

An Urban-Rural Focus on Food Markets in Africa

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An Urban-Rural Focus on Food Markets in Africa¹

This paper takes an urban-rural focus on sub-Saharan Africa (hereafter: Africa) food markets, arguing that the structure of food demand is changing with urbanization and that policies and programs should focus on what will help both the very poor rural producers and the large number of very poor urban consumers in African cities. Aside from migration, improved access to markets is the most likely way for poor rural populations to improve their livelihoods. The growing numbers of very poor urban dwellers mean that policymakers need to consider how to keep food prices affordable without recreating the subsidies that stifled economic growth in the past. Experts on economic growth in Africa note that among all regions of the world, Africa trades the least within its region. Increasing access to domestic and regional markets is seen as key to poverty reduction, food security, and economic growth, as well as a necessary step to improve the continent's capacity to trade with the rest of the world (USAID 2005).

The growing urban population represents huge demand for African agriculture. Although some African city dwellers produce food, both for their own consumption and commercial sale, most purchase their food. This urban market is much more accessible than export markets to rural and periurban producers. In most cases, especially nonprocessed food, domestic producers can compete with imported products. Urban dwellers do not follow the same consumption diet as their rural counterparts, preferring greater amounts of meat, dairy, oils and fats, and fruit and vegetables such as tomatoes and potatoes, and they increasingly demand a year-round supply of these items. Rural producers need to first understand what is in demand, then how to supply it year round. This applies to intermediate goods as well—for example, greater demand for meat and dairy will also imply a greater demand for grains as feed for animals.

Africa has high wholesale and retail marketing margins relative to other parts of the world, and high price differentials across time and geography, indicating that marketing of African agriculture can be improved through greater vertical integration. This might include providing better market information to producers and processors; strengthening contract enforcement between producers, traders, processors, or distributors; or improving physical markets or market bureaus where commodities are bought and sold. Establishing a reliable telecommunication network can help reduce transaction costs by making it easier for producers to know when to go to market for the best price, and by keeping traders in contact with producers and retailers. Farmer associations can create economies of scale that can, for example, make it possible to purchase a truck or contract with a driver to get produce to market. Contract growing formally connects buyers to producers, for whom the buyers are willing to provide financing and technical assistance to improve the yield.

Policies and actions to improve the marketing channels that bring goods to market must not lose sight of how these affect smallgrowers and poor urban consumers. For example, supermarkets and agents/traders in fresh produce markets can be obligated to purchase a share of their produce from smallgrowers. Poor urban dwellers should be allowed to practice urban agriculture if it does not create health and safety risks. For the medium term, governments should not preclude the informal sector from continuing to provide “inferior” products because, although the urban market collectively has huge buying power, it is comprised of many households who have very limited buying power.

This paper investigates the growing domestic urban food market and the implications for small producers and the informal sector. The first section establishes how urban and rural food demand differs, looking first at dependence on purchased food and dietary preferences in the urban market, and then comparing this demand to the export market. It also documents trends in urban retail markets, with an emphasis on

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the informal sector and supermarkets. The second section disputes anecdotal evidence that African cities are mainly fed by imports. The third section focuses on three increasingly important suppliers to the urban food market: periurban farmers, urban agriculture, and processors. Section four examines Africa's difficulties with market integration, and section five describes how various institutions can improve this. The final section sets out policy recommendations targeted mainly at municipal governments and those providing assistance to them.

I. Urban Consumption Patterns and Urban Demand

Africa is urbanizing at rates faster than the rest of the world. In each of the three largest countries in East Africa, there are more than 10 million urban inhabitants. In West Africa, Nigeria dominates with 61 million urban inhabitants, but most other West African countries are also approaching a majority urban population. In Southern Africa, South Africa is the most urbanized as well as the most populous country and accounts for much of the trade in food products in the subregion.

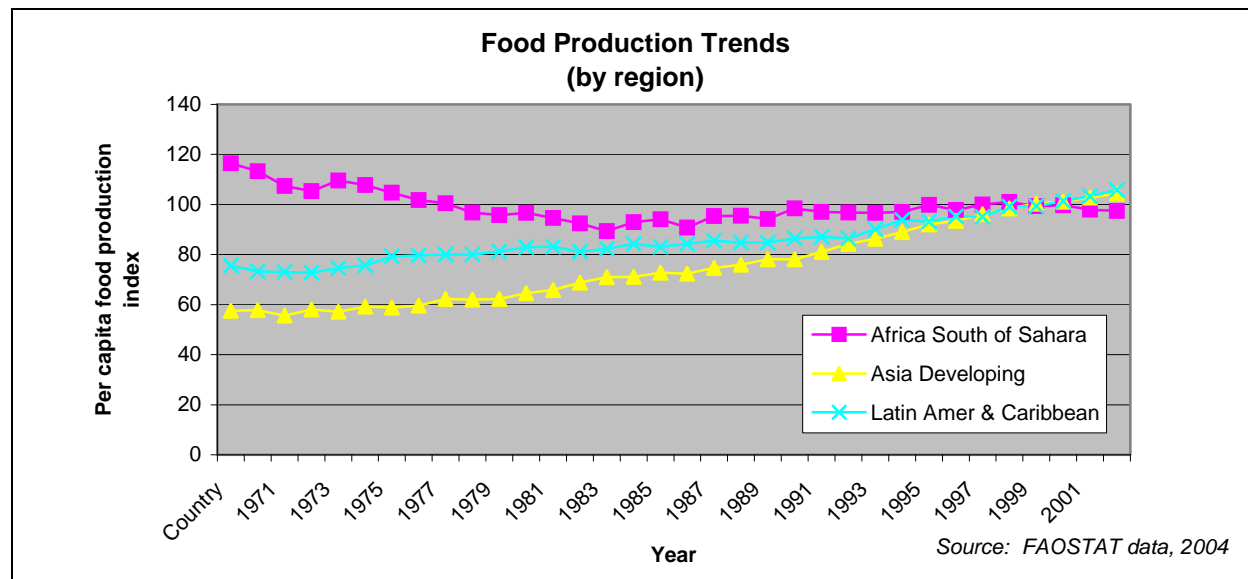
Urbanization in Sub-Saharan Africa (SSA)			
	Urban population as percent of total population (1980)	Urban population as percent of total population (2002)	Urban population in millions (2002)
West Africa			
Benin	27	44	2.9
Burkina Faso	8	17	2.0
Cameroon	31	50	7.9
Ghana	31	37	7.4
Nigeria	27	46	60.7
East Africa			
Ethiopia	10	16	10.9
Kenya	16	35	11.0
Tanzania	15	34	12.0
Uganda	9	15	3.7
Southern Africa			
Angola	21	35	4.7
Botswana	18	50	0.9
Malawi	9	15	1.7
Mozambique	13	34	6.3
South Africa	48	58	26.5
Total, Sub-Saharan Africa	21	33	227.8

Source: World Development Indicators 2004, World Bank.

Has food production in Africa kept up with demand from a growing population? It is well documented that Africa's per capita production dropped precipitously from 1970 through the mid-1980s, just as the Green Revolution was taking off in Asia.² This was a period of great transition as countries threw off the mantle of colonialism but at the same time lost export markets, and African leaders thought that import-substitution policies would leapfrog them to the status of industrialized countries. Since the introduction of structural reforms, African agricultural production has not fallen as in the period before, but it has also not grown on a per capita basis. While Asia and Latin America posted steady increases in per capita food

² See Kherallah and Delgado (2002) for a description of Africa's agricultural reforms and problems in the past two decades. Collier and Gunning (1999) point to even more basic structural constraints for Africa's agricultural disadvantages vis-à-vis the rest of the world: high risk of crop failure, geographic isolation, land abundance, incentives to diversify rather than specialize, and so on.

production over time, Africa has hovered at roughly the same level for the past 15 years (see chart below). This performance suggests that while liberalization reforms have not been effective at promoting growth, they may have been effective in halting the falling production rates over the 1970s and '80s. These numbers also suggest while there is certainly room for improvement, African food producers have been reasonably successful in keeping up with population growth.



I.A Marketed food versus subsistence

Although only one-third of Africa’s population lived in cities in 2002, urban dwellers consumed a much larger share of the continent’s marketed food because rural dwellers largely consume food they produce themselves. There is some evidence that suggests rural households are increasing their consumption of purchased food. For example, in the past decade, rural households in Tanzania began to consume more purchased food than food they had produced themselves. However, rural households still purchase only half of their food, while their urban counterparts purchase most of their food.

Purchased vs. home-produced food, Tanzania						
	Food budget share					
	Dar es Salaam		Other urban areas		Rural areas	
	'91/'92	'00/'01	'91/'92	'00/'01	'91/'92	'00/'01
Food—purchased	99	96	86	87	42	53
Food—home produced	1	4	14	13	58	47
Total spent on food	100	100	100	100	100	100

Source: National Bureau of Statistics, Tanzania (2002).

According to the Malawi Integrated Household Survey from 1997–1998, urban households purchase 90 percent of their food and rural households purchase 30 percent of their food. Household data from Mozambique’s National Household Living Conditions Survey from 1996–1997 reveal similar patterns. If we assume these proportions hold in the rest of Africa, we can weight them by the urban and rural shares of the population and come up with rough estimates of the share of food that is purchased in Africa, and

the urban and rural shares of purchased food.³ According to these estimates, urban households purchase 60 percent of all marketed food (see table below).

	Percent of food consumed that is purchased by household	Weighted by percent of total population (2002)	Purchased food as percent of total SSA food consumption	Percent of all purchased food in SSA
Urban	90 percent ^a	33 percent ^b	30 percent	60 percent
Rural	30 percent ¹	67 percent ^b	20 percent	40 percent
Total	-	100 percent	50 percent	100 percent

a. *Source:* Malawi Integrated Household Survey for 1997–1998.

b. *Source:* World Development Indicators 2004, World Bank.

If this pattern holds between now and the year 2030, when half of Africa's population will live in urban areas, there will be an increase in the share of all food that is marketed (60 percent) and in the share of marketed food that is consumed by urban households (75 percent). We might expect that as countries urbanize and develop more efficient agricultural markets, consumption in rural areas would be less on a subsistence basis. In this case, the total share of food that is marketed will increase and the rural share of marketed food would be more than 25 percent.

	Percent of food consumed that is purchased by household	Weighted by percent of total population (2030)	Purchased food as percent of total SSA food consumption	Percent of all marketed food in SSA
Urban	90 ^a	50 ^b	45	75
Rural	30 ¹	50 ^b	15	25
Total	-	100	60	100

a. *Source:* Malawi Integrated Household Survey for 1997–1998.

b. *Source:* World Development Indicators 2004, World Bank.

Experts have estimated that the urban food market in Namibia to be worth \$500 million, or roughly 12 percent of the country's gross domestic product (GDP) (Sattar, Diz and Franklin 2003). As the urban population share in Namibia matches that of the continent—33 percent of the total population—the urban food market could represent a similar share of GDP in other sub-Saharan African countries.

I.B Urban versus rural diets

Throughout the world, urban residents have been shifting their consumption away from traditional grains and toward meat, dairy, and fruit and vegetables (Huang 1996; IFPRI 2002). They are able to consume these preferred foods because they tend to have higher incomes and, living in cities, they have better access to a wide variety of food as cities are trading centers for domestic and imported goods.

³ These calculations offer a conservative estimate of marketed food. As shown in the table of data from Tanzania, the share of purchased food in urban and rural areas there is higher than that in Malawi. In Kenya, certainly an outlier in the sophistication of its markets, rural households purchase 70 percent of their food, while urban households purchase 98 percent of their food. (Nyoro et al. 2004)

There is considerable evidence from household surveys that the typical African urban diet differs from the rural diet. Reardon (1993) compiles data from various household surveys of the Sahel countries from the 1980s that show a clear distinction among the types of cereals consumed by urban and rural households, with urban households preferring rice and wheat.

Urban-Rural Cereal Consumption in the Sahel, by Percentage (Comparing consumption of various types of cereals)							
	Rice	Millet	Sorghum	Maize	Wheat	Other	Total
Ouagadougou, Burkina Faso	41	16	12	15	17	-	100
Rural Burkina-Sahelian zone	1	47	29	21	1	-	100
Sudanian zone	0	11	72	16	1	-	100
Guinean zone	6	22	57	14	1	-	100
Bamako, Mali	57	19	-	1	17	6	100
Rural Mali – Bougouni	8	83	-	6	-	3	100
Kayes	4	21	-	74	-	1	100
Niamey, Niger	55	36	2	16	-	-	100
Rural Niger – Tillabery	17	70	15	-	-	-	100
Diffa	1	53	16	24	5	-	100

Source: Reardon (1993).

Data from the 2002–2003 household consumption surveys in Mozambique show that urban and rural dwellers consume comparable amounts of maize flour. However, urban dwellers consume three times as much rice, much less cassava flour, and negligible amounts of sorghum flour. Urban dwellers consume more meat, chicken, and fish, especially fresh fish. The types of vegetables and pulses consumed by urban dwellers also differ significantly from those consumed by their rural counterparts. Urban dwellers in Mozambique prefer butter beans, tomatoes, and Portuguese spring greens, while rural dwellers consume more pea and cassava leaves.

Comparison of Urban and Rural Diets in Niassa and Cabo Delgado, Mozambique^a			
Product	Urban	Rural	Ratio of Urban to Rural Consumption
Cereals			
Rice	95	31	3.06
Maize flour	221	233	0.95
Cassava flour	51	134	0.38
Sorghum flour ^b	-	47	-
Meat & Fish			
Chicken	3	2	1.50
Fish	37	17	2.18
Vegetables and Pulses			
Butter beans	22	11	2.00
Tomato	46	22	2.09
Portuguese spring greens ^c	8	-	-
Pea	10	23	0.43
Cassava leaves	22	46	0.48

a. Quantity consumed per capita per day in grams.

b. Urban consumption was negligible.

c. Rural consumption was negligible.

Source: National Directorate of Planning and Budget, Mozambique (2004).

Data from the Malawi Integrated Survey 1997–1998 show similar patterns. Urban households spend roughly one-quarter of their food budget on cereals and one-quarter on meat and fish. In contrast, almost half of the food consumed by rural households is cereals, while the meat and fish consumed is 13 percent. Rural households consume very little eggs and dairy, while their urban counterparts spend 7 percent of their budget on these items. Urban households also consume much more cooking oil and fats and twice as much sugar.

Household food expenditure, by type of food, Malawi		
	Percent of total food expenditure	
Types of food	Urban	Rural
Cereals	26.4	48.7
Meat & Fish	25.1	13.3
Eggs & Dairy	6.5	0.8
Cooking Oils & Fats	5.6	1.5
Sugar	7.0	3.2

Source: Malawi Integrated Household Survey, in PWBM (IFPRI, etc)

Similar patterns emerge from data out of Burundi. Residents of the capital city, Bujumbura, consume more fish, meat, and alcoholic beverages. People in the rest of the country consume relatively more roots and tubers and legumes (see table below). In South Africa, because it is much more urbanized and much richer with relatively good access between urban and rural areas, one can see a change of behavior even in the nonurban population as the average household is now consuming between five and ten tomatoes per week. (Louw et al. 2004)

Household food expenditure, by type of food, Burundi		
	Percent of total food expenditure	
Types of food	Bujumbura	Rest of the country
Tubers	10.2	38.9
Legumes	10.6	22.6
Fruits & vegetables	15.6	13.2
Cereals	13.9	8.4
Alcoholic & nonalcoholic beverages	17.7	6.1
Meat & fish	20.7	3.9
Cooking oil, salt, sugar	9.0	6.1
Tobacco	0.5	0.7
Prepared food	1.8	0.2
Total	100	100

Source: Republique du Burundi, Enquête Prioritaire (1998).

I.C Urban demand relative to export markets

For most traditional and high-value food products, urban food demand is significantly greater than current export markets, (see table below). In Africa, maize is an important staple for both urban and rural households. The urban maize demand supplied by domestic producers is more than 10 times the amount of maize that is exported. Urban markets for high-value products such as meat and fish, dairy, and tomatoes are also much greater than export markets. It is striking that in Kenya, one of the strongest horticulture exporters of the continent, the Ministry of Agriculture estimates that 94 percent of horticultural products are consumed domestically. (Nyoro Ariga and Komo 2004)

Rice and sugar are the exceptions. Urban households do consume much rice and sugar, but this demand appears to be met by commercial imports. Therefore, the effective urban demand for these products from domestic farmers is smaller than the farmers' sales to export markets. It appears strange that rice and

sugar are being both imported and exported at a high level. This can be partially explained by the fact that subsidized rice and sugar production in the developed world depresses world prices and allows African urban consumers to purchase imports to satisfy their demand.

Estimates of Urban Food Demand Compared to Food Exports, all Sub-Saharan Africa, 2002			
	Urban food purchased from domestic producers ^a	Food exported	Ratio of urban food demand relative to exported food
	(1,000 metric tons)		
Maize	4278	404	11.6
Rice	931	1075	0.9
Meat & Fish	3229	1381	2.3
Milk	5992	166	36.1
Sugar	79	1587	0.05
Oils & Fats	862	458	1.4
Tomatoes	826	46	18.0

Source: FAOStat 2004.

a. Urban food purchased from domestic producers was estimated by a three-step process. First, total domestic consumption was weighted by per capita urban consumption relative to rural consumption and population. For example, the ratio of urban to rural per capita rice consumption is 3:1. Population ratio is 1:2. Therefore, the ratio of urban to rural rice consumption is 3:2. Second, the urban share of consumption was then adjusted by 0.9, the share of food consumed by urban households that is purchased. Third, 100 percent of commercial imports of a particular product were subtracted from the urban food purchased. This results in an estimate of urban food purchased from domestic producers.

1.D Informal sector and urban food retail markets

In most African countries, the informal sector plays a very large role in the urban food retail market. The sector's positive attributes include a flexibility that enables them to respond quickly to price changes; willingness to collect goods from remote producers; and low profit margins, which keep prices down. The informal sector increases choice and affordability for poor urban consumers by selling so-called inferior⁴ products not offered by the formal sector.

Even in South Africa, with probably the most sophisticated food market in Africa, the informal retail market has an estimated turnover of USD 5 billion. (As a comparison, Pick n Pay and Shoprite Checkers, South Africa's two largest supermarket chains, had net sales of USD 3.3 billion and 3.5 billion in 2003, although some of these sales are outside South Africa.) The most important part of South Africa's informal retail sector is probably the *spaza*, small retail enterprises operating from a residential stand or home, usually in black townships. In South Africa, there are perhaps more than 100,000 *spaza* shops, which probably employ close to 300,000 people (Ntloedibe 2005).

While the informal sector's extraordinarily elastic response to prices and urban demand renders it highly efficient on one level, its informality and the small scale of vendors present structural challenges that may perpetuate inefficiencies in food markets on another level. Informal food vendors face a number of problems including the following: their illegitimate status can lead to confrontations with the police and local officials;⁵ their preoccupation with price prevents any real commitment to quality control or health standards; their poor access to capital prevents investments in scale, technology, or equipment; and their

⁴ Inferior products are generally less processed than their alternative and therefore less expensive. One example is hammer-milled maize meal versus industrial-milled maize meal. Another is raw milk versus processed milk. In some cases, the "inferior" product may actually be more nutritious.

⁵ In a study of Harare's informal food transportation networks, 48 percent of vendors cited police-related delays, (Leybourne and Grant, 2000).

small size inhibits gains that might be realized through economies of scale. One sees complementary linkages between the formal and informal sector: more than 20 percent of *spaza* owners have relationships with distributors that supply soft drinks, dairy, and bakery products (Ntloedibe 2005).

According to studies in the capitals of Madagascar (1998) and Cameroon (1993), 10 to 13 percent of households reported that their major place of food purchase was from hawkers. In Madagascar, the most common place where households purchased food was in small shops, comparable to the *spazas* of South Africa, and thus considered the informal sector. In Cameroon, the open market was the principal place of food purchase. Although the market is probably considered a formal institution, many of the market participants can be characterized as informal traders. At the time of the survey, very few households purchased food at supermarkets, although this has probably changed in the past decade.

Principal place of food purchase		
	% of respondents, Antananarivo, Madagascar	% of respondents, Yaoundé, Cameroon
Gifts	0.7	–
Own consumption	1.5	2.4
“Ambulant” hawker / vendor	12.9	9.5
Small shop	47.8	20.0
Shop / Store	0.4	2.7
Public market	33.2	57.9
Supermarket	0.5	2.5
Public sector	0.0	0.1
Other	3.0	5.0
Total	100	100

Source: MADIO-DIAL Enquete 1-2-3, (1998), Madagascar; Enquête 1-2-3: ELA (Étude sur les lieux d’achat), Yaoundé, 1993.

The informal sector dominates in most fresh food sales, while supermarkets and other formal stores supply more processed food such as jam and canned fruit; baby foods; nonrice cereals; canned meat and fish; mutton; and cheese. An urban household survey conducted by the Tegemo Institute of Agricultural Policy and Development in Kenya found that 52 percent of the households interviewed bought their milk products from *dukas* (shops), 12 percent from kiosks (*kibanda*) and milk bars, 28 percent from large supermarkets, while 5 percent purchased from small supermarkets. Hawkers have become very prominent recently after the collapse of Kenya Cooperative Creameries, and supplied 16 percent of the sample households (Nyoro, Ariga, and Komo 2004).

Urban consumers choose to buy their food from the informal sector largely because of price and proximity. This pattern is seen, for example, in Madagascar (see table below). Formal-sector share of retail markets will likely increase as incomes increase and consumers demand higher quality, but in some African countries this may happen rather slowly.

Reasons for buying food from the formal vs. informal sector, by percentage				
Principal Reason	Antananarivo		Yaoundé	
	Informal	Formal	Informal	Formal
Price	16.8	21.5	42.3	20.6
Proximity	62.2	19.2	40.5	10.0
Reception / Environment	1.3	13.9	1.4	0.5
Credit	0.2	0.0	0.8	0.9
Quality	18.3	43.0	9.3	63.3
Nowhere else to go	1.0	2.1	5.1	2.7

Other	0.2	0.3	0.7	1.9
Total	100	100	100	100

Source: MADIO-DIAL Enquete 1-2-3, (1998), Madagascar. Enquête 1-2-3: ELA (Étude sur les lieux d'achat), Yaoundé, 1993.

I.E Food consumption by the urban poor and wealthy

Recent survey work from Kenya provides a somewhat different picture of informal and formal sector retail activity than the earlier survey data from Madagascar and Cameroon and also demonstrates clear distinctions in the buying patterns between poor and wealthy urban households. Kenya is more reliant on the formal sector for food markets because it has several national supermarket chains. Detailed consumer survey data from Nairobi showed that consumers spent more than one-tenth of their food shillings at large format supermarkets, with considerable variation among income groups. Households in the richest quintile spent more than a quarter of their food shillings at the large format supermarkets and the poorest spent only 2.5 percent. However, all income groups spent about the same share of their food shillings at small supermarkets (about 5 percent) (Tschirley et al. 2004).

While wealthy households might buy all types of food at a supermarket, poor and middle-income households mostly buy processed foods at supermarkets. Poor and middle-income households do not buy fresh fruit and vegetables (FFV) at large format supermarkets. Except for the households in the most wealthy quintile, Nairobi consumers spent the most of their food shillings in traditional *dukas*, almost 30 percent. The second most important food retail outlet for Nairobi consumers was the open market, followed by the butchery and then the kiosks (Tschirley et al. 2004).

Overall, the formal sector food retail outlets (small and large supermarkets) collect more food shillings than kiosks, but less than traditional *dukas*, open markets, and butcheries. One can expect for this to change with economic growth in the country, but experts from the Tegemeo Institute for Agricultural Policy and Development do not expect this to be a rapid change. Their prediction is that open markets and kiosks will continue to dominate the sales of fresh fruit and vegetables for the foreseeable future. At present, these retail outlets collect 92 percent of shillings spent by Nairobi consumers on fresh fruit and vegetables (Tschirley et al. 2004).

An IFPRI study of urban households from Accra, Ghana, found that households in the poorest expenditure quintile spend 26 percent of their per capita food budget on basic starch staples (grains, roots, tubers), while the wealthiest households spend only 18 percent on these items. In contrast, the wealthiest households spend almost twice as much of their food budget on high-value, high-protein foods, such as meat, fish, dairy, and eggs. In absolute monetary terms, a typical rich household will spend seven times more money on meat and dairy as a poor household (Maxwell and Levin 2000).

Food expenditures for the poorest and richest households in Accra, Ghana		
	Percent of total food expenditure	
Types of food	Poorest household (bottom quintile)	Richest household (top quintile)
Staples (grains & roots)	26	18
Meat & Dairy	15	29
Street Food	39	26

Source: Maxwell and Levin (2000).

The poorest households spent 39 percent of their food budget on street foods and meals away from home, and households in the two wealthiest quintiles spent 26 percent of their food budget on street meals. A

possible explanation for why the poorest households spend such a large share of the food budget on street foods is that their working hours are long and combined with long commutes to their jobs, there is little time for preparing food at home or for coming home for lunch. Female-headed households spend 36 percent of their budget on prepared foods while male-headed households spend only 31 percent of their budget on prepared foods, (Maxwell and Levin 2000). This suggests that the opportunity cost of cooking at home for female-headed households is higher than the cost of the street food. Another study from Nigeria found that city residents spent up to 50 percent of their food budget on street food, (IFPRI 2002). Street food increasingly provides a cheap, convenient—though not always nutritious—alternative for especially poor urban dwellers.

Between 1995 and 1998, the economy of Antananarivo, Madagascar, experienced a major upswing that improved the purchasing power of all households in the city. The table below gives a breakdown of the resulting changes in food budgets. Although cereals continue to be the major food budget item, their share in the food budget decreased sharply. With an additional money unit, households are more likely to spend it on meat and dairy. Even in this case when prices of meat and dairy rose much more than other products, households shifted their food budget to consume more of these products. In fact, the very high price increases in meat and dairy products may partially be due to the fact that as household incomes increased, their demand for such products increased.

Changes in budget allocation by type of food, 1995–1998: Antananarivo, Madagascar, by percentage				
Food	Price increases	Increase in real consumption	Share of food budget (1995)	Share of food budget (1998)
Cereals	+44	24	43	36
Meat, fish	+90	24	23	25
Vegetables	+92	14	9	10
Prepared meals	+42	78	5	7
Beverages, tobacco	+47	91	5	6
Oils, condiments	+11	97	5	6
Sugars, canned food	+49	42	4	4
Dairy products	+115	81	2	4
Fruits	+32	10	2	3
TOTAL			100	100

Source: MADIO-DIAL Enquete 1-2-3, (1998), Madagascar.

Increasingly, one sees product differentiation occurring in urban markets as urban consumers purchase inferior goods to cope with falling incomes and food insecurity. While absolute incomes in African cities tend to be higher than in rural areas, the incomes relative to the urban cost of living are often below, or at best on par with those in rural areas, (Jamal and Weeks 1993). Evidence from Senegal shows that inferior goods like raw cassava are increasingly demanded by urban dwellers, (Senegal Food Security Report 2003). In Kenya, consumer demand for pasteurized milk plummeted, as cheaper raw milk became available through informal trader networks when the government relaxed controls on milk prices and decriminalized the sale of unpasteurized milk in urban areas in 1992. The volume of processed milk in Kenya fell from 350 million liters in 1991 to 150 million liters in 2001. Formal processors are operating at only 22 percent of capacity. Informal milk outlets, which trade in unpasteurized milk, now account for over 80 percent of the total milk sold. As informal retailers sell raw milk without pasteurization, they can sell milk to final consumers for almost half the price of the formal retailers. Urban consumers, particularly the poor, prefer to boil raw milk themselves—a practice reportedly common in Kenyan households, (Karanja 2003)—rather than to buy the more expensive pasteurized milk.

II. African Cities and Food Imports

Before turning to how domestic producers have responded to the growing urban market, we dispute anecdotal evidence that African cities are being mainly fed by imports.

II.A Food aid

Food aid can increase the productivity of urban households by increasing purchasing power, improving labor productivity, and keeping people healthy. It can also depress the price of food and stymie local production. If food is delivered only to the very poor who would not otherwise be buying food, producer prices are unaffected. However, if food aid is delivered to the better-off population who would be buying food from local producers, producer prices suffer.⁶

The degree to which food aid supplies urban demand is not clear because there is little data that disaggregate rural and urban food aid. Data from Malawi's Integrated Household Survey (1997–1998) found that only about 1 percent of urban households' food came from gifts (which include food aid). In rural areas, about 6 percent of urban households' food came from gifts (including food aid).⁷ These data would seem to suggest that the role of food aid in supplying urban demand is minimal. However, in a parallel community questionnaire (delivered under the same Malawi survey), respondents in some cities claim that the receipt of relief aid (fertilizer, seed, or food as gift) increased over the past ten years. In the urban areas of Blantyre and Zomba, about half of responding wards claimed that there was more food aid available than there was ten years ago. In Lilongwe, 13 percent of responding wards claimed that there was more food aid; the rest observed no change. While these are not necessarily contradictory claims, they point to the need to exercise caution when determining the effects of food aid on urban food markets.

Food aid mostly does not provide products that typify the urban food diet (i.e., meat and fish, dairy, and fruits and vegetables), which further supports the case that food aid does little to satisfy urban demand. Cereals constitute 90 percent of food aid and wheat itself constitutes 46 percent of total food aid in terms of metric tons, (see table below). Approximately 6 percent of Africa's cereal consumption is imported as food aid.⁸ Almost one-fifth of all wheat consumed in Africa in 2002 was brought in as food aid. In terms of food aid, rice is much less important than wheat, constituting only 5 percent of Africa's food aid and 2 percent of Africa's rice consumption. Of the noncereals food aid, pulses and oils/fats are most important. Africa receives insignificant amounts of fruit, vegetables, dairy, or meat as food aid. These figures suggest that food aid does not follow urban dietary patterns.

⁶ In a recent study of the incentive effects of food aid on household behavior in rural Ethiopia, John Hoddinott found that food aid is *not* a disincentive for agricultural production. On the contrary, "there is some suggestion that food aid leads to increases in labor supply to agriculture, wage work, and own-business activities," (Hoddinott, 2003:2). Similarly, Abdulai et al. (2004) contend that food aid can actually increase agricultural productivity if it is targeted properly.

⁷ As this in an average, for some households, gifts or food aid may be important.

⁸ According to the FAO Food Balance Sheet (2002), Africa imports a quarter of total cereals consumed. According to the World Food Programme (2002), one-quarter of cereals imported to Africa comes in the form of food aid. This means that cereal food aid accounts for approximately 6.25 percent of total cereal consumption.

Food Aid to Africa 2002			
	Total Amount (1,000 metric tons)	% of Total Food Aid	Food Aid as % of Food Consumption
Wheat & Wheat Flour	2385	46	19
Rice	262	5	2
Coarse Grains	1599	31	N/a
Blended/fortified	427	8	N/a
Subtotal, Cereals	4673	90	6
Meat & Fish	3	0	0
Oils & Fats	199	4	4
Dairy	9	0	0
Pulses	289	6	5
Other noncereals	34	1	N/a
Subtotal, Noncereals	534	10	N/a
Total	5207	100	2

Source: FAOStat (2004); World Food Programme (2004).

II.B Commercial food imports

Commercial imports of wheat and rice represent significant shares of African food consumption. More than 60 percent of wheat and wheat flour consumed is imported commercially and more than 40 percent of rice consumed is imported commercially, (see table below). Rice, heavily imported from Asia, may crowd out domestic cereal production by lowering urban food prices. In Sierra Leone, for example, imported rice undercut locally produced rice (the national staple food) in 1995 by offering prices that were 10 to 15 percent lower. The price of a bag of local rice was about 280 leones (\$26–\$32), while imported, subsidized rice cost 230 leones (\$23–\$28) in the Freetown market, (Verheye 2000).

Commercial Food Imports to Africa and Local Production (2002)				
	Total Amount of Commercial Food Imports (1,000 metric tons)	Commercial Food Imports as % of Food Consumption	All Imports (Commercial & Food Aid) as % of Food Consumption	Local Production as % of Food Consumption ^c
Wheat & Wheat Flour	7,934	63	82	20
Rice	5,219	46	48	66
Maize ^a	1,245	5	12	108
Sub total, Cereals	14,813	19	26	95
Meat & Fish	2051	17	17	94
Oils & Fats	2256	14	15	111
Dairy	2332	13	13	96
Fruit & Vegetables ^b	866	7	7	329
Pulses	0	0	5	130

Source: FAOStat (2004).

a. Commercial imports of maize may be higher. The World Food Programme does not disaggregate data on maize food aid. Here we assumed 100 percent of coarse grain food aid to be maize and subtracted that amount from all imports to estimate commercial imports.

b. There was no data on fruit and vegetables as food aid so it was assumed that all imports were commercial.

c. Local production and imports, or even local production alone, may exceed food consumption when nonfood “uses” are important. For fruits and vegetables, spoilage is significant. Fish is used for feed. Grains are used as feed and spoilage is also significant. Oils and fats have many nonfood uses.

The only other cereal commercially imported at any significant level is maize. However, imports of maize are small relative to local production and food consumption of maize. In fact, commercial imports of maize are less than the amounts used for feed. (In the African diet, maize is as important as wheat and rice

combined. This is true for the continent on average, while different preferences are clear in different regions.)

In “Food Trade and Food Policy in Sub-Saharan Africa: Old Myths and New Challenges,” Christopher Stevens argues that the main reason why Africa imports such a large portion of its cereal is that subsidies to farmers in the developed world encourage overproduction (in the developed world) and depress world prices (Stevens 2003). Low world prices for wheat, rice, and maize mean that African cities will import more of these cereals than they otherwise would. It also means that domestic producers will get lower prices for the cereals they produce.

Commercial imports of meat and fish are significant at 17 percent of total food consumption. Given that these are high-value products, they may be even more important than wheat or rice in terms of the dollar value of import. Oils and fats and dairy are commercially imported at about 14 percent of total food consumption. Commercial imports of fruits and vegetables are half that, and commercial imports of pulses are almost nonexistent.

As shown in the table below, local producers in Kenya supply most of the meat, fish, dairy, fresh fruits and vegetables, pulses, and maize. Even supermarkets import very little fresh fruits and vegetables. Kenya together with South Africa represents the most advanced of African countries in terms of agricultural trade, so one would expect that in other African countries these products are domestically sourced at even higher rates.

	Uchumi supermarket chain	Nakumatt supermarket chain	Corner shop
Suppliers			
Farmers	20	60	80
Brokers	73	32	0
Open market	0	0	20
Importers	7	8	0

Source: Nyoro, Ariga and Komo (2004).

III. Domestic Suppliers to the Urban Food Market

As urbanization increases, and the urban demand pushes up prices for foods such as meat, fish, dairy, and vegetables, one would expect domestic producers to respond by increasing food production and shifting production patterns to accommodate urban diets. The greatest question is whether domestic producers are responding to market signals to produce for the urban market. As domestic producers are not a homogenous group, there is not one answer to this question. As described below, the first to respond to the growing urban demand have been producers located in urban and periurban areas. They have intensified or increased cultivation, diversified production, and engaged in processing functions, in response to the growing urban demand.

The African agricultural sector is dualistic, with a few highly capitalized firms integrated into export markets and a preponderance of small-scale farmers barely producing above their own subsistence level. For these small-scale farmers, the challenge to invest to achieve economies of scale or perhaps to add value-added processing functions is great. Instead of investing in their farms, they are likely to try to diversify their income sources by engaging in nonfarming activities. This is even true for relatively well-off white farmers in Namibia who will work a job in the city instead of increasing the scale of their operation. (Sattar, Diz and Franklin 2003)

III.A Periurban farming

Under the state-controlled marketing boards, farmers were assured of a fixed equal price regardless of how far or close they were to principal markets or transportation hubs. This in effect subsidized producers in remote areas and encouraged cultivation in locations where it was not economically feasible (Kherallah et al. 2002). With market liberalization, one would expect to see increased cultivation closer to population centers. Of the five FAO farming systems in the Guinea savanna zone in West Africa, the areas with highest population density (around Kano in Nigeria, Ouagadougou in Burkina Faso, and Dakar in Senegal) also have the highest percent of land under cultivation and the highest cattle density. Those areas closest to the urban market not only responded by intensifying agricultural production, but also by focusing on high-value products such as cattle.

	Population density (people/km ²)	Land under cultivation (%)	Cattle density (head/km ²)	Exploitation level
Farming system 1	63	18	11	Medium
Farming system 2	142	84	39	High
Farming system 3	238	37	20	High
Farming system 4	23	5	8	Low
Farming system 5	13	2	4	Low

Source: FAO (2002).

In West Africa, the private sector has begun intensive investment in periurban poultry, pork, and milk production systems. This means other farmers will be able to increase production of crops such as soy, which can be used as high-protein additives in animal feed. Periurban milk cooperatives complain of the competition from cheap imported milk powder, demonstrating their clear knowledge of the market and their competition (FAO 2002). Throughout West Africa, family farms have shifted their cropping patterns to a more diverse range of commodities, from basic grains to maize, cowpeas, sesame, and market gardening, (Cour and Snrech 1998). Also, many rural households have taken up fishing as an additional activity and source of income (Morand, Sy and Breuil 2005).

Farmers in the periurban region of Kumasi, Ghana, have gradually intensified cultivation and changed and diversified the crops they grow. In the 1960s, the principal crop was cocoa for export. In the 1970s, farmers shifted to cassava, maize, and okra in response to urban demand. In the 1980s and 1990s, they have diversified further, adding tomatoes and other vegetables (Toulmin and Gueye 2003). However, the closer a farm is to the city, the higher its value—and the greater the chance that investors or developers will purchase it and take it out of farming use. In the absence of secure property rights, farmers must weigh investments in the land against the risk of the land being taken away. The farmers around Kumasi now face declining soil fertility and smaller plots, which require increased use of fertilizers. As cultivated land is quickly being turned into building plots, farmers close in are becoming wary of investing in the land they farm, but farmers 20 km from Kumasi are more confident to intensify production, (Toulmin and Gueye 2003). A similar problem faces farmers in periurban Port Harcourt. The insecure land rights discourage investment in farming, and periurban residents try to commute to Port Harcourt for jobs and farm only to supplement their income, (Toulmin and Gueye 2003).

In Dakar, lax enforcement of the nonconstruction zone in the periurban area has led to a 29 percent decline in grain production between 1980 and 1994, and a 6 percent decline in the area for fruits and vegetables (Mbaye and Moustier 2000). Shifting jurisdictions under recent decentralization reforms are blamed in part for this poor enforcement:

Problems with understanding Senegalese real-estate law, particularly the 1964 National Land Act, are that those who farm the land rely on the fact that “the land first belongs to those who cultivate it.” The first actions arising from the government’s policy of regionalization and decentralization, notably the transfers of jurisdiction to local and regional authorities, are now causing the latter to play a major role in the development and redistribution of land falling under their jurisdiction. In its final provision, the National Land Act grants discretionary powers to urban community leaders to allocate land (Decupper 1995). The fear is that the well-known lack of distribution criteria, combined with pressing urbanization, are sounding the death knell for much of the farming around Dakar. (Mbaye and Moustier 2000)

The counter-example is the area around Kano in northern Nigeria, where ownership is secure and households invest in the land. In Kano, the land’s intensive cultivation has encouraged farmers to develop sustainable practices like using animal manure to treat the soil, feeding plant biomass to the animals, and using dead wood for fuel. Private ownership extends even to trees, ensuring that they are protected. This system of sustainable farming, built on notions of sustainability and property rights, has been practiced in Kano for several centuries (Toulmin and Gueye 2003).

At the same time that farmers have diversified their crops to take advantage of new market opportunities, more successful farmers are also using early or late harvests to take advantage of higher prices they bring. One example is a successful complex household in Zaradougou, Mali, which among other activities practices off-season vegetable cultivation (Brock and Coulibaly 1999). Some farmers near Himo, Tanzania, also decided to cultivate tomatoes during the rainy season despite the greater cultivation expense because they knew the higher prices in Dar es Salaam outweighed the greater costs. These farmers were distinguished from the farmers cultivating tomatoes later in the season as they had significant interaction with traders, with whom they could negotiate credit and price (Diyamett and Diyamett 2001)

III.B Urban Agriculture

As defined by the 15th Session of the Committee on Agriculture (FAO 1999), urban agriculture refers to “small areas (e.g., vacant plots, gardens, verges, balconies, containers) within the city for growing crops and raising small livestock or milk cows for own-consumption or sale in neighborhood markets.” In

Nairobi, only one-third of the land employed in urban agriculture was private residential land. The other locations were roadsides, riverbanks, and other publicly owned lands, (Foeken and Mboganie Mwangi, 1998).

Urban agriculture is not constrained by lack of infrastructure because there is less need for packaging, storage, and transportation of food, and so flourishes in Africa. Urban agriculture is also an important food source and source of income for low-income urban households. Women can engage in urban agriculture while taking care of children. Proponents of urban agriculture contend that it provides a critical buffer against malnutrition and food insecurity, during a time when jobs are scarce and poorly paid. They argue that it does not squeeze out more efficient land uses because it is relatively mobile, (Sawio 1998). Land that gets appropriated for other uses will, as witnessed in Dar, either cause the central urban land to be farmed more intensively or push farmers out to more periurban areas. Proponents also argue that urban agriculture prevents urban development on fragile lands and promotes green spaces in urban areas.

Critics of urban agriculture argue that it appropriates urban land that might be used more efficiently. They also point to the health risks of plots that locate close to contaminated sites, as in the Msimbazi valley of Tanzania, (Sawio 1998). Critics also point to the competition for resources like water and land.

According to a 1989 Zambian study, half of urban township residents practiced vegetable gardening. A 1992–1993 study in Lusaka similarly found that 40 percent of respondents still gathered wild vegetables for additional food or income, (Drescher 2000). In Kampala, Uganda, about 60 percent of the city's land is used for agriculture. About 40 percent of the food eaten in Kampala is produced within the city limits, (Urban Harvest 2003). In Nairobi, it is estimated that annually, 50,000 bags of maize and 15,000 bags of beans are produced, 250,000 chickens and 45,000 goats and sheep are reared, and 42 million liters of milk are produced (Ayaga et al. 2004).

In Yaounde, the capital of Cameroon, a city of 1.5 million, urban agriculture is practiced mostly by poor people, almost all of whom sell their produce and consume about 18 percent as an important diet supplement. Most grow African leafy vegetables because they are highly nutritious and increasingly popular with higher-income households as they learn of their comparative nutrition value relative to imported vegetables. The study of urban and periurban agriculture in Yaounde and the health risks posed by wastewater reuse found no contamination in the periurban cultivation sites but significant contamination in the urban sites. In contrast to how cultivation is practiced in cities of Eastern and Southern Africa, in Cameroon it is men who are more likely to be involved in urban agriculture (Endamana et al. 2003).

As urban income-generating opportunities become more scarce, urban agriculture acts as an important buffer against malnutrition and food insecurity. Maxwell, Levin and Csete (1998) attribute Kampala's low levels of urban malnutrition to the widespread participation in urban agriculture.⁹ In comparison, in Accra, where less than 6 percent of individuals engage in agricultural activity, about 15 percent of children were found to be stunted or underweight, and about 5 percent of women experienced malnutrition (Maxwell and Levin 2000).

According to an IDRC project report, urban agriculture in Dar es Salaam, Tanzania, contributes between 20 and 30 percent of household food. It is practiced not just by the poor, but also by the better-off

⁹ In a study of urban agriculture and nutrition in Kampala, Maxwell et al. (1998) find a statistically strong relationship between urban farming and nutritional status. Low-income households, in particular, demonstrate better nutritional status when they engage in urban farming than when they do not, suggesting that urban agriculture provides an informal safety net for the urban poor.

households in the city. The project report suggests that urban agriculture's increasing profile—across a wide swath of residents—has elevated it in the eyes of local policymakers. Local authorities have reportedly become more tolerant of the presence of crops and animals in the city. The report also points out, however, that the amount of land dedicated to urban agriculture in Dar has decreased. Instead, urban farmers are using central, interstitial city lands more intensively and pushing out into the periurban areas (IDRC n.d.).

Contestations over land drive much of the debate about urban agriculture. The amount of urban land available for farming is decreasing rapidly in most cities. In the Ga District of Accra, 2,000 to 3,000 hectares are reportedly lost each year (Larbi 1995, cited in Maxwell et al. 2000). When land is made available for other uses, it may generate short-term employment in construction or relieve the demand for low-income housing. But it also may displace urban farming locales, which provide critical food security and livelihood opportunities for many urban women.

Urban and periurban agriculture are responding to market signals. By locating production closer to consumers, producers are able to circumvent expensive transport costs and get perishable produce to market with less spoilage. By producing for own-consumption in the urban areas, producers are able to free up income for other purposes and to ensure some degree of food security.

III.C Domestic processors

As noted above, urban households often prefer processed foods because of their convenience. Processing food reduces spoilage and makes transport easier, but efficient processing requires a steady input supply and sometimes requires large capital investment in special equipment, such as dairy processing. When a cheaper unprocessed substitute product exists, poorer urban households may turn to the nonprocessed product. In Uganda, all major milk-processing plants were operating much below their installed capacities and incurring losses, because urban households were turning to the informal sector for “raw” milk. Ninety percent of marketed milk production is sold through the informal market.¹⁰ The major processing plants are caught in the middle between cheap raw milk sold through the informal market and imported milk that is preferred by consumers who can afford to buy pasteurized milk. Their challenges include poor quality raw milk as an input, poor plant and processing design, lack of cold storage facilities, and an inferior reputation compared to imports (Aliguma et al. 2004).

Recently, a donor-sponsored project in Uganda was able to significantly increase the demand for UHT (long-life) milk through an advertising campaign about the health benefits of UHT milk at the same time that significant investment in capacity lowered the retail price. Introducing UHT milk was a way for processors to deliver a product to consumers at a lower price than perishable processed milk. One of the advantages of UHT is that processors could buy more milk when the price was low and less when the price was high, but to release the products to market in a continuous flow. As processors demanded more milk during the rainy (high production) season, this also had the benefit of giving the raw milk producers a better price for their product (Motts 2006).

Africans still consume most of their fruits and vegetables fresh, as opposed to canned or frozen. In Kenya, about 90 percent of horticultural products are consumed fresh (Nyoro et al. 2004). The tomato and potato are two horticultural products more likely to be consumed in a processed form, especially in cities. In South Africa, the share of the potato harvest that is processed has grown from 6 percent in 1981 to 20 percent in 2003. The growth is attributed to increasing demand for potato chips and frozen french fries. In the past six years, the demand for the french fry product has more than doubled (Louw et al. 2004).

¹⁰ In Kenya, the situation is similar but not as extreme. Eighty percent of milk sold is marketed through the informal sector.

In Mali, since the closure of the country's only tomato processing plant in 1998, local tomatoes are sold fresh in urban markets, while Italian imports dominate the processed tomato market. Among the problems faced by the domestic processing plant was the change in consumers' preference to the rich, red color of the tomato paste. An expert report investigating the potential for reintroducing and marketing locally processed tomato products identifies supply as a critical factor. The processing plant would have to have a mother farm and contracting agreements with nearby farmers to ensure a sufficient supply. There is a risk that if the processor extends credit to the farmer and deducts the costs from sales proceeds, the farmer will break agreement and sell at local fresh markets, instead of paying back the credit. To mitigate the risk of such behavior, the authors recommend that the processor collectively negotiate with a farmers' association that will provide some self-policing (Weidemann Associates 2005).

The Blue Crane Route Municipal Development Agency manages an empowerment company looking for opportunities for small-scale farmers to find markets for their products. The Agency acts as a co-owner until the emerging owners are capable of performing the management tasks on their own. In one case, the Agency successfully developed a new product, goat cheese, to be marketed to major urban markets (Louw et al. 2004).

In some cases, the solution of getting rural products to urban markets is two-stage processing. An example of this is cassava processing. The traditional form of cassava processing involved a 10-day drying process during which sand, dust, or soil would end up on the final product. By introducing motorized chippers to farmers associations, the Southern Africa Root Crops Research Network (SARNET) allowed them to produce for the urban market. The farmers' associations sold the cassava chips to Powerfoods in Dar Es Salaam or other major processors which then process them into cassava flour, a substitute for maize or wheat flour. (SARNET 2004) In Nigeria, they have developed simple mechanical processing for commercial production of cassava and prepared cassava-based convenience food, such as gari for porridge, that can be performed without a significant capital investment (Nweke, Spencer, and Lynam 2002).

As in the case with UHT milk in Uganda and the various cassava products in Southern Africa, it sometimes takes investment from the donor agency to help develop a market for new products, or even to identify potential processed products. SARNET successfully promoted cassava flour in the confectionary business and as meal flour, as well as several industrial applications (glue, plywood); sweet potato as a juice; and both processed products as livestock feed.

IV. Degree of Market Integration

In Africa we observe high geographic price differentials and high wholesale and retail marketing margins that can be attributed to higher transaction costs compared to the rest of the world. Ahmed and Rustagi (1987) compared transport costs and marketing margins in Africa and Asia and found that African farmers received only 30–50 percent of final market prices, compared to 70–85 percent received by Asian farmers. The authors attribute much of the difference to higher transport costs in Africa (Ahmed and Rustagi 1987). While transport continues to be a very big challenge, attention has been paid recently to other factors that contribute to market inefficiencies, including lack of: competition, market information, contract enforcement, capital and economies of scale (rooted in lack of credit), and systems to facilitate trade and transport. Some countries have made more progress than others in the past decade. According to recent studies, the major maize markets in Ghana and Uganda have become more integrated and flexible since liberalization with well-developed networks. Informal traders collecting foodstuff from the farm and delivering it to local wholesalers are involved in intense competition with each other, which makes the marketing channels highly elastic and price sensitive (Abdulai 2000; Rahid 2004). Benin shows evidence of the market working—traders are effective in bringing products from surplus regions to deficit areas (Gabre-Madhin, Minot and Khan 2001). Though transaction costs in rural Mozambique are still high, huge improvements have occurred since the early 1990s. In 1994, for example, traders would have to wait two weeks or more to find transport for their goods; now that time has been diminished to about 1–2 days wait time (Bias and Donovan 2003). This suggests there is room for improvement in Africa’s agricultural marketing that may result in higher producer prices and lower consumer prices.

IV.A Price differentials within a country

One expects to see some price differentials across markets within a country based on distance from the production or processing location and stronger demand in larger and richer urban markets. Data from Uganda (see table below) show such price differences in the major regions of the country. The highest price for chicken is in the central region, where the capital is located. Cooking oil is cheaper in the central region, however, perhaps due to processing locations. The greatest price differences are seen with the northern regions, where there have been ongoing conflicts and guerilla warfare (Bureau of Statistics, Uganda 2001). In the table below, the final column compares the price differential between the peaceful regions. Excepting the northern region, the price differentials of beef, chicken, and cooking oil drop significantly.

Average Prices of Consumer Goods in Uganda, by Region (Uganda shillings, 1999–2000)						
	Central	Eastern	Northern	Western	Largest price differential	Differential w/out Northern
Beef (kg)	2000	2000	1500	1700	33%	17%
Chicken (no.)	3900	3000	2500	3000	56%	23%
Cooking oil (3 litres)	1400	1800	1200	1800	50%	29%
Sugar (kg)	1200	1200	1200	1200	N/a	N/a
Salt (½ kg)	300	200	200	250	33%	33%

Source: Bureau of Statistics, Uganda (2001).

In Mozambique, the fertile food-producing central and northern regions are far away from the primary consumption market—Maputo, the capital city—located in the south, both in terms of distance and the quality of roads and transport networks. New highway links between Maputo and the South African border—financed largely by the South African government—have cut travel time from the city to the border to less than one hour. As a result, Maputo consumers depend largely on food imports from

neighboring South Africa to meet a large proportion of their food needs. The northern areas export their food surplus to nearby Zambia and Malawi (Bias and Donovan 2003).

Mozambique's two largest cities, Beira (in the central region) and Maputo (in the south) regularly face different price structures. Beira, which relies entirely on local production of maize grain, faces sharp seasonal price increases when local supplies dwindle, (especially between December and February). Maputo, though consistently paying more for their maize, is able to stabilize their prices through the introduction of imports from South Africa. "Border trade in the south has clearly stabilized prices in Mozambique's main urban center" (Jayne et al. 1999).

The experience of Mozambique illustrates the importance of relieving not only internal bottlenecks between rural and urban areas, but also of improving regional exchange networks—as these are often more rational options for urban markets.

In the absence of war or drought, one would expect price differentials across geographic regions to be fairly constant over time, at least in similar seasons. However, one sees in Tanzania not only large price differentials between cities (ranging from 36 percent to nearly 50 percent), but a flip-flop of prices where the considerably cheaper market becomes much more expensive in the next year (see table below).

Differentials of Maize Prices in Tanzania (wholesale price in Tanzanian shillings)		
	August 1994	August 1995
Price of maize in Iringa	6,800	6,250
Price of maize in Dodoma	4,600	8,500
Price differential	48%	36%

Source: Kahkonen and Leathers 1999.

IV.B Large wholesale and retail marketing margins

Much of the price differentials in various markets are due to variations in wholesale and retail marketing margins.¹¹ A study of maize marketing in Zambia and Tanzania found an average farm-retail margin of 6 cents per kilo in Zambia and a 50 percent greater margin (9.5 cents per kilo) in Tanzania from mid-1995 to mid-1996. This means that it cost 50 percent more to market maize in Tanzania than it did in Zambia. One important distinction between the two markets is the continuing role of the government-run Strategic Grain Reserve that limits movement of maize and discourages market entry (Kahkonen and Leathers 1999). In Ethiopia, the gross price spread as a share of retail price was 14 percent for maize, 9 percent for white wheat, and 7 percent for white teff. In Addis Ababa and other high priced markets, the spread was more than 20 percent (Negassa 1998).

In the selection of countries studied by Jayne et al. (1999), South Africa has the lowest wholesale marketing margin for maize (except for Zimbabwe, which has not liberalized its market), but the highest retail marketing margin for its industrial-milled roller meal. Compared to the rest of Africa, South Africa has diffuse urban centers and sophisticated road networks, and can also easily transport goods, which explains the lowest wholesale marketing margin. The high cost of labor in South Africa is one explanation for the tripling in price when maize purchased wholesale in the capital city is processed into industrial-milled roller meal. Traub and Jayne (2004) also cite bottlenecks in South Africa's downstream marketing system due to highly concentrated ownership of milling operations into large mills that exclusively supply major retailers. Grain storage is also managed by a few large companies. The National Department of Agriculture acknowledged that, "the maize milling industry exhibits the typical

¹¹ The wholesale marketing margin is the difference between the wholesale price and the producer's price. The retail marketing market is the difference between the retail price and the wholesale price.

characteristics of an oligopolistic structure where monopolistic competition based on brands and market segmentation exists, which does have an impact on the retail price” (Food Pricing Monitoring Committee 2003). The Food Pricing Monitoring Committee expressed concern about the level of competition in the industry, and recommended promoting measures to increase the market participation of small-scale millers.

Another reason why South Africa’s industrial milled roller meal is so much more expensive than in other African countries may be the absence of a close substitute product. In other African countries, hammer-milled whole meal is commercially available. Industrial-milled maize produces higher-quality, finer grain; hammer-milled maize uses more inexpensive, rudimentary techniques and produces a more coarse grain. As described above, there are clear distinctions between the diets of poorer and richer urban households, with one of them being a preference for “inferior” products. Poor households can purchase hammer-milled whole meal for roughly 60 to 72 percent of the price of industrial-milled whole meal.

Prices for Maize Grain and Maize Meal, January 1996-August 1998						
	Ethiopia	Kenya	Zambia	Zimbabwe	South Africa	Mozambique
Producer price	97	190	133	109	113	101
Wholesale price, capital city	135	241	174	120	133	217
Industrial-milled roller meal	--	390	285	172	443	424
Hammer-milled whole meal	--	272	204	124	--	254
Price of hammer-milled whole meal as % of industrial-milled roller meal	—	70	72	72	—	60
Price Margins						
Wholesale marketing margin	39.2	26.8	30.8	10.1	17.7	114.9
Retail marketing margin (industrial-milled)	—	61.8	63.8	43.3	233.1	95.4
Retail marketing margin (hammer-milled)	—	12.9	17.2	3.3	—	17.1

Source: Jayne et al. (1999).

The country with the highest wholesale marketing margin was Mozambique, because the capital city is far (in distance and in accessibility) from rural producers. Between Maputo and Nampula, price differences of more than 20 percent were reported in 2001 for maize and beans and 35 percent for imported rice; between Maputo and Beira, an almost 100 percent difference was found in the price of maize (MADER 2001). As mentioned above, Maputo imports most of its grain from South Africa

In all cases, the retail marketing margin for hammer-milled meal is fairly low. The Kenyan government is fairly lax toward informal trade and meal imports during the off –season, which gives Nairobi residents access to the considerably cheaper hammer-milled meal throughout the year. Jayne et al. report that Kenya’s maize market reforms have reduced expenditures by Nairobi consumers on maize meal by roughly USD 10 million per year by allowing less expensive and more nutritious hammer-milled whole meal (Argwings-Kodhek and Jayne 1997, cited in Jayne et al. 1999).

In Zimbabwe, the Grain Marketing Board (GMB) purchases maize from producers and sells to commercial millers in a feeble attempt to maintain affordable prices for maize meal. In 1997–1998, maize meal prices surged in response to concerns about El Niño’s impact on production. In other countries, the response was to increase imports to stabilize domestic maize prices, but in Zimbabwe, the GMB imposed price controls on maize grain and maize meal. When the black-market producer price of grain began to increase—first above the GMB producer price, then even above the GMB’s selling price—the GMB raised its prices to adjust to market conditions. This triggered a domino effect, as the GMB and

black markets continuously hiked their prices. This set economy-wide inflation in motion, and made maize meal extremely expensive for urban consumers (Jayne et al. 1999: 21).

Zambia's low margins according to the figures above might similarly suggest that it is a "success" case. However, the figures understate the nature of the problem for urban consumers in Lusaka, Zambia, because they do not account for seasonal variations. Late in the season, supplies of hammer-milled meal on public markets typically dwindle. Supplies of industrial mill remain high, however, because the large-scale industrial millers are able to import maize, and often at subsidized or preferential rates. The Zambian government's support of these large millers means that during key parts of the year, urban consumers become price takers. They begin buying industrial milled meal at higher prices.

If imported maize grain and buffer stocks were released onto public markets instead of channeled directly to selected millers, so that the monthly price in public markets were reduced from 23 percent higher to only 8 percent higher than industrial mill purchase prices (still reflecting the economies of scale advantage of large buyers), estimated expenditures on maize meal by urban consumers would decline by roughly 11 percent, an average of US\$12 million annually. Maize meal expenditures by the poorest third of urban consumers would decline by an estimated 16 percent. (Jayne et al. 1999)

The Zambian experience demonstrates how high marketing margins can be a result of lack of competition, underscoring the importance of efficient and liberalized food marketing systems for urban consumers. Preferential treatment of certain food industry players can deter other traders from participating in grain markets, weakening market integration and damaging urban consumers' purchasing power. The relatively low retail marketing margin for hammer-milled meal across these countries demonstrates that making such "inferior" products commercially available can greatly increase urban food security.

IV.C Transaction costs

Transaction costs encompass both costs associated with the physical transfer of produce (from storing, transporting, and processing the agricultural products) and costs associated with risk, supervision, and search—costs that are generally more difficult to observe and measure. Poor infrastructure increases both the cost of physical transfer of produce and the associated risk—crops spoiling due to poor storage facilities and packing materials, slow travel, and lack of processing equipment close to production sites. It is estimated that African farmers incur post-harvest losses from poor storage and poor sales decisions at about 30 percent of production costs (Lambert 2004). Similarly Negassa, Myers and Gabre-Madhin (2004) found that Ethiopian grain traders would sometimes sell when the price was not advantageous because they risked greater losses from spoilage and quality deterioration, again from lack of well-developed storage facilities and poor market information. Poor transport systems and the lack of capital and economies of scale with which many traders operate mean that they may have to wait a long time for a vehicle to transport the goods. Without contracts and contract enforcement, a trader or retailer must spend more time traveling to the seller to ensure that the product will be available for sale as promised. Farmers often do not understand the risks faced by traders and therefore accuse them of obtaining excessive profits.

Storage, transport, and processing are critical for getting highly perishable foods such as meat, fish, dairy, fruits, and vegetables to the urban market, and yet there is very poor infrastructure in Africa to support these processes. Only one-third of maize farmers surveyed in Zambia had sufficient storage for the entire crop and almost 40 percent had little or no farm storage (Kahkonen and Leathers 1999). In rural Mozambique, storage facilities are extremely limited because of the country's history of panseasonal pricing. Since prices did not change, farmers had no incentive to wait to market their products, so they

did not develop on-farm storage beyond what they needed for their own consumption. Without adequate storage facilities, farmers producing maize and beans in response to growing urban demand are forced to sell most of their product immediately after it is harvested. Prices are lowest at these times, and so returns to farmers are limited. (Bias and Donovan 2003)

As shown in the table below, with some exceptions, Africa's transport infrastructure is much less extensive than that in the developing countries of Asia. Getting food to market is a huge challenge, given that 6 to 10 percent of the total road network is paved (Caron and Reichert 1999). Roads that are paved are poorly maintained. Their condition deteriorates quickly due to a lack of enforcement of truck and axle weight regulation; trucks are overloaded, exceeding the design limit. South Africa estimates the damage to its road systems from overloaded trucks amounts to annual losses of R600 million (Louw et al. 2004).

Selected Indicators of Surface Transport for Africa and Asia, 1990			
Country	Rail and road mileage per 1,000 persons	Rail and road mileage per 1,000 ha of cultivated land	# of motorized vehicles per mile of paved road
<i>African countries</i>			
Benin	0.17	0.36	9
Kenya	0.30	1.09	19
Malawi	0.28	1.55	17
Senegal	0.44	0.60	12
Tanzania	0.15	0.09	14
Togo	0.37	1.26	14
Zimbabwe	1.09	4.11	36
<i>Asian countries</i>			
Bangladesh	0.07	0.75	48
India	0.68	3.58	49
Pakistan	0.73	3.71	43
Philippines	1.65	7.38	52
Korea, Rep.	0.58	11.41	67

Source: Alexandratos (1995).

Despite all the problems with the road system, it is generally preferred to rail. For example, in Uganda, 70 percent of cargo uses the highway compared to the 30 percent using rail. The highway is seen as preferable because the delivery times are more reliable and flexible. In Kenya, most of the rail system is about 100 years old and uses diesel locomotives about 25 years old (Caron and Reichert 1999).

Very little agricultural produce is transported by vehicles specifically for this purpose. Farmers and traders are both likely to rely on public transport. This is a major constraint as bus stops may be some distance from the farm and the buses often break down, jeopardizing the perishable cargo. Even if the buses do not break down, the rough roads may damage horticultural produce (Nenguwo 2004). Given both the cost and difficulty of getting products to market and the uncertainty they face as they do not have accurate market information, very few farmers actually travel to urban markets themselves, as evidenced by the case of Uganda (see table below).

Point of Sale for Uganda Farmers (% distribution)		
	1997	1999/2000
Trader at farm-gate	47	39
Creditor at farm	6	10
Local co-operatives	8	10
Periodic market	9	8
Most common market	3	4
<i>Total</i>	<i>100</i>	<i>100</i>

Source: Bureau of Statistics, Uganda (2001).

Many small traders buy periurban agricultural produce because they do not have the capital required to transport products over long distances. In a study of traders from Benin, Malawi, and Madagascar, few had weighing equipment, transportation, or storage facilities. Transport costs were the largest share of marketing costs followed by personal travel costs of the trader (Fafchamps, Gabre-Madhin and Minten 2003). According to SARRNET, traders in Tanzania preferred to buy cassava from areas closer to Dar Es Salaam at 30 USD per metric ton as opposed to farmers from the Rufiji district at 10 USD per metric ton because the poor road linkages greatly increase the transport costs (SARRNET 2004).

Distribution of Marketing Costs of Traders			
	Benin	Madagascar	Malawi
Transport costs as % of marketing costs	61	45	48
Personal travel costs as % of marketing costs	17	36	32
Bagging costs as % of marketing costs	11	0	6
Taxes and fees as % of marketing costs	<1	10	3

Source: Fafchamps, Gabre-Madhin and Minten (2003).

In a study of Kinshasa retailers, Minten and Kyle (2000) found that the retailers' personal travel costs, seen as a proxy for risk and supervision costs, always exceeded the costs of transporting the merchandise. Taxes, storage costs, and table rental were fairly low and standard across the board. For peanuts, rice, and beans, packing costs formed the largest portion of the retailers' marketing costs (Minten and Kyle 2000). These figures suggest that interventions could be tailored to the type of food, for example, improving packing technology for peanuts, rice, and beans.

Distribution of Daily Marketing Costs for Food Retailers in Kinshasa					
	Cassava	Maize	Peanuts	Rice	Beans
Personal travel, retailer ^a	28	33	25	23	22
Packing	23	21	40	46	47
Transport, merchandise ^b	20	19	16	15	14
Taxes	12	11	9	8	7
Storage	11	10	6	5	6
Table	6	5	4	4	4
Total marketing costs	100 percent	100 percent	100 percent	100 percent	100 percent

a. Travel costs of the retailer to the market. b. Transport from the wholesale market to retail market.

Source: Minten and Kyle (2000).

In a study of grain marketing in Ethiopia, Dessalegn and Jayne (1998) impute difficult-to-measure transaction costs in various local markets by subtracting the costs of transport, handling, and typical trader profit margin from the price spread between Addis Ababa and the local market. The author estimates in some cases nonmonetary transaction costs were 30 percent more than the monetary costs of getting food to market. The imputed transaction costs for mixed teff, an Ethiopian staple, vary significantly from 1 percent of the final price to 36 percent of the final price, suggesting indirect costs and market

inefficiencies may vary from local market to local market. This is attributed to risks associated with a lack of good market information and sporadic and uncertain costs, like “kella” charges (grain checkpoint taxes), variable transportation rates, traditional practices that condition traders to buy and sell grain only in specific markets regardless of price, and high market risk in moving grain—and therefore increased trader margins to cover risk assumption, search costs, and opportunity costs foregone in waiting for transport (Dessaiegn and Jayne 1998).

Imputed Transactions Costs for Mixed Teff in Selected Ethiopian Markets

Market	Distance from Market to Addis Ababa (km)	Transfer costs^a (Birr/qt)	Price spread between AA & local market	Imputed transaction costs (Birr/qt)^b
Nazreth	98	20	22	2
Ambo	125	20	48	28
Meki	134	22	25	3
Hosaena	232	24	66	41
Shambu	314	26	96	70
Dangla	485	36	55	49
Bahir Dar	570	43	58	16

a. Transfer costs = Transport costs + Handling Cost + Trader's Margin; Transport cost is assumed to be .05 Birr/qt/km from the local market to brokers in Addis Ababa (AA); Handling cost is set at 2.5 Birr/qt; Normal profit or trader's margin is assumed to be 7 percent of AA price parity price

b. Imputed transaction = Price spread between Addis Ababa and local market minus transfer costs.

Source: Dessaiegn and Jayne. (1998).

In Ethiopia, small traders waited an average of 1–2 weeks to secure transport for their inventory, according to the 1998 survey. Poor transport availability gives large, more vertically integrated merchants a considerable influence on grain prices, since they have no challenge from other traders (Dessaiegn 1998).

V. Institutions to Improve Market Integration

Improving market integration will require significant investment in physical infrastructure and institutions. Below is a discussion of the potential for several institutions to reduce the wholesale and marketing margins in Africa.

V.A *Contract farming*

“Contract farming can be defined as an agreement between farmers and processing and/or marketing firms for the production and supply of agricultural products under forward agreements, frequently at predetermined prices” (Eaton and Shepherd 2001). Contracts reduce insecurity for buyers and sellers by binding the parties to deliver or purchase a certain quantity and quality of product at a certain price. Knowing that he has a buyer reduces the risk of the farmer, which means he is better able to make appropriate investments, sometimes on credit.

For processors in particular, it is important to have a guaranteed quality supply to ensure continuous production. An example is the Cassava Starch Manufacturing Company in Pietersburg in South Africa that contracts farmers in the Mpumalanga region to produce cassava for the factory, above and beyond the cassava produced on its own land (SARRNET 2004). The leading milk processing firm in Kenya, Brookside Dairies Ltd., initiated formal supply contracts with farmers (now 15,000 dairy farmers) to ensure a regular supply of raw milk for processing. By indicating how much milk each farmer will deliver daily, the contracts allow the dairy to plan for capacity utilization and optimal use of its transport fleet (Tom R. Wambua. 2002. “Farm-agribusiness linkages in Kenya.” Report prepared for FAO).

In some contract farming schemes, the buyer may provide inputs, credit, and technical advice. The Brookside Dairies Ltd. provides extension services, artificial insemination, veterinary drugs, and animal feed at wholesale prices. These are sold to the farmers at the collection centers on credit and are paid back by deductions from milk proceeds (Wambua 2002). Smallholder sugarcane growers contracting with the Transvaal Sugar Limited in South Africa may receive assistance in “financing, training, land preparation, the installation and maintenance of irrigation equipment, planting, weeding and fertilizing.” (Johann Kirsten and Kurt Sartorius. 2002. “Farm-agribusiness linkages in South Africa.” Report prepared for FAO.)

Perhaps most importantly, the buyer is telling the producer the market preferences while the producer still has the opportunity to diversify his crop. Producers need to know which products are in greater demand by urban consumers—as discussed above, more meat, fish, dairy, and vegetables—and the prices these products command on a day-to-day and seasonal basis. In addition, there are more subtle, but increasingly important characteristics, such as quality and safety standards which farmers must adhere to in order to supply certain sections of the urban market. In some cases, the buyer helps the producer to meet specifications regarding methods for production, cultivation, and harvesting. In a vegetable supply chain for hotels in Zambia, the smallholder growers were more responsive to extension advice and were more willing to invest their own resources because they knew it to be more profitable. The outgrower schemes were first used to supply the export market and then were used to serve the market of the country’s largest city (Nenguwo 2004).

Exporters from Kenya have been able to supply about half of all fruit and vegetables exported through contract arrangements with smallholders. In the Kenya example, the government has played a role in enforcing contracts between buyers and growers and mediating disputes. Having more small-claims courts to address contract disputes would make it feasible for contracts to play a larger role in the domestic market (Minot and Ngigi 2004). In many African countries where small-claims courts do not

exist for contract enforcement, NGOs and member organizations (discussed below) have taken on the role of resolving disputes.

V.B Producers' associations

Similar to contract farming, producers' associations can provide market information on prices and the preferences of urban consumers to farmers and can lower transaction costs for both traders and farmers. Producers mainly rely on traders or other farmers to provide them with market information, resulting in strong information asymmetries. In Zambia, despite a weekly bulletin of prices and a radio broadcast, 16 percent of farmers said they had no source of information on maize prices.

Source of Price Information for Maize Farmers in Zambia	
Information source	Percent
Other farmers	63
Other buyers	16
None	16
Price bulletins or radio broadcast	5

Source: Kahkonen and Leathers (1999).

Local cooperatives or producers' associations can be a two-way source of information. Farmers who sell their products through local cooperatives may have better access to market information because the fixed cost of obtaining market information is spread over a larger group. At the same time, farming cooperatives can pool the costs of receiving producer certification, which provides information to the buyer on the ability of a producer to deliver products to a certain standard. Certified producers can usually charge a higher price for their products because they can sell to different buyers, such as hotels. With certification, the product standards are more clear, which also reduces the potential for disputes between buyers and sellers.

Sometimes NGOs help establish or even act as surrogate producers' associations. In Mozambique, they are playing an increasingly important role in food marketing: "contacting traders, identifying potential crops and zones for marketing, and then coordinating with farmers to have stocks ready for traders; they may negotiate prices and conditions, sometimes arranging transport for the commodities" (Bias and Donovan 2003). As Bias and Donovan (2003: 83) report, "contract enforcement is basically non-existent in rural areas of Mozambique," so private-sector players like AGRIMO and SANAM depend on these NGOs to help them link with small-scale farmers, and have enlisted their help to get around contract enforcement problems. NGOs and farmer associations use peer pressure and withholding association benefits to ensure that farmers repay their debts and honor their product marketing contracts. However, these efforts are still in incipient stages.

Other investments producers' associations can make would create economies of scale. One example is for the producers' association to collect money for hiring a truck and driver to bring their goods to market. This creates a virtuous circle, as the transporter may be able to invest in a better truck if he can show his creditors that he has contracts for his service.

Another important investment for producers is storage facilities and processing equipment that will allow them to get their produce to market unspoiled. In the Rufiji district of Tanzania, four farmers associations were formed for cassava processing and marketing. Before using the motorized cassava chipper, the farmers were only able to sell the cassava to traders at 10 USD per metric ton. Having invested in trips to Dar Es Salaam to negotiate with major markets and buyers, they are able to sell processed cassava chips/flour at 150 USD per metric ton (SARNET 2004).

Modern information and communication technologies (ICTs) hold great promise for providing up-to-date market information to farmers, but the reality is that it will be many years before most rural farmers have access. Uganda therefore employs a knowledge sharing system based on both traditional and modern means. Modern technology provides up-to-date information to a fully connected hub, while communication between the branch and farmers is by word of mouth. Also in Uganda, Foodnet collaborates with a mobile phone service provider to disseminate information on daily prices through short messaging services (SMS) in 11 agricultural commodities in 15 towns (Asaba and Day 2003). In Malawi, a partnership of the Initiative for Development and Equity in African Agriculture and a mobile service provider allows dissemination of wholesale prices and placing offers to buy or sell. This is complemented by more low-tech dissemination methods—display boards at market information centers for farmers and sellers to place offers or bids and a radio program that provides information on wholesale prices and extension information (Forum for Agricultural Research in Africa n.d.).

The South African Sugar Association and a KwaZulu-Natal provincial department of agriculture have created a joint venture to provide irrigation advice through SMS to small-scale farmers. Using weather data, a crop simulation model can determine how much water is in the soil for each field of sugarcane and whether irrigation should continue, be stopped, or resume. Individual farmers receive this advice through SMS for their particular field (August 23, 2005, reported on <http://www.SouthAfrica.info>).

V.C Traders' associations

Traders are the key information link for rural producers, but they need information too. Traders sometimes must spend a substantial amount of time and money traveling to producers to ensure that products are delivered as specified. Personal travel costs of traders in Benin were 17, 36, and 32 percent of marketing costs in Benin, Madagascar, and Malawi (Fafchamps et al. 2003).¹² Without government support for contract enforcement, traders feel it necessary to travel often to the producers to ensure that they are producing what they promised in their contract.

Trader Assets	Benin	Madagascar	Malawi
Percent with telephone	4	4	2
Percent with motorized vehicle	15	8	6

Source: Fafchamps et al. (2003).

Telephones and fax machines can be used to communicate orders and reduce the amount of time and money on personal travel for enforcement. The fact that only 3 percent of the traders surveyed from Benin, Malawi, and Madagascar had a telephone helps explain their high cost for personal travel to perform contract enforcement (Fafchamps et al. 2003).

Associations of traders are common throughout the world, including Africa. They are typically organized around a single market where the members trade and therefore have strong common interests to improve the market infrastructure. Trading space in the market is the most important membership benefit. This may be seen as restrictive by forcing membership on traders, but this policy avoids the free rider problem where other traders would benefit from the work of the association.¹³

¹² The higher percent in Malawi can be explained by the fact that the sample of traders in Malawi included many more traders who bought directly from farmers and sold directly to urban consumers.

¹³ There is debate over the noncompetitive behavior of traders' associations. Rural producers in the Aba region (southeastern Nigeria) complain that the market unions in the city did not allow them to sell their products directly to consumers. Okali, David, Enoch Okpara, and Janice Olowoye. "The Case of Aba and Its Region, Southeastern Nigeria." Working Paper Series on Rural-Urban Interactions and Livelihood Strategies. London: IIED, 2001.

Possessing both the motivation and organizational ability, traders' associations are a natural partner for the municipal government in improving market infrastructure. However, in an FAO report summarizing case studies of traders' associations throughout the developing world, African associations reported that the municipal authorities were not interested in such partnership. The meat traders' association in Dar Es Salam had not been successful in convincing the municipal authorities to construct new abattoirs, despite regularly meeting with authorities to make sure some portion of the taxes paid by its members would go to improving facilities. The associations in Lagos reported that authorities made arbitrary decisions without consultation, resulting in fee increases but no market improvements. An exception is the produce dealers' association in Busia, Uganda, which was successful in its negotiations with the municipal authorities to improve market security and to resurface the market square (Shepherd 2005).

The most successful examples in the FAO report of new markets or market infrastructure came from Asia (India, Pakistan, Nepal, and Myanmar). These associations have been the force behind building new wholesale markets, the transfer of wholesale markets to a new site, or the construction of additional storage facilities. In Myanmar, the Kahtaintaw association's leadership met with the city council about the problem of traffic congestion and convinced the council to allocate a new area for warehouse construction for its members. Although the association members may be willing to pay for construction of storage facilities, this still requires coordination with the municipal government to obtain appropriate permissions and perhaps zoning changes (Shepherd 2005).

Important other services provided by traders associations include dispute resolution (with other traders or with farmers), identity cards that allow them to buy on credit, and insurance for produce. Some associations introduce size and quality grading for produce. The Dar association made agreements with municipal authorities on standards for hygiene, and weights and measures. Most associations provide some form of marketing information, such as on price and demand in other markets, or on the cost and availability of transport. In Myanmar, the Kahtaintaw association records all transaction and displays them on a notice board. Price information is transmitted in printed form at a nominal fee to members and also sent to the government (Shepherd 2005).

In West Africa, it is common to have a product-specific traders' association, without paid leadership or staff, which belongs to umbrella associations that do have paid leadership and staff. The Tomato Traders' Association in Accra aims to keep a constant supply at the market to smooth prices and accomplishes this by scheduling when groups of members are in the field purchasing produce and others are selling at the market (Shepherd 2005).

V.D Public markets

Public markets can be both physical infrastructure and institutions with members and operating rules. Wholesale markets are still very important for supplying fresh fruit and vegetables to urban retail outlets in most African countries. In South Africa, there is a network of 16 national fresh produce markets (FPMs) that are not only the main distribution channels for horticulture produce, but also act as the primary reference point in price determination. In Zambia, it is estimated that approximately 75 percent of the fresh produce consumed in urban areas goes through wholesale markets (and mostly the Soweto market) (Emongor 2004). The FAO identifies Africa's lack of dedicated wholesale markets in secondary cities as a major impediment to efficient agricultural marketing (Seidler 2001).

Other open-air markets are important in the retail sector. In Kenya, it is estimated that about 55 percent of the households that purchased fresh fruits and vegetables bought from open-air, or "wet" markets; 33 percent from kiosks; less than 7 percent from supermarkets; and 3 percent from hawkers (Nyoro et al. 2004).

Improving and maintaining the public markets will be beneficial to operators in both the informal and formal sectors. Hawkers in one of the two largest FPMs represent between 27 percent and 29 percent of monthly turnover and 50 percent of sales on the Johannesburg FPM (Louw et al. 2004). The Mandela's People Market, part of the Johannesburg Fresh Produce Market (JFPM) in South Africa, has 71 stalls for informal traders and retailers and a place where they can store goods overnight. Informal traders purchase produce next door from the Unity Fresh Produce Wholesale Market, also part of the JFPM, to avoid transport costs. They receive training by JFPM staff on how to use the market system, and the JFPM has also financed a business-skills training program for the informal traders (Development Report 2005). Hawkers can receive training on how to use the market through the "on the market floor facility," while informal sector and urban entrepreneurs are supported with a program to obtain financing for their businesses (Louw et al. 2004). In 2004, the JFPM also housed a business incubation program for black-female-owned companies to supply fruits and vegetables to prisons and hospitals (Masondo 2005).

In the late 1990s, the Rundu Town Council (Namibia) realized the need for a real market place with running water and other basic facilities. Soon after the one market was built, the council recognized the need for additional markets for informal traders selling to two major settlements nearby. The markets provide training in marketing to producers and traders, including skills such as bookkeeping (Rundu Open Markets n.d.).

The JFPM's infrastructure includes six sales halls, 40 cold rooms, 31 banana-ripening rooms, wholesale and retail shops, banks, petrol stations, parking areas, and two cafeterias. The market also supports an SMS-based market information system with up-to-date price data that can be used by anyone who has access to a cell phone. The informal traders receive training on how to use the system. Another way that the JFPM supports the informal sector is that market agents must procure at least 10 percent of their produce from poor, small-scale farmers (Government of South Africa 2005).

The new Magogoni fish market in Dar es Salaam, built with assistance from the Japan International Cooperation Agency, has greatly benefited fisheries and increased demand for fish by urban consumers. The market has a separate fish processing area, clean water supply and drainage facilities, ice-making machines and ice storage facilities. There is an auction house, a wholesale building, and places designated for retail businesses such as groceries and restaurants. This is similar to the successful JFPM, in that supporting services to buyers (groceries, restaurants) are housed with improved facilities for sellers (cold storage facilities).

Drivers of *bakkies*, pick-up trucks used to transport traders and their produce, have formed their association to service the JFPM. Initially, the *bakkie* drivers had many disputes with the taxi drivers who felt that *bakkies* were moving in on their business. Through their association, the *bakkie* drivers were able to negotiate with the taxi drivers a deal in which the *bakkie* drivers promised not to transport more than four passengers, thus specializing in the transport of produce (City of Johannesburg 2004).

In contrast with most African public markets, the JFPM is corporatized and is run like a business, although it is still owned by the City of Johannesburg. As described above, in other cities traders' associations often take on the role of market management, improving market infrastructure, and providing the cleaning and security of the market.

V.E Supermarkets

Supermarkets in Africa, as in the developed world, vertically integrate the functions of collection, distribution, and retail. Large traders in Africa focus more on wholesale trade and less on collection, distribution, and retail, which requires more investment in transport, storage, and processing (Fafchamps et al. 2003). Although today supermarkets represent only a small fraction of food sales in Africa, they are

growing in numbers. It is their ability to concentrate activities and thus squeeze margins that may eventually enable them to compete on price with the informal sector.

Although supermarkets are likely to rely on imports for processed food, they are still more likely to purchase fresh produce from local farmers. For example, Zambian supermarkets mainly bought fresh produce from local farmers and from processors, in the case of milk. Canned and processed products were imported from the region (Emongor et al. 2004). In South Africa, the Thohoyandou Spar Supermarket buys 30 percent of its vegetables from poor, small-scale farmers. The supermarket provides training in quality control and provides production support and interest-free loans for farmers with a viable business plan. Interestingly, the supermarket explicitly does not sell tomatoes and mangoes, the major traditional crops of the region, to avoid direct competition with informal traders (Government of South Africa 2005).

In some markets, supermarkets are displacing small formal-sector stores with high margins. In South Africa, there are 1,400 supermarkets, which represent only 2 percent of formal-sector stores, but have 55 percent of formal-sector retail turnover. In Kenya, supermarkets have 20-30 percent of food retail. In Nigeria, supermarket sales only amount to 5 percent of total food retail. Supermarkets respond to urban dietary preferences, providing a higher share in nonstaples and processed products compared to grains and fresh produce.

From South Africa and Kenya, supermarkets are quickly expanding throughout the continent, as these countries' retail chains penetrate surrounding countries. Other African countries with supermarkets (mostly through South African or Kenyan foreign direct investment) include Zimbabwe, Zambia, Namibia, Botswana, Swaziland, (and more recently) Madagascar, Mauritius, Angola, Mozambique, Uganda, Tanzania, Ghana, Nigeria, and DRC. The South African supermarket Shoprite/Checkers has itself invested in 13 other African countries. As of yet, multinational supermarket chains from other regions have not attempted to penetrate the African market, although that will come (Weatherspoon and Reardon 2003).

Supermarkets are imposing vertical integration on agricultural markets, eliminating individual wholesalers in their supply chains and replacing them with consolidated, specialized wholesalers. For example, Shoprite owns Freshmark, a network of distribution centers that supply fruit and vegetables to Shoprite stores. They contract directly with producers who typically have to haul their own produce to the supermarket's distribution centers. In addition to procuring and distributing produce, distribution centers perform many value-added activities—grading, washing, packaging, labeling, and pricing produce. In start-up situations (e.g., Zimbabwe) there may be as few as 3 stores per distribution center, but in an advanced market there may be as many as 160 stores served by a single distribution center.

Supermarkets use contracts and written specifications to reduce risk and the transaction costs associated with it. Supermarkets may provide written product specifications for quality grades and standards. They have a list of preferred suppliers with which they have contract arrangements that incorporate the product specifications as well as the price. A supermarket chain in Zimbabwe provides inputs on credit to their producers and has extension officers to give advice on production practices (Boselie, Henson, and Weatherspoon 2003).

VI. Policy Recommendations for the City/Municipal Level

VI.A Regulations for standards and incentives

Perhaps the most important recommendation for municipal governments in forming policy to support the agro-food sector is to remember its dualistic nature. On the one hand, governments want to encourage production, processing, and handling standards that can satisfy the export market as well as the domestic urban market. On the other hand, mandating such standards will exclude many smallgrowers from participating in the urban market and raise prices for urban dwellers, many who are very poor.

While South Africa so often is the leader to emulate, one lesson that other governments should learn and avoid is mandating standards too high too soon. Recent South African legislation requires that basic foodstuffs be fortified, requiring new entrants to acquire expensive equipment, technology, and additional personnel—much of which is outside the scope of small-scale or informal entrants. In the case of maize, this means that supply is limited to a few big milling operators and market entrance is blocked for small-scale millers, as they cannot meet the mandated quality standards for maize processing. The competition is reduced even more because hammer-milled meal (an “inferior” product) is not an available alternative to industrial-milled meal, again forcing higher prices on consumers (Traub and Jayne 2004). In contrast, the government in Nairobi is fairly lax toward informal trade and meal imports in hammer-milled meal in the off-season, to keep prices low for its city dwellers.

To reduce marketing transaction costs, municipal authorities can set grades and standards for produce that classify the product and ensure that the buyer and seller know what to expect and neither feels cheated in the transaction. At the same time, standards at the level of supermarkets and exporters will increase transaction costs for small-scale producers especially and may eliminate participation by informal traders. Therefore, it is not advised for the government to enforce such high standards for all domestic markets. For those who want to sell to these high-end markets, the municipal government could provide third-party certification of more strict sanitary and phytosanitary standards and even organic certification. The municipal authorities can work with traders’ associations (as in the case in Dar es Salaam) to set standards for hygiene, and weights and measures for the wholesale and wet markets.

Municipal governments can also encourage supermarkets and other large buyers to employ contract farming with smallgrowers. When a supermarket is looking for new site, a city can negotiate that a certain percentage of the fresh vegetables will be bought from smallgrowers, such as the successful example of the Thohoyandou Spar Supermarket in South Africa. Similarly, market agents can be pressed to procure a certain percentage of their produce from small-scale farmers.

In addition to providing incentives, local governments must create the structure for enforcing contract farming. One way to support contract farming is the establishment of small-claims courts, especially in smaller municipalities more accessible to a majority of the smallgrowers. Through these small-claims courts, local governments can resolve contract disputes if they arise and minimize the potential for such disputes by ensuring that contracts are written in plain language and that they disclose risks to producers; that producers have a reasonable period of time to review and cancel contracts; and that producers cannot terminate a contract out of retaliation (International Federation of Agricultural Producers 2004).

VI.B Policies to support urban and periurban agriculture

Municipal governments need to remember that smallgrowers are not only “out there” but also underfoot as city dwellers are farming, often on public land. The opportunities of urban agriculture include income support to city dwellers and waste recycling, as typical wastewater effluent treated for agricultural reuse

contains nitrogen, phosphorous and potassium to fertilize crops. Urban agricultural producers can focus on high-value-added produce and become entrepreneurs through street food stands, fresh milk outlets, or maize roasters (FAO 1999).

The “Harare Declaration on Urban and Peri-Urban Agriculture in Eastern and Southern Africa” (2003), signed by ministers responsible for local governments from Kenya, Malawi, Swaziland, Tanzania, and Zimbabwe, shows that African governments, both central and local, are coming to terms with the fact that urban agriculture will not go away. While governments need to confront the very real health risks of urban agriculture, primarily for the producers but also for the consumers,¹⁴ they realize that they need to integrate urban agriculture into the urban economies and legislative and institutional arrangements.

The greatest problem facing periurban agriculture is land tenure as cities expand and take over cultivated land. Reported in a survey of urban farmers in Kinondoni (a municipality of Dar es Salaam with a population of 1 million), most obtained the land through informal means, while only a quarter reported purchasing rights to the land. Naturally, this situation leads to land conflicts, which rarely are brought to court because of the costs involved. Women in Harare reported that a man would invade the land they were cultivating and dare them to take action. Land speculation also reduces the amount of land available for cultivation.

Based on the research done in Tanzania, Uganda, and Zimbabwe, the Municipal Development Partnership created a set of policy recommendations to support urban and periurban agriculture (Municipal Development Partnership, Eastern and Southern Africa 2004a; 2004b; 2004c). One recommendation is to ensure that urban planners take into consideration urban agriculture in developing land-use plans and set aside or zone special areas for urban and periurban agriculture. In periurban areas, these plots can be sold to farmers (perhaps with provisions limiting resale to avoid the speculation trap). In urban areas these can be allocated to farmers for a specified period of time. The city in collaboration with a bank or microfinancing institution can make loans to resource-poor farmers for purchasing land for urban agricultural purposes.

Local councils will need to play an important role in determining how land rights can be allocated and in adjudicating land conflicts. One recommendation is to set up an office within the city council that will deal with urban agriculture issues, including handling conflicts and disputes. In the case when agricultural land must be used for development, it is the role of the local council to ensure that the urban farmers are duly notified in advance so they do not lose their crops.

Some progress has already been made. In Kampala, the city council recently loosened restrictions on agriculture and food trading, and set up a system for registering all commercial urban crop and livestock activities. It is hoped that the new ordinances will legitimize urban agriculture activities and prevent the harassment of farmers by officials and land developers (Urban Harvest 2004).

In Ghana, local officials are responding to such public health concerns by cleaning up hazardous sites where residents have been practicing urban agriculture. In Kumasi, for example, the city funded the treatment and filling of polluted ponds that had been used for urban fishing. The city then rendered the land usable for small farming plots, and trained the fishermen to use the land in this new way.

¹⁴ Cooking produce or soaking it in chlorine solutions will reduce the health risk to consumers considerably.

VI.C Investment in public markets and transport¹⁵

One of the main investments cities can make to reduce farm-retail margins and improve market integration is to upgrade main and secondary wholesale and retail markets. Wholesale markets are still very important for supplying fresh fruit and vegetables to urban retail outlets in most African countries, and yet most secondary cities in Africa do not have dedicated wholesale markets. When upgrading market infrastructure, cities must make sure that informal traders are not shut out. As with the Mandela People's Market in South Africa, or the Kehemu or Sauyemwa markets in Namibia, separate or adjoining markets need to be built for informal traders and training provided in basic marketing skills such as bookkeeping.

An important factors to consider in locating new public markets is whether it will be accessible to both informal traders and poor consumers and how it will be served by public transit. As a rule, larger markets are associated with greater competition and the best prices, but also the worst traffic congestion. Major markets are usually located in the center of town, which means that most poor urban households have trouble getting to them. In addition to providing public transport to major markets in the center of town, cities can make sure that there are secondary markets closer to where poor people live that are also well run and have adequate infrastructure. In 2004, the City of Johannesburg opened a satellite wholesale market in Soweto, which is more accessible to poor urban households, and is considering opening other wholesale markets in similarly poor neighborhoods (Masondo 2005).

Such investments can be part of a city's economic development plan. The first goal of the City Development Strategy for Bamako, Mali, is to "promote economic development through productive employment creation and resource mobilization activities, through the organization and promotion of the informal sector; rehabilitated, created and managed market facilities, improved resource mobilization, an efficient artisanal policy and the organization and promotion of the agro-food sub-sector" (UN-HABITAT 2001)."

To get the best use of its physical investments, a city must also have a plan for the market's maintenance and management. As shown by the JFPM, corporatization of the public market can be one way to improve maintenance and management while reducing subsidy and corruption. In many African countries the municipal council derives significant income from levying fees on market traders who rent the stalls from the local authorities. However, perhaps even more municipal revenue could be collected if improved management is introduced privatization or corporatization of the market. Experience in Tanzania in the 1990s showed that Dar es Salaam was not obtaining enough revenue to cover collection of garbage generated from the market; meanwhile the city of Mwanza had privatized the maintenance and management of its major markets while maintaining investment and regulatory functions and had greatly increased the revenues it received (Financing Cities for Sustainable Development, Prepared for UN Habitat). The same UN Habitat report pointed out that when spontaneous markets spring up, often alongside existing markets because the latter have outgrown their capacity, the city has an even harder time collecting fees.

VI.D The growing role of technology

Advanced technology, from smart cards to cell phones and SMS, can be a tool for disseminating market information and for reducing opportunity for corruption. In the commission system used in South Africa

¹⁵ Interestingly, the Agricultural Marketing Service of the USDA has recently announced a grant fund to promote farmers' markets in the U.S. Projects may address advertising and market promotion, product or market labeling and signage, waste management, facility planning and/or design, transport and delivery systems, market infrastructure for food processing and preparation, storage, packaging, and refrigeration, among others. FY 2006 Guidelines for Catalog of Federal Domestic Assistance Number 10.168.

the market agents who sell fresh produce do not take actual title of the produce. Rather, they agree upfront with the farmers on a commission they will take for selling the produce, which is usually around 7.5 percent. The farmers are responsible for the grading, packaging, and transport of produce to the market. As the share of proceeds that the farmer receives will depend on the quality of produce, he is not inclined to be guilty of “topping”(when poor quality produce is packed at the bottom of the box or bag and best quality is on top). It is in the agent’s interest also to obtain the best price. As sales in the fresh produce markets are only performed through a smart card, there is no ability of the agent to report lower sales revenues than actual (Louw et al. 2004).

Both farmers and traders with cell phones access the JFPM SMS-based market information system with up-to-date data. As discussed above, the KwaZulu province provided plot-specific irrigation advice to sugar farmers by SMS; in Uganda, a mobile phone provider helped subsidize low-cost provision of market information by SMS. At the same time, less high-tech forms of disseminating market information need to continue throughout the decade. For example, transactions can be recorded and displayed on a notice board. Municipal governments can then disseminate that information through a “hub and satellite” model where dissemination to the hub can be through ICT and to the individual farmers through community radio and word of mouth.

Another form of technology that is important for bringing perishable goods to market is processing technology. The needs range from high-level technology that requires large capital investments, such as in processing UHT (long-life) milk, to low-level technology such as motorized cassava chippers that can be purchased by producers’ associations. As described above, both of these processing technologies result in the producers receiving a higher price for their product. In the case of UHT milk, the price received by producers increased because the processor increased its demand for milk during the season when it was most available, as it was able to process milk in large capacity but release it to market in a timed way due to the product’s long-life quality. For the cassava farmers, they were able to sell an intermediary product that was more useful to downstream processors (e.g., of cassava flour) with less risk of spoilage.

Although most investments for agricultural processing need to be made by the private sector, the city can help to bring processors and producers together through market information days and co-sponsor advertisements of new local products to build demand. In other words, the city can bring together the actors of the value chain. In some cases where smallgrowers and traders stand to benefit significantly, the local government may consider investing in processing ability that is tied to the public markets or that will open new markets. An example is the City of Johannesburg investing in a Value-Adding Services Center as part of the JFPM that will prepare fresh cut produce and deliver it to corporate retail chains (Masondo 2005). Another example is the Blue Crane Route Municipal Development Agency, which helped smallgrowers organize and learn to manufacture and market goat cheese to major urban markets.

VI.E Traders’ and transporters’ associations

One of the key actors in the food market chain that the municipal government can support is the traders’ association. Traders should elect members to the market committees that coordinate with the local government on policies related to the public markets. This is a mechanism by which municipal government can engage traders and their associations in decisions for improving market infrastructure, as well as options for maintaining and managing the market. As discussed above, municipal authorities do tax the traders and yet the latter rarely see the benefits of those revenues.

The traders’ associations is a natural partner when it comes to developing policies to better organize transport and reduce traffic congestion around markets. In Nepal, the Pokhara fruit and vegetable wholesale traders’ association helped improve roads that lead to and are inside the market. The

association was also responsible for constructing an entrance gate to the market. To make it easier for retailers to make purchases at the market, the association helped attract bus routes to the market area.

Ignoring these associations can cause serious problems, such as in Dhaka when regulations regarding traffic movement disrupted the supply of food to the city (Shepherd 2005). On the other side, a study of wholesale food traders in Nigeria by Smith and Luttrell (1994) found that the association's efforts to organize transport led to an increase in produce brought to markets. In Accra, the Tomato Traders' Association staggers the arrival of trucks at the wholesale market, which both reduces traffic congestion and prevents price fluctuations based on changes in supply, by scheduling when certain groups of members are in the field purchasing produce and others are selling at the market. The Ghana agricultural product traders' organization informs its member, when there are problems with the roads or other problems related to supply, and finds solutions. For example, it chartered trucks to take traders to other countries to buy tomatoes when a viral disease wiped out much of Ghana's tomato crop in 2003 (Shepherd 2005).

When they exist, municipal governments can also engage associations of transporters in solving congestion problems around markets. As discussed above, the emergent transport sector in South Africa consists of *bakkies* and minibuses whose driver, in order to avoid conflict, have a negotiated pact over the proportion of goods and passengers they transport (Louw et al. 2004).

A caution when empowering these associations is to prevent them from acting as monopolies that limit competition. By ensuring that a part of the market is reserved for farmers to sell directly to consumers, this can keep the traders in check. Farmers and retailers should also be consulted in developing market policies.

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