Factors affecting transient and chronic poverty in the Philippines

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ABSTRACT
The levels of poverty take different approaches to tackle. Poverty as a global problem can be classified into transient and chronic poverty. This study aims to examine the dynamics of poverty with some factors influencing it. Specifically, it measures the effect of some economic, demographic, and social factors on the poverty status of Filipino households. Using repeated cross-section analysis from the baseline logistic model, results reveal that the factors included in the study significantly affect transient and chronic poverty status of Filipino households.

Keywords: transient, chronic, poverty

INTRODUCTION
The developing world, including the Philippines, has been described in terms of their most significant features and of their state of poverty. These economies measure poverty using various metrics, which define their state of underdevelopment (Todaro and Smith, 2011).

Across the world, measures of poverty have been based on economic indicators such as income and consumption (Arcilla et al., 2011; Estudillo et al., 2008; Mitiku, 2014; Orbeta, 2003, 2005), and also other dimensions such as capacity (Ataguba et al., 2013) and other social inclusion principles (Marlier & Atkinson, 2010; Waggle, 2008). Rivera, Pizzaro, and Aliping (2013), for instance, noted that in the Philippines, poverty is officially measured through the poverty (per capita income) and food threshold (minimum cost for food).

Kakwani (2010) supported constructing a new model for poverty lines due to differences in demographic factors. For example, while there is a standard computation for the caloric requirement per family, it will not be fair to specify similar food baskets for the population given differences in family size, regional price thresholds, and location, plus the factor of inflation, thus the need to determine different food poverty line per region. Other non-monetary measures which could define the population’s status whether poor or non-poor include water and sanitation, health, education, and shelter (Chambers, 2007).

The levels of poverty take different approaches to tackle. For example, Moreno (2011) suggested that only the enterprising poor could enjoy the benefits of microcredit to engage in entrepreneurship and not the poorest of the poor, the hardcore poor (Milgram, 2001), or the abject poor (Alvarez & Barney, 2013). Other studies (Aslanbeigui, Oakes, & Uddin, 2010; Boateng, Boateng, & Bampoe, 2014; Milgram, 2001; Shetty, 2010) also showed that those who have had experience in starting or handling one’s own business gained access to microcredit. Those who are enterprising would have an upper hand in access to a resource to grow the business. The latter could benefit more from cash transfer programs (Moreno, 2011), which could help in their day-to-day subsistence.
Economic transformation, i.e., moving households from low to high income is a concern of development economics but the new view of economics aims higher than to increase income and that is, to eliminate or reduce poverty, inequality, and unemployment (Todaro and Smith, 2011).

Of the poverty mobility options, poverty alleviation or eradication has been among the most studied and perhaps the goal as far as poverty mobility is concerned. After all, as Hulme (2009) stated in his chronicle of the Millennium Development Goals (MDG), poverty alleviation is a moral obligation. At the crux of discussions poverty is the extreme inequality of incomes that stunt macroeconomic growth and the inequitable distribution in society (Reyes et al., 2010a, b; Van den Berg, 2012). Todaro and Smith (2011) stated why extreme income inequality should be a matter of concern. First, it leads to economic inefficiency, which leads to inefficient allocation of resources. Second, inequality undermines social stability and solidarity. Generally, it means that the rich gain political power that increases their bargaining power. Consequently, the outcomes of these negotiations only benefit the rich. Lastly, extreme inequality is simply unfair.

Importance rises to explore how some factors would affect the continuous battle of an economy such as the Philippines against poverty. This study focuses not only on poverty alleviation but other poverty mobility scenarios such as no change in status, movement to further poverty, or from a state of poverty to non-poverty. Hence, this study answers the research problem, “how do some economic, demographic, and social factors affect transient and chronic poverty status of Filipino households?” It particularly aims to test whether demographic (age, size, size, age, education), economic (wage, entrepreneurship, government support) and social (urbanity) factors affect the poverty status of Filipino households. Furthermore, it aims to test whether these factors lead to transient or chronic poverty in the Philippines. Once the relationships have been established, this will benefit not only the people who fall below the poverty line but also the policy-makers for economic development. Moreover, this will also benefit investors and businessmen, the academe and future researchers.

REVIEW OF RELATED LITERATURE

Poverty studies would usually focus on factors on why someone becomes or is poor. The literature pointed to demographic factors such as age (Estudillo, Sawada, & Otsuka 2008; Heslop & Gorman, 2002), family size (Arcilla, Co, & Ocampo, 2011; Orbeta, 2003, 2005; Son, 2013), education (Chatterjee, 2005; Hala & Ali, 2013; Kim & Terada-Hagiwara, 2013), gender (Kim, Lee, & Lee, 2010; Todaro & Smith, 2011; Dowling & Yap, 2009), race (David & Gouws, 2013; Miller, 1968), and disability (Rahman, Matsui, & Ikemoto, 2013) as determinants of poverty. Economic factors like wages (Hasan & Jandoc, 2010), entrepreneurship (Alvarez & Barney, 2013; Durrani, Usman, Malik, & Ahmad, 2011; Mitiku, 2014), and access to credit (Huddon, 2008), as well as social factors such as inequality of distribution of wealth, for example, between urban and rural centers (Koveos & Zhang, 2012; Islam, Islam, & Abubakar, 2012; Sawada & Estudillo, 2012), citizenship (Dowling & Yap, 2009; Wagle, 2008), and war (Dowling & Yap, 2009; Lim, 2009) could all contribute to poverty.

Corollary to the discussion on the MDG on poverty is the articulation of positive externalities. As determinants of poverty such as demographic, economic, and social factors contribute to poverty, among those that persistently contribute to poverty are unemployment and urbanity, i.e., social factor dictating rural poverty. Sulistyowati (2013)
discussed how investments on educational, health, and infrastructure expenditure contribute to employment and reduced poverty. His study found that increased health expenditure contributes most to increased gross domestic product (GDP), all sector workforce (regardless if industrial or agricultural), and reduced poverty. Given this increased investment, it has a positive benefit on individuals, as well as a societal effect of increased productivity through employment and reduced poverty.

Poverty as a global problem can be classified into transient or transitory poverty, and chronic or permanent poverty. Krishna (2010) classified transitory or transient poverty as one in which people’s poverty status is only for a short term. For instance, Cohen and Tyree (1986) studied characteristics of the poor and non-poor in the United States using the Panel Study of Income Dynamics from 1967 to 1978. They found that sons and daughters were able to escape poverty when their families have savings, a business or good education. They also contributed new factors for mobility such as community of origin (whether the community is affluent gauged by the median income of the neighborhood), and marriage. Furthermore, Rahman et al. (2013) in their study of poverty in Bangladesh categorized poverty as ascending poor to include household income below the poverty line 10 years ago but escaped poverty. The study cited that 76 percent upward mobility was caused by increase of work opportunity, diversified income sources, crop diversification and progress in business.

On the other hand, chronic poverty is a category to which those who have become poor remain so for a long period of time, sometimes intergenerational (Krishna, 2010; Prowse, 2009). Using panel data, Rahman et al. (2013) categorized poverty into chronically poor as those whose household income fall below the poverty line for a long period of time; and found that such state of poverty was due to high family expenses, natural disasters, loss of money for employment abroad, and high treatment cost for illnesses. Moreover, Alvarez and Barney (2013) showed the other side of microfinance, in which acquiring small loans for a business led to further poverty of the beneficiary. The authors showed that microfinance institutions were not discriminate in handing out loans to potential borrowers, even if all 10 would use the loan for opening a small store in the same neighborhood. In this scenario, some would thrive, and unfortunately, others would go bankrupt. Those who went bankrupt secured more loans to pay for the initial loan, which led them to further poverty.

Likewise, using data from the Annual Poverty Indicators Survey (APIS; 2004, 2007, and 2008), Family Income Expenditure Survey (FIES; 2003 and 2006), and combined APIS and FIES five-year panel data set, Reyes, Tabuga, Mina, Asis, and Datu (2010) also categorized poverty status of Filipino households as chronic poor those who were consistently poor in each of the covered year; and transient poor those who were poor during a given period of time and non-poor for at least one year during the year under study.

This study contributes in determining the effect of some demographic, economic and social factors on poverty mobility in the Philippines, especially in probability results such as transient and chronic poverty. Likewise, this also looks into family size, education, wage as factors of poverty and confirm the finding established in the research of Reyes et al. (2010b).
**METHODOLOGY**

Using data of Filipino households from Annual Poverty Indicators Survey (APIS) 2008 and APIS 2011 with 190,171 and 42,063 households respectively, this study examined poverty status of Filipino households. Specifically, this study measures the effect of some economic, demographic, and social factors on transient and chronic poverty in the Philippines. To achieve this objective, two phases of methodology were employed, namely, maximum likelihood estimation (MLE) and repeated cross-section analysis.

The first phase MLE is an alternative approach that utilizes out of sample information and provides more efficient estimates (Greene, 2013, as cited in Conchada & Rivera, 2013). The dependent variable, i.e., whether the household is poor or not, is a dummy variable that is modeled as a standard logit probability model. Hence, a logistic model was employed with the following specification:

$$\ln\left(\frac{p_i}{1 - p_i}\right) = x' \beta + \varepsilon$$

(1)

where $p_i/(1 - p_i)$ measures the probability that $y = 1$ relative to the probability that $y = 0$, which is called the odds ratio or relative risk (Gujarati & Porter, 2009). For the logistic regression model, the log-odds ratio is linear in the regressors (Cameron & Trivedi, 2005). In this study, poverty is measured in terms of per capita income based on the poverty threshold from National Statistical Coordination Board of PHP16,871.00 per year or PHP46.86 per day or the equivalent of approximately one USD. Hence, households having per capita income at poverty line of PHP16,871.00 per year is considered poor.

To measure the influence of the independent variables (i.e., demographic, economic and social factors) on the probability that a household will be poor or non-poor, the logistic specification is given by

$$\ln\left(\frac{p_i}{1 - p_i}\right) = f(FSIZE_i, AGE, AGE SQ, EDUC, WAGE, URBAN, ENTREP, GOVS) + \varepsilon_i$$

(2)

where:

- $p_i$ is the probability that a household is considered poor while $(1 - p_i)$ is the probability that a household is non-poor.
- $FSIZE_i$ (family size) is the number of family members in the household.
- $AGE_i$ indicates the age of the household head, reported in terms of the number of years completed, that is, his/her age as of last birthday.
- $AGE SQ_i$ indicates the age-squared of the household head, which is generating a quadratic curve. Positive effect of age and a negative of age squared would mean that as household gets older, the effect of age is lessened.
- $EDUC_i$ (education) is defined as the highest grade completed by the household head in any educational institution.
- $WAGE_i$ refers to the gross basic salary or wage earned by the household head from all his/her jobs.
URBAN\textsubscript{i} (urbanity) is a dummy variable assigning the value of 1 if the household is residing in urban area and 0 in rural area.
ENTREP\textsubscript{i} (entrepreneurship) indicates whether or not the household is engaged in entrepreneurship.
GOVS\textsuperscript{i} (government support) indicates whether the household received government support under Kalahi-CIDSS program, poverty reduction project.

After employing MLE to determine whether the independent variables are significant on the probability that a household will be poor or non-poor, we proceeded to examine the mobility into and out of poverty in the Philippines using repeated cross-section analysis. For this purpose, we adapted the model from the derivation of Dang, Lanjouw, Luoto, and McKenzie (2011), an alternative statistical methodology for analyzing movements in and out of poverty based on two or more rounds of cross-sectional data. Household characteristics in round 2 that are observed in both round 1 and 2 provides linear projection of round 2 income; and gives estimation of the degree of mobility into and out of poverty. For instance, to estimate the fraction of household in the population who are poor in round 2 after being poor in round 1 could be expressed after some manipulations, as:

\[ P(\epsilon_{i1} < z_1 - \beta_1'x_{i1} \text{ and } \epsilon_{i2} > z_2 - \beta_2'x_{i2}) \]

which represents the degree of mobility our of poverty for households over the two periods in the study, where
\[ x_{i1} \text{ and } x_{i2} \] represent vectors of characteristics of household \( i \) in survey round 1 and 2, respectively, and
\[ z_1 \text{ and } z_2 \] denote the poverty line in the period 1 and period 2 respectively.

Diagrammatically, the relationships between the variables tested are structured in the succeeding Figure 1 and Figure 2.

**Figure 1. Diagram of Chronic Poverty**

<table>
<thead>
<tr>
<th>Poverty Line</th>
<th>Chronic Poverty</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>Non-Poor □------□ -- □ Non-Poor</td>
</tr>
<tr>
<td></td>
<td>Poor □------□ -- □ Poor</td>
</tr>
<tr>
<td>2011</td>
<td>2008</td>
</tr>
</tbody>
</table>
RESULTS AND DISCUSSION

Descriptive Statistics for Per Capita Income

Presented in the following table are the statistical information of the dependent variable per capita income using APIS 2008 and 2011 datasets.

Table 1. Descriptive statistics for per capita income

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>130,135</td>
<td>8,702.67</td>
<td>3,756.25</td>
<td>0</td>
<td>16,870</td>
</tr>
<tr>
<td>Non-Poor</td>
<td>60,036</td>
<td>38,047.64</td>
<td>41,602.22</td>
<td>0</td>
<td>1,850,000</td>
</tr>
<tr>
<td>Overall</td>
<td>190,171</td>
<td>17,966.92</td>
<td>27,240.92</td>
<td>16,873.33</td>
<td>1,850,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B (2011)</th>
<th>Observations</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor</td>
<td>22,920</td>
<td>9,707.272</td>
<td>3,656.132</td>
<td>0</td>
<td>16,870.67</td>
</tr>
<tr>
<td>Non-Poor</td>
<td>19,143</td>
<td>44,706.18</td>
<td>49,160.65</td>
<td>16,871.20</td>
<td>1,905,000</td>
</tr>
<tr>
<td>Overall</td>
<td>42,063</td>
<td>25,635.38</td>
<td>37,561.96</td>
<td>0</td>
<td>1,905,000</td>
</tr>
</tbody>
</table>

As shown in Table 1, there were 130,135 (68.43%) poor households and 60,036 (31.6%) non-poor households from the total 190,171 households included in 2008 APIS. On the other hand, there were 22,920 (54.49%) poor households and 19,143 (45.51%) non-poor households that were included in total 42,063 households covered by 2011 APIS.
Results of marginal effects after the logistic regression analysis show that the independent variables (i.e., demographic, economic and social factors) significantly influenced the decrease in poverty incidence of 74% in 2008 to 51% in 2011.

Demographic factors such as family size, age and education revealed to have significant influence on the probability of the household of becoming poor for both 2008 and 2011. The results indicate that family size contributes to the increase in the probability of the household of becoming poor. This implies that the greater the number of family members, the higher the probability that per capita income of household is below the poverty threshold.

The results also show that age and age-squared are significant to the decline in poverty incidence. Age suggests a positive effect as it decreases the probability of becoming poor for both 2008 and 2011. Age-squared has a reverse effect as family members who are very young or old rely on the household heads who are at their optimum to take on work, with their capacity and physical strength to earn an income.

Another demographic factor education as presented in Table 2 revealed to be significant with a twisting effect. Household heads whose educational attainment are below high school (secondary education) increase the probability of being poor for both 2008 and 2011 while those with higher educational attainment, i.e., higher levels of education past the secondary education, reduces the probability of being poor for both 2008 and 2011 at an increasing rate. This empirical result validates the importance of education, i.e. obtaining higher education would translate into high probability of greater capacity for earning.

As shown in Table 2, results of the marginal effects based on logistic regression analysis reveal that wages, entrepreneurship and government support are significant economic factors that influence the household of becoming poor or non-poor for both
2008 and 2011. Wages of the household head decreases the probability of the household of being poor for both 2008 and 2011. The results indicate that the 74% probability of the households being poor in 2008 decreases by 0.0007%; while 51% probability in 2011 decreases by 0.0008%. We note however that although the probabilities are statistically significant, they exhibit minimal effect on poverty status.

Also, entrepreneurship decreases the probability of the household of being poor for both 2008 and 2011. This means that if the household is engaged in entrepreneurial activities, the results indicate that 74% probability of the households being poor in 2008 decreases by 16%; while 51% probability in 2011 decreases by 20%. This suggests that the more Filipinos are involved in entrepreneurial activities, the lesser their chances of being poor.

Furthermore, government support to the households significantly decreases the 74% probability of the household of being poor by 15.8% in 2008 while 51% probability in 2011 increases by 18% as shown in Table 2. The volatility of results implies that the government support received by households for 2008 and 2011 cannot predict reliably the effect on their poverty status. Attempts should be made to reevaluate this statement as another set of data in the future becomes available.

Results of the marginal effects based on logistic regression analysis show that the social factor urbanity significantly increases the probability of the household of being poor for both 2008 and 2011. This means that if the household is living in urban area, the results indicate that 74% probability of the households of being poor in 2008 increases by 22%; while 51% probability in 2011 increases by 29%.

Bounds of Mobility

Using repeated cross-section analysis of the household data, approach proposed by Dang, Lanjouw, Luoto and McKenzie (2011) in estimating the movement into and out of poverty, we obtained the estimates as shown in Table 3.

The results provide some bounds on the extent of movements into and out of poverty based on the characteristics of the cross-section data of households surveyed. The lower and upper bounds in the table are estimated using the exogenous variables listed in Table 2.

<table>
<thead>
<tr>
<th>State of the World</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor in 2008; Non-poor in 2011</td>
<td>.0399</td>
<td>.0429</td>
</tr>
<tr>
<td>Non-poor in 2008; Non-poor in 2011</td>
<td>.4122</td>
<td>.4152</td>
</tr>
<tr>
<td>Non-poor in 2008; Poor in 2011</td>
<td>.4918</td>
<td>.4950</td>
</tr>
<tr>
<td>Poor in 2008; Poor in 2011</td>
<td>.0499</td>
<td>.0531</td>
</tr>
</tbody>
</table>

Poor to Non-Poor

Results of repeated cross-section analysis, as shown in Table 3, reveal that proportion of Filipino households in 2011 that lies between the lower and upper bound estimates of 3.99% and 4.29% was above the poverty line in 2011 after being below the poverty line in 2008.
Non-Poor to Non-Poor
Estimates as presented in Table 3 show that fraction of Filipino households in 2011 that ranges from 41.22% to 41.52% was above the poverty threshold in 2011 and 2008.

Non-Poor to Poor
Results as shown in Table 3 reveal that proportion of Filipino households in 2011 that lies between the lower and upper bound estimates of 49.18% and 49.5% was below the poverty threshold in 2011 after being above the poverty threshold in 2008.

Poor to Poor
Estimates as presented in Table 3 show that fraction of Filipino households in 2011 that ranges from 4.99% and 5.31% was below the poverty threshold in 2011 and 2008.

Poverty Mobility
In furtherance of repeated cross-section analysis, we used the probabilities in Table 3, estimating the degree of mobility into and out of poverty for households over the two periods 2008 and 2011 to categorize the households into transient and chronic poverty as presented in the succeeding table.

<table>
<thead>
<tr>
<th>State of the World</th>
<th>2011 Households</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor in 2008; Non-poor in 2011</td>
<td>4.14%</td>
<td>Transient</td>
</tr>
<tr>
<td>Non-poor in 2008; Non-poor in 2011</td>
<td>41.37%</td>
<td>Transient</td>
</tr>
<tr>
<td>Non-poor in 2008; Poor in 2011</td>
<td>49.34%</td>
<td>Transient</td>
</tr>
<tr>
<td>Poor in 2008; Poor in 2011</td>
<td>5.15%</td>
<td>Chronic</td>
</tr>
</tbody>
</table>

Transient Poverty
Results as shown in Table 4 reveal that among the Filipino households in 2011, 4.14% of them were poor in 2008 but moved out of poverty in 2011, and therefore categorized as transient poor. Likewise, transient poverty includes 49.34% of households in 2011 that were above the poverty threshold in 2008 but became poor in 2011.

Chronic Poverty
Results as shown in Table 4 reveal that 5.15% of Filipino households in 2011 were below the poverty threshold in 2011 and 2008, and hence categorized as chronically poor.

CONCLUSIONS
Various reasons are found in the literature that point to different types and levels of poverty leading to different approaches to tackle them. This study focused on dynamics of poverty, categorized into transient and chronic poverty.

The results of this study showed that the effects of some demographic, social and economic factors are significant in reducing poverty incidence in the Philippines from 74% in 2008 to 51% in 2011. Furthermore, using repeated cross-section analysis, this study examined how demographic factors family size, age, and education; economic factors wages, entrepreneurship, and government support; and social factor urbanity influence poverty status of Filipino households involved in the study and categorized into transient and chronic poverty.
Similar to related studies, family size was found to have negative effect on poverty status. Families with large family size suffer from financial issues due to greater amount of income required for the caring of family members. It is expected that a larger family often has more expenses than a smaller family and a higher amount of income must be budgeted to meet the basic necessitates of family members. Hence, larger families are more susceptible to chronic poverty.

Age of the household head was found to have significant positive effect on poverty mobility from 2008 to 2011 while age squared posts the reverse effect. Considering that household heads included in the study aged in the range of 41 to 50 years of age, the results suggest that while household heads are at their optimum with their physical strength as a factor to earn income, such that when household heads gets older or if they are too young, there is a declining capacity to earn income sufficiently for the family. Hence, families with household heads below and above the prime age are more susceptible to chronic poverty, while those with household heads at their prime age are more likely to move out of poverty and be categorized into transient poverty.

Education as the last demographic factor in the study has been found to have significant positive effect on poverty mobility. Educational attainment of households that are past high school (secondary school) contributes to the decrease in the probability of the household of becoming poor while households whose educational attainment are high school and below revealed to increase the probability of being poor. This indicates that those with lower education would have more difficulty in moving out of poverty and susceptible to chronic poverty compared to those with higher education, which posits a great chance to be categorized into transient poverty.

Economic factors wages, entrepreneurship and government support are found to be significant in decreasing poverty incidence in the Philippines from 74% in 2008 to 51% in 2011. Household heads that lack earning power are trapped to chronic poverty due to lack of sustainable income. This study showed empirical evidence that these economic factors influence positively to transient poverty as well.

Lastly, social factor urbanity suggests a negative effect on poverty mobility. Specifically, this finding indicates that household living in urban area decreases the probability of moving out of poverty or from transient poverty and hence, susceptible to chronic poverty. This suggests that while more job opportunities are available in urban areas, competition is stiff that results in the phenomenon of urban unemployment in many developing countries like the Philippines. The inability to avail of social services such as education, health and sanitation, and housing capability are most likely to be contributors of chronically poor as they lack the earning power to lift themselves to a higher standard of living.

REFERENCES


