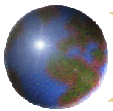


# Are staple food markets in Africa efficient?

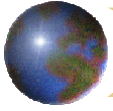
Shahidur Rashid and Nicholas Minot

Presented at the COMESA policy seminar  
"Food price variability: Causes, consequences, and policy options"  
on 25-26 January 2010 in Maputo, Mozambique  
under the COMESA-MSU-IFPRI African Agricultural Markets Project (AAMP)



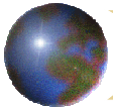
## Outline

- Concepts (and Mis-concepts) of market efficiency
- Market integration and market efficiency
- Determinants of market efficiency
- Measure of market efficiency
- Results from existing studies
  - How useful are these results?
  - Reconciling with survey data
- Summary



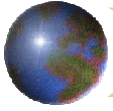
## Concepts (and mis-concepts)

- Misconception: “Price variability is a symptom of market inefficiency.”
- In fact, price variability is necessary for the very existence of the market because price variability provides people with incentives to engage in trade!
- Excessive variability may be a symptom of market efficiency
- ... but lack of variability can also be a symptom of market inefficiency



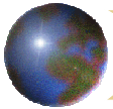
## Market integration and market efficiency

- **Market integration**: Two markets are said to be integrated if the prices move together (“co-movement”)
- **Market efficiency**:
  - Exchange efficiency:
    - There are no unexploited opportunities for mutually beneficial trade
    - Price differences  $\leq$  Full cost of marketing
  - Operational efficiency:
    - There is no room for reducing marketing cost below existing level



## Market integration and market efficiency

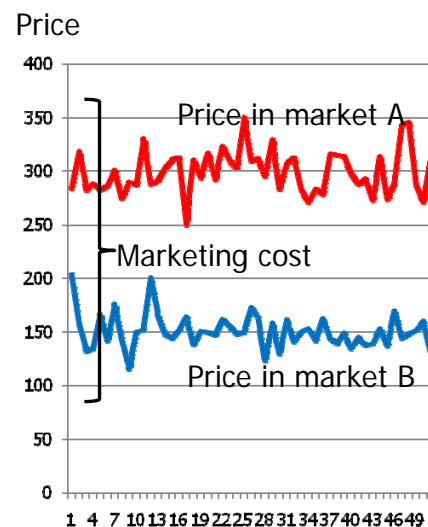
- Misconception: “Market integration implies market efficiency and vice versa”
- In fact, it’s possible to have market integration without market efficiency
- Also possible to have market efficiency without market integration

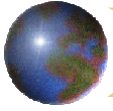


## Market integration and market efficiency

Illustration 1: Markets can be efficient but not integrated.

- Marketing cost between A and B is larger than price difference
- → No trade because not profitable
- → Markets are not connected so no co-movement of prices
- Thus, markets are efficient (no missed opportunities) but not integrated (no co-movement)

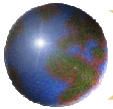
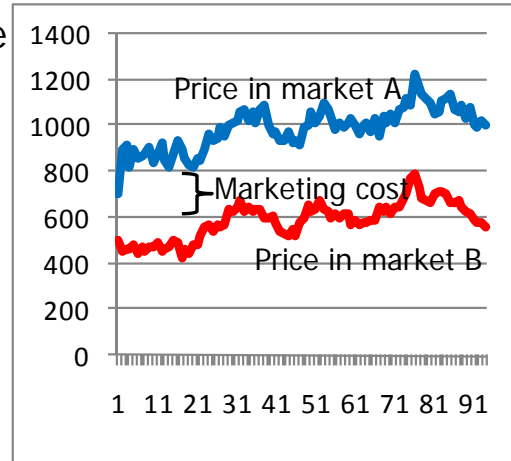




## Market integration and market efficiency

### Illustration 2: Markets can be integrated but not efficient

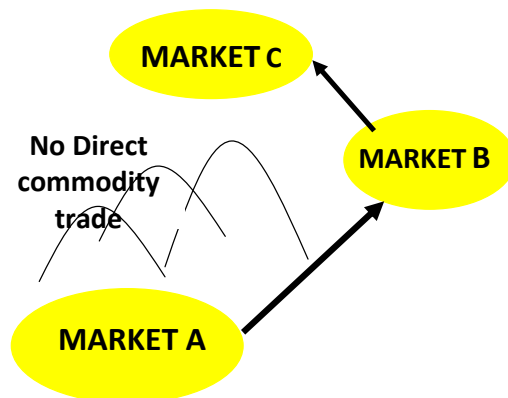
- Suppose cartel maintains price difference at 2x the actual marketing cost
- Markets are integrated (co-movement of prices)
- ...but not efficient (price difference is greater than marketing costs)

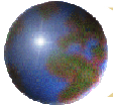


## Market integration and market efficiency

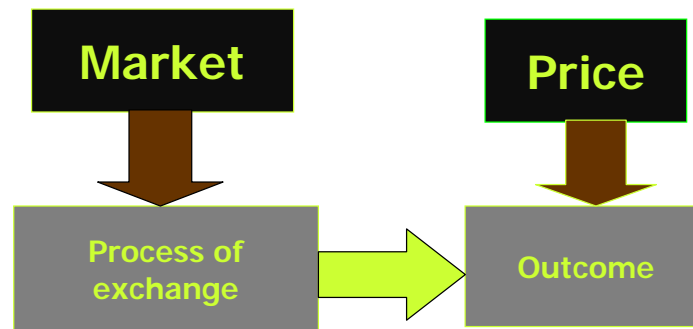
### Illustration 3: Markets can be integrated, but not efficient

- Market A is surplus and B & C are deficit. There is no direct trade between A and C, but trade flows from A→B→C
- Markets are integrated, but not efficient because costs can be reduced by promoting direct trade.



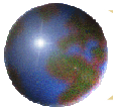


## Determinants of market efficiency



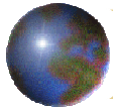
**Better process of exchange → better market efficiency, which depends on:**

- Infrastructure, Information, Institutions
- Law, regulations, contract enforcements
- Public policies—food policies, trade policies, etc.



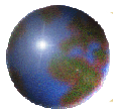
## Measuring market integration & efficiency

- Market integration analyses has evolved
  - ▣ From simple price correlation analysis
  - ▣ To complex cointegration analysis and parity bound models.
- Recent studies rely on variants of cointegration and parity bound models.
- Some recent studies include estimates of marketing costs
- However, none of the existing methods captures the full intricacies of the market efficiency.



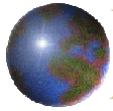
## Methods for measuring market integration

Characteristics	Analytical method					
	Correlation analysis	Regression analysis without lags	Regression analysis with lags	Co-integration analysis	Parity bounds method (PBM)	Threshold auto-regression (TAR)
Measures co-movement of prices	Yes, but has statistical problems	Yes, but has statistical problems	Yes, but has statistical problems	Yes	Yes	Yes
Can include more than two markets	No	Yes	Yes	Yes	No	No
Can measure speed of adjustment	No	No	Yes	Yes	Only indirectly	Yes
Takes into account transfer costs	No	No	No	No	Yes	Yes
Can make use of info on marketing costs	No	No	No	No	Yes	Yes
Can identify market inefficiency	No	No	No	No	No, unless TC available	No, unless TC available



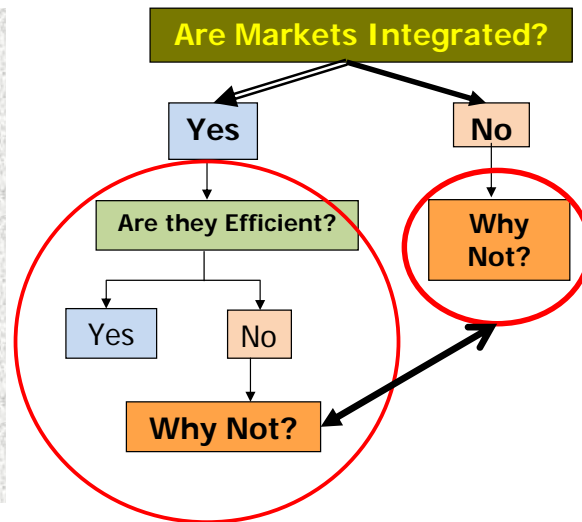
## Results from existing studies

- Market integration has improved following liberalization in both East and Southern African countries
- Markets function relatively well, following the rules of spatial arbitrage in the long run but with significant deviations in the short run.
- Market integration breaks down when markets are separated by long distances and poor infrastructure, though this does not necessarily indicate imperfect competition in food markets.

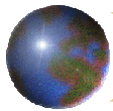


## How useful are the results in terms of policy guidance?

- Most of the studies test if the markets are integrated or not.
- Many stops at giving a “Yes” or “No” answer.
- If the answer is “No”, studies do not tell us “why”. If “yes”, we hardly know anything about efficiency.
- They tell very little about *reasons behind inefficiency*



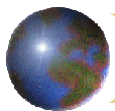
Answers to “Why Not” are critically important for policy guidance



## Things that existing studies do not tell us

- Staple food markets in SSA are evolving and becoming more competitive

Regions and Districts of Uganda	Years in the agricultural trading	Number of competitors		Percent of transactions on credit
		When started business	In the year 2000	
<b>Central Region</b>				
Kampala	5.1	59	109	34
Luwero	6.5	84	49	22
Masaka	5.3	37	55	28
Mpigi	6.7	30	40	18
Mukono	7.6	55	42	24



## Reconciling with survey / other data

- Contrary to existing study results, surveys indicate market *inefficiency*
- There seems to be more stops than necessary between surplus and terminal market locations

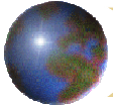
Countries / Indicators	Farm gate to primary	Primary-secondary	Secondary-wholesale	Total or average
<b>Ethiopia</b>				
Distance travelled (km)	28.48	61.32	67.76	158.0
Transport cost (US\$/km-mt)	0.30	0.20	0.18	0.15
Transport as % of total	15%	17%	30%	--
<b>Kenya</b>				
Distance travelled (km)	6	67	300	373.0
Transport cost (US\$/km-mt)	0.30	0.30	0.11	0.15
Transport as % of total	19%	65%	39%	--



## Reconciling with survey / other data

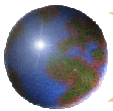
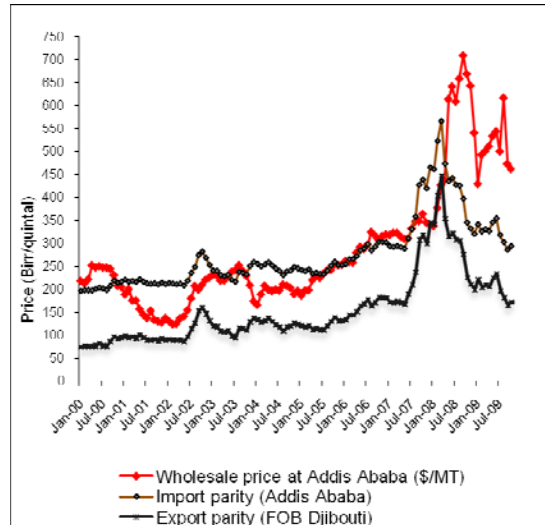
- Contract enforcement is time consuming

Indicators	Ethiopia	Ghana	Kenya	Malawi	Zambia	Uganda	OECD
No. of Procedures	30	22	25	40	21	19	22
Days to process	690	730	360	337	404	484	252
Cost as % of debt recovered	14.8	12.7	41.3	36.5	28.7	35.2	11.2



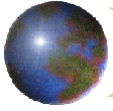
## Macro / trade policy induced effects are not captured in spatial price analyses

- In 2008-09, domestic price of wheat in Ethiopia went \$200 above the import parity due to macroeconomic policy factors.
- Spatial price analyses would not capture this because domestic prices went up in all locations within the county.



## Summary (1)

- Spatial price variability is a natural market phenomenon; and it is needed for the very existence of market
- It's the extreme variability and "no variability" that should be the policy concerns
- There has been substantial improvement in spatial price analyses methods, but none of them seems to capture the full range of the determinants of market efficiency.



## Summary (2)

- Existing studies find spatial markets in Eastern and Southern Africa to function well, at least in the long run. However, the results of studies (and other spatial price analyses around the world)
  - ✦ Do not offer clear policy guidance
  - ✦ Contradict with the survey data, where they are available.
- In order to devise policies / investment strategies, analysis has to go beyond spatial price analyses and pay more attention to specific analyses of market structure and performance—be it staple or other commodities.