Fruit and Vegetable Production, Marketing and Consumption in Zambia:

Overview of Empirical Analysis by FSRP

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Outline

- Background and context
- Overview of the empirical analysis
  - Main data sources for the analysis
  - National production and marketing patterns
  - Urban consumption patterns
  - Lusaka market flow channels and price behavior (tomato, rape and onion)
- Conclusions and programme issues

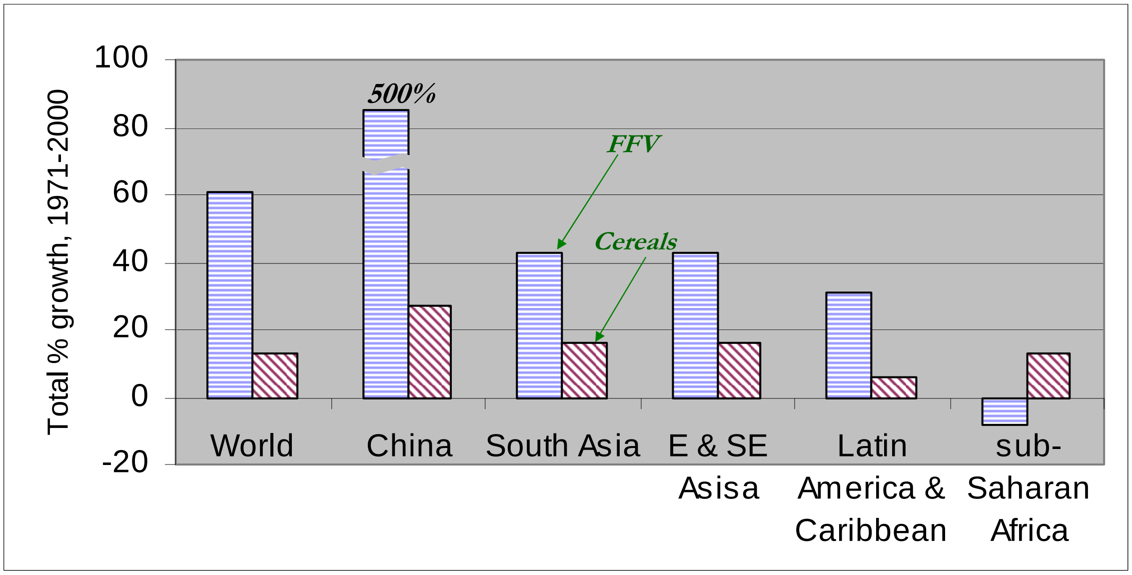
Please note: FFV in this presentation stands for fresh fruits and vegetables

Background and Context

Production Trends

- Improved market performance for FFV can improve livelihoods in developing countries
  - Yields per unit area can be high
    - Opportunities for land constrained farmers (including female headed)
  - Opportunities for
    - Value addition
    - Off-farm employment (especially for women)
    - Improved nutrition
- The FFV sector has shown great growth everywhere in the world except SSA (excluding South Africa) for data up to 2000
- Demand for FFV increases as income grows
- SSA has recorded growth in income, but not clear if production and marketing of FFV has kept pace
- If income growth continues and proper investments are made, FFV can be a major source of growth of the rural sector in SSA

Total % growth in per capita supply of FFV and cereals, by region, 1971-2000



One explanation for this pattern is <u>lack of markets</u>. If markets existed and were well linked to farmers, supply may be able to grow substantially . Situation may have improved after 2000

Driving forces for FFV growth

- Urbanization:
  - Increasing demand for FFV in urban areas
- Income growth
  - Increasing demand in both rural and urban areas
- Growing regional export markets
- Supermarket chains and small supermarkets
  - Increasing demand from the need to meet particular customer needs
- Growing tourist industry
- Growing international export markets

But remember:

- Over 95% of all FFV transactions across the world are in domestic markets
  - Even in two very large exporters
    - 4 to 5 times larger in Kenya
    - Twice as large in Mexico
  - At least 20 times as large in Zambia
- Largest absolute growth potential is in domestic and regional markets
- A balanced approach to horticultural sector development will emphasize these local and regional markets in addition to international exports

How to respond to opportunities

- Physical market places will remain central to FFV marketing for the foreseeable future
- Dysfunctional nature of these markets related to ownership and management models
  - Need a re-definition of public and private sector roles in ownership and management
- If above with related legal frameworks not addressed opportunities for rapid improvement of FFV supply chains and rural income would be lost
  - Returns for other stakeholders in these markets would continue being compromised

Overview of Empirical Analysis

Main data sources

- CSO/MACO/FSRP "Supplemental Surveys"
  - 2001, 2004, 2008
- CSO/MACO/FSRP Urban Consumption and Expenditure Survey, 2007-2008
- FSRP Lusaka Horticultural Markets Trade Flows and Price Monitoring Data
  - Tomato, rape, onion
  - Soweto market, selected retail market, and supermarkets
  - In 3rd year of on-going data collection
    - Over 60,000 cases of wholesale trade flows, and wholesale and retail price data

Production & marketing patterns

Proportion of smallholders producing and selling FFV (SS08)

Province	%Producing FFV	%Selling FFV	%Selling among FFV growers
Central	23.3	20.2	86.9
Copperbelt	34.1	28.9	84.8
Lusaka	17.5	14.1	80.3
Southern	40.5	30.6	75.7
Northern	13.8	8.7	62.9
North Western	20.2	11.6	57.5
Western	15.6	8.5	54.2
Eastern	61.3	22.3	36.5
Luapula	96.4	18.1	18.8
Total	**37.7**	**17.8**	**47.3**

More urbanized provinces

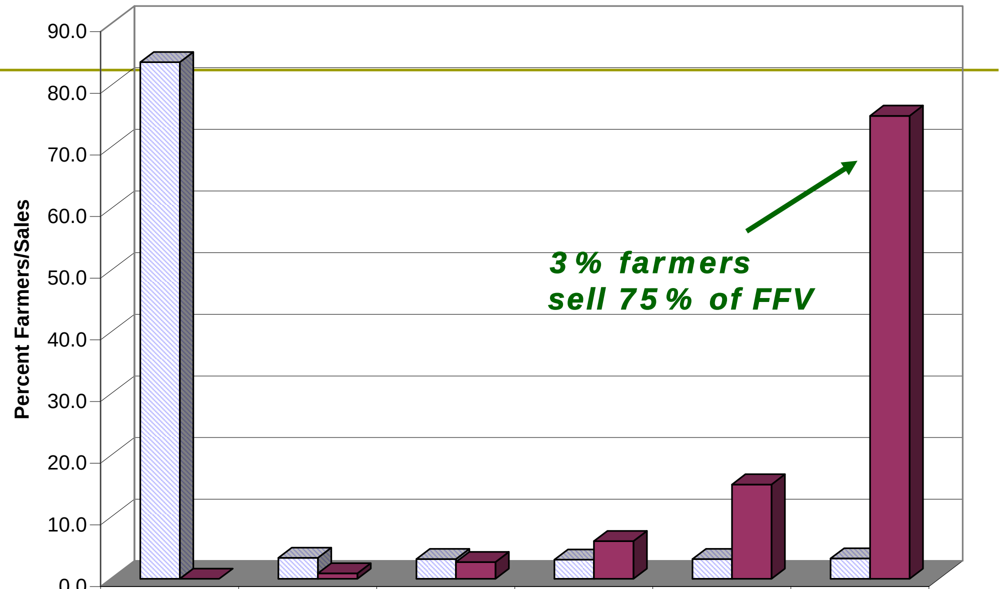
Share of total crop sales income of FFV sales (SS08)

	%Share of FFV income of total crop cash sales	
Province	**Among all smallholders**	**Among FFV sellers**
Lusaka	39.0	82.3
Copperbelt	55.4	77.9
Central	45.4	76.0
Western	16.7	64.5
Northern	19.4	62.1
Luapula	23.9	54.6
North Western	20.1	53.5
Eastern	16.6	48.0
Southern	10.6	29.8
Total	**27.4**	**61.3**

Copperbelt high for both indicators

4 times more among sellers in Western

%farmers selling FFV and share of total sales category (SS04)



	0 No sales	1 Lowest sales	2	3	4	5 Highest sales
%Farmers	83.8	3.4	3.2	3.1	3.2	3.3
%Sales	0.0	0.9	2.7	6.1	15.3	75.1

Sales Category

The most valuable FFV items sold by smallholder farmers in 2004 and 2008

FFV item	Share of total value of sales	
	SS 2004	SS 2008
Tomato	38.4	54.1
Rape	23.2	17.9
Cabbage	12.3	7.1
Water melon	0.4	4.9
Chinese cabbage	-	3.5
Banana	1.9	2.7
Egg plant	4.3	0.5
Onion	3.4	2.7
Total	**83.9**	**93.4**

Share of rape declining. First sellers margin at Soweto 4.5 times higher for tomato. Margins for retailers more or less the same

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Onion	3.4	2.7
Total	**83.9**	**93.4**

Water melon increasingly becoming important. Smallholders are realizing its market value

Share of total consumption from own production of different vegetables in Lusaka (UCS 2007-8)

Vegetable	Percent share from own production
Bean leaves	28
Pumpkin leaves	17
Cassava leaves	16
Sweet potato leaves	13
Amaranthus, Egg plant	5
Chinese cabbage	3
Rape, Impwa (local egg plant)	2
Tomato, Onion, Cabbage, Okra	1

Urban production is essentially limited to traditional leaves

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Tomato, Onion, Cabbage, Okra	1

Big consumption items come in from rural/production areas

FFV wholesaling activities in Soweto Market

Urban consumption patterns

- A consumption and expenditure survey in the urban centers of Lusaka, Kitwe, Kasama and Mansa has shown that FFV form an important part of urban hh's budget
- This expenditure creates market for FFV produced by farmers
- The linkage between the 2 important as:

"IT IS MARKETS THAT STIMULATE PRODUCTION AND NOT VICE VERSA".

FFV 2nd only to cereals & staples

Urban household expenditure shares of different food groups per adult equivalent

Food Items	Lusaka	Kitwe	Mansa	Kasama
Weighted No. of Households	267,934	78,398	9,305	20,769
	------------ % of Food Expenditures--------------			
Cereals & staples	24.1	27.4	28.0	27.2
Dairy items	5.2	3.6	1.7	2.0
Meat & eggs	16.8	15.6	12.7	14.5
Fish	7.6	8.4	12.4	12.5
Vegetables	13.7	15.0	11.4	14.2
Fruits	3.6	4.0	3.7	4.0
Legumes	3.7	3.4	3.7	3.7
Sugar & oils	7.9	8.9	8.5	8.7
Other foods	4.7	4.8	4.7	6.0
Tobacco & alcohol	5.3	4.6	6.3	4.0
Food away from home	7.3	4.3	6.9	3.2
Total %	100	100	100	100

Source: CSO/MACO/FSRP Urban Consumption Survey, 2007-2008

FFV share ranges from 15% to 19% of total expenditure on food

%Shares of total food expenditure of different FFV items

Food items	Lusaka	Kitwe	Mansa	Kasama
N of households	267,934	78,398	9,305	20,769
Rape	4.0	4.7	2.8	4.1
Tomato	3.5	3.8	2.9	3.6
Onion	1.6	1.9	1.2	1.4
Cabbage	.7	.5	.7	.7
Local leaves	2.2	2.8	2.8	2.8
Other vegetables	1.6	1.3	1.1	1.6
Banana	1.1	1.0	.7	.7
Oranges / tangerines	.7	.7	.5	.4
Apple	.5	.5	.2	.2
Other fruit	1.3	1.9	2.3	2.8
Cereals & staples	24.1	27.4	28.0	27.2
Animal protein	24.4	24.0	25.1	27.0
Other food prepared at home	26.9	25.3	25.0	24.4
Food away from home	7.3	4.3	6.9	3.2
Total	100	100	100	100

Source: CSO/MACO/FSRP Urban Consumption Survey, 2007-2008

The 3 most important items account for 6.9% to 9.4% of food budget

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Tomato	3.5	3.8	2.9	3.6
Onion	1.6	1.9	1.2	1.4
Cabbage	.7	.5	.7	.7
Local leaves	2.2	2.8	2.8	2.8
Other vegetables	1.6	1.3	1.1	1.6
Banana	1.1	1.0	.7	.7
Oranges / tangerines	.7	.7	.5	.4
Apple	.5	.5	.2	.2
Other fruit	1.3	1.9	2.3	2.8
Cereals & staples	24.1	27.4	28.0	27.2
Animal protein	24.4	24.0	25.1	27.0
Other food prepared at home	26.9	25.3	25.0	24.4
Food away from home	7.3	4.3	6.9	3.2
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Source: CSO/MACO/FSRP Urban Consumption Survey, 2007-2008

Local/traditional leaves are also important in urban diets

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Onion	1.6	1.9	1.2	1.4
Cabbage	.7	.5	.7	.7
Local leaves	2.2	2.8	2.8	2.8
Other vegetables	1.6	1.3	1.1	1.6
Banana	1.1	1.0	.7	.7
Oranges / tangerines	.7	.7	.5	.4
Apple	.5	.5	.2	.2
Other fruit	1.3	1.9	2.3	2.8
Cereals & staples	24.1	27.4	28.0	27.2
Animal protein	24.4	24.0	25.1	27.0
Other food prepared at home	26.9	25.3	25.0	24.4
Food away from home	7.3	4.3	6.9	3.2
Total	100	100	100	100

Source: CSO/MACO/FSRP Urban Consumption Survey, 2007-2008

Main fruits are banana, orange, apples. All fruits account for 3.1% to 4.1% of the food budget

Retail channels used for FFV purchases

Retail channel	Lusaka %	Kitwe %	Mansa %	Kasama %
Market stand / stall	68.04	70.48	68.29	66.79
KaSector (Mobile/street vendors, Katable/Kantemba/Kashop (kiosk)	26.58	23.25	24.81	25.36
Retail/whole grocer / general dealer / shop	.35	.51	.30	.14
Mini-mart / small supermarket	.49	.12	.00	.09
Large supermarket, independent	.24	.00	.00	.02
Large supermarket, chain	2.46	2.35	4.34	2.92
Bakery	.01	.00	.00	.04
Private household	1.82	3.30	2.26	4.63
Other	.00	.01	.00	.00

CSO/MACO/FSRP Urban Consumption Survey, 2007-2008.

The market and KaSector have the largest market share accounting for 92% to 95%

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Large supermarket, chain	2.46	2.35	4.34	2.92
Bakery	.01	.00	.00	.04
Private household	1.82	3.30	2.26	4.63
Other	.00	.01	.00	.00

CSO/MACO/FSRP Urban Consumption Survey, 2007-2008.

Private hh also important

The large supermarket chain share ranges from 2.4% to 4.3%. Largely Shoprite in areas outside Lusaka

% Share of modern market system by household income level

Urban area	Income level		
	Low	Medium	High
Lusaka	0.4	1.2	9.5
Kitwe	0.9	1.2	7.5
Mansa	0.2	2.8	9.8
Kasama	0.3	1.4	6.2

- ***Modern market system (grocer/mini-mart/super-markets) share highest among the high income group.***

- ***But still share is much less compared to that of the traditional market system (90.2% to 93.8%) within this income group***

% Market share by FFV item

FFV item	%Share of traditional/informal market system	%Share of private household	%Share of modern/formal market system
Bean leaves	98.3	1.7	0.1
Rape	95.5	3.8	0.6
Guavas	91.1	8.3	0.6
Impwa	98.2	1.1	0.7
Amaranthus (Bondwe)	96.5	2.7	0.9
Okra (lady's finger)	97.5	1.0	1.5
Mangoes	97.0	1.6	1.5
Tomato	94.5	3.5	2.0
Onion	95.0	2.6	2.4
Sweet potato leaves	95.2	2.2	2.6
Cabbage	95.5	1.8	2.7
Cassava leaves	94.9	2.1	3.0
Pumpkin leaves	94.7	1.2	4.1
Oranges/tangerines	92.3	0.6	7.1
Egg plant	89.8	0.6	9.6
Green beans	88.3	1.0	10.6
Avocado pear	84.5	3.1	12.4
Bananas	85.0	1.4	13.6
Watermelons	84.4	1.2	14.3
Lemons	83.0	1.7	15.3
Apples	74.6	0.3	25.2

CSO/MACO/FSRP Urban Consumption Survey, 2007-2008.

Market share different depending on FFV

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Onion	95.0	2.6	2.4
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CSO/MACO/FSRP Urban Consumption Survey, 2007-2008.

- ***< 3% of traditional FFV and main vegetables (rape, tomato, onion, cabbage) flow through modern market system.***
- ***Pumpkin leaves, a traditional vegetable, at 4% are doing fairly well***

% Market share by FFV item

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CSO/MACO/FSRP Urban Consumption Survey, 2007-2008.

The FFV with more than 10% share of modern system are by and large fruits, except green beans

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CSO/MACO/FSRP Urban Consumption Survey, 2007-2008.

Guavas, rape, tomato and avocado are the most FFV items purchased from private households

Lusaka market channels, price behavior

- Looks at tomato, rape and onion only
- Analysis mainly based on FSRP Lusaka Horticultural Markets Trade Flows and Price Monitoring Data

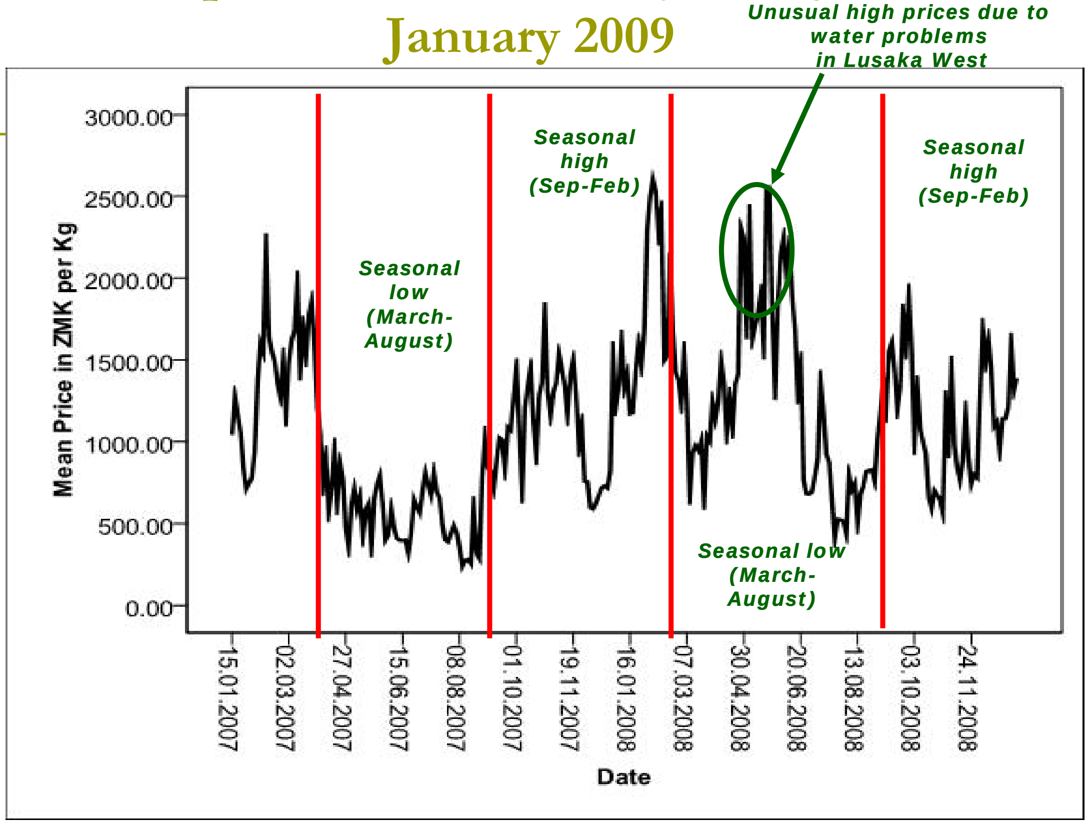
Supply areas to Lusaka

The 3 main supply districts in Soweto (January 15, 2007 to January 15.2009

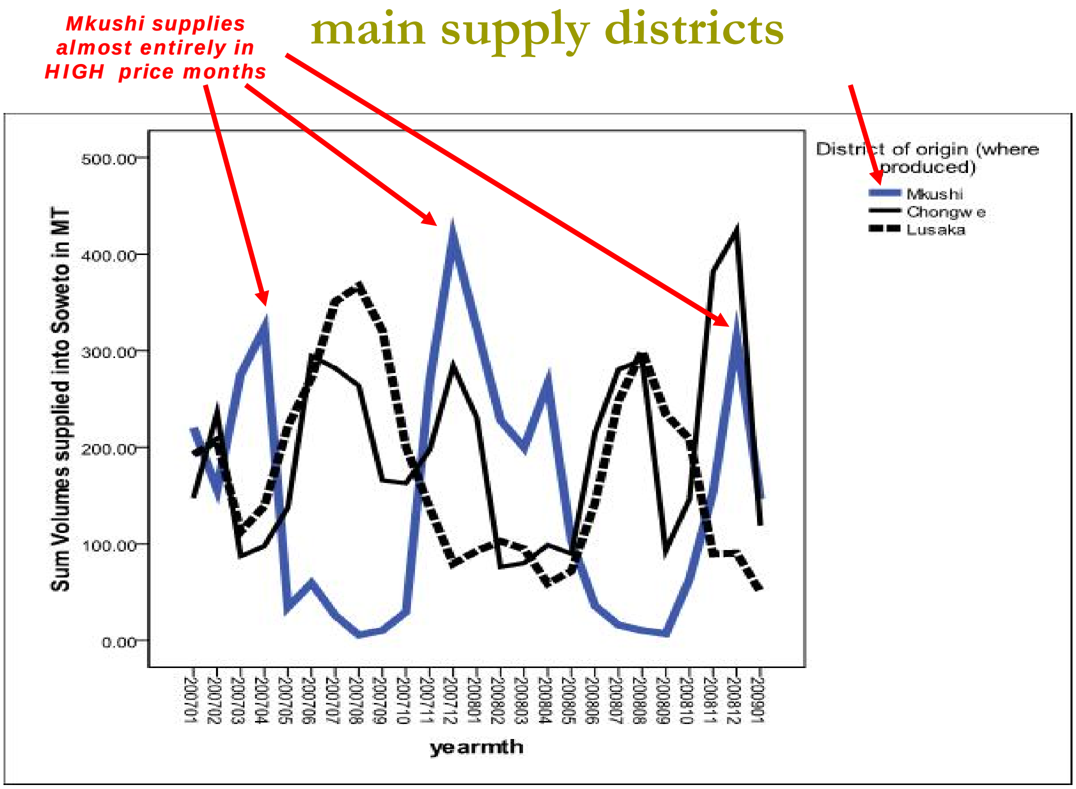
Tomato		Rape		Onion	
District	**Share (%)**	**District**	**Share (%)**	**District**	**Share (%)**
Chongwe	21.6	Chongwe	71.1	Mugabi	30.3
Lusaka	19.0	Chibombo	12.3	S/Africa	27.5
Mkushi	17.0	Mumbwa	12.0	Lusaka	21.0
Total	**57.6**		**95.4**		**78.8**

- Tomato supplied came from a total of 17 districts
- Rape came from 10 districts
- Onion came from 19 districts
  - Areas outside the country were also treated as districts
    - Mugabi, S/Africa, Tanzania and Zimbabwe
- Mugabi is an area on Zambia-Malawi border

Tomato prices in Soweto, 15 January 2007 – 15 January 2009

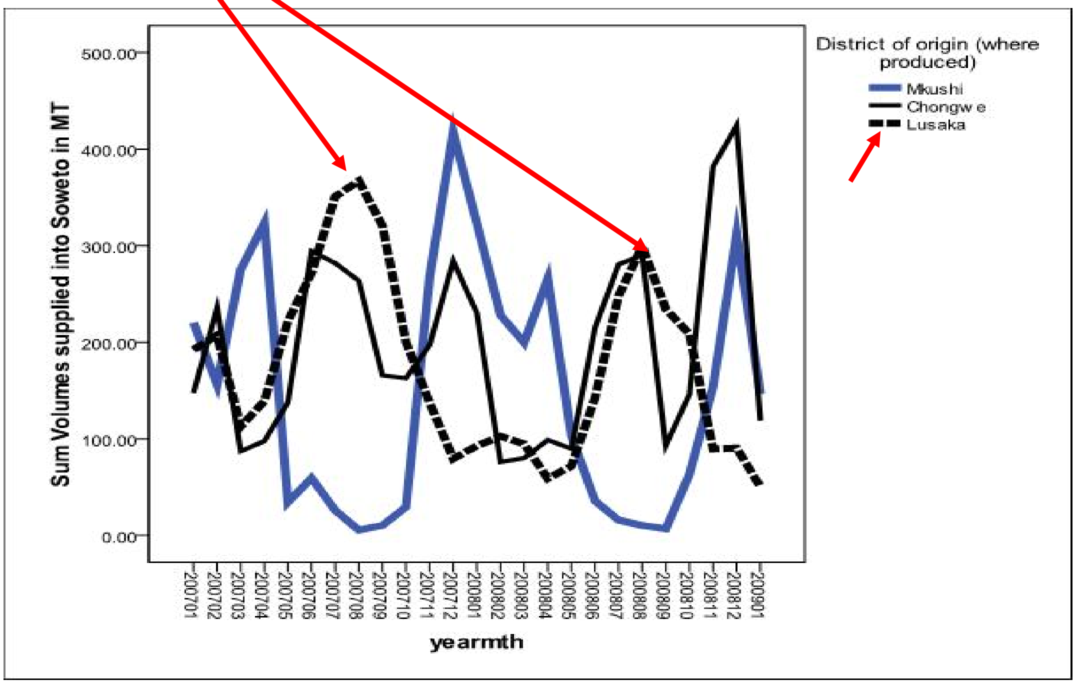


Seasonality of supply of tomato from the 3 main supply districts



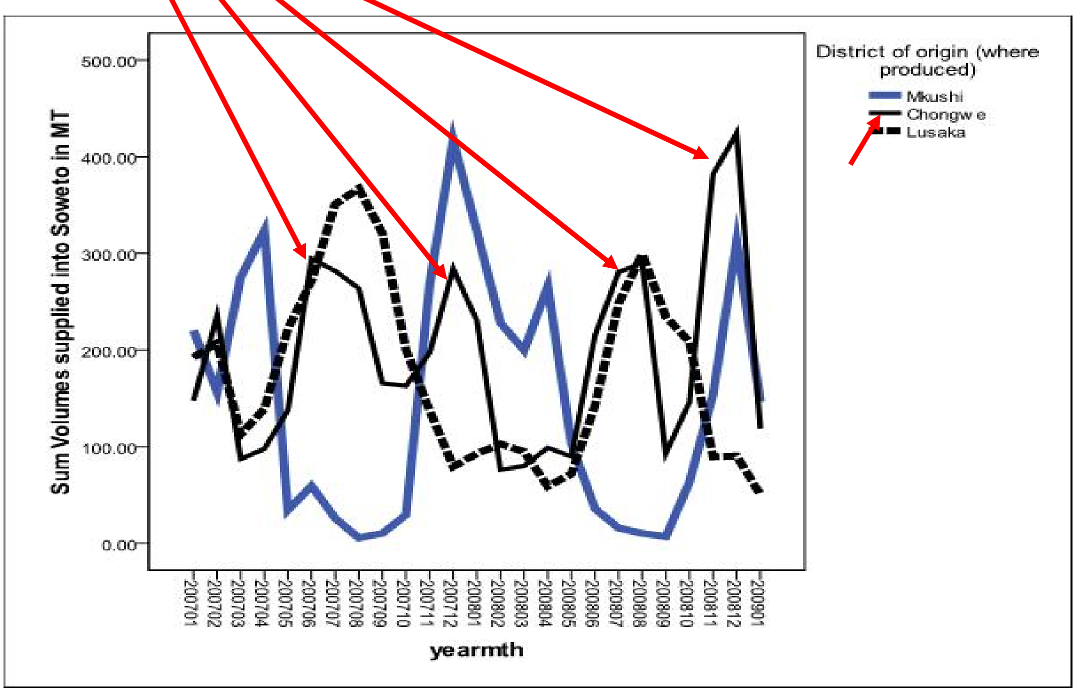
Seasonality of supply of tomato from the 3 main supply districts

Lusaka supplies almost entirely in LOW price months



Seasonality of supply of tomato from the 3 main supply districts

Chongwe supplies during both



Tomato supply channels for Lusaka

Flow channels into Soweto			
Farm area type	**Total share (%)**	**%Through farmers**	**%Through traders**
Small	12	67	33
Medium	44	64	36
Large	44	45	55
Total		**59**	**41**
Flow channels into retail markets including kaSector			
% Share from Soweto		73	
% Share directly from farm areas		27	

Medium and large farm areas more important

Tomato supply channels for Lusaka

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More trader role in large farm areas

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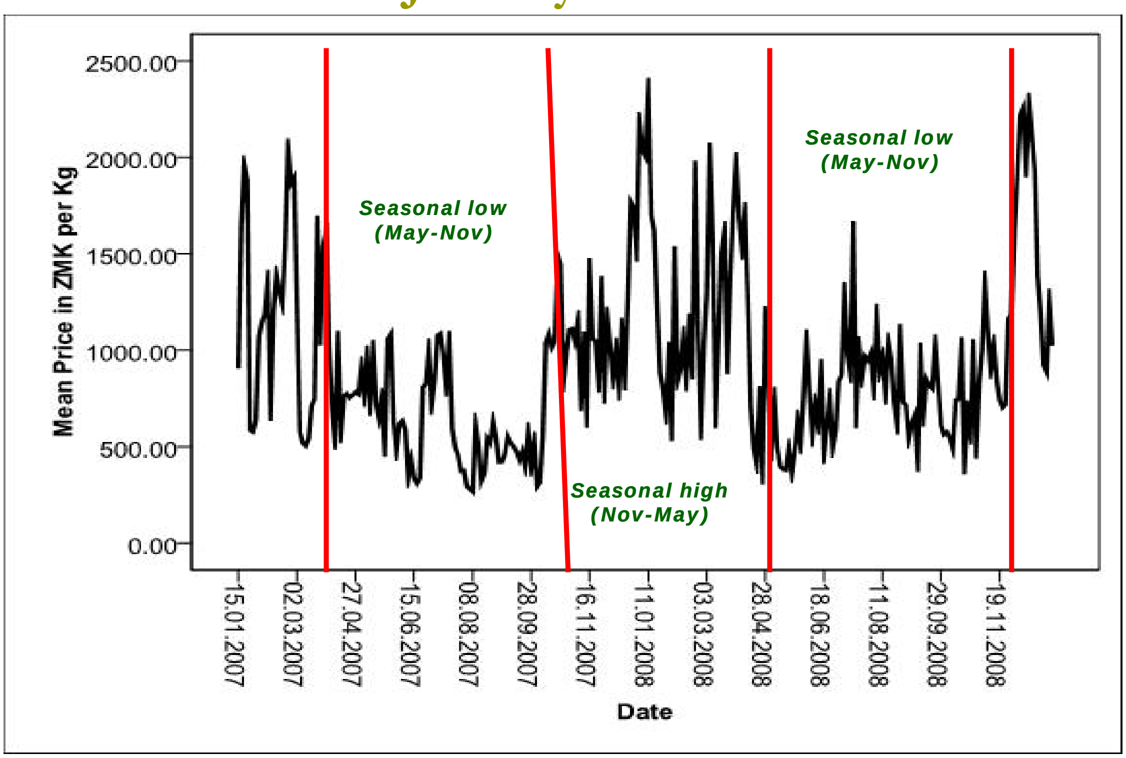
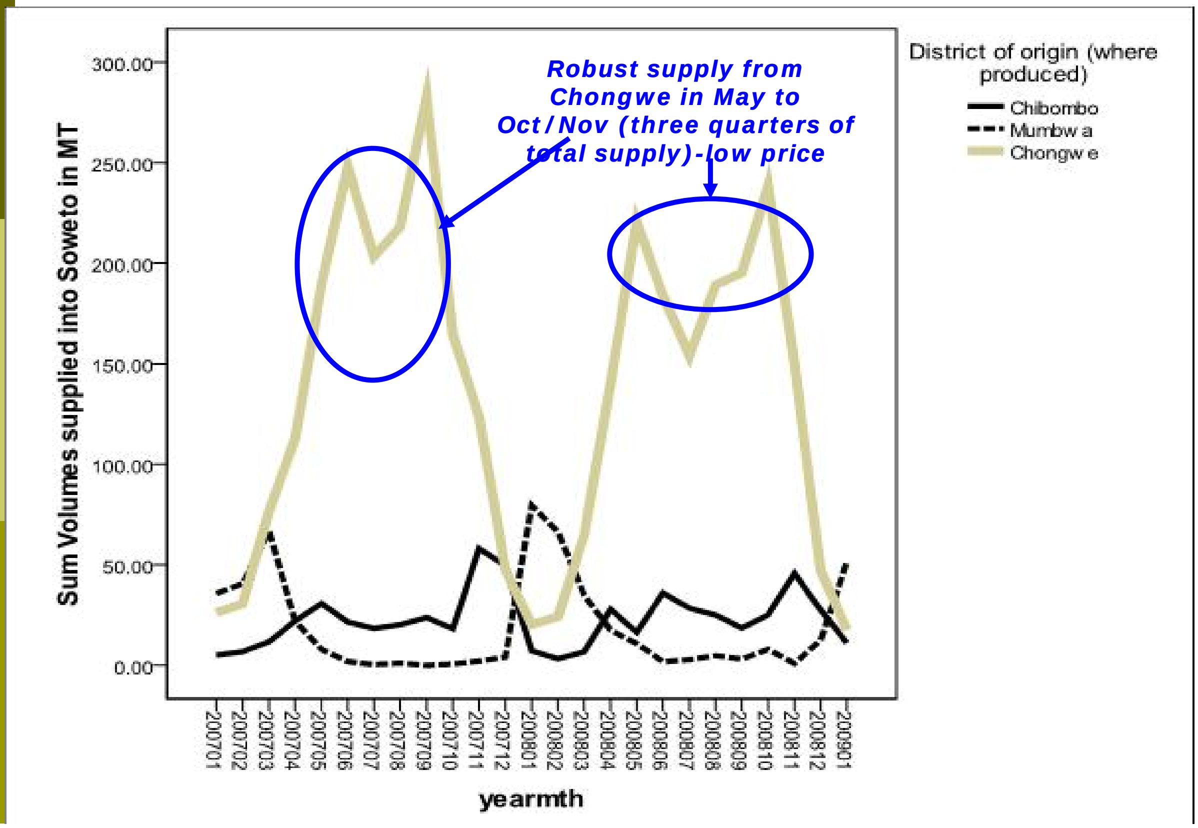
Soweto share is about three quarters

- ***Some tomato leaves Soweto for places such as L/stone, Copperbelt, DRC (15% rough estimate)***

Rape prices in Soweto, 15 January 2007 – 15 January 2009



Seasonality of supply of rape from the 3 main supply districts



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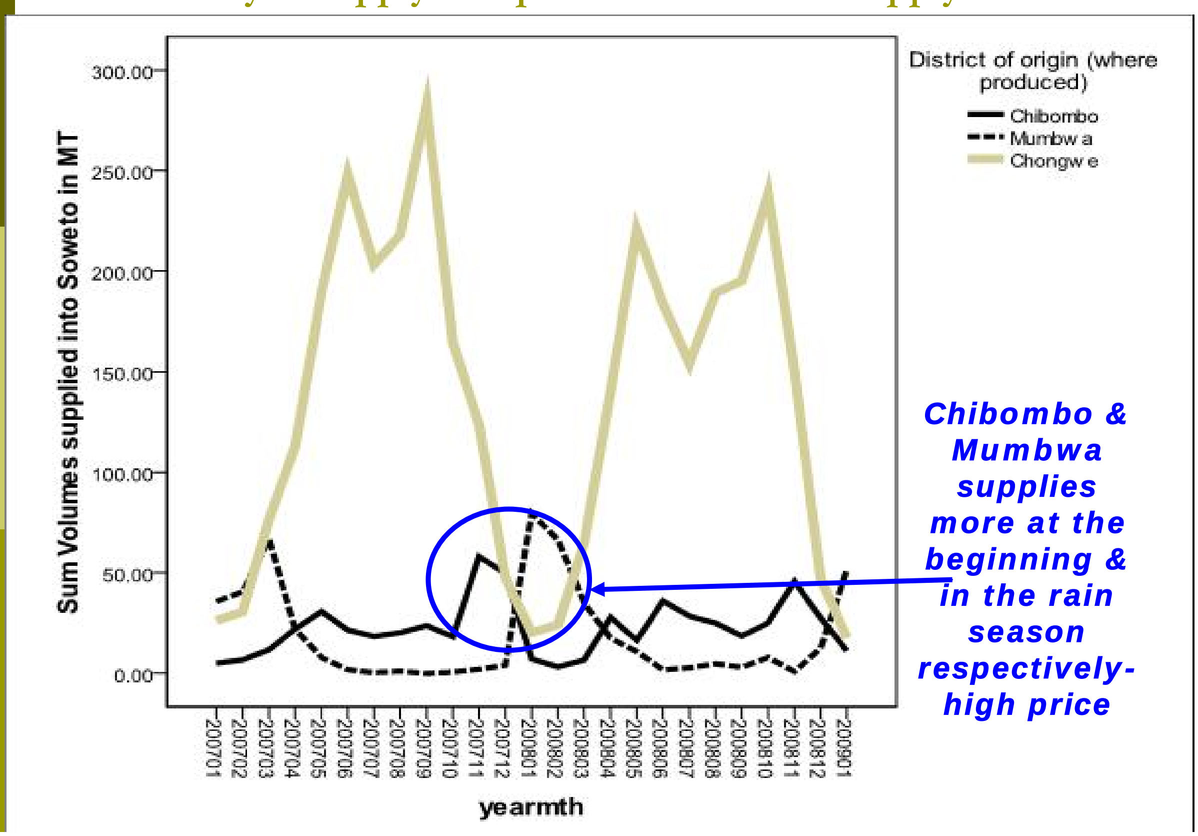


Rape supply channels for Lusaka

Flow channels into Soweto			
Farm area type	Total share (%)	%Through farmers	%Through traders
Small	10.4	99.0	1.0
Medium	50.1	99.8	0.2
Large	39.6	99.5	0.5
Total		**97.7**	**0.3**
Flow channels into retail markets including kaSector			
% Share from Soweto		51.6	
% Share directly from farm areas		48.4	

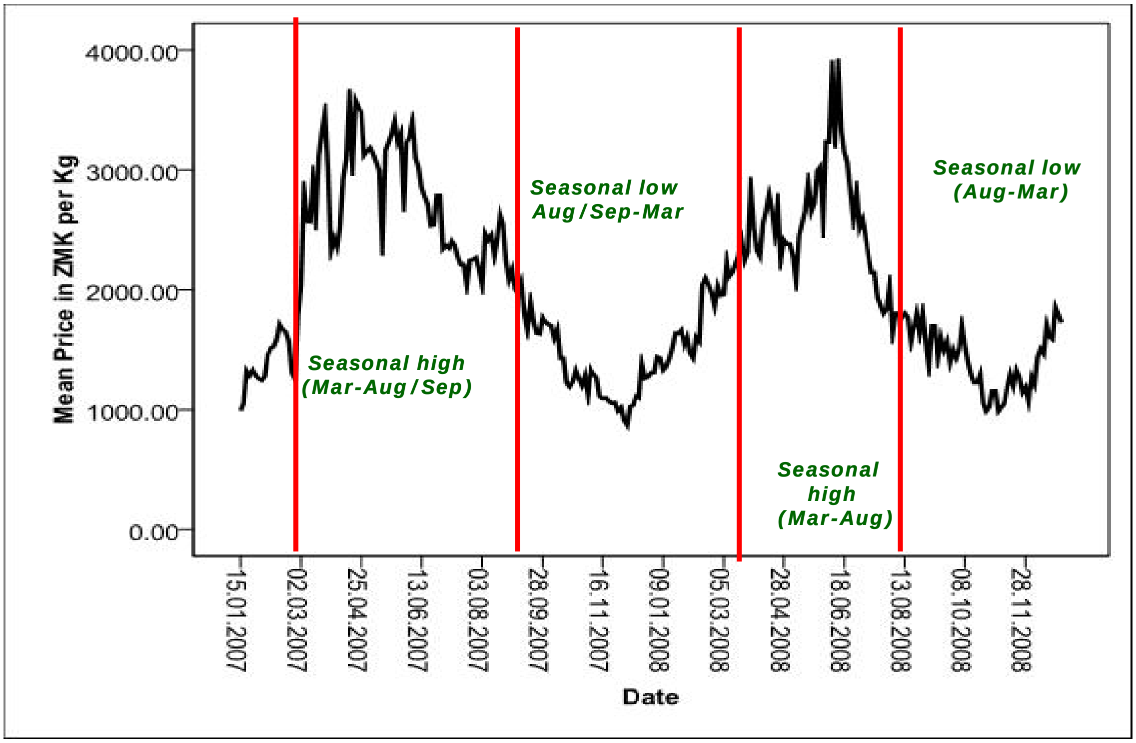
Minimal role of traders

Rape supply channels for Lusaka

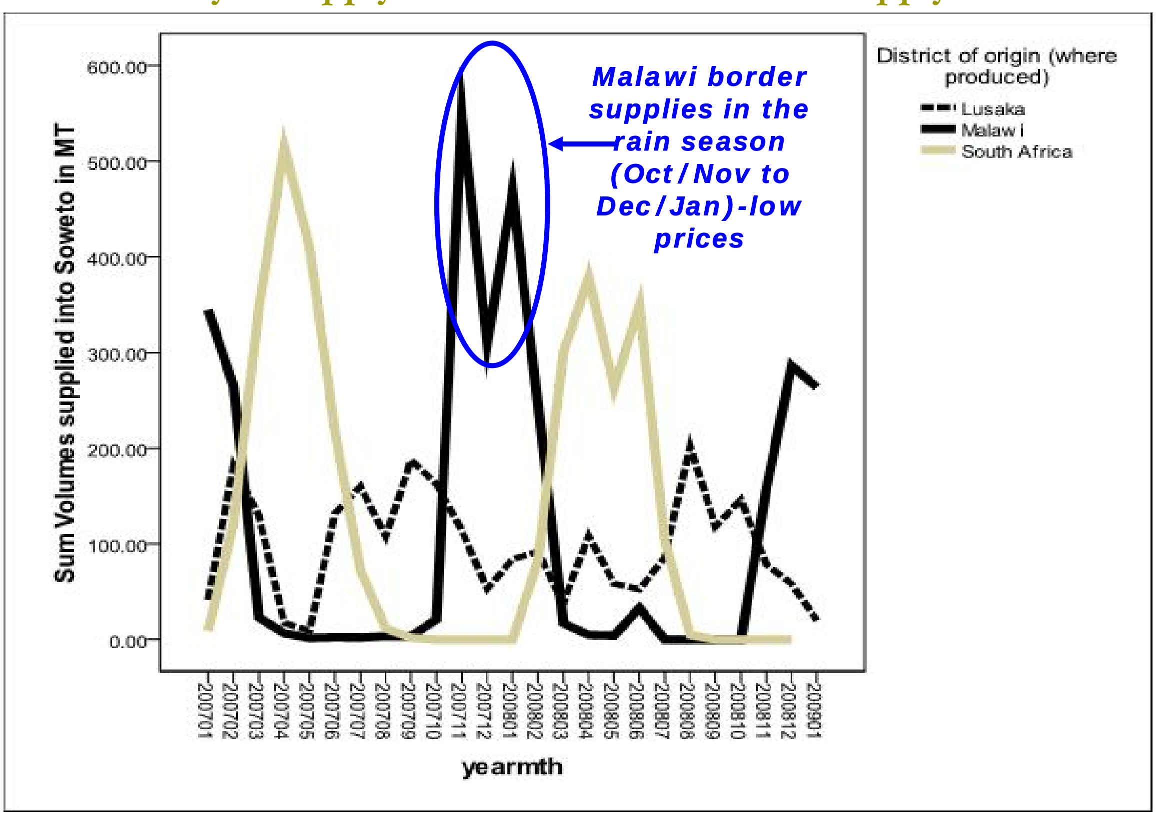
Flow channels into Soweto			
Farm area type	Total share (%)	%Through farmers	%Through traders
Small	10.4	99.0	1.0
Medium	50.1	99.8	0.2
Large	39.6	99.5	0.5
Total		**97.7**	**0.3**
Flow channels into retail markets including kaSector			
% Share from Soweto		51.6	
% Share directly from farm areas		48.4	

Direct farm deliveries to retail markets almost half

Onion prices in Soweto, 15 January 2007 – 15 January 2009



Seasonality of supply of onion from the 3 main supply districts



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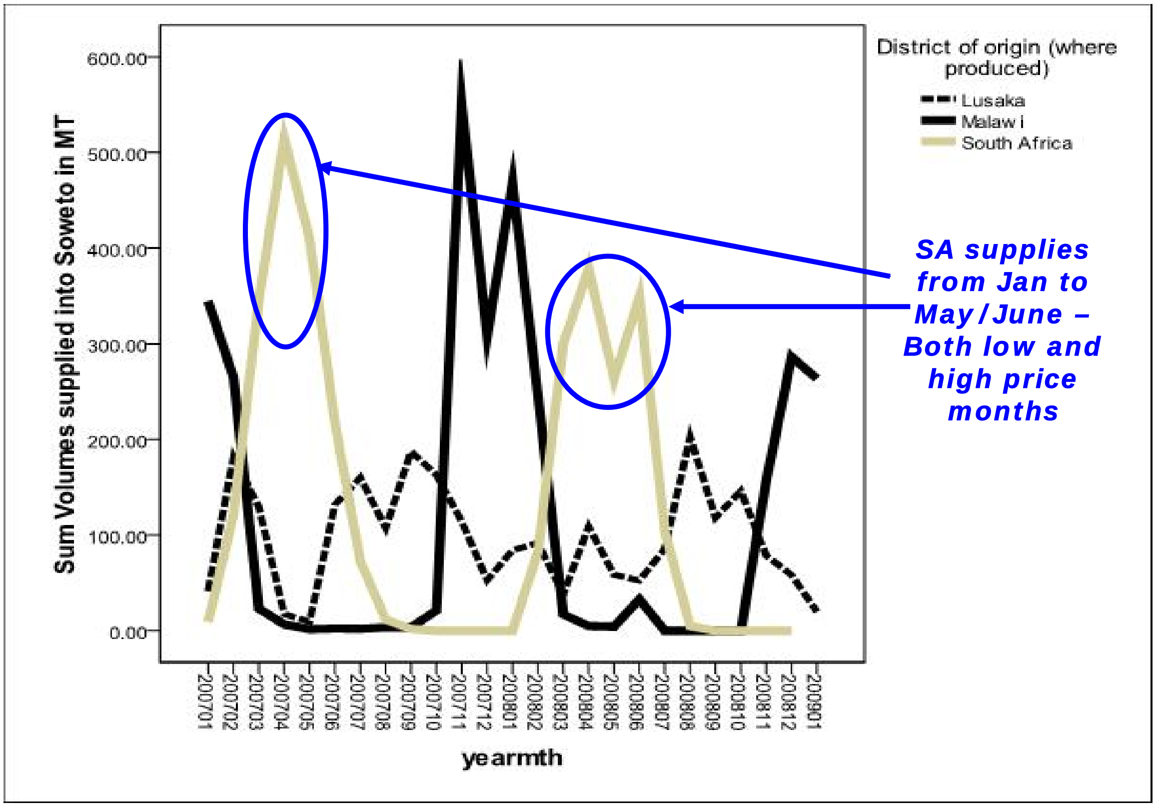

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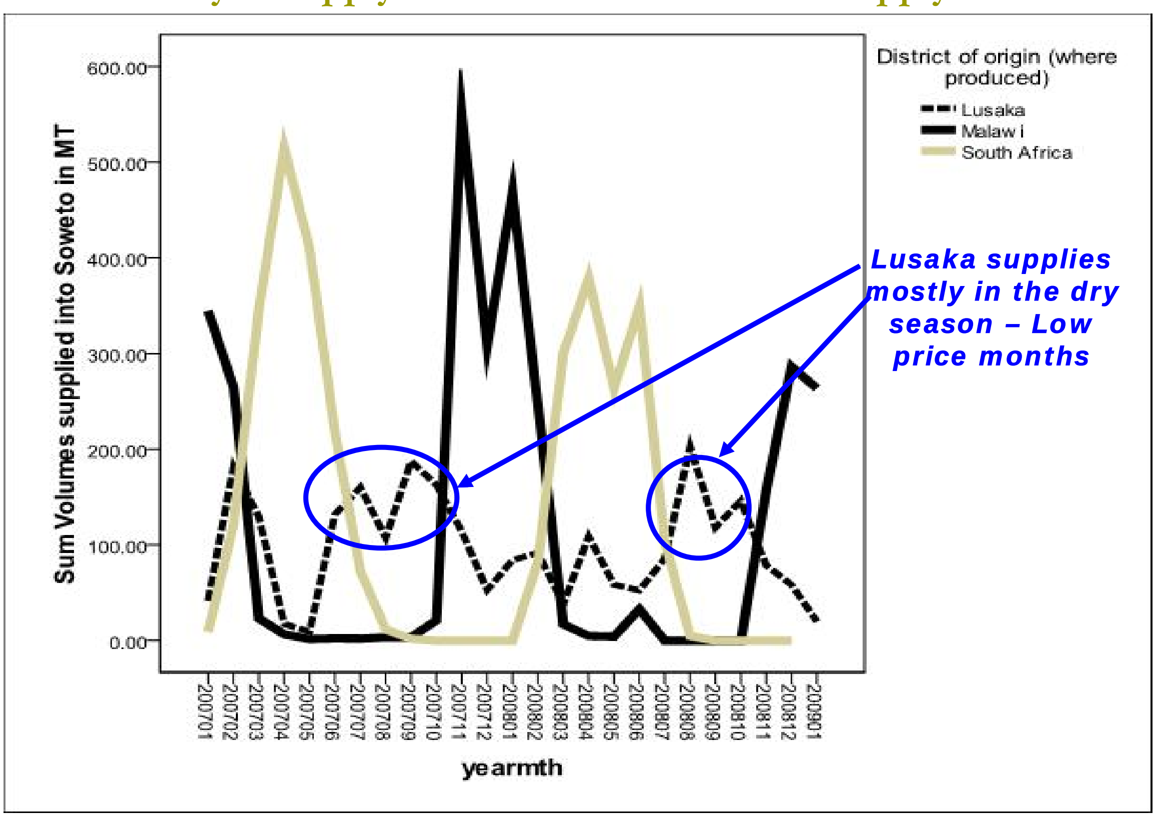

Onion supply channels for Lusaka

Flow channels into Soweto			
Farm area type	Total share (%)	%Through farmers	%Through traders
Small	14	0.7	99.3
Medium	26	53.8	46.2
Large	2	50.0	50.0
Total	**42**	**34.8**	**65.2**
Mugabi (Malawi)	30		
South Africa	28		

Most onion from outside the country

Flow channels into retail markets including kaSector	
% Share from Soweto	91
% Share directly from farm areas	9

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Traders handle a larger share

Onion supply channels for Lusaka

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Flow channels into retail markets including kaSector	
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Little direct farm deliveries

- ***Some onion from Soweto also delivered out of Lusaka to L/stone, Copperbelt, DRC (35% rough estimate)***

Price variability and predictability

- Weekly prices of vegetables (e.g. tomato and rape) vary greatly, but those of commodities (e.g. onion) that can be stored relatively easier are much more stable
- This calls for need for better backflow of information (coordination) from brokers at market and farmers to reduce large day-to-day variations in quantities supplied

Price variability and predictability

- The SMS system (providing near real data on prices and supplies) is one way to start doing this
- BUT IS REALLY ONLY A STARTING POINT

- Part of instability
  - Inability to control production environments
  - Availability of transport when needed
- Eventual SMS info on diseases can help
- Cell phones can also be used to broker transport when needed at lower cost

SO, WHAT ARE THE KEY ISSUES

To improve the FFV supply chain

- Need for improved information flow through out the chain
  - Cell phone revolution has already dramatically improved access to information on market prices
- Need for improved production environments
  - How can access to reliable technical information be improved in the absence of public extension?
  - Can information through SMS on input availability and prices bring those prices down?

KEY ISSUES (2)

- Need for improved hard infrastructure
  - Linked to better management models (PPP) and improved coordination
  - Especially at wholesale, which are leverage points in the system
  - Does legislation need to be modified? E.g. The Markets Act and Bus Station Act
  - Learning from success stories important
    - Organized system in South Africa
    - New markets in Tanzania developed in collaboration with national farmers' organization

SUMMING UP

- The modern market system is growing and is likely to continue doing so
  - Rate of growth likely to be much slower than once thought and too slow to transform these traditional systems over any acceptable time frame
- Importance of traditional market systems for the foreseeable future can not be over emphasized
  - Needs to be improved with focus on wholesale – leverage point
  - Mobile phone revolution offers great potential for improved information flow across the whole supply chain

Thank you