

## Staple food prices in Zambia



**Antony Chapoto<sup>1</sup>, Jones Govereh<sup>2</sup>, Steven Haggblade<sup>3</sup> and Thomas Jayne<sup>4</sup>**

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<sup>1</sup> Research Fellow, MSU Food Security Research Project, Lusaka Zambia. Contact: [chapotoa@msu.edu](mailto:chapotoa@msu.edu).

<sup>2</sup> Senior Policy Coordinator, Africa Agricultural Markets Program, Alliance for Commodity Trade in Eastern and Southern Africa - COMESA Specialized Agency. Lusaka, Zambia. Contact: [jgovereh@comesa.int](mailto:jgovereh@comesa.int).

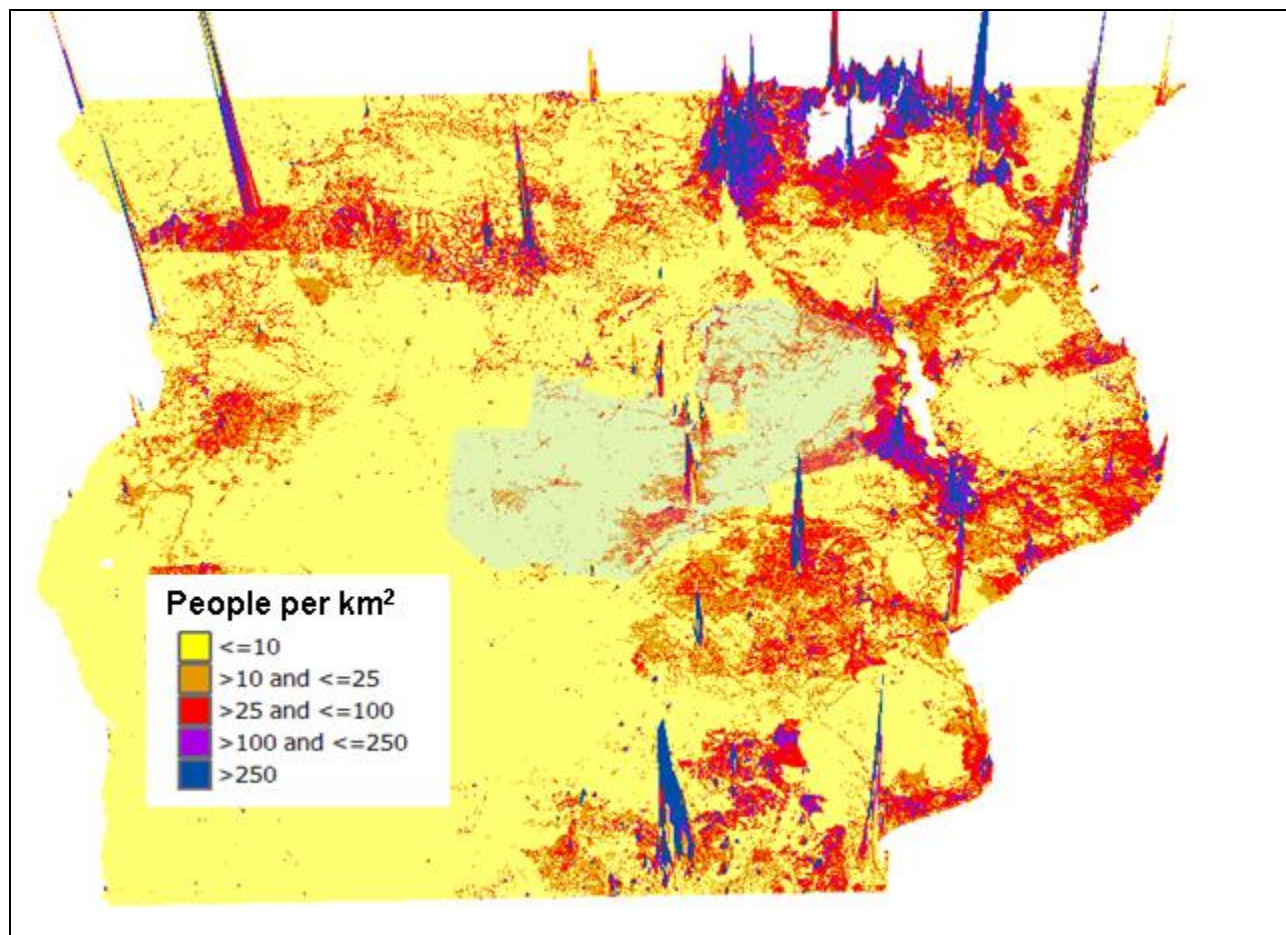
<sup>3</sup> Professor in International Development, Department of Agricultural, Food, and Resource Economics, Michigan State University, East Lansing Michigan. Contact: [blade@msu.edu](mailto:blade@msu.edu).

<sup>4</sup> Professor in International Development, Department of Agricultural, Food, and Resource Economics, Michigan State University, East Lansing Michigan. Contact: [jayne@msu.edu](mailto:jayne@msu.edu).

## 1 Introduction

Zambia's 11 million people occupy a large swath of fertile but landlocked farmland in the central part of southern Africa (Figure 1). Given its low population density, abundant subsurface water, large tracts of cultivable farmland and proximity to large neighboring deficit food markets, Zambia enjoys significant potential as a prospective regional food exporter. Despite this considerable agricultural potential, Zambia remains intermittently food deficit (in poor harvest years), autarkic (in normal years) and food surplus (in good harvest years). Maize prices fluctuate considerably from year to year as a result of domestic production volatility and a penchant for government control of cross-border trade in food staples.

Figure 1. Population Density in South East Africa



Source: Haggblade, Longabaugh and Tschirley (2009).

## 2 Importance of staple foods in the diet

Maize dominates food consumption in Zambia, providing over half of all calories consumed (Table 1). Cassava serves as the second most important food staple nationally, and in some regions it is the preferred staple. In recent decades, wheat has become increasingly important as a third basic staple food, particularly in urban areas where it now accounts for higher budget share than maize (Mason and Jayne, 2009).<sup>5</sup>

Within Zambia, regional consumption patterns differ quite sharply. As in much of South Eastern Africa, Zambia encompasses three major food staple zones. Maize dominates consumption baskets in southern and eastern Zambia, while cassava predominates in parts of the north as it does in northern Malawi and coastal parts of northern Mozambique (Figure 2). Northern and northwestern Zambia form a transition zone between the maize and cassava belts, with household consumption of large quantities of both cassava and maize. This dual-staple zone, where households consume a seasonally and inter-annually variable blend of maize and cassava-based food products, covers a wide swath of northern Zambia, Malawi and Mozambique.

National per capita averages, therefore, camouflage a wide variation in consumption patterns across these different food staple zones (Table 2). Across all zones, urban areas tend to favor wheat consumption, relative to rural areas. As a result, the impact of maize price volatility affects consumers very differently in these different food staple zones.

Table 1. Consumption of Major Food Staples in Zambia

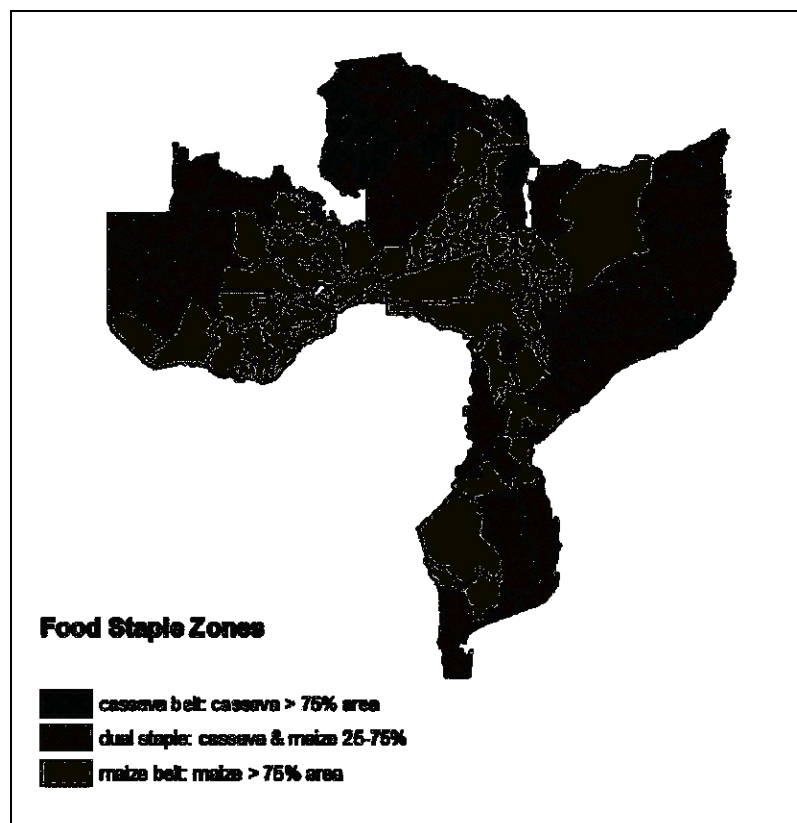
Commodity	Quantity consumed (kg/person/year)	Daily caloric intake (kcal/person/day)	Share of caloric intake (percent)
Maize	133	1122	57%
Cassava	83	252	13%
Wheat	17	136	7%
Others	111	465	24%
Total	345	1975	100%

Source: FAO (2009).

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<sup>5</sup> Given that wheat prices exceed those of maize, the caloric contribution of maize still remains larger than wheat, particularly for low-income urban households.

Figure 2. Food Staple Zones in South East Africa



Source: Haggblade, Longabaugh and Tschirley (2009).

Table 2. Food Consumption by Food Staple Zone in Zambia (kg/person/year)

	Food Staple Zone			National average
	maize belt	dual-staple	cassava belt	
<b>Maize</b>				
rural	161	92	57	124
urban	156	117	119	146
national	159	98	61	131
<b>Cassava (dry weight)</b>				
rural	2	65	89	35
urban	3	26	38	9
national	3	56	87	27
<b>Maize plus cassava</b>				
rural	163	157	147	159
urban	159	143	157	155
national	161	154	147	158

Source: Haggblade, Longabaugh and Tschirley 2009).

### 3 Production and trade of main staple foods

#### 3.1 Maize

Over the past twenty years, between 1980 and 2009, Zambia's maize production has gyrated wildly around its long-term average of 1.1 million metric tons per year (Table 3, Figure 3). This considerable production variability has translated into wide swings in the price of Zambia's principal food staple. It has likewise translated into an intermittent need for imports.

In terms of actual trade flows, Zambia's maize availability changes from year to year, along with its variable maize harvest. In good harvest years, such as 1988 and 2009, Zambia produces a surplus for export. But in poor years, such as 1992, 2002 and 2005, Zambia requires substantial maize imports. During the 2005 to 2007 period, covering one below-average and two above-average years, Zambia imported roughly 5% of maize requirements (Table 4).

Figure 3. Production Trends in Zambia's Three Principal Food Staples



Source: FAOSTAT, MACO.

Table 3. Trends in Staple Food Production in Zambia (5-year centered moving averages)

	1980	1985	1990	1995	2000	2005	2009	average
maize	972	1,045	1,292	1,145	782	1,206	1,489	1,105
cassava, dry weight	97	111	182	221	270	292	325	212
wheat	11	17	52	59	73	113	164	66

Source: FAOSTAT and MACO Food Balance Sheets.

Table 4. Production and trade of main staple foods in Zambia (2005-2007 averages)

Commodity	Production (1000 tonnes)	Imports		Exports	
		(1000 tonnes)	as % of consumption	(1000 tonnes)	as % of consumption
Maize	1,219	60	4.8%	33	2.7%
Cassava	982	0	0.0%	-	0.0%
Wheat	116	72	38.3%	0	0.0%
Others	3,323	215	6.7%	329	9.9%
Total	5,640	346	6.2%	362	6.4%

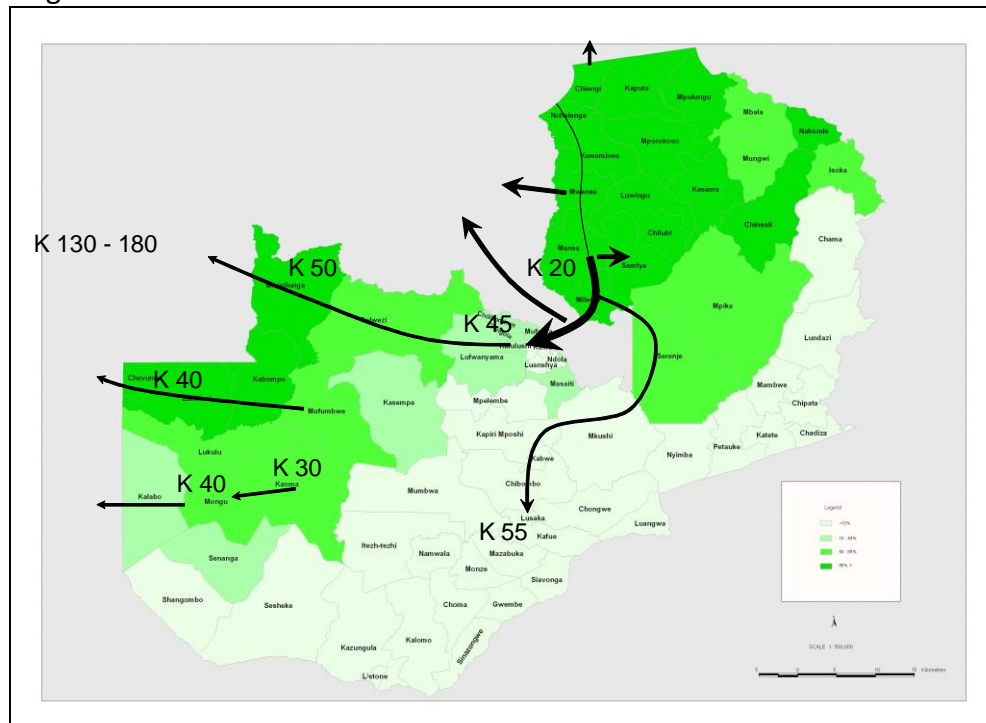
Source: FAO (2009).

### 3.2 Cassava

Cassava and wheat production, however, have proven less volatile, cassava because of its well-known drought tolerance and wheat because it is frequently grown under center pivot irrigation. Both cassava and wheat production have grown steadily over the past twenty years (Figure 3, Table 3). By 2009, Zambia was largely self-sufficient in both secondary staples.

Although Zambia does export small quantities of dried cassava to the Democratic Republic of Congo (Figure 4), domestic prices of cassava are largely determined by local supply and demand. Given large substitution possibilities between cassava and maize, particularly in the cassava belt and dual staple zones, the domestic maize price influences both demand for cassava as well as its price.

Figure 4. Dried Cassava Trade Flows and Wholesale Prices\* in Zambia



\* Prices in thousands of Kwacha per 50 kg bag.  
 Source: Haggblade and Nyembe (2007).

### 3.3 Wheat

Both maize and wheat are internationally traded commodities in Zambia (Table 4). With wheat, Zambia has historically required imports. But given steady production gains (Table 3), by 2009 Zambia's production of 195,000 tons of wheat met Zambia's consumption requirements. To protect Zambian wheat farmers, government instituted a ban on wheat imports in 2009 (Times of Zambia, 2009).

## 4 Staple food price patterns

### 4.1 Relative prices

Relative to maize meal, the dominant food staple in Zambia, wheat-based products cost roughly triple (Table 5). Because cassava is very thinly traded outside the northern Zambia, and given large transport costs between the surplus zones in the north and the cassava importing zones in the south, the cassava to maize price varies substantially across zones (Figure 4). In the cassava belt and dual staple zones of northern Zambia, dried cassava products (chips and flour) sell for 50% to 70% of the price of straight-run maize meal (mugaiwa). However, in the maize belt of central, southern and eastern Zambia, cassava costs more than maize (Table 6). Given high transport costs from northern Zambia to Lusaka and given that cassava flour is typically sold in very small units (usually 1 kilogram bags), reported unit retail prices for cassava flour in central and southern Zambia often substantially exceed the price of maize meal.

Table 5. Retail food prices in Zambia, \$ US average January 2008 through June 2009

	Price
maize, roller meal	\$ 0.39
wheat flour	\$ 1.43

Source: CSO.

Table 6. Differences in staple food prices by food staple zone, Zambia November 2006

	Product	Prices (Kw/kg)		Relative prices cassava/maize
		cassava	maize	
Cassava-based dual staple zone				
Mansa	flour/mugaiwa	444	889	0.50
Kawambwa	flour/mugaiwa	444	778	0.57
Dual staple zone				
Kasama	chips/grain	469	778	0.60
Serenje	chips/grain	444	667	0.67
Maize belt				
Lusaka	chips/grain	800	700	1.14

Source: Haggblade and Nymebe (2008).



## 4.2 Spatial price differences

Food prices vary spatially in Zambia. Maize and cassava prices are lowest in rural production zones and highest in urban areas. Wheat products, particularly bread, are sold mostly in urban areas.

In Zambia's urban centers, maize prices are typically highest in Lusaka and Ndola and 10% to 20% lower in Chipata, Kabwe and Choma.

Table 7. Spatial differences in white maize wholesale prices

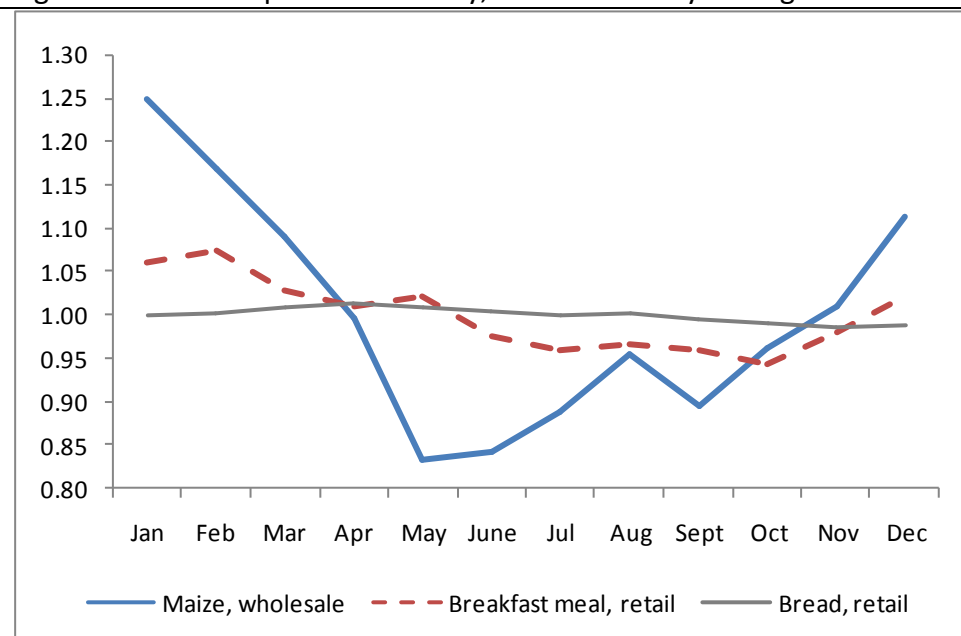
	Choma	Lusaka	Kabwe	Ndola	Chipata
Price (\$US per tonne)					
2005	158	162	146	155	148
2006	148	175	148	189	167
2007	132	169	157	173	115
2008	226	255	204	247	197
Price relative to Lusaka wholesale price					
2005	0.98	1.00	0.90	0.96	0.91
2006	0.85	1.00	0.84	1.08	0.95
2007	0.78	1.00	0.93	1.03	0.68
2008	0.88	1.00	0.80	0.97	0.77
average	0.87	1.00	0.87	1.01	0.83

Source: Agricultural Market Information Centre.

### 4.3 Price seasonality

Seasonally, maize prices fluctuate about 40% from the harvest-time trough to the lean-season peak. Maize meal prices fluctuate less, only about 10%, during the year. And bread prices remain essentially flat throughout the year (Figure 5).

Figure 5. Indices of price seasonality, Lusaka monthly averages 2000 through 2008



Source: AMIC

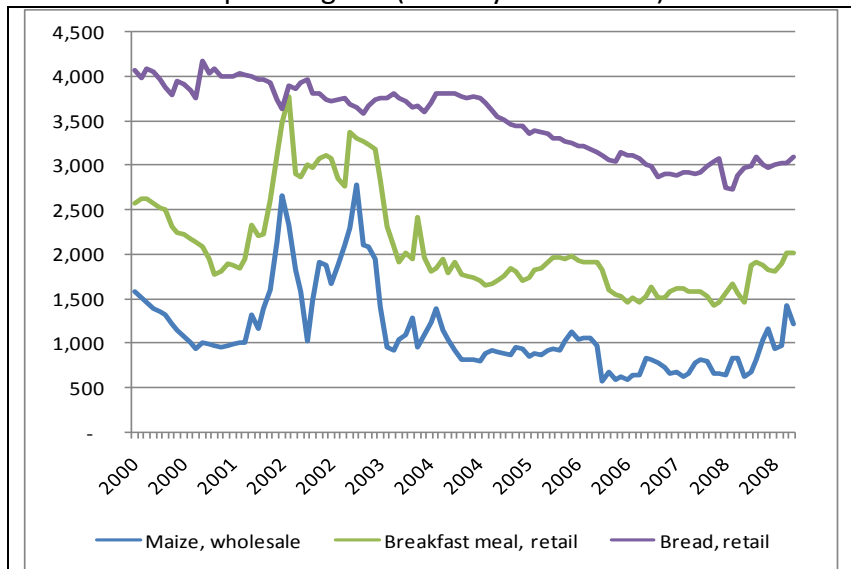
### 4.4 Price changes over time

Over the past decade, prices of maize, maize meal and wheat have trended generally downwards when valued in real Kwacha. Although maize prices spiked in 2002 and 2003, real wheat prices declined steadily between 2000 and 2009. In 2008, maize prices rose by about 10% higher than 2007 levels, though they did not reach the levels attained in 2002 and 2003 (Figure 6a).

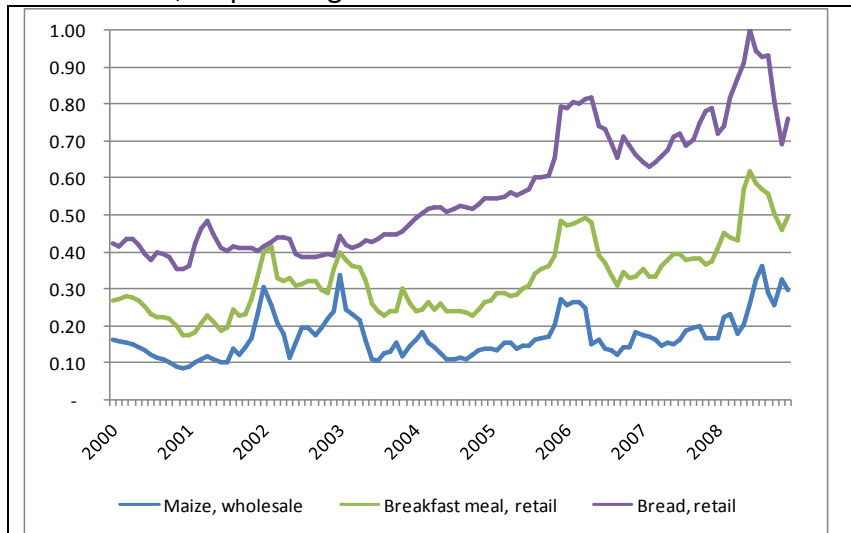
When denominated in dollars, however, the 2008 maize price spike exceeded that of 2002. From 2007 to 2008, dollar-denominated maize prices increased by about 40%. In large part, the price increases of 2005 and 2008 mirror the roughly 30% strengthening of the Kwacha against the US dollar (Figure 6b and 6c). For most Zambians, who are paid in Kwacha, the 2008 price increases were less significant in real terms than the large price spikes of 2002 and 2003.

Figure 6. Staple food prices

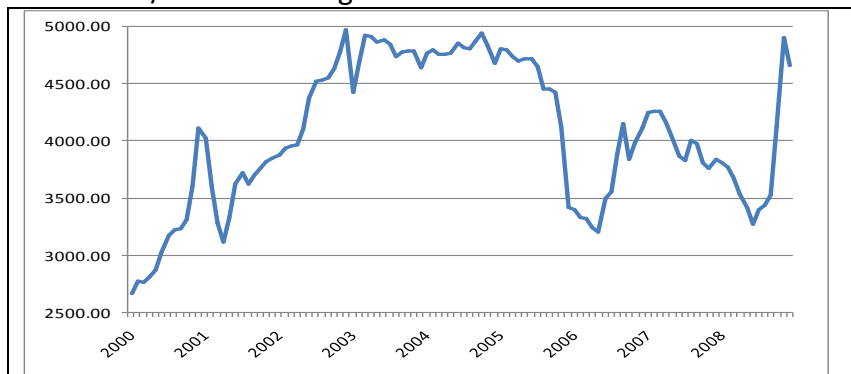
a. Real Kwacha per kilogram (January 2008 = 100)



b. Nominal \$US per kilogram



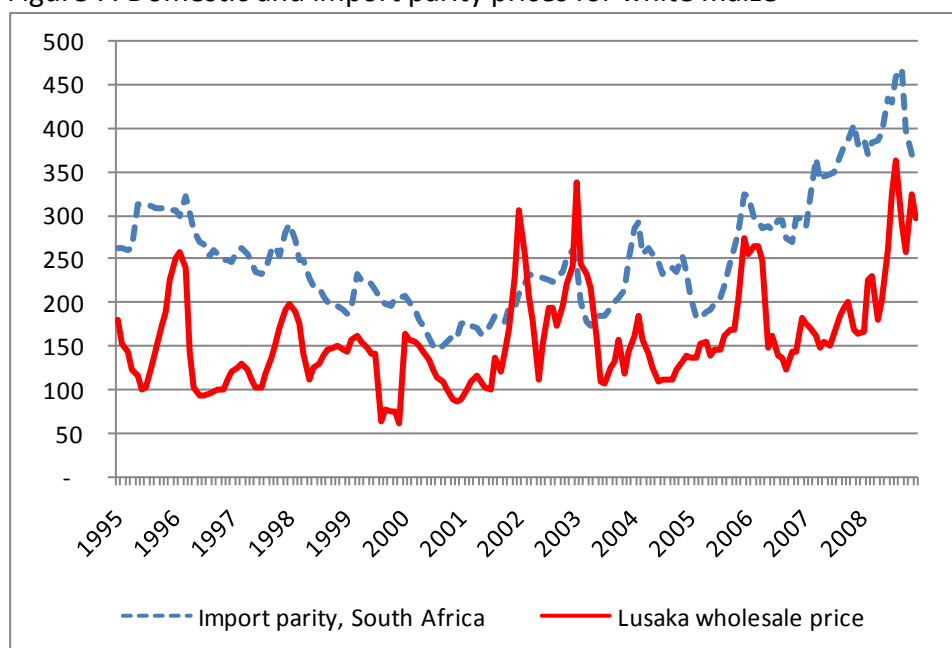
c. Kwacha/dollar exchange rate



Source: AMIC.

Domestic prices have generally remained below import parity. In several years (1998 and 2000), import parity has capped domestic price increases. In several notable instances, however, they have not. In both 2002 and 2003, domestic prices spike above import parity for brief periods. In both instances, uncertainties about the level and pricing of government imports limited private import volumes (Nijhoff et al. 2002, 2003). Similarly in 2005, late government decision-making on import permits, tariffs, and phytosanitary controls diminished private sector interest in maize import and imposed delays that led to significant transport cost escalation, both of which contributed to a rapid maize price run-up in late 2005 and early 2006 (Mwanaumo et al. 2005).

Figure 7. Domestic and import parity prices for white maize



Source: AMIC, SAFEX.

## 5 Food price policy

### 5.1 Maize

Maize has consistently reigned as “King of Crops” in Zambian food policy circles, and the maize price remains the most politically sensitive price in the economy. Since independence in 1964, Zambian policy makers have focused public subsidies and policy attention on white maize, the country’s primary food staple. Over this period, policy stances have changed during three distinct phases.

**1964 to 1990.** During the 25 years following independence, the Zambian government tightly controlled maize prices (both farmgate and consumer prices), as well as input prices and trade, all through a monopoly awarded to the parastatal National Agricultural Marketing Board (NAMBOARD). NAMBOARD supplied subsidized inputs and guaranteed purchases of maize at a

fixed pan-territorial price. Nationalized maize mills sold mealy meal at subsidized prices to urban consumers, while copper revenues financed these massive subsidies. At their peak, in 1986, consumer and producer maize subsidies accounted for 17% of total government spending (Howard and Mungoma, 1996). With the decline in world copper prices, the Zambian government could no longer afford these substantial subsidies for the country's predominant food staple.

Under heavy fiscal and donor pressure, the government disbanded NAMBOARD and liberalized maize markets through a series of reforms beginning in the late 1980's. Early efforts to reduce urban maize subsidies, in 1986 and 1990, led to food riots in the Copperbelt and Lusakia. As a result, Zambian political leaders remain acutely aware of the political sensitivity of maize pricing policy.

**1990 to 2004.** After campaigning on a platform of maize market reform, the newly installed Chiluba government began its reform efforts in 1991 by dismantling NAMBOARD and issuing licenses to private maize traders. But the halving of national maize production during the drought of 1992 led to immediate pressure to resume heavy government involvement in both import and domestic marketing of maize. Not until the 1994/95 production season did government refrain from announcing maize prices (Howard and Mungoma, 1996). After dismantling the NAMBOARD in 1991, government established a new Food Reserve Agency (FRA) in 1995 to maintain security stocks. FRA purchases remained nominal until the mid 2000's (Table 6).

Even after liberalization of domestic maize trade, Zambia's government continued to play an active role influencing the level of maize imports and exports. Government, at various times, imported directly, awarded import permits to private traders, issued publicly financed tenders for private import, and in some cases subsidized sale through privatized mills.

This active government involvement, coupled with unpredictable policy positions, has tended to discourage commercial cross-border maize trade. Uncertainties about access to import permits, tariff levels and possible government price subsidies led to clearly diminished trader interest in maize imports in 2002 and 2005 (Nijhoff et al. 2002, 2003, Mwanauo et al. 2005). As a result, many government officials mistrust private traders. Given the frequent policy changes and the unpredictability of government trade quotas, tariff and pricing decisions, the mistrust is mutual.

**2005 to 2009.** Amendment of the Food Reserve Act, in 2005, resulted in dramatic changes in the level of FRA involvement in Zambian maize markets. Since then, the FRA has opened up over 600 buying depots through the country to buy maize from smallholder farmers at pan-territorial prices, generally far above wholesale market price. In 2006, for example, the FRA paid \$192 per ton, and in 2007 they purchased maize at \$186 per ton (Govereh, Jayne and Chapoto, 2008). During the presidential election year of 2006, the FRA purchased 390,000 tons of maize from smallholder farmers. This amounted to over 90% smallholder marketed volumes (Table 6). Since 2005, the FRA has dominated maize trading in Zambia.

Table 6. Food Reserve Agency Purchases of Maize

Year		Maize production ('000 tons)			Maize sales			FRA domestic purchases		
harvest	marketing	smallholder	large farms	total	smallholder	smallholder	large farms	000 tons	as a percent of	
					PHS	CFS	CFS		smallholder sales (PHS)	national production
1991	1991/92	-	-	1,097	608	-	-			
1992	1992/93	-	-	483	216	-	-			
1993	1993/94	-	-	1,598	642	-	-			
1994	1994/95	-	-	1,021	363	-	-			
1995	1995/96	-	-	738	265	-	-			
1996	1996/97	-	-	1,409	277	-	-	10.5	4%	1%
1997	1997/98	-	-	960	185	-	-	5	3%	1%
1998	1998/99	582	56	638	157	117	64	0	0%	0%
1999	1999/00	-	-	856	217	-	-	0	0%	0%
2000	2000/01	-	-	1,053	272	-	-	0	0%	0%
2001	2001/02	614	188	802	198	121	171	0	0%	0%
2002	2002/03	418	184	602	195	-	-	23	12%	4%
2003	2003/04	823	384	1,207	291	218	382	55	19%	5%
2004	2004/05	994	220	1,214	357	247	234	105	29%	9%
2005	2005/06	598	268	866	289	115	235	79	27%	9%
2006	2006/07	1,107	317	1,424	426	358	-	390	92%	27%
2007	2007/08	1,104	262	1,366		398	224	396	99%	29%
2008	2008/09	988	224	1,212		357	174			
2009	2009/10			1,889		-	-			

Source: Govereh, Jayne and Chapoto (2008), MACO.

## 5.2 Cassava

Beginning in 2005, the newly reconstituted FRA added cassava to its list of purchased commodities, paying a price of 500 to 700 Kwacha per kilogram, well above the market price of 15,000 to 20,000 per 50 kg bag (equivalent to 283 to 377 Kwacha/kilogram). During the 2006 season, when the FRA offered a price 30% to 50% higher than the prevailing market price, they were able to procure their entire 2,400 ton cassava quota in less than two weeks (Haggblade and Nyembe, 2008). However, given the high procurement price, they were unable to sell their stocks. Ultimately, they sold a small portion of their stocks at a loss and wrote off the rest. Since 2007, FRA has been reluctant to purchase cassava. As a result, the domestic cassava market and small exported volumes remain largely unregulated.

## 5.3 Wheat

Until 2009, Zambia's wheat consumption has exceeded domestic production. Consequently, Zambia has required regular, substantial volumes of wheat imports. The Zambian government has regulated these imports by issuing quantitative permits under the Control of Goods Act.

In past years, the government has issued wheat import permits as requested by millers. However, as Zambian farmers approached wheat self-sufficiency in 2009, the Zambia National Farmers' Union (ZNFU) lobbied government for protection from imports. In June 2009, the government announced a ban on wheat imports (Times, 2009).

## **5.4 Current food policy**

### ***5.4.1. Trade policy***

Zambia controls trade in maize and wheat through a system of quantitative restrictions regulated under the Control of Goods Act. Both imports and exports require government permits stipulating the allowable quantities traded. In recent years, the Food Reserve Agency has received the bulk of the trading permits for both the import and export of maize.

Zambia likewise imposes import tariffs of 15% on maize. During shortfall production years, as in 2005, government suspended the maize import tariff. However in 2008, after lengthy negotiations with the private sector, government declined to waive the maize import duty.

### ***5.4.2. Public food stocks***

In 1996, the Zambian government established a Food Reserve Agency (FRA) to hold buffer small food security stocks to ensure domestic supplies and to provide liquidity in the maize market during the initial years of market liberalization. Amendment of the Food Reserve Act, in 2005, dramatically increased the level of FRA involvement in Zambian maize markets. Since then, the FRA has opened up over 600 buying depots through the country to buy maize from smallholder farmers. In recent years, the FRA has purchased about 25% of the national maize harvest and held carry-over maize stocks ranging from 100,000 to 250,000 tons.

### ***5.4.3. Price controls***

The FRA sets a fixed pan-territorial procurement price for maize. Though not legally binding on private traders, the FRA price typically exceeds the commercial market price.

Consumer prices, though not regulated explicitly, remain the subject of ongoing, highly publicized discussions between government and millers. During shortfall production years, the government typically sets price guidance for maize millers, particularly when government supplies subsidized imports or FRA maize to the mills.

## **5.5 Response to the food crisis**

Between June 2008 and June 2007, maize prices increased by 9% in real Kwacha and 40% in nominal US dollars. Even at these levels, 2008 prices were well below the levels attained during the production shortfall of 2001/02 (Figure 6). Nonetheless, in response to general concerns over maize prices and tightening world cereal markets, the Zambian government took several temporary measures to moderate maize price increases: • they banned maize exports, • considered reduction in the maize import duty, and • sold subsidized maize to millers in order to moderate maize meal prices for consumers. They also allocated additional resources for fertilizer subsidies in the 2008/09 production season.

The impact of these actions remains the subject of ongoing debate. Despite the maize export ban, informal exports continued, though possibly at lower level than prior years, to DRC and also to Zimbabwe (Govere, 2009). Initial discussion of the 15% import duty waiver collapsed in August 2008 when the Attorney General advised the government against giving traders concessions to import maize. Some private imports did occur, though some traders cancelled their options to purchase maize on the SAFEX exchange, while others redirected their South

African maize purchases to other countries in the region. Between December 2008 and February 2009, government spent 351 million Kwacha subsidizing FRA maize sales to millers. While this did appear to place downward pressure on maize meal prices during this period, the government suspended this program in March 2009 after allegations that millers were failing to pass along the full price discount to consumers (Govere, 2009). The last of the government emergency responses, their expanded fertilizer subsidies in late 2008, contributed to a near-record maize harvest in 2009 (Figure 1) and to record spending, as fertilizer subsidies consumed nearly half of all agricultural spending (Govere, 2009).

## **6 Summary and conclusions**

Volatility in maize production and in maize prices drives food policy in Zambia. Following an initial liberalization of maize markets in the early 1990's, following the bankruptcy of the government marketing parastatal NAMBOARD, the Zambian government has gradually resumed a larger and larger role in maize markets. Government also routinely controls maize and wheat imports and exports through quantitative restrictions imposed under the Control of Goods Act. Cassava, however, remains largely unregulated.

As an intermittent surplus producer and periodic importer of maize, Zambia would seem poised to benefit from regional trade opportunities, as an exporter in some years and an importer in others. Unpredictable policies (in particular, uncertainties over import quotas, tariffs and FRA release prices) have discouraged private maize trade. This, in turn, has reinforced government suspicion that they cannot rely on private traders to supply food markets during crisis years, a sentiment that has fueled the renewed dominance of the FRA and government trade controls. This mutual caution and mistrust, between government and private traders, has resulted in periods (such as 2002 and 2003) when domestic maize prices have exceeded import parity (Figure 7). As a result, Zambian food prices have fluctuated more than necessary in some years.

In the medium run, price moderation through regional trade will require improved efficiency among marketing agents as well as transparent and predictable policy signals. Over the long run, consumption diversification out of maize and into wheat and cassava-based foods, feeds and beverages will tend to reduce Zambia's current vulnerability to its erratic maize harvests, policies and maize prices.



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