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Analyses of Relative Prices of Inputs and Staples Vis-à-vis Prices Volatility in 2004-05

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Abstract: This study tested the hypothesis that prices` volatility of 2004 and 2005 could limit cropping intensifications leading to reduced availability of crop residues and grains for ruminants` nutrition. The major catalyst of the volatility is refined fuels and oils prices that rose by 37.00% during the period. Prices data from Kano, Bauchi, Oyo, FCT, Adamawa, Cross-Rivers, Abia, Imo and Katsina as published by NAMIS were used. These states, supplied improved maize, sorghum and rice seeds and fertilizers to their farmers with subsidies. Three groups: seeds, as inputs, fertilizers and commodities` prices were analysed and relative and cumulative indices calculated for it. Results showed the following subsidy levels: 7.00, 4.00 and 8.00% in Bauchi, Niger and Katsina States, respectively for seeds and 2.00 and 40.00 in Bauchi and FCT for fertilizers. And for others, price rises of between 2.00 and 11.00%. As for food staples, highest price rise was in Abia at 78.00 and the lowest in Bauchi at 6.00%. States with staple prices higher than inflation of 10.00-15.00% (2004-2005) were Kano, Oyo, Abia, Niger and Katsina implying that relative erosion of disposable incomes of farmers was not universal and relatively, were dampened by higher commodity prices. The hypothesis was rejected, as it is plausible to assume that if prevailing subsidies continued, cropping intensifications would not be dampened. Subsidizing and providing labour saving devices and creating clusters farming operations supports to provide it would enhance productivity.

Key words: Relative price, price volatility

INTRODUCTION

Costs centres of inputs and values added to it and its outputs (utilities of time, place, form and price) determine prices in all production and marketing models such as in perfect and imperfect competition models. There are four conditions for perfect competition that are not in imperfect competition. In the first model, outputs are homogenous and consumers are assumed to be identical from the point of sellers (no discriminations). The second embodies many producers as it is in the agricultural sector. This is followed by relatively reliable pricing information known by both producers and sellers. The final one is free entry and exit. These conditions are not met in imperfect competition such as it is in monopoly and monopsony-few sellers and buyers-Henderson and Quandt[1].

In both market models, costs could vary for example, in Nigeria, costs of funds, foreign exchange (FOREX) and fuels and oils (or triple Fs) are the catalysts of rising prices and thereby escalating costs centres of producers, marketers and consumers. This has remained the situation since the introduction of Structural Adjustment Programme (SA) in September 1986. It leads to subtle but continuous devaluation of the Naira vis-à-vis the USA-Dollar. This in turn lead to escalating prices of all inputs and services required for rational production, transportation, costs of services, energy and communication and inputs with relatively high import[2].

The volatility of prices assumed a newer dimension since the inception of the present administration in 1999. It started with the upward review of wages and salaries that were more than quadrupled. Thus, labour as a cost centre rose leading to partial or complete transfer of its burdens to the consumer. This was followed by government policy on subsidy on refined fuels and oils that lead to escalation of transportation costs as vehicles use diesel or petrol. The price indices of petrol using 1999 as the base year are 170 and 330. That is to say petrol prices rose by 70.00 and 230.00% between 1999and 2003 and 1999 and 2005. Between 2004 and 2005, it rose by 42.00% officially.

THEORETICAL AND CONCEPTUAL ISSUES

It is rational to assume that with relatively, constant disposable incomes, rising prices could affect the levels of effective demand that will in turn force producers to reduce supply. In order to measure the relative changes in prices from one period (base) to the other (current), price indices are calculated. This is explained succinctly by Loretto[3] as:

A price index is a measure that shows how a set of prices has changed between time periods. Prices are

aggregated together in a series of calculations that can essentially be divided into two different parts: Initial (or elementary) aggregation where individual prices are grouped together and higher level aggregation.

There are six methods for explaining these situations. Loretto[3] elucidations are used and summarised below. Some formula on these are attached on the appendix. The first is Simple Aggregate Unweighted Index that is calculated by taking a list of commodities, finding the total cost of the items on the list for the two periods, calculating the two movements between the two and expressing it as an index number. The second one is Laspeyres Index. This is the most commonly used index formula that measures the change in cost of purchasing the same basket of goods and services in the current period as was purchased in a specified base period. The prices are weighted by quantities in the base period. The third type is Paasche Index that compares the cost of purchasing the current basket of goods and services with the costs of purchasing the same basket in an earlier period. The prices are weighted by the quantities of the current period. This means that each time the index is calculated, the weights are different. Thus, while Laspeyre overstates rises in prices, Paasche does the same for quantities purchased. There are other four methods and are: The Fisher Ideal Index. Marshall-Edgeworth and Torqvist formulae and all attempts to arrive at the ideal index designed to avoid the inherent differences in the Laspeyres and Paasche indexes. The Fisher Ideal index is the geometric means of Laspeyres and Paasche indexes. It requires the same data as a Paasche index, so it is generally impracticable to use if a timely indicator of price change is required. The Marshall-Edgeworth Index uses the arithmetic mean of the quantities purchased in the base and current periods as weights. Like the Fisher Ideal index it is impracticable to use as a timely indicator of price change because it requires the use of quantities purchased in the current period. The last one, Torqvist Index and other Log-Change Index numbers are measures of relative change, which are usually based on ratios. Log-change index numbers like Torqvist are based on the natural logarithms of those ratios. The Tornqvist index is not often used as it requires the use of quantities purchased in the current period. The first method showing relative price movements on item-by-item basis and its cumulative relative (average of the items) prices were used.

MATERIALS AND METHODS

The sole objective of this exercise is to reject or accept this hypothesis:

That prices` escalation of some inputs and commodities could dampen productivity growth and thus availability of crop residues and grains needed for ruminant nutrition

If the hypothesis is accepted, then, it would be postulated that productivity of ruminants (beef, mutton, goat meat, milk, hides, skins and bones) would be declining If it is rejected, it would be postulated that the inherent subsidy levels on main agricultural inputs are allowing the obverse to hold. For relative and cumulative price changes, figures for items with subsidy are indicated with negative signs. To find its leels, it should be subtracted from 100. The simple aggregate unweighted index method was used because data available for base and current years were for prices only[3,4]. This is published by National Agricultural Marketing and Inputs Supplies[5].

RESULTS AND DISCUSSION

The results of this study are shown in the three sections of Table 1. The first section shows the simple and cumulative price relatives for improved variety of seeds distributed by the three tiers of government in Nigeria. These are maize, sorghum and rice. Base and Current Years are 2004 and 2005 because of the massive escalation of prices that prevailed. Simple price relatives show that Bauchi State was the only State with across the board subsidy levels (3.00-14.00%) between the base and current years for each of the inputs. However and in It is followed by Katsina and Oyo States. However, commonality in subsidy was only in the case of rice. In general prices rose by between 4.00 and 16.00% with the highest in Imo State. There was no change for Cross Rivers State while for the baskets of these inputs, its prices dropped in FCT, Niger and Katsina States.

Table 1 shows the situations for the categories of fertilizers supplied. Highest subsidy levels were in FCT and Cross Rivers States. Those States that did not indicate any subsidies are Kano, Oyo, Imo and Katsina. However, there were very moderate price rises in the first two (2.00-3.00%) but relatively high in Imo and Katsina States. Highest price rise was Imo and Katsina States (19.00 and 11.00%, respectively). In terms of cumulative prices relatives (for a basket of inputs-or all of it), there was a relative fall in price by 2.00 and 6.00% in Bauchi and Adamawa States. Apart from Katsina and Imo, it was moderate in others.

Similar exercise was effected on the price per kilogram of commodities-staples-and shown in the third section. Five commodities: maize, sorghum, Rice (local), Yam and Cassava were used. The changes in prices were not global for example, the price of local rice fell by 9.00% in Kano but in Bauchi, it was for Yam at 10.00%. For Oyo, prices generally rose and for yam and cassava, 84.00 and 46.00%, respectively. In the FCT, there was fall in the price of cassava by 36.00% and moderate rises for others.

Table 1: Simple and cumulative price relatives

	(Calculated index numbers)									
Inputs (Seeds/Kg.)	Kano	Bauchi	Oyo	FCT	Adamawa	C'Rivers	Abia	NigerImo	Katsina	Katsina
Maize (Hybrid)	1.04	-0.97	-0.74	1.00	1.04	1.00	1.01	1.06	1.06	1.08
Sorghum	1.05	-0.95	1.50	1.00	-0.93	1.00	1.06	1.00	1.39	-0.75
Rice	1.06	-0.86	-0.92	-0.88	1.15	1.00	1.09	-0.82	1.05	-0.91
Cumulative relatives	1.05	-0.93	1.05	0.96	1.04	1.00	1.05	96.00	1.16	0.91
Fertilizers (50 kg. Bag) (50 kg. Bag)										
NPK 15-15-15	1.03	-0.89	1.00	-0.54	1.02	-0.98	1.06	1.05	1.26	1.17
NPK 20-10-10	1.00	-0.98	1.08	-0.64	-0.94	-1.02	-0.96	-1.08	1.15	1.09
Urea	1.03	1.07	1.00	-0.64	-0.88	-1.00	1.00	1.00	1.15	1.08
Cumulative Relatives	1.02	0.98	1.03	-0.60	0.94	-1.00	1.04	1.38	1.19	1.11
Commodities (Kg.)										
Maize	1.04	1.18	1.16	1.07	1.00	1.00	1.41	1.11	1.33	-0.65
Sorghum	1.75	1.18	1.14	1.06	1.01	1.12	1.16	-0.97	1.50	1.50
Rice (local)	-0.91	1.05	1.18	1.13	1.14	-0.72	-0.96	-0.66	1.00	1.20
Yam	1.61	-0.90	1.84	1.00	-0.86	-0.63	1.80	1.32	1.14	2.27
Cassava	1.29	1.00	1.46	-0.64	1.37	1.60	3.57	2.40	1.62	1.62
Cumulative Relatives	1.32	1.06	1.36	0.98	1.08	1.02	1.78	1.29	1.05	1.45

Notes: Base year is 2004 due to high price escalations of 2004 and 2005 Source: NAMIS: Nigeria Agricultural Marketing News Bulletin,[5]

In Adamawa, the price of Yam declined by 14.00%. In Cross Rivers State, it was local Rice and Yam that recorded fall of 28.00 and 37.00%, respectively. In Abia State, only local Rice has a fall in price by 4.00%. There was an escalation in the prices of cassava 257.00% arising from the massive requirements of industries requiring cassava located in Nnewi and Onitsha and possibly, leading to rise in the price of Yam at 80.00%. In Niger State, the prices of Sorghum and local Rice fell by 3.00 and 34.00% while those of Yam and Cassava rose by 32.00 and 257.00%, respectively. A relatively similar situation prevailed in Imo and Katsina. The commonalities are that yam and cassava prices rose astronomically. Although it could be assumed that there are convergence in the consumption of staples there are preferences and with the Presidential Initiatives on Cassava requiring massive industrial and bakeries requirements for cassava.

In terms of Relative Cumulative prices, it could be observed from the third section of the Table that Abia, Katsina, Oyo, Niger and Kano recorded higher price rises of 78.00, 45.00, 36.00, 29.00 and 32.00%, respectively. However, pries for these commodities (basket of goods) fell by 2.00% in FCT.

CONCLUSIONS

It is being concluded that the various subsidy levels on inputs prevailed upon price escalations of outputs. As long as it is maintained, cropping intensifications may not be affected. Hence, the positive hypothesis is rejected. The industrial requirements for these staples would be on the rise as capacity utilization of manufacturing outfits are improving. What would be needed is the intensification of the propagation of labour saving devices through direct and indirect supports by the three tiers of government. While it is known that it may lead to costs centres that could be avoided by farmers, Local Government Authorities should initiate Cluster Farming Operations Support (CFOS) whereby farmers should be grouped contiguously and most mechanized labour-saving activities carried out with tractors or with manual or animal source of motive power (i.e., not engines or electrically driven). This will make it possible for adoption of improved husbandry systems to prevail and thereby increases in production and productivity. The real and perceived erosion of disposable income was not calculated but it is plausible to suggest that inflationary pressures have acted upon it for all categories of producers and consumers.

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