The Impact of Rising Food Prices on the Households in a Low Income Township in South Africa

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Abstract: Food prices in South Africa have increased significantly in recent years. The impact of these price increases on many residents remains largely unknown. The study reported here analyzed the perceptions of households in a low income township of Bophelong (South Africa) in order to assess the impact of increases in food prices. The results are based on a household survey using questionnaires. The majority of households reported that they do not have enough income to meet their daily needs. The increase in prices in general was much higher for electricity and commuting. A logistic regression model was used to determine the socio-economic factors affecting the reported impact of increase in food prices. Married and employed household heads reported lower severity levels. Female-headed households reported higher severity levels of price increases. Household income, household size, age, educational attainment of the household head and the labour- force had no effect on the reported impact of prices. The article provides useful information to policy makers by providing information on the reported impact of rising food prices among low income households in a South African context.

Keywords: Food prices; inflation; low income households; Township; South Africa.

1. Introduction

Inflation is a sustainable and continuous rise in the general price level or a fall in the value of money (Makinen, 2003). It refers to the overall price level increase in the economy, not an increase in the price of one commodity. In South Africa, general price levels are monitored by the South African Reserve Bank (SARB) through the consumer price index (CPI). The central bank has made inflation targeting and therefore price levels its top priority. This is the most significant monetary policy reform since 1994. The Reserve Bank aims at maintain inflation within the 3-6% band. Inflation has fallen from double-digit levels in the 1990s to well within the target range, and has in some years fallen outside the range (Butler, 2010). The reasons for these inflationary pressures are complex and include both supply-side and demand-side factors. The long-term structural trends underlying growth in demand for food have coincided with short term cyclical or temporary factors affecting food supply, resulting in a situation in which growth in demand continues to outstrip growth in supply. The supply side factors include lower levels of cereal stocks by world's major cereals producers, which contribute to higher price volatility, production shortfalls due to bad weather, and soaring petroleum prices, which are highly correlated with food prices. Demand-side factors include increased demand from the emerging biofuels market and changes in consumption patterns in large emerging economies such as India and China.

A number of studies have been undertaken to understand the impact of food prices on a number of socio-economic indicators. The poor are the first to suffer from a price rise and the last to benefit from a price fall due to poor access to information (Prabu, 2011). The suffering of the poor is largely attributed to their abrupt and unstable income (United Nations, 2010). Changes in food prices affect poverty and inequality through consumption and income channels. On the consumer side, as food prices increase, the monetary cost of achieving a fixed consumption basket increases hence reducing consumer's welfare. However, for the segment of the population whose income depends directly or indirectly on agricultural markets (i.e. self-employed farmers, wage workers in the agricultural sector, and rural land owners) the rise in food prices represents an increase in their monetary income. For each household, the net welfare effect of an increase in food prices will depend on the combination of a loss in purchasing power (consumption effect) and a gain in monetary income (income effect). Clearly, for those households whose income has no linkages with the agricultural markets, for instance urban dwellers, the net welfare effect of an increase in food prices will be entirely determined by the negative consumption effect. The urban poor are the most vulnerable group because they are net food consumers and as food prices increase, they involuntarily respite from eating nutritious and fresh food due to limited income sources (United Nations, 2010).

Studies on the poor and rising prices have been mainly carried out in the Asian countries (Aksoy and Dikmelik, 2008; Reyes, 2010; World Bank, 2010). A study by Muhammad et al., (2010) in the UAE concluded that the severity of prices increases was higher based on ethnicity and income level. Respondents with lower income reported higher severity levels. The cost of food and healthcare was seen to be the most impacted by prices increases. Reyes (2010) points that poor household's coping strategies differ from those of the non-poor households. When food prices go up, poor households reduce food consumption and substitute with cheaper products, while the non-poor reduce expenditure on durables and not really on food. Rural poor are found to have more options; as an example they can resort to medicinal plants and herbs for medication, while the poor in the urban areas can only resort to cheaper generic brands. The International Monetary Fund (IMF) (2011:1) suggests that the poor and the low income have to grow some vegetables as a hedge against price increases. At a national policy level, Aaron and Kingdon (2007:2) argue that the suffering by the poor during inflation times can only be ameliorated by an increase in government expenditure and investment. Given that poor and vulnerable households spend a large proportion of their income on basic foodstuffs, higher food prices erode their disposable income.

This study attempts to provide quantitative evidence at a micro level by analysing the perceptions of urban households in a South African township on the impact of rising food prices. In South Africa, the term township and location usually refers to the often underdeveloped urban living areas that, from the late 19th century until the end of apartheid, were reserved for non-whites, principally Black and Coloureds. They were usually built on the periphery of towns and cities. In the townships, households are caught in poverty trap from which they are unlikely to escape without government help (Estelle, 2003). A random sample of households was surveyed in a township called Bophelong (about 70km south of Johannesburg). Previous studies have found seemingly high poverty levels in the area; where 67% of the households were found to be living below their poverty lines in 2003 (Slabbert, 2003). A study by Sekhampu (2004) reported that 62% of the households were poor. A similar study by Slabbert (2009) revealed increasing levels of poverty where 69% of the sampled population in Bophelong was found to be poor. A logistic regression model was used to determine the socio-economic factors affecting the reported impact of high food prices.

The article is organized as follows. The next section will provide a brief historical overview of inflation changes in South Africa. The methodology followed will then be explained. Following that will be the main results and discussion based on the analysis. The last section provides the conclusion on the findings of the study.

2. Recent inflation changes in South Africa

Rising food prices reduce the level of disposable income available for consumers to spend on other goods, and add to the strain experienced by consumers. Inflation in South Africa has been unstable even long before the democratic government that took over in 1994. South Africa had a relatively low inflation rate, averaging 2.5 per cent in the 1960s. The rate subsequently accelerated, entering the double-digit range in 1973, making the average inflation rate in the 1970s to rise to 10.3%. During the late 1980s, South Africa's inflation rate did not decline. Inflation reached a high of 18.6% in 1986, forcing a depreciation of the rand, and it continued in double-digit amounts after that. Inflation continued to erode economic strength in the early 1990s, but declined to 9.1% in 1994. Inflation increased in early 1995 under pressure from new social spending, but declined to 8.7% by the end of the year. The lower rate of inflation resulted in part from a decline in food prices, the relative stability of the rand, and the lowering of import tariffs. Inflationary pressures persisted in the increase in credit purchases and strong labour demands (Byrnes, 1996).

Figure 1 show the year on year headline inflation rate and the food and non-alcoholic beverages inflation rate since October 2010. Following a steady downward movement beginning in late 2008, local food prices started an uptrend in mid-2010. Food price inflation in March 2009 was the largest contributor to overall CPI inflation. Headline CPI increased by 6 % between October 2010 and October 2011. Food and non-alcoholic beverages inflation increased by 10.6 % between October 2010 and October 2011; the highest level since May 2009. The annual increase in food and non-alcoholic beverages inflation was largely driven by the annual increases in oils and fats (22.6 %), sugar (14.9 %), meat (14.6 %) and vegetables (11.8 %). The prices of processed food products increased by 10.3 % from October 2010 to October 201, while the price of unprocessed food products increased by 11.5 % over the same period. Headline inflation has also shown an increasing trend during this period, from 3.4 % in October 2010 to 6 % in October 2011. The headline inflation has remained in the 6% range for the first quarter of 2012. In contrast, food and non-alcoholic beverages inflation ranged from 11.1% in December 2011 to 8.6% for February 2012. The decrease has been attributed to slowing consumer demand as a result of the instability in some of the country's major trading partners, especially Europe. (Stats SA, 2011; Stats SA, 2012).

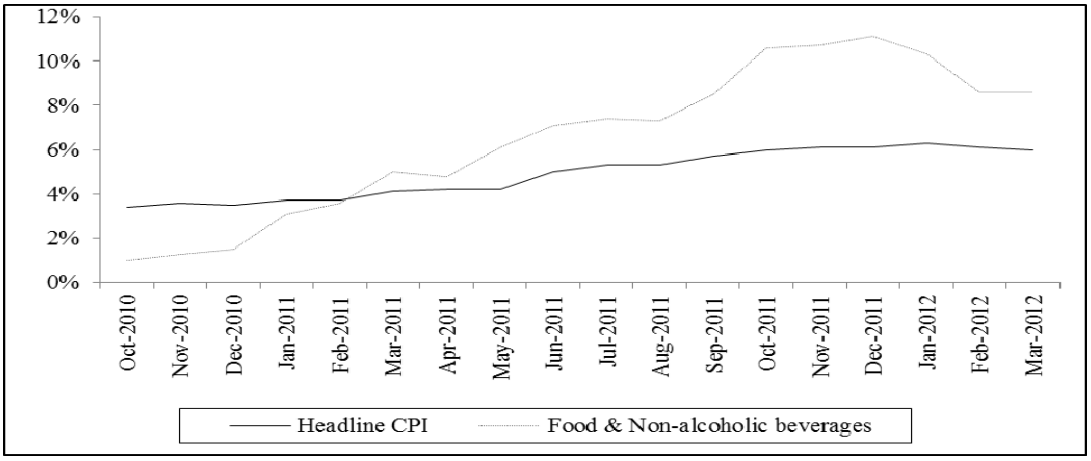

Figure 1. Headline CPI and food and non-alcoholic beverages CPI for 2010 – 2012 (year-on-year)

3. Research methodology

The data for this study was collected in Bophelong during March 2012. A total of 300 questionnaires were randomly administered in the area through face to face interviews. The survey questionnaire was tested before its distribution and necessary adjustments were made. The questionnaire included information on demographics, respondents' opinion on prices increase, impact of prices increase, and strategies to deal with increase in food prices. Several statistical methods were used to analyse the data using SPSS. A logistic regression model was used to determine the socio-economic factors affecting the reported impact of high food prices on the households in Bophelong Township. The households are classified as impacted or not impacted. Predictor variables are a set of demographic and socioeconomic variables. The choice of the regression model was based on the characteristics of the dependent variable. The impact of high food prices was measured using a scale of 0 and 1, where 1=Impacted and 0=Not impacted. The regression model was estimated as follows:

$$Yt = \beta' Xt + \varepsilon t. \quad (1)$$

Where Yt is unobserved, Xt is vector of explanatory variables, and β is the vector of unknown parameters; and εt is the independently and identically normally distributed error term. The description of dependent and explanatory variables is shown in Table 1. The data were analyzed using the Statistical Package for the Social Sciences (SPSS Version 20.0 for Windows).

Table 1. List of the variables and their description

Dependent variable	
Impact status	Reported impact by household (0= not impacted, 1=impacted)
Explanatory variables	
AGE_Head	Age of the Head of the Household in Years
HH_Income	Household income in Rands
HH_Size	Number of household members
EDUC_Head	Years of Schooling Head of the Household
ES_Head	Head of the Household Employment Status (1 = Employed, 0 =No)
G_Head	Head of the Household Gender (1 =Female, 0 =Male)
MS_Head	Head of the Household Marital Status (1 =Married, 0 =Not married)
Lab_Force	No. of Potential Income Earners in the Household

4. Findings and discussion

4.1 The demographic characteristics of the sample

The sample data was based on responses from the head of the household. The descriptive statistics for the sampled population is given in table 2. The results showed that the youngest head of household was 18 years, with the oldest at 90 years old. There were also greater variations in household income, with the lowest household income recorded at R20 ($2.50) per month and the highest earning household had an income of R12 000 ($1500). The results also showed that 46.2% of households were headed by females (G_Head). The average number of years of schooling (EDUC_Head) was 6.63 years, which equate to primary schooling education. About 8.3% of households head had no formal education. The majority of households heads were married (58.2%). The variable for Labour force (Lab_Force) measured the number of people per household who are of working age and are able to work. The average labour force was calculated at 2 members per household.

Table 2. Comparison of the demographic statistics of the respondents

	N	Minimum	Maximum	Mean	Std. Dev.
HH_Income	300	20	12000	1590.98	1973.066
HH_Size	300	1	10	3.97	1.831
AGE_Head	300	18	90	50.81	15.484
EDUC_Head	300	0	66	6.63	4.194
ES_Head	300	0	1	.31	.462
MS_Head	300	0	1	.29	.456
G_Head	300	0	1	.69	.465
Lab_Force	300	0	7	2.27	1.062

4.2 Impact of rising food prices on households

Several questions were used to determine the effect of increase in food prices on households in Bophelong. The respondents were asked if they have enough income to meet their daily needs. Table 3 shows that 75.4% of all households said that they do not have enough income to meet their daily needs. The majority of households (57.5%) reported that they cannot be able to have the normal three meals a day, resorting to skipping a meal. The respondents were also asked whether they borrow food from neighbours for sustenance; 67.1% of all households answered yes. These households reported that they borrow basic items like sugar and salt, and in most cases are not expected to return the food. On the question of whether they have been impacted by recent food prices increases; 82.7% of all respondents reported that they were impacted, with 17.3% reporting no impact. The respondents who reported that they impacted by rising food prices were then asked to rate the severity level and were given the choices of somehow, moderate and severely. Fifty eight per cent answered that they were severely affected, with 17% reporting moderate impact and 8% said that the impact was minimal (somehow).

Table 3. Effect of recent prices increases on households in Bophelong

Do you have enough income to meet your daily needs?	Yes	24.6%
	No	75.4%
Do you normally have three meals a day?	Yes	42.5%
	No	57.5%
Do your neighbours lend you food?	Yes	67.1%
	No	32.9%
Has there been days in the last three months you did not have food?	Yes	60%
	No	40%
Have you been impacted by the recent price increases?	Yes	82.7%
	No	17.3%

The study also collected opinions on the impact of price increases in general. The respondents were asked to indicate the categories of expenditure where they were affected by rising prices in general. Table 4 shows the results of the descriptive statistics for different reported categories. The households reported significant increase in the overall cost of living. The most effect was observed for electricity (mean value of 1.1495), followed by commuting (1.4751) and food (1.5333). Other categories considered included education, healthcare and housing. The households reported that these factors are provided freely by the government and therefore not impacted by their price increases.

Table 4. Mean increase of cost of important categories in the last 12 months

	N	Minimum	Maximum	Mean	Std. Dev.
Electricity	300	1.00	4.00	1.1495	.51079
Food	300	1.00	4.00	1.5333	.68590
Commuting	300	1.00	4.00	1.4751	.80636
Overall cost of living	300	1.00	4.00	1.2558	.59246

4.3 Factors affecting the reported impact of rising prices

The results of the logistic regression on the factors that affect the reported impact of increases in food prices are shown in table 5. The table shows the logistic regression results, Wald test and the odd ratio for each of the explanatory variables. The results of the survey show that employment status (ES_Head), marital status (MS_Head) and the gender of the household head (G_Head) are significant in explaining the variations in reported impact of increases in food prices on households in Bophelong. Households with employed heads reported lower impact of food prices. Married household heads also reported lower severity levels. Of interest was that female-headed households reported that they were more impacted by food prices, compared to male-headed households. The sign for the coefficient for the gender of the household head was positive.

There was no significant difference in households responses based on the age of the household head (Age_Head), the educational level of the head (Educ_Head), household income (HH_Income), household size (HH_Size) and the number of people per household who can work (Lab_Force). These factors were not significant in explaining the variations in the reported impact.

Table 6. Logistic Regression on the factors that impact reported impact of high prices

	B	S.E.	Wald	df	p	Odd Ratio	95% C.I. for Odds Ratio	
							Lower	Upper
HH_Income	0.000	0.000	1.623	1	0.203	1.000	1.000	1.000
HH_Size	0.014	0.106	0.018	1	0.894	1.014	0.824	1.249
AGE_Head	-0.027	0.016	2.729	1	0.099	0.973	0.942	1.005
EDUC_Head	0.142	0.082	2.997	1	0.083	1.152	0.981	1.352
ES_Head	-1.571	0.525	8.962	1	0.003	0.208	0.074	0.581
MS_Head	-1.091	0.410	7.090	1	0.008	.336	0.150	0.750
G_Head	1.741	0.462	14.172	1	0.000	5.702	2.304	14.114
Lab_Force	-0.086	0.175	0.242	1	0.623	0.918	0.651	1.293
Constant	2.735	1.153	5.624	1	0.018	15.411		

For selecting a good model, a number of tools for model adequacy can be employed. The Hosmer-Lameshow goodness of fit statistic shows the possible deviation from the underlying fitted distribution. The percentage of correct predictions made after fitting the model on the observed data is another way to assess its applicability. Moreover, the high McFadden

R2 and high percentage of correct predictions leads to the selection of a model. The model containing all explanatory variables was significant χ^2 (8 N= 300) = 89.80 P < 0.001, indicating that the model was able to distinguish between the impacted and not impacted households. The model as a whole explained 25.9% (Cox and Snell R Squared) and 42.9% (Nagelkerke R Square) of the variations in the reported impact of rising food prices, and correctly classified 89% of all cases.

5. Concluding remarks

The aim of the study reported here was to analyse the impact of rising food prices on households in a low income township of Bophelong. A logistic regression equation was estimated to determine the factors influencing the reported impact of food prices. A random sample of 300 households in Bophelong was analysed, with the reported impact as the dependent variable and a number of socio-economic characteristics as explanatory variables. The results of the study showed that various household factors are important in explaining the reported impact of food prices. There was reported significant increase in the cost of electricity and commuting. The overall cost of living was also reportedly higher.

The regression results showed that the employment status, marital status and the gender of the household head are important in explaining the variations in the reported impact of food prices. Married and employed household heads reported lower severity levels. Female-headed households reported higher severity levels compared to male-headed households. The results of this study can help policy makers understand the social impact of high food prices on urban townships. The possibility of providing food vouchers and other measures to alleviate the impact of food prices on township dwellers can be a great relief. There is a need to further investigate the possibility of supporting households to produce more of their food.

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