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Staple food prices in Kenya



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1 Introduction

Maize marketing and trade policy in Kenya has been dominated by two major challenges. The first challenge concerns the classic food price dilemma: how to keep farm prices high enough to provide production intensification incentives for farmers while at the same time keeping them low enough to ensure poor consumers' access to food. The second major challenge has been how to effectively deal with food price instability, which is frequently identified as a major impediment to smallholder productivity growth and food security. Redressing these causes of low farm productivity and food insecurity are major challenges facing Kenyan policy makers.

The question of how to reduce food price risks and raise smallholder farm productivity quickly brings us to the appropriate roles of the state and private sector in markets. There is widespread agreement that the state has a crucial role to play in developing strong output markets in Africa. However, there are major controversies as to what exactly these critical government roles are, and how they should be implemented.

A good starting point for meaningful discussion about alternative food price policy and investment options would be to review trends in food consumption, production, and price levels, and the forces shaping these trends. These are the objectives of this background paper for Kenya. The remainder of the paper is organized as follows. Section 2 reviews the importance of the main staples in Kenyan food consumption patterns. Section 3 reviews production and trade trends of these major staples. Section 4 describes trends in food prices and instability. Section 5 describes Kenya's maize marketing and trade policy objectives, the rationale behind these objectives, and a chronology of policy interventions used to achieve these objectives. Section 6 summarizes the main findings and conclusions of the study.

2 Importance of staple foods in the diet

According to FAO Stat (2009), the average person in Kenya consumes 2155 kilocalories of food per day. Of this, 1183 kilocalories (55%) are in the form of the main staples: maize, wheat, beans, potatoes, plantains, and rice. Over the last 40 years, caloric intake per person appears to have been roughly constant over time in Kenya, dipping in the early 1990s but rising gradually since then.⁴

Maize is the main staple food in Kenya, accounting for 65% of total staple food caloric intake and 36% of total food caloric intake (FAO Stat, 2009, Table 1).⁵ The average person consumes 88 kgs of maize products per year. Wheat is the second most important staple nationally, accounting for 17% of staple food consumption in

⁴ The temporary drop in caloric intake per person during the early 1990s was associated with a period of negative per capita national income growth as well as negative per capita agricultural growth in the early 1990s.

⁵ According to the FAO Stat website, 2003 was the most recent year for which data is available, so these figures may be slightly outdated.

Kenya. However, recent urban consumption surveys indicate that wheat products have overtaken maize in terms of expenditures in urban areas, and the share of rice in urban food consumption is also rising (Muyanga et al, 2005).

Maize has “inferior good” characteristics in the sense that its share in staple food expenditures is highest among the poor. Maize accounts for nearly 20% of total food expenditures among the poorest 20% of urban households, declining to 1% of total food expenditures among the wealthiest 20% (Muyanga et al, 2005).

Because national maize production is not keeping pace with the growth in national demand, imported wheat and rice are increasingly filling the residual food needs gap. For this reason, the share of wheat and rice in staple food expenditures are rising, leading to more diversified basket of staples over time.

Beans are the third most important staple food nationally, accounting for 9% of staple food calories and 5% of total food calories in the national diet (Table 1).

Individually, plantains, potatoes, are rice constitute less than 5% of staple food calories and 3% or less of total food calories.

Table 1. Importance of staple foods in diet of Kenya

Commodity	Quantity consumed (kg/person/year)	Daily caloric intake (kcal/person/day)	Share of caloric intake (percent)
Maize	88	768	65%
Wheat	26	196	17%
Plantains	23	56	5%
Potatoes	31	60	5%
Beans	11	103	9%
Total	180	1183	100%

Source: FAO, 2009a

3 Production and trade of main staple foods

3.1 Maize

Maize production in Kenya has not kept up with national consumption requirements. In most years, the country imports maize from Uganda and Tanzania. In years of poor maize production, imports of wheat and maize from international sources typically make up the shortfall in additional informal regional imports.⁶ Maize imports as a percentage of national consumption is only 3.5%. However, of the 3,027,000 tons of maize produced annually (on average over the 2005, 2006 and 2007 seasons), at most 1,000,000 hits the market, thus recorded official imports

⁶ Wheat imports have risen at an annual rate of 26,000 tons per year since the early 1990s and have exceeded 600,000 mt since 2005. Using an OLS regression of Kenya’s national wheat imports on national maize and wheat production and a time trend over the period 1990-2007 indicates that a decline in maize production of one tonne is associated with a 160kg increase in wheat imports, other factors constant. This effect is imprecisely measured however, with a significance level of 0.13.

account for over 10% of supplies circulating in Kenyan markets. If informal regional imports were recorded, the share of imports would be even higher.

Maize production and marketed sales in Kenya are highly concentrated. While almost all farmers in Kenya grow maize, it is estimated that 2% of farmers in the smallholder sector account for over 50% of the national marketed supply (Jayne, Myers, and Nyoro, 2008). If the large-scale sector were included, the concentration of marketed supply would be even greater.

Table 1. Production and trade of food staples in Kenya

Commodity	Production	Imports	Exports	Imports as a percentage of apparent consumption	Exports as a percentage of production
	(1000 tons)	(1000 tons)	(1000 tons)	(%)	(%)
Maize	3,027	108	25	3.5%	0.8%
Wheat	360	612	2	63.1%	0.5%
Potatoes	855	0	0	0%	0%
Plantains	602	0	0	0%	0%
Beans	447	40	3	8.2%	0.6%
Rice	39	248	1	86.6%	1.9%
Total	5330	1009	31		

Source: FAO, 2009b. Figures are based on the mean of 2005, 2006 and 2007 production levels.

Note: Apparent consumption is production plus imports minus exports and non-food uses.

Production data: <http://faostat.fao.org/site/567/default.aspx#ancor>

Trade data: <http://faostat.fao.org/site/535/default.aspx#ancor>

3.2 Wheat and Rice

Wheat is produced by smallholder and large-scale producers, but the latter account for the lion's share of national production. Production is unable to keep pace with consumption requirements and the country imports over 60% of national wheat consumption. Wheat imports appear to be growing rapidly as the country becomes increasing food deficit due to urbanization and population growth.

Rice plays a similar role as wheat, in that importation is growing rapidly in response to the rising gap between national staple food production and consumption requirements. Very little rice is produced in the country, but it is becoming a major staple in urban areas along the coast.

3.3 Potatoes and Plantains

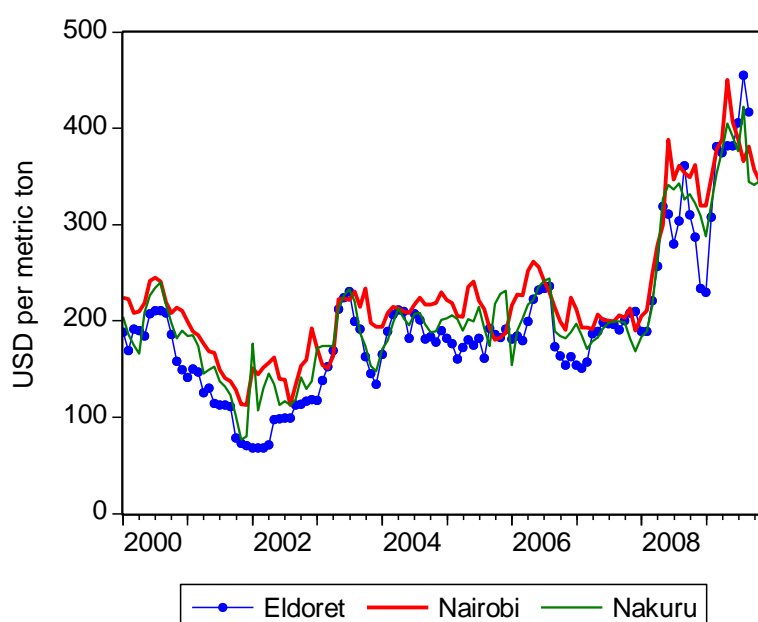
These crops play a role in Kenya that is similar to cassava in some countries of central and southern Africa, in the sense that these crops provide a consumption "shock-absorber" to annual variations in production of the main staple, maize (Haggblade, Tschirley, and Longabaugh, 2009). In years of national maize shortfalls, potatoes can be pulled out of the ground and plantains can be harvested to substitute for maize in the diets. In years when maize is bountiful, potatoes can continue to be stored in the ground for at least some period of time.

Neither potatoes nor plantain are traded across national boundaries to any significant degree. Yet their role in reducing the magnitude of food imports in major deficit years is likely to be significant.

4 Maize price patterns

Maize grain prices in Kenya are among the highest in the Eastern and Southern Africa region. Mean wholesale market prices in the surplus zones of Nakuru and Eldoret and the capital city, Nairobi, between January 2000 and December 2009 have been US\$192, US\$209, and US\$225 per metric ton, respectively, considerably higher than world market levels during this period (Figure 1). Comparing price levels in the major urban markets of Kenya, Zambia, Tanzania, Uganda, Malawi, Mozambique and South Africa, only in Malawi has mean maize prices exceeded those in Kenya (Chapoto and Jayne, 2009).

Figure 1. Wholesale maize prices, nominal USD per metric ton, 2000-2009.



Despite the fact that markets were reformed in the early 1990s to allow for private trade, the National Cereals and Produce Board still continues to exert a major indirect effect on maize prices. The NCPB has purchased between 10-20% of the domestically marketed maize output in Kenya, mainly from large-scale farmers (defined as farms over 50 acres). Very few smallholder farmers sell to the NCPB since the mid-1990s, based on nationwide Tegemeo survey data. However, using vector autoregression (VAR) analysis, Jayne et al. (2008) estimated both the separate and joint impacts of the NCPB's purchase and sale operations on wholesale prices and their results indicate that the NCPB's operations have, between 1995 and 2005, raised wholesale market prices by 17 to 20 percent. Over this period, the NCPB has

cumulatively purchased 30% more grain from farmers than it has sold to millers and other domestic buyers.⁷ Hence the NCPB's operations have tightened the supply-demand balance in domestic markets, which had a price-raising effect on wholesale markets. Secondly, the NCPB has generally set its purchase prices above those in domestic markets, which has put upward pressure on local market prices.

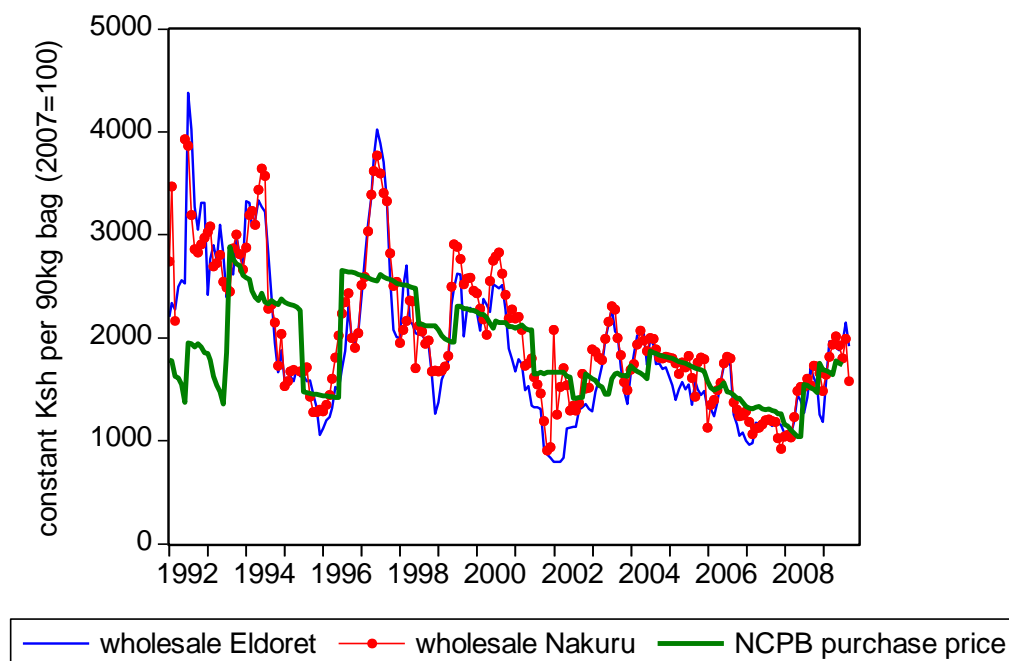
Jayne et al. (2008) also found that the NCPB's activities reduced the standard deviation and coefficient of variation of market prices, consistent with its stated mandate of price stabilization. It has successfully raised market prices in bumper crop years and exerted downward pressure on market prices in drought years, mainly through its price setting operations. In the absence of a transparent and well defined pricing model, the costs that NCPB has imposed on the Treasury in achieving this improvement in price stability are not publicly available, and hence welfare effects cannot be derived.

In recent years, the NCPB has slowly reduced in real terms its maize purchase and sales price over time. The declining trend in the real NCPB maize purchase price is shown in Figure 2. This is evidence that, over time, the NCPB is partially retreating from attempts to push market prices substantially above what their equilibrium levels would be without the involvement of NCPB. Wholesale maize prices were very high in the early 1990s (equivalent to over \$220 per ton in Nairobi) when the NCPB was still purchasing between 3-6 million tons even after the liberalization programme had begun. However, after the NCPB's purchases declined sharply starting in 1995, real wholesale maize prices have declined as well. Mean real prices in the 1995-2007 period have been lower by 25% in Eldoret, by 30% in Kitale, and by 29% in Nairobi, than during the 1985-1994 period. Time trend regressions indicate a statistically significantly down trend in the inflation-adjusted prices in most markets between 1985/96 and 2006/07. However, in the 2008/09 season, real prices have risen again.

There has also been a very close correlation in real price movements between the NCPB purchase price (primarily operative in the surplus areas of Western Kenya) and the wholesale market prices in these areas of Western Kenya (Figure 2). After adjusting for inflation, real maize market prices as well as the NCPB purchase price have been declining over time, except for the recent 2007/08 and 2008/09 price spike, which is discussed in more detail in Section 5.

⁷ This conclusion is based on NCPB monthly data on maize purchases and sales over the period 1995-2005. However, it does not count food relief

Figure 2. Comparison of real maize price trends, NCPB purchase price vs. wholesale market prices in Western Kenya



Note: Prices are mean of monthly prices from the marketing year (July-June); e.g., 1999 is from July 1999 to June 2000. Purchase prices remain pan-territorial. source: NCPB, 2007

Figures 3a and 3b show the relationship between the NCPB purchase price and the wholesale and farm-gate maize prices in recent years, for two major maize surplus districts, Nakuru and Eldoret. Farm-gate prices are obtained from Tegemeo farmer surveys in the months shown for which at least 10 observations are available per month, whereas wholesale market prices are obtained from the Ministry of Agriculture. The figures allow us to compare the differences between farm-gate and wholesale prices, which is the margin accruing to assembly traders who buy from farmers and sell to wholesalers or the NCPB in district towns. In both figures 3a and 3b, there appears to be a fairly close relationship between the farm-gate and wholesale prices, with farm-gate prices constituting 92% and 95% of the wholesale prices, on average, for months in which data was available for both prices.

Figure 3a. Farm-gate and wholesale maize prices, and NCPB purchase price, Nakuru district, 2006/07 and 2008/09 seasons.

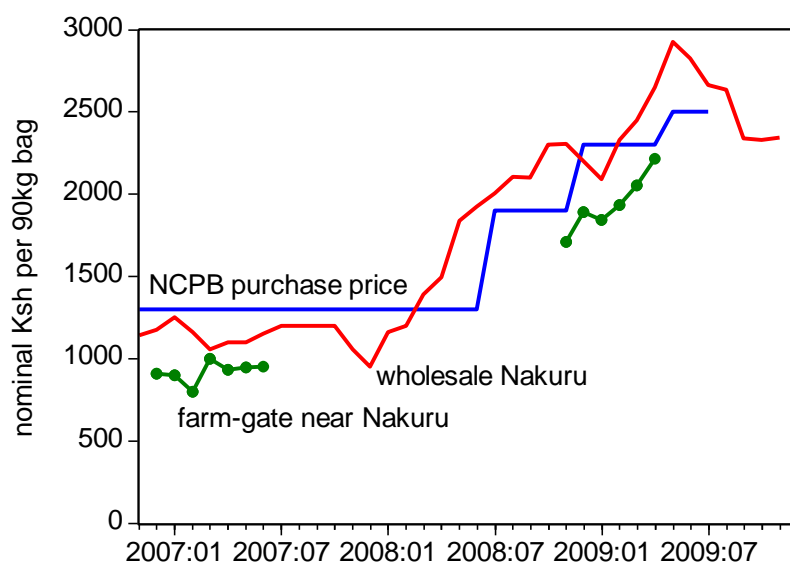
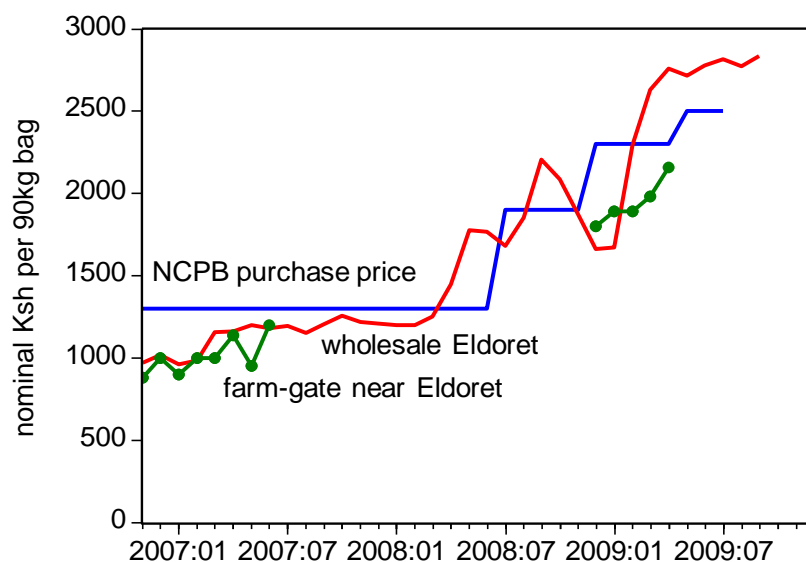


Figure 3b. Farm-gate and wholesale maize prices, and NCPB purchase price, Eldoret district, 2006/07 and 2008/09 seasons.



5. Food price policy

In Kenya, food security has generally been taken as synonymous with maize security by policy makers and other segments of society. This is because maize is not only the main staple food but also the most common crop grown by rural poor households for food (Nyoro et al., 1999). The importance attached to maize by policy-makers in Kenya can be inferred from the emphasis laid on maize in current and past national food policies.

Attempts at reforming Kenya's maize marketing and pricing system began in the late 1980s. Up until that time, the Government set producer and into-mill prices for maize and set maize meal prices to be sold by millers and retailers to consumers. These prices were pan-territorial and pan-seasonal, adjusted once per year at the beginning of the marketing season. The government marketing board, known as the National Cereals and Produce Board (NCPB), had a longstanding monopoly on internal and external trade. Informal private trade across district boundaries was illegal, as was cross-border trade. Traders were required to apply for movement permits to allow them to transport grain across district boundaries. Despite government attempts at suppression, some private maize trade existed in Kenya even during the control periods before the liberalization process began in the late 1980s.

The Cereal Sector Reform Program began in 1987/88. The European Union supported the program as part of the country's overarching structural adjustment policies. At first, the GoK and donors agreed to legalize inter-district maize trade, with the maximum volume of maize trade to be progressively raised over time. The reform agreement also called for the NCPB to reduce its market share (i.e., maize purchased as a proportion of total maize traded) over time, by widening the margin between its maize purchase and selling price, which would have provided greater scope for the private sector to operate. In fact, the NCPB's trading margin declined in the early 1990s, which had the opposite effect of making it unprofitable for the private sector to engage or invest in many types of marketing activities, especially long-distance trade.

The reform process intensified in late 1993, when, under pressure from international lenders, the government eliminated movement and price controls on maize trading, deregulated maize and maize meal prices, and eliminated direct subsidies on maize sold to registered millers (Ariga and Jayne, 2009). By 1995, private traders were allowed to transport maize across districts without any hindrance.

The reform process was expected to raise competition by encouraging more private sector participation in the market and thereby reduce costs in the marketing system. In practice, the implementation of the reforms has most likely exacerbated the risks and costs of private sector investment. This is because the reforms have been marked by frequent and usually unanticipated changes in trade tariffs, quantity restrictions, and regulatory changes facing private traders. The discretionary policy tools used by the government to influence market prices and supplies, and which raised market uncertainty for traders include: (i) frequent and unannounced changes in maize import tariff rates; (ii) export bans; (iii) the behavior of the NCPB, in particular the prices it sets for maize purchase and sale, and the funds allocated for

this purpose by the Treasury, which then determine the extent to which the NCPB can defend its official pricing structure and influence market prices; and (iv) regulatory changes regarding the amount of freedom the private sector was permitted in maize marketing.

In addition to these sources of uncertainty, the liberalization process in Kenya has created additional risks for private investment associated with the uncertainty over the eventual dispensation of NCPB assets. Private investment in dedicated capital outlays, such as storage facilities, has been impeded by the high degree of uncertainty over the disposition of the NCPB's storage facilities and other assets. New private investment in storage facilities could be vulnerable to huge losses if the NCPB continued to be a major player in the market, offer prices to farmers and millers that did not rise through the marketing season (pan-seasonal prices), and set a narrow margin between its buying and selling prices that was covered by the treasury – all of which happened during much of the 1990s. Table 4 provides a detailed chronology of these interventions.

Prior to market liberalization in the late 1980s, the NCPB purchased between 5-8 million bags of maize per year. Even during the early years of liberalization, the NCPB received enough public funds to purchase between 3 and 6 million bags per year, which was more than half of domestically marketed maize output. Thus, the NCPB remained the dominant player in the maize market even 6-7 years into the liberalization process. This is not surprising considering that the NCPB set its maize purchase prices considerably higher than prevailing market prices. In the maize breadbasket areas of Western Kenya, the incomes and living standards of many farmers, especially large-scale farmers, depended on the NCPB continuing to offer support prices for maize. In this way, by offering above-market support prices, the NCPB used its market power and access to treasury subventions to discourage private sector investment in maize wholesaling and storage.

Starting in the 1995/96 marketing year, and under pressure from external donors, the government dramatically reduced the NCPB's operating budget. This forced the NCPB to scale back its purchases substantially to about 1 million bags per year between 1995 and 2000 (Table 3). The reduction in NCPB maize purchases from 3-8 million to 1 million bags led to intensive lobbying by commercial maize farmers for increased purchases. Gradually, a year before the national elections, the government increased the NCPB's budget in the 2000/01 year. Since 2000, the NCPB's maize purchases have been trending upward. In drought years, when market prices are already relatively high, the NCPB tends to purchase relatively small volumes. In normal or good years, the NCPB's purchases have exceeded 3 million bags, which is believed to be roughly 25-35% of the total maize sold by the small and large farm sector in Kenya, and is approaching the scale of operations played by the NCPB during the pre-reform era.

Most of the maize purchased by the NCPB now appears to be directly from large-scale farmers in the maize surplus parts of the country, where unit procurement costs are low due to scale economies. Since the major withdrawal of the NCPB in 1995, Tegemeo/Egerton survey data show that most small farmers in Kenya sell their maize to private traders. The Tegemeo/Egerton/MSU household survey has tracked

the maize selling and buying behavior of 1,313 small farm households in 1996/97, 1999/00, and 2003/04. About 28.6% of these households are located in the prime maize-surplus districts of Trans Nzoia, Uasin Gishu, upper Kakamega, Nakuru, upper Narok, and Bomet. In this High-Potential Maize Zone, we find that 9% of the maize selling households sold maize to the NCPB. The other 91% of the households selling maize in the High-Potential Maize Zone sold to private buyers. Over the entire nationwide sample, only 2% of the households sold to the NCPB, while 34% sold to private buyers. The remainder of the sample did not sell maize. Yet, as will be shown later, the NCPB indirectly influences millions of small farmers and urban consumers through the upward pressure that its operations exert on maize market prices.

The 2007 National Food and Nutrition Programme (NFNP) is a draft government document that attempts to address the shortcomings in earlier policy documents. In particular, the NFNP shifts the focus away from maize self-sufficiency to a more comprehensive policy of food access, diversity, and nutritional status (Republic of Kenya, 2007). It acknowledges that high staple food prices, while favorable to farmers who can produce a surplus, directly hurt not only urban consumers but also a large portion of rural small-scale farmers who are net buyers of staple food. The NFNP emphasizes increased availability and accessibility to diverse foods to meet the basic minimum food nutritional requirements. It proposes a gradual removal of import duties on maize, wheat and rice, promotion of cross-border trade in food items, control importation of subsidized foods, and educating local authorities and administrators on importance of free movement of food items. By proposing appropriate reforms in domestic and external trade policy, the NFNP brings into perspective the importance of perceiving food security in the broader context of regional market integration and globalization rather than just as a localized issue (Nyoro et al 2007).

Table 3. NCPB Maize Trading Volumes and Price Setting, 1988/89 to 2008/09.

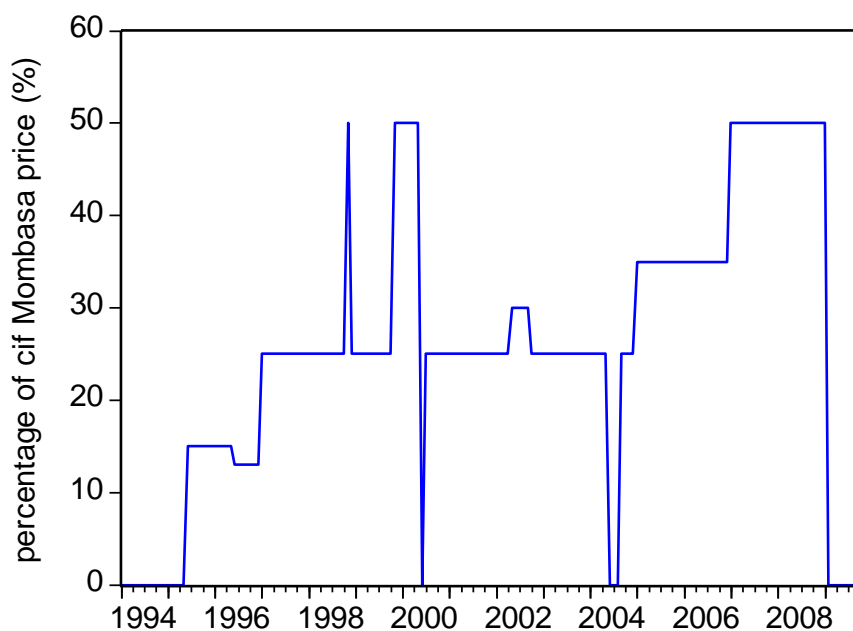
YEAR	TOTAL OUTPUT	NCPB MAIZE PURCHASE AND SALE PRICE (KSH PER 90KG BAG)				NCPB MAIZE PURCHASES	NCPB MAIZE SALES	OFFICIAL EXPORTS	OFFICIAL IMPORTS
	(000 MT)	NOMINAL		INFLATION-ADJUSTED (2005=100)		(000 MT)	(000 MT)	(000 MT)	(000 MT)
	(A)	PURCHASE PRICE (B)	SALE PRICE (C)	PURCHASE PRICE (D)	SALE PRICE (E)	(F)	(G)	(H)	(I)
1988/89	2761	201	326	1725	2703	643.81		167	0
1989/90	2631	221	337	1680	2561	551.30		110	0
1990/91	2290	250	337	1645	2215	235.27	669.55	160	0
1991/92	2340	300	358	1649	1961	318.91	735.18	19	75
1992/93	2430	420	646	1679	2582	493.36	257.45	0	0
1993/94	2089	950	1280	2549	3434	467.55	512.82	0	89
1994/95	3060	920	1280	1960	2728	540.00	67.73	2	121
1995/96	2699	600	887	1235	1825	100.82	111.27	154	0
1996/97	2160	1127	1100	2232	2176	62.82	54.27	221	0
1997/98	2214	1162	1318	2172	2463	151.45	14.64	9	565
1998/99	2400	1009	1209	1764	2113	34.91	123.27	13	0
1999/00	2322	1200	1436	1923	2301	177.18	145.09	37	52
2000/01	2160	1250	1300	1812	1884	311.45	74.09	7	498
2001/02	2776	1000	1250	1414	1768	257.73	23.73	6	472
2002/03	2441	1052	1265	1408	1693	89.09	196.36	0	24
2003/04	2714	1358	1680	1670	2066	162.00	136.73	48	109
2004/05	2459	1400	1950*	1566	2181	314.08	144.02	14	273
2005/06	2918	1362	1770*	1250	1770	135.29	375.56	5	207
2006/07	3248	1300	1500*	1161	1339	407.17	97.63	17	152
2007/08	2929	1300	na	895	na	na	na	48	116
2008/09	2367	1900/2300	na	1235/1495	na	na	na	0	990

Note: * NCPB maize selling price changed from pan-territorial to province-specific in 2004. Prices shown are for Nairobi and Central Provinces.

Source: NCPB data files, except for maize production statistics, which come from the Ministry of Agriculture. Official imports include both NCPB and recorded private sector imports. Further disaggregation of import data is contained in Appendix 1.

Another important aspect of maize price determination in Kenya concerns trade policy. In order to support maize prices in the main growing areas after liberalization, the government imposed high tariffs on maize imports, both at the port of Mombasa (to restrict imports from the world market) and at border crossings along the Uganda and Tanzanian borders. Figure 4 shows the frequent variations in maize import tariff rates for internationally-sourced maize through the port of Mombasa. Since the inception of the East African Custom Union in January 2005, maize imports from other COMESA countries have been taxed only at the rate of 2.75% while maize imports from outside COMESA attracts 50% import tariff. Since 2008, imports from Uganda and Tanzania attract zero tariff.

Figure 4. Maize import tariff rate through Mombasa Port, Kenya, 1994-2009.



Source: Ministry of Trade and Industry.

Evidence indicates that the costs of maize production in eastern Uganda are typically lower than in most areas of Kenya (Nyoro, Kiriimi, and Jayne, 2004), and import tariffs were deemed necessary to stem the inflow of imported maize from Uganda. However, since the border is relatively porous, illegal cross border trade was common, estimated at 100,000 to 250,000 metric tons per year (Ackello-Ogutu and Echesseh, 1997). It is alleged that relatively high NCPB support prices encouraged maize imports from Uganda at the same time that official trade policy attempted to suppress it. Illegal cross-border trade appears to have been impeded somewhat by transaction costs, including bribery payments to police, extra handling charges associated with offloading maize at the border, smuggling it across the border, and on-loading maize onto trucks on the Kenya side of the border. This confusion was compounded by the fact

that these export bans, import bans, and major changes in import tariff rates as shown in Figure 4 were not anticipated by market participants as the government in most cases never consulted with them or provided prior announcement of trade policy changes.

Imposing an import ban or high tariff rates benefited the large maize producers (a relatively small group) who were able to market their surplus at relatively higher prices compared to the situation that could have existed without bans. Conversely, a much larger group of net-maize buying rural households and urban consumers were adversely affected to the extent that import tariffs raised domestic maize prices. However, the distributional effects were likely to be relatively small. A recent VAR analysis indicates that maize import tariffs over the 1995-2004 period raised mean domestic prices by roughly 4%, although in several particular years, the import tariff raised domestic price levels by well over 10% (Jayne et al., 2008).

However, since 2005, Kenya's maize trade policy has stabilized considerably. It has complied with regional initiatives under the Common Market for Eastern and Southern Africa (COMESA) and the East African Community (EAC) to eliminate cross-border tariffs within the region and harmonize regional and international trade policies. Since January 2005, the tariff on maize imported into Kenya from Tanzania and Uganda has been limited to a 2.75% government levy. Imports of maize grain from Mombasa have continued to attract a 50% tariff up to January 2009.⁸

While formal maize import tariff rates are being harmonized in the region, numerous non-tariff barriers to regional trade remain. Though a Single Entry Document (SED) is required for custom clearance for COMESA countries, Kenya has additional requests for other information that makes it difficult for traders to fill these forms, which delays custom clearance. Before being cleared through customs, one might need a combination of the following forms: (i) original invoice; (ii) Import Declaration Form; (iii) Pre-Shipment Inspection (Clean Report of Finding-CRF); (iv) Certificate of Origin; (v) Phytosanitary Certificate; (vi) Quality Standards Certificate (issued by KBS); and (vii) Safety Standards Certificate, among others. The issuance of most of the import documents is centralized at the capitals or at major towns which means that maize traders have to travel long distances to obtain the documents. Non-tariff barriers in the form of cumbersome trade regulations have constrained official regional trade and increased informal unregistered cross-border trade. However, unregistered or unrecorded cross-border trade incurs additional transaction costs, bribe payments, and handling costs which are most likely paid for by producers and consumers in the form of lower producer prices and higher consumer prices. This is one area that further research can provide useful information in estimating the costs of these non-tariff barriers and how they compare with official tariff rates.

⁸ One other area that is being addressed by COMESA is the harmonization of food safety standards and SPS requirements. Each country has its own standards that may be different from the others and this will impose additional costs for traders who have to meet varied quality standards. The harmonization of the various standards will reduce costs for traders and raise the volume of trade. The setting of regionally harmonized quality and product standards is in progress. EAC and COMESA are also addressing the issue of Simplified Trade Regime that encompasses Simplified Custom Documents and Simplified Rules of Origin for cross-border trade.

The major aspects of Kenya's "stop-go" maize marketing and trade policies, from the inception of liberalization in the late 1980s, are summarized in Table 4.

Table 4. Evolution of Maize Marketing and Pricing Policy Reforms starting in 1988.

State Marketing Agency	Market Regulation and Pricing Policy
1988 NCPB financially restructured. Phased closure of NCPB depots. NCPB debts written-off; crop purchase fund established but not replenished.	1988 Cereal Sector Reform Program (CSRP) envisages widening of NCPB price margin. In fact margin narrows. Proportion of grain that millers are obliged to buy from NCPB declines. Limited unlicensed maize trade allowed.
	1991 Further relaxation of inter-district trade.
	1992 Restrictions on maize trade across districts re-imposed. NCPB unable to defend ceiling prices
	1993 Maize meal prices deregulated. Import tariff abolished.
	1995 Full liberalization of internal maize and maize meal trade; Maize import tariff re-imposed to 30%.
1995 NCPB restricted to limited buyer and seller of last resort role. NCPB market share declines to 10-20% of marketed maize trade. NCPB operations confined mainly to high-potential areas of western Kenya.	1996 Export ban imposed after poor harvest.
	1997 Import tariff imposed after poor harvest
	1997 – onward External trade and tariff rate levels change frequently and become difficult to predict. NCPB producer prices normally set above import parity levels
2000 –	2005 –
onward NCPB provided with funds to purchase a greater volume of maize. NCPB's share of total maize trade rises to 25-35% of total marketed maize.	onward The government withdraws the maize import tariff from maize entering Kenya from EAC member countries. An official 2.75% duty has been assessed until early 2008 when it was revised to zero. Import duty of 50% still assessed on maize entering through Mombasa port except when duty is temporary lifted when the country experiences high levels of maize deficit.

Source: authors

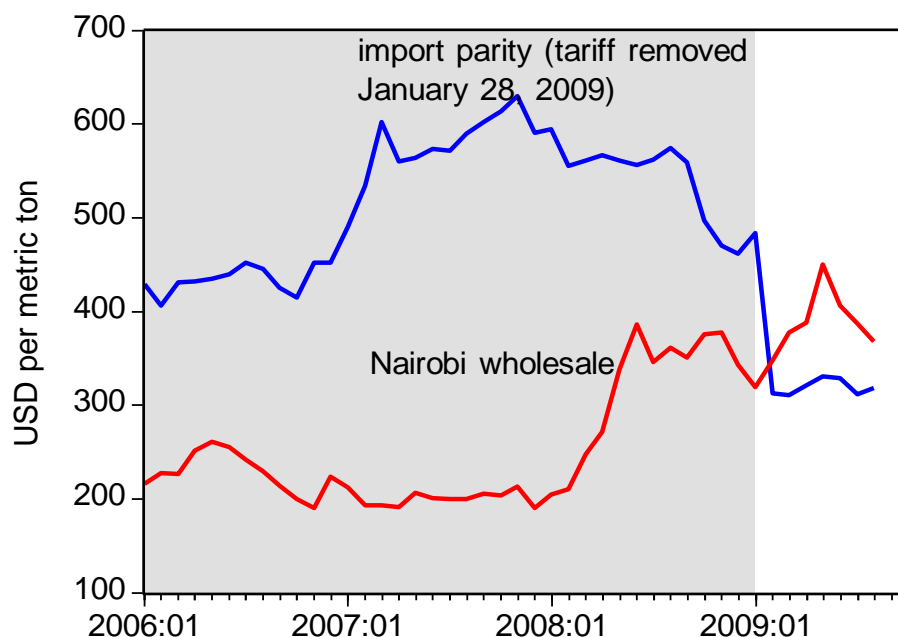
6 Response to the 2008/09 food crisis

In early 2008, Kenya's main season harvest in late 2008 was estimated to be below average due to high fertilizer and fuel prices as well as post-election violence in early 2008. Erratic main season rains further reinforced the early warning conclusions that maize shortages would arise by early 2009 unless steps were taken to import maize. Early warning estimates of import requirements were in the range of 1 million tons. Imports from Tanzania and Uganda were believed to be able to satisfy some of Kenya's residual maize requirements, but Tanzania had an export ban in place. Kenya, on the other hand, maintained a 50% import duty on maize through the port of Mombasa throughout 2008. The import duty made private importation uneconomic and created a situation in which the Kenyan government would need to arrange maize importation from the world market to avert shortages. However, as of December 2008, the government had imported only 135,000 tons from South Africa. Private informal imports Tanzania and Uganda were estimated at 120,000 tons through 2008 despite official trade bans (RATIN, 2009).

Kenya's maize import tariff rate has always been a topic of speculation by grain traders given sudden changes and occasional zero-rating by the government (Figure 1). Millers, traders, and local analysts had been arguing for a duty waiver since it became clear in mid-2008 that massive imports would be required. This would have allowed sufficient grain to be imported well in advance of the depletion of domestic supplies and thereby avoid congestion at the port and undue strain on available upland transport capacity.

In response to the poor harvest and restrictions on importation, prices have risen sharply in 2008. Figure 5 presents Nairobi wholesale maize price trends denominated in U.S. dollars. Note that 2007 price levels were relatively average despite the rise in world food prices that had already begun. High world prices in 2007 and early 2008 no doubt pushed Kenyan maize prices in the range of US\$300 to US\$350 by mid-2008 when the market moved toward an import parity price surface in anticipation of the need for imports. But because of delays in government importation and government's decision to maintain the 50% tariff on imports through Mombasa throughout 2008 for private sector importers, maize prices stayed at very high levels in late 2008 despite the tumbling of world prices starting in October 2008. Maize prices usually decline by November or December in Kenya as the main season harvest hits the market. The fact that prices continue to stay over \$300 per ton at this time could have been an indicator of a food crisis to come.

Figure 5. Nairobi local and import parity prices, January 2006-August 2009.



Source: Ministry of Agriculture Market Information Bureau for Nairobi wholesale prices; Kenya Bureau of Statistics for exchange rates; SAFEX and Tegemeo Institute for import parity prices.

In January 2009, Kenya's food crisis deepened over allegations of corruption over the issuing of import licenses, reported diversion of maize imports to Sudan, and a lack of transparency over the sale of subsidized NCPB grain have led to the sacking of most of the NCPB Board of Directors and 17 senior managers. On January 16, 2009, President Mwai Kibaki declared a state of emergency and launched an international appeal for US\$ 463 million to feed roughly 6 million people who were estimated to be food insecure. In January 2009, the World Food Programme pledged to feed 3.2 million people following the government's declaration of a food crisis in the country.

The import duty on maize was finally lifted on January 28, 2009, allowing importers to buy maize from the international market and bring it in to the country duty free. Millers and traders immediately placed import orders from South Africa. Within three weeks, supplies starting landing at Mombasa Port. The Grain Bulk Handling facility at the port was able to offload grain at a capacity of roughly 220,000 tons per month. However, inland transport capacity now became the main constraint. The Kenyan Railways system linking Mombasa to the main population centers in central and western Kenya had stopped operating and private transport capacity was insufficient to handle the massive grain imports that were concentrated into weeks immediately after the import duty was lifted. Grain traders interviewed during this period indicated that the maximum transport capacity from Mombasa is 150,000 tons per month, which would have been sufficient to meet local demand if supplies had been mobilized 3-4 months earlier, but which were unable to do so by the time the import tariff was actually

lifted. Consequently, rationing was experienced in early 2009 and domestic prices continued to climb upward of \$400 per ton, even as the cost of importing maize to Nairobi had fallen to the \$300-320 per ton range. Because grain did not arrive at the port early enough to transport sufficient volumes upcountry (given transport capacity constraints) to meet demand requirements, maize market prices continued to climb during the first half of 2009 well over import parity. This state of affairs could have been avoided if the import tariff was lifted much earlier, especially since national shortfalls were predicted by the early warning systems and by local policy institutes as early as May 2008.

The concentration of maize imports into a two-month period (late February-April 2009) also generated additional marketing costs that were ultimately borne by Kenyan consumers. Because inland road transportation was insufficient to handle the volumes imported (estimated at 0.7 million tons), traders were forced to store their grain in facilities outside the Mombasa port waiting for available transport to arrive. Upland transport capacity was further constrained by the fact that fertilizer importation for the main growing season typically occurs in February-March as well.

By September 2009, domestic maize prices had stabilized in line with import parity prices as imports continued to relieve the deficit and production from some areas of the country began to hit the market.

7 Summary and conclusions

Maize accounts for the single largest share of production and consumption in Kenya's small farm sector. Achieving productivity growth in this staple crop is likely to be necessary but not sufficient for broad-based and pro-poor agricultural growth in Kenya.

Food imports are becoming increasingly important in staple food diets as food consumption requirements are increasingly outstripping domestic food production. The rapid growth in food consumption requirements is being driven primarily by urbanization and population growth. Maize and wheat production growth are not sufficient to match the growth in consumption. Much of the import gap is being increasingly filled by wheat and rice, which might be due to urbanization and by changing consumer preferences over time. However, impediments to regional maize trade in some years makes it easier for large millers and traders to source residual grain requirements from international markets rather than from smallholder farmers in neighboring countries.

The real price of maize in Kenya has declined markedly since 1995 as the NCPB has partially withdrawn from the maize market. However, real prices of maize, wheat and almost all other crops rose dramatically with the world food crisis of 2007/08 and Kenya's particular food crisis in 2008/09. While food prices in world markets peaked in July 2008 and started declining thereafter, food prices in Kenya started skyrocketing in mid-2008 and exceeded import parity for much of 2009. The reasons for this are discussed above, and largely reflect policy decisions to maintain a 50% tariff on maize imports long after the need for major grain imports was realized in mid-2008.

In the period between 1995 and 2005, the NCPB's activities were found to reduce the standard deviation and coefficient of variation of market prices, consistent with its stated mandate of price stabilization. It has successfully raised market prices in bumper crop years and exerted downward pressure on market prices in drought years (with the notable exception of 2008/09), mainly through its price setting operations. However, the costs involved in achieving improved maize price stability are not available, and hence welfare effects cannot be derived.

The trend toward structural food deficits is a consequence of urbanization, population growth, land pressure, and diversification into other crops. Rising land constraints will progressively encourage farmers to shift toward crops providing high returns to scarce land. Because much of Africa is experiencing increased land pressure and limited potential for area expansion, population growth is causing a decline in land/labor ratios and farm sizes are declining. Maize is a relatively low value-to-bulk crop that currently provides high returns to fertilizer application and land in a limited number of areas. Given reasonable assumptions about the potential for future productivity gains, it is unlikely that maize will provide the net revenue on the millions of farms that are 0.5-1.0 hectares or smaller to generate much improvement in absolute household incomes, especially in the semi-arid areas. Hence, the gradual movement toward smaller farm sizes will compel households to adopt more diversified commercialization strategies capable of maximizing the value of output per scarce unit of land. Thus, the trend toward structural maize deficits is not necessarily a bad omen for the region if small farmers can shift into other activities that provide higher incomes. This is already happening for many smallholder farmers in the region.

Yet maize productivity growth will remain a crucial objective. If it can be achieved, it will reduce import dependence and remain a source of dynamism and growth for both rural and urban areas in the region. For farms that satisfy the joint conditions of being located in agro-ecologically suitable areas and cultivating enough land to overcome relatively low returns per unit of land, maize will remain a dominant cash crop, as for many of the farms in districts such as Trans Nzoia, Uasin Gishu, Lugari, and Nandi. For farmers in most other areas (the majority of which are purchasers of maize), lower costs of acquiring maize will encourage the commercialization of smallholder agriculture toward higher-valued commodities – a major source of productivity growth.

While such a shift will be central for poverty alleviation for millions of small farms in Kenya, particular in semi-arid areas, this outcome is not assured. Faster progress in bringing down both rural and urban poverty rates will depend on greater investment in the critical public goods that are preconditions for agricultural productivity growth. The government has a crucially important role to play in this process. A great deal of research evidence from Africa as well as around the world indicates that the greatest contribution that public sector resources can make to sustained agricultural growth and poverty reduction is from sustained investment in crop science, effective extension programs, physical infrastructure, and a stable and supportive policy environment (Mellor, 1976; Byerlee and Eicher, 1997; Alston et al, 2000). The treasury costs of the NCPB maize trading account in recent years are not immediately available but in the controlled marketing period of the late 1980s, they were estimated at roughly 5% of Kenya's GDP (Jayne and Jones, 1997). Meanwhile, the genetic advances that were a major factor in maize productivity growth in earlier decades have waned as funding by both donors

and government has declined. Rural poverty alleviation will require renewed commitment to public goods investments in these key areas. At the heart of all these issues are governance and political commitment.

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