

# Analysis of the Impact of Changes in the Prices of Rice and Fuel on Poverty in the Philippines

Celia M. Reyes, Alellie B. Sobrevinas, Joel Bancolita, and Jeremy de Jesus

De La Salle University, Angelo King Institute

cbms@dls-csb.edu.ph

This study aims to assess the impact of rising prices of rice and fuel on poverty in the Philippines. In particular, the variations in the potential effects among different group of households were analyzed using household level data. Results of the study confirm that the impact of increasing prices of rice and fuel vary across different groups of households depending on the sector of employment, level of urbanity, income group and geographical location. In fact, there are losers and gainers from the recent increases in the prices of rice and fuel. In response to higher prices, households adopted different coping mechanisms, some of which are damaging and counter-productive in the medium- and long-run.

**Keywords:** Poverty, community-based monitoring system, impact analysis, prices, rice, fuel, coping mechanisms, pass-through rates, net benefit ratio

The world experienced a dramatic increase in food and fuel prices during the first half of 2008. According to the Food and Agriculture Organization (FAO, 2008), international nominal prices of all major food commodities reached their highest levels in nearly 50 years while prices in real terms were highest in nearly 30 years. The FAO food price index (a trade-weighted Laspeyre's index of international quotations expressed in US dollar prices for 55 food commodities) increased by 53.0% for the first three months of 2008 compared to the same three months in the previous year. The rising prices of food is led by vegetable oils, which increased by more than 97.0%, followed by grains, which increased by about 87.0%. The current agricultural market is characterized by the increase in international prices of not just a few but of nearly all major food and

feed commodities. The increase in prices is expected to have adverse effects on poverty and is worrisome precisely because it is expected to hurt the poor the most.

Meanwhile, fuel prices have also been increasing for seven consecutive years according to the U.S. Energy Information Administration (2008). During the first quarter of 2008, the oil price index increased by 66.5%. The impact of higher fuel prices depends on two components, namely: (1) direct effect of higher prices of petroleum products consumed by the household; and (2) indirect effect on the prices of other goods and services consumed by the households that use fuel as an intermediate input. These changes in the global food and fuel prices are also affecting developing countries, including the Philippines. As such, it is very important to determine the effects

of these price changes on poverty. This would eventually help the governments in identifying some policy responses. Although the discussion in this study focuses on the impact of rice and fuel price changes, the same framework may be used in analyzing the potential impact of future economic shocks that may similarly affect prices of commodities.

### ***Trend in Rice Prices***

In terms of prices, farmgate (producer), retail (consumer), and international prices of rice show a fairly stable trend during the period January 2006 to December 2007 with an average monthly growth of 0.39%, 0.43%, and 1.12%, respectively. However, rice prices significantly increased starting January 2008. In fact the average monthly growth rates in farmgate, retail, and world prices for the period January to September 2008 are estimated to be about 3.3%, 2.4%, and 6.6%, respectively. It is worth noting that the huge gap between farmgate and retail prices of rice remains throughout the period. On the average, domestic retail price of rice is higher than the price at the farm level by about 21.8%. The difference includes the cost of transporting rice produce from the farm to the market. This may also indicate the power of the traders in the country in terms of controlling the market price of rice (Intal & Garcia, 2005). In some cases, wholesalers are capable of creating artificial shortages by hoarding rice to increase prices and flooding the market with their stocks to lower rice prices.

On the average, international prices is lower than retail prices by about 38.3%. Although the gap between world prices and domestic prices is also notable, the difference between world price and retail prices started to narrow down during the month of January 2008. In fact, in April and May of 2008, the world prices even exceeded the domestic retail prices. This may possibly be due to the heavy government interventions on the rice sector during these periods. During the period covered in this study, price of rice was at its highest in June 2008. In particular, retail price of ordinary

rice reached its peak at about PHP 35.78 per kilogram while farmgate price (rice equivalent price) of rice is also highest during the same month at about PHP 27.98 per kilogram. On the other hand, international rice prices were at its highest during the month of May 2008 at PHP 33.12 per kilogram.

### ***Trend in Fuel Prices***

Data from the Philippines Department of Energy (DOE) showed fairly stable trend in the prices of fuel, particularly of unleaded gasoline and diesel during the period January 2006 to September 2008. Although prices started to continuously increase from March 2007, significant increases were recorded in 2008. During the period covered, price of fuel is at its peak during the months of July 2008 at about PHP 60.24 per liter. The annual average price per liter of unleaded gasoline increased by 30.1% from PHP 39.25 in 2006 to PHP 51.07 in 2008. In addition, the annual average price of diesel increased by 34.1% from PHP 34.48 per liter in 2006 to PHP 46.23 per liter in 2008. One of the major factors that contributed to higher prices during the period is the scarcity of oil because of the reduction in supply of the Organization of the Petroleum Exporting Countries (OPEC) and reduction in the production in non-OPEC economies. These changes in prices are expected to greatly affect not only the sectors which are directly dependent on fuel (e.g., transportation sector) but also other sectors of the economy.

### ***Underlying Causes of the Recent Spikes in Prices***

The previous sections highlighted the significant increases in rice and fuel prices in the recent months. Based on the Asian Development Bank (ADB) document (2008a), there were a number of factors that contributed to the recent increases in food prices, including rice. These factors can be classified into three sets as follows: (1) structural and cyclical factors; (2) supply and demand factors; and (3) international and domestic markets.

Structural factors are the major causes of high international rice prices in recent years. In particular, there is shortfall in production relative to consumption. Note that one of the major inputs to rice production is fertilizer which, in turn, is highly dependent on petroleum products. Cyclical factors, on the other hand include unfavorable weather and outbreaks of pest infestations.

Moreover, the demand factors that have contributed to increasing prices include the growing population and strong income growth in emerging economies around the globe. There has also been rising demand in biofuel which leads to diversion of grains from use as food or feed. In terms of supply, one important factor is urbanization and competing demand for land for commercial rather than agricultural purposes. Less investment in agricultural technology, infrastructure and extension programs may have also contributed to the modest growth in rice supply. Some government actions have also affected food prices by restricting exports and using administrative measures to control prices. Reduction in taxes and import duties on imported grains in net importing countries (temporarily), as well as price subsidies, has also shielded consumers (ADB, 2008a). In the Philippines, the current problem of increasing rice prices in the country is also allegedly related to the problem of hoarding of some big businessmen. Since small farmers have limited resources, as well as limited access to credit and storage facilities, they are sometimes forced to sell their palay produce even at low prices.

## Review of Literature

There are a number of earlier studies which have analyzed the welfare impact of price changes. The methods used in these studies differ considerably. Some researchers focused on the country-level impacts while others looked at the household-level impacts. Furthermore, some studies focused on specific commodities, such as rice, while others covered a number of major commodities. A few researchers also adopted a specific econometric model to help in the analysis.

It is recognized that analyzing the economy-wide impact of soaring prices is important precisely because a large increase in the prices of food and fuel may threaten macroeconomic stability, as well as the overall growth of a country. This is especially true for low-income, net importing countries. Most of the developing countries are particularly vulnerable because of certain characteristics such as having high levels of chronic hunger and being highly dependent on imports of petroleum products and in a number of cases, on imports of major grains. In looking at the impact of price increases at the country level, FAO (2008) focused on the impact in terms of the following: (1) food import bills; (2) current account deficits; (3) transmission of international prices to domestic prices; and (4) consumer price index and per capita consumption of cereal. Based on FAO's (2008) analysis, developing countries in general could face a significant increase (i.e., 33.0%) in aggregate food import bills. In some cases, the increase in food import bills could also lead to substantial widening of the current account deficit, especially to the poor countries. This could affect other macroeconomic variables, such as exchange rate, the reserve position of the national bank or increased indebtedness. In terms of price transmission, results for the seven Asian countries included in the study revealed that about one-third of the increase in real US dollar prices was passed through to domestic markets. These results confirm Sharma's (2002) generalization that transmission elasticities during the 1995-96 price increases in Asian countries are usually low, especially for rice.

An Asian Development Bank (2008b) study also evaluated the macroeconomic impacts of high and rising food prices and its impact on households using poverty and distribution analysis. Applying the Oxford Economics global model, the study traced the impacts of fast climbing food and energy prices on developing economies in Asia, including the Philippines, within two situations: the first supposing that the 57.5% increase in world food prices in the first quarter of 2008 is continued through year-end, and the second assuming that the 66.5% rise in world oil prices is added on top

of the food price increase. The results were not presented as projections but as mere indications of how countries could respond to shocks coming from unprecedented rise in food and fuel prices. Nonetheless, four findings were identified involving primarily the expected impact of food and fuel increases on the macroeconomic level, namely: (1) higher domestic prices; (2) fall in private consumption; (3) higher interest rates dampening fixed investments; and (4) significant decline in GDP because of diminished consumption and investment demand. The study also analyzed the impacts of higher food prices on poverty and inequality using household data in two countries – the Philippines and Pakistan. Simulations were conducted adopting three different scenarios where the increase in food prices is 10%, 20%, and 30%. The results of the study show that the increase in food prices in the Philippines by 10%, 20%, and 30% threatens to create an additional 2.72 million, 5.65 million, and 8.85 million poor people, respectively. It should be noted though that the estimates were arrived at using the national poverty line instead of the USD 1/day poverty line to factor out the less sensitivity of the latter to the head count ratio, and that the estimates are concerned only with the price effect on consumers (not accounting for producers). The increase in food prices also tends to intensify income inequality in the Philippines. The results show that increases in food prices by 10%, 20%, 30% will raise the Gini index by 0.55, 1.10, and 1.65 percentage points respectively. The paper's findings also include a reduction in the average standard of living of different income groups, specifically a 4.16% decline precipitated by 10% jump in food prices. The paper also estimated how much would be needed to shield the poor consumers before the increases and people pushed into poverty who were non-poor before the increases from the negative effects of high food prices. To address the increase in food prices, the study recommended that export restrictions should be discouraged, domestic markets should be unrestricted, government controls over prices and resource allocation should be avoided. To alleviate the social impacts of such price shocks, the

extremely poor must be provided well-targeted assistance in the form of cash transfers, food-for-work, feeding programs, and food stamps; small and marginal farmers must have equal access to credit, fertilizer, improved seeds, pesticides, electricity, and water and should be provided market access across the region and in the global marketplace. It was also recommended that in the long-run, improvements should be made in land and labor productivity in agriculture through long-term investments and technological advances including up scaling of research and development (R&D), and sustainable land use.

At the microeconomic level, the first step in doing the analysis is to determine the proportion of net seller and net buyer households and their characteristics. After that, the next step would be to determine the likely welfare impact of a price change across household types (FAO, 2008). Note that the nature of impact across households varies depending on existing consumption patterns and household market position as net buyers and net sellers. Most of the recent studies, however, adopted nonparametric techniques in the analysis to allow convincing demonstration and presentation of results with minimum unnecessary assumptions (e.g., Deaton 1989; Budd 1993; Barrett & Dorosh 1996; Minot & Goletti, 2000). These techniques allow presentation of very useful graphical displays of the results which can be easily interpreted by the policymakers.

To understand how price changes affect household welfare, Deaton (1989) also highlighted the importance of measuring the net benefit ratio (NBR). The NBR is defined as the value of net sales of a commodity as a proportion of income. It is actually the difference between the production share and consumption share of rice in total expenditures. Given this, net sellers are expected to have positive NBRs while net buyers have negative NBRs. The NBR for a particular commodity represents the “before-response” or impact elasticity of expenditures (or real income) with respect to the price change of that commodity. Total expenditure is used as a proxy for income because expenditures data tend to be a more

reliable indicator of household welfare (Deaton 1989; Budd 1993; Barrett & Dorosh 1996).

In his analysis, Deaton (1989) combines household data and hypothesized price changes to study the distributional impact of higher rice prices in Thailand. The same methods were used in studies of the distributional effect of higher food prices in Côte d'Ivoire (Budd, 1993), in Madagascar (Barrett & Dorosh, 1996) and in Vietnam (Minot & Goletti, 2000). In this approach, the first-order welfare effect of rice price change is proportional to NBR. The NBR is a very short-term measure in that it assumes no response from households as producers or as consumers. In particular, it assumes no change in labor markets or non-farm income that might result from the price change. In the short run, those who are net buyers in the cities and in the rural areas (including the poorest rural households that are predominantly net buyers) who spend a large share of their income on food will be the most adversely affected. One of the major results of Deaton's (1989) study is that higher prices of rice would benefit rural households in Thailand at all levels of living. However, the group of households at the middle of the income distribution would have the largest percentage income gains from rice price increases.

### ***Objectives of the Study***

The review of literature indicated that there are several methodologies in analyzing the impact of rising prices on poverty. The review further shows that while several studies have already been done to examine the impact of the recent price increases on the Philippines, there has been no study capturing the duality of households. Moreover, while there have been many anecdotes of household responses, there has been no systematic analysis of the coping mechanisms adopted by households. Thus, this study attempts to apply relevant methodologies to assess the household level impacts. Particular attention will be given to the impact on rice farm households, as well as poor households.

The general objective of the study is to assess the impact of rising food and fuel prices on poverty

while the specific objectives are (1) to analyze the differential effects among different group of households (based on urbanity, income group, and geographical location); (2) to identify the losers and gainers from the price increases; and (3) to identify the coping mechanisms adopted by households

## **METHODOLOGY**

### ***Method of Analysis***

This study adopted some of the methodologies employed in earlier studies as discussed in the previous sections. In analyzing the impact of rising prices, focus was given on the household level impacts. In this study, pass-through rates of price increases were determined and results based on the Input-Output Accounts of the Philippines were presented. Some nonparametric techniques were also employed in order to be able to present useful graphical displays that would help in analyzing the varying effects on different groups of households. In addition, this study conducted a Community-Based Monitoring System (CBMS) survey in order to determine the impact of rising prices at the household level.

It is recognized that the effects of price changes vary depending on whether a household is a net producer or a net consumer of a commodity. In fact, a price change has opposite effects on the real income of producers and consumers. Examining how the net positions of households vary across income distribution would also help in determining which groups of households are expected to gain or lose from commodity price changes. In the case of rice, the net benefit ratio (NBR), as used by Deaton (1989), is computed for each household. As such, the NBR is used as the main indicator of household welfare, thereby allowing the study to capture the duality (i.e., both producer and consumer of rice) of households in the Philippines. The NBR can be computed as follows:

$$NBR = \frac{p_i y_i - c_i q_i}{x_i} = \frac{p_i y_i}{x_i} - \frac{c_i q_i}{x_i} \quad (1)$$

where:

$p_i$  = producer price of palay

$y_i$  = volume of rice production

$c_i$  = consumer price of rice

$q_i$  = quantity of rice consumed

$x_i$  = total household expenditures

In simple terms, *NBR* can be seen as the difference between the palay income share ( $\frac{p_i y_i}{x_i}$ ) and the share of rice consumption in the total expenditure ( $\frac{c_i q_i}{x_i}$ ). Given the above formula, the value of *NBR* is expected to be positive for net producers/net sellers of rice and negative for those who are net consumers. Given an increase in rice prices, net producers will gain while net consumers will lose while the opposite would be true in case of a decrease in prices. The behavior of *NBR* across income distribution reflects how a change in prices affects households across income distribution. As much as possible, this study disaggregates the results by level of urbanization (rural vs. urban areas), by geographical location and by income deciles. The impact of the recent increases in rice prices was estimated using 2006 Family Income and Expenditure Survey (FIES) data as the baseline information. Aside from descriptive analysis, nonparametric techniques in density estimation and regression are employed in order to present useful graphical displays. To determine the effects of rising prices of rice on each household based on the *NBR*, the actual change in rice prices from 2006 to 2008 was used in the estimation. In particular, the retail price of rice in the equation of *NBR* was increased 39.6% while farmgate price of palay was increased by 34.9%. The changes in the *NBR* are then compared among different groups of households. This allows us to identify which groups of households would benefit and who would lose from the price increases.

In analyzing the impact of fuel price increases, a nonparametric analysis of the fuel consumption

patterns across different group of households was also done. Since households in the Philippines are generally net consumers of fuel products, this study focused only on the demand side. The direct effects of fuel price changes, particularly to direct consumers of gasoline and diesel, are also analyzed and compared among different group of households.

The 2000 Input-Output (I-O) Accounts of the Philippines were also used in the analysis. This allows us to determine not only the direct effects of price changes but also the indirect impact which channels through other sectors of the economy. The I-O Tables provide the disaggregative measures of the economic structure of the country and present in a table format the inter-relationships between the industries in an economy in terms of the production and the uses of their products and the imported products. One of the basic assumptions of this framework is that the inputs used in producing a product are related to the industry output by a linear and fixed production coefficient. This means that any increase or decrease in inputs will result in a proportional increase or decrease in the level of output. In addition, it also assumes homogeneity which means that each industry produces a single output. Each industry also has a single input structure and there is no substitution between the products of different industries.

### **Data Used**

This study utilized household level data from the FIES of the Philippines conducted by the National Statistics Office (NSO) in 2006 which gathered data on family income and living expenditures and related information affecting income and expenditure levels and patterns. Detailed data on rice consumption and production from the FIES were utilized while secondary data on rice were also sourced from the Bureau of Agricultural Statistics (BAS), the NSO, and the FAO. On the other hand, data on fuel consumption were sourced from the FIES while data on fuel prices were collected from the Web sites of the Department of

Energy (DOE) and the International Monetary Fund (IMF). The I-O Accounts prepared by NSO and the National Statistical Coordination Board (NSCB) were also used.

To support the analysis and to gather more detailed information on how households are coping with the increasing prices, a rider questionnaire (attached to the CBMS core questionnaire) was administered to selected barangays in the Philippines. The rider questionnaire intends to capture different indicators that could be used in measuring the impact of price increases through changes in their consumption patterns. To come up with specific case studies, three barangays were selected to represent urban and rural areas, namely: Barangay 51 and Barangay 85 in Pasay City representing the urban areas and Barangay Santa Rita in Capas, Tarlac representing a rural area. Barangays 51 and 85 consist of 316 and 208 households, respectively, while Barangay Santa Rita is composed of 339 households, a third of which are rice farmers.

## RESULTS AND DISCUSSION

This section consists of two major parts. The first section focuses discussion on the impact of international price changes on domestic markets. The impact on other sectors in the economy and consequently on household spending is also analyzed. The second part focuses on the household level impact based on the 2006 FIES data and 2008 CBMS survey data. As much as possible, results are disaggregated by urbanity, by income group, and by region in order to determine which groups of households would benefit or lose from price changes.

### **IMPACT (PASS-THROUGH) OF INTERNATIONAL PRICE CHANGES ON DOMESTIC MARKETS**

In determining the economy-wide effects, one simple approach is to determine the pass-through rates. Note that the impact of rising prices on domestic economies depends on the extent to which

changes in international market prices of commodities have been transmitted to the domestic economies. The trend in the ratio of domestic price to foreign price (in local currency) of a commodity would allow us to determine the pass-through rates in the recent period. The decline in the ratio during the current period as compared to the previous period (i.e., before there was a significant increase in the prices of the commodities) would indicate that the government somehow intervened which prevent a full pass-through of the changes in the foreign price. In order to have a more detailed analysis of the pass-through rate, a regression analysis was also conducted with the following structure:

$$\ln P_d = a + b_1 \ln e + b_2 \ln P^* \quad (2)$$

where:

$P_d$  = domestic price

$e$  = exchange rate (PHP/USD)

$P^*$  = foreign price (in USD) per unit of imports

### ***Pass-Through Rates for Rice***

There has been a decline in the ratio of domestic price to foreign price during period when there were significant increases in rice prices (January 2008 to June 2008) as compared to the previous months. In fact, the ratio significantly decreased starting January 2008. Although the ratios started to increase again in July 2008, it is important to note that the ratio has not gone back to its original level. Before the significant price increases (covering the period January 2006 to December 2007), the average ratio is about 1.84 while the ratio is lower in 2008 averaging to about 1.26. The decline in the ratio confirms that the government did not allow a complete pass-through of the changes in the foreign price. In fact, during the months of April and May 2008, the ratio of domestic price to foreign price is less than one. This is the period when world price of rice is higher than the domestic price of rice. The subsidy provided by the governments during this period may have contributed to this pattern.

For the regression analysis, domestic price was represented by the retail price per kilogram of regular milled rice while foreign price is represented by the price of white broken rice, Thai A1 Super, f.o.b. Bangkok (Friday closing price). Regression estimation utilizing the data for the period January 2000 to December 2006 (which serves as the reference period) results to the following equation:

$$\ln P_d = 4.77 - 0.342 \ln e + 0.278 \ln P^* \quad (3)$$

Since the coefficients of  $\ln e$  and  $\ln P^*$  are less than one, it may imply that there is no full pass-through of world prices during the period (Table

1). Using the estimated regression model, the domestic prices after the reference period are projected based on the actual exchange rates and foreign price of rice. Results show that the ratio between the actual domestic prices to the projected domestic price is less than one from November 2007 to April 2008, which may indicate the heavy intervention provided by the government during these periods. While world price of rice started to decline in June 2008, domestic prices only started to decrease during the month of July. This may reflect the lag in the transmission of world prices to domestic prices of rice.

**Table 1**

*Actual and Projected Price of Rice, January 2007 to September 2008*

Period	Actual domestic price (a)	Projected domestic price (b)	Ratio (a)/(b)
Jan-07	21.35	21.18	1.01
Feb-07	21.43	21.60	0.99
Mar-07	21.77	21.71	1.00
Apr-07	21.91	21.66	1.01
May-07	22.01	21.75	1.01
Jun-07	22.15	21.82	1.02
Jul-07	22.43	22.08	1.02
Aug-07	22.70	22.09	1.03
Sep-07	23.36	22.58	1.03
Oct-07	23.33	23.19	1.01
Nov-07	23.10	23.85	0.97
Dec-07	23.08	24.60	0.94
Jan-08	23.31	25.21	0.92
Feb-08	23.58	26.47	0.89
Mar-08	25.26	27.57	0.92
Apr-08	29.80	30.16	0.99
May-08	31.30	30.26	1.03
Jun-08	35.79	28.60	1.25
Jul-08	35.51	27.93	1.27
Aug-08	32.82	26.82	1.22
Sep-08	30.01	26.02	1.15



### *Pass-Through Rates for Fuel*

In terms of fuel prices, data reveal that the ratio of domestic price to foreign price slightly declined during the period when there were significant increases in fuel prices. (In the absence of data on foreign price of unleaded gasoline and diesel, the world price of crude oil per barrel was converted into price per liter by using the conversion rate of 158.987 liters per barrel of crude oil.) In particular, the average ratio before the price increases (covering the period January 2006 to March 2008) was about 1.88 as compared to 1.60 during the period of rising fuel prices. This trend may, therefore, indicate that the market did not allow a full pass-through of the changes in the foreign price of fuel (in local currency).

The results of the regression analysis utilizing monthly data from January 2003 to December 2006 reveal the following relationship:

$$\ln P_d = 6.28 - 1.30 \ln e + 0.83 \ln P^* \quad (4)$$

Since the coefficients are less than one, there is incomplete pass-through of fuel prices. Using this model, the estimated domestic prices of fuel for 2007 and 2008 are shown in Table 2. The results show that the ratio of domestic price to foreign price remain below 1 in 2007 and 2008. This also reflects an incomplete complete pass-through of the changes in the foreign price of fuel.

**Table 2**

*Actual and Projected price of Fuel, January 2007 to September 2008*

Period	Actual domestic price of fuel (P/Liter) (a)	Projected domestic price of fuel(P/Liter) (b)	Ratio (a)/(b)
Jan-07	33.75	32.56	1.04
Feb-07	33.45	34.33	0.97
Mar-07	34.70	36.99	0.94
Apr-07	35.70	39.87	0.90
May-07	36.95	40.49	0.91
Jun-07	37.45	42.03	0.89
Jul-07	37.95	45.45	0.84
Aug-07	37.95	43.20	0.88
Sep-07	38.70	46.24	0.84
Oct-07	39.70	49.02	0.81
Nov-07	40.95	55.20	0.74
Dec-07	41.45	55.44	0.75
Jan-08	41.45	45.79	0.91
Feb-08	40.45	45.63	0.89
Mar-08	42.95	50.73	0.85
Apr-08	44.45	52.75	0.84
May-08	48.45	59.28	0.82
Jun-08	55.95	63.44	0.88
Jul-08	60.24	65.41	0.92
Aug-08	54.45	57.91	0.94
Sep-08	49.45	51.69	0.96

*Note:* Price of fuel used is the average price for diesel and unleaded gasoline  
Sources: Bureau of Agricultural Statistics and authors' estimation.

## ***MEASURING THE DIRECT AND INDIRECT EFFECTS OF RISING PRICES OF RICE AND FUEL ON POVERTY***

### ***Direct Estimation: Based on Changes in CPI***

Given the patterns of consumption in 2006, the increase in average prices of rice and fuel during the period 2006 to 2008 would generally increase the prices of goods and services being consumed by the households. This would mean that there will be a proportional increase in the poverty threshold faced by the households. Based on simple computation, the weights of rice and fuel to the consumer's basket, which is used to construct the consumer price index (CPI) in the Philippines, were used. Note that rice carries a weight of 9.4% while fuel (including gasoline and diesel) has a weight of 1.3%.

Results of the simple estimation reveal that consumer prices would increase by about 4.1% on top of the normal inflation. This would mean that the minimum amount of per capita income that the population should have in order to meet its basic nutritional requirements would now be about PHP 15,674. This would force more than 1.8 million additional people to fall below the poverty threshold. Aside from the increase in the headcount index, there is also an expected increase in the poverty gap indicating that the populations fall farther below on average from the poverty threshold. In fact, poverty gap index increase from 9.0 before the price increases to 9.9 after price increases. There is also an increase in the severity index by 0.5.

### ***Capturing the Effects on Other Sectors: Based on the Input-Output Framework***

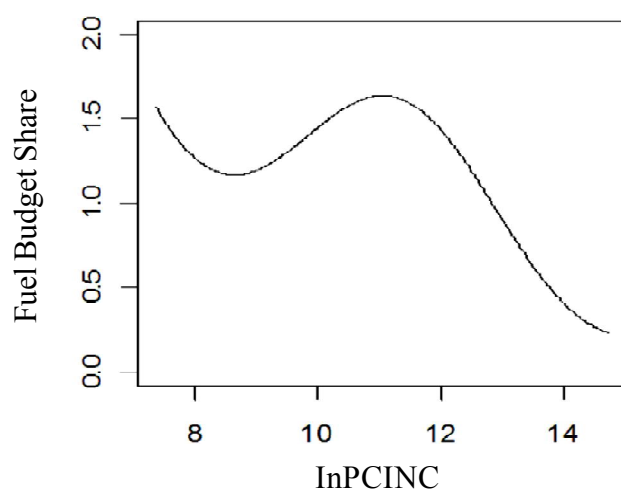
Although the direct estimation presented in the previous section clearly show the effect on poverty, utilizing the Input-Output (I-O) framework would allow us to better capture the overall effects of price changes. Using the 2000 Input-Output Accounts of the Philippines, the impact of price changes,

which channels through other sectors of the economy, are captured in the estimation. The sectors which are greatly affected by rice and fuel price increases are also identified.

***Rice price increases: Effects on other sectors.*** In analyzing the impact of rice price increases, the changes in the prices of retail and farmgate prices of rice were incorporated to the Rice and Corn Milling and Palay categories of the I-O tables. (Under the "rice and corn milling" category of the input-output table, it was assumed that rice carries a weight of 71.0 percent based on the Bureau of Agricultural Statistics 2008 production data.) Holding other factors constant, the increase in rice prices is also expected to affect other sectors in the economy. Among the major sectors, short-stay accommodations (other than hotels and motels) will be most affected. These are probably the businesses which also provide food services or offer rice meal. Based on the estimation, there would be about 16.5% increase in their prices as a result of rice price increases. Industries involved in the production of miscellaneous food products and animal feeds are also among those which would be greatly affected. Restaurants, bars and canteens and other eating and drinking places, as well as hotels and motels, would also be affected.

Holding other factors constant, a 39.6% increase in the retail prices of rice and 34.9% increase in farmgate prices of rice would lead to a 2.14% increase in the prices of goods and services, in general. Based on the items consumed by the households, total household expenditures may increase by about 2.97% on top of the normal inflation. (This is based on the weighted average of the increase in prices of goods and services consumed by households as reflected in the 2000 Input-Output Accounts of the Philippines.) This would mean that poor households in the Philippines (those with annual per capita income below PHP 15,057, on the average) would require at least PHP 333 to cover the additional expenses of each member of the household.

**Fuel price increases: Effects on other sectors.** As mentioned earlier, the increase in fuel prices can have direct and indirect impact on the welfare of the population. Since most of the households in the Philippines are consumers, rather than producers, of fuel, this section discusses only the effects of fuel price increases which channel through consumption. The 2006 FIES data revealed that households in the Philippines spent an average of PHP 2,039 on fuel (consisting of liquefied petroleum gas (LPG) and petroleum products (e.g., kerosene/gas, etc.). This is about 1.5% of the household's average expenditures. Disaggregated results show that urban households generally spend higher proportion of their household expenditures on fuel. Comparing across income deciles, it is observed that poorer households tend to have higher expenditures on fuel as compared to richer households. Richer households in general have a higher fuel budget share compared to those at the lower income deciles although the share is starting to decrease among those at the 9<sup>th</sup> income decile. Overall, petroleum and LPG's combined share to total expenditures is higher (1.6%) for the poorest group of households relative to those which belong to the 2<sup>nd</sup> to 5<sup>th</sup> income deciles. This trend in fuel consumption is supported by the nonparametric regression of fuel budget share and per capita income (Figure 1).



**Figure 1.** Nonparametric regression of fuel budget share (LPG and petroleum).

To analyze the impact of fuel price increases, shocks were incorporated to petroleum refineries category of the I-O Tables. Note that the increase in the prices of petroleum products has an impact on a number of sectors in the economy, especially those which are directly dependent on these products. Since there are many industries which use fuel as inputs to production, it is notable that the prices of the outputs of many industries are also affected. The industry which is most affected by fuel surges is those which manufacture asphalt, lubricants and miscellaneous products of petroleum and coal which are expected to experience an increase in prices by about 22.8%. Relatively large price increases are also recorded for the transportation industry, including air transportation (10.0%) and public utility cars and taxicab operations (9.9%). Prices of jeepney, tricycles (motorized and non-motorized) and other road transport (7.2%) and bus line operation (7.1%) also increased. Note that the increase in the prices of road transportation such as jeepney, tricycles and buses could affect the middle-income and poor households more since they are the ones who consume much on these services. It is also important to note that some agriculture-related industries, such as the manufacture of pesticides and insecticides (6.0%) and fertilizers (4.9%), also exhibited an increase in prices since these industries, particularly the fertilizer industry, are highly dependent on fuel as an input. This may mean that eventually, farmers (who are usually poor) would also be affected by fuel prices increases. It is also worth noting that even the price of electricity is expected to increase by about 4.1% as a result of fuel price increase.

Holding other factors constant, a 30.1% increase in the average price of unleaded gasoline from 2006 to 2008 is expected to result to a 1.5% increase in the average prices of goods and services (assuming that prices of all types of petroleum, including LPG, would increase at the same rate). However, average household expenditures are expected to increase by a higher rate (i.e., about 1.9%). This is primarily because of the larger increase in the prices of goods and services

commonly consumed by households. The 1.9% increase in prices of goods and services consumed by households is also on top of the normal inflation that they would experience.

***Simultaneous increases in rice and fuel prices: Effects on other sectors.*** A simultaneous change in the prices of rice (39.6% for retail prices and 34.9% for farmgate prices) and fuel (30.1%) is also done based on the I-O framework. These price changes were simulated using the I-O Tables and the results show that there would be a 3.7% increase in the prices of goods on top of the normal inflation. However, in terms of the goods and services consumed by households, an average of 5.2% increase is expected due to rice and fuel increases. This is also on top of the normal inflation being experienced by the households. The industry which manufactures asphalt, lubricants, and miscellaneous products and coal would be the most affected sector as reflected in the 22.9% increase in the price of their outputs. In addition, businesses which offer short-stay accommodations (other than hotels and motels) and manufacturer of miscellaneous food products and animal feeds are also greatly affected. As expected, those who are involved in the transportation sector are also greatly affected.

***Simultaneous change in the prices of rice and fuel: Impact on poverty incidence.*** In the previous section, estimation of the direct effects of rice price changes revealed that poverty would increase by about 2.0%. However, estimation based on the Input-Output framework resulted in a higher increase in the general prices (i.e., 2.5%). This is primarily because this estimation captures the effects of price changes which channel through other sectors of the economy. Results show that there would be a 5.2% increase in the total household spending as a result of rice and fuel price increases. This would mean that the previous national poverty threshold would now be about PHP 15,840 per capita per year. This would mean that poor households in the Philippines (those living below the poverty threshold of about PHP 15,057

per capita per year) would need an additional PHP 783 per person to maintain to their original utility level. Given an average household size of five, a poor household would need at least PHP 3,915 additional income per year to cope with the higher prices of rice and fuel.

In 2006, there are about 25.2 million poor people in the Philippines. Based on the 2006 FIES data, there are about 2.2 million people with per capita income which is within 5.0% higher than the provincial poverty threshold. Since this is the most vulnerable groups, the 5.2% increase in the household expenditures would force them to fall below the poverty line. In fact, about 2.3 million more people will become poor as a result of the higher prices of rice and fuel. Holding other factors constant, poverty incidence would go up by about 2.5% from 26.4% before the rice price increase to 28.9% after the price increase. The increase in the number of poor households is due to the fact that their real income is reduced given the rice price increases. Headcount index, in fact, would increase by 2.7%. Poverty gap is also expected to increase which means that the poor households become poorer as their per capita income fall far below from the poverty threshold. As expected, poverty also becomes more severe as reflected in the increase in the poverty severity index.

Because of rice price increases, both urban and rural poverty would increase. However, the percentage increase in poverty incidence is higher in the rural areas as compared to the urban areas. In fact, rural poverty would increase by 2.5 percentage points while incidence of poverty in the urban areas would increase by only 1.4 percentage points. As expected, poverty rate across all regions in the Philippines would also increase. The increase in the incidence of poverty is largest in the Autonomous Region in Muslim Mindanao (ARMM) at 3.8% and lowest for National Capital Region (NCR) at 1.3%.

### ***IMPACT OF RISING PRICES OF RICE ON DIFFERENT HOUSEHOLD GROUPS***

The impact of rising rice prices is expected to vary across different groups of households. As

highlighted earlier, those who are net producers are expected to benefit while those who are net consumers tend to lose from increasing prices. The succeeding sections examine the results by determining which groups of household would benefit more relative to the other groups. At the same time, groups which were most adversely affected by the rice price increases are identified.

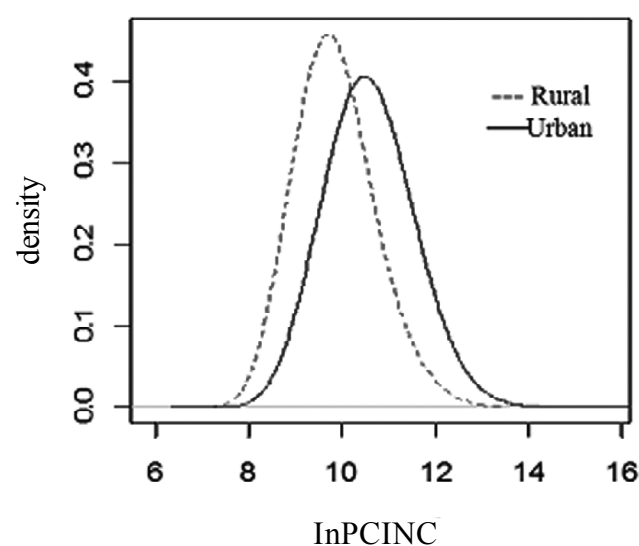
### ***Income Distribution***

The distribution of income based on geographical location and level of urbanization provides the foundation for understanding the likely differences in the possible impact of the price changes on different households. This also helps in understanding the distributional effects of price changes. The 2006 FIES reveal the disparities in living standards across all regions in the Philippines. Ignoring price differences, NCR has the highest annual per capita income (*PCINC*) across all regions with an average amount of PHP 80,950 (about USD 1,578 with an average exchange rate in 2006 of P51.31 per USD) per year. This value is more than four times that of ARMM which has an average annual *PCINC* of only PHP 18,083 for all households. It is also important to highlight that urban households in regions near NCR (i.e., CALABARZON, CAR, and Central Luzon) generally have higher income levels compared to those in other regions).

In 2006, the poverty threshold for the Philippines is about PHP 15,057 (USD 293) per capita per year. This translates to a poverty incidence (among families) of about 26.4% during the period. Across all regions, poverty is highest in ARMM (48.5%), followed by Caraga (42.8%), Zamboanga Peninsula (42.0%) and Bicol (40.2%). The lowest poverty incidence is recorded in NCR at 5.2%. It is also important to highlight that rural poverty is greater as compared to urban poverty. In fact, poverty incidence in the rural areas is about 35.9% which is more than twice the poverty rate in the urban areas (14.6%).

Figure 2 further highlights how income is distributed across households in urban and rural

areas. Note that the height of the curve corresponds to the number of observations that fall into the band. It is clear that urban households generally have higher living standards compared to rural households. This is well-documented in developing countries like the Philippines. The long upper tail of the distribution demonstrates the presence of extremely rich households and illustrates the existence of inequality, predominantly within urban households. Urban households, on the average, have *PCINC* of PHP 59,238 which is more than twice the average *PCINC* of rural households (i.e., PHP 26,677). The measures of dispersion, particularly the coefficient of variation, show the variations among the urban households and among the rural households.



**Figure 2.** Distribution of income by urbanity, 2006.

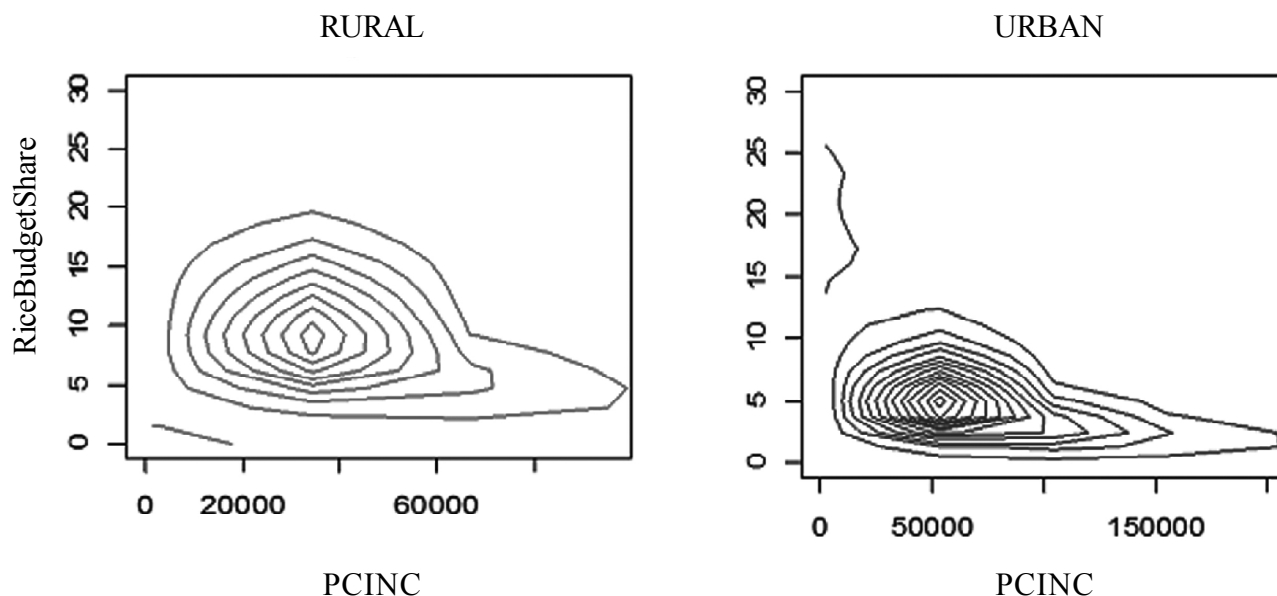
### ***Rice Consumption Patterns***

Based on the 2006 FIES data, rice is consumed by about 97.4% of households in the Philippines. However, there is also a great deal of variation in the patterns of rice consumption across different group of households in the Philippines. In 2006, the average annual household rice expenditures in the Philippines is about PHP 11,461 which accounts

for about 11.9% of their total expenditures. The share of rice to total household expenditure is higher for rural households compared to urban households. It is important to highlight that the rice budget share (*RBSHARE*) among the poorest households (those at the lower deciles) is higher compared to the richest households (those at the higher income deciles). In fact, the share of rice to total budget generally decreases as households move from a one decile to a higher decile.

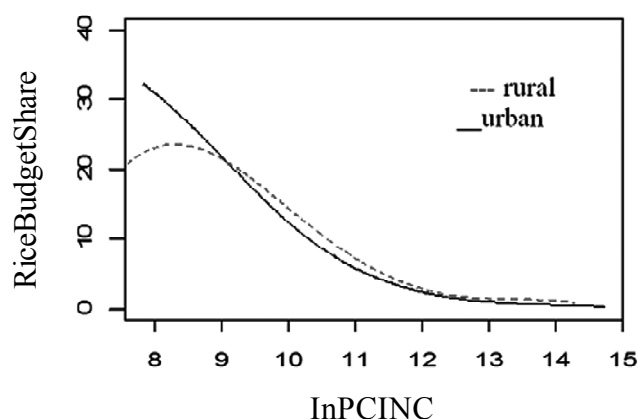
Holding other factors constant, it is expected that the significant increase in rice prices can adversely affect the lower-income groups. In particular, it is expected to result to welfare losses to those who are already living below the poverty line and can possibly drive others into poverty. This can lead to more unequal distribution of income. Therefore, safety measures should be provided to the poorest households to mitigate the negative impact of increasing rice prices on them. Results of the 2006 FIES also reveal that households in NCR have the least *RBSHARE* (5.1%) while households living in ARMM have the highest *RBSHARE* (19.4%).

The abovementioned generalizations are also supported by the joint density of *RBSHARE* and *PCINC* (Figure 3). These contours are similar to smoothed histograms in a three-dimensional view. The heights of the histograms are the fraction of households at the levels of *PCE* and *RBSHARE* represented by the coordinates at the base. Therefore, the points, which are linked by a contour, have the same density. The plots clearly illustrate the variation in *RBSHARE* within each group of households. For rural households with *PCINC* of about PHP 10,000, there are groups whose expected *RBSHARE*s are as low as 5.0% and as high as 13.0%. Variation in *RBSHARE* is also observed for urban households. Note that there are smaller contours which lie separately from the major contours. These represent the ‘outliers’ with respect to the main distribution. This may indicate some important information about the situation of the poor households. For instance, for the poorest urban households, a very wide variation in the *RBSHARE* is recorded, that is, some groups are expected to have about 3.0% while others have about 25.0%.



**Figure 3.** Patterns of *RBSHARE* and per capita income, 2006.

The nonparametric regression between *RBSHARE* and *lnPCINC* also reveals that the share of rice to total budget decreases as income increases (Figure 4). The generally downward sloping curves for both groups of households confirm Engel's law that the share of rice expenditures on total budget decreases as living standards rise. In fact, the richest households on the average allotted a considerably smaller proportion of their budget to rice compared to other households. However, in absolute terms, the amount they spend on rice may exceed those of the poorest households.



**Figure 4.** Nonparametric regression of *RBSHARE* and *lnPCINC*, 2006.

Source of basic data: 2006 FIES.

The poor rural households, which are at the bottom of the expenditure distribution, show a very interesting pattern. In fact, for households with very low levels of income, the share of rice consumption increases with income but beyond a certain level, the share of rice to total budget begins to fall. Although this can be possibly due to the fact that there is lesser number of observations for this extremely low income range, it also provides important information on rice consumption patterns of this group of households. There are a number of possibilities. It may imply that the poorest households may be consuming other cereal products (e.g., instant noodles) or are eating less rice because they cannot afford it and some may

be even suffering hunger. For this group of households, a unit increase in income would tend to increase their consumption of rice and hence, share of rice to total expenditures becomes larger. At the other end of the distribution, however, a flatter curve is observed for both rural and urban groups reflecting lower expenditure elasticity for richer households. This means that the share of rice to total budget does not change significantly as households become very rich. Figure 4 also demonstrates the welfare effects of price changes which operate through consumption. For instance, if farmers continue to receive the same price for production (i.e., farmgate prices remain constant), but consumer prices increase, the poorest households will lose more as compared to the richest households.

Based on the 2006 FIES, poor households spend about 19.9% of their expenditures on rice while non-poor households allot 9.0% of their budget to rice. In fact, poor households spend an average of PHP 2,082 of their budget for rice consumption. On the other hand, non-poor households consume about PHP 4,888 of their total budget for rice. This means that while the amount allotted by non-poor households to rice is higher, its share to their total expenditures is relatively lower. Assuming farmers continue to receive the same price for rice, the increase in retail prices would hurt the poor households the most.

It is also worth noting that among all National Food Authority (NFA) rice consumers, only 46.6% are considered poor. In addition, among all poor households (who are supposed to benefit from subsidized NFA rice), only 24.0% were able to access NFA rice. This also provides some indication on targeting the poor. Results of the 2006 FIES also reveal that only about 13.9% of households in the Philippines consume NFA rice. On the average, NFA rice represents about 5.5% of the households' total rice expenditures. Note that for households in the lowest income decile, NFA rice accounted for only about 12.7% of their total spending on rice. Based on the level of urbanity, households in urban areas generally have lower NFA rice share (3.5%) to total household

rice consumption. Across different regions, the largest proportion of households who consume NFA rice is located in Bicol region (46.7%). On the other hand, the least proportion of NFA rice consumers is recorded for Western Visayas (2.9%). This may be attributed to the extent of government interventions, particularly the NFA interventions, in these regions.

Moreover, households which either produce palay or receive a net share of palay produced by other households did not sell all their palay produce in the market. In fact, about 28.2% of their own palay produce in 2006 were consumed at home while about 0.8% were given away as gifts. This means that only about 71.0% of their palay produce (including their own palay production and their net share of palay produced by other households) are sold by these households in the market.

### ***Rice Production Patterns***

Based on the 2006 FIES, about 14.4% of households in the Philippines are producers of rice. A large proportion (about 41.8%) of the income of these rice producers comes from rice production. As expected, the proportion of rice producers in rural areas is higher compared to urban areas. It is also observed that there are more rice producers among the poorest households, that is, those at the 2<sup>nd</sup> and 3<sup>rd</sup> deciles have the higher probability of being involved in rice production. The largest proportion of rice producers is recorded for Cordillera Autonomous Region (CAR) (38.0%) and Cagayan Valley (35.6%). Data also showed that palay income share decreases as household move from one decile to a higher decile. This means that the poorest households have the highest palay income share while the richest households have the lowest palay income share. Richer households, in fact, have more opportunities to be involved in other economic activities and do not need to rely heavily on rice production income. On the other hand, poorer households are more dependent on palay production as a source of income. Note also that palay income share is highest among

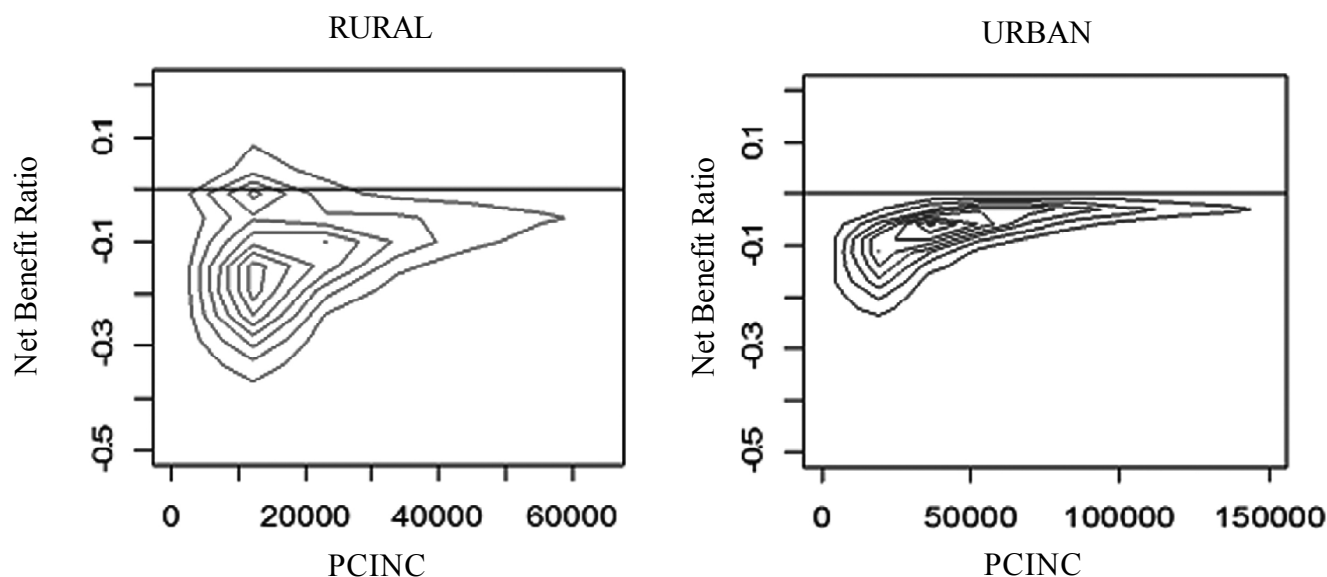
households in the following regions: (1) ARMM (77.0%); (2) Central Luzon (55.8%); (3) SOCCSKSARGEN (55.2%); and (4) Davao (53.2%).

### ***Net Consumers and Net Sellers of Rice***

Figure 5 shows that most of the households in the Philippines are expected to be net consumer of rice, that is, most of the households across different income groups in both urban and rural areas have expected *NBRs* of less than 1. Note that the horizontal line divides the net producers and the net consumers of rice. Although most of the rice producers are located in the rural areas, it is notable that a large proportion of rural households are still considered net consumers. For urban households, as expected, households are generally expected to be net consumers of rice. This also confirms the earlier generalizations that most of the households living in urban areas are expected to be negatively affected by rice price increases.

Data from the 2006 FIES confirm that there are more net consumers (84.7%) of rice than net producers (12.8%) in the Philippines. This shows that more households in the country would be negatively affected by the increase in rice prices. The same generalization is arrived at when results are disaggregated by urbanity, by income decile and by region. It is important to highlight that within each groups of households, a higher proportion of net consumers (93.8%) is recorded in urban areas as compared to rural areas (75.8%). While a majority of households in the rural areas are also net consumers of rice, the proportion of net producers within these areas is also expectedly higher compared to urban households. Moreover, the groups of households at the second, third and fourth deciles recorded the highest proportion of net rice producers (16.1%, 17.4% and 16.0%, respectively) relative to other groups. As expected, the largest proportions of net rice consumers are reported for those at the 10<sup>th</sup> (92.0%), 9<sup>th</sup> (89.8%) and 8<sup>th</sup> (89.8%) deciles. Across all regions, NCR (98.6%) and CALABARZON (96.2%) recorded





**Figure 5.** Distribution of *NBR* across different levels of living standards in rural and urban areas, 2000.

Note: PCINC in thousand pesos.

Source of basic data: 2000 FIES, NSO.

the highest proportion of net consumers while Cagayan Valley (36.8%) and Ilocos Region (29.1%) recorded the largest proportion of net producers.

Based on the distribution, most of the net producers in the Philippines are located in the rural areas (80.7%) while most of the net consumers are located in the urban areas (54.9%). Although most of the net producers in the Philippines belong to the lower income deciles (i.e. 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> deciles) and most of the net consumers are those in the upper income deciles, it is expected that the poorest households (especially those who belong to the first income decile) are the most vulnerable to price changes. This means that the poorest households are the ones who are most adversely affected by price increases. The rising prices may further erode their purchasing power, thereby worsening their poverty situation. Comparing across all regions in the Philippines, it is worth noting that most of the net consumers in the Philippines are located in NCR (15.8%) and CALABARZON (14.7%) while most net producers are in Central Luzon (13.2%) and Ilocos Region (12.4%).

### ***NBR: Measuring the Impact of Increasing Prices of Rice***

To determine the direct impact of rice price increases on household welfare, a simulation was done and the variation in *NBR* among different groups of households was analyzed. In particular, the simulation involved a 39.6% increase in retail prices of rice, which is the actual increase in the average retail prices of rice between the period 2006 (baseline period) and 2008. On the other hand, the average farmgate price of palay increased by about 34.9% from PHP 10.88 in 2006 to about PHP 14.68 in 2008. Given the negative *NBR*s, households in the Philippines would be negatively affected by the increase in rice prices (both of farmgate and retail prices). It is worth noting that households would generally lose from price increase with rural households being the more affected group compared to urban households. The poorest households are also the most adversely affected.

About 85.5% of households in the Philippines would be negatively affected while only 12.1% of

the households would benefit from the increase in rice prices. There is also a small proportion (2.4%) of households which are not directly affected by rice price changes. This would include those households whose palay income share is equal to the rice budget share, as well as those which do not produce palay and do not consume rice at the same time. This may include households in regions where the main staple is not rice.

Disaggregation of the results by urbanity, by income decile and by region follows the same trend. A larger proportion of losers were recorded for the urban areas (94.1%) as compared to rural areas (77.0%). Based on the distribution, most of the losers in the Philippines are, in fact, living in the urban areas (54.6%) while most of the gainers are located in the rural areas (80.6%). Most of the gainers belong to the 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> income deciles. Looking at the regional patterns, a larger proportion of households in each region would tend to lose from rice price increases. Based on regional distribution, most of the losers are living in NCR (15.7%) and CALABARZON (14.6%)

As mentioned earlier, among all poor households (who are supposed to benefit from subsidized NFA rice), only 24.0% purchase NFA rice. This is an indication of the extent of NFA interventions in the country. Assuming that all poor households would consume NFA rice only, their *NBRs* would slightly change. Although *NBRs* of poor households remain to be negative (i.e., -0.063), there would be a slight positive effect in their net position. This means that, given their level of production and consumption, poor households would benefit if they could access the subsidized NFA rice. On the other hand, if non-poor households are limited to buying commercial rice and are not allowed access to the highly subsidized NFA rice, results confirm that there would be a decrease in their *NBRs* by about 0.014, reflecting a decline in their welfare status. This is primarily because they would now face a higher price for purchasing commercial rice instead of the much cheaper NFA rice in the market.

### ***Impact of Rice Price Increases on Rice Farm Households***

***Net position of rice farm households.*** One important result is that although most of the rice farm households in the Philippines in 2006 are net producers of rice (78.0%), the proportion of net consumers is also fairly large (22.0%). It is possible that the income derived by these households from rice production is not sufficient to support their home consumption. In some cases, rice producers sell their palay produce in order to have cash which they can use to finance other households expenses. Some farmers are also forced to sell their palay produce to traders who dictate the buying price (which is usually lower than the market rate). Although some of them reserve a certain amount of their harvest for own consumption, most of them also purchase rice from the market later on as the need arises.

In terms of urbanity, a larger proportion of rice farm households are net producers in both urban (84.1%) and rural areas (76.8%). However, as expected, most of the net producers are living in the rural areas. Across income deciles, it should be noted that a relatively large proportion (i.e., 33.8%) of rice farm households at the lowest income decile are considered net consumers. In fact, most of the rice farm households which are net consumers belong to the 1<sup>st</sup> income decile (i.e., about 18.8%). Furthermore, most of the richest farmers (i.e., 88.0%), however, are net producers of rice. These results also confirm that small farmers tend to be the most adversely affected by rice price increases. Across all regions, although net producers accounted for a higher proportion of rice farm households, it is important to note that a significant proportion of the poorest households are net consumers of rice. In fact, most of the rice farm households (about 8.8%) in the Philippines which are considered net consumers belong to the lowest income decile. This still confirms that the poorest farmers are expected to be the most adversely affected by rice price increases.

It is also important to mention that based on the 2006 FIES, a large proportion of rice farm households are considered poor. In fact, about 33.5% of rice farmers are income poor. This may indicate that the rice production income of some farmers is not enough to sustain the basic nutritional requirements of the household members. Results also reveal that about 20.0% of poor households in the Philippines are involved in rice production. Understanding the reasons why rice farm households are generally poor requires much deeper analysis. However, in general, rice farm households have relatively lower non-farm income as compared to non-rice farm households. Since small rice farms have smaller income which is not enough to move out of poverty, non-farm economic activities would play an important role in providing additional sources of income.

***Rice farm households: losers and gainers.***

Focusing on those households which are involved in rice production, a large proportion of rice producers would gain from rice price increases. However, it should be noted that still a large proportion of rice farm households would tend to lose from such price changes. In fact, while 73.7% of rice farm households would benefit from rice price increases, about 26.3% of them would lose from such price changes. This may include small rice farmers who cultivate a small piece of land and produce a minimal amount of rice produce. In particular, poor farmers have a lower average rice production (PHP 25,440 per year) while nonpoor farmers have an annual average rice production of about PHP 55,701. In addition, poor farmers who lose from rice price increases have an average rice production amounting only to PHP 10,701 per year while their average rice consumption is about PHP 16,179 per year. This confirms that the value of production of these farmers may actually be less than the value of their rice expenditure for the entire year, making them losers of rice price increases. In fact, the average ratio of the value of rice consumption to total rice production of rice producers is greater than one (i.e., 1.1). This would also imply that, in general, small farmers who

are usually poor would lose from rice price increases.

As expected, most of the rice farm producers who are losers are located in the rural areas (88.5%). At the same time, more rice farmer gainers are located in the rural areas (82.8%). Based on income groups, most of the rice farm households that would be negatively affected by the rice price increases belong to the lower deciles. Although most of the gainers belong to the 3<sup>rd</sup> and 4<sup>th</sup> income deciles, it is important to note that the rice farm households which are at the extremes of the income distribution (i.e., poorest and richest) would have a lower share to total gainers in the Philippines. In fact, only 9.9% of the total gainers in the Philippines belong to the 1<sup>st</sup> income decile while only 4.6% of them belong to the 10<sup>th</sup> income decile.

The distribution of rice farmers who are losers and gainers after rice price increases show that the groups of households which are greatly affected by rice price changes are those living in the rural areas. In fact, a larger proportion of losers (and gainers) are located in the rural areas. Across income deciles, it is worth mentioning that the groups of households who are most adversely affected are those at the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> income deciles. A large proportion of losers and gainers belong to these groups of households. This demonstrates that the relatively poor rice farm households are affected more by the changes in rice prices. Among all regions in the country, most of the losers are living in Central Luzon, Ilocos Region and Western Visayas.

Although the average farmgate prices also increased, the change is not enough to benefit all rice farm households. This is because even rice farmers themselves are highly dependent on the rice market. In fact, among all rice farm households, about 75.1% also purchase rice from the market in 2006. As mentioned earlier, most of the farmers, in practice, sell their own produce to traders and then, later on buy some of the rice they consume from the market. Some of them would opt to buy the cheaper rice alternative, such as the NFA rice, which is highly subsidized by the government. About 10.1% of rice producers in 2006 also purchased NFA rice from the market.

## RESULTS OF THE CBMS SURVEY IN SELECTED BARANGAYS

### *IMPACT ON HOUSEHOLDS*

Households in the three barangays were asked how they perceive their present condition compared to their situation six months ago. Interpreting data, especially on perceptions, should be approached with caution. Perceptions are highly subjective and influenced by external factors like mood of the respondent at the time of the interview, respondent's overall disposition on life (pessimists vs. optimists), and others hosts of psychological aspects. Nonetheless, one's psyche is strongly linked to one's economic situation and therefore self-rated status and other perception data cannot be dismissed altogether. For this study, results show that Barangay Santa Rita has the highest proportion of households that reported improvement in their condition (17.1%) while Barangay 51 has the lowest proportion at 5.5%, which is significantly lower than Barangay Santa Rita and Barangay 85 (13.4%). Barangay 51 has the highest proportion of households that reported no change in their situation (70.9%), about 6.7 and 10.1 percentage points higher than Barangay 85 and Barangay Santa Rita, respectively. Moreover, Barangay 51 also has the highest proportion of households that reported deterioration in their status (23.6%), a notch higher than the other two barangays. It is notable that about a quarter of the households living in each barangay claimed that they have become worse off as compared to their condition six months ago. Although this may not be attributed solely to the increasing prices of rice and fuel, the fact that rising prices reduce their purchasing power, especially of the poor households, may have contributed to their perception of declining economic situation.

Within the barangay of Santa Rita, perceptions of rice farming households are slightly different from those of non-rice farming households. The proportion of households that reported improvement in their condition is almost the same for both groups (i.e., around 17%). However, the

proportion of rice farming households that reported a worsening of their situation is about 4.0 percentage points less than non-rice farming households. While not a full-proof assertion, these results may imply that not all rice farming households benefited from the spike in rice prices.

If one further looks at the subset of rice farming households in Barangay Santa Rita by dividing it into quintiles, a larger proportion of rice farm households belonging to the 4<sup>th</sup> and 5<sup>th</sup> quintiles reported improvement in welfare (20.8% and 16.1%, respectively) as compared to those at the lowest quintile (10.0%). Note also that an even larger proportion of lower income rice farmers reported decline in welfare. These results indicate that, apparently, a larger proportion of higher income rice farmers than lower income rice farmers are benefiting from the price surge mainly because the former have more resources for utilization and mobilization and are in a better position to increase production as a response to high prices than the latter. Everything else held constant, poor farmers are less likely to benefit from price increases unless the household can get hold of sufficient capital to expand rice production. This is the tipping point where government intervention is most welcome. Credit programs can enhance poor rice farmers' capacity to effectively respond to incentives posed by increases in prices. The provision of affordable agricultural inputs would likewise lower the risks of incurring huge debts by the farmers, thereby decreasing cost and increasing profits.

After decomposing the data into five income groups (quintiles), results show that higher income brackets generally have more respondents reporting that their condition has improved compared to six months ago and less respondents saying that their condition has deteriorated compared to six months ago. Judging by the households' responses, therefore, it is apparent that the poor have perceived their situation to have worsened while the non-poor have perceived their state to have gotten better. This suggests that soaring food and fuel prices tend to impact poor households a great deal more than it impact the non-poor households. Thus, government efforts should be appropriately

channeled to poor households that have been hurt and are being hurt by high prices of food, including rice.

Based on the 2006 FIES, only about 13.9% of households in the country consumed NFA rice. On the other hand, about 41.9%, 47.9%, and 23.0% of the households purchase NFA rice in Barangay Santa Rita, Barangay 51 and Barangay 85, respectively. While the figures may have differences in view of geographical coverage, it is likely that the significant difference in the proportion of NFA rice consumers may be partly due to the shift in consumption of households from commercial rice to NFA rice, which is a cheaper alternative. It is also important to note that about 37.2% of rice farm households in Barangay Santa Rita consume NFA rice in 2008 while a larger proportion (44.3%) of non-rice farmers purchased NFA rice during the same period.

Although a larger proportion of poor households were able to access NFA rice as compared to non-poor households during the survey period, data still show and confirm a degree of undercoverage. This is true for all barangays included in the study. In particular, Barangay Santa Rita reported that 62.9% of poor households consumed NFA rice in 2008 but in addition, it can be seen that 80.7% and 33.3% of poor households in Barangays 51 and 85, respectively, were also able to access NFA rice. This observation remains to be true for each of the three barangays included in the study. As highlighted earlier, this trend demonstrates the fact that not all poor households benefit from the cheaper NFA rice.

### ***HOUSEHOLDS' COPING MECHANISMS***

As mentioned earlier, this study also intends to determine how the different groups of households are coping with the increase in prices in general, and increase in rice and fuel prices in particular. Among the three barangays, the average income is highest for those households living in Barangay 85 (PHP 77,321) followed by Barangay 51 (PHP 63,434) and then, by Barangay Santa Rita (PHP 44,785). Based on the responses of the households

in the rider questionnaire, a number of coping mechanisms adopted by the households have been identified. The succeeding sections present the similarities and differences in the coping mechanisms of households living in three different barangays.

A majority (or about 97.7%) of households in the three surveyed barangays did not change the type of staple food they consume for the period January-June 2008 (100% for Barangay Santa Rita, 96% for Barangay 51, and 97.2% for Barangay 85), there are still some changes in other aspects of their consumption pattern which may be partly attributed to the soar in rice and fuel prices. Recall that rice is considered the main staple food in the Philippines. Rice consumption in the country has continuously increased, which, according to analysts, is an indication that most Filipinos remain poor as they lack the means to expand their choice of food (Sabangan, 2008). Moreover, data from the Department of Agriculture's Bureau of Agricultural Statistics (DABAS) showed that annual per-capita rice consumption in the Philippines increased by 28.3% to 118.7 kilograms in 2006 from 92.53 kg in 1990. In monthly terms, this sums up to an increase in rice consumption from 7.7 kg to 9.8 kg per person. It is also important to note that rice consumption in the Philippines is relatively higher compared to other higher-income countries in Asia. For instance, Japan and Taiwan recorded an annual per capita rice consumption of about 61 and 48 kilograms, respectively.

As the price of rice continues to rise, it is expected that Filipinos will substitute cheaper foodstuff (i.e., corn, root crops). Nevertheless, due to the availability of cheaper types of rice in the market, notably NFA rice priced at PHP 18.25/kg and subsidized imported rice from US and Thailand sold at PHP 25/kg, consumers did not make an abrupt shift from rice to non-rice foodstuff. Another factor worth noting is that rice is a staple commodity in Philippine diet, deeply ingrained in culture, language, and national consciousness. For a poor household, or any household for that matter, rice should be present

in the dining table even with or without a viand to go along with it.

### ***Changes in Rice Consumption Patterns***

**Rural community.** Results from Barangay Santa Rita show that the proportion of households consuming NFA rice increased by 22.4%. Among those households which changed the type of rice they consume, about 65.9% said they cannot afford to buy the more expensive product anymore (i.e., the commercial rice). The shift from commercial rice to NFA rice can be reflected in the data for Barangay Santa Rita. In particular, 66 households (19.5%) in the barangay who consumed commercial rice six months ago now consume NFA rice. The shift from commercial rice to NFA rice is also evident even for rice farming households in the barangay. During the survey, about 37.2% of rice farmers are consuming NFA rice. This is a significant increase compared to the proportion six months ago which is only about 15.0% of all rice farmers in the barangay. In addition, the proportion of rice farm households which consume commercial rice significantly decreased from 39.8% to 21.2%. Moreover, 12 households (10.6% of rice farmers) who previously consume their own harvest shifted to NFA rice and 20 households (17.7% of rice farmers) who previously consume commercial rice also shifted to NFA rice. These are normally done by farmers in order to earn more, that is, selling their produce at a relatively higher price than NFA rice or consuming less expensive rice considering the increase in rice production costs.

Moreover, according to the farmers' groups National Rice Farmers Council and Rice Watch and Action Network, palay production costs have increased to as much as PHP 10 per kilo for the June planting season of 2008 this year. Based on the figures released by the Bureau of Agricultural Statistics, the average price of urea during the planting season in June 2008 was PHP 1,754.31 per sack (an increase of 78.49% from PHP 982.84 only per sack in June 2007). On the top of higher

fertilizer prices, other cost of production inputs posted a sharp increase from an average cost of PHP 7.40 per kilo only in 2007. It is customary for farmers to leave some cavans of rice to be milled later for their daily consumption but in order for the farmers to pay off their debts incurred for rice production and still have some savings, they have to make changes to their consumption, in this case, the type of rice that they consume. It is important to highlight that the shift to NFA rice remains to be true even for farm households. In fact, the number of rice farm households which consume NFA rice increased from 17 six months ago to 42 households. On the other hand, the number of farm households which consume commercial rice decrease from 45 to 24 households.

**Urban community.** Data from Barangay 51 reveal that although proportions of type of rice being consumed did not change very much in the past six months, 35 households (7%) shifted to NFA rice from commercial rice with 213 households (42.5%) sticking to NFA rice as staple food bringing the total proportion of NFA rice-consuming households to 50.0%. Being the poorer barangay relative to Barangay 85 and Barangay Santa Rita, the high price of rice served as a barrier for poor households to purchase commercial grade rice thereby limiting them to the cheap NFA rice. Households that cannot anymore afford the high price of commercial rice tend to substitute the cheaper NFA rice. On the other hand, Barangay 85 has seen its rice consumption virtually unchanged for the past six months with only 9 households (5.2%) changing preference from commercial rice to NFA rice. In addition, Barangay 85 has only 41 (23.6%) NFA rice-consuming households, relatively fewer than NFA rice consumers in Barangay 51 numbering 248 households (49.5%). Barangay 85 being the relatively well-off community, rice consumption patterns have not changed mainly because food, specifically rice, is only a small part of their consumption.

### ***Changes in Consumption, Preparation and Purchase of Food***

In terms of consumption pattern, about 16.5% of households in Barangay Santa Rita reported that there had been changes in the way they eat and prepare food during the period of high prices. Meanwhile, the figures for Barangay 51 and Barangay 85 are 25.7% and 20.1% respectively. This finding suggests that the recent spike in food and fuel prices have greater influence on the food consumption pattern of urban household. The data also confirm that within a rural farming barangay (i.e., Santa Rita) households that do not engage in farming have to make necessary alteration to their food consumption pattern to cope with high and rising food and fuel prices unlike farming households that, we assume, benefit from the increases in prices.

***Rural community.*** The household coping mechanism most practiced by households in this barangay is by eating less meat and more fish and vegetables. About 60.7% of the households claimed that this is their major coping mechanism. Another coping mechanism reported by these households is by modifying their cooking method (48.2% of the households) and by eating less than three meals a day (37.5% of the households). For those households who shifted to cheaper food or eat less frequent than the usual three meals a day, there is probability that this may result to malnutrition. In some cases, the higher expenditures on rice due to higher prices may also reduce their expenditures on health and education. This may also result to a reduction of the budget to purchase the critically needed agricultural inputs (e.g., fertilizers, fuels) to expand rice production in response to higher prices.

***Urban community.*** In contrast, households in Barangay 51 have a different set of household coping mechanisms than Barangay Santa Rita. Mixing commercial rice with NFA rice is the top strategy employed by households (51.5%) to cope with high and rising food prices. For households

used to commercial rice as staple food, the next best thing to do is to blend cheaper NFA rice with commercial rice instead of abandoning it. Usually the combination would be 50-50 or in worse case more of the NFA rice. To illustrate, a family with 6 members with an average consumption of 1 kilo of rice per day that decided to mix NFA rice with commercial rice at a 50-50 ratio can save as much as PHP 73 (26.6%) per week. This weekly savings translates to a monthly savings of PHP 292. This amount may be meager but within the context of subsistence living of poor households, this savings is enough to support the education of children or it can be used on other investments like health and nutrition.

Besides mixing commercial rice with NFA rice, the data also show other coping mechanisms done by households in Barangay 51 to cushion the impact of rising food prices on their daily living. Among the households in Barangay 51 that responded changes have taken place in the way they eat and prepare food for the period January-June 2008, 38.8% eat the same food for several days in a row, the same proportion of households combine meals, and 23.1% eat more ready-to-cook food and less prepared food. The preceding household coping strategies in Barangay 51 are negative with respect to its implications on the health and nutrition status of household members. The risks with eating the same foodstuff on a daily basis are nutritional deficiencies and calorie intake shortfall. Combining meals and shifted preference to ready-to-cook food also entail the same health risks especially for the children and pregnant women who are members of the households practicing such coping strategies. Meanwhile, results from Barangay 85 present another set of household coping mechanisms different from Barangay 51 and to a lesser extent Barangay Santa Rita. Eleven households (30.6%) said that they ate less meat and more fish and vegetables and 10 households (27.8%) said they tightened their belts and became more conscious with what they buy. Households in Barangay 85 that made changes to their consumption pattern in lieu of high food prices have not reduced food consumption but mainly

substituted relatively more affordable foodstuff or chose cheaper brands of their usual food basket.

### ***Changes in the Place Where Households Buy their Staple Food***

Looking at the data on food market preferences of the 3 barangays, the proportion of households that buy their staple food from aggregated commercial markets at present is highest in Barangay 85 (92.2%) with only 5.6% of its households buying from government-run markets (i.e., Tindahan ni Gloria and NFA Rolling Stores). Moreover, the proportions for Barangay 51 are 70.3% for commercial marketplace and 21.1% for government-controlled stores. Forty nine percent of households in Barangay Santa Rita at present buy its food from commercial sources with 26.8% purchasing its staple food from government-run sources.

***Rural community.*** Aside from shifting from one type of rice to another, most of the households in Barangay Santa Rita also shifted from one staple food market to another. Most notable is the increase in the proportion of households which purchase rice from the NFA rolling stores. In particular, about 13% of households who usually purchase rice from the wet market now buy rice from NFA rolling stores. About 1.5% of households who previously buy rice from sari-sari stores now purchase rice from NFA rolling stores, as well. Furthermore, some households (about 0.6%) who also buy previously from supermarkets now buy rice from the sari-sari stores.

***Urban community.*** The distribution of households among the different food markets in Barangay 51 and Barangay 85 remained essentially the same during the past six months with the exceptions of 11 households – 7 of these households shifted from sari-sari-store to NFA rolling store and the remaining 4 households shifted to either NFA rolling store or Tindahan ni Gloria from either supermarket or wet market.

Forty one households surveyed in Barangay Santa Rita reported that the reason behind their change in preference over food market was the unaffordable food prices in commercial marketplaces while majority of households in Barangay 51 and Barangay 85 stated that their primary reason was to save money. The results suggest that even though urban households can still afford food prices in commercial centers for example they rather shift to government-run stores to avail of foodstuff at a cheaper price. This maximizing behavior of consumers, particularly of the non-poor households, prove to be the source of leakages in government programs intended for the poor, that is, NFA subsidized rice.

### ***Changes in the Type of Fuel Used for Cooking***

Although there had been subtle changes in the type of fuel used for cooking by and large, changes in the preference for the type of cooking fuel shifted from petroleum-based products to non-petroleum cooking fuels. No abrupt changes happened because instead of replacing the cooking fuel the household can scrimp and save in order to avoid increased spending on fuel. This strategy includes making changes in cooking and food preparation of the household (Table 39).

In response to increasing fuel prices, households have also adopted some coping mechanisms. For instance, some households shift from cheaper energy sources. In Barangay Santa Rita, 1.2% of all households who previously used Liquefied Petroleum Gas (LPG) shifted to charcoal. In addition, 2.1% of LPG users six months ago now shifted to the use of firewood for cooking. The shift is mainly because households can no longer afford to buy the more expensive fuel. Some households also reported that they were doing this to save more money (and have more money to finance their other needs). Three households each in Barangay 51 and Barangay 85 also shifted from more expensive cooking fuel to a cheaper one. The substitution is either from LPG or kerosene to either firewood or charcoal.



### ***Changes in Electricity Consumption Pattern***

The average electric bill of households in Barangay Santa Rita has generally increased during the period covered by the study. The patterns of electricity consumption in the barangay have also changed in response to the increasing electricity rates. Most of the households (51.1%) claimed that the main reason for such change is the increase in electricity rates. Some households (16.0%) decrease their electric usage in order to reduce their electric bill. Given the increasing prices, some households adopted some coping mechanisms. A majority of the households (88.7%) reported that they are disconnecting household appliances when not in use in order to reduce electric consumption. About 68.0% of the households also cut down television viewing hours to minimize their electric bill. To save energy, 36.1% of the households also replace incandescent bulbs with fluorescent bulbs. Furthermore, other coping mechanisms are adopted by the households as follows: (1) lessening the use of household appliances other than TV (29.9%); (2) using laundry fabric softeners to do away with ironing (16.5%); (3) voluntary disconnection of electricity (2.1%); and (4) resorting to electricity pilferage.

The average electric bill of households in Barangay 51 also generally increased during the past six months. Majority of these households (66.1%) declared that increasing electricity rates is the reason for the increase. Given the circumstance, households had to cope by making changes with regards to their electric consumption. These mechanisms include disconnection of appliances not being used (84.5%), shortened TV viewing hours (51.2%), and use of laundry fabric softeners to do away with ironing (53.6%). Unlike the two other barangays, the average electric bill in Barangay 85 fell but not that much (0.8%) mainly because of decreased usage as a natural response to high electricity rates. Households in Barangay 85 practiced the same conservation strategies as the other two barangays.

### ***Changes in Education-Related Expenses***

Results also revealed that some households coped with increasing prices by sacrificing some health-related expenses, which can have long-term effects on the poverty situation of the household. For instance, some children (6-16 years old) are forced to stop going to school due to financial limitations. In Barangay Santa Rita, about 24 (7.1%) households have at least one child who stopped going to school. However, only a few families (0.9%) decided to transfer their children (6-16 years old) from private to public school mainly because they can no longer afford to pay the tuition fee in the private schools.

The data from Barangay 51 reveal that only five households (1%) have at least one child who stopped going to school in 2008 but was enrolled last school year. There was no reported instance of a child being transferred from private to public school in the said barangay. The case was different in Barangay 85. Five households or 2.8% have at least one of their children transferred from private to public school in 2008. Out of these households, three shared that the main reason for such move was that they can no longer afford the tuition fee of their children. More so, four households reported that at least one of their children had stopped going to school during 2008. Each of the households pointed to a unique reason that include helping in family business, no money for education, lack of interest in going to school, and illness or disability.

### ***Changes in Health-Related Expenses***

Among the three barangays surveyed for this study, Santa Rita has the highest proportion (43.4%) of households that said there were changes in the way they meet their health and medical needs. One possible explanation is that rural households has different, but not necessarily varied, suite of coping strategies than urban households thus they have to make adjustments in every aspect of their expenditures not excluding

medical/health care needs. Urban households on the other hand can still manage not to alter their health seeking behavior by tapping other coping strategies available to them.

**Rural community.** In order to cope with the increasing prices, some households also changed the way they meet their medical/health care needs. For instance, about 70% of households in Barangay Santa Rita now go to government health centers/hospitals instead of private clinics/hospitals. Furthermore, a majority of the households (61.2%) in the barangay would rather consult an “albularyo” (quack doctor or witch doctor) instead of a licensed doctor when they have health problems. There is also a significant proportion (39.5%) of households in the barangay who use herbal plants as alternatives for pharmaceuticals.

**Urban community.** In contrast, 75.4% of households in Barangay 51 now resort to self-medication instead of getting proper prescription from a doctor. Moreover, 36.8% of households reported that they shifted to buying generic drugs from branded drugs. Another significant proportion (25.4%) do not anymore go to private clinics or hospitals but go to government health centers or hospitals instead. The same set of coping strategies are also practiced by 10% of households in Barangay 85.

Variety in the health coping strategies between the barangays can be associated with the following factors, namely: local customs and epidemiology, presence of health and wellness facilities and access to health services, and income.

### ***Changes in Communication-Related Expenses***

Forty-six households (25.7%) of the households that had seen changes in their cellphone expenses said that the main reason why they cut down on their cellphone expenses is to save money. However, a larger proportion (39.7%) of households that had seen their cellphone expenses decreased for the past six months reported decreased usage behind the decline. In Barangay

51 average cellphone expenses per month decreased by 3.4% from PHP 194.54 to PHP 188.01. The average cellphone expenses per month in Barangay 85 also significantly dropped. It decreased by as much as 37.9% from PHP 603.71 to PHP 374.64. Thirty-three percent said that the slash in cellphone expenses is to save money. Poor households have to cut down on non-basic needs including expenses on short text messaging or calling unlike non-poor households. For Barangay Santa Rita, there are no significant changes in communication-related expenses, that is, only a slight decrease in the average weekly cellphone expenses (1.3%).

### ***Changes in the Pattern of Transportation-Related Expenses***

**Rural community.** For households in Barangay Santa Rita, there are no changes in the main mode of transportation when going to work. For those households which used their own vehicles when going to work, results show that the average price of fuel per liter faced by the households increased by about 12.8% from PHP 51.69 to PHP 58.33. Given this, their average weekly expenditures decreased by about 11.5% from PHP 737.72 to PHP 652.51. Households who usually go to work by riding a public utility vehicle (e.g., jeepney, bus), also experienced an increase in the average expenses for fare. In fact, their average weekly fare expenses six months ago is only about PHP 147.31 for a round trip and now, it is about PHP 165.84. This would mean that households should have an additional amount of at least PHP 18.53 to finance their weekly transportation expenses due to the increase in transportation fare, holding other factors constant. Note that a fare hike is a result of the continuous increase in the price of fuel in the country.

**Urban community.** Like Barangay Santa Rita, Barangay 51 saw virtually no changes in the main mode of transportation when going to work except for the two households who shifted from PUV to private vehicle and another two households who don't ride PUV anymore and instead walk to their

workplaces. For those households which used their own vehicles when going to work, results show that the average price of fuel per liter faced by the households increased by about 4.5% from PHP 48.17 to PHP 50.43. Their average weekly expenditures increased by about 4.8% from PHP 718.25 to PHP 754.30. For households in Barangay 85, there are no changes in the main mode of transportation when going to work except for a single household that shifted from PUV to private vehicle. For those households which used their own vehicles when going to work, results show that the average price of fuel per liter faced by the households increased by about 2.6% from PHP 50 to PHP 51.33. Their average weekly expenditures increased by about 10.6% from PHP 1,095 to PHP 1,225. Households who usually go to work by riding a public utility vehicle (e.g., jeepney, bus), also experienced an increase in the average expenses for fare. In fact, it increased by as much as 24.6% from PHP 34.26 to PHP 45.45. Households whose eldest member is attending school experienced an increase in the average weekly expenses for fare. In particular, it increased by about PHP 7.80.

### ***Savings and Loans***

***Rural community.*** About 57 households, representing 16.8% households in Barangay Santa Rita, reported that they were able to save some amount of money. In order to cope with the increasing prices, 49 households (14.4%) in the barangay in the last six months made use of their savings to purchase commodities that they normally purchase using their cash-in hand. Another way of coping with the increasing prices is through borrowing money. In fact, about 72.6% of the households borrowed money during the last six months. A majority of them however sourced their loan from their relatives (70.7%), friends (36.6%) and neighbor (26.4%). Among rice farm households in Barangay Santa Rita, about 57 households (50.4% of rice farm households) were able to save in the last six months. However, about 43.4% also used their savings to purchase

commodities that they normally buy using cash-in-hand. Furthermore, about 75.2% of rice farm households borrowed money from various sources in order to support their household expenses.

***Urban community.*** During the past six months, 131 households (31.3%) of in Barangay 51 reported that they were able to save some amount of money. Due to high and rising prices of basic goods, 78 households (18.7%) made use of a part of their savings to buy commodities that they usually purchase using their cash-in-hand. In Barangay 85, 32.6% of households reported that they were able to save money and 30.2% spent part of their savings to purchase goods normally bought with cash. High prices reduce the purchasing power of money which means more cash is needed to buy the same amount of the same good. This creates a situation wherein the household have a higher propensity to spend that may leave it cash strapped. To cope with these eventualities, households borrow money in the form of cash. Actually, 129 households (30.9%) in Barangay 51 borrowed money during the past six months. Most of them borrowed money from relative (55%), neighbor (43.4%), and friends (25.6%). Furthermore, 78 households (45.4%) in Barangay 85 loaned money during the past six months, most of which were sourced from loan sharks (25.6%), friends (25.6%), and relatives (23%).

Results show that Barangay 51 has a high proportion of savers almost equal to the proportion of savers in Barangay 85. Meanwhile, Barangay Santa Rita has a lower proportion of savers. This disparity may be explained by the income gap between the rural barangay and two urban barangays.

### ***Selling and Pawning of Assets***

***Rural community.*** During the last six months, at least one member of the 50 households (14.8%) in Barangay Santa Rita sold their properties or assets in order to have additional money to finance their household expenses. A majority of them sold their jewelries (34.0%), agricultural land (24.0%)

and cellphone (20.0%). Two households even reported selling their ATM cards. In addition, 82 households (24.2%) pawned some of their properties or assets in order to have additional cash. In fact, about 48.8% of these households pawned their jewelries while 40.2% pawned their agricultural land. About 8.9% and 29.2%, respectively, of rice farmers also sold or pawned some of their properties in the last six months.

Selling or pawning agricultural land, farm animal, or farm implement for that matter greatly reduces the future income of farming households. Productive assets are supposed to remain in the hands of the households and use these to increase their income but in extraordinary times they are forced to sell or pawn these properties leaving them more vulnerable to move into poverty unless they are able to recover these assets at the soonest possible time.

**Urban community.** During the past six months, 6 households (1.4%) in Barangay 51 reported that at least one of its member sold their properties or assets in order to augment their income while the figure for Barangay 85 is slightly higher (4.6%). A majority of households in Barangay 51 sold properties like jewelry, cellphone, and appliances. The same kinds of assets except cellphone were also sold by households in Barangay 85 together with house, residential lot, jeepney, and motorcycle. Two households also sold items like a photocopying machine and bakulong (equipment for fishing). Moreover, 1.9% and 11.2% of households in Barangay 51 and Barangay 85, respectively, have one of its members pawned their properties or assets. In Barangay 51, one household pawned their agricultural land, three, on the other hand pawned their jewelry, and another five pawned their cellphones. In addition to jewelry and cellphones, households in Barangay 85 also pawned assets such as house, residential lot, and car. It is evident that households in Barangay 85 have more productive assets than Barangay 51. It is clear from the results that Barangay 51 has very small proportions of households that sold or pawned properties during the past six months.

These findings support the fact that very poor households being limited in terms of assets and capital, have a restricted array of household coping strategies to draw upon in times of crisis. Assets, although not all, mostly sold or pawned by households in Barangay 85 are considered productive. These are productive in the sense that it can generate income for the household. Its loss means fast cash for the household, but in the long-run, the foregone income from the assets would outweigh the short-run benefit. Middle-income households usually do these actions in order to sustain current consumption patterns instead of cutting back on expenses.

### **Employment**

**Rural community.** During the last six months, about 4.4% of households in Barangay Santa Rita have at least one member who lost a job. The main reason for job loss is that the company where the employee is working went bankrupt and closed. Job loss could really have a negative effect on the welfare of households.

Given the continuous increase in prices, a majority of households has at least one member who tried to explore employment opportunities in order to augment their income. In fact, 10.0% of households in Barangay Santa Rita have a member who had sought for additional work besides their primary occupation. They normally do this in order to meet the daily household needs. Furthermore, about 9.4% of households in the barangay have a member who performed any other work besides their main occupation. Others (11.2%) also tried to seek employment in another area or country.

**Urban community.** During the past six months, 6.9% and 7.8% of households in Barangay 51 and Barangay 85, respectively, have at least one member who lost a job. In Barangay 51, the main reason for the job loss is end of contract (91.4%); likewise in Barangay 85 (42.9%). In times of unusually high inflation, job loss means wiping out almost all, if not all, of the household's income which is true for households with only one member

working. This is highly detrimental to every aspect of welfare within the household. It will even get more precarious if no household member would be able to find a job in the short-run. Although job losses in 2008 is not directly linked to higher food and fuel prices but due to the ensuing financial crisis rocking the United States and other developed countries, unemployment is expected to rise due to lower demand for consumer goods by industrialized countries in the first half of 2009. It is not the best time to lose a job amidst soaring prices and a slowing economy. Inflation rates are still not within the pre-crisis levels as well as prices of rice and other foodstuff.

Given the situation, 2.7% of households in Barangay 51 and 7.8% of households in Barangay 85 have at least one member seek additional work in order to meet daily household expenses or save money. In addition, 0.4% and 6.2% of households in Barangay 51 and Barangay 85, respectively, performed an extra job other than their primary occupation. Four households (0.8%) in Barangay 51 and 12 households (6.7%) in Barangay 85 are exploring employment opportunities outside the area or country.

### ***Recreational Patterns***

***Rural community.*** Among the households in Barangay Santa Rita, 59.3% were engaged in recreation or leisure activity. A majority of them (42.3%) were involved in gambling and betting games. In addition, a large proportion of them spent money for travel and tourism (32.3%). During the last six months, 7.9% of these households reported that there were changes in the way they carry out their recreational activities. In particular, a majority (87.5%) responded that engaging in the recreation or leisure activity has become less frequent given the increasing prices. Moreover, about 31.3% of the households engaged in recreational activities substitute leisure activities with less expensive one.

***Urban community.*** Only 63 households (12%) in Barangay 51 said that they engaged in any recreational activity. Most of them (36.5%) usually

dine out, bar hop, or hang out in coffee shops. Twenty households (31.8%) spent part of their money in watching movies, concerts, and live performances. For the past six months, 64.8% responded that there were changes in their leisure patterns. Almost all of the households (95.7%) reported that they engaged in recreational activities less frequently as a strategy to cope with climbing prices of commodities. Majority of households (40.8%) surveyed in Barangay 85 were engaged in any recreation or leisure activity. A large proportion of these households (46.6%) shared that shopping and roaming around malls are their leisure activities. In addition, 37% of the same set of households reported that their recreational activities also include watching movies, concerts, and live performances. During the past six months, 34.8% of these households said changes took place in the way they carry out leisure activities. Specifically, a bulk of these households (78.3%) reported that the conduct of recreational activities became less frequent in the past six months.

### ***Changes in Recreational Activities***

Results show that the three barangays have less in common in terms of recreational and leisure activity but do share the same coping strategy. The differences may be attributed to local customs, absence or presence of recreational facilities, and income. The three factors enumerated may very well determine the set of recreational or leisure activities a household engages to. In the case of Barangay Santa Rita, being a rural community, it is relatively farther from recreational facilities like malls, coffee shops, entertainment centers, and so forth, thus one should expect that households rarely see a movie or shop at malls. Field observations in Barangay Santa Rita clarified that gambling was done only for leisure purposes for it does not involve bets or money. This is the way of the community to strengthen kinships among families and relatives and galvanize camaraderie among neighbors. Community members usually play cards or *mahjong* with the players' family and relatives nearby. On another note, the barangay's

geographic location makes traveling for households favorable. Capas, Tarlac is at the heart of major road networks leading to tourist destinations in the north of the country namely Baguio City and the Cordilleras not to mention the Hundred Islands in Pangasinan. These explain the recreational pattern of the said barangay. The case is different with regards to the two urban barangays. Moreover, there are also differences between the leisure patterns between the two barangays. The top recreational activity for Barangay 51 is dining out, bar hopping, or hanging out in coffee shops; on the other hand, for Barangay 85, it is shopping and roaming around malls. Recreational facilities are accessible for both barangays but with Barangay 85 being the more affluent community, naturally households here have more disposable income to spend for shopping compared to Barangay 51 where households settle for dining out and/or staying in coffee shops, activities which entail lesser cost. The proximity of the barangays to recreational facilities like movie houses, entertainment center (i.e., Cuneta Astrodome), and malls explain why a significant proportion of households in both barangays reported watching movies and live acts as their leisure activity. Although the variations in recreational patterns between the three barangays were striking, unexpectedly they share the same coping strategy. Recreational activities for majority of households in the 3 barangays, where changes to conduct of leisure activities took place, have become less frequent within the context of soaring prices. It appears that the price crisis compelled poor households, and to a lesser extent for middle-income households, to forego recreation and prioritize basic necessities.

### **HOUSEHOLD COPING STRATEGIES AMONG POOR AND NON-POOR HOUSEHOLDS**

In times of economic shocks, do poor and non-poor households differ in household coping mechanisms adopted? Based on the results, the answer is yes. Poor households tend to adopt coping strategies that are damaging and counter-

productive in the medium- and long-run. On the contrary, non-poor households commonly employ coping mechanisms to maintain current consumption level (smoothing consumption). Another finding is that more coping strategies are doable for non-poor households compared to poor households.

In the rural site, 42.3% of poor households said they shifted to NFA rice, while a smaller proportion of non-poor households (17.8%) reported the same coping mechanism. Meanwhile, in the two urban barangays in Pasay City, more non-poor households shifted to NFA rice than poor households. One probable reason for the results is that poor households have already been patronizing the cheaper rice from NFA even before the crisis struck as shown by figures of rice consumption in the two urban barangays. Based on the survey, six months ago (March 2008), 42.4% of the urban respondents said that they were consuming NFA rice while only 19.5% of the rural respondents said that they were patronizing NFA rice.

With regards to changing preference to government-run stores, 21% of rural poor households surveyed reported such coping strategy and 6.9% of the poor urban households surveyed did the same coping strategy.

Across the three sites, results show that poor households are more predisposed to change food consumption pattern. Examples of which are skipping meals and shifting to less quality foods. Based on national figures, about 60% of a poor household's budget goes to food expenditure and this may be the reason why poor households are very sensitive to price changes in food commodities.

As expected, the transfer of children from private to public school as a coping mechanism is only found among non-poor households. But withdrawing children from school is more prevalent among poor households across the samples.

Likewise in the case of withdrawal of children from school, changes in health-seeking behavior is more common among poor households among the respondents surveyed. Examples of such

coping strategies are going to faith healers for health concerns instead of a doctor, and resorting to self-medication. Many studies on social impacts of aggregate shocks on household welfare suggest that poor households have higher propensity to cut back on medical expenses compared to non-poor households.

Based on the results from the three sites surveyed, non-poor households are more likely to rely on their savings to purchase things they normally buy with their cash-in-hand. This may be partly attributed to the fact that it is among the non-poor households that we see more people reporting that they saved money. Saving and the use of it turned out to be an important coping mechanism for non-poor households in smoothing their consumption in times of high and rising prices.

Higher proportions of borrowers are found among poor households across the samples. The case is different when it comes to sale of assets. Results imply that in the rural setting, non-poor households are more inclined to sell properties than poor households apparently because the former have more belongings to put up for sale. But in the urban setting, non-poor households do not rely much on sale of properties to cope with rising prices of food and fuel. Data show that among the farming households, the proportion of poor households that responded that they sold properties is higher compared to non-poor households. However, the results are opposite among non-farming households. One possible explanation for this is that rural poor households (especially rice farming households) are trying to expand their production by selling assets in order to take advantage of higher rice prices, while non-farming non-poor households are selling belongings to compensate for their lack of food production and rising food prices (very much like urban households who are net buyers).

In general, higher proportions of pawnors are found among non-poor households across the samples.

As to seeking additional job as coping strategy, the results from the rural and urban sites are different. In the rural site, higher proportion of poor

households said that they have additional job seekers compared to non-poor households. Unlike the rural sample, higher proportion of non-poor urban households responded that they seek additional job as coping strategy. It appears that seeking additional work as coping mechanism is not that common among urban poor households. The same goes with performing additional work.

Seeking work outside the area or country as a coping strategy is more widespread among non-poor households across the samples surveyed.

Lastly, among the urban households asked, it is apparent that poor households are more likely to alter the way they carry out their recreational or leisure activities compared to non-poor households while among the rural households it is the reverse.

## GOVERNMENT RESPONSES

Because of the recent spikes in prices of rice, the Philippine government has responded through some policy decisions having short-term and long-term impact. One specific intervention of the government is the direct sale of rice at subsidized prices. NFA increased its participation in the market to reduce the long queues of people wanting to buy subsidized rice. More NFA outlets were established around the country. Emergency food imports (e.g., allowing private sectors to import rice) to augment domestic rice supply was also sought. The government also announced that anti-hoarding measures would be introduced. In addition, cash transfers to certain groups, called “*Katas ng VAT*”, were implemented to mitigate the impact of higher inflation. The government also encouraged fast food restaurants to reduce the portion of rice sold with meals

### *Katas ng VAT program*

The government started recognizing the enormity of the food and fuel price crisis in 2008. This is the time when the government launched ad hoc responses to the soaring food and fuel prices. The umbrella program was named “*Katas ng VAT*”

(literally fruits of VAT). Due to unprecedented jump in oil prices, the government collected windfall taxes on oil products. The 12% value-added tax had been tagged even by the president as the source of most needed funds to cushion the impact of rising prices on poor families. As of the present, the program was divided into four tranches but for assessment purposes only the first and second phases of the project will be discussed in this study.

The first phase of the Katas ng VAT program includes power subsidy for lifeline users, scholarship fund for poor but deserving students, microcredit for public utility vehicles for conversion of engines to run on cheaper and more efficient fuel, and funds for phasing out of incandescent bulbs and replacing it with fluorescent lamps.

The second phase is composed of assistance like rehabilitation of infrastructure damaged by typhoons, microfinance loans for wives and immediate relatives of transport workers, upgrade of provincial hospitals, and one-time cash dole-out to senior citizens without pension.

The two phases of the program is worth PHP 9 billion (PHP 4.5 billion per phase). The nature of the program is the source of its weakness. The aid is usually in the form of one-time cash assistance to loosely targeted households. In the case of lifeline users (households that consume 100kW or less of electricity a month), the records of the electric firms or cooperatives served as the basis for the assistance. In the urban areas, the procedure is for the household to go to the nearest LandBank (government-owned bank that releases the fund) branch and present their electric bill for the month of May. If the electric bill deemed authentic then the person is given PHP 500 in cash transfer. In rural areas, the power subsidy is automatically deducted from the next electric bill as ordered by the National Electrification Administration to provincial electric cooperative and companies. The government aims to assist four million lifeline users nationwide.

The impact of such programs is fleeting. Once the beneficiary spent the money (PHP 500), it's the end of it. Its sustainability is very much questionable. Thus, large amount of money should

be invested by the government on medium- and long-term development programs because spending funds on short-term projects only mitigate the situation and not tackle the underlying problem head on.

### ***NFA Family Access Cards***

The plan to sell NFA subsidized rice exclusively to food poor households had been floating since April 2008. It was only fully implemented last December 1, 2008. The concept is that only the "poorest of the poor" should receive cheap rice from the government. This may very well be in response to reports and studies suggesting that only one third of the subsidized rice went to the poor. But still the targeting strategy of the Department of Social Welfare and Development (the department implementing the program) is not full-proof.

Poor targeting increases the risk of the non-poor getting the benefit from these programs and the poor being left out. Leakage is the main problem of the sale of cheap NFA rice to the public. In the case of the distribution of the access cards, the Department of Social Welfare and Development (DSWD) is giving the responsibility of identifying the beneficiaries to the local government units but this is where the problem lies. If the local government unit (LGU) doesn't have a household-level data to work on to identify poor households, it will be very difficult for the LGU to come up with a list. This is where the CBMS can fill the gap. Through CBMS, the LGU can generate list of income poor or food poor households depending on its target beneficiaries. Using CBMS or other monitoring systems for that matter will greatly reduce for rate of leakages.

### **CONCLUSION**

This study aimed to determine the impact of rising prices of rice and fuel on poverty. In order to help decision-makers in designing specific policy interventions, the losers and winners of the spike



in the prices of rice and fuel are identified. Results of this study confirm that the impact of increasing prices of rice and fuel would vary across different groups of households based on the level of urbanity, income group and geographical location.

In the case of rice price increases, results reveal that most of the households in the Philippines are net consumers rather than net producers of rice. One important observation is that urban households would be the more adversely affected as compared to those living in the rural areas. In addition, the poorest households are the most vulnerable to price changes. In fact, they would be the most adversely affected by rice price increases. Given this, policy interventions should focus on providing safety nets to poor households. Another important result is that although a large proportion of rice farmers would benefit (73.7%) from rice price increases, a significant proportion (26.3%) is still expected to lose. On the whole, it is the poorest farmers who tend to be the most adversely affected by the rice price increase.

On the other hand, results confirmed that as opposed to rice, households in the Philippines in general spend a relatively small proportion of their budget on fuel. In fact, only about 1.5% of their total expenditures are allotted to fuel (including petroleum and LPG). And while the amount of fuel expenditures increases as households move from one income decile to a higher decile, in general, the overall fuel budget share of the poorest group of households (i.e., those at the 1<sup>st</sup> income decile) is higher vis-à-vis the richest households or those in the 10<sup>th</sup> income decile.

Results of the CBMS survey further confirmed that households adopted different coping mechanisms in response to increasing prices. In particular, some households reported that they changed their consumption patterns during the period covered by the study. For instance, some households modified their expenses on food, on health and on education. Reduction in the amount spent on these necessities may have long-term effects on the poverty situation of the households.

In response to the recent price increases, the Philippine government has designed and

implemented policies and programs that would mitigate the negative impact of soaring prices. One of the most popular interventions of the government (through NFA) is the direct sale of rice at subsidized prices. Although the efforts of the government to provide cheaper rice to the population are being recognized, one important concern is related to the matter of targeting. In particular, it was noted that among all NFA rice consumers, only 46.6% are considered poor. Furthermore, although the poor households are supposed to be the target beneficiaries of the highly subsidized rice, results confirm that only 24.0% of these poor households were able to access NFA rice. Note that for households in the lowest income decile, NFA rice accounted for only about 12.7% of their total spending on rice. This implies serious leakage and undercoverage problems with the current targeting system. While there have been efforts to address the problem on leakages to the extent that Family Access Cards were issued, they have not been successful due to lack of household level data that would identify eligible beneficiaries. Consequently, considerable leakages and exclusion still prevail. Thus, it is recommended that household level data for all households in the community, such as those being generated by the community-based monitoring system being implemented by local government units, be used to identify eligible beneficiaries through some proxy means test model. This would help reduce the leakage of program benefits to the non-poor as well as ensure that the poor benefit from these subsidies.

## REFERENCES

- Asian Development Bank. (2008a). *Food prices and inflation in Developing Asia: Is poverty reduction coming to an end?* Retrieved from <http://www.adb.org/documents/reports/food-prices-inflation>
- Asian Development Bank. (2008b). *Soaring food prices: Response to the crisis*. Retrieved from <http://www.adb.org/Documents/Papers/soaring-food-prices/default.asp>

- Barrett, C. B., & Dorosh, P. A. (1996). Farmers' welfare and changing food prices: Nonparametric evidence from rice in Madagascar. *American Journal of Agricultural Economics*, 78(3), 656-669.
- Budd, J. W. (1993). Changing food prices and rural welfare: A nonparametric examination of Cote d' Ivoire. *Economic Development and Cultural Change*, 41(3), 587-603.
- Deaton, A. (1989). Rice prices and income distribution in Thailand: A non-parametric analysis. *The Economic Journal*, 99(395, Supplement), 1-37.
- Energy Information Administration. (2008). *Short-term energy outlook*. Retrieved from [http://www.eia.doe.gov/steo#Global\\_Petroleum\\_Markets](http://www.eia.doe.gov/steo#Global_Petroleum_Markets)
- Food and Agriculture Organization. (2008). *Soaring food prices: Facts, perspectives, impact, and actions required*. Retrieved from [http://www.reliefweb.int/rw/lib.nsf/db900sid/PANA-7F5HYU/\\$file/FAO\\_apr2008.pdf](http://www.reliefweb.int/rw/lib.nsf/db900sid/PANA-7F5HYU/$file/FAO_apr2008.pdf)
- Intal, P. S., & Garcia, M. C. (2005). *Rice and Philippine politics*. (Discussion Paper Series No. 2005-13). Makati City: Philippine Institute for Development Studies.
- Minot, N., & Goletti, F. (2000). *Rice market liberalization and poverty in Vietnam*. (IFPRI Research Report No. 114). Washington, D.C.: International Food Policy Research Institute.
- Sharma, R. (2002). *The transmission of world price signals: Concepts, issues and some evidence from Asian cereal markets*. (Document CCNM/GF/AGR(2002)10). Paris: OECD Global Forum on Agriculture.