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Effects of Rising Food and Oil Prices on Rural Households in Ghana: A Case Study of Selected Communities in the Dangme West District Using the CBMS Approach

Felix A. Asante, Cynthia A. Tagoe, and Alfred A. Boakye
University of Ghana, Legon

This study sought to examine the effects of rising food and oil prices on rural households in Ghana in relation to their food, access to healthcare and education, changes in their work situations, their financial management practices, and their recreational and leisure practices using three selected communities in the Dangme West district of the Greater Accra region – Dodowa, Ningo, and Prampram. A total of 300 households were interviewed. The households were divided concerning the issue of whether their standard of living was better, worse or had remained the same. In general, households that indicated they were worse off currently than they were last year slightly outnumbered those who had seen improvements in their lives.

Keywords: Community-Based Monitoring System (CBMS), commodity prices, price level changes, cost of living

Developments on the global agricultural front in 2007, such as the rising food prices, pose significant threats to Ghana's macroeconomic stability and overall development achievements. Global food prices increased over 50% as a result of the use of crops for bio-fuel, rising cost of production, climate change, and increase in demand as a result of population increase. Petroleum and other fuel price increases were also driving up food prices, particularly because of the high transport costs of low-value high-volume commodities such as staples. The increase in crude oil prices fueled large increases in cost of production (tractor services, fertilizer) and, more importantly, distribution.

These developments on the global scene always have repercussions for individual country and this translates and trickles down eventually to the household. Over the past five years, there have been steady increases in the price of fuel on the global market and because of the importance of fuel in the production, marketing and transportation/haulage of food products and the desire of every producer/farmer to cover their costs, there is inflation and, generally, rising prices. The effects of the increase in the cost of food for a country like Ghana, which relies on food imports to supplement domestic production and consumption, cannot be underestimated since these are felt at all levels of the economy and society.

These effects, however, have mostly been analyzed from the macro level where the figures at the national or country level have been the focus of discussion. But since the individual and, by extension, the household is at the receiving end of all these costs triggered by global happenings, there is the need to also look into the situation at the individual/household level especially because the expenditure on food forms a large proportion of the budget of many poor households, particularly in rural communities in developing countries such as Ghana. With the increase in food expenditure, households will have less money to spend on other things, such as consumer goods, investment in education, health, and their general livelihood.

The Community-Based Monitoring System (CBMS) is a tool designed for assessing impact of programmes and projects in the context of local governance and decentralization. It has indicators that enable an assessment of one's living condition, health, education, and poverty level at the household level. It provides information at the household level for the use of local government units and other organizations working at that level for the purposes of planning program implementation and monitoring. It also utilizes local government unit and community personnel in the process, making it cost-effective and also a tool for capacity-building of local personnel. It is very flexible and allows varied issues to be assessed and monitored. Issues specific to the districts like access to community services and facilities, political/community participation, migration, agriculture and waste management can be monitored through the CBMS approach. With its core indicators and questionnaire, the CBMS approach enables the collection and analysis of data at the district level because it is easily adaptable to the district-specific situation and uses local resources in terms of community enumerators in the assessment. This study using the CBMS approach assesses the effects of rising food and oil prices on households in Ghana using the rural district of Dangme West as a case study.

The Dangme West District is the largest district by land area in the Greater Accra Region of Ghana. Geographically, the district is located in the southeastern part of Ghana and shares boundaries with Yilo and Manya Krobo districts in the northwest, Akwapim North district in the west, North Tongu on the northeast, Tema and Adenta municipalities in the southwest, and Dangme East district in the east. The Volta River and the Atlantic Ocean wash the northeastern and southern portions of the district, respectively. The district has a total land area of about 1,442 square kilometers accounting for about 42% of the region's land area and accommodates 98,809 inhabitants, accounting for 3.4% and 3.3% of the regional and country's population in 2000 respectively. About 48% of the population is male and 51.8% female. The dependency ratio (proportion of the population aged 0-14 and 65+ years old to the economically active population, aged 15-64 years old) is 0.79.

The Dangme West district is more rural than urban with 76% of the population living in rural areas. This is further supported by the dominance of agriculture as the main occupation, accounting for 58.6% of labor force in the district. Trading and fishing account for 22.1% and 6.4% of the labor forces respectively with the latter mostly made up of older people. Though the district capital is located just about 25 kilometers from Accra, the capital of Ghana, poverty in the district is endemic and can be compared with poor districts in other parts of the country. Due to the proximity to the capital and the lack of industry and work for the youth who are not too keen on agriculture and fishing, there is a lot of commuting from towns in the district like Dodowa, Prampram, Dawhenya, and Afienya to Accra for various reasons, including employment.

Dangme West district is one of the hottest and driest parts of the country. Temperatures are appreciably high for most parts of the year with the highest during the main dry season (November to March) and the lowest during the short wet season (June to August). The absolute maximum temperature is 40 degrees Celsius. Mean annual rainfall increases from 762.5 millimeters on the coast to 1,220 millimeters to the north and northeast close to the foothills of Akwapim Range.

The unreliability and dependence of farmers on the rainy season makes farming a vulnerable occupation. Periodic main crop failures are common phenomena even in the better-watered northern parts. The predominant vegetation type found in the district is of the short grass savannah interspersed with shrubs and short trees, a characteristic of the sub-sahelian type. The soils are highly elastic when wet but become hard and compact when dry and then crack vertically from the surface. This renders the soil unsuitable for hand cultivation. The main occupational activity of the economically active population is agriculture (crop farming, livestock. and fishing).

The study seeks to ascertain the effects of rising food and oil prices on rural households in Ghana using the Dangme West District as a case study and specifically to (1) highlight changes over the past year in households' satisfaction of basic needs of food; (2) give insight into any change in the cost involved as households seek to access health and education; (3) assess changes in their work situation and financial management practices over the past year; and (4) discuss the implications for the socio-economic development of household members in the Dangme West District.

STUDY DESIGN AND METHODOLOGY

Having piloted the CBMS in the Dangme West District in 2004/2005, it became the obvious choice in the selection of a study area where the effect of the rising food and oil prices on rural households in Ghana could be studied. The existing structures and cordial relationship with the assembly and, particularly, the staff also informed this selection.

Study Design – The Questionnaire

The Ghana CBMS Price Increases Impact questionnaire was adopted from the Philippines CBMS approach and was revised to suit the Ghanaian conditions. The questionnaire included issues relevant in assessing the effects of the rising food and oil prices on rural households in Ghana such as changes in food consumption and health seeking behaviors, changes over the past year in education and employment situation, communication and transportation, financial management and recreational practices. It kept the core CBMS questions which included questions into household characteristics, education, political participation, employment and health, child mortality, housing and shelter, lighting, water and sanitation, income and livelihood, peace and order, and access to social and community services which formed part of the original CBMS questionnaire used in the pilot study.

Selection of Enumerators and Fieldwork

With the assistance of the District Planning Officer, efforts were made to track some of the enumerators used in the 2004/2005 survey because of their familiarity with the survey but this did not yield much fruit. So a new team was constituted and this was made up of teachers coming from the communities surveyed. A one-day training was organized by the Ghana team for the enumerators. The District Planning Officer was involved in the identification and selection of the local enumerators for the survey.

The three communities of Dodowa, Prampram and Ningo in the Dangme West district which were surveyed in 2004 were revisited. A hundred households from each of the communities totaling 300 were randomly sampled and surveyed in October 2008.

Method of Analysis

All the 300 questionnaires collected from the field were checked, coded, and analyzed using SPSS. Local capacity to analyze the data collected from the field was, however, lacking, which necessitated the task to be carried out by a data entry manager outside the district. Quintiles using household income were constructed. The first quintile represents the poorest and the fifth quintile the richest groups. Thus, as one moves from the first quintile to the fifth quintile, one is moving from the poor to the rich.

OVERVIEW OF THE RISING FOOD AND OIL PRICES

Global Context

One emerging factor behind rising food prices was the high price of energy. Energy and agricultural prices have become increasingly linked. With oil prices at an all-time high in July 2007 and the U.S. government subsidizing farmers to grow crops for energy, U.S. farmers have massively shifted their cultivation towards biofuel feedstocks, especially maize, often at the expense of soybean and wheat cultivation. About 30% of U.S. maize production was to go into ethanol in 2008 rather than into world food and feed markets. High energy prices have also made agricultural production more expensive by raising the cost of mechanical cultivation, and of inputs such as fertilizers and pesticides, as well as of transportation of inputs and outputs (Von Braun, 2008).

Another source of the current price increases is the growing world population's demand for more and different kinds of food. Rapid economic growth in many developing countries has pushed up consumer purchasing power, generated rising demand for food, and shifted food demand away from traditional staples and towards high-value foods such as meat and milk. This dietary shift is leading to increased demand for grains used to feed livestock. Lastly, poor weather has also played a role in the rise of food prices. For example, severe drought in 2007/2008 in Australia, one of the world's largest wheat producers, has cut into global wheat production.

High food prices have radically different effects across countries and population groups. At the country level, countries that are not food exporters will benefit from improved terms of trade, although some of them are missing out on this opportunity by banning exports to protect consumers. Net food importers, however, will struggle to meet domestic food demand. Given that almost all countries in Africa are net importers of cereals, they will be hard hit by rising prices. At household level, surging and volatile food prices hit the poor and food insecure. The few poor households that are net sellers of food will benefit from higher prices.

Adequate nutrition for the population, especially the poor people, is also at risk when they are not shielded from the price increases. Higher food prices lead poor people to limit their food consumption and shift to even less-balanced diets, with harmful effects on health in the short and long run.

Country Context

Total export receipts (f.o.b.) increased by about 11% in 2007 to US$ 4,194.7 million, from US$ 3,726.7 million in 2006. This growth was fuelled by increases in the volume and /or prices of commodities, especially gold and cocoa. Total import receipts (f.o.b.) increased at an even faster rate of 16% in 2007 to US$ 8,073.6 million, from US$ 6,753.7 million in 2006. The growth in imports was due to increases in both the oil and non-oil bill. Trade deficit worsened in 2007, reaching a high of US$ 3,878.9 million, an increase of 21% over the 2006 value of US$ 3,027.0 million.

Total merchandised exports for the first half of 2008 amounted to US$ 2,885.4 million, compared with US$ 2,142.8 million (a growth of 34.7%) for the same period in 2007. Total merchandise imports for the period January to June 2008 amounted to US$ 4,945.6 million, compared with US$ 3,473.6 million for the same period in 2007 (an annual growth of 42.4%).

For the half year of 2008, the merchandise trade deficit is provisionally estimated at US$ 2,060.2 million, compared with a deficit of US$ 1,330.7 million for the same period in 2007. The current account is provisionally estimated to have recorded a deficit of US$ 1,171.3 million (in part due to an increase of US$ 411.0 million in the oil import bill), compared with a deficit of US$ 639.8 million for the same period in 2007.

Domestic Food Prices

Globally, towards the latter part of 2007, food

prices have been an important social, economic, and humanitarian issue. Food prices have economic growth implications and consequently threaten the poverty reduction efforts of developing economies such as Ghana. It is estimated that over 50% of the consumer price index is attributable to food. Thus, food prices have important implications for inflationary pressures.

Despite the unfavorable developments globally, Ghana is still self-sufficient in most of her basic food items, including maize, cassava, yam, and plantain. Ghana still records a deficit in the production of rice, meat, and fish and some quantities of these are usually imported to meet local production.

Average national wholesale prices of grains in 2007 show that while maize, rice, and cowpea prices were above their 2006 levels, those of millet and sorghum were down in price. The reduction in the price of millet and sorghum by 13.6% and 2.6% respectively was in spite of the floods in the Northern and Upper East regions. Indeed, over the past three years, millet and sorghum prices have been following a downward trend. Maize prices increased by more than 12%, from 2006 to 2007, while local rice and cowpea prices rose by more than 5% and nearly 6% respectively.

With the exception of cassava and gari, all prices in the starchy foods category rose in 2007 relative to 2006. The price of plantain went up by over 132% in 2007. Prices of yam and cocoyam also appreciated by 19.3% and 18.6%, respectively.

Among all food categories, vegetables had the most significant rise in price in 2007. The lowest of these price appreciations was dried pepper, gaining only about 2.2% in 2007 relative to 2006. Onion prices went up by about 8.2% over the period. Tomato and groundnut prices, however, increased by as much as 75.7% and 64.5% respectively.

Government's Mitigating Policies

The Government of Ghana, in the face of challenges, especially the rising fuel and food prices as well as the increases in cost of agricultural inputs, sought to mitigate the negative impacts of global food price increases without jeopardizing the potential benefits. The government also engaged the nation on measures to mitigate the effects of rising costs of petroleum products and food in the country. In this light, a task force was constituted by the government to study the situation on a continuous basis so as to recommend such actions as would be necessary from time to time, until stabilization and normalcy was achieved.

Apart from measures taken to cushion the Ghanaian consumer against the rising food costs such as the removal of import tariffs on rice, wheat, yellow corn and vegetable oil, the government intervened to ensure that Ghana's farmers are best positioned to take advantage of emerging opportunities. To ensure that producers in the agricultural sector are well positioned to respond to the challenges and take advantage of emerging opportunities, the government further instituted the following measures:

- Subsidizing fertilizer to reduce farm production costs and ensure the effective distribution to farmers for a good harvest;
- Substitution of cassava flour for wheat flour in bread and pastry products;
- Supporting large-scale cultivation of rice in northern Ghana; and
- Rehabilitation of dams damaged in northern Ghana by the 2007 floods.

In addition, the following proposed interventions did not preclude on-going investments for agricultural development, particularly those that sought to contribute to the achievement of food security and emergency preparedness.

- Investment in mechanization (procurement and distribution of tractors, implements, shellers, rice mills, power tillers, etc.);
- Expanding irrigation facilities (i.e. dams and dugouts, pumping water from rivers and streams, sinking of boreholes, etc.);
- Procurement of sheep and goats under the Livestock Development Project;
- Strengthening and revolutionizing the agricultural extension service;

- Providing post-harvest infrastructure including storage and processing infrastructure;
- Increasing the provision of mechanization services throughout the value chain (land preparation through to harvesting and processing); and
- Supporting farmers with soft loans to increase staple food production.

Other interventions that were put in place by the government include the following:

- Removal of the excise duty and debt recovery levy on premix oil to assist fishing communities;
- Reduction in the excise duty and debt recovery levy on gas oil, kerosene and Marine Gas Oil;
- Increase in government's support for the production cost of electricity to bring relief to domestic consumers;
- Government in consultation with its development partners also decided to import and stock-pile supplies of wheat and rice to enhance food security;
- The Ministry of Food and Agriculture (MoFA) also stepped up the supply of tractors at subsidized rates to farmers and also ensured accelerated provision of small irrigation dams, and through its extension services, supervised the supply of improved seeds and ensured adherence to best practices among farmers;
- Finally, the Millennium Development Authority was also directed to accelerate the pace of implementation of the Millennium Challenge Account Programme in all selected districts.

CHARACTERISTICS OF RESPONDENTS IN STUDY AREA

The study took place in the Dangme West district of the Greater Accra region within three towns – Dodowa, Ningo, and Prampram. In all, 300 respondents were interviewed. The respondents were household heads or a household member nominated to represent the head of household. There were more males interviewed than were females with Ningo showing the highest percentage of male representation (Table 1).

Table 1
Sex of Respondents (Heads of Households)

Town	Sex	Frequency	Percent
Dodowa	Male	71	72.4
	Female	27	27.6
	Total	**98**	**100.0**
Ningo	Male	86	85.1
	Female	15	14.9
	Total	**101**	**100.0**
Prampram	Male	82	81.2
	Female	19	18.8
	Total	**101**	**100.0**

Table 2 reveals that most of the respondents in the study area were married. For instance, in Ningo, as much as 75% were married while Dodowa and Prampram recorded about 65% of respondents in each district married. Other respondents were in informal/loose unions or widowed while others were divorced or had never been married.

The highest age among respondents was 82 years which was recorded at Dodowa while the minimum was 20 years at Ningo. The minimum mean age recorded was 40 years and was noticed at Prampram and the highest mean age of 44 years was recorded at Ningo. (See Table 3.)

Table 2
Marital Status of Respondents (Heads of Households)

Town		Frequency	Percent
Dodowa			
	Married	64	65.3
	Informal/loose union	11	11.2
	Divorced/separated	13	13.3
	Never married	7	7.1
	Widowed	3	3.1
	Total	**98**	**100.0**
Ningo	Married	76	**75.2**
	Divorced/separated	4	4.0
	Never married	12	11.9
	Widowed	9	8.9
	Total	**101**	**100.0**
Prampram	Married	66	65.3
	Informal/loose union	9	8.9
	Divorced/separated	8	7.9
	Never married	11	10.9
	Widowed	7	6.9
	Total	**101**	**100.0**

Table 3
Age of Respondents

Town	N	Minimum	Maximum	Mean	Std. dev.
Dodowa	98	20	82	42.2	13.0
Ningo	101	23	79	44.3	14.6
Prampram	101	20	79	39.7	13.8

EFFECTS OF THE RISING FOOD AND OIL PRICES ON HOUSEHOLDS

Food Consumption Behavior of Households

The major food staple of the respondents in the Dangme West district of the Greater Accra region of Ghana is corn or maize. All three towns, namely Dodowa, Ningo, and Prampram, have a high percentage of respondents who use maize/corn as their main staple both currently and in the past year. Last year, 26% of respondents in Dodowa used maize/corn as their main staple, but currently, that percentage stands at 40.2%. No change was observed among respondents at Ningo (62%) while there was a slight change in Prampram where currently 58% use maize/corn as main staple as against 58.2% last year. Maize/corn dominates as main staple because the main dish of the people in this area is kenkey which is prepared with maize. Other staples are tubers (yam, cassava, and cocoyam) and rice. Again, more than 14% of respondents at Dodowa had switched from one-staple to mixed staples. This was not the case in Ningo and Prampram.

Associating income levels of households with their major food staples indicated that all households, regardless of their income status, patronized all food staples both currently and a year ago. This same scenario is replicated at Prampram but in Ningo it was observed that households in the highest 20% in terms of income use rice currently and used it a year ago as a major food staple. Prampram recorded no household in the highest 20% income level as using rice as a major staple while Dodowa recorded between 11% and 12% currently and a year ago, respectively.

It was also noted that some respondents had switched from some staples to other staples and the main reason was affordability. About 53% of male-headed households cited inability to afford certain staples as the main reason for switching to other stapes while 20% of female-headed households indicated the same. It was interesting to observe that 60% of female-headed households had to save money and, therefore, had switched from some expensive staples like rice and yam to less expensive ones like cassava and maize.

Results based on income levels of households also indicated that the major reason for households switching from some staples to others was the increasing cost of staples necessitating this move. In Dodowa, this reason was cited by households in all income levels but at Ningo, only households in the lowest 20% gave this reason while 50% of households (in the lowest 20%) at Prampram named the same reason. Households in the last 20% and 40% income groups at Dodowa also indicated that they could now afford the purchase of certain food staples.

There were some slight changes in the places where households had usually been buying food within the last year. For instance, at Dodowa, 23.1% of male-headed households were buying their food from local markets a year ago but this had slightly increased to 23.4% currently while there were no changes among female-headed households. No changes were observed among households that purchased and still purchase food from supermarkets. There had been some shift among female-headed households concerning purchases of food from kiosks. While there were no female-headed households that purchased food from kiosks in the past year, 3.5% purchase food from kiosks currently. Ningo and Prampram present quite similar results with a few exceptions. For example, while no female-headed households purchase food from supermarkets in these towns, 0.5% of male-headed households purchased food from supermarkets last year at Ningo and 0.5% currently purchase from supermarkets at Prampram.

Results indicated that income strata did not define clear cut differences between households as far as buying of staples from local markets is concerned in that all households across income levels purchased food staples from their local markets in their vicinities both currently and a year ago. However, only households in the fifth quintile at Ningo purchased food staples from the supermarket currently and a year ago as against

households in the third quintile at Prampram. Households in the third and fourth quintiles at Dodowa also purchased food staples from the supermarket both currently and a year ago. There were no major changes in the place of purchase of food staples across all communities.

Female-headed households gave no reasons for changing the place of food purchase but reasons given by male-headed households include inability to afford buying food from such venues and the need to save money, among other reasons. Among male-headed households, only those from Ningo (25%) indicated that they could not afford the food prices at their previous places and therefore had switched to other places where prices were cheaper. About 25% of the respondents from Dodowa insisted that they had changed place of food purchases because they want to save money.

The reason for inability to afford the buying of staples from certain sources necessitating changes was cited by households in the fifth quintile at Ningo while those in the fourth quintile at Dodowa indicated the need to save money as the major reason for changing their usual place of staple food purchases.

Households had made adjustments in their patterns of food preparation. The most changes have come from male-headed households. In general, 38.2% of male-headed households had made changes while 30% of female-headed households had done the same. At Dodowa for example, 10.6% of male-headed households had made changes as compared to 8% of female-headed households. At Ningo, 16.6% of male-headed households had made changes in food preparation patterns while 16% of their female-headed households had done the same.

Households have adopted quite a number of strategies in coping with changing economic trends and this is also reflected in their food preparation patterns. At Dodowa, the most significant change has been the household eating less of what it normally used to eat. About 30% of households are in this category. Other strategies adopted by households at Dodowa include skipping of meals, combining meals, parents eating less as a result of cut in quantities so children could have more food, mixing varieties, shifting from perfumed rice to local rice, among others. Most of these strategies were practiced in Dodowa. The most popular coping strategy at Ningo is the household skipping meals and at Prampram, the households eating less of what it normally used to and skipping meals.

Households across all income levels have adopted one or more of the coping strategies. Dodowa exhibited the most significant strategies in that households and the first and second quintiles adopted various approaches in food preparation. In Dodowa, it was observed that only households in the first quintile ate ready-to-cook food and also shifted from buying perfumed rice to local rice due to the high cost associated with the perfumed rice. At Ningo, the major strategy adopted by households in the first quintile was that of eating the same food for a number of days while households in the second quintile adopted a strategy of combining meals.

The most common reason for changes in the pattern of food preparation by households was the general increase in the cost of living. Male-headed households were hardest hit by the increasing trend in the cost of living. At Dodowa, as much as 76% of male-headed households were in this category as compared to 12% of female-headed households. At Ningo, male-headed households were affected by increasing cost of living and had led to changes in their household food preparation patterns (75% of respondents) while at Prampram, male-headed households formed 37.5% of respondents who experienced increasing cost of living.

The pinch of the economic hardships was felt by all households especially those in the first and second quintiles at Dodowa while those mainly affected at Ningo were those households in the first and fifth quintiles. At Prampram however, households citing general increases in the cost of living as a major reason for changing food preparation pattern were those in the second quintile.

Energy Consumption Behavior of Households

Generally, charcoal was the most common fuel for cooking by all households in the study areas. This is because it is the most easily accessible. LPG is cheaper but not easily accessible in that households would have to travel some distance to get their cylinders filled, while charcoal is usually brought to the doorstep of households. There were notable changes in the use of the different types of fuel for cooking by households. For instance, at Dodowa, 44.2% of households used charcoal last year as against 38.3% currently. At Ningo, 58% of households (male-headed) used this fuel last year as compared to 57.1% that use this fuel currently. However, LPG was more widely used by male-headed households than female-headed ones. At Dodowa, while 24.7% of households that were male-headed used LPG for cooking, only about 10% of female-headed households used LPG. Use of LPG as fuel for cooking was not common at Ningo.

A higher percentage of households had not seen any changes in their electricity consumption but among those that had changes in the electricity consumption patterns, the male-headed households dominated. At Dodowa, 29.7% male-headed households changed their electricity consumption while 6.3% of female-headed households had also changed their electricity consumption. At Ningo and Prampram, the male-headed households that had changed their electricity consumption were 36.5% and 26% respectively, while female-headed households were 15.4% and 5.2%, respectively.

The main reasons cited for changes in electricity consumption by households were increases/ decreases in electricity tariffs, and increases/ decreases in usage. On the whole, more male-headed households indicated increases in electricity tariffs compared to female-headed households. At Dodowa, while 57% of households (male-headed) cited increases in electricity tariffs, 14.8% of female-headed households are in this category. At Ningo, 70.2% of male-headed households revealed changes in electricity consumption as a result of increase in tariffs even though the percentage of female-headed ones were about 15%. About 2% each of male-headed and female-headed households had decreased usage of electricity. The same trend was noticed at Prampram where about 74% of households that were male-headed pointed out that increases in tariffs had led to changes in household electricity consumption compared to about 14% of female-headed households.

The reasons cited for changes in electricity consumption are confirmed by households across income strata and this was mainly noted at Dodowa. Households which cited decreases in electricity rates were all in the fourth quintile at Dodowa while households in the first quintile at Ningo cited increased usage as a reason for changes in electricity consumption. Only households in the fourth quintile at Prampram cited decreased usage as a reason for change in electricity consumption.

Households in the study area adopted strategies which changes in their electricity consumption patterns. Generally, the most common strategies across towns were replacement of incandescent bulbs with fluorescent ones, and reducing the use of household appliances to cut down on electricity consumption. As many as 64% of households at Dodowa had replaced their incandescent bulbs which consume higher wattage of electricity with compact fluorescent bulbs which consume less electricity while 16% disconnect their electrical appliances when not in use. Apart from replacement of incandescent bulbs with compact fluorescent bulbs, about 24% of households at Ningo disconnected their household electrical appliances when not in use. The most common strategy adopted by households at Prampram was the disconnection of household electrical appliances when not in use – 60% of households. About 20% of households also replaced incandescent bulbs with compact fluorescent bulbs as a strategy to cut down on electricity consumption.

In terms of income levels of households it was noted that those in the second and third quintiles at Dodowa disconnected household appliances

when not in use while their colleagues in the first, fourth, and fifth quintiles at Ningo did same. At Prampram this measure cut across all income levels. Only households in the first quintile at Dodowa cut down TV watching hours as a strategy to reducing electricity bills. It was also noted that only households in fourth quintile adopted the strategy of reducing the use of household appliances except TV.

Health Seeking Behavior

Generally, not many households have changed their health care needs except for households at Ningo where 61.3% of households who were male-headed had changed their health care needs compared to 35.5% of female-headed households. Only 3.2% of households at Ningo had not changed their health care needs in contrast to over 77% at Prampram and 67% at Dodowa. Over 26% and 6% of households that were male-headed and female-headed had changed their health care needs, respectively, at Dodowa.

The general impression in the study area in relation to healthcare needs is that many households have resorted to visiting government hospitals for consultation and hospitalization. This is plausibly attributed to the introduction of the National Health Insurance Scheme (NHIS) which is mostly operational in government hospitals and health centers. This assertion is supported by the fact that the NHIS has been established in all districts in Ghana since 2005 and that the proportion of people registered with the NHIS increased from 15% of the Ghanaian population in 2005 to 38% in June 2007, meaning approximately 3.2 million and 8.2 million people respectively (http://www.nhis.gov.gh). Furthermore, the current policy with regards to accessing the NHIS is that only government hospitals are mandated to provide services related to the NHIS. Therefore it makes sense that most households would attend government hospitals to seek medical care. At Dodowa, 52% of households changed their patterns of healthcare and adopted visiting of government hospital for health care needs compared to 20% at Prampram. Over 22% of households at Ningo resorted to self-medication and 20% at Prampram did the same. Again, almost 26% of households at Ningo used medicinal plants or herbal medicines as alternatives to pharmaceuticals.

Education and Work/Employment

Generally, children within households had been transferred from private to public schools. Furthermore, more children from male-headed households were transferred from private schools to public schools than female-headed households. The most prominent transfers were those in Ningo where 53.3% of children from male-headed households were transferred from private schools to public schools while 20% of children from female-headed households did the same. Minimum transfers were noticed at Prampram where only 7% of children were transferred – these were male-headed households.

The main reason for transferring children from private schools to public schools was the inability to pay tuition fees charged by private schools. The plausible explanation could be the fact that the introduction of the capitation grant implemented by government made public schools "more" cheaper. Almost 50% of households in Dodowa (male-headed) could not afford tuition fees anymore and 10% of households that were female-headed gave the same reason. At Ningo, 63.6% of households – male-headed households indicated their inability to afford tuition fees resulting in the transfer of children while 9.1% of female-headed households transferred their children for the same reason. The other reason for transfer as cited by 9.1% male-headed households was that of transfer of residence.

Dropping out of school among children in the study area was not common except for a few cases at Dodowa (about 3% for female-headed households) and 10% at Ningo (for male-headed households). Prampram had no reported case of children dropping out of school.

There were two major reasons why those

children who dropped out of school had to do so. Among the households whose children dropped out of school at Dodowa, 50% indicated the children had stopped schooling so they could assist on family farms and businesses while the rest indicated that the children themselves were not interested in schooling. All the school dropouts were from female-headed households. All male-headed households at Ningo revealed that the children dropped out of school for lack of interest.

Only a few household heads had lost their jobs in the past year. The most significant job loss was found in Dodowa where about 9% of households (male-headed) had lost their jobs. There were no job losses among female-headed households at Prampram.

The main reasons among households that experienced job losses include company going bankrupt and closing down, getting fired due to work-related problems, end of contract, illness/ disability, among others. Dodowa had the most reasons for household job loss as being fired from work places due to problems. Other reasons for job loss are pregnancy and to a lesser extent the issue of seasonality of agriculture which render some agricultural workers (especially laborers) jobless at certain times of the year. On the whole, male-headed households lost more jobs than female-headed households.

Households in the study area did not depend on only one job but diversified in terms of jobs so they could meet their daily household expenses and also save for future needs – future financial security.

Communication and Transportation

Generally, there were increases in the number of households that used cell phones from last year to now. Dodowa shows a 17% increase in male-headed households that used cell phones currently compared to last year and female-headed households showed an almost 4% increase in cell phone usage.

The major reason for general changes (mostly increases) in the use of cell phones was the issue of affordability. Most respondents across the study area affirmed that they could currently afford cell phones as compared to last year. About 68% of male-headed households at Dodowa agreed that they could afford the use of cell phones while female-headed household counterparts were 21%. Interestingly, a few female-headed households (5.3%) noted the termination of cell phone use as a result of their inability to afford the use of the cell phone. About 13% of female-headed respondents at Ningo indicated their ability to afford the use of cell phones compared to 50% of male headed households. The same magnitude (40%) of both male and female-headed households at Prampram affirmed their abilities to use cell phones.

On the average, cell phone users paid GHS 14.43 per month to service a cell phone at Dodowa a year ago and this had increased to GHS 16.8 currently. At Ningo, the monthly average cost for using a cell phone was GHS 13.85 but this figure currently stands at GHS 17.39. At Prampram, households were making a mean monthly cell phone usage expenditure of GHS 19.56 last year and this figure has increased to GHS 23.86 currently.

The reasons for differences in cell phone use expenditure by households are varied and sparsely distributed in terms of percentages with the most dominant reason being increases in cell phone usage leading to higher monthly expenditure. At Dodowa, for instance, 30.5% of households that were male-headed indicated increased usage of cell phone as the main reason for increased monthly average cell phone expenditure and 8.5% of households that are female-headed gave the same reason. About 20% of households that were male-headed again revealed that monthly average cell phone expenditure had gone up mainly as a result of increases in network rate charges. About 55% of male-headed households revealed that increased usage of their cell phones had mainly led to higher monthly average expenditure compared to their female headed household of 24%. Other reasons advanced for increased monthly cell phone expenditure include higher taxes (after the introduction of the Talk Time Tax), the use of more than one cell phone and increases in the number of

new business contacts and contracts leading to increases in calls and texts made per month.

The usual mode of transport in the study area was walking. The percentage of household heads that walked as a means of transport ranged between 20.7% at Dodowa and 43.6% at Prampram among male-headed households a year ago as against a range of 21.3% at Dodowa and 49.4% at Ningo currently. The next common means of transport is public utility vehicles (PUVs). At Dodowa, over 26% of households that are male-headed travel by means of PUVs currently as compared to about 14% a year ago. There were some slight increases at Ningo and Prampram.

At Dodowa there was a sharp decrease in the number of male-headed households who use their own private vehicle from 31% a year ago to 12% currently while that of female-headed households dropped from 3.4% to 1.3%. Other forms of transportation were mass transit, school/office vehicles and bicycle.

On the whole, the major reason why respondents and their household members in the study area walked to their work places or school (by school children) was the fact that the work places or schools were nearer to their places of abode. At Dodowa, almost 80% of respondents cited this reason while about 67% of respondents at Ningo gave the same reason. Another important reason given by respondents is the need to save money as a result of walking to work. Other reasons were the fact that some respondents could not afford the cost of PUVs, prioritizing scarce income by using available money on food, paths to work not being passable by vehicles and finally the fact that some workers want to exercise their bodies when going to work.

Financial Management Practices of Households

Male-headed households were able to save more than female-headed households. Dodowa had the highest percentage (over 58%) of male headed households who were able to save and the lowest among male-headed households was 17% at Ningo. Among female-headed households the highest number representing about 20% of households that were able to save were at Dodowa and the least of 7.9% were found at Ningo and Prampram. Ability of households to use cash-in-hand to purchase commodities was again dominated by male-headed households at Dodowa with almost 48% while the least number of households representing 15% were found in Ningo. Although more male-headed households at Dodowa were able to save, they dominated in borrowing of money from other sources. About 29% and 23% of male-headed households were into borrowing at Dodowa and Ningo, respectively.

Among those who borrowed did so from many sources which included private banks, government banks, friends, neighbors, relatives, savings and loans companies (susu), microfinance institutions, NGOs, and others. The most common sources of borrowing at Dodowa were government banks (22%) and savings and loans companies (22%). No money was sourced from cooperatives or NGOs. At Ningo, the most common source of borrowing was neighbors (23%) followed by about 21% borrowing from friends. No household borrowed from non-bank financial institutions. In Prampram, neighbors (33.3%) were the most common sources of credit for households. No credit was sourced from cooperatives, micro finance institutions, non-bank financial institutions, and NGOs.

Sale of properties or assets was not very popular among the respondents. The highest number representing 22% of respondents at Dodowa sold their assets or properties compared to just about 5% of respondents at Ningo.

The sale of personal assets by households largely took place at Dodowa where a wide range of properties including residential plots, agricultural or commercial land, farm animals, cars/vans, cell phones, household appliances, and livestock were disposed of by households. Residential plots as well as cell phones topped the list of items that were sold while the common assets sold at Ningo were residential plots and farm animals. The only asset that was sold by households at Prampram was household appliance.

Recreational Practices/Leisure

Households in the study area engage in a wide range of recreational activities ranging from travel/ tourism to playing board games. The recreational activities include sports and exercise, watching movies, playing football, gambling and betting, and eating out once in a while. The most common recreational activity was watching movies with Prampram having the highest percentage of about 46% of households, while the least was from Dodowa (32%). Gambling and betting was not a common recreational activity at Dodowa; likewise travel/tourism was not a common recreational activity at Ningo. Other recreational activities cited by households were listening to radio or music, swimming at the beach, among others.

There were a few changes to the recreation patterns of households in the study area. Changes that occurred to recreational patterns of households include cancellation of long scheduled leisure, engaging in recreation frequently (for those households that do not engage in recreation), and substitution of recreational activities.

Standard of Living

The standard of living of households is defined in terms of whether they are better off, worse off or they have remained the same. In general, households that indicated they were worse off currently than they were last year slightly outnumber those who had seen improvements in their lives. For instance, at Dodowa, about 34% of male-headed households indicated that they were better off currently than they were a year ago while about 12% of female headed households pointed out the same. However, 52% of households at Ningo (46.5% male-headed and 5% female-headed) opined that their living standards are worse off currently than they were a year ago. Those households that had seen no changes ranged from 5% for female-headed households to 19% for male-headed households. There were more conspicuous changes in male-headed households than in female-headed ones.

A comparison is made between the poorest (first quintile) and richest (fifth quintile) households in relation to their expenditure on electricity bill per month currently and a year ago, and monthly expenditure on mobile phone call/text both currently and a year ago. There were no statistically significant differences between most expenses under review among the poorest and richest households except the amount spent monthly on calling/texting a year ago. For example, at -0.211, the correlation between electricity bill paid a year ago by the poorest and richest households were not statistically significant. On the other hand, the Pearson correlation between the expenditure made by these households on texting/calling a year ago was -0.951, which was statistically significant and near perfect correlation but negatively.

The difference in mean expenditure made by the non-poor and poor households ranges between GHS 0.65 and GHS 31.3 and at a Pearson's correlation of 0.000, the differences in expenditure made by households with respect to monthly electricity bills a year ago is perfectly not related. On the other hand, at Pearson's correlation of 1.000, the expenditure made by both households (poor and non-poor) with respect to amount paid for complete trips using public vehicle was perfectly related to each other and statistically significant. Differences between most current expenditure among poor and non-poor households were not statistically significant.

ESTIMATING GOVERNMENT POLICY IMPACT ON RICE PRODUCTION AND CONSUMPTION IN GHANA

Finding the ratio of domestic price of rice to its border price in Ghana involves the estimation of the Nominal Protection Coefficient of rice which is given by:

$$NPC_r = P_{d\,r} / P_{br} \qquad (1)$$

where:

NPC_r = Nominal Protection Coefficient for rice in Ghana;

P_{dr} = Domestic price of rice at the wholesale level; and

P_{br} = Border price of rice at the wholesale level.

The coefficient relates the price received by the producer to the price which he would have received under the assumption of free trade. If the NPC is less than unity it means that domestic price is less than world price and is indicative of taxation of rice. A value of NPC greater than unity means that domestic (support) price is higher than world price which reveals that there is discrimination in favour of domestic price of rice. A value of NPC that is equal to 1 indicates that there is no distortion of output prices.

It also important to estimate the nominal protection rate (NPR) which is defined in percentage form as:

$$NPR = 100(NPC_r - 1) \quad (2)$$

The impact of government policies on the price of rice is measured by the Nominal Protection Rate (NPR), defined as the percentage by which domestic price of rice (P_{dr}) exceeds border price (P_{br}), converted at the official exchange rate.

In this analysis, the border equivalent price or world price of imported milled rice (25% broken) adjusted for international freight and insurance costs (in domestic price) have been estimated to serve as yardstick and to indicate the extent to which domestic prices have been distorted by government intervention. The domestic price has been estimated by adjusting for handling, transport and market margins from the farm gate to the domestic market. Imported rice (25% broken) is used in this estimation because it is equivalent to the local rice.

The bulk of rice consumed in Ghana is imported and government intervention of tariff removal on rice and other food commodities like wheat, yellow corn and vegetable oil (for cooking) was towards imported rather than locally produced food items. Government directly taxed imported rice while the tax on local rice was indirect in that it is done mainly through taxes on farm inputs rather than directly taxing milled local rice.

The Nominal Protection Coefficients (NPC) of rice imported into Ghana from 1990 to 2008 show a rather erratic trend starting from 2.96 in 1996 and dropping to a low of 0.87 in 1998 and rising to 2.64 in 2006 and dropping again to 2.22 in 2007 (Table 4 and Figure 1). NPC for all years under review are greater than one (except in 1998) which indicate that government policy in Ghana, especially towards rice production, is intended to positively affect local production of rice in that domestic price of rice is higher than the world price of rice. This highlights the fact that government policy causes injuries to consumers' ability to purchase local rice. Rice has an almost inelastic demand in Ghana and therefore even if domestic prices increase, demand is not expected to fall significantly. Government policy is therefore discriminatory against world prices and this is intended to encourage local production of rice. The Ghana government in May 2008 announced removal of import duties as well as debt recovery levy and excise duty on premix fuel and staples including rice, wheat, yellow corn and vegetable oil. This was mainly done to bring relief to Ghanaians in the midst of the global challenges, resulting from crude oil and food price hikes. However, the NPC for 2008 stood at 2.19 indicating that domestic price of imported rice was still much higher than its world prices. This phenomenon was confirmed by reports that despite the tariff removal on imported rice and other food items, prices on the domestic market were still high. Therefore the conclusion is that government intervention did not make any impact or was very minimal if any at all.

Table 4
Nominal Protection Coefficients and Rates for Rice in Ghana (1996-2008)

Year	NPC	NPR (%)
1996	2.96	196.48
1997	1.43	43.04
1998	0.87	-12.94
1999	1.13	13.45
2000	1.36	35.67
2001	1.52	51.94
2002	1.46	46.41
2003	2.57	157.18
2004	1.89	88.80
2005	2.39	138.81
2006	2.64	163.69
2007	2.22	121.72
2008	2.19	119.27

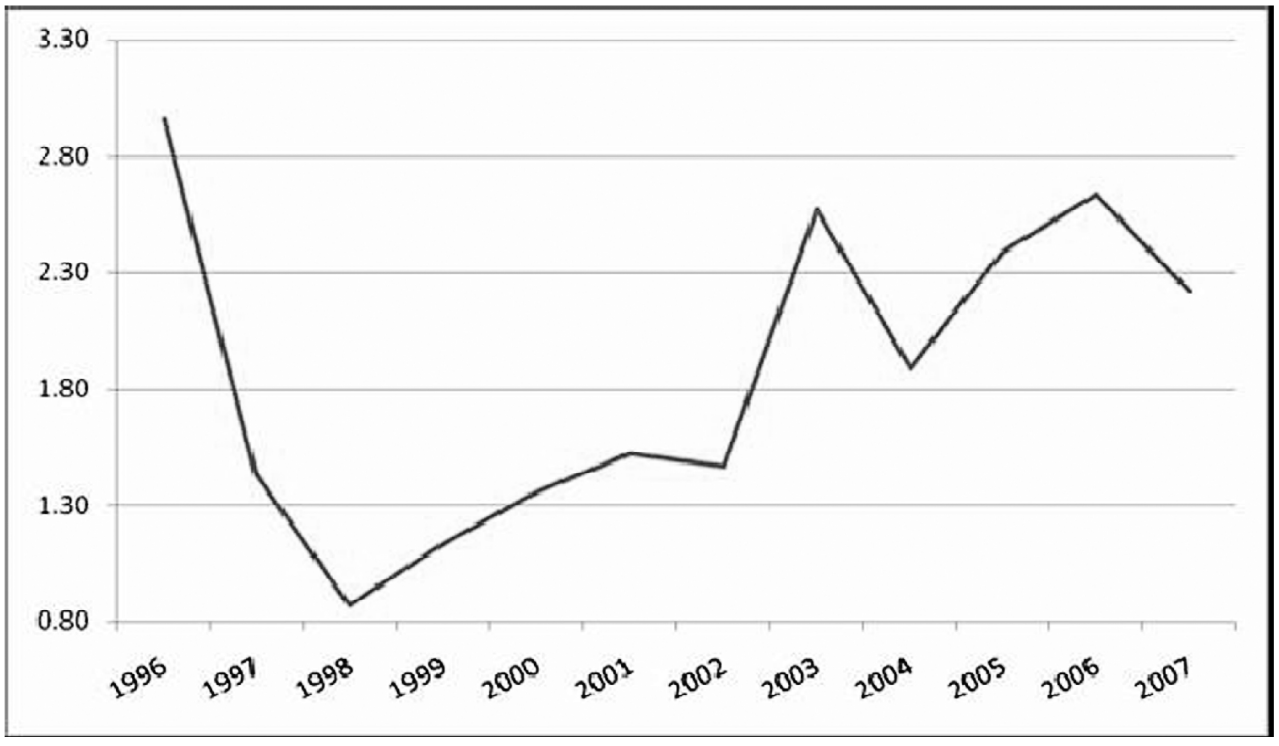

Figure 1. Trend of Nominal Protection Coefficient for Rice in Ghana (1996-2007).

The trends in the Nominal Protection Rate (NPR) show the magnitude of the impact of government interventions on domestic prices. Ghana has very high protection levels over the period 1996 to 2008 except for 1998. Protection levels peaked at over 196% (1996) and dipped to -12.94% (1998), steadily rising to over 157% in 2003 and to almost 122% in 2007. This is expected because according to David and Huang (1996), exporting countries have negative protection, while importing countries have zero or positive Nominal Protection Rate. Exporting countries have negative protection rates because they are interested in preventing the collapse of the world rice market while importing countries like Ghana are interested in protecting and possibly encouraging their local production of rice. The logic behind these high protection rates is to encourage local production of rice which incorporates cost cutting technologies making local production cheaper than imported rice but the effect of these high nominal protection rates has rather made the consumer worse off since local production has not been able to match demand forcing the consumer to purchase imported rice which is still high (in price). In 2008, the nominal protection rate was 119.27%. In effect government policies were rather protecting the exporting countries.

The Nominal Protection Coefficient for fertilizer in 2007 is estimated to be 1.37. The border price of fertilizer imported into Ghana is not available for 2008 which year government subsidised by the prices of the input. Although this may be premature, inferences drawn from experts in the field indicate that the subsidies on fertilizer in 2008 did not make any major impact because the prices of fertilizer in 2008 where not very different from that in 2007. The figure of 1.37 indicates that policies did not actually subsidise fertilizer and therefore the rice industry was not protected from price hikes on the international market. The mitigation measures to contain the rising crude and food prices in 2008 cost the country GHS 92.47 million in direct revenue loss as result of the removal of the tariffs. This translated into a simple per capita revenue loss of GHS 4.2.

CONCLUSIONS

There was an impact of the rising food and oil prices on rural households in Ghana. Some households took advantage of the government's programs (e.g., joining the National Health Insurance Scheme, thus moving from the private to the public health care system and also taking advantage of the capitation grants to public schools by withdrawing their children from private schools to public schools).

Food consumption behaviors changed. Households ate less of what it usually used to eat and also skipping meals and shifting from expensive staples to relatively cheaper ones. Government intervention over the years towards the local rice industry did not make any impact or was very minimal if any at all. The good intention of government in protecting the local rice industry has not paid off since local production has not been able to meet the demand, causing injuries to consumers in terms of their ability to patronise local rice. This ultimately protect producers in Ghana's trading partners in rice since imported rice becomes cheaper on the Ghanaian domestic market, further distorting domestic prices and hurting local producers.

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