Chronic and transient poverty and vulnerability to poverty in the Philippines: Evidence using a simple spells approach

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This paper uses panel data and two welfare indicators, namely per capita expenditure and per capita food expenditure, to determine the frequency that the households enter poverty and food poverty in the Philippines. Unlike other studies, this paper attributes similar factors to explain transient and chronic poverty but finds that these factors are more pronounced for the chronic cases. Significant factors that contribute to both chronic and transient poverty and food poverty are the household heads' low educational level, affiliation in economically unstable and risky occupations such as those in the agriculture, fishery and resource sectors and those who are unskilled laborers, the lack of health insurance and high dependency burden. It also finds that that vulnerability to poverty and food poverty in the Philippines is high especially in the rural districts and areas with armed conflict.

Households that experience higher earnings, new job, abundant harvest, better health or receipt of remittance/inheritance are less likely to be chronically poor. Shocks related to labor market affect both transient and chronic food poverty while natural calamities or health deterioration of any household member increase the probability of the household falling into chronic food poverty. Policies suggestions to address both types of poverty are provided based on these results.

1. Introduction

Poverty affecting households is a state or condition of deprivation in a particular period of time where household members are deprived of their economic well-being. They lack the means to achieve the basic necessities in life such as food, housing, clothing, basic services such as health, education and lack the capacity to achieve basic well-being. Vulnerability to poverty involves exposure of a household and its family members to a high probability of poverty although the household may not be permanently poor all the time. This vulnerability and risk of exposure to poverty may be due to a persistent lack of income and access to basic needs as well as sudden shocks. The shocks can be household-specific such as illnesses, fire and localized job loss. It can also be community-wide or region-specific such as natural disasters and armed conflict and it can be in macroeconomic-scale such as financial crisis, economic recession and other economic shocks leading to loss of jobs, closure of credit lines and/or inflation. Vulnerability consists of economic insecurity based on exposure and risk to poverty in the present and future, so the concept runs across time and is therefore dynamic in nature, as opposed to the state of poverty, which is a condition of the household in a specific period of time (Duclos 2002).

The chronic and transient poverty concepts can be easily used in the important issue of vulnerability of households or families to poverty. This issue is a natural offshoot arising from the transient component of poverty although the literature has argued that poverty and vulnerability are two distinct concepts. While changes in socio-economic status such as job loss, lower wages and death of a household member can be focused on as sources of vulnerability, the lack of coping mechanisms such as insurance and access to credits may prevent one from being poor. The job loss of a household member does not necessarily put

the household into poverty in relation to its ability to meet their consumption if credit is available. It is clear that vulnerability hinges on the identification of the transitory poor, on the identification of triggers that may cause the non-poor to cross the other side of the poverty threshold and the availability of safety nets that may prevent the non-poor from becoming poor. Vulnerable economic units consist, therefore, of segments coming from both the poor and non-poor. The former becomes part of the chronic poor while the latter becomes part of the transient poor.

The Philippines has a long history of battle against poverty and this is reflected on the government's different anti-poverty programs integrated in the various governments' Medium-Term Development Plan[1]. Despite these, the country still has to achieve its Millennium Development Goal milestones in poverty reduction. The country can, therefore, benefit from the findings of studies within the dynamic setting. From a policy standpoint, understanding both the chronic-transient poverty and poverty-vulnerability paradigm is crucial in crafting the right mix of short- and long-term anti-poverty programs. For example, the lack of preventive measures stemming from the lack of strategy to correctly identify the causes of vulnerability may lead to chronic poverty. The effectiveness of government programs relies on a more correct targeting strategy to avoid leakages.

This research is motivated to analyze the determinants that may explain the frequency of experienced poverty in the Philippines using the Annual Poverty Indicator Survey (APIS) and the Family and Income Expenditure Survey (FIES) collected by the National Statistics Office in the 2000s. The spells approach, which counts the number of times the household becomes poor, is employed. Two welfare indicators are used, namely the per capita expenditure and the per capita food expenditure. These are compared against the per capita poverty threshold and the per capita food thresholds to determine the households that are poor and food-poor at a given point in time.

Using Multinomial Logit, results indicate the importance of the household head's education to ward off high frequencies of experienced poverty and food poverty. High dependency burden of young household members, job loss or income reduction and natural disasters or poor health increases the likelihood of households to experience high frequency of poverty. Similar findings can be noted for households in rural districts and areas with armed conflict.

Results on Probit regressions on the transient or chronic poor versus never poor households indicate that both transient and chronic poverty are affected by mostly similar sets of explanatory variables except that the effects on chronic poverty and chronic food-poverty are more pronounced. Results indicate the importance of the education and age of the household head and low dependency burden to deflect both types of poverty. However, there are some factors that are significant only for either transient or chronic poverty. While certain occupations such those in the agriculture, fishery and resource sectors and manual/unskilled labor affect both transient and chronic poverty, household heads who are trade workers, plant and machine operators/assemblers and clerks are more likely to experience transient poverty. While shocks do not affect transient poverty, households that experience higher earnings, new job, abundant harvest, better health or receipt of remittance/inheritance are less likely to be chronically poor. Shocks related to labor market affect both transient and chronic food poverty while natural calamities or health deterioration of any household member increases the probability of the household falling into chronic food poverty.

This paper is organised as follows: Section 2 reviews the related literature on the measurement of vulnerability and provides an overview on poverty studies in the Philippines using panel data. Section 3 discusses the data sources, samples and poverty lines. Section 4 discusses the empirical strategy to

[1] See Lim (2009) for a comprehensive discussion of the Philippine government's anti-poverty program.

estimate the frequency of experienced poverty and to correct for attrition bias and section 5 discusses the results. Section 6 summarizes and concludes.

2. Review of Literature

2.1 Methods to Measure Vulnerability

The World Bank (2000) identifies the earlier methods of measuring vulnerability. One method is the use of transition matrix to depict the movements in and out of poverty and to determine entry and exit probabilities. Another method is to estimate income variability, the idea of which is that two groups with the same income or expenditure but with different income variability would have different vulnerabilities. The groups with more stable income would be less vulnerable. There is also the method of identifying the length and frequency of poverty spells. When panel data are available, it becomes possible to determine the number of times the households fall into poverty. Households that fall into poverty just a few times are the transient or temporary poor. These are part of the vulnerable groups and those that have been poor in all of the sample years are considered the chronic poor. This is the approach used in this paper.

Other methods to measure vulnerability can be found in Hoddinott and Quisumbing (2003). These include treating vulnerability as expected poverty (Chaudhuri *et al*. 2002, 2005; Yang and Choi 2007), vulnerability as low expected utility and vulnerability as uninsured exposure to risk.

2.2 Chronic and Transient Poverty in the Philippines

Studies on poverty in the Philippines abound (see for example Balisacan 2003a, 2003b; Balisacan and Pernia 2002: Lim 2009). However, these researches are done using cross-section or descriptive data and as such only identify the poor at a given point in time. There is neither insight on the length of poverty spells nor information on the characteristics of economics units experiencing these spells. Although the persistence of poverty in the Philippines has already been discussed by Balisacan (2007), the study has used time-series data and is concerned on the aggregate picture of poverty.

Recently available data have made it possible to analyze the Philippine poverty in a panel setting, however. One rich source of such data is the chronic poverty and hunger and the 'self-rated poverty' being monitored quarterly by surveys undertaken by the Social Weather Stations. Here respondents are asked if they experienced poverty and hunger. They are then asked if they had experienced poverty in the last five years (year by year) and if they experienced hunger in the last twelve months (month by month). Chronic poverty and chronic hunger and their trends over quarters and years can be estimated from these survey results (Mangahas 2008; Mangahas and Guerero 2012).

Another publicly available data which can be formed into a panel include selected years of Family Income and Expenditure Surveys (FIES) and the Annual Poverty Indicators Surveys (APIS). These datasets are used by Reyes (2003) and Reyes *et al*. (2010) to analyze the transient and chronic poverty in the Philippines using the spells approach. Results from these studies indicate higher transient poverty than chronic poverty. Logit regression analyses have been used by these earlier papers to predict factors determining chronic and transient poverty The papers have found that structural characteristics of the household such as family size, educational attainment, agriculture or non-agriculture income, quality of assets and infrastructure affect a household's probability of entering chronic poverty, while exposure to risks such as natural calamities and lack of safety nets are more connected to transient poverty. Results also indicate higher poverty in Mindanao, lower in Luzon and more in agricultural areas.

While the present study uses the same survey datasets used by Reyes *et al*. (2010), it has salient points of departure. One, this study has used smaller sample size due to stricter guidelines on the merging of the datasets. Two, this study has found attrition bias in the formed panel data and has attempted to correct for it in all the regression runs. Three, this study finds that both transient and chronic poverty are affected by the same factors, except that the factors have more pronounced effect on the chronic poverty.

3. Data and Preliminaries

3.1 Data sources and Samples

The datasets to be used will be the Annual Poverty Indicator Survey (APIS) in 2004, 2007 and 2008 and the Family Income and Expenditure Survey (FIES) in 2003 and 2006 conducted by the National Statistical Office (NSO) in the Philippines. APIS is a nationwide survey designed to provide access and impact indicators that can be used as inputs to the development of an integrated poverty indicator and monitoring system. The APIS covers all 82 provinces of the country including all cities and municipalities in Metro Manila. FIES is also a nationwide survey every three years by the NSO as rider to the Labour Force Survey and collects detailed expenditure and income data.

APIS collects household and member data. The household data contains information on the household head such as age, sex, marital status, highest grade attained, employment data and job-related injuries. It also contains detailed household assets, income sources and expenditures. The 2004 APIS household data contain information on the positive and negative shocks experienced by the household and a self-rated change in social status. The member data contain information on the household members such as age, sex, marital status, highest grade attained and job-related information. FIES collects more detailed income sources and expenditures. All the individual information such as age, sex, marital status and employment data pertain to the household head.

APIS and FIES can be merged to form a panel dataset. This can be done since there is a master sample based on the results of the Census of Population and Housing and a portion of the master sample is retained that the NSO re-surveys for some period. These samples will be replaced by another set of samples to be tracked again after some period. NSO have four replicates and each of these replicates possesses the properties of the master sample. Some of the samples in the second rotation of the 2003 FIES have been resurveyed at the same round of the 2006 FIES and the 2004 and 2007, 2008 APIS.

For the purpose of this research, NSO has provided us with the second rotation of replicate four of 2003 and 2006 FIES and 2004, 2007 and 2008 APIS. Merging of these datasets is done by creating a household identification number through the concatenation of various geographical variables namely, region, province, municipality, barangay[2], enumeration area, sample housing unit serial number and household control number. There are 6701 samples that are common to the five datasets. The samples are further limited to households that satisfy two criteria. One, the sex of the household head should be the same throughout the period. Two, the age of the household head should be consistent as well. For example, the age difference of the household head in 2003 FIES and 2004 APIS should be either zero or one while the age difference of the household head between 2004 APIS and 2006 FIES should be either two or three. These criteria are set to ensure that we are tracking the same families throughout the period. There are 2571 samples left when these additional restrictions have been imposed.

To make the results comparable across time and space, all incomes and expenditures are expressed in 2003 National Capital Region (NCR) prices. The provincial price data are from the National Statistical Coordination Board. In addition, all the relevant APIS incomes and expenditures are multiplied by two since the reference period of APIS is past six months while that of the FIES is one year.

3.2 Poverty Lines

The NSO in the Philippines releases the official poverty threshold.[3] The estimation of the poverty threshold starts with the computation of the food threshold, which is determined by using regional menus priced at the provincial level. The one-day menus were determined by the Food and Nutrition Research

[2] Barangay is the basic political unit in the Philippines and is roughly equivalent to a village.

[3] The discussion here is largely taken from http://www.nscb.gov.ph/poverty/FAQs/default.asp

Institute (FNRI) using low-cost, nutritionally adequate food items satisfying basic food requirements of 2,000 calories, which are 100 per cent adequate for the Recommended Energy and Nutrient Intake (RENI) for energy and protein and 80 per cent adequate for the RENI for vitamins, minerals and other nutrients. These menus were used to estimate the per capita per day food cost. This is then multiplied by 30.4 (approximate number of days per month) to get the monthly food threshold or by 365 days (30.4 days/month x 12 months) to get the annual per capita food threshold.

After the computation of the food threshold, the estimation of the poverty threshold to include the additional income required for the sustenance of the minimum non-food basic needs follows. Non-food basic needs include the following: clothing and footwear; fuel, light and water; housing maintenance and other minor repairs; rental or occupied dwelling units; medical care; education; transportation and communications; non-durable furnishing; household operations; and personal care and effects. Hence, to compute for the poverty threshold, the food threshold is divided by the proportion of the food expenditures (FE) to total basic expenditures (TBE) derived from the latest FIES using the FE/TBE's of families within the +/- ten percentile of the food threshold. The food and non-food thresholds make up the poverty threshold.

No thresholds have been released by the NSCB for 2008. The 2008 poverty threshold is therefore projected using the poverty threshold in 2007 and the provincial consumer price index in 2008. Similar projection is done for the 2008 food threshold.

4. Methodology

4.1 The Spells Approach, Multinomial Logit and Probit Regressions

This paper uses the spells approach which determines the frequency that a household enters poverty in the sample years. Two welfare indicators are used namely, the per capita expenditure and the per capita food expenditure. The former will be compared against the poverty threshold and will be referred to as poverty all throughout the text. The latter will be compared to the food threshold and will be referred to as food poverty.

Descriptive data will be given on the frequencies of poverty and food poverty nationally, by urban and rural categories and by the regions of the country. Multinomial Logit regressions will then be used to analyze the determinants of the frequency that the household is poor. Using detailed dummy variables has caused the failure of Multinomial Logit runs to converge and no meaningful marginal effects have been estimated. Therefore, the dependent variables for the Multinomial Logit regressions are parsimonious. These include data pertaining to the household head, head's spouse and family size in the initial period. Shocks in 2004, geographical dimensions and the mean number of household members by age group are included as explanatory variables as well.

The analysis is enhanced by using Probit regressions for panel data. Preliminary runs using the Probit regressions indicate no problems using detailed dummy variables. Therefore, the dependent variables include detailed dummy variables for the household head's educational attainment and occupation, shocks in 2004, geographical dimensions, changes in the household composition by age group and changes in the number of employed household members.

For the Probit regressions, this paper defines once or twice poor as transient poor or the less vulnerable group. Those that are three, four and five times poor are considered chronic cases of poverty.

4.2 Attrition Bias

Since the research will utilize panel data, a necessary preliminary data mining will be to check for attrition bias. A common issue to the use of any longitudinal data is that the sample collected becomes smaller on succeeding resurvey, which can when the original sample refused to participate again or

became unable to participate or can no longer be tracked down. This problem becomes serious when non-participants have systematic characteristics that are related to the outcome being investigated. If poor households are more likely to drop out of the succeeding surveys, then estimates based on the remaining samples are likely to be biased. Using these estimates as basis for policy recommendations is likely to raise objections from an empirical standpoint.

Formally, consider two equations for an economic unit i, $y_{1i} = x_{1i}\beta_1 + \varepsilon_{1i}$ and $y_{2i} = x_{2i}\beta_2 + \varepsilon_{2i}$ where x is a vector of explanatory variables and β_t is a vector of parameters. Assuming $E(\varepsilon_{ti}) = 0$ and $E(\varepsilon_{1i}\varepsilon_{2i}) = \sigma_{12}$, then for the population data $E(y_{1i} \mid x_{1i}) = x_{1i}\beta_1$ and for the available data $E(y_{1i} \mid x_{1i}, y_{2i} \geq 0) = x_{1i}\beta_1 + E(\varepsilon_{1i} \mid \varepsilon_{2i} > -z_i)$ where $z_i = \frac{x_{2i}\beta_i}{\sigma_2}$. If $E(\varepsilon_{1i} \mid \varepsilon_{2i} > -z_i) \neq 0$, then the problem of sample selection occurs. Attrition bias is just a case of selection where the sample is limited not by the researcher, rather by the non-participation of survey respondents. Miller and Hollist (2007) argue that attrition bias can affect the external and internal validities of multiwave studies. External validity is questionable when the characteristics of the resulting subsequent samples are not generalizable to the initial samples. Internal validity is questionable when the correlations among the variables are altered as a result of samples dropping out of the succeeding survey waves. While the NSO has ensured that each replicate of the APIS and FIES possesses the properties of the master sample, we have imposed additional restrictions to ensure that the same families are tracked throughout the periods of observation. These restrictions could be a possible window for attrition bias.

To test for the presence of attrition bias, we follow Miller and Wright (1995) and run a logit regression on 'stayers'[4] using the independent variables extracted from the first wave. Independent variables include the characteristics of the household head, household assets and geographical location dummies. These dependent variables should not be statistically significant to rule out attrition bias. Results[5] indicate that the characteristics of the household head and some of the regional dummies are statistically significant determinants of participation in the entire survey wave. Another method to check for attrition bias is to test for the equality of the two covariance matrices for the samples observed only in the first period and for the samples observed in all periods using the Box M-test. The null hypothesis using this test is that the two covariance matrices are equal indicating no threats to internal validity. The p-value computed using the Box M-test is 0.00 indicating rejection of the null hypothesis.

Since attrition bias is present in our data, we follow Heckman (1979) and the Inverse Mills' Ratio, $IMR = \frac{\phi(\beta x)}{\Phi(\beta x)}$, is computed from the probit regression involving the 'stayers'. IMR will be included as explanatory variables in the quantile regressions

5. Discussion of Results

5.1 Descriptive Data

Table 1 shows the breakdown in the frequency of poverty at the national, urban-rural, and regional levels of the country. The figures show varying degrees of vulnerability to poverty in the regions of the Philippines and between the urban and rural divide. At the national level, table 1 shows that 59% of the sample households have become poor at least once during the sample years of 2003, 2004, 2006, 2007 and 2008 indicating high vulnerability to poverty in the Philippines. 75% of the sample households have become food-poor at least once in the sample years although this may be a bit exaggerated since much of

[4]Equal to1 if participated in the succeeding wave and equal to 0 if not.

[5] Available from the author upon request.

the consumption of food may not entail monetary expenses especially in the rural areas where backyard food production for own family consumption is a predominant practice.

There is high vulnerability in the Autonomous Region of Muslim Mindanao (ARMM) where only 5% of the households have never been poor during the sample years. Only 3% in ARMM has never been food-poor, while 70% and 85% have been three to five times poor and food-poor, respectively. Some of the other vulnerable regions are CARAGA[6] where only 17% is never poor and 6% is never food-poor. 60% and 75% have been poor and food-poor three to five times, respectively. Only 9% in the Cordillera Administration Region are never food-poor. Other poor areas are MIMAROPA[7], the Zamboanga Peninsula, Bicol Region, Northern Mindanao Region, Davao Region and Eastern Visayas Region. Most of these regions have experienced protracted armed conflict. MIMAROPA and Bicol regions are plagued by the unrest sown by the New People's Army. The regions in Mindanao are torn by the resistance to central control and the resentment at the increasing number of Christian settlers (Schiavo-Campo and Judd, 2005).

On the other hand regions in Luzon such as Metro Manila, Central Luzon, CALABARZON[8] and Cagayan Valley are less vulnerable to poverty. Central Luzon and CALABARZON are geographically close to the Metro Manila area. CALABARZON is the only region with a higher percentage of never poor but where there are more households three to five times poor compared to once or twice poor. CALABARZON is comprised mostly of urbanized provinces including Rizal, Cavite, Laguna and Batangas. However, it also includes Quezon province that is very vulnerable to typhoons and floods.

For rural areas, only 29% has never been poor while only 15% has never been food-poor. 76% in urban areas, like the NCR, are never poor and 56% are never food-poor. Only 5% has been three to five times poor and 10% three to five times food-poor in the NCR.

Based on the results above, households in the Philippines are very vulnerable to poverty. The severity of the vulnerability is quite serious in rural areas and in many regions as indicated by the large percentages of households that are poor three to five times in the five sample periods. The regional disparities reflect differences in the quality of infrastructure, the vibrancy of the local economies, the economic and political stability of the areas and proneness to natural disasters – especially typhoons and floods.

Table 2 shows the mean values of selected socioeconomic characteristics for each frequency of experienced poverty. Figures in the upper panel of the table indicate that never poor households are headed by people with higher educational attainment. It can be observed that educational achievement of the household head is lower as the frequency of experienced poverty increases. Never poor households are also headed by older people and the head's age decreases as the frequency of experienced poverty increases. The same observations can be noted for the age of the spouse of the household head. Never poor households are headed by service workers while those that experienced poverty at least once are headed by farmers, forestry workers and fishermen. The mean number of employed household members is similar across the frequency of experienced poverty. The mean family size for the never poor households is lower and this becomes higher as the frequency of experienced poverty increases. Looking at the age composition of household members, never poor households have the lowest mean number of young members particularly age groups between 0 and 15 year of age. Never poor households have higher mean number of household members aged over 25 years old. These households also are, on the average, extended households and have higher number of members who have health insurance. The figures indicate that never poor households are highest among those that reported to have experienced

[6] Composed of Agusan del Norte, Agusan del Sur, Surigao del Norte, Surigao del Sur and Dinagat Islands.
[7] Composed of **Mi**ndoro, **Mar**induque, **Ro**mblon and **Pa**lawan.
[8] Composed of **Ca**vite, **La**guna, **Ba**tangas, **Ri**zal and Que**zon**.

neither positive nor negative shock. Never poor households are also highest among those who reported to have experienced positive shocks. The same observations can be noted for negative shocks. The lower panel of table 2 shows the descriptive statistics using the per capita food expenditure and per capita food threshold to determine food poverty. Similar observations as above can be noted.

5.2 Results Using Multinomial Logit Regressions

Tables 3 and 4 show the marginal effects based on the estimates of the Multinomial Logit regressions for the frequency of experienced poverty and food poverty, respectively. From table 3, results indicate that households headed by at least a college graduate are likely to be never poor while households with high family size in 2003 are more likely to be always poor. Looking at the household member composition, results indicate that households with many young members are likely to experience higher frequencies of poverty. This is true for age groups between 0 and 15 year olds. Households with many members from 16 to 25 years of age are less likely to be never poor. In addition, households that experience positive shocks in the form of a new job with higher earnings or abundant harvest are less likely to be always poor. Households that experience negative shocks in the form of job loss or income reduction are less likely be never poor and are more likely to be always poor while households that have been stricken by natural disasters or poor health are more likely to be four times poor. In addition, households in areas with armed conflict are more likely to experience higher frequencies of poverty. Similar findings can be noted for rural households. Households with members who have health insurance are less likely to experience high frequencies of poverty.

Results using the food thresholds are similar with the results above. From table 4, households headed by at least a college graduate are less likely to experience food poverty. In addition, households with big family size in the initial period are likely to be always food-poor. Looking at the household member composition, households with many young members are likely to experience high frequencies of food poverty. This is particularly true for households with many members with age less than one year, 1 to 7 years, 7 to 15 and 15 to 24. In addition, households that experience positive shocks in the form of higher earnings, a new job with higher earnings or abundant harvest are likely to be never food-poor. Households that reported better health, receipt of remittance or inheritance are less likely to experience frequent food poverty relative to households that have not experienced any shock. These are consistent with the results on the negative shocks in the form of job loss or income reduction. Households that have been stricken by natural disasters or poor health are less likely to be never food-poor. In addition, households in areas with armed conflict are more likely to experience higher frequencies of food poverty. Similar findings can be noted for rural households. Households with members who have health insurance are less likely to experience high frequencies of food poverty.

5.3 Results Using Probit Regressions

5.3.1 Comparing the Transient and Chronic Poor with the Never Poor

The first two columns of table 5 show the results for the more transient poor versus the never poor using the per capita expenditure and the poverty threshold as basis for determining the frequencies of experienced poverty. Columns 3 and 4 show the results for the more chronic poor versus the never poor.

Results reveal that households with heads that have higher education are less likely to be vulnerable to poverty. The effect of the high educational attainment is more pronounced for the chronic poor, however. Results also show that households with older heads are less likely to experience transient and chronic poverty. This is probably because older people have more skills and have more established networks in the labor market that shield their households from sudden poverty. Results also indicate that there are many occupations of the household head that may contribute to the household's poverty. For example, households headed by farmers/fisherfolks/forestry workers and laborers/ unskilled workers are more likely to be transient poor relative to those employed in the government. These are also the households

that are more likely to be chronic poor. Other occupations that make transient poverty likely include trade and related workers, plant and machine operators and assemblers, and clerks. Those headed by service workers are also more likely to be chronically poor.

High dependency burden also appears to be a factor on transient and chronic poverty. While both transient and chronic poverty are positively affected by household with many members between 0 and 25 years old, the effect of many members between 0 to 15 years old is more pronounced in the case of chronic poverty. Households with many members beyond 25 years of age are less likely to experience both types of poverty. Its effect is more pronounced in the transient poverty, however.

Households that experience positive shocks in the form of higher earnings, new job, abundant harvest, better health or receipt of remittance/inheritance are less likely to be chronically poor. In addition, households that experience negative shocks in the form of job loss or income reduction are more likely to experience chronic poverty. Shocks do not have any significant effect on the likelihood of being transient poor, however. In addition, households in rural areas are likely to experience both types of poverty but the likelihood of being chronic poor is higher. Households in regions with armed conflict are more likely to be chronically poor while households with access to health insurance are less likely to be transient or chronic poor.

Table 6 shows the equivalent results using the per capita food expenditure and the food poverty threshold as basis for determining the frequencies of experienced poverty. Similar to the above results, households with heads that have higher education are less likely to be vulnerable to food poverty. Households with older heads are less likely to be transiently and chronically food-poor. Relative to those whose heads are employed in the government, households headed by unskilled workers and those in the service sectors are more likely to be transient food-poor. There are many occupations that make the household more likely to be chronically food-poor, however. Relative to households headed by government employees, those headed by service workers, farmers, trade and related workers and unskilled workers are more likely to experience chronic food poverty.

Results on the high dependency burden of young household members have the same pattern as in table 5. For the transient food-poor, more household members in the more economically active age group negatively affects food poverty. However, in the chronic food-poor case, more household members aged 25 and above also contribute *positively* to chronically food-poor.

Households that experience negative shocks in the form of job loss or income reduction are more likely to experience transient and chronic food poverty. The effect is more pronounced on the likelihood of being chronically food-poor, however. Households that experience natural disasters or poor health are likely to be chronically food-poor while it has no significant effect on being transient food-poor. In addition, households in rural areas are more likely to experience both types of poverty but the likelihood of being chronic food-poor is higher.

5.3.2 Comparing the Chronic Poor with the Transient Poor

Using the poverty defined by per capita expenditure versus the poverty threshold and the food poverty defined by per capita food expenditure versus the food poverty threshold, table 7 compares the four to five times poor with the once poor households. The latter is a more stringent definition of the transient poverty. Results indicate that for both regressions, the household head's educational attainment makes the household less likely to be chronically poor and chronically food-poor. It can be noted, however, that the effect of educational attainment is more pronounced for the chronic food poverty.

Unlike in table 5 where there are many occupations of the household head that appear to contribute to the household's poverty, only the households headed by farmers and laborers/unskilled workers make the

household more likely to experience chronic poverty and chronic food poverty. Results also show that households with older heads are less likely to experience chronic poverty and chronic food poverty. This suggests that the experience in the labor market of older people and the networks they have established during the course of their lifetime help households to ward off chronic poverty and chronic food poverty.

High dependency burden also appears to be a factor on chronic poverty and chronic food poverty. Households with higher members aged 25 and above make the household less likely to experience chronic poverty. The sign reverses for the chronic food poverty which suggests that households with large family size and living in intense poverty cut on food expenditures to allow for other necessary basic expenditures. Thus, even if there is a bigger number of household member in the economically active age group, the combination of other factors such as the lack of adequately paying jobs or job loss, low income, low skills and low education attainment, brings the family more into more chronic food-poor condition.

Households that experience positive shocks in the form of higher earnings, new job, abundant harvest, better health or receipt of remittance/inheritance are less likely to be chronically poor and chronically food-poor. Households that experience natural disasters or deterioration in health are more likely to be chronically food-poor. In addition, households in rural areas and in areas with armed conflict are more likely to experience both types of poverty except that the effect of these factors on chronic poverty is more severe.

6. Policy Implications and Challenges

Unlike other papers on chronic and transient poverty, the result of this paper attributes similar factors to chronic and transient poverty and food poverty. Defining transient as entering poverty fewer times and chronic as entering poverty several times, it is not so surprising that the same factors would affect the two groups except the effects would be more pronounced for the persistently and chronically poor.

This paper finds that the variables that bring about vulnerability to poverty and food poverty are the household head's low educational level and unstable or economically risky occupations such as those in the agriculture, forestry and resource sectors and laborers/unskilled workers. Other factors of consideration also include geographical elements such as rural districts and conflict areas, lack of a well-paying and stable employment and large dependency burden of young economically inactive household members who require significant expenditures to feed, educate and nurture.

While shocks do not affect transient poverty, households that experience higher earnings, new job, abundant harvest, better health or receipt of remittance/inheritance are less likely to experience chronic poverty. Shocks related to labor market affect both transient and chronic food poverty while natural calamities or health deterioration of any household member increases the probability of the household falling into chronic food poverty.

The implications of these results are quite important. It requires policy makers to be biased towards anti-poverty strategies that develop infrastructures and invigorate local economies and promote market linkages and stable employment generation. Successful integrated area and rural development are essential for poverty reduction. It entails improving not only the continuing enrollment and uninterrupted studies of students up to high school and college levels but also the improvement of the quality of the educational system and ensuring that it will lead to stable employment at adequate pay levels. It entails policies to address the large dependency burden of young household members. This is a very controversial policy that the largely Catholic Philippines will have to address head-on.

The results also suggest strong climate change and disaster management program in areas prone to flood, drought and typhoon. It entails addressing problems in agriculture, the rural setting and the casual and informal labor markets.

The results also imply that there should be a strong link between developing technical/vocational skills and local livelihood opportunities to ensure that high school graduates who will not be able to afford college education will be equipped with skills that are valuable in the labor market. Strong link between the academe and the industry is also needed to ensure that the courses being offered in colleges and universities are relevant to the needs of the local labor market.

Better health care services and centers and health insurance schemes for the low-income groups should be strengthened as well. Resolution of decades-long problems in areas with armed conflict should be achieved as soon as possible. These areas are also the most underdeveloped in terms of infrastructure, local economies promotion and local governance.

Many of these will take some time and therefore safety nets and the mitigation of poverty are required for the chronic and transient poor. The current conditional cash transfer program of the government, which is being touted as the pillar of the anti-poverty strategy of the government, has a bigger mitigating and safety net component for addressing poverty. It also has long run implications such as the continuing education of children and the reduction of the incidence of poor maternal health. While the policy prescriptions above can partly address transient and chronic poverty, poverty reduction is multidimensional and requires the cooperative efforts of the national and local agencies of the government as well as the civil societies.

The attrition bias found in the panel data is mitigated by the inclusion of the Inverse Mills' Ratio in all the regression runs. In the future, data collection in the Philippines should be improved by tracking down economic units better in order to continue the analysis of poverty in the context of longitudinal setting and to allow for longer and good quality panel data. Right now, nationally representative survey datasets such as FIES and APIS use the household or place of domicile as the point of data collection. Surveys can assign unique identification numbers based on the household heads' information, for example. These identification numbers ensure quality and legitimate panel data. This study has to limit the sample based on the consistency of the household head's age and sex across the five-year period to partly ensure that the data tracks the same families over time. The use of weights to blow up the sample into population is also problematic since the weights assigned to the households differ across the years. In the end, this study does not use weights. In addition, important variables such as shocks are collected only in 2004. It would have been ideal to analyze the effects of these variables on year-to-year basis. Future poverty studies in the Philippines can therefore benefit from future data collection with longitudinal objectives and perspectives.

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Table 1: Proportion of households in terms of frequency of poverty during the 5-year period, APIS and FIES

	Per capita expenditure against poverty threshold	Per capita food expenditure against food threshold		Per capita expenditure against poverty threshold	Per capita food expenditure against food threshold
NATIONAL					
Never poor	0.41	0.25			
Once poor	0.13	0.15			
Twice poor	0.1	0.13			
Thrice poor	0.09	0.12			
Four times poor	0.1	0.14			
Always poor	0.16	0.22			
URBAN			**RURAL**		
Never poor	0.62	0.41	Never poor	0.29	0.15
Once poor	0.14	0.2	Once poor	0.13	0.12
Twice poor	0.08	0.12	Twice poor	0.11	0.13
Thrice poor	0.05	0.1	Thrice poor	0.12	0.14
Four times poor	0.05	0.09	Four times poor	0.13	0.17
Always poor	0.06	0.08	Always poor	0.22	0.3
REGIONS					
Ilocos-I			**Zamboanga- IX**		
Never poor	0.44	0.24	Never poor	0.29	0.16
Once poor	0.15	0.18	Once poor	0.13	0.15
Twice poor	0.09	0.15	Twice poor	0.1	0.11
Thrice poor	0.1	0.11	Thrice poor	0.03	0.13
Four times poor	0.13	0.15	Four times poor	0.11	0.08
Always poor	0.08	0.17	Always poor	0.35	0.38
Cagayan Valley-II			**Northern Mindanao-X**		
Never poor	0.56	0.38	Never poor	0.34	0.19
Once poor	0.2	0.15	Once poor	0.17	0.13
Twice poor	0.06	0.15	Twice poor	0.1	0.12
Thrice poor	0.07	0.12	Thrice poor	0.05	0.12
Four times poor	0.05	0.09	Four times poor	0.11	0.13
Always poor	0.07	0.1	Always poor	0.24	0.3
Central Luzon-III			**Davao-XI**		
Never poor	0.62	0.39	Never poor	0.32	0.15
Once poor	0.15	0.19	Once poor	0.11	0.14
Twice poor	0.09	0.2	Twice poor	0.1	0.11
Thrice poor	0.09	0.1	Thrice poor	0.12	0.21
Four times poor	0.02	0.07	Four times poor	0.16	0.15
Always poor	0.03	0.05	Always poor	0.2	0.24
CALABARZON-IVA			**SOCCSKSARGEN-XII**		
Never poor	0.59	0.37	Never poor	0.36	0.22
Once poor	0.08	0.14	Once poor	0.15	0.12
Twice poor	0.08	0.09	Twice poor	0.1	0.15
Thrice poor	0.06	0.12	Thrice poor	0.09	0.12
Four times poor	0.07	0.12	Four times poor	0.09	0.14
Always poor	0.12	0.17	Always poor	0.2	0.25

MIMAROPA-IVB			**Metro Manila**		
Never poor	0.29	0.13	Never poor	0.76	0.56
Once poor	0.1	0.1	Once poor	0.13	0.21
Twice poor	0.14	0.11	Twice poor	0.06	0.12
Thrice poor	0.11	0.14	Thrice poor	0.03	0.06
Four times poor	0.11	0.2	Four times poor	0.02	0.03
Always poor	0.26	0.33	Always poor	0	0.01
Bicol-V			**Cordillera Administrative Region**		
Never poor	0.33	0.17	Never poor	0.07	0.09
Once poor	0.12	0.17	Once poor	0.09	0.16
Twice poor	0.13	0.17	Twice poor	0.11	0.12
Thrice poor	0.1	0.06	Thrice poor	0.25	0.18
Four times poor	0.12	0.23	Four times poor	0.32	0.19
Always poor	0.2	0.21	Always poor	0.16	0.26
Western Visayas-VI			**Autonomous Region of Muslim Mindanao**		
Never poor	0.43	0.26	Never poor	0.05	0.03
Once poor	0.13	0.16	Once poor	0.13	0.05
Twice poor	0.09	0.1	Twice poor	0.12	0.07
Thrice poor	0.12	0.13	Thrice poor	0.23	0.17
Four times poor	0.09	0.12	Four times poor	0.21	0.29
Always poor	0.15	0.23	Always poor	0.26	0.39
Central Visayas-VII			**CARAGA-XIII**		
Never poor	0.4	0.24	Never poor	0.17	0.06
Once poor	0.18	0.17	Once poor	0.12	0.1
Twice poor	0.08	0.13	Twice poor	0.11	0.1
Thrice poor	0.11	0.14	Thrice poor	0.12	0.14
Four times poor	0.14	0.13	Four times poor	0.13	0.15
Always poor	0.1	0.19	Always poor	0.35	0.46
Eastern Visayas-VIII					
Never poor	0.34	0.23			
Once poor	0.14	0.13			
Twice poor	0.16	0.14			
Thrice poor	0.11	0.11			
Four times poor	0.1	0.19			
Always poor	0.15	0.21			

Table 2: Mean values of socioeconomic characteristics, by frequency of experienced poverty

Using per capita expenditure against poverty threshold	Never poor	Once poor	Twice poor	Thrice poor	Four times poor	Five times poor
Educational Attainment of the household head (FIES 2003)	3.83	2.82	2.39	2.46	2.31	1.93
Age of the household head (FIES 2003)	47.28	45.15	44.22	43.56	41.71	40.19
Primary occupation of the household head (FIES 2003)	5.36	6.55	6.71	6.67	6.63	6.81
Age of the spouse (APIS 2004)	45.06	42.52	41.26	40.07	39.09	37.50
Number of total household members employed (FIES 2003)	1.87	1.81	1.88	1.82	1.77	1.80
Family Size (FIES 2003)	4.49	4.92	5.07	5.44	5.85	6.45
Number of household members aged <=1 (APIS and FIES)	0.41	0.59	0.62	0.78	0.83	1.13
Number of household members aged <=7 (APIS and FIES)	3.23	2.57	2.84	3.67	4.57	6.43
Number of household members aged <=15 (APIS and FIES)	3.23	4.39	4.74	5.72	7.00	9.34
Number of household members aged <25 (APIS and FIES)	3.46	4.23	4.02	4.35	4.36	3.31
Number of household members aged >25 (APIS and FIES)	5.25	4.72	4.73	4.61	4.62	4.54
Changes in the type of household (APIS and FIES)	1.32	1.22	1.19	1.12	0.87	0.80
Any one in the household member with health insurance (APIS 2004)	0.57	0.44	0.38	0.32	0.36	0.34
Count of households experiencing shock						
No shock	598	174	153	119	141	225
Positive shock only/new job with higher salary/more earnings/abundant harvest	114	33	26	21	24	34
Positive shock only/Others	60	9	6	8	9	6
Negative shock only/lost job/reduced income	70	33	18	27	23	49
Negative shock only/increased food prices	167	66	37	49	41	76
Negative shock only/others	19	9	10	7	16	8
Using per capita food expenditure against food threshold						
Educational Attainment of the household head (FIES 2003)	4.10	3.35	2.76	2.57	2.41	2.12
Age of the household head (FIES 2003)	47.37	46.41	45.43	44.04	43.27	41.14
Primary occupation of the household head (FIES 2003)	5.05	5.93	6.49	6.64	6.61	6.73
Age of the spouse (APIS 2004)	45.32	43.69	43.11	40.25	40.73	38.51
Number of total household members employed (FIES 2003)	1.87	1.82	1.75	1.88	1.94	1.78
Family Size (FIES 2003)	4.30	4.51	4.82	5.15	5.69	6.36
Number of household members aged <=1 (APIS and FIES)	0.39	0.53	0.51	0.74	0.71	1.01
Number of household members aged <=7 (APIS and FIES)	1.66	2.16	2.45	3.15	3.86	5.74
Number of household members aged <=15 (APIS and FIES)	2.87	3.21	4.28	4.90	6.35	8.81
Number of household members aged <25 (APIS and FIES)	3.12	3.69	3.68	3.93	4.70	3.91
Number of household members aged >25 (APIS and FIES)	5.17	5.06	4.82	4.86	4.78	4.60
Changes in the type of household (APIS and FIES)	1.27	1.30	1.24	1.20	1.03	0.89
Any one in the household member with health insurance (APIS 2004)	0.60	0.48	0.44	0.40	0.39	0.35
Count of households experiencing shock						
No shock	367	199	169	173	194	308
Positive shock only/new job with higher salary/more earnings/abundant harvest	70	36	35	22	37	52
Positive shock only/Others	35	17	12	11	13	10
Negative shock only/lost job/reduced income	37	29	32	25	37	60
Negative shock only/increased food prices	97	71	58	60	50	100
Negative shock only/others	10	11	10	9	12	17

Relevant codes for the occupation of the household head: 5 clerks, 6 service workers and 7 farmers/fishermen/forestry workers. Codes of the changes in the household type: 1 extended household once and 2 extended household twice in the sample period.

Table 3: Marginal Effects Based on the Multinomial Logit Estimates on the Frequency of Entering Poverty: Using Per Capita Expenditure Versus Per Capita Poverty Threshold

	Never Poor		Once Poor		Twice Poor		Thrice Poor		Four Times Poor		Five Times Poor	
	dy/dx	SE	dy/dx	SE	dy/dx	SE	dy/dx	SE	dy/dx	SE	dy/dx	SE
Household data in the initial period (2003 FIES)												
Head is college graduate or higher	0.461***	0.030	-0.069***	0.022	-0.097***	0.018	-0.083***	0.014	-0.109***	0.012	-0.103***	0.010
Age of household head	-0.001	0.003	-0.001	0.002	0.000	0.002	0.001	0.002	-0.002	0.002	0.001	0.001
Age of spouse	0.004	0.003	0.000	0.002	-0.002	0.002	-0.002	0.002	0.001	0.002	-0.001	0.001
Family size	-0.020	0.014	-0.011	0.011	0.003	0.010	0.000	0.008	0.013*	0.007	0.015**	0.006
Shocks (2004 APIS)												
Positive shock: new job with higher salary/more earnings/abundant harvest	0.093	0.046	0.014	0.035	-0.019	0.027	-0.012	0.024	-0.030	0.019	-0.046***	0.013
Positive shock: Better health/remittances/inheritance	0.080	0.074	-0.037	0.051	-0.029	0.046	0.007	0.048	0.028	0.047	-0.050**	0.020
Negative shock only/lost job/reduced income	-0.144***	0.038	0.020	0.036	-0.031	0.028	0.070**	0.034	0.026	0.028	0.060**	0.026
Negative shock only/increased food prices	-0.024	0.034	0.031	0.027	-0.037*	0.021	0.028	0.022	-0.008	0.018	0.010	0.016
Negative shock only/natural disasters/poor health	-0.150**	0.062	-0.036	0.055	0.050	0.056	0.013	0.046	0.143**	0.061	-0.020	0.028
With household member having health insurance	0.161***	0.026	0.014	0.020	-0.037**	0.018	-0.049***	0.015	-0.040***	0.014	-0.048***	0.012
Conflict areas	-0.105***	0.028	-0.020	0.022	-0.001	0.020	0.004	0.017	0.039**	0.017	0.084***	0.017
Rural	-0.349***	0.026	-0.014	0.020	0.041**	0.017	0.097***	0.014	0.104***	0.013	0.120***	0.012
IMR	-0.569***	0.104	0.130	0.077	0.090	0.071	0.174***	0.060	0.148***	0.056	0.028	0.044
Mean number of household members by age group (APIS and FIES)												
less than or equal 1	-0.255***	0.055	-0.022	0.040	0.025	0.035	0.077***	0.028	0.068***	0.026	0.107***	0.021
age>1 & age<=7	-0.220***	0.028	-0.002	0.020	0.002	0.018	0.056***	0.014	0.070***	0.013	0.094***	0.012
age>7 & age<=15	-0.129***	0.021	0.006	0.015	0.004	0.014	0.030***	0.011	0.034***	0.010	0.055	0.009
age>15 & age<=25	-0.055***	0.021	0.027*	0.015	-0.001	0.014	0.024**	0.012	0.014	0.011	-0.010	0.009
age>25	0.067**	0.031	-0.021	0.026	-0.023	0.024	-0.027	0.023	0.003	0.019	0.001	0.016
average number of workers	-0.012	0.016	-0.016	0.012	0.008	0.011	0.001	0.009	0.003	0.008	0.017**	0.007

Number of observations: 2320; Prob > chi2: 0.00; Pseudo R2; 0.22 */**/*** indicate significance at the 10/5/1% level. Figures are obtained by issuing mfx command after the mlogit command in Stata.

Table 4: Marginal Effects Based on the Multinomial Logit Estimates on the Frequency of Entering Poverty: Using Per Capita Food Expenditure Versus Per Capita Food Poverty Threshold

	Never Poor		Once Poor		Twice Poor		Thrice Poor		Four Times Poor		Five Times Poor	
	dy/dx	SE	dy/dx	SE	dy/dx	SE	dy/dx	SE	dy/dx	SE	dy/dx	SE
Household data in the initial period (2003 FIES)												
Head is college graduate or higher	0.337***	0.030	0.082***	0.025	-0.041*	0.023	-0.077***	0.021	-0.140***	0.018	-0.161***	0.015
Age of household head	-0.001	0.002	0.001	0.002	-0.003	0.002	0.003*	0.002	-0.002	0.002	0.002	0.002
Age of spouse	0.002	0.002	-0.001	0.002	0.002	0.002	-0.006***	0.002	0.003	0.002	-0.001	0.002
Family size	0.000	0.009	-0.016*	0.010	-0.004	0.010	-0.003	0.010	0.006	0.010	0.018**	0.009
Shocks (2004 APIS)												
Positive shock: new job with higher salary/more earnings/abundant harvest	0.050*	0.031	0.039	0.034	0.052	0.036	-0.062**	0.028	-0.025	0.029	-0.054**	0.022
Positive shock: Better health/remittances/inheritance	-0.016	0.036	0.022	0.049	0.022	0.056	-0.001	0.054	0.043	0.060	-0.070*	0.036
Negative shock only/lost job/reduced income	-0.086***	0.019	-0.032	0.028	0.026	0.035	-0.027	0.031	0.052	0.035	0.066*	0.034
Negative shock only/increased food prices	-0.019	0.020	0.036	0.025	0.014	0.027	0.022	0.026	-0.046**	0.023	-0.007	0.022
Negative shock only/natural disasters/poor health	-0.076***	0.033	-0.013	0.050	0.034	0.062	0.005	0.055	0.027	0.055	0.023	0.052
With household member having health insurance	0.095***	0.017	0.033*	0.018	0.006	0.020	-0.021	0.019	-0.043**	0.019	-0.071***	0.017
Conflict areas	-0.061***	0.017	-0.041**	0.019	-0.057***	0.020	0.004	0.022	0.069***	0.023	0.087***	0.021
Rural	-0.221***	0.021	-0.123***	0.020	-0.016	0.019	0.050***	0.018	0.107***	0.018	0.204***	0.016
IMR	-0.244***	0.064	-0.131*	0.070	0.073	0.076	0.154**	0.076	0.037	0.074	0.111*	0.066
Mean number of household members by age group (APIS and FIES)												
less than or equal 1	-0.138***	0.036	-0.063*	0.036	-0.100**	0.041	0.085**	0.035	0.066	0.035	0.151***	0.031
age>1 & age<=7	-0.145***	0.017	-0.069***	0.019	-0.038*	0.020	0.012	0.018	0.098***	0.018	0.141***	0.016
age>7 & age<=15	-0.098***	0.013	-0.055***	0.015	-0.015	0.015	0.018	0.014	0.052***	0.014	0.098***	0.013
age>15 & age<=25	-0.055	0.014	-0.009	0.015	-0.011	0.016	0.010	0.015	0.045***	0.014	0.019	0.013
age>25	-0.001	0.019	0.025	0.020	-0.012	0.023	-0.003	0.025	-0.005	0.025	-0.004	0.023
average number of workers	-0.012	0.010	-0.017	0.011	-0.010	0.012	0.014	0.012	0.012	0.011	0.014	0.010

Number of observations: 2320; Prob > chi2: 0.000; Pseudo R2: 0.20. */**/*** indicate significance at the 10/5/1% level. Figures are obtained by issuing mfx command after the mlogit command in Stata.

Table 5: Marginal Effects Based on the Probit Regression Estimates, Using Poverty Frequency from the Per Capita Expenditure and Per Capita Poverty Threshold

	Once or Twice Poor vs Never Poor		**4 or 5 Times Poor vs Never Poor**	
	Coef.	SE	Coef.	SE
Data on household head (2003 FIES)				
Age	-0.011***	0.003	-0.095***	0.011
Education attainment				
head reached elementary undergraduate	-0.154	0.196	-0.211	0.631
head is elementary graduate	-0.412**	0.197	-1.443**	0.633
head reached high school undergraduate	-0.452**	0.202	-2.478***	0.67
head is high school graduate	-0.611***	0.2	-3.004***	0.661
head reached college undergraduate	-0.846***	0.208	-4.444***	0.722
head is college graduate or above	-1.578***	0.266	-6.678***	1.067
Occupation				
Professionals	-4.128	661.006	1.572	1.421
Technicians and Associate Professionals	-0.136	0.216	0.447	0.966
Clerks	0.376*	0.203	1.312	1.06
Service Workers and Shop and Market Sales Workers	0.084	0.152	2.213***	0.623
Farmers, Forestry Workers and Fishermen	0.266***	0.098	2.601***	0.464
Trade and Related Workers	0.218**	0.11	1.088**	0.523
Plant and Machine Operators and Assemblers	0.200*	0.11	0.446	0.532
Laborers and Unskilled Workers	0.353***	0.107	2.976***	0.494
Special occupations	0.07	0.253	-1.468	1.58
Shocks (2004 APIS)				
Positive shock: new job with higher salary/more earnings/abundant harvest	-0.055	0.081	-0.782**	0.313
Positive shock: Better health/remittances/inheritance	-0.042	0.132	-1.251**	0.53
Negative shock only/lost job/reduced income	0.005	0.095	0.964***	0.341
Negative shock only/increased food prices	-0.028	0.067	0.352	0.252
Negative shock only/natural disasters/poor health	0.227	0.151	0.555	0.56
Any one household member has health insurance	-0.089*	0.052	-0.459**	0.193
Conflict areas	0.087	0.059	0.565***	0.21
Rural	0.287***	0.055	2.171***	0.24
IMR	0.470**	0.186	2.976**	0.728
Changes in the household composition by age group, (APIS and FIES				
less than or equal 1	0.420***	0.067	0.803***	0.147
age>1 & age<=7	0.224***	0.033	0.791***	0.072
age>7 & age<=15	0.141***	0.024	0.662***	0.055
age>15 & age<=25	0.067***	0.022	0.295***	0.054
age>25	-0.193***	0.027	-0.077*	0.045
Changes in the number of employed household members (APIS)				
Increase in number of members employed	-0.007	0.062	-0.124	0.099
The same number of members employed	0.098*	0.057	-0.01	0.113
Number of observations	5827		6205	
Prob > chi2	0.000		0.000	

Figures are obtained by issuing mfx command after the xtprobit command in Stata. Reference category for the household head's education is no grade completed. Reference category for the occupation is government employees. Reference category for the changes in the number of employed household members is "decrease in the number of employed members". */**/*** indicate significance at the 10/5/1% level.

Table 6: Marginal Effects Based on the Probit Regression Estimates, Using Poverty Frequency from the Per Capita Food Expenditure and Per Capita Food Threshold

	Once or Twice Poor vs Never Poor		**4 or 5 Times Poor vs Never Poor**	
	Coef.	SE	Coef.	SE
Data on household head (2003 FIES)				
Age	-0.007***	0.002	-0.058***	0.008
Education attainment				
head reached elementary undergraduate	0.007	0.309	-0.669	0.487
head is elementary graduate	-0.078	0.309	-1.308***	0.492
head reached high school undergraduate	-0.050	0.311	-1.394***	0.515
head is high school graduate	-0.328	0.310	-2.247***	0.507
head reached college undergraduate	-0.477	0.313	-3.286***	0.546
head is college graduate or above	-0.826**	0.324	-5.278***	0.703
Occupation				
Professionals	0.205	0.204	0.192	1.087
Technicians and Associate Professionals	0.049	0.155	0.067	0.650
Clerks	0.204	0.180	0.595	0.807
Service Workers and Shop and Market Sales Workers	0.224*	0.121	1.546***	0.430
Farmers, Forestry Workers and Fishermen	0.112	0.083	1.692***	0.315
Trade and Related Workers	0.156*	0.095	0.843**	0.356
Plant and Machine Operators and Assemblers	0.122	0.094	0.665*	0.362
Laborers and Unskilled Workers	0.282***	0.094	1.903***	0.338
Special occupations	0.269	0.233	0.390	0.911
Shocks (2004 APIS)				
Positive shock: new job with higher salary/more earnings/abundant harvest	-0.001	0.075	-0.361	0.231
Positive shock: Better health/remittances/inheritance	-0.059	0.116	-0.411	0.381
Negative shock only/lost job/reduced income	0.181**	0.085	0.454*	0.249
Negative shock only/increased food prices	0.046	0.062	0.309	0.200
Negative shock only/natural disasters/poor health	0.207	0.145	1.226***	0.447
Any one household member has health insurance	-0.072	0.049	-0.242*	0.148
Conflict areas	0.052	0.057	0.168	0.161
Rural	0.258***	0.050	1.754***	0.179
IMR	-0.034	0.060	2.442***	0.557
Changes in the household composition by age group, (APIS and FIES)				
less than or equal 1	0.317***	0.070	0.481***	0.122
age>1 & age<=7	0.160***	0.033	0.533***	0.058
age>7 & age<=15	0.097***	0.025	0.523***	0.044
age>15 & age<=25	0.086***	0.022	0.264***	0.042
age>25	-0.040*	0.023	0.160***	0.039
Changes in the number of employed household members (APIS)				
Increase in number of members employed	0.060	0.054	0.030	0.085
The same number of members employed	0.338**	0.169	-0.020	0.093
Number of observations	4652		5644	
Prob > chi2	0.000		0.000	

Figures are obtained by issuing mfx command after the xtprobit command in Stata. Reference category for the household head's education is no grade completed. Reference category for the occupation is government employees. Reference category for the changes in the number of employed household members is "decrease in the number of employed members". */**/*** indicate significance at the

10/5/1% level.

Table 7: Marginal Effects Based on the Probit Regression Estimates on Four or Five Times Poor versus Once Poor

	Using per capita expenditure and per capita poverty threshold		Using per capita food expenditure and per capita food poverty threshold	
	Coef.	SE	Coef.	SE
Data on household head (2003 FIES)				
Age	-0.020***	0.005	-0.016***	0.004
Education attainment				
head reached elementary undergraduate	-0.049	0.247	-0.524**	0.25
head is elementary graduate	-0.418*	0.248	-0.862***	0.251
head reached high school undergraduate	-0.739***	0.266	-0.944***	0.262
head is high school graduate	-0.837***	0.262	-1.076***	0.258
head reached college undergraduate	-0.932***	0.294	-1.445***	0.273
head is college graduate or above	-1.510***	0.527	-1.857***	0.325
Occupation				
Professionals	0.753	1.267	0.425	0.445
Technicians and Associate Professionals	0.604	0.55	0.277	0.316
Clerks	0.273	0.572	0.085	0.398
Service Workers and Shop and Market Sales Workers	0.321	0.307	0.319	0.212
Farmers, Forestry Workers and Fishermen	0.572***	0.218	0.455***	0.151
Trades and Related Workers	0.182	0.247	0.221	0.174
Plant and Machine Operators and Assemblers	-0.026	0.256	0.141	0.178
Laborers and Unskilled Workers	0.470**	0.225	0.483***	0.161
Special occupations	-1.230*	0.71	0.399	0.499
Shocks (2004 APIS)				
Positive shock: new job with higher salary/more earnings/abundant harvest	-0.380**	0.151	-0.221**	0.115
Positive shock: Better health/remittances/inheritance	-0.286	0.27	-0.129	0.192
Negative shock only/lost job/reduced income	0.102	0.15	0.091	0.12
Negative shock only/increased food prices	-0.055	0.116	0.012	0.095
Negative shock only/natural disasters/poor health	0.107	0.247	0.474**	0.216
hh member has health insurance 2004	-0.1	0.093	-0.1	0.073
Conflict areas	0.246**	0.098	0.130*	0.078
Rural	0.617***	0.108	0.647***	0.082
IMR	-0.354	0.309	0.004	0.061
Changes in the household composition by age group, (APIS and FIES)				
less than or equal 1	0.516***	0.088	0.438***	0.081
age>1 & age<=7	0.367***	0.04	0.351***	0.036
age>7 & age<=15	0.296***	0.03	0.306***	0.026
age>15 & age<=25	0.095***	0.03	0.156***	0.027
age>25	-0.122***	0.03	0.066**	0.026
Changes in the number of employed household members (APIS)				
Increase in number of members employed	-0.051	0.068	0.074	0.065
The same number of members employed	0.052	0.075	0.748***	0.268
Number of observations	3784		4764	
Prob > chi2	0.000		0.000	

Figures are obtained by issuing mfx command after the xtprobit command in Stata. Reference category for the household head's education is no grade completed. Reference category for the occupation is government employees. Reference category for the changes in the number of employed household members is "decrease in the number of employed members". */**/*** indicate significance at the 10/5/1% level.