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Changing Rural Households' Expenditures and Coping Strategies under Deregulated Fuel Price Regime in Nigeria: A Micro-Evidence from Ikene Local Government

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Abstract: Deregulation of the Nigeria's oil sector has resulted into increase in pump prices of petroleum products. Consequently, purchasing power of income has reduced as prices of goods and commodities increased. This study analyzed the changes in expenses incurred by households on energy products, food and transportation and coping strategies used. Data were collected with simple random sampling and analyzed using descriptive statistics and z-test for statistical significance. Results showed that while expenses on kerosene significantly increased ($p<0.01$) the number of liters of kerosene significantly decreased ($p<0.01$). Expenses on most carbohydrate foods significantly increased in absolute term ($p<0.05$) while there were significant reductions in consumption of some protein and vitamin rich foods ($p<0.05$). Coping strategy of fetching fuel wood was used by 29.63% while 21.30% buy food on credit. It was recommended that to minimize adverse nutritional and environmental effects of fuel price hike, government should assist in boosting economic activities of rural people and ensuring that research into safe utilization of solar energy for cooking is encouraged.

Key words: Coping strategies, fuel wood, solar energy, fuel price hike, deregulation

INTRODUCTION

In Nigeria, petroleum products constitute part of the most widely used and easily accessible sources of power for domestic and industrial users. However, in the past decade or so, prices of petroleum products (kerosene, petroleum, diesel and cooking gas) have not been stable. Specifically, the latest upward review of the pump prices of petroleum products in September 2005 (N50.00 to N65.00 L^{-1} for petrol, N64.00 to N78.00 L^{-1} for diesel, N45.00 to N58.00 l^{-1} for kerosene), made it the fifteenth time that such increases will be had since the first uniform pricing was introduced on October 1, 1973. Against all oppositions, government argued that the bulk of fuel used in Nigeria was imported and subsidies were aiding illegal practices of cross border smugglers. Hence, the deregulation policy must be implemented with complete removal of the N250 billion annual subsidies on fuel importation. With this, local pump prices of all categories of fuel have increased to reflect what obtain in international markets[1].

Without sufficient means of coping, fuel price hike adversely affects purchasing power of domestic users, such that welfare level declines. Therefore, some coping strategies, which are behaviors or practices employed to maintain an existing level of welfare are automatically devised. These are implicit principles that guide house-hold members when seeking survival strategies to cope with income shocks or adverse price effects[2]. Essentially, poor households are forced to adopt strategies, which enable them to survive adverse economic conditions without necessarily improving their welfare. Because of low income profile, low or absence of savings and lack of insurance against income shocks and uncertainties in commodity prices, rural people are usually worst affected by policies that affect their production and consumption decisions[3].

A number of studies have illustrated the increasing reliance of the poor on diverse forms of coping and survival strategies[4,5]. Cecelski[6] found that when not enough fuel wood is available, rural people shift to alternative fuels, such as cattle dung, crop residues, coconut husks, rice-hulls, millet stalks, dried herbs etc. Agarwa[7] submitted that in the event of fuel scarcity in some third world countries, rural landlords can gather firewood and crop residues from their own property, while the landless must depend on wood from common lands or may be allowed to gather from other people's land in exchange for their labour. Smil[8] found that hike in fuel prices compels shift from modern energy sources to traditional sources (fuel wood). It was noted that each family had to devote more of its time, labour and household income to searching for and buying fuel wood.

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Dercon[9] reviewed strategies that households and individuals used to avoid consumption shortfalls caused by income risks. Some of these were reduction in quantity and quality of food. Alderman and Paxson[10] found that risk-coping strategies may include self-insurance through precautionary savings, informal group-based risk-sharing and attempts to earn extra income when hardship occurs. Dercon and Krishnan[11] analyzed risk-sharing practice within rural households in Ethiopia. They found that poor households in the southern part of the country were not engaged in complete risk sharing, while women bore the brunt of adverse income shocks.

This study attempts to analyze the changes in households' expenditure and their coping strategies under the deregulated fuel price regime in Nigeria. This effort is important because studies of coping strategies can reveal useful information about people's perceptions of an economic change and priorities for surviving[12]. Also, in most cases, households' coping decisions are clearly reflected in changes in their expenditures. These, if not monitored, may have some long-term nutritional and environmental consequences.

MATERIALS AND METHODS

The area of study is Ilishan-Remo, commonly known as Ilishan, in Ikenne Local Government Area of Ogun State, Nigeria. Ilishan is a fast growing rural community located 60 km from Abeokuta, the capital city of Ogun State. It is located mid-way between Ijebu-Ode and Sagamu. Bordering communities are Iperu, to the north, Ikenne to the west and Ilara to the east.

We used data collected through structured questionnaires that were randomly administered to the households in the community. After obtaining a list of the households, a total of 108 households were randomly sampled. The data were collected some 4 weeks after the fuel price hike. We therefore relied on memory recalls on the expenditure profile of the households before the increases. Because fuel price hike is a sensitive issue in Nigeria, the households painstakingly took time to recollect more accurate answers to the different questions.

Data collected were subjected to both descriptive and statistical analysis. Frequency distribution, percentages, mean and coefficient of variation were used to describe the data, while z-statistics was used to determine statistical difference between the mean values of food and non-food items purchased before and after the fuel price hike. This formula for z-test can be stated as:

$$z = \frac{X_2 - X_1}{\sqrt{\frac{\sigma_2^2}{n_2} - \frac{\sigma_1^2}{n_1}}} \quad (1)$$

RESULTS AND DISCUSSION

Socio-economic profile of respondents: Table 1 shows that 55.56% of the house heads were males, while 83.33% were married. The distribution of the household head ages revealed that 38.89% were between the ages of 35 to 50 years, while 31.48% were between 18 to 34 years. Average age of the house heads is 41.83 years with a standard deviation of 14.09. It could therefore be deduced that there is a good number of able-bodied manpower among the household heads.

On education, 15.74% of the respondents had no formal education, while just 8.33% had tertiary education. Majority of the respondents were educated up to secondary school level (47.22%), while 28.70% had only primary education. Majority (37.04%) of the household heads were primarily into farming with about 25.93% working primarily as traders and 14.81% as civil servants. Artisan was the occupational category with the lowest frequency (7.41%). Furthermore, households with 3-5 persons have the highest frequency in the studied population (40.74%), closely followed by 6-8 persons

Table 1: Descriptive analysis of some socio-economic characteristics of the respondents

Socio-economic factor	Frequency	Percentage
Sex		
Male	60	55.56
Female	48	44.44
Age		
18-34	34	31.48
35-50	42	38.89
51-64	23	21.3
Above 64	9	8.33
Marital status		
Single	15	13.89
Married	90	83.33
Divorced	1	0.93
Widow	2	1.85
Educational level		
No formal education	17	15.74
Primary education	31	28.7
Secondary education	51	47.22
Tertiary education	9	8.33
Occupation		
Farmer	40	37.04
Trader	28	25.93
Artisan	8	7.41
Civil Servant	19	14.81
Others	19	14.81
Household size		
2-Jan	13	12.04
5-Mar	44	40.74
8-Jun	43	39.81
9 and above	8	7.41

Table 2: Descriptive statistics of households' expenditures on some items before and after the fuel price hike

	Before		After			
Items categories	Mean	Coef of variation	Mean	Coef of variation	z-statistics	% Change
Energy generating items						
Kerosene	859.03	183.54	987.73	164.78	4.994**	14.98
Kerosene (litre)	18.82	179.95	16.31	145.98	-2.117*	-13.34
Fuel wood	268.98	51.6	381.3	58.42	4.818**	41.76
Petrol/diesel	289.81	28.29	339.81	29.94	1.089	17.25
Candle	65.37	58.83	80.19	63.04	2.872**	22.67
Charcoal	4.63	13.67	7.41	13.67	1.421	60.04
Gas	51.85	13.67	74.07	13.67	1.432	42.85
Sawdust	2.04	19.44	2.41	19	1.453	18.14
Palm kernel paste (Ogunso)	4.63	22.76	7.22	23.24	2.226*	55.94
Sawdust B	9.26	16.65	38.89	17.89	1.612	319.98
Food Items						
Cassava (garri)	988.8	108.24	1204.07	132.08	8.165**	21.77
Yam flour	460.28	57.63	563.33	61.6	5.496**	22.39
Rice	1714.72	147.49	1973.89	162.84	8.176**	15.11
Beans	1037.41	94.45	1432.59	66.51	2.308*	38.09
Yams	1592.41	71.11	1417.04	82.46	-2.563*	-11.01
Eggs	596.11	79.34	366.11	68.78	-4.910**	-38.58
Meat	1900.56	111.15	1519.44	116.89	-4.121**	-20.05
Fish	929.63	101.31	957.22	103.67	0.946	2.97
Vegetable	391.48	84.59	521.67	107.14	6.227**	33.26
Fruit	404.26	73.21	266.85	63.19	-5.721**	-33.99
Bread	606.11	93.98	682.59	101.5	2.235*	12.62
Milk	426.39	70.32	364.63	63.18	-3.297**	-14.48
Palm oil	617.5	154.82	711.48	164.17	9.704**	15.22
Vegetable oil	544.07	106.58	574.63	108.02	1.814	5.62
Plantain	280.93	51.57	228.52	49.89	-2.389*	-18.66
Transportation						
Commercial transportation	622.59	73.81	875.19	75.2	6.804**	40.57
Personal transportation	75	17.77	114.81	20.98	1.589	53.08

(39.81). The smallest (1-2 persons) and the largest (above 9 persons) were 12.04 and 7.41%, respectively. Average household size is 5.24 with standard deviation of 2.398.

Changes in households' expenditures: Table 2 shows that while expenses on kerosene significantly increased by 14.98% ($p<0.01$), actual liters of kerosene purchased significantly decreased by 13.34% ($p<0.05$). This was due to price hike that made households spend more and buy less. It should be noted that official price of kerosene increased by 28.89%. However, households, especially those in the rural areas may face as much as 40% price increase due to other problems cumulating into serious market inefficiency. Also, amounts of money spent on fuel wood significantly increased by 41.76% ($p<0.01$). This is as a result of increase in the price of kerosene. It should be submitted that these are not all out-of-pocket expenses, because households were asked to input cost on those fuel wood collected from farms. Clearly, it was found that more households are now collecting fuel wood for cooking from farms and the tendency to aggravate deforestation cannot be doubted. Expenses on candle significantly increased by 22.67% ($p<0.01$). Also, expenses on palm kernel paste significantly increased by 55.94% ($p<0.05$).

Expenses of the households on processed cassava (garri) and yam flour significantly increased by 21.77 and 22.39%, respectively ($p<0.01$). Similarly, amounts of money spent on rice and beans significantly increased by 15.11 ($p<0.01$) and 38.09% ($p<0.05$), respectively. However, expenses on food items like yam, eggs, meats, fruits, milk and plantains significantly decreased between the two periods ($p<0.05$). This was as a result of inability of the households to meet all previous expenses. In this case, expenses on these food items that contain more of protein and vitamins reduced so that enough of other carbohydrate foods required by the house members can be purchased. Finally, expenses of the households on transportation significantly increased ($p<0.01$).

Households' ranking of coping strategies: Table 3 contains the percentage of respondents that ranked some coping strategies first as means for cushioning the effect of fuel price hike on energy utilization, food consumption and ease of transportation. Coping strategies that are energy-related are actions that households take when they do not have enough fuel (kerosene/fuel wood) or money to buy fuel. As shown in the table, 29.63% of the respondents ranked fetching of firewood from the bush first as the coping action they

Table 3: Distribution of households' first rank of coping strategies to survive hike in fuel prices

Coping strategy	Frequency	Percentage
Fuel related coping strategies		
Cooking large quantities of food at once to conserve fuel	26	24.07
Using ogunso or esan to start fuelwood fire	7	6.48
Using rubber plastic or waste nylon to start fire	2	1.85
Fetching firewood from the bush	32	29.63
Borrow money t buy kerosene/firewood	6	5.56
Buy kerosene/firewood on credit	20	18.52
Others	15	13.89
Food related problems		
Rely on less preferred foods	9	8.33
Rely on less expensive foods	21	19.44
Borrow money to buy foodstuff	16	14.81
Borrow foodstuff	4	3.7
Purchase food on credit	23	21.3
Rely on help from relatives	8	7.41
Limit portion at meal time	8	7.41
Ration money to household	2	1.85
Limit your own intake	4	3.7
Reduce number of meals	10	9.26
Others	3	2.78
Transportation related problems		
Trek part of the journey to reduce cost	43	39.81
Trek to almost everywhere	18	16.67
Travel long distances only when it is unavailable	12	11.11
Avoid all long distance journeys	8	7.41
Borrow money to pay for transportation	10	9.26
Fever members of the household travel to reduce cost	9	8.33
Others	8	7.41

take when they do not have sufficient household fuel or money to buy fuel. This could be because most of the household heads in the sampled population are farmers and can easily fetch fuel wood from their farms or nearby bushes. Also, 24.07% of the households cook large quantities of food at once for the whole household in order to conserve fuel, while 18.52% of the respondents borrowed money to buy household fuel. About 5.56% used other materials (esan, oguso) besides kerosene to start fire with firewood.

The table also shows the most highly ranked strategies that households use for coping with food price hike resulting from increase in the prices of petroleum products. It shows that 21.30% of the households were purchasing food on credit. Some households 19.44% relied on less expensive foods while 14.81% were borrowing money to buy foodstuffs. Also, 7.41% rely on less preferred food, while 3.70% indicated that they borrow foodstuffs. Some households 9.26% reduced the number of meals if food was not sufficient or limit portions at meal times.

With respect to coping with transportation related problems, 55.55% of the respondents indicated that they trek on foot for part of or the entire journey to reduce the cost of transportation. Also, 11.11% of the respondents travel long distance only when it is unavoidable, while 10.19% borrow money to pay for transportation and 8.33% will allow representative members of the household to travel when there is no enough money for all members of the household to do so.

CONCLUSION AND RECOMMENDATIONS

This study attempted to determine from a cross-sectional data, the coping strategies rural households are adopting to cope with the rise in price of foods stuffs, household fuel and transportation following the like in the pump price of petroleum products in Ilishan Remo in Ikenne Local Government Area of Ogun State. The policy issues identified from the results of the analysis are hereafter discussed.

Withdrawal of the Federal Government's subsidy on oil has resulted into reduction in the real value of income in rural Nigeria. Therefore, to cushion its effects, residents of the area should be assisted to get some needed farm inputs like fertilizers, hybrid seeds etc. possibly as loan given in kind under the recent efforts by Ogun State Government to generate employment. Also, promotion of entrepreneurial skills in other farming enterprises like animal husbandry and fish farming would lead to job creation and diversification of rural people's incomes.

Also, the household heads indicated that fetching of fuel wood is now a major energy-related coping strategy. This will have adverse effect on the environment through deforestation. The government should subsidize kerosene (a preferred substitute of fuel wood) sufficiently enough to discourage indiscriminate felling of trees for fuel wood and for making charcoal. Research into the use of solar energy for domestic power generation should be promoted.

This study found that the rural households in the study area are hard hit by hike in food prices that resulted from hike in petroleum product prices. This resulted in reduction in expenses on protein and vitamin rich foods. Government should therefore ensure that food production is boosted in order to ensure all-year-round availability and affordability. Road networks, whether between rural and urban, rural and rural, or urban and urban areas should be well maintained. This will assist in promoting efficient agricultural marketing and increase the number of vehicles plying a road for reduction in transportation cost. Transportation related problem can also be reduced if local areas are well connected to mobile phones. Inter-village or inter-city transportation is bound to reduce if rural people can communicate on the phones.

The type and frequency of coping strategies adopted by rural households in order to cope with the difficult situation of providing enough food, adequate transport and sufficient household fuels is an important determinant of the level of economic hardship faced by rural households. It is therefore important that the findings of this study be considered with respect to finding ways to alleviate the sufferings of rural households and improving the quality of life of rural dwellers.

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