

Smallholder Farmer Behavior and Agricultural Productivity in Eastern and Southern Africa:

Implications for Regional Trade



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with colleagues at Michigan State University

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Four underappreciated facts about African agriculture:

1. Farm sizes are declining → major land disparities
→ affects the % of farmers capable of producing a surplus and participating in markets
2. Most smallholder farmers are buyers of staple food
→ directly hurt by higher grain prices
3. Retail food prices are trending downward in most of the region
4. Countries adopting a relatively open approach to regional trade are experiencing lower price volatility and fewer food crises than those controlling prices and trade flows.

Fact #1

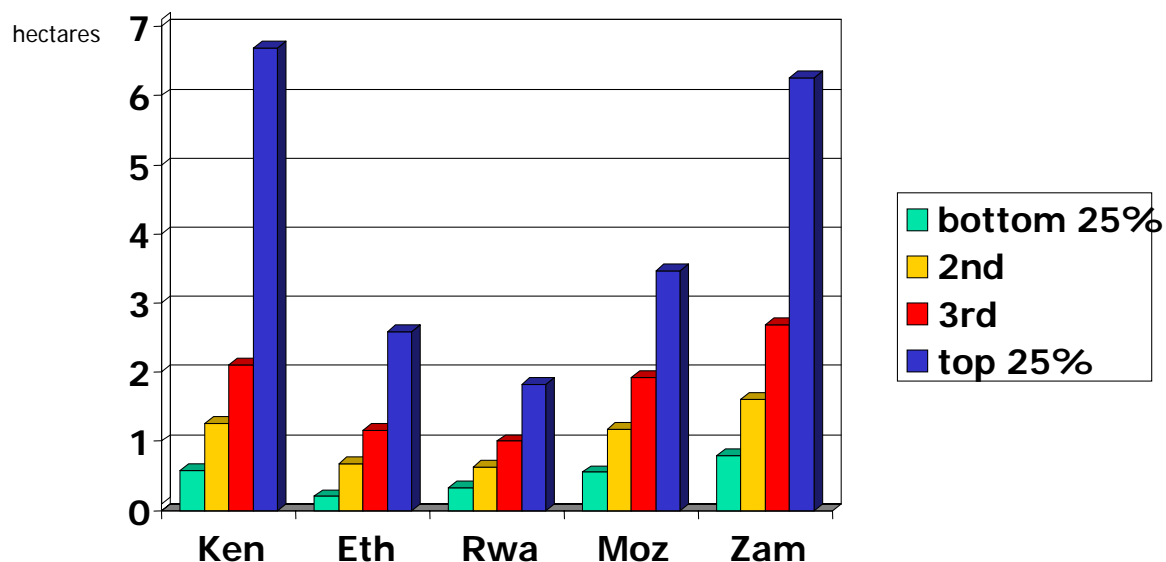
- Emerging land pressures are generating fundamental challenges for strategies to link farmers to markets and reduce poverty

Cultivated land per agricultural person (hectares per capita)

	1960-69	1970-79	1980-89	1990-99
Ethiopia	0.508	0.450	0.363	0.252
Kenya	0.459	0.350	0.280	0.229
Mozambique	0.389	0.367	0.298	0.249
Rwanda	0.215	0.211	0.197	0.161
Zambia	1.367	1.073	0.896	0.779
Zimbabwe	0.726	0.664	0.583	0.525

Source: FAOStat website: Source: FAO Stat database: www.faostat.fao.org/

Farm size distribution: Small farm sector



Characteristics of smallholder farmers, Zambia 2003/04

	N=	Farm size (ha)	Asset values (US\$)	Gr. Rev., maize sales (US\$)	Gr. Rev., crop sales (US\$)	Total hh income (US\$)
Top 50% of maize sales	31,320 (2%)	4.3	1,132	720	1163	2,932
Rest of maize sellers	328,561 (26%)	1.6	316	88	193	634
Households not selling maize	907,255 (72%)	0.9	231	0	97	415

Upshot

- New technology can help
- But given plausible assumptions about the extent to which technical innovation can raise grain yields, farm sizes are becoming too small for most smallholders to produce a grain surplus (and participate in markets)
- Hence, diversification into higher-return activities will be crucial
- This transition is already occurring

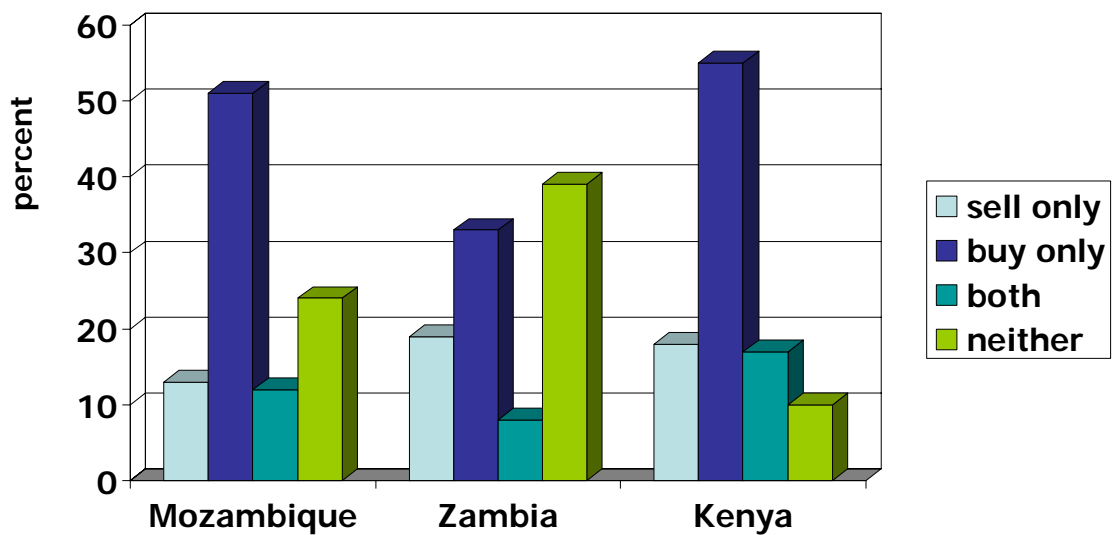
Role of maize in farm sales revenue is declining (share of gross sales revenue)

	Maize	Other grains/ beans/ oilseeds	Non-food cash crops	Fruits - veges	Animal products
Kenya	13.3	7.9	34.0	14.7	26.7
Malawi	32.3	11.8	44.9	na	na
Mozam	13.8	9.3	16.9	30.4	23.4
Zambia	28.2	7.7	16.7	27.5	14.7

Fact #2

- Most rural farm households are buyers of maize (or net buyers)

Smallholder Households' Position in the Maize Market



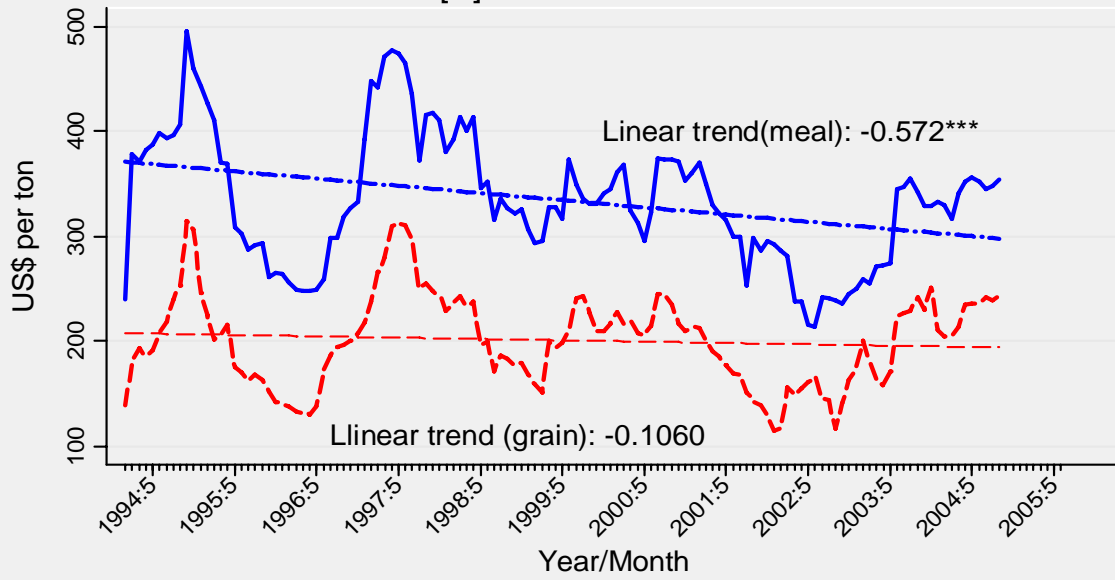
Fact #2

- Most rural farm households are buyers of maize (or net buyers)
- 2% of households account for 50% of marketed grain surplus
- Crop price supports:
 - highly concentrated benefits
 - anti-poor
 - Most likely impede small farm diversification into higher-valued activities
- As world food prices rise, major policy focus will shift to protecting consumers

Fact #3

- Retail maize meal prices are trending downward

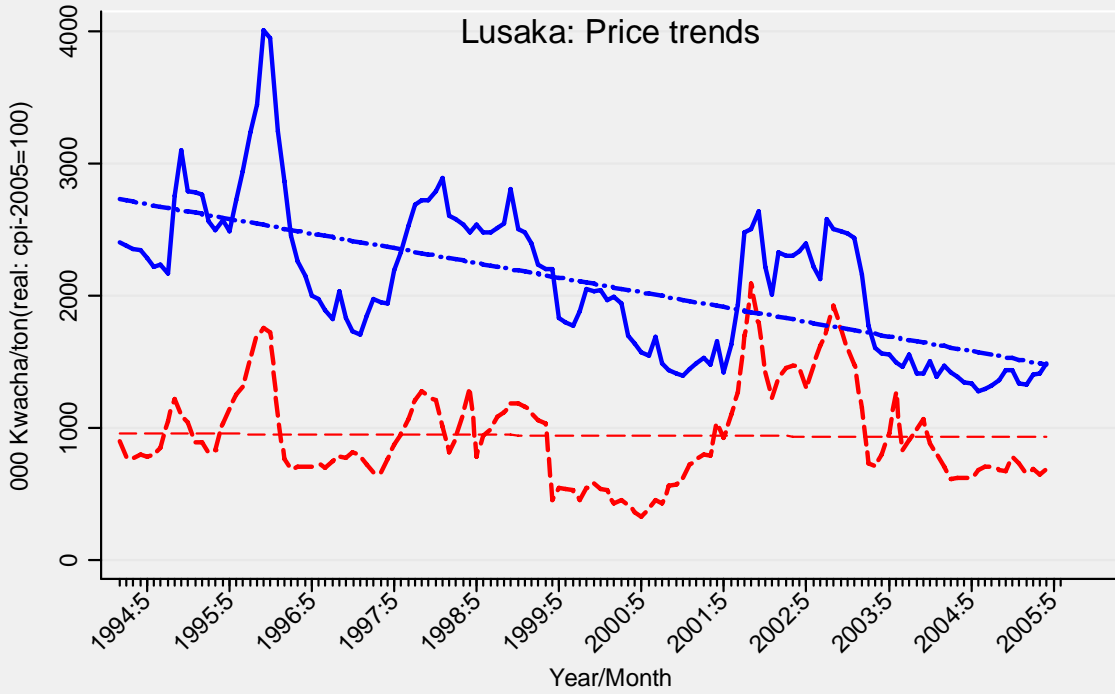
[D] Nairobi: Price trends



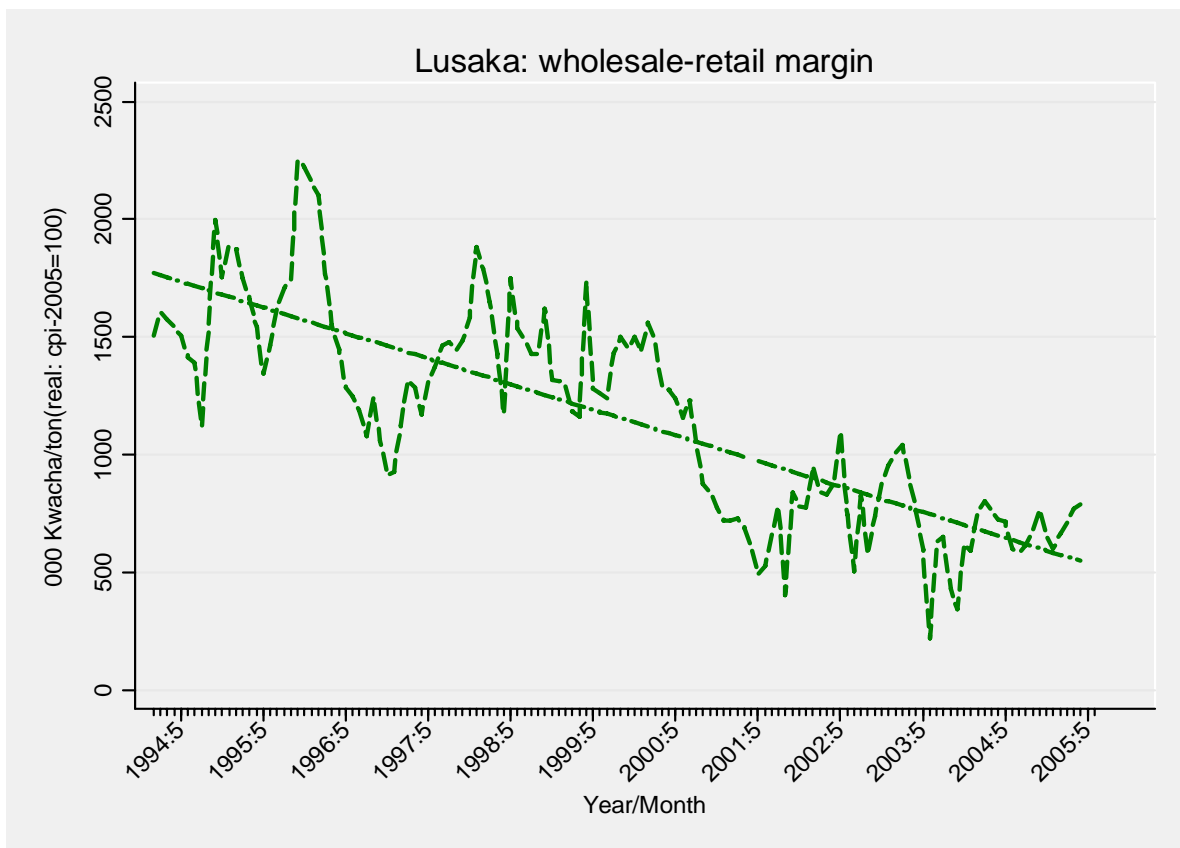
--- Wholesale maize grain — Retail maize meal
- - - Linear-trend-grain - - - Linear-trend-meal

*** 1% level of significance

Lusaka: Price trends

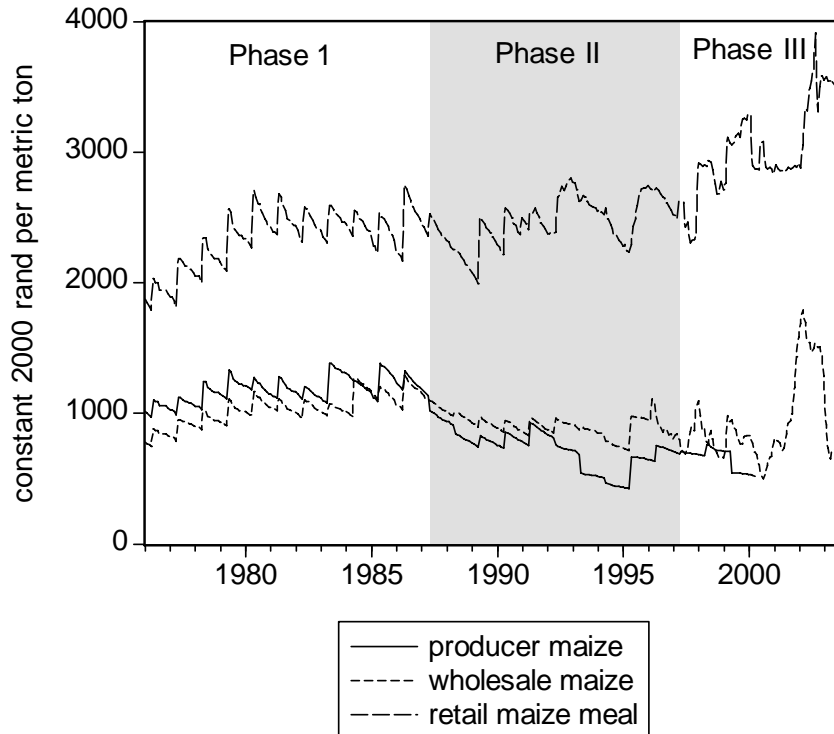


--- Wholesale grain — Breakfast meal
- - - Linear-trend-grain - - - Linear-trend-meal



Fact #3

- Retail maize meal prices are trending downward
- Why?
 - Food market reform has encouraged rapid investment in informal, small-scale milling and trading networks
 - The informal channel exerts competitive pressure on commercial millers/retailers
 - Exception: South Africa



Fact #4

- Maize grain prices are generally *more unstable* in countries that restrict grain trade than in countries having open borders

- Compute two measures

- Unconditional CV: measure of price variability
- Conditional CV: measure of price *unpredictability*
 - After accounting for available information on rainfall, normal seasonality, exchange rates, and last month's price.

-
- Both unconditional and conditional CVs:
 - Highest in Malawi and Zambia
 - Moderately high in Mozambique and Mali (maize)
 - Lowest in Mali (rice) and Kenya

Country	Market	Coefficient of Variation	
		Unconditional	Conditional
Malawi	Lilongwe	0.48	0.17
	Karonga	0.46	0.13
Zambia	Lusaka	0.40	0.10
	Kasama	0.36	0.12
Mozambique	Maputo	0.24	0.08
	Nampula	0.43	0.12
Kenya	Nairobi	0.24	0.05
	Kitale	0.33	0.09
Mali (Maize)	Koutiala	0.33	0.10
	Mpessoba	0.35	0.11
Mali (Rice)	Koutiala	0.08	0.03
	Loulount	0.11	0.04

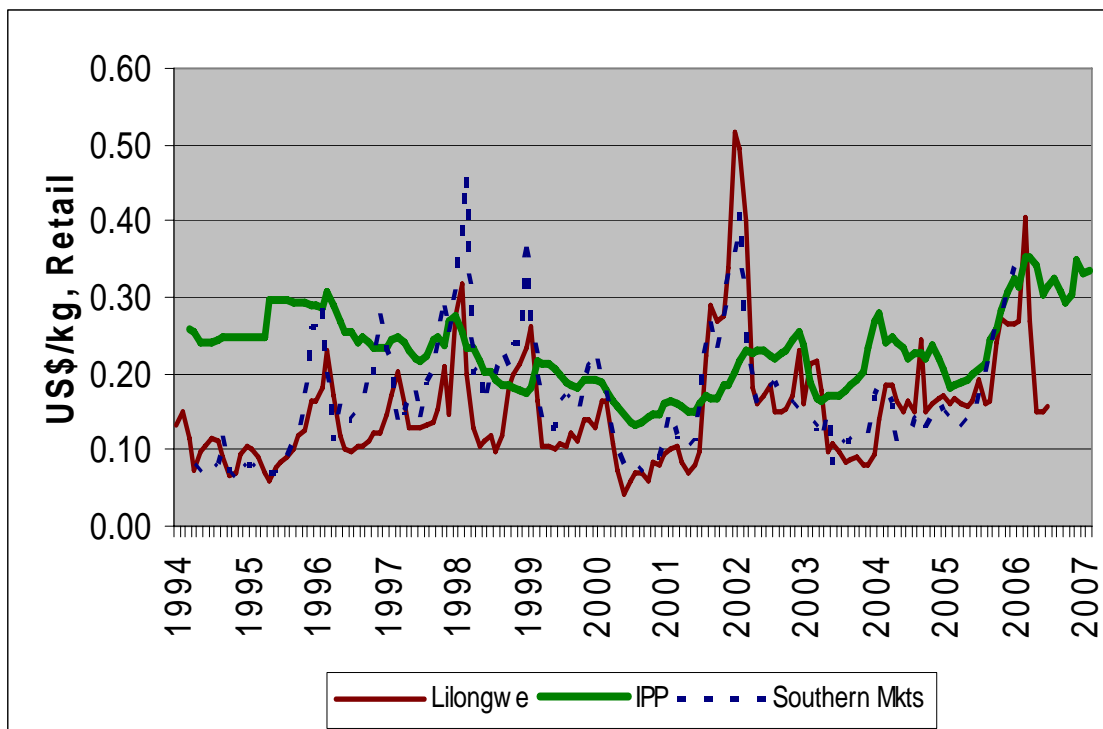
Conclusions:

- Despite compelling 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

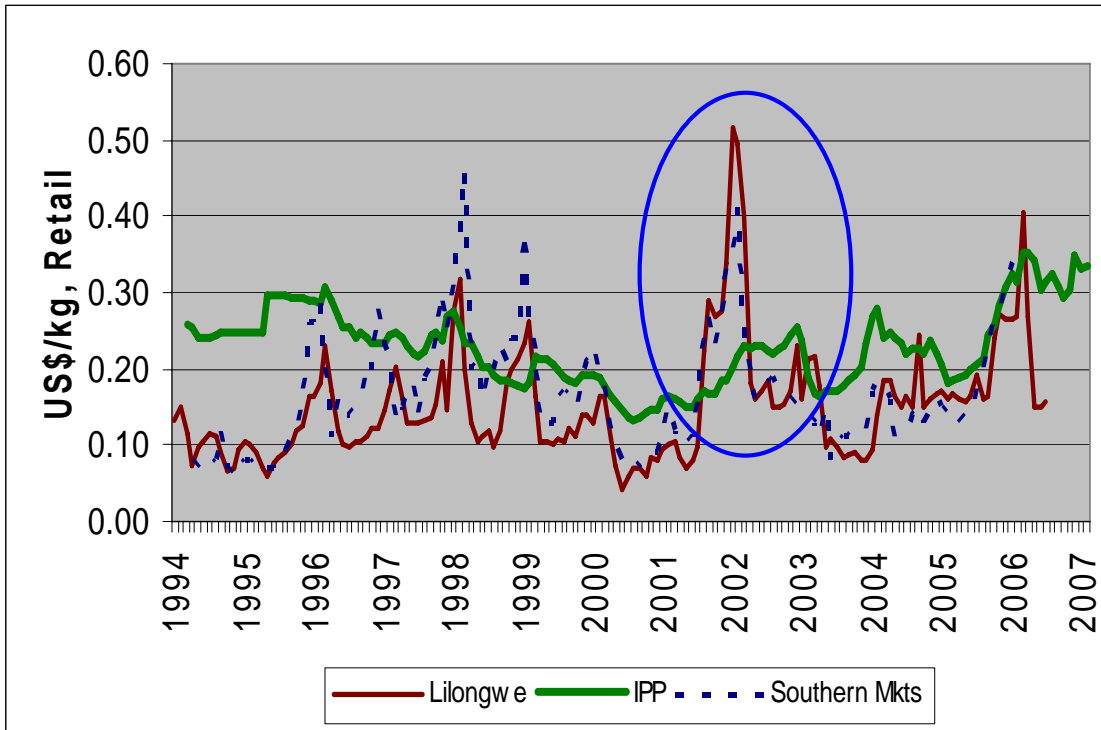
Why Does this Conclusion Hold?

1. Cutting off trade depresses the long-term development of commercial markets
2. “Self-fulfilling prophecies” – if governments intervenes too heavily, then private trade will not invest
3. Many governments’ well-meaning attempts to stabilize prices actually destabilize them because they
 - cannot mobilize forex quickly enough
 - over-release supplies onto markets
 - buy too much from the market, etc.

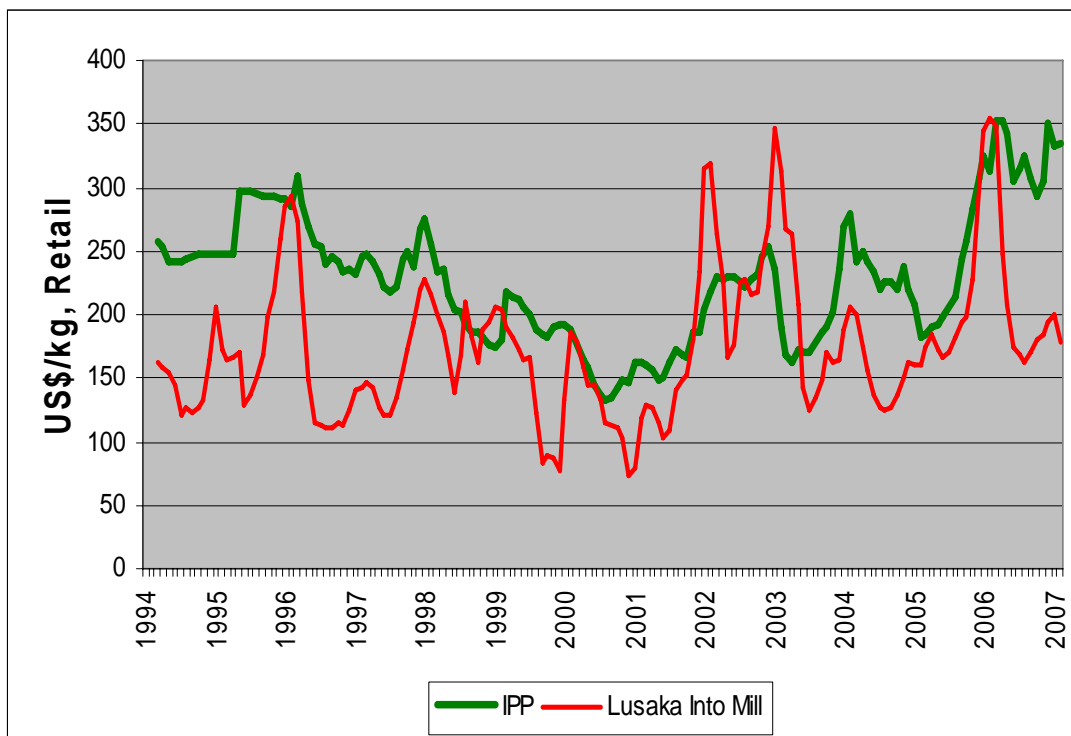
Malawi



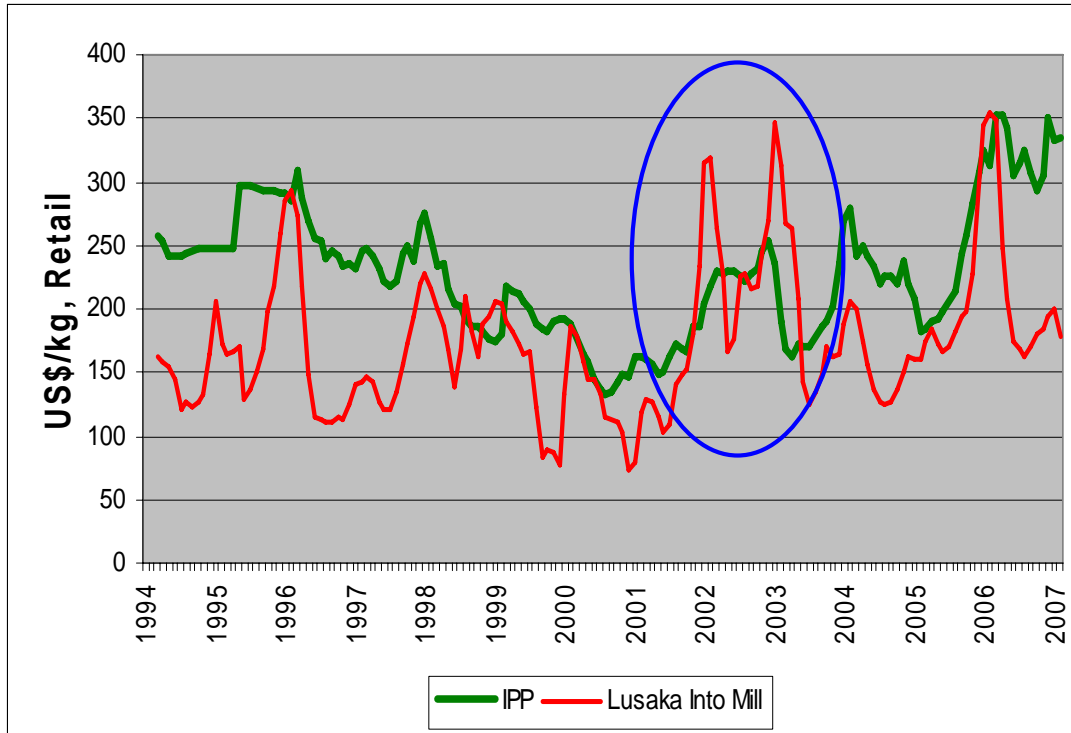
Malawi



Zambia



Zambia



While private trading systems will always result in some price variation, they tend not to cause the frequent food crises due to policy mistakes and inaction that are commonly seen in the region

Big picture strategy

1. Promote productivity of staple food crops
 - Farm management advisory services
 - Support local R&D
 - Support rise of farmer organizations
 - Policy support for regional trade / private investment
 - Aim to reduce food price instability
2. Provide similar support for strategically chosen other crops
 - Ones that can figure prominently in smallholder income
 - Regional or international demand
3. Nurture shifts toward higher-return crops
 - Market development for wider range of crops

Summary of Policy Implications

1. Provide incentives for government to reallocate expenditure patterns toward those that best contribute to *sustained* productivity and poverty reduction
2. More selective and more sustained donor support for growth-promoting investments – *move away from budget support*
3. Advocate for policy stability and predictability – don't constantly change trade policies and the nature of government participation in markets.
4. Food self-reliance, not food self-sufficiency – adopt a more open borders approach to regional trade



thank you