugar, *shiro*, and *berbere* respectively. In the case of controlled value chains by the government, consumer cooperatives are again the major outlets. They account for 72 percent of all the sugar and 54 percent of all the edible oil retail distribution. *Baltena* shops are relatively important for *berbere* and *shiro*, accounting for 23 percent and 22 percent of the market respectively.

As can be seen in Table 5.1, modern retail currently only accounts for a very small percentage of food being distributed in Addis Ababa. Its share of all products is most important in the case of oranges, making up 9 percent of total distribution. Interestingly, modern retail is not (yet) present in the important cereal market. The only cereal where it has a small market share is maize, at 3 percent. This is a surprising finding as the international pattern is that modern retail focuses in the early stage of supermarket development on cereals and processed products before moving on to perishable crops (Minten and Reardon 2008). Modern retail in Ethiopia defies this pattern, possibly because of the specific cereal preferences of urban consumers in Ethiopia, the lack of standardization and grading of cereals in the traditional value chains (Gabre-Madhin 2001), and the lack of large cereal processing companies that can assure a steady quality supply.

[12] As converting grain to flour is a time consuming undertaking and as opportunity costs of time of consumers increase with increasing incomes, this pattern of grain purchasing followed by milling might disappear over time.

Table 5.1—Importance of different outlets (%)

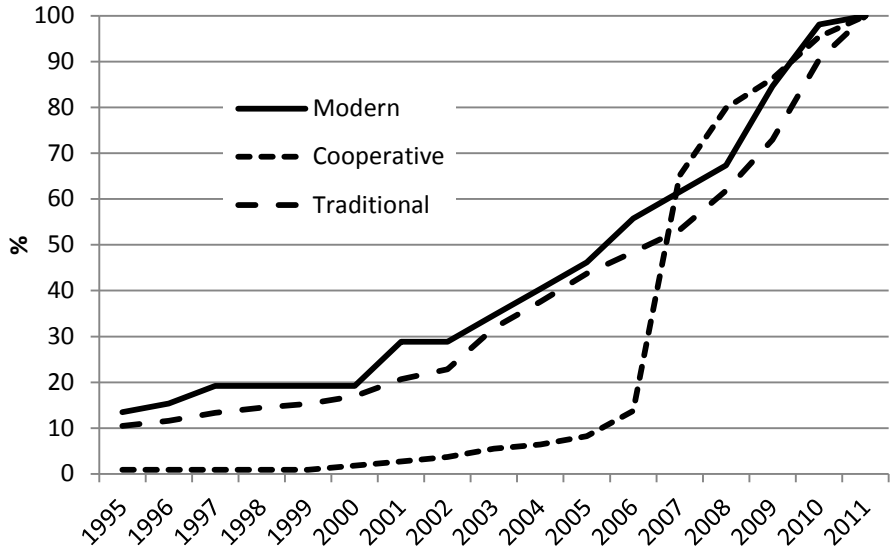
	Cereals				Fruits and vegetables					Processed food			
	Teff	**Wheat**	**Maize**	**Sorghum**	**Potato**	**Tomato**	**Onion**	**Banana**	**Orange**	**Edible oil**	**Sugar**	***Shiro***	***Berbere***
Minimarkets	0	0	0	0	3	3	2	7	9	2	0	5	3
Consumer cooperatives	8	75	4	1	0	0	0	0	0	54	72	3	0
Kebele shops	2	1	0	0	0	0	0	0	0	1	0	0	0
Flour mills	61	7	64	64	0	0	0	0	0	0	0	9	0
Cereal shops	29	10	28	34	0	0	0	0	0	0	0	4	2
Regular shops	0	4	0	0	33	38	31	20	0	41	22	50	67
F&V grocery shops	0	0	0	0	24	26	30	65	78	0	0	4	2
F&V microsellers	0	0	0	0	37	31	34	3	0	0	0	0	1
Private commercial farm shops	0	0	0	0	0	0	0	0	0	0	0	0	0
Etfruit shops	0	0	0	0	0	0	0	4	6	1	5	0	0
Baltena shops	0	0	0	0	0	0	0	0	0	0	0	22	23
Modern retail shops	0	1	3	0	2	2	2	1	8	1	1	2	2
Total	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Authors' calculations from Addis Ababa Food Retail Survey 2012.

Notes: F&V = Fruit and Vegetable

While the share of modern retail is currently small, it is however quickly emerging, as seen in Figure 5.1. It shows that 50 percent of the modern retail shops were started in the last 7 years. However, the growth rates are not significantly higher than for traditional retail, indicating high turnover and/or significant growth as well for the sector, possibly driven by rapid urbanization in the last decade (Schmidt and Kedir 2009). Figure 5.1 further shows the rapid emergence of cooperative urban food retail, with a big jump in the creation of new cooperatives between 2007 and 2008. Given the increasing importance of modern private and cooperative retail in food retail, we focus in detail on these types of outlet and the role that is filled by them.

Figure 5.1—Cumulative density functions of start-up years



Source: Authors' calculations from Addis Ababa Food Retail Survey 2012.

Table 5.2 presents some characteristics of modern retail outlets, defined as those outlets where consumers do self-service and which have at least one cash register. 52 of these outlets were part of our survey. The physical size of most modern retail outlets is still relatively small, at 74m^2 on average. The average number of cash registers is slightly higher than 1. Only 8 percent of modern retail outlets are part of a chain. Most of the owners are local Ethiopians. Owners estimated that still a limited number of people travel to modern retail outlets by car, i.e. less than one-third. However, these numbers are significantly higher than the share of people that owns a car in Addis Ababa.

To better understand where these modern outlets are located, we run a simple regression with the log of the (potential) rent paid for a retail outlet shop on sub-city dummies, area of the shop, and a modern retail dummy. The results at the bottom of Table 5.2 show that the rent paid for these modern retail outlets is significantly higher compared to other retail outlets, controlling for sub-city dummies as well as for the area of the shop. These results indicate overall that it is mostly wealthier people that visit these modern retail outlets and that modern retailers also focus on wealthier areas, as has been noted in other countries (Tschirley et al. 2010).

It seems that modern retail in Ethiopia is currently in its infancy and is still far away from the type of supermarket roll-outs that are seen in other parts of the world (Reardon et al. 2003). Ethiopia has not yet started the supermarket revolution and customers are currently not able yet to benefit from the one-stop shopping that might reduce consumers' search costs significantly and for which modern retail outlet (wealthier) consumers are often willing to pay more, with possible upstream effects for farmers.

Table 5.2—Characteristics of modern retail

a. Descriptives modern retail		Unit	Statistics
Number of observations		Number	52
Type of modern retail outlet	Supermarket	Number	38
	Minimarket	Number	14
Area (in m^2)		Average	74
Number of cash registers		Average	1.2
Part of a chain		Percent	8
If yes, how many shops in chain?		Average	2
Stand-alone?		Percent yes	85
Entrance?	On parking lot	Percent	25
	On street	Percent	75
% of customers that own car		Average	32
% of customers that come with car		Average	32
Background owner: - Ethiopian		Percent	96
- Ethiopian-diaspora		Percent	2
- Foreigner		Percent	2
b. Determinants of log(rent paid)		**Coeff.**	**t-value**
Area of the shop		0.0088	7.22
Modern retail (yes=1; no=0)		1.6728	10.01
Sub-city dummies (default=Arada)			
Bole		0.0006	0.01
Kolfe Keraniyo		-0.5691	-5.14
Lideta		0.0531	0.44
Nifa silk		-0.4043	-3.14
Number of observations		1070	
F(6,1063)		54.84	
Prob>F		0.0000	
R-squared		0.2716	
Root MSE		1.1655	

Source: Authors' calculations from Addis Ababa Food Retail Survey 2012.

As discussed in Section 2, the government is currently involved in the distribution and price control of a number of food products (sugar, palm oil, and wheat).[13,14] A number of follow-up questions were asked for outlets that sell these controlled products. While prices of palm oil and sugar were fixed, this was not as common in the case for wheat (only 21 percent of the wheat outlets reported to have a fixed price for this cereal). We present some further analysis for those outlets that state to be governed by price controls. Price controls do not only hold for products sold by public cooperatives but are also practiced by other outlets (Table 5.3).[15,16] On top of price controls, a significant number of outlets also stated that they had limits on the quantities that they could sell. These could be maximum as well as minimum limits. Maximum limits are most prevalent as indicated by 55 percent of the sugar and palm oil outlets where prices are fixed. Minimum limits are especially prevalent for the case of wheat (52 percent of the outlets).

Table 5.3 further shows that a large number of these outlets are characterized by a number of rationing issues. First, between 40 percent (wheat) and 60 percent (sugar) of the outlets that indicate that prices are controlled, state that they have at some point run out of stock in the last 12 months.[17] For those outlets that run out of stock, outlets were 32 percent, 35 percent, and 39 percent of the time unable to sell wheat, palm oil, and sugar, respectively, because of lack of supplies. Second, when supplies are available, most of these outlets also had regularly queues of people lining up

[13] These products seem to have been selected because of ease of government intervention: the three products are imported by parastatals or are largely produced by state-owned companies (for sugar).

[14] However, during the field survey, it was noted that in some cases, there are still localized attempts to control prices of other food products as well. In one of the surveyed flour mills, a note was posted with maximum prices for different products as well as another note indicating "If you find this mill selling magna at a price above 1,600 ETB/quintal, call these phone numbers: x and xx". The note was stamped by the Trade and Industry Development Office of the responsible *woreda*. The owner of the mill indicated that another neighboring mill had been forced to close a couple of weeks earlier because it had not respected these prices.

[15] Consumer cooperatives sell wholesale to regular traders at a lower price than the retail price, allowing for a small margin. However, the controlled price for consumers should be the same no matter where they buy.

[16] A common complaint was that regular private shops did not want to sell the products where prices were controlled given the small—and controlled—margins. To assure availability, the government sometimes forced retailers to offer these products by putting up notes in these shops informing customers to call the Trade and Industry Development Office if a controlled product was not available.

[17] It is not always clear where the constraint in the supply chain is. It might be at the wholesale as well as the consumer cooperative level. To order these products, consumer cooperatives have to go through a process that takes time. Retailers might run out of stock if this process was not started on time. As products have to be paid up-front, some of the consumer cooperatives also lack the necessary capital to hold all of the products at once.

to buy the product. Retail outlets estimate that between 22 percent (wheat) and 32 percent (palm oil) of the time there was queuing in the outlets. The maximum number of customers in such a queue was over 40 people. It appears that, because of the opportunity costs of time in queuing, the effective prices that consumers face are thus often significantly higher than the cash prices paid.

Table 5.3—Price control problems with sugar, palm oil, and wheat outlets

	Unit	Sugar outlets	Palm oil outlets	Wheat outlets
Price fixing				
Price is currently fixed by the government	Percent yes	91	80	21
If price is fixed, average level	ETB per kg or liter	15	26	20
Outlets affected by price fixing:				
- consumer cooperatives	Percent	29	33	84
- regular shops	Percent	42	42	1
- minimarkets	Percent	18	14	1
- others	Percent	11	11	14
For those outlets that practice price fixing:				
a. Rationing				
Outlet has a maximum limit on what it sells to consumers	Percent yes	55	55	73
If a maximum limit exists, level of limit (kg or liter per customer)	Mean	40	34	43
	Median	4	5	50
Outlet has a minimum limit on what it sells to consumers	Percent yes	35	33	52
If a minimum limit exists, level of limit (kg or liter per customer)	Mean	9	11	26
	Median	1	3	22
b. Lack of supplies				
Outlets that ran out of stock in the last 12 months	Percent	60	57	40
% of time that outlet was unable to sell because of lack of supplies	Percent	35	39	32
c. Queues				
Outlets that had queues of people (>10 people) lined up at some point	Percent yes	67	36	42
Longest queue (people) that the outlet had to buy this product	Mean	48	47	44
% of time that outlet had queues to buy this product	Percent	30	32	22

Source: Authors' calculations from Addis Ababa Food Retail Survey 2012.

6. MODERN VERSUS TRADITIONAL RETAIL

6.1. Quality Comparisons

In other countries, modern retail outlets do not only charge higher prices, they also sell higher quality products (Minten and Reardon 2008). A formal test of this hypothesis is presented in Table 6.1.[18] Columns 1 and 2 of the table show estimated probit coefficients from the regression of two cereal quality indicators on retail outlet dummies. White cereals, particularly teff and wheat, are considered to have higher quality and consumers often pay a significant quality premium for these (Minten, Stifel, and Tamru 2012). While we have very few modern retail outlets engaged in vending cereals (see Table 5.1), in column 1 we find that these retailers are more likely to carry white cereals compared to both consumer cooperatives and *kebele* shops. Similarly, minimarkets and regular shops are nearly 37 percent more likely to sell white cereals compared to both consumer cooperatives and *kebele* shops. Column 2 also shows that cereals in these types of outlets are less likely to contain impurities, such as sand, small stones, husk, and bran. This effect is, however, not significant for modern retail outlets. Columns 1 and 2 show that, despite the low penetration of modern retail, they appear to focus the supply on relatively better quality cereals.

Columns 3 and 4 present the results of the probit regression with quality indicators for fruits and vegetables as dependent variables and retail outlets as independent variables. We use as measurement for quality a size dummy (large=1) and a product-specific quality measure dummy (high=1). The modern retail outlet dummy is significantly and positively related with both the size and quality indicators. The marginal effect of being a modern retailer compared to minimarkets and regular shops on size is 17 percent; i.e. fruits and vegetables sold in modern retail shops are 17 percent more likely to be in the large size category compared to those sold in regular shops. The product specific measure for quality is also

[18] Since errors for the same retail outlet could be correlated, in all specifications individual errors are clustered at retail outlet level.

found to be much higher in modern retail shops, as indicated in column 4. One noteworthy observation in column 3 is that the public *Etfruit* shops carry fruit and vegetable produce that are larger than those sold in regular fruit and vegetable grocery shops. These results indicate overall that clean, fresh, or ripe fruits and vegetables are more commonly available in modern retail and cooperative outlets. This is consistent with findings from Minten and Reardon (2008) and Gorton et al. (2011), who report that products in supermarkets are of higher quality compared to products in traditional retail outlets, such as wet markets and microsellers.

Table 6.1—Quality regressions

	Cereals		Fruits and Vegetables	
Variables	**Cereal sold is white**	**No impurities**	**Size is large**	**Quality is high**
	1	2	3	4
Modern retail shops	0.90*	0.07	0.55	0.84**
	(0.53)	(0.53)	(0.38)	(0.34)
Minimarkets and regular shops	1.06***	1.14**	-0.29	0.25
	(0.31)	(0.50)	(0.33)	(0.31)
Consumer cooperatives	-0.16	0.08		
	(0.24)	(0.32)		
Kebele shops	-0.41	-0.61*		
	(0.45)	(0.33)		
Flour mills	-0.22	-0.82***		
	(0.22)	(0.31)		
Cereal shops	-0.16	-0.77**		
	(0.24)	(0.32)		
F&V grocery shops			-0.63*	0.27
			(0.33)	(0.32)
F&V microsellers			-1.07**	-1.01
			(0.54)	(0.63)
Arada sub-city(=1)	-0.01	-0.07	0.64***	0.49***
	(0.06)	(0.08)	(0.20)	(0.17)
Bole sub-city (=1)	0.02	0.24***	0.76***	0.41***
	(0.05)	(0.07)	(0.18)	(0.15)
Lideta sub-city (=1)	0.02	-0.10	0.98***	0.50***
	(0.07)	(0.10)	(0.22)	(0.19)
Nifa silk sub-city (=1)	0.04	-0.16**	0.14	0.21
	(0.06)	(0.08)	(0.18)	(0.17)
Constant	0.31	0.88***	0.58*	-0.82**
	(0.23)	(0.31)	(0.35)	(0.33)
Observations	2,268	2,224	849	851

Source: Authors' calculations from Addis Ababa Food Retail Survey 2012.
Notes: F&V = Fruit and Vegetable. In column 1, the dependent variable takes the value 1 if cereal is white as opposed to red, brown, or dark for teff and wheat, red yellow or burned-white or burned-black for maize and sorghum (e.g., see Minten et al. 2012). In column 2, the dependent variable is 1 if there are no impurities in the grain as evaluated by the enumerator collecting data from the retail outlet. In column 3, the dependent variable is 1 for fruit and vegetable products that are large or medium in size; more than 6 cm in width for potato, more than 5 cm for tomato and orange, more than 5 cm in width and 6.5 cm in height for onion, and more than 13 cm in length for banana. The quality variable in column 4 describes other quality attributes, such as cleanness for potato, freshness for tomato and banana, absence of flies and perceived quality level for onion and ripeness for orange. We construct a dummy for each of these quality attributes where the value 1 indicates better quality, such as fresh tomato and banana and grade 1 onion. From columns 1 and 2, we lump and exclude all other retail outlets that sell cereals into the control. In columns 3 and 4, *Etfruit* shop is excluded from the regression. Robust standard errors are in parentheses. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

The quality regression results overall confirm that modern retail outlets sell higher quality products compared to traditional retail outlets. It is thus expected that they would charge higher prices for these products. This is looked at in the next section.

6.2. Price Comparisons

Table 6.2 presents hedonic price regression estimates for cereals (columns 1 through 4), fruits and vegetables (columns 5 through 9), and processed food (columns 10 through 13). Columns 2 and 3 show that prices for wheat and maize are significantly higher in modern retail outlets, even after controlling for product quality and retailer's location. We do not find any significant price differences between cereal retail outlets for sorghum and teff.

Unlike the case of cereals, modern retail outlets mostly do not charge higher prices for fruits and vegetables after controlling for quality. We find that in the parsimonious model without controls for quality, prices of fruits and vegetables are consistently higher in modern retail shops (not shown, available upon request). This, however, disappears once we control for quality as shown in Table 6.2 from columns 5 through 9. In fact, columns 5 through 8 show that modern retailers offer cheaper prices for potato, tomato, banana, and onion. However, the effects are not significant and the price levels for the same quality are comparable to prices in fruit and vegetable grocery shops. Table 6.2 also shows that *Etfruit* is found to charge significantly lower prices for orange compared to all other forms of retail outlets that sell orange.

Columns 10 through 12 further show that modern retail outlets charge higher prices for processed food items, controlling for product quality and retailer's locations. Consumer cooperatives, on the other hand, charge much lower prices for *shiro* (however, its share is small) while minimarkets and regular shops charge lower prices for *berbere* and higher prices for *shiro*. The price of sugar does not differ by retail outlet, seemingly because it has been subjected to price ceilings and tight distributional controls by the authorities.

The regression specification employed in Table 6.2 also includes a variable that captures whether the retail outlet is registered for Value Added Tax (VAT) at the time of data collection. Since cereal retailers are exempted from VAT, the analysis concentrates on the price impact of VAT on fruits and vegetables, as well as on processed food items. Table 6.2 shows that VAT-registered outlets charge significantly higher prices for nearly all the commodities that we have considered; VAT registration increases price by 23 percent (potato), 18 percent (tomato), and 14 percent (onion), while banana and orange prices seem to be unaffected by the retailer's VAT registration status.[19] The relationship between VAT registration status and prices for processed food items also appear to be strong, except for sugar. VAT registration is associated with significantly higher prices, 13 percent for edible oil and *berbere*, and 19 percent for *shiro*, controlling for type of retail outlets. As noted earlier, sugar price is tightly controlled by the state and, hence, there is no correlation between its price and VAT registration status of the retailer, as shown in the last column of Table 6.2.

In Table 6.2, we also test whether prices differ by the time of data collection. Since our survey was conducted between mid-March and mid-April, we can observe how prices evolve before and after the Ethiopian Easter, which is celebrated on the 8th of April. As shown in the table, wheat and maize prices seem to have gone down after the holiday, while prices for fruits and vegetables appear to have increased after the holiday. This might be explained by higher demand for cereals that is commonly noticed immediately before holidays, driving prices up.[20] We also find mixed results for the wholesaler dummy. Cereal wholesalers seem to offer price discounts, while fruits and vegetable wholesalers charge slightly higher prices for orange and lower prices for potato compared to fruits and vegetable outlets that do not carry these products in bulk.

[19] This percentage changes are obtained by fitting log linear regression on the hedonic price model.

[20] For example, the week preceding the Ethiopian New Year celebrated on September 11. 2012, was characterized by significant price hikes for teff, onion, and tomatoes, which led to tight price regulations and imprisonment of some traders who were believed to charge 'unfair' prices by trade bureaus at *woreda* and *sub-city* levels (Fortune, Vol. 13, No.646, September, 16, 2012)

Table 6.2—Hedonic price regression for cereals, fruits and vegetables, and processed food

	Cereals				Fruits and Vegetables					Processed food			
Variables	**Teff**	**Wheat**	**Maize**	**Sorghum**	**Potato**	**Tomato**	**Banana**	**Onion**	**Orange**	**Edible oil**	**Shiro**	**Berbere**	**Sugar**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Modern retail shops		5.16***	30.64***		-2.22	-0.96	-0.23	-0.74	6.31*	14.53**	12.00***	11.22***	0.01
		(1.10)	(6.23)		(1.63)	(1.48)	(0.57)	(0.89)	(3.72)	(6.22)	(1.85)	(2.59)	(0.67)
Minimarkets and regular shops	-0.08	0.84			-1.44	-0.66	0.08	-0.26	9.96***	3.49	2.39**	-6.35***	-0.34
	(0.30)	(0.67)			(1.45)	(1.34)	(0.52)	(0.54)	(3.13)	(5.92)	(1.11)	(1.66)	(0.54)
Consumer cooperatives	-0.74*	-1.28**	2.39	0.59						-2.04	-10.29**	0.74	-0.67
	(0.40)	(0.59)	(2.01)	(0.42)						(5.78)	(5.21)	(6.00)	(0.56)
Kebele shops	-0.07	-2.53***	-0.89										
	(0.35)	(0.50)	(1.97)										
Flour mills	-0.54**	-1.47***	0.11	0.44									
	(0.25)	(0.43)	(0.47)	(0.32)									
Cereal shops	-0.39	-0.96**	0.44	0.50									
	(0.28)	(0.49)	(0.54)	(0.33)									
F&V grocery shops					-1.22	-0.24	-0.14	0.42	10.03***				
					(1.43)	(1.35)	(0.45)	(0.52)	(2.58)				
F&V microsellers					-1.55	0.96	1.27*	0.23					
					(1.64)	(1.61)	(0.65)	(0.85)					
Data is collected before the Ethiopian Easter	-0.09	0.43***	0.73*	-0.27**	-1.01**	-0.98**	-0.09	-1.01***	0.34	-1.17	-1.16	-0.78	
	(0.10)	(0.16)	(0.41)	(0.13)	(0.40)	(0.43)	(0.20)	(0.27)	(1.66)	(1.18)	(0.96)	(1.44)	
Years of operation of the outlet	-0.00	0.01	0.06	0.01	0.01	-0.02	-0.02	-0.00	-0.10*	-0.05	0.08	0.01	-0.02***
	(0.01)	(0.01)	(0.06)	(0.01)	(0.03)	(0.04)	(0.02)	(0.02)	(0.05)	(0.06)	(0.06)	(0.08)	(0.01)
Provides home delivery service	0.09	-0.34*	-0.10	0.13	-0.62*	0.60	0.20	-0.34	-1.10	-2.71	0.61	-3.39	-0.55
	(0.10)	(0.18)	(0.26)	(0.15)	(0.35)	(0.51)	(0.36)	(0.32)	(2.09)	(2.51)	(2.04)	(2.73)	(0.34)
Outlet is a wholesaler	-0.43	-0.10	-3.83	0.13	-0.94*	1.32	-0.26	-0.00	3.44*	-0.51	0.11	6.92**	-0.38**
	(0.28)	(0.44)	(3.11)	(0.23)	(0.56)	(0.92)	(0.43)	(0.42)	(1.87)	(1.80)	(2.37)	(3.16)	(0.19)
Outlet is registered for VAT					1.85***	2.16***	0.51	1.32**	1.87	6.09***	6.73***	10.88***	0.01
					(0.63)	(0.51)	(0.33)	(0.51)	(1.47)	(1.65)	(1.31)	(1.81)	(0.32)
Constant	11.07***	9.72***	4.83***	6.91***	8.09***	10.62***	8.75***	8.34***	-10.03	54.71***	25.62***	73.02***	15.38***
	(0.36)	(0.77)	(0.70)	(0.60)	(1.60)	(2.03)	(0.88)	(0.92)	(8.05)	(9.85)	(7.59)	(3.76)	(0.98)
Observations	919	338	315	214	133	180	122	217	57	1,139	623	511	298
R-squared	0.642	0.686	0.811	0.448	0.577	0.438	0.234	0.402	0.696	0.709	0.415	0.396	0.233

Source: Authors' calculations from Addis Ababa Food Retail Survey 2012.

Notes: F&V = Fruit and Vegetable. The regression model includes controls for locations and several quality indicators, such as origin, size, cleanness (impurities), and color, among others. We do not report the coefficients for these controls for the sake of brevity (results are available upon request). From columns 1 and 2, we lump and exclude all other retail outlets that sell cereals into the control. From columns 5 through 9, *Etfruit* shop is excluded. In the rest of the specifications, from columns 10 to 13, the excluded retail outlet is *Baltena* shop. Robust standard errors in parentheses. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

Matching is performed to compare price differences between modern retail outlets and traditional retail outlets as well as between cooperatives and traditional outlets. Following the work of Heckman, Ichimura, and Todd (1998), Abadie and Imbens (2002), and Abadie et al. (2004), we employ two types of matching techniques, matching based on univariate propensity scores (PSM) and matching based on a matrix of covariates called Biased Corrected Matching (BCM).

PSM creates matches based on the predicted probability of having a product of certain attributes, such as origin, color, location, and quality, in the modern retail outlet (or cooperatives), as opposed to traditional outlets. We employ Epanechnikov kernel weights which down weigh distant observations in terms of propensity scores. Our PSM approach also imposes a common support restriction where we trim treatment observation with propensity scores higher or lower than the maximum or minimum scores of observations in the control group. As a robustness check, we also report estimates from BCM, where we correct for imbalances resulting from using several matching covariates. We employ a BCM estimator using nearest neighbor matching techniques with replacement to improve the sensitivity of the simple matching estimators to the number of matches.

Tables 6.3 to 6.5 present the matching estimates for each product group. In the first three columns of each table, modern retail outlets are considered as treatment while all the rest of the retailers, which are lumped into the 'traditional' outlets, are considered controls. From columns 4 through 6, the treatment group is constructed by lumping consumer cooperatives, *kebele* shops, and *Etfruit* shops into cooperatives and the control group is composed of traditional private retail outlets. Consistent with the hedonic regression results discussed in Table 6.2, Table 6.3 shows that modern retail outlets charge considerably higher prices for wheat and maize. Not surprisingly, cooperatives are found to charge the lowest prices for wheat and teff, as shown in column 6 of the table. As shown in the bottom of the table, the BCM estimates are comparable to the PSM estimates both in direction and magnitude.

Table 6.3—Matching estimates prices cereals

	Matching 1: Private modern versus rest			Matching 2: Cooperatives versus rest		
	Treated (Modern)	Controls (Traditional)	Difference	Treated (Cooperatives)	Controls (Traditional non-cooperatives)	Difference
	(1)	(2)	(3)	(4)	(5)	(6)
Propensity Score Matching (PSM)						
Teff						
Unmatched	na	na	na	11.5	12.1	-0.56**
ATT	na	na	na	11.5	12.0	-0.44
Number of observations	0	0	0	50	510	
Wheat						
Unmatched	15.4	11.9	3.50***	8.15	9.17	-1.01***
ATT	16.0	11.7	4.28***	8.54	9.87	-1.33*
Number of observations	5	33		34	69	
Maize						
Unmatched	35.1	6.04	29.0***	6.24	6.00	0.24
ATT	35.1	6.04	29.0***	6.24	6.02	0.21
Number of observations	7	13		12	59	
Biased Corrected Matching (BCM)						
Teff			na			-0.49***
Wheat			3.92***			-2.27***
Maize			28.4***			0.23
Sorghum			na			0.50

Source: Authors' calculations from Addis Ababa Food Retail Survey 2012.
Notes: ATT=Average treatment for the treated. na = not available. From columns 1 through 3, the treatment group corresponds to modern retail outlet while other retail outlets are lumped into the control group (traditional retailers). From columns 4 through 6, cooperatives (consumer cooperatives, *kebele* shops, and *Etfruit* shops) are in the treatment group while the remaining outlets, excluding modern outlets, are in the control group. PSM is performed on the common support region (e.g., Heckman et al. 1998), and BCM uses nearest neighbor matching estimator where a treatment observation is matched with four neighboring control observations. We match based on several confounders, including location and quality indicators, such as sub-city, origin, size, cleanness (impurities), and color among others. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

Table 6.4 illustrates that modern retail outlets charge slightly higher prices for fruits and vegetables before matching. In the matched sample, however, only the price difference for potato and tomato are statistically significant. In the BCM approach, tomato remains highly priced in the treatment group. The price comparison between cooperatives and other traditional retailers, such as fruits and vegetable grocery shops and microsellers, is reported from columns 4 through 6 in the table. Due to the small sample size, we are not able to compare the prices in the PSM setting. Yet we find that

banana is much cheaper in cooperatives than for traditional retailers, an effect largely driven by *Etfruit* shops. Similarly, the BCM results indicate that cooperatives charge much lower prices for banana, onion, and orange.

Table 6.4—Matching estimates prices fruits and vegetables

	Matching 1: Private modern versus rest			Matching 2: Cooperatives versus rest		
	Treated (Modern)	Controls (Traditional)	Difference	Treated (Cooperatives)	Controls (Traditional non-cooperatives)	Difference
	(1)	(2)	(3)	(4)	(5)	(6)
Propensity Score Matching (PSM)						
Potato						
Unmatched	8.38	7.32	1.06**	na	na	na
ATT	8.46	7.50	0.95*	na	na	na
Number of observations	14	46				
Tomato						
Unmatched	12.4	10.6	1.80***	na	na	na
ATT	12.0	10.6	1.40**	na	na	na
Number of observations	17	61				
Banana						
Unmatched	8.62	8.31	0.31	8.00	8.43	-0.43
ATT	8.62	8.36	0.23	8.00	8.52	-0.53***
Number of observations	16	95		11	67	
Onion						
Unmatched	10.1	9.00	1.15***	na	na	na
ATT	9.94	9.43	-0.50	na	na	na
Number of observations	18	62				
Orange						
Unmatched	18.7	16.8	2.01	na	na	na
ATT	17.4	18.0	-0.62	na	na	na
Number of observations	15	38				
Biased Corrected Matching (BCM)						
Potato			0.87			na
Tomato			2.03***			na
Banana			0.29			-0.62***
Onion			0.59			-1.18*
Orange			-0.51			-10.4***

Source: Authors' calculations from Addis Ababa Food Retail Survey 2012.
Notes: ATT=Average treatment for the treated. na = not available. From columns 1 through 3, the treatment group corresponds to modern retail outlet while other retail outlets are lumped into the control group (traditional retailers). From columns 4 through 6, cooperatives (consumer cooperatives, *kebele* shops, and *Etfruit* shops) are in the treatment group while the remaining outlets, excluding modern outlets, are in the control group. PSM is performed on the common support region (e.g., Heckman et al. 1998), and BCM uses nearest neighbor matching estimator where a treatment observation is matched with four neighboring control observations. We match based on several confounders including location and quality indicators, such as sub-city, origin, size, cleanness (impurities), and color among others. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

In the descriptive statistics and parametric models, prices for processed food items tended to be consistently higher in modern retail outlets. Matching estimates reported in Table 6.5 also support these findings albeit with stronger effects as indicted by higher estimates. As seen from columns 1 through 3, modern retail outlets charge higher prices for all processed food items besides sugar. Reassuringly, the PSM estimates are comparable with BSM estimates presented at the bottom of the table. Columns 4 through 6, on the other hand, show that cooperatives charge significantly lower prices for edible oil and sugar. While matching shrinks to some extent the magnitude of the unmatched estimates, the effect remains statistically significant even at 1 percent after matching. Moreover, the BCM results indicate that these findings are robust to model choices.

Table 6.5—Matching estimates prices processed foods

	Matching 1: Private modern versus rest			Matching 2: Cooperatives versus rest		
	Treated (Modern)	Controls (Traditional)	Difference	Treated (Cooperatives)	Controls (Traditional non-cooperatives)	Difference
	(1)	(2)	(3)	(4)	(5)	(6)
Propensity Score Matching (PSM)						
Edible oil						
Unmatched	77.7	40.0	37.7***	24.4	46.6	-22.2***
ATT	77.7	62.7	14.9***	24.4	28.9	-4.57***
Number of observations	248	855		276	552	
Shiro						
Unmatched	56.5	39.0	17.4***	20.3	28.7	-8.44
ATT	56.5	39.1	17.4***	20.3	25.1	-4.90
Number of observations	100	391		4	17	
Berbere						
Unmatched	98.9	75.6	23.3***	74.1	75.5	-1.35
ATT	98.9	75.2	23.7***	74.1	75.3	-1.17
Number of observations	100	420		5	181	
Sugar						
Unmatched	15.0	14.5	0.45	14.2	14.7	-0.53***
ATT	15.0	14.5	0.45	14.2	14.7	-0.47***
Number of observations	16	261		104	157	
Biased Corrected Matching (BCM)						
Edible oil			13.5***			-5.45***
Shiro			15.0***			-4.89
Berbere			24.1***			-2.12
Sugar			0.19			-0.46***

Source: Authors' calculations from Addis Ababa Food Retail Survey 2012.
Notes: ATT=Average treatment for the treated. From columns 1 through 3, the treatment group corresponds to modern retail outlet while other retail outlets are lumped into the control group (traditional retailers). From columns 4 through 6, cooperatives (consumer cooperatives, *kebele* shops, and *Etfruit* shops) are in the treatment group while the remaining outlets, excluding modern outlets, are in the control group. PSM is performed on the common support region (e.g., Heckman et al. 1998), and BCM uses nearest neighbor matching estimator where a treatment observation is matched with four neighboring control observations. We match based on several confounders including location and quality indicators, such as sub-city, origin, size, cleanness (impurities), and color among others. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

The matching estimates presented from Tables 6.3 through 6.5 are largely consistent with the estimates from the parametric hedonic regression model reported in Table 6.2. While creating matches based on observed product-origin, quality, and location covariates decreases the effect of a modern retail outlet on observed price differences, modern retail outlets charge significantly higher prices for most of the food types. The findings on cooperative retail indicate that cooperatives consistently charge lower prices for all types of food items where estimates are available.

7. CONCLUSIONS AND POLICY IMPLICATIONS

Relying on unique primary data from food retail outlets in Addis Ababa, we find that there is a large amalgam of retail outlets selling food, ranging from private modern retail and public cooperatives to informal microsellers. However, the importance of these outlets differs significantly by food product. Sales from flour mills dominate in the case of cereals; microsellers and fruit and vegetable grocery shops are most important for fruits and vegetables; and traditional shops and cooperatives take care of the bulk of sales in the case of the studied processed foods. We also note increasing differentiation in food retail markets in recent years. We find that despite the prohibition of FDI in food retail, a domestic modern retail sector is quickly emerging. However, its share is still very small and it has not yet entered the cereal sector, which remains in the hands of local flour mills, cereal shops, and cooperative retail. The importance of cooperative retail is also rapidly growing. It is especially important for those products where supply chains are controlled by the government (sugar, wheat, and palm oil).

To compare food prices between different outlets, we rely on hedonic pricing regressions and matching methods. We find that the VAT system is unevenly applied across food retail outlets, leading to seemingly important differential effects on price formation. Outlets that pay Value Added Tax (VAT) charge significantly higher prices, controlling for quality. Overall, there is mostly a price premium associated with purchasing food products at modern retail outlets, an effect which is explained neither by product quality nor retailer's location differences. It seems that consumers are willing to pay

higher prices in modern retail outlets as these outlets offer a larger assortment of products, higher quality, clean shopping area, and greater convenience. We also find that cooperative retail outlets often charge lower prices. Given that most of these retail outlets were established in response to the recently observed significant food price hikes, the fact that they charge lower prices is not surprising. Our data also show that they still charge lower prices even after controlling for quality. However, these retail outlets often run out of stock, and when commodities, such as wheat and sugar, are available, buyers would sometimes have to endure long queues to buy these items.

The findings in this paper point to several policy implications. First, Headey et al. (2012) show that Ethiopia's urban poor are especially hard hit by food price inflation and volatility. While assuring low food prices for its poor people should stay an important objective of the Ethiopian government, it seems that the support could be better targeted. The current price controls for some food products, as well as the direct public involvement in import and distribution, seem to lead to inefficiency and rationing. It would be beneficial for the government to move increasingly out of the distribution of food itself, as well as to reduce price controls in these markets. Poor people in urban areas in Ethiopia might then be protected through better targeted subsidies at lower costs.

This could be achieved in two ways. A first method would be to focus food subsidies on an economically inferior food.[21] The advantage of such a targeting method is that the poor can be supported at lower fiscal burden and less leakage with little administrative costs (Pinstrup-Andersen 1988). While our results show that consumer cooperatives mostly sell less preferred qualities—and there is thus some element of self-targeting—the fact that three-quarters of all wheat and sugar is distributed under this controlled system indicates little effective targeting, leading to high and unsustainable costs for the government. Tafere, Taffesse, and Tamru (2010) further show high income elasticities for wheat, indicating that this crop is not well suited for self-targeting.[22] A second and better method would be the implementation of an urban safety net. Under such a policy, markets would determine prices, but targeted subsidies (e.g. means testing) would help protect the poorest urban consumers. Such targeted systems have been shown to effectively reduce poverty and vulnerability at lower fiscal costs, while at the same time avoiding distortions in market functioning (Coady, Gross, and Hoddinott 2004; Ahmed and Bouis 2004; Grosh et al. 2008). The latter is an important argument as the overall subsidy on imported wheat in the case of Ethiopia seems to lead to disincentives for the local wheat sector.

Second, the increasing insistence of VAT payments by tax authorities is certainly required for financing an ambitious development agenda, especially as it has been shown that Ethiopia has one of the lower tax collection rates in Africa. The impact of taxation and VAT on food prices and poverty has been looked at in other countries (e.g. Younger et al. 1999; Alderman and del Ninno 1999; and Coady, Dorosh, and Minten 2009), but its effect is not yet well understood in Ethiopia given its recent imposition and given uneven application. However, it is obvious that a better performing tax collection system leads to higher urban food prices. This seems to indicate the need for a system that protects the most vulnerable hit by these price increases and points again to the potential usefulness of a targeted urban safety net.

Third, modern retail is still a very small niche market in Addis Ababa, and it seems that urban consumers might benefit from more options in the food retail landscape, possibly opening up opportunities for the agri-food sector to benefit from consumers' increased willingness to pay. International evidence shows that modern retail takes off especially with rising incomes (Traill 2006; World Bank 2007), which seems to be happening in Ethiopia. In line with that, stimulating the emergence of a competitive private—and increasingly modern—retail sector will benefit urban consumers. While there might be costs associated with the entrance of more modern retail—as traditional retailers would possibly (but relatively, given the overall increasing urban retail markets) lose out in the long run (Joseph and Soundararajan 2009)—there are several arguments that would justify an increased presence for modern retails. These include the benefits of one-stop shopping, economies of scale by larger retail companies leading to lower prices, spillovers from their entrance, larger quality premia for products, and more efficiently organized value chains to the benefit of consumers as well as producers (Reardon et al. 2003).

[21] When households become richer, they increasingly eat less of such foods.

[22] If such a self-targeting policy would be chosen, it seems that sorghum or maize would potentially be better candidates given a lower and negative income elasticity for these staple foods in urban areas in Ethiopia (Tafere, Taffesse, and Tamru 2010).

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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://www.ifpri.org/book-757/ourwork/program/ethiopia-strategy-support-program or http://essp.ifpri.info/ or http://www.edri-eth.org/.

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