

# Measuring the impacts of trade barriers and market interventions on maize price instability: Evidence from Eastern and Southern Africa



A. Chapoto and T. S. Jayne

Regional Consultation Workshop on:  
“The Use and Impact of Trade and Domestic Policy Interventions on Cereal Value Chain Stakeholders in Eastern and Southern Africa”  
Dar es Salaam, Tanzania, June 3-4, 2009

## Organization of presentation

---

1. What is the problem?
2. Competing models of roles of state and private sector in food markets
3. Price Instability in ESA
  - a) Data and methods
  - b) Results-Comparison of price instability between countries following: **open border policies vs. ad hoc & discretionary intervention policies**
4. Policy implications and conclusion

# What is the problem?

---

- Major misunderstanding of the staple food and input market policy environment ESA
  - “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)
    - 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

---

.....What is the problem?

- 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 intolerable 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

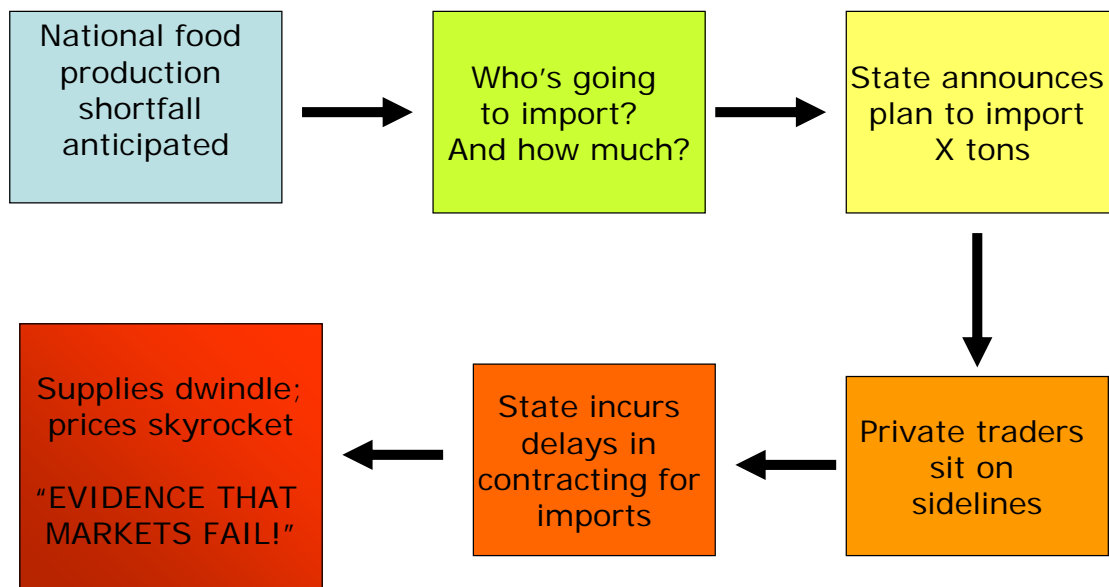
## Sources of Policy Unpredictability

---

- ❑ Export bans, import quotas (year to year & within year)
- ❑ Uncertainty over changes in import tariff rates
- ❑ When and where will marketing boards enter the market, at what price?
- ❑ All of these sources of unpredictability impede private traders' servicing small farmers' needs
- ❑ Conclusion: Prices may shoot over import parity due and appear to represent a market failure

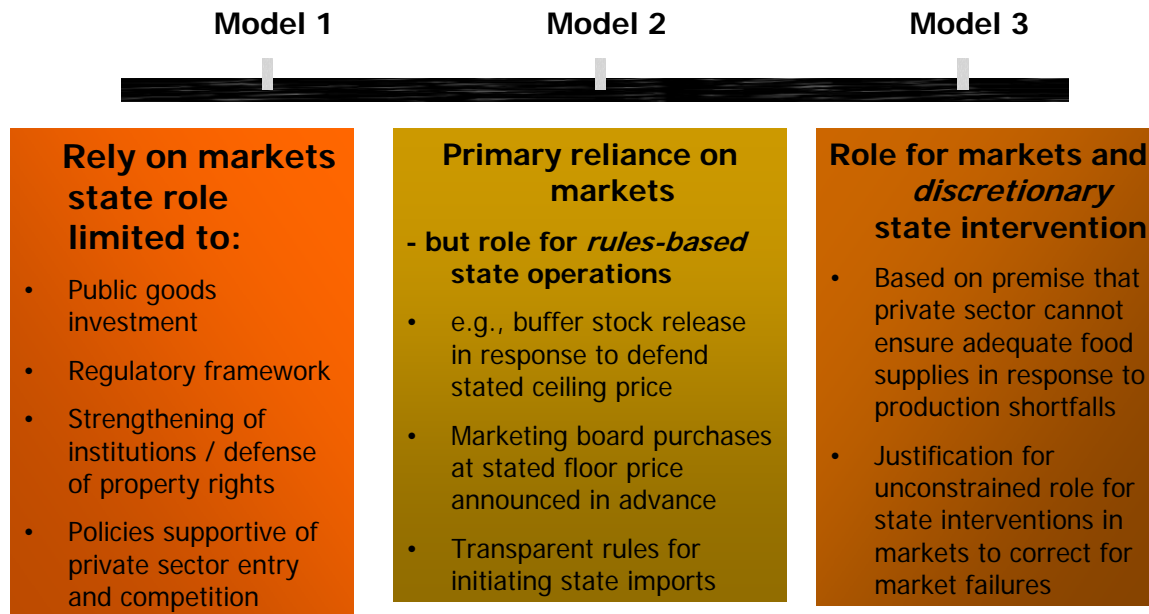
## Example of so called 'market failure'

---



**Market failure or coordination/governance failure?**

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



## What is the right strategy?

- ❑ Poulton et al (2006) note that 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**) may 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?

## **Data and Methods**

---

- ❑ 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)

## .....Data and Methods

- Unconditional CV: measure of price variability
- Conditional CV: measure of price *unpredictability* via the magnitude of one-month ahead forecast error, given known information on:
  - last month's local & international maize price
  - local maize production index a proxy for rainfall index
  - normal seasonal price movements
  - Last month exchange rates
  - Interest rates (not included due to data problems)

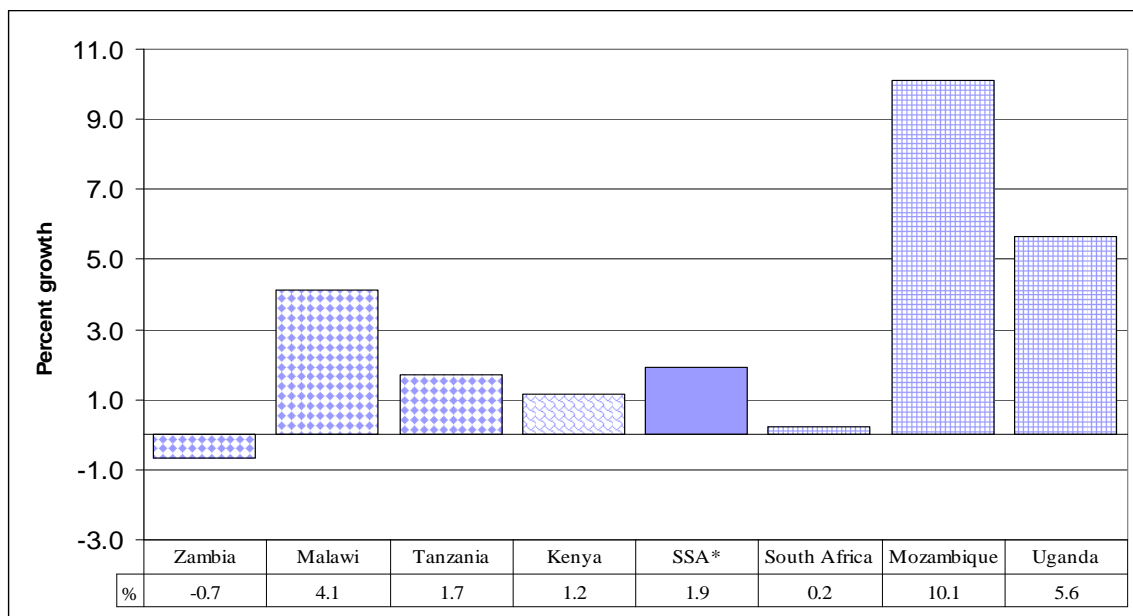
Table 1: Timing of major different policy regimes

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

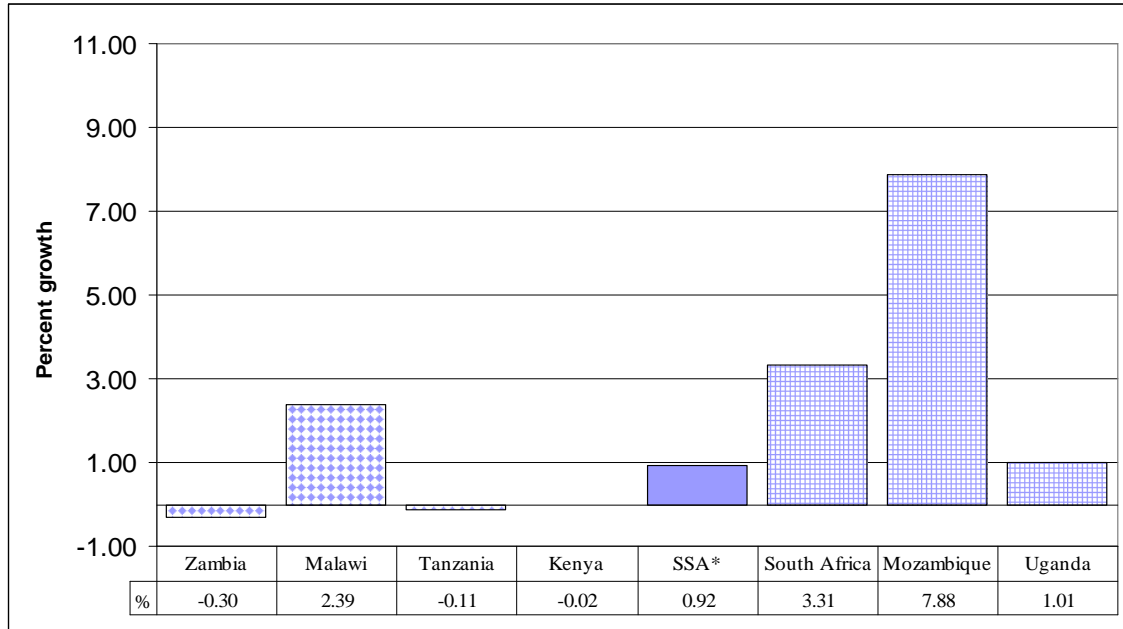
- Higher maize production and yield growth in countries having open borders compared to countries that pursue interventionist policies and restrict grain trade.

Maize Production growth rates, 1990 to 2007, Sub-Saharan Africa\* and selected countries



Source: FAOStat

## Maize yield growth rates, 1990 to 2007, Sub-Saharan Africa\* and selected countries



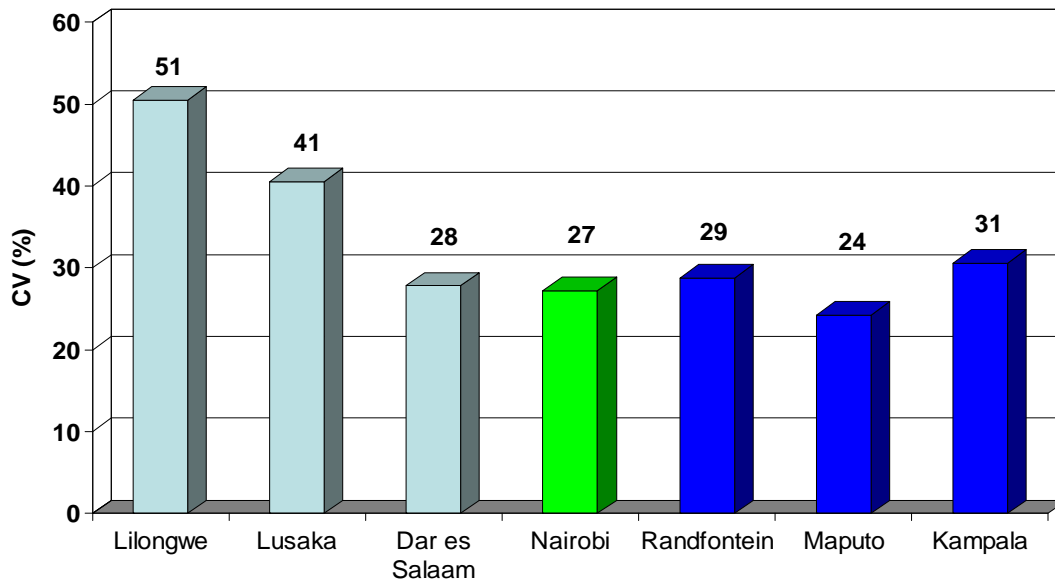
Source: FAOStat

## Finding 2

- ❑ Maize grain prices are generally *more unstable* in countries that pursue interventionist policies and restrict grain trade than those with open borders
- ❑ Highest in Malawi and Zambia

# Coefficient of Variation: Maize Grain Prices Instability

---



## Finding 3

---

- Maize grain prices are generally **no more predictable** in countries that restrict grain trade than in countries having open borders
  - conditional CVs:
    - Highest in Malawi and Zambia
    - Moderately high in Mozambique, Tanzania, Uganda
    - Lowest in Kenya, South Africa

# Maize Grain Prices Unpredictability

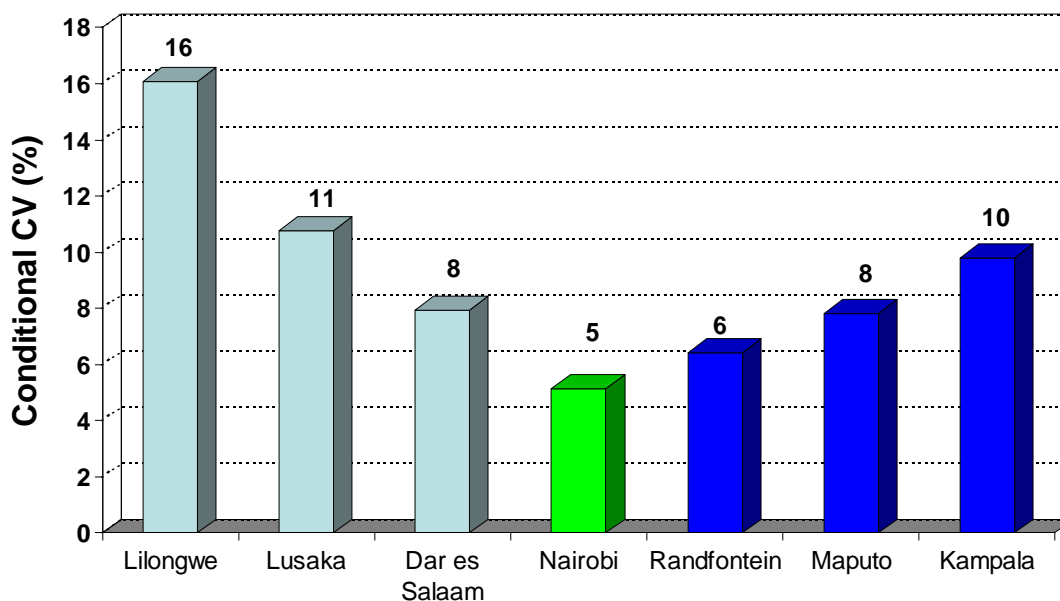
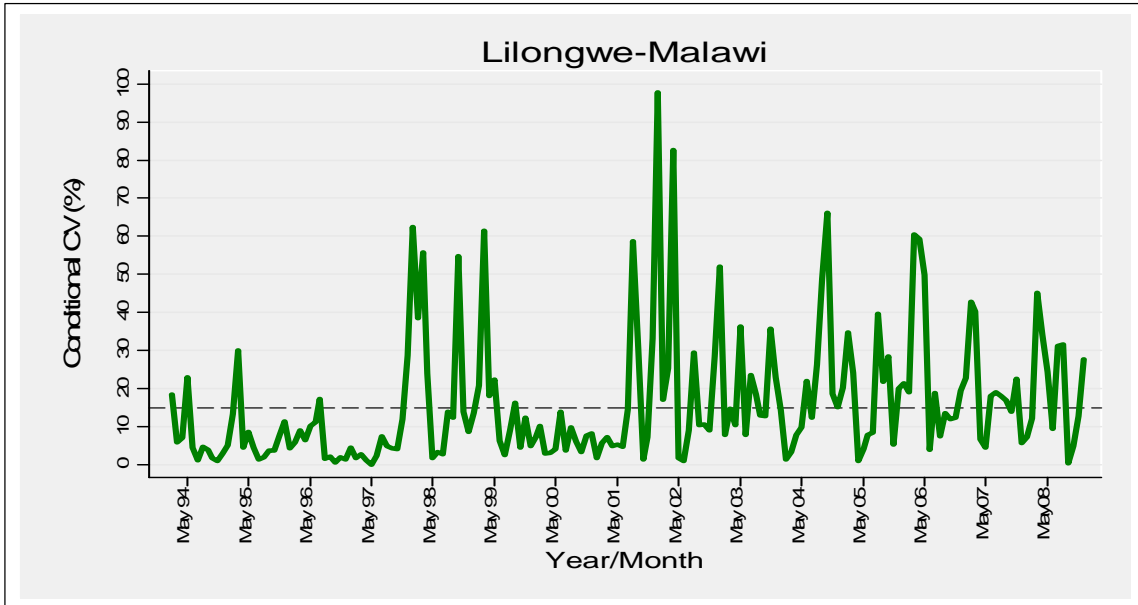


Table 3: Index of Unpredictability in Monthly Maize Prices

Country	Market	Full Sample 1994-2008	Period1	Period 2	Period 3
Malawi	Lilongwe	16.08	14.53	20.83	-
	Karonga	12.26	10.33	18.20	-
Zambia	Lusaka	10.76	9.42	13.32	8.75
	Choma	11.92	13.66	14.58	6.71
Tanzania	Dar es Salaam	7.94	7.47	9.19	-
	Mbeya	10.16	7.75	18.62	-
Kenya	Nairobi	5.13	5.12	6.21	4.03
	Nakuru	7.35	9.71	5.84	4.86
Mozambique	Maputo	7.83	-	-	-
	Nampula	12.16	-	-	-
Uganda	Kampala	9.79	-	-	-
	Mbala	11.80	-	-	-
South Africa	Randfontein	6.42	-	-	-

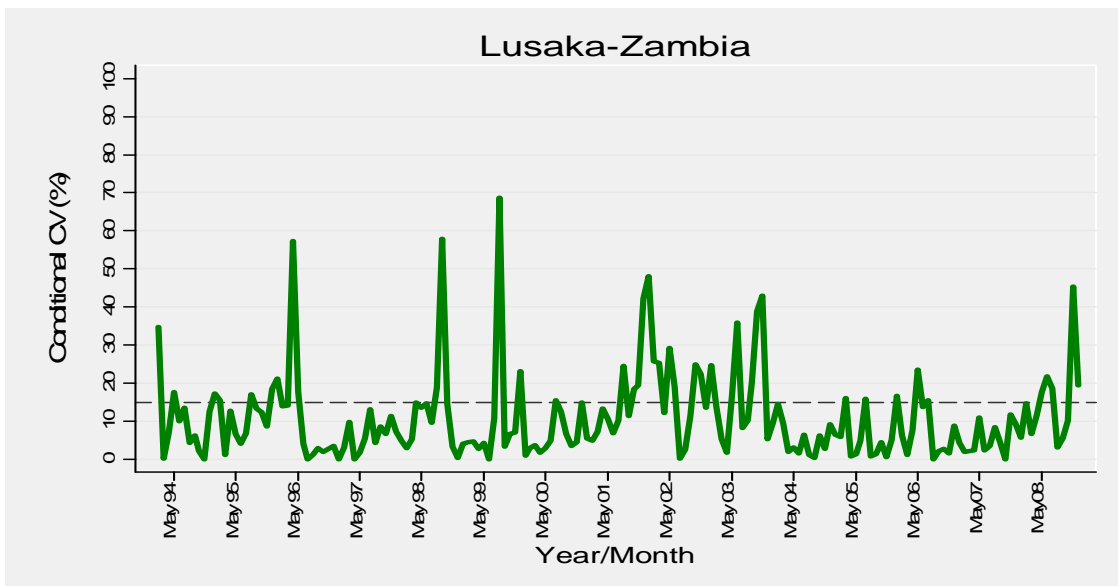
.....Price unpredictability

Fig 1. Conditional CV, Lilongwe



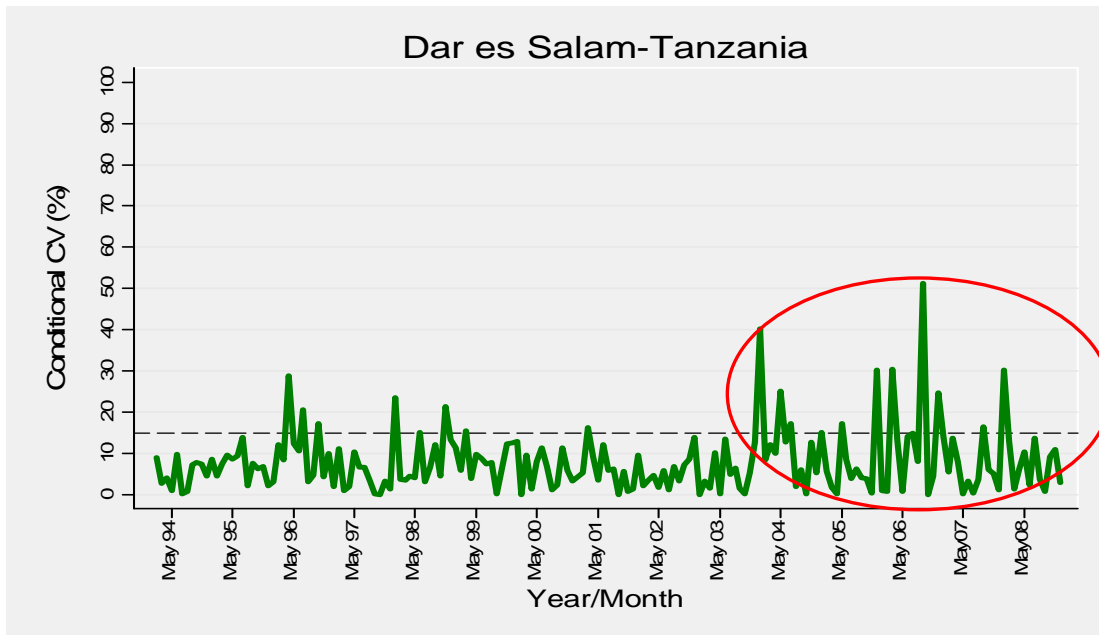
.....Price unpredictability

Fig 2. Conditional CV, Lusaka



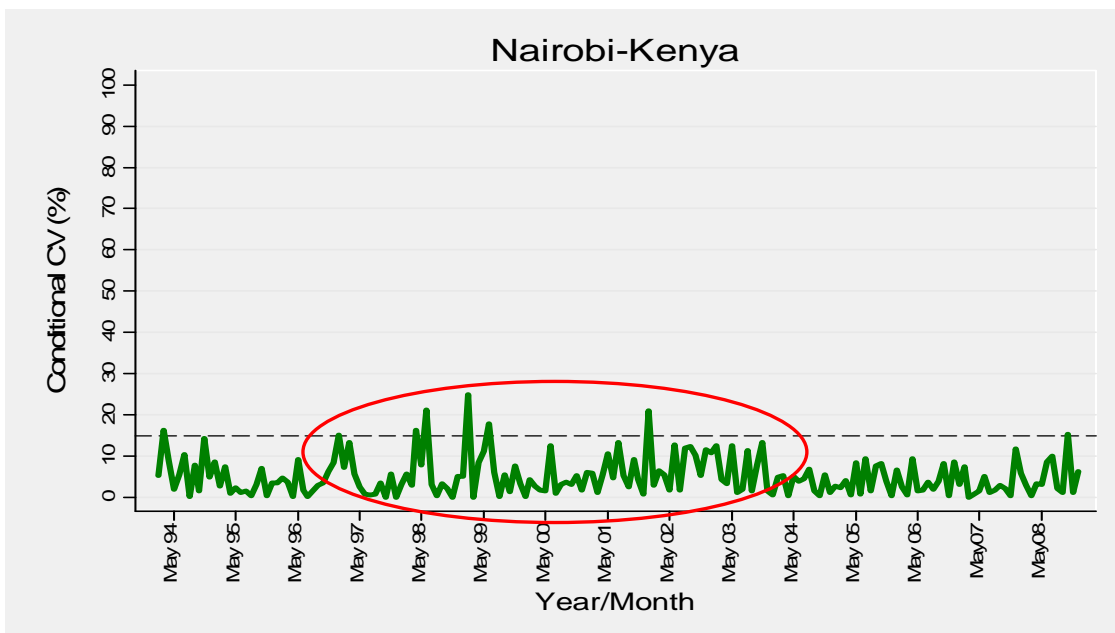
.....Price unpredictability

Fig 2. Conditional CV, Dar es Salam



.....Price unpredictability

Fig 2. Conditional CV, Nairobi



## 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 growththan countries actively intervening to stabilize prices
- ❑ Government operations in markets are costly. Little evidence that these costs incurred provide tangible improvements in price stability or predictability.
- ❑ 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 (Model 3) 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
3. If governments intervenes too heavily, then markets will not develop
4. Governments’ well-meaning attempts to stabilize prices through various interventions may actually destabilize them if they cannot mobilize forex quickly enough, over-release supplies onto markets, buy too much from the market, etc. These problems can be categorized as two types: (i) coordination failures; (ii) information failures

## Conclusions

---

- Improve government-private coordination to improve markets and reduce price instability
- Clearly defined and transparent rules for triggering government intervention
- Greater role for rule-based public sector participation in less-favored areas with poor market access
- With increased investment in governance and institutions, Model 2 may be more feasible and is likely to be a preferred strategy.

---

Thank You