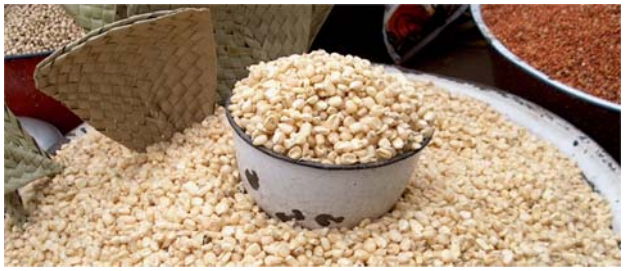
The Impact of Trade Barriers and Market Interventions on Maize Price Unpredictability: Evidence from Eastern and Southern Africa



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What is the problem?

- ESA countries often try to control the flow of grain across borders
  - "liberalization" – a misnomer
  - marketing boards continue to play major role in food and input markets. Share of nationally marketed maize:
    - 15-57% (Kenya), 3-32% (Malawi) and 11-80% (Zambia)
  - discretionary use of trade policy instruments
- Bottom line: "interventionist liberalization" more appropriate characterization of policy environment in many countries in region
  - Affects scope for private trade and investment
  - strategic interactions between private and public sector in markets – the behavior of one affects the other

- There is a strong rationale for continued state operations in food markets and trade
  - The perception that leaving the private sector to operate on its own may bring untolerable levels of price instability
  - So, strong theoretical argument for state operations to moderate price swings
  - However, there are strategic interactions between private and public sector in markets – the behavior of one affects the other
  - If government actions in markets are unpredictable and discretionary, this may limit scope of private participation and trade
- Hence – impact of state trade and marketing policies on price instability is essentially an empirical question

Regional Trade – Challenges

- Regional trade has potential to
  - Raise farm-gate prices in areas of surplus
  - Reduce consumer prices in areas of deficit
- Despite Free Trade Area maize trade not free
  - Various Tariff and Non-Tariff Barriers
  - Traders cannot import or export without a license – traders may see an opportunity to reduce food scarcity but cannot do it (e.g., Malawi - late 2008/09)
- Main problem is their unpredictability, ad hoc nature

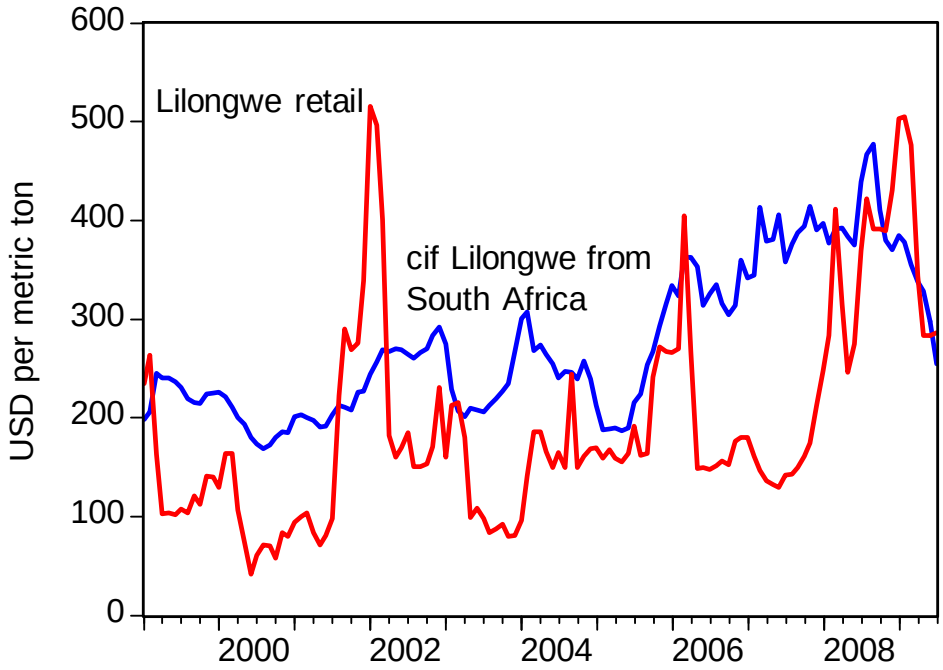
Sources of Policy Unpredictability

- If government actions in markets are unpredictable and discretionary, this will affect private traders' behavior
- Strategic interaction between govt and traders
- Sources of government unpredictability:
  - Timing of export/import bans
  - Timing of change in import tariff rates
  - When and where will marketing boards enter the market, at what price?
  - When will the Board run out of funds to continue buying?
- These sources of unpredictability impede the scope for private trade

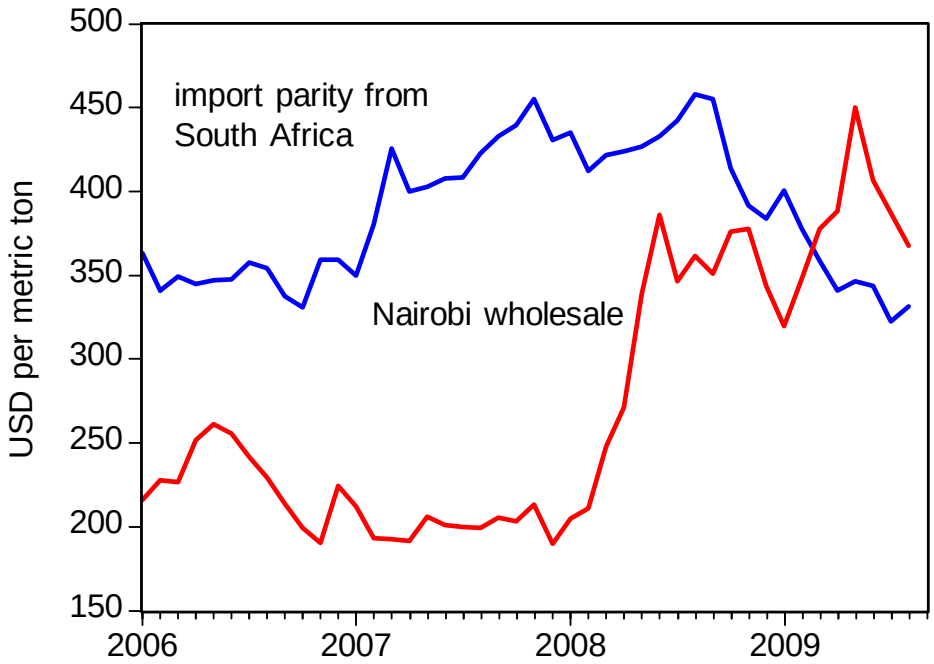
Outcomes of Policy Unpredictability

- Frequent outcomes:
  - Government may announce intention to import but do so late, causing prices to shoot over import parity
  - Traders may desist from operating in certain smallholder areas out of uncertainty of government behavior (e.g., after government announces that it will buy at artificially high prices, but then runs out of funding to buy) → farmers lose access to markets that they otherwise would have had

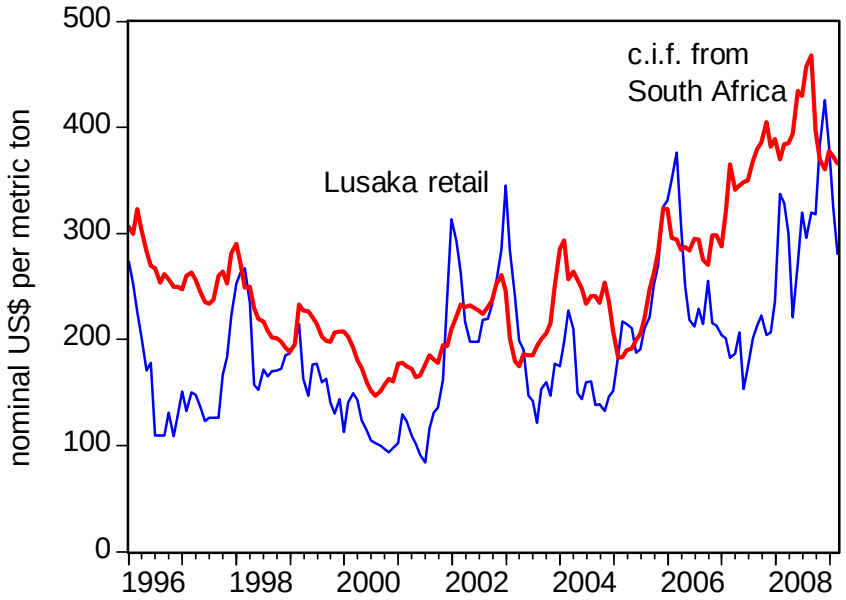
Maize prices vs import parity, Lilongwe, Malawi



Maize prices vs. import parity, Nairobi, Kenya



Lusaka Maize Retail Prices



Competing models of roles of state and private sector in food markets:

Model 1 **Model 2** **Model 3**

Rely on markets state role limited to:

- Public goods investment
- Regulatory framework
- Strengthening of institutions / defense of property rights
- Policies supportive of private sector entry and competition

Primary reliance on markets

- but role for *rules-based* state operations

- e.g., buffer stock release in response to defend stated ceiling price
- Marketing board purchases at stated floor price announced in advance
- Transparent rules for initiating state imports

Role for markets and *discretionary* state intervention

- Based on premise that private sector cannot ensure adequate food supplies in response to production shortfalls
- Justification for unconstrained role for state interventions in markets to correct for market failures

What is the right strategy?

- There is no credible government commitment to Model 1 (**full liberalization**), hence Model 2 (**markets with rule-based state operations**) is preferred
- However, questionable whether Model 2 could be perceived as credible either
- Many governments insist on unconstrained authority to intervene whenever necessary (i.e., Model 3)
- With low level of trust and commitment problems, Model 3 (**ad-hoc interventionism**) is likely to become the long-run equilibrium
- Model 3 has in fact become the dominant model among the main maize-producing countries in the region

Maize Price Instability in ESA

Empirical Question

- Are maize grain prices more stable and predictable in countries:
  - using trade barriers and marketing board operations to stabilize grain prices

    versus
  - countries with open border policy and relying on trade to stabilize prices?

Price Instability Vs. Unpredictability

- *Price Volatility*- the unconditional variance in food prices over time, measured by the Coefficient of Variation
- *Price unpredictability*-the unanticipated component of price instability, i.e., the conditional variance from a price forecast model.
  - Eg. A measure of unpredictability for the price in month *t+1* could be represented by the forecast error between predicted and actual price.

$$P_{t+1} - E_t(P_{t+1}) = e_{t+1}$$

e_{t+1}, the forecast error, is the measure of unpredictability

Data

- Monthly retail/wholesale maize grain prices from 7 countries -January 1994 to December 2008
- Countries
  - Group A: Mozambique, Uganda, South Africa (open border policy)
  - Group B: Malawi, Zambia, Tanzania (heavy restriction of trade)
  - Borderline case: Kenya (initially restricting trade, progressively open border policy, especially since January 2005)

Table 1: Timing of major different policy regimes

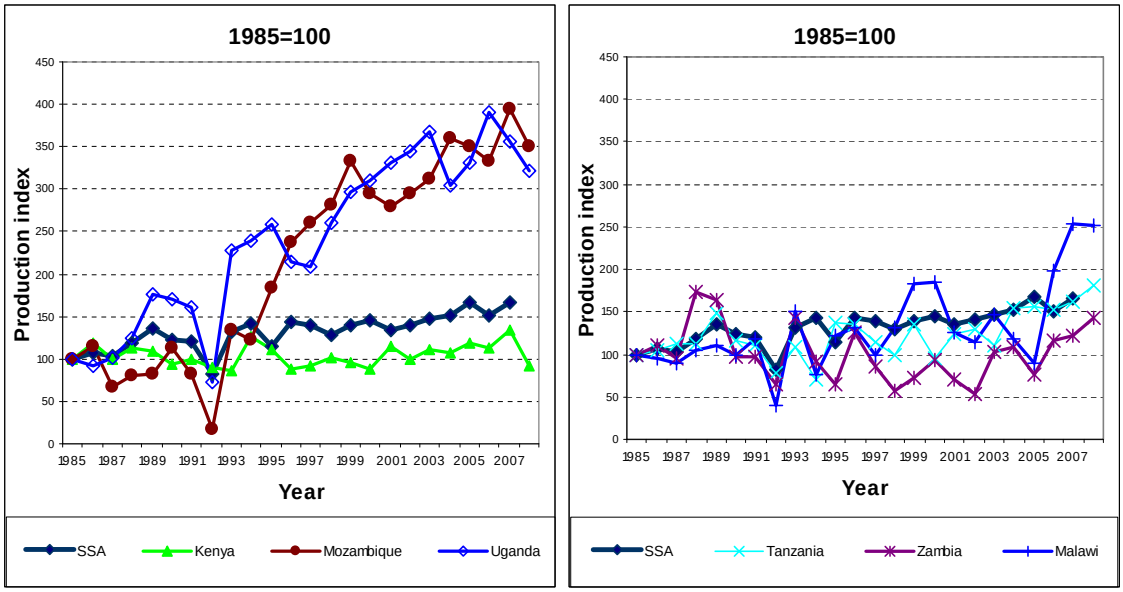
Country	Phase 1	Phase 2	Phase 3
Tanzania	Jan 1994 to Dec 2004 (Reform phase)	Jan 2005 to current (Beginning of on/off Export bans)	-
Zambia	Jan 1994 to Apr 2000 (Reform phase)	May 2001-Apr 2005 (FRA became one of the major players in the maize market)	May 2005- current (FRA ramping up its activities prior to an election)
Malawi	Jan 1994 to Mar 2005 (Reform phase)	April 2005 to current (ASIP Ag Input Subsidy Program)	-
Kenya	Jan 1994 to Nov 2000 (Reform phase)	Dec 2000-Dec 2004 (NCPB provided with more fund to ramp up activities)	Jan 2005-current (start of EAC – lower tariff rates)
South Africa, Mozambique and Uganda	----------Constant policy regime over period ----------		

Finding 1

- With the exception of Malawi, countries pursuing food price stabilization policies and food security objectives through direct state operations over the past decade have failed to match production growth for SSA

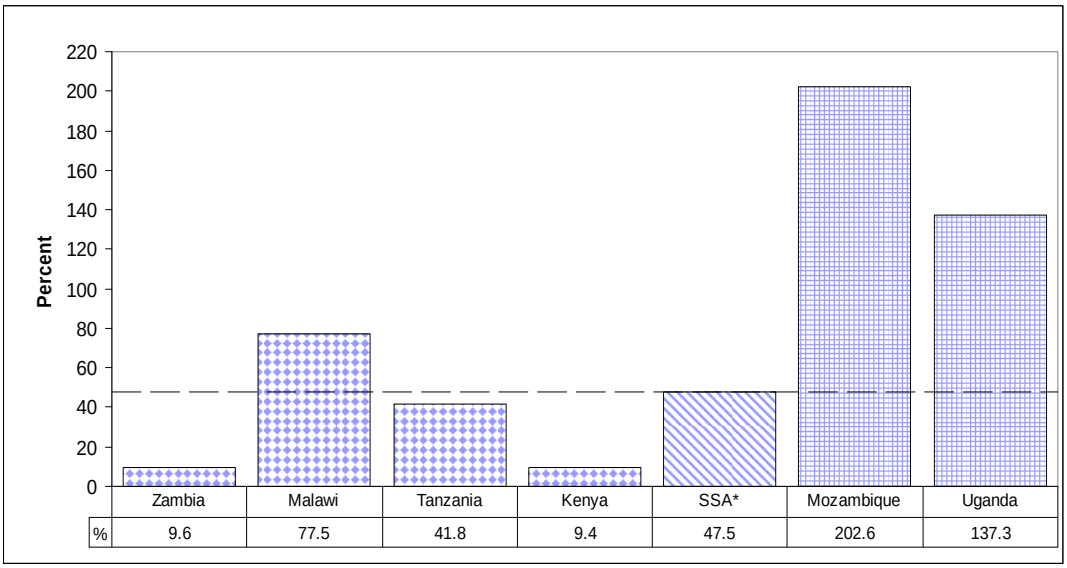
- By contrast, Mozambique and Uganda, countries with relatively stable maize marketing and trade policies have experienced more than a 100% increase in maize production over the past two decades.

Figure 1. Maize Production Index for Sub-Saharan Africa, Zambia, Malawi, Tanzania, Kenya, Mozambique, and Uganda, 1985 to 2008



Source: Data from FAOStat

Figure 2. Overall Maize Production Growth, 1985 -2008



Source: Data from FAOStat

Finding 2

- To some extent, maize grain prices are generally ***more volatile*** ***and less predictable*** in countries that pursue food price stabilization policies through direct state operations and restrict grain trade via ad-hoc domestic and trade policies compared to those will relatively stable and open border policies
  - Malawi and Zambia have the highest degree of price volatility and uncertainy

Figure 3. Comparison of Unconditional Coefficient of Variation for Capital City Markets/major Consumption Centers

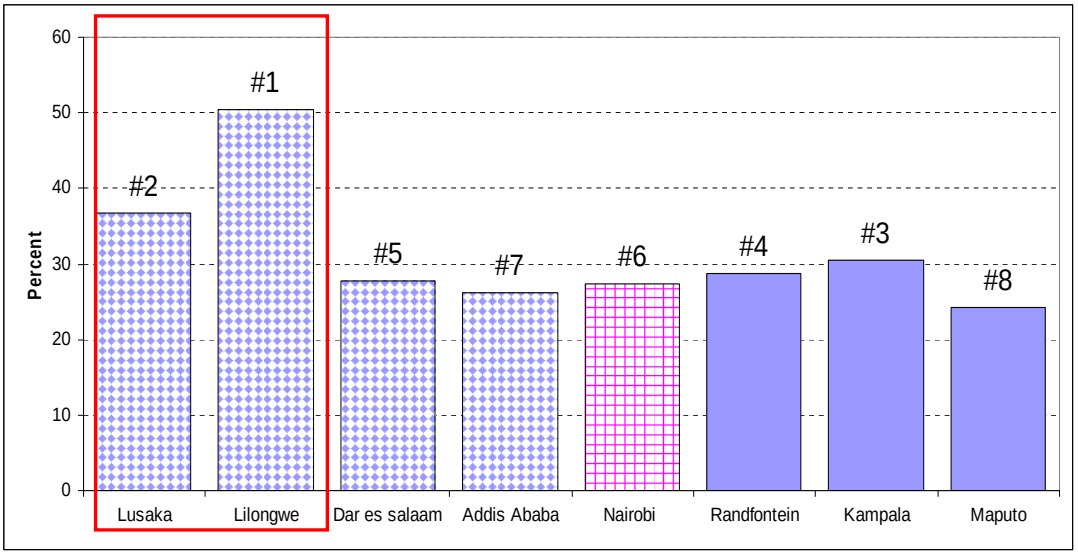


Fig 4: Maize Grain Prices Unpredictability

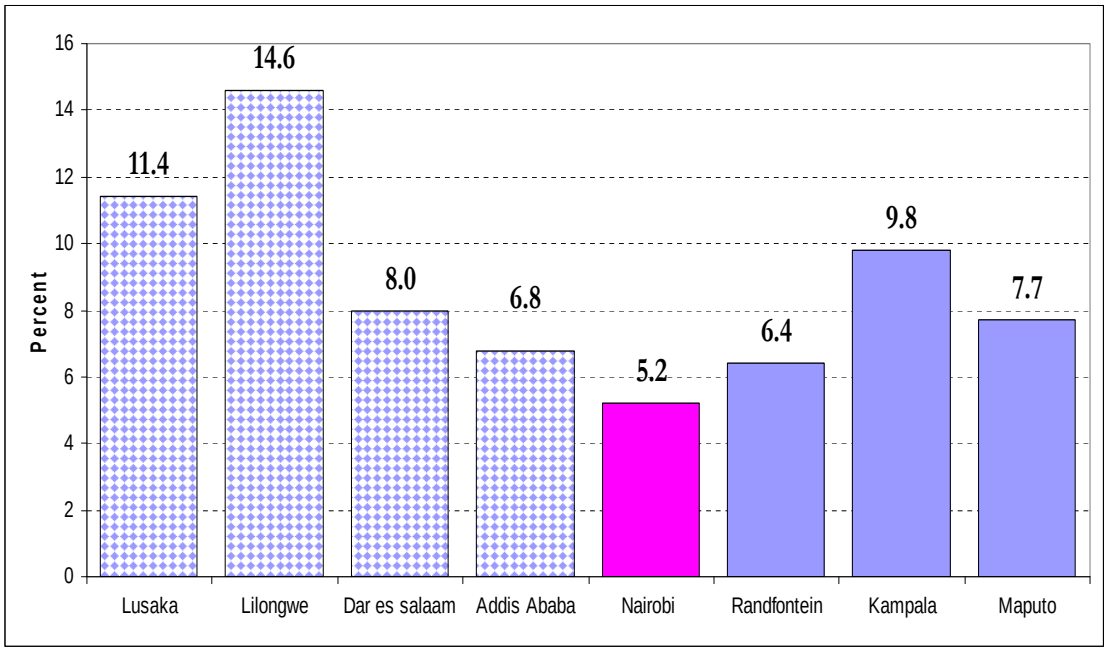


Fig 5a. Maize Grain Prices Unpredictability

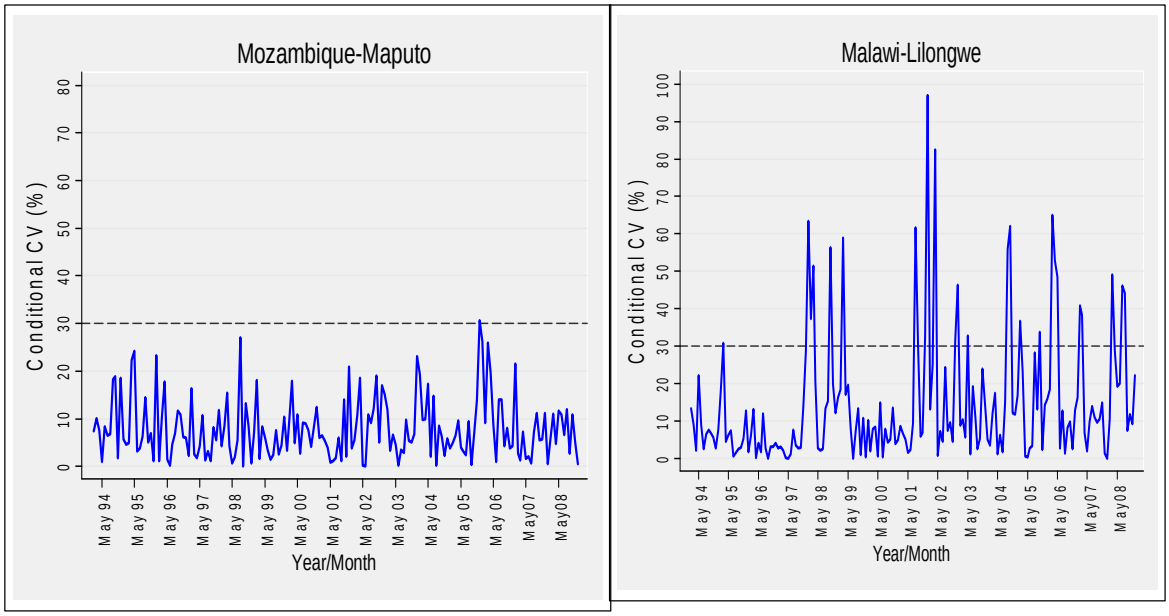


Fig 5b. Maize Grain Prices Unpredictability

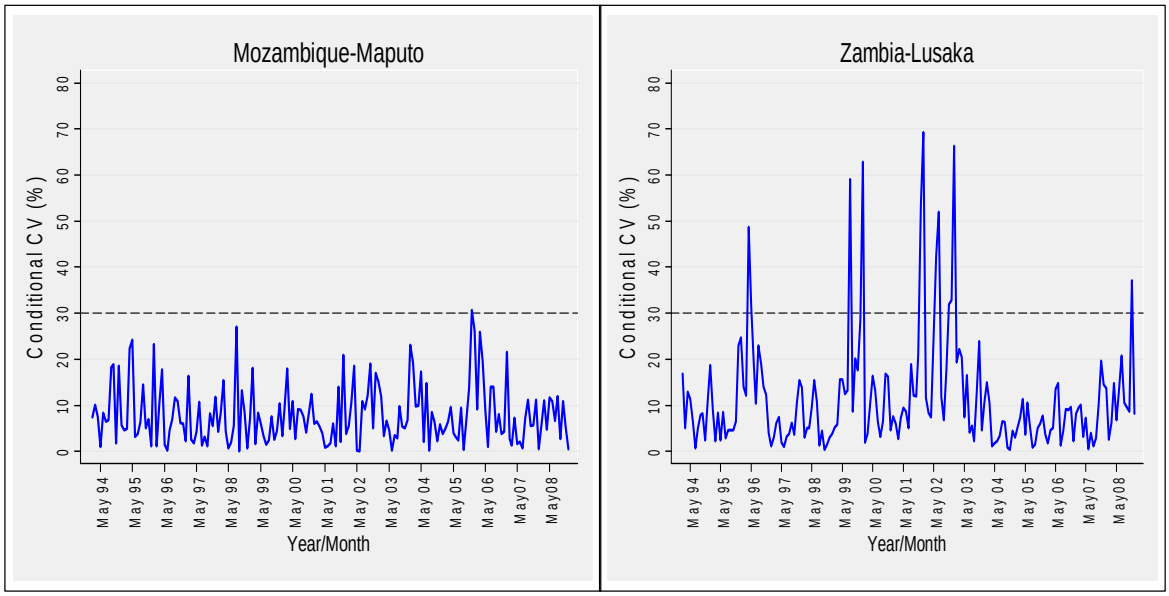


Fig 5c. Maize Grain Prices Unpredictability

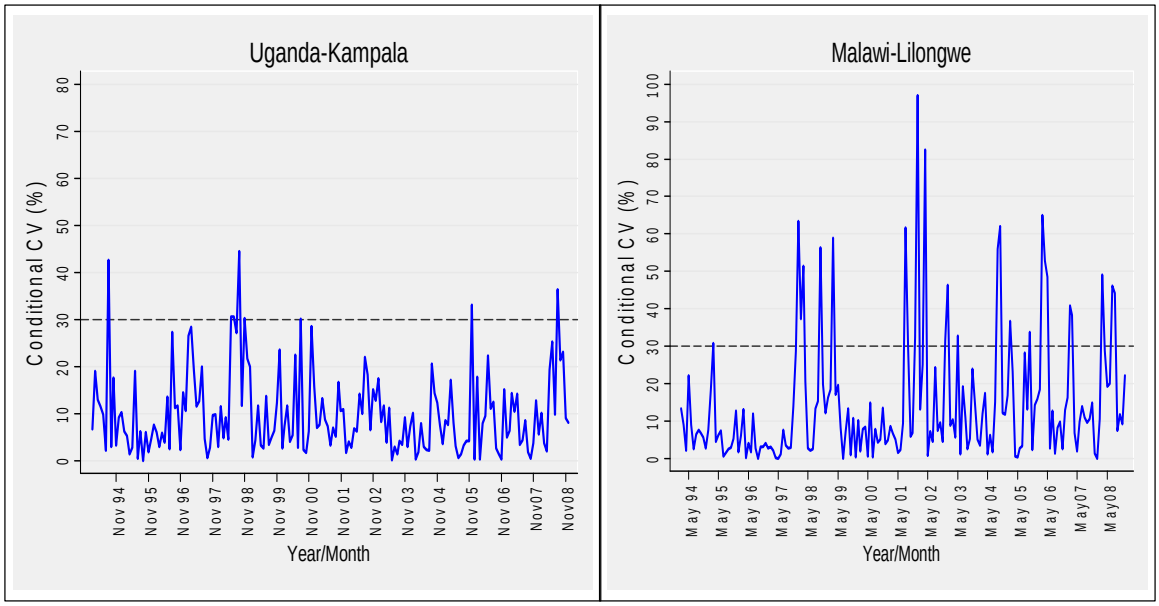


Fig 5d. Maize Grain Prices Unpredictability

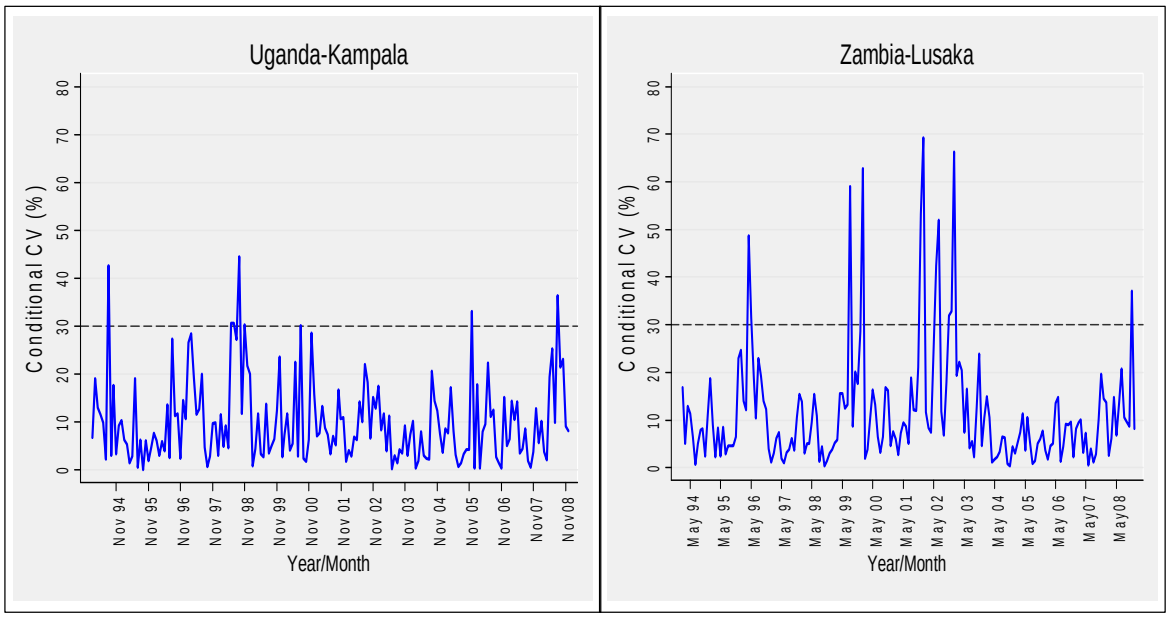
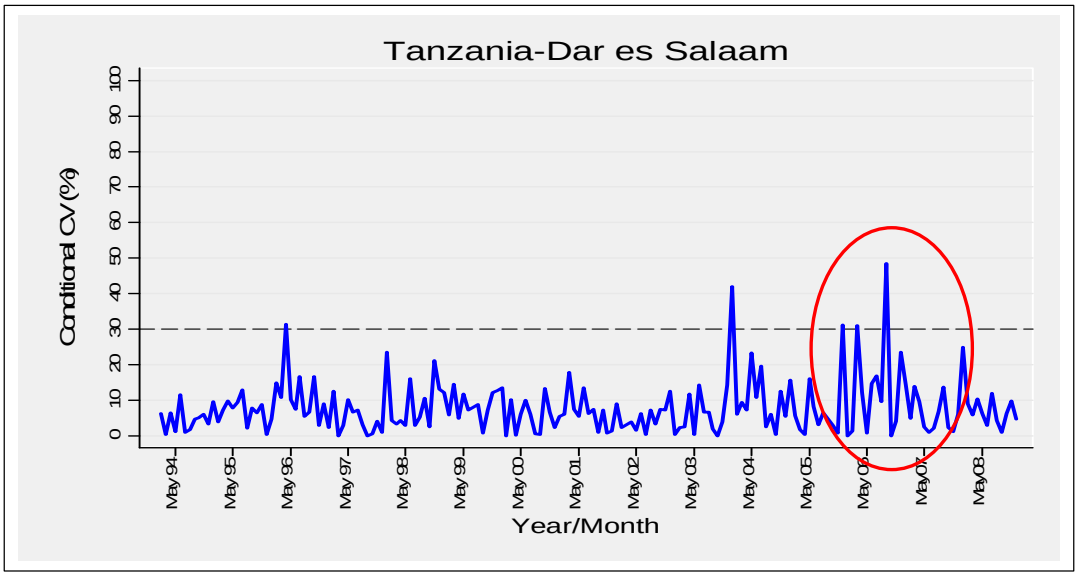


Fig 5e. Maize Grain Prices Unpredictability



Finding 3

- Mozambique, has the lowest price variability in the capital city of Maputo, but the other markets Nampula and Beira, have price volatility and market uncertainty closer to that of Malawi.
  - Markets in the northern part of Mozambique are somewhat integrated with markets in Malawi so policy instability in Malawi is likely to be transmitted into these markets.

Fig 6. Coefficient of Variation: Maize Grain Prices Instability

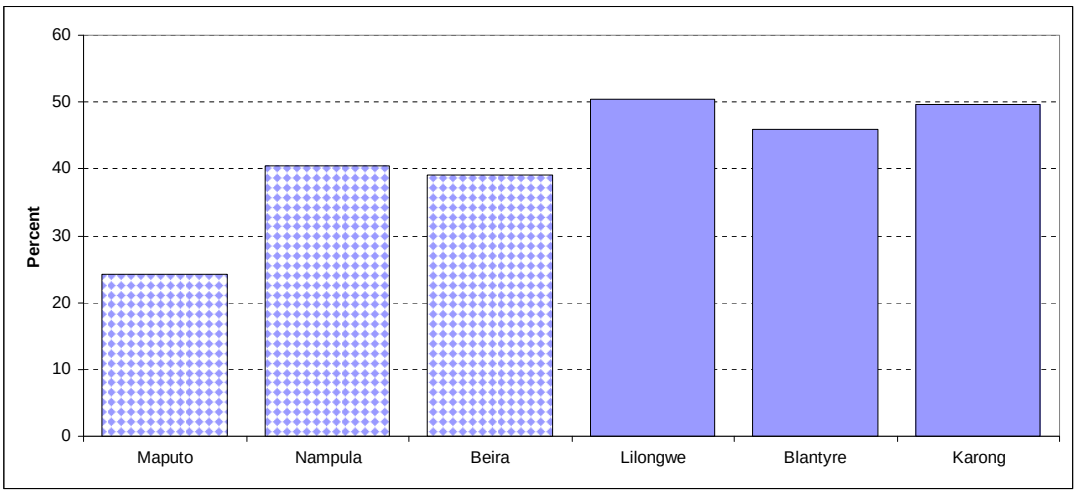
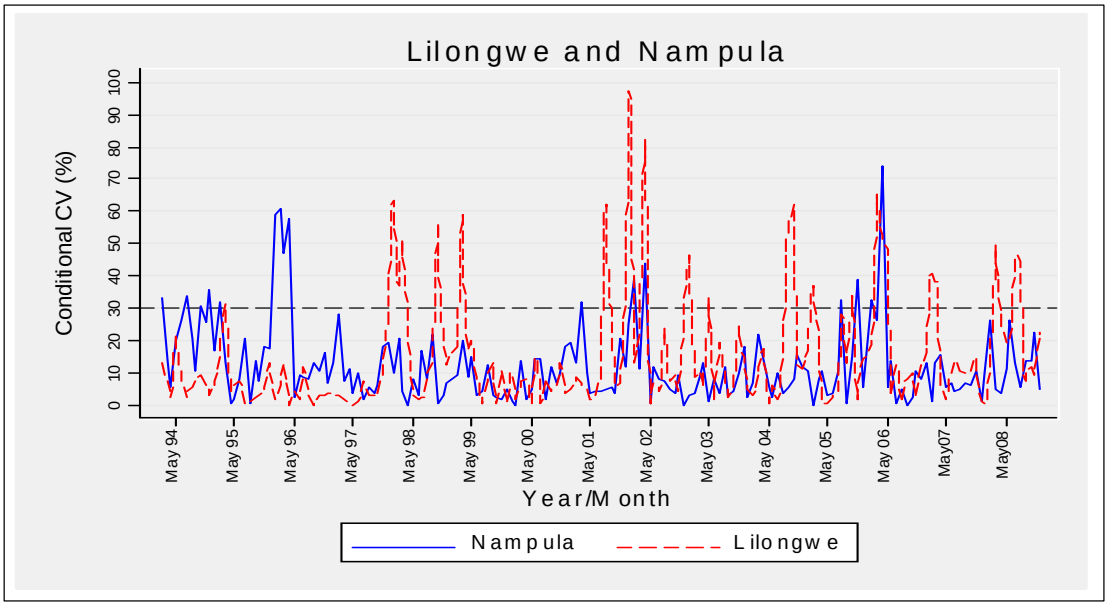


Figure 7. Comparison of Conditional Coefficient of Variation for Lilongwe, Malawi and Nampula, Mozambique



Finding 4

- The more stable trade policy environment in Kenya between 2005 and 2008 appears to have contributed to the decline of both price volatility and market uncertainty.
  - Historical unconditional and conditional Coefficient of Variations (CVs) have declined since Kenya's entry into the East African Commission trading agreement in January 2005.
  - Kenya eliminated the variable maize import tariffs from Uganda and Tanzania (except for a 2.75% inspection fee).

Figure 8. Unconditional Coefficient of Variation for Nairobi Kenya

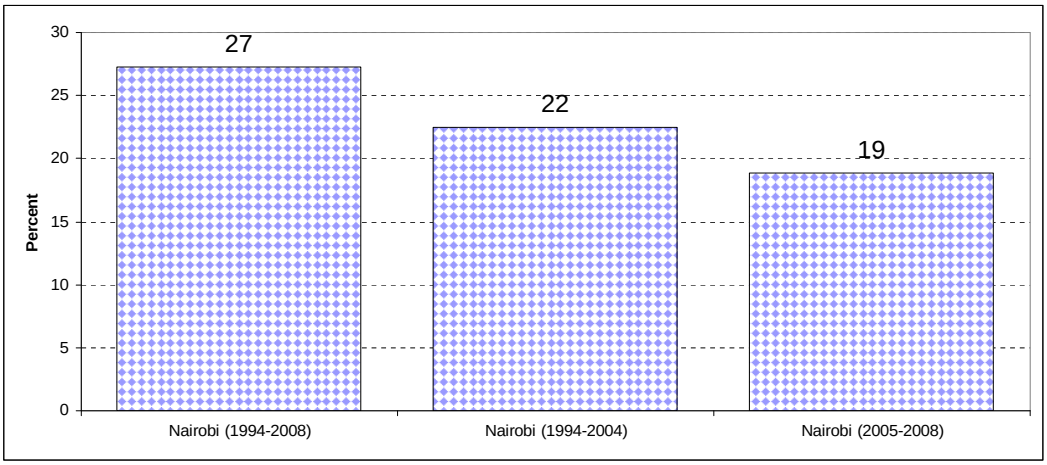
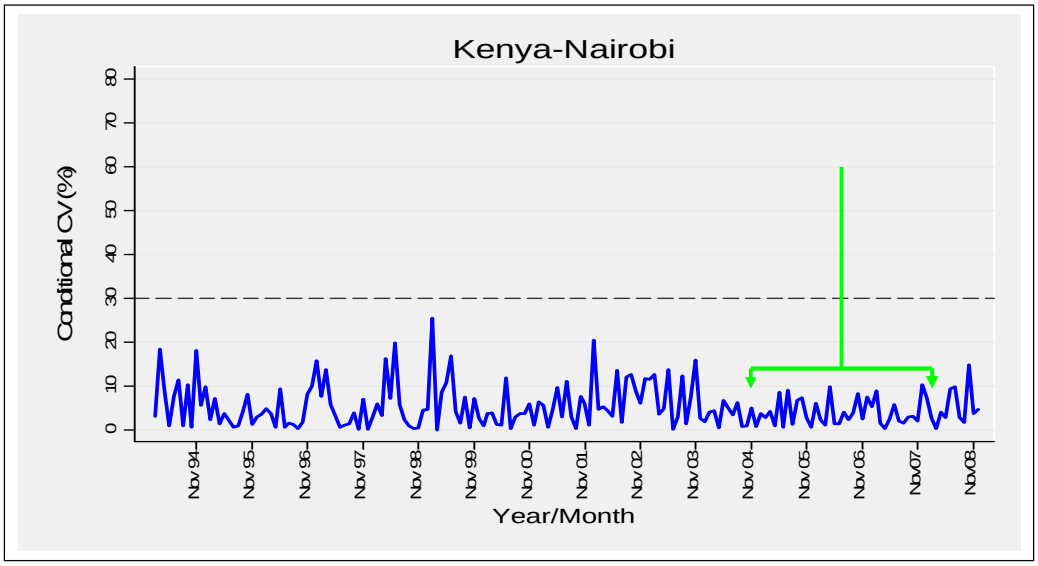


Figure 9. Conditional Coefficient of Variation for Nairobi, Kenya



Finding 5

- There is no apparent difference between coastal and landlocked countries in terms of the magnitude of price instability and unpredictability measures.

Conclusion:

- Despite theoretical rationale for price stabilization and controlling trade to stabilize food supplies, countries that rely on "maize without borders" generally have
  - **more stable prices**
  - **higher cereal production growth**

  than countries actively intervening to stabilize prices
- Government operations in markets are costly. Not clear that these costs incurred provide any tangible improvements in price stability
- While private trading systems will always result in some price variability, they tend not to cause the frequent food crises caused by ad hoc government actions that are commonly seen in the region

Why Does this Conclusion Hold?

1. Private trade develops more slowly and more tentatively in countries where government policy is unpredictable
2. Cutting off trade depresses the long-term development of commercial markets; properly regulated commercial markets promotes price stability
3. If governments intervenes too heavily, then markets will not develop
4. Interventionist governments' well-meaning attempts to stabilize prices may actually destabilize them because they cannot mobilize forex quickly enough, over-release supplies onto markets, buy too much from the market, etc. (example given earlier)

Conclusions

- Promote consultation and coordination between public and private sectors to reduce uncertainty in each others' behavior
- Need for predictability of government actions
  - Clearly defined and transparent rules for triggering government intervention
  - Note that this is not an argument for getting government out of markets
  - Rather, the findings indicate that more predictable rules-based government operations will reduce the potential for food crises
- Government actions to facilitate trade, not provide disincentives to trade