

Some dynamics of food inflation in South Africa

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Introduction

- International commodity prices (food and energy) rose strongly in recent years.... peaking in mid 2008 and then declining.
- Rising commodity prices have an impact (direct and indirect) on inflation, growth and welfare and hence attracted particular attention in formulation of policy.
- Classic approach is that transitory food and energy price changes are quickly reversed and hence do not warrant special attention in MP.
- The basic point here is that temporary relative price shifts do not result in large output costs and hence should be accommodated.

Introduction

- However, more lasting changes in commodity prices result in “second round effects” which....highly detrimental and threatens sustainable economic growth.
- Relative prices play an important role in inflation process.
- Ball and Mankiw (1994) show that firms price adjustment is related to the size of the shock it faces.
- Implies that overall price effect could be dependent on a sectors importance rather than solely on whether the shock is temporary or not.
- In addition, inflation expectations coupled with the level of inflation persistence in the sector could be the major determinants of the overall price effect.

Review of domestic and international food price trends

Trend in food prices
YoY changes
(FAO and IMF index in dollars, SA in rand)

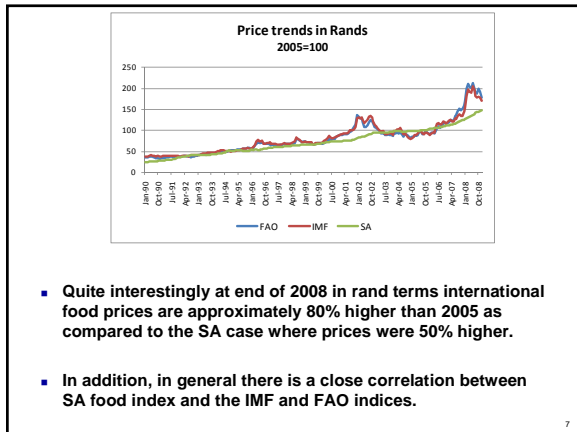
- Between 2007 and mid 2008:
 - international food prices have increased significantly and declined sharply thereafter
 - In case of SA has been a gradual but prolonged increase and marginal decline since beginning of 2009.
- Here we ignore the composition of the food basket.

Food price trends
2005=100

- However, SA food prices were approx 50% higher at end of 2008 than in 2005
- Internationally food prices had increased by approx 30% during the same period.

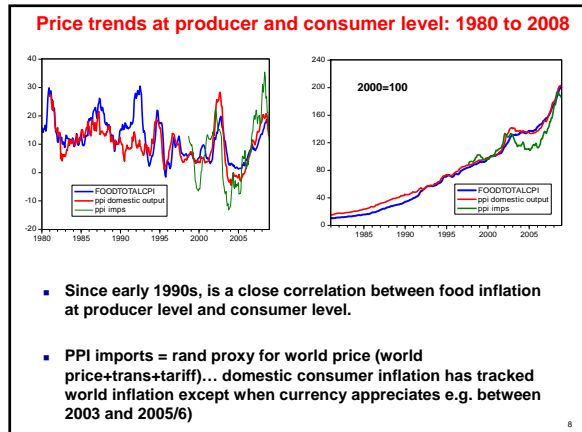
Food price trends
YoY changes in Rands

- However, picture is different when we consider price movements in rands.
- In last five years YoY changes in SA food index has been smaller than the changes in FAO and IMF food indices



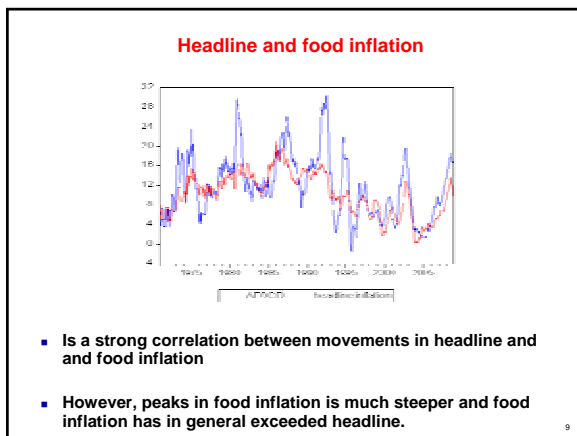
- Quite interestingly at end of 2008 in rand terms international food prices are approximately 80% higher than 2005 as compared to the SA case where prices were 50% higher.
- In addition, in general there is a close correlation between SA food index and the IMF and FAO indices.

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- Since early 1990s, is a close correlation between food inflation at producer level and consumer level.
- PPI imports = rand proxy for world price (world price+trans+tariff)... domestic consumer inflation has tracked world inflation except when currency appreciates e.g. between 2003 and 2005/6)

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- Is a strong correlation between movements in headline and food inflation
- However, peaks in food inflation is much steeper and food inflation has in general exceeded headline.

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Mean and volatility of food and headline inflation

	Mean Inflation rate		Standard Deviation	
	CPI	Food	CPI	Food
1970s	10.4	11.6	2.8	4.9
1980s	14.6	15.7	2.3	5.5
1990s	9.9	11.8	3.6	7.7
2000-08	6.0	8.4	3.4	5.3

- Has been a significant decline in mean rates seen 1980s.
- However, food inflation has been much more volatile.

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Contribution of components relative to weight in CPI basket

- Food contri to hdlne infl has increased over time
- During 2000s 9/10 food components contributed more than weight in basket
- These products made up 20% of headline infl and 95% of food component in CPI
- 5 of food components contribute more than 1.5 times their weight in CPI basket

Sub-categories of CPI	80-89	90-99	00-08
food	1.07	1.23	1.43
Grain Products	1.05	1.13	1.55
Meat	1.31	1.19	1.52
Fish and Other Sea Food	0.90	1.08	1.31
Milk, Cheese & Eggs	0.96	1.19	1.62
Fats and Oils	0.76	1.25	1.87
Fruit and Nuts	0.82	1.75	1.10
Vegetables	0.94	1.71	1.58
Sugar	1.05	1.10	1.09
Coffee, Tea & Cocoa	0.94	1.09	0.89
Other	1.09	1.17	1.20

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Contribution of components relative to weight in CPI basket

Non-alcoholic Beverages	1.11	1.25	1.13
Alcoholic Beverages	0.92	1.19	1.35
Cigarettes, Cigars, and Tobacco	0.86	1.86	1.74
Clothfoot	0.90	0.70	-0.19
Housing	0.97	0.68	0.67
Fuel and Power	0.84	1.08	1.33
Furniture and equipment	0.88	0.71	0.31
Hsehold operations	1.00	1.38	1.26
Medical Care and Health Expenses	1.09	1.48	1.45
Transport	1.00	1.03	1.27
Communication	1.03	0.95	0.62
Recreation and Entertainment	0.97	0.77	-0.01
Reading Matter	1.19	1.24	1.03
Education	1.20	1.23	1.03
Personal Care	1.02	0.99	0.93
Other	1.07	1.04	0.21

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Do food prices help forecast inflation

- Given the contribution of food inflation to headline inflation...logical to consider whether food prices help forecast inflation.
- Following Cecchetti and Moessler (2008):

$$\pi_t^{headline} = \alpha + \sum_{k=1}^{12} \beta_k \pi_{t-k}^{headline} + \sum_{k=1}^{12} \gamma_k \pi_{t-k}^{food} + \varepsilon$$

- If sum of coeff on lagged food price inflation is significantly different from zero then food price inflation has some predictive content, i.e. helps forecast headline inflation.
- The econometric results show that the sum of coefficients are significantly different from zero

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How persistent is food inflation?

- A persistence measure captures the likely impact of a shock on the inflation path.
- A better understanding of the persistence of food inflation will provide useful information about the likely impact of food price shocks on headline inflation...particularly relevant given the contribution of food to headline inflation.
- If inflation is a univariate autoregressive process, the standard persistence measure is given by

$$\pi_t = \mu + \sum_{i=1}^n \alpha_i \pi_{t-i} + \varepsilon_i \quad \left(p = \sum_{i=1}^n \alpha_i \right)$$

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How persistent is food inflation?

- Persistence of headline inflation has declined.
- For food inflation
 - Marginal decline in persistence
 - Currently, food inflation displays greater persistence than other components...is higher than headline inflation
- Means that shock to food inflation will have a more lasting impact.

Persistence estimates	1981Q1-1999Q4	2000Q1-08Q4
1 Headline CPI	0.98	0.81
2 Commodities	0.94	0.82
3 Services	0.97	0.68
4 Food	0.89	0.85
4 Sub-Components of CPI		
5 Grain products	0.85	0.83
6 Meat	0.75	0.76
7 Fish and other seafood	0.84	0.70
8 Milk, cheese and eggs	0.88	0.83
9 Fats and oils	0.83	0.88
10 Fruit and nuts	0.81	0.24
11 Vegetables	0.52	0.55
12 Sugar	0.87	0.69
13 Coffee, tea and cocoa	0.86	0.94
14 Other food	0.95	0.78
38 Summary Statistics		
39 mean	0.86	0.77
40 median	0.87	0.80
41 weighted mean	0.86	0.78
42 % of categories SCPI pers	0.95	0.55

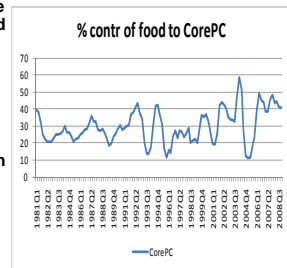
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4 Sub-Components of CPI		
15 Non-alcoholic beverages	0.89	0.77
16 Alcoholic beverages	0.88	0.74
17 Cigarettes, cigars and tobacco	0.84	0.69
18 Clothing	0.98	0.57
19 Footwear	0.98	0.67
20 Housing	0.93	0.62
21 Fuel and power	0.75	1.10
22 Furniture	0.95	0.94
23 Appliances	0.92	0.85
24 Other household equipment and textiles	0.82	0.85
25 Household consumables (Cleaning mater	0.88	0.93
26 Domestic workers	0.91	0.68
27 Other household services	0.94	0.83
28 Medical care and health expenses	0.77	0.83
29 Vehicles	0.95	0.93
30 Running costs	0.65	0.57
31 Public and hired transport	0.86	0.86
32 Communication	0.81	0.88
33 Recreation and entertainment	0.94	0.83
34 Reading matter	0.67	0.86
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Food and core inflation

- Some indication of persistence of food inflation can be gauged from its contribution to core inflation.
- Conventional core measures excludes food but high persistence of food infl means that food should be included in core measure.
- Food's contribution to a persistent weighted core inflation has increased over time... currently accounting for 50% of core inflation.



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Food inflation and second round impacts

$$\pi_t^{food} - \pi_{t-2}^{food} = \alpha + \beta (\pi_{t-2}^{food} - \pi_{t-2}^{headline}) + \varepsilon$$

- where $i =$ lags in quarters
- Basic point here is that if β is -ve and significant then there is evidence of second round effects from food inflation.

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Food inflation and second round impacts

Lags (quarters)	coefficient	t statistic	probability
2 quarters	-0.54	-5.59	0.00
3 quarters	-0.96	-8.53	0.00
4 quarters	-1.38	-12.04	0.00
6 quarters	-1.59	-14.32	0.00

- The results for SA indicate that the β is highly significant thus implying strong second round effects from food inflation.
- This result is similar to correlation analysis and I-O calculations done by the IMF.

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Some conclusions

- Food's contribution to headline inflation is significantly higher than it's weight in CPI basket.
- Food price trends are fairly similar at producer and consumer level. There is also some evidence to suggest that the ER has a strong influence on domestic food price movements.....although pass-through effects are asymmetric in nature
- Food inflation is more persistent than headline inflation and some of the other components in the CPI basket.
- There are strong second round effects from food inflation. Food price movements account for around 50% of core inflation currently

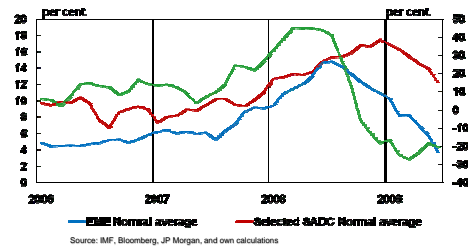
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Some policy implications

- Given the above results, food inflation warrants special attention in policy circles given its implication/impact on inflation, growth and welfare.
- This is especially the case for MP given its contribution to core inflation and the strong second round effects... and hence its impact on inflation expectations.
- In the case of SA, food infl presents particular challenge with regards to anchoring inflation expectations? However, the task at hand is complicated by the fact that exogenous shocks and exchange rate movements have an important bearing on food price movements.

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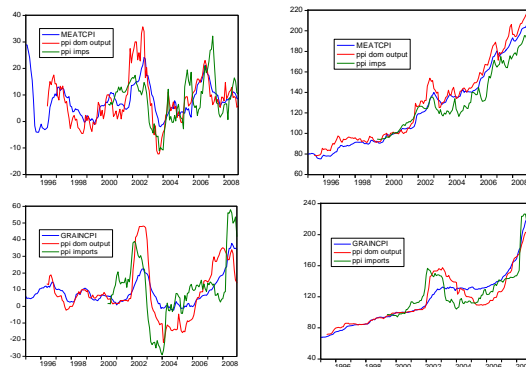
Food price inflation



- Food price movements have been pretty sticky in some SADC counts
- While there has been a decline, food price increases are still in double digit territory

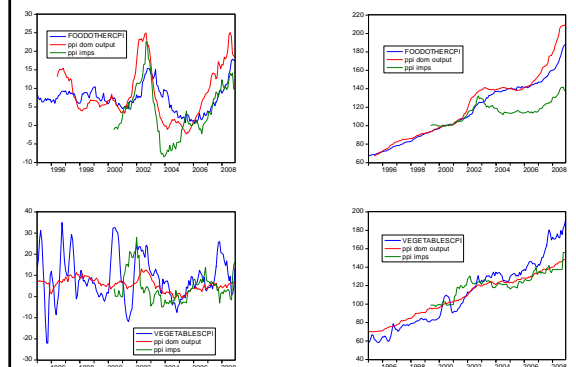
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Price trends

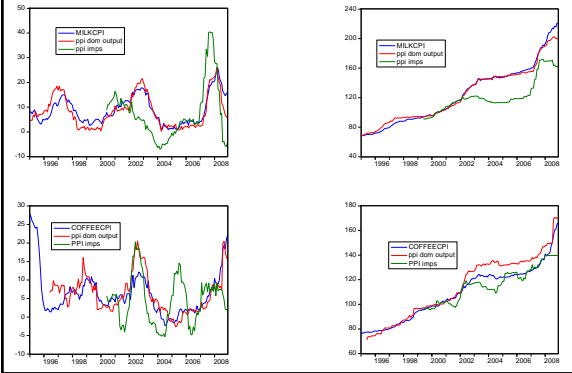


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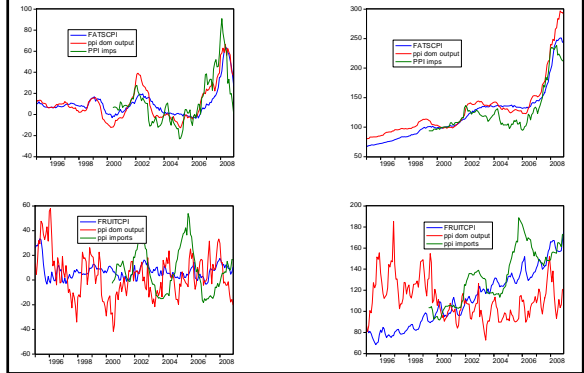
Price trends



Price trends



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