Factors affecting state of poverty in the Philippines

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ABSTRACT

Poverty is a global problem characterized by a lack of resources. Causes of poverty boil down to status or any disadvantage that can be ascribed to demographic, social and economic factors. This study aims to examine the relationship between some of these factors and state of poverty in the Philippines. In particular, this study includes demographic factors such as age, family size, and education; economic factors such as entrepreneurship, wages, and government support; and a social factor linked to inequality of distribution of wealth between urban and rural centers. Using binary logistic regression, results reveal that the factors included in the study significantly affect state of poverty of Filipino households. These factors make poverty alleviation challenging; while economic factors such as entrepreneurship and government support are also seen as interventions. Hence, it is recommended that government should create more programs supporting entrepreneurship to equip poor Filipino households while expanding government assistance schemes to aid them move out of poverty.

Keywords: poverty, state of poverty, entrepreneurship, government support, logistic regression

INTRODUCTION

Poverty is a global problem characterized by a lack of resources. In economic terms, poverty is defined by a dollar-a-day subsistence or more specifically, the revised USD1.25 daily survival income.

According to Todaro and Smith (2011), despite the variations in physical, demographic, historical, cultural and structural characteristics, most developing nations face common set of problems that define their state of underdevelopment. The Philippines is one of the developing nations that share the phenomenal problem of poverty. While different administrations of the Philippine government took turns in prioritizing poverty alleviation with programs to combat it, the incidence of poverty in the Philippines is reported at 25.2 percent as of 2009 according to National Statistical Coordination Board.

Causes of poverty boil down to status or any disadvantage that can be ascribed to demographic, social and economic factors. This poses to the research problem statement of this study, "What factors affect state of poverty in the Philippines?" In particular, this study aims to examine the relationship between the state of poverty and demographic factors such as age, family size, and education; economic factors such as entrepreneurship, wages, and government support; and a social factor linked to inequality of distribution of wealth between urban and rural centers. These factors make poverty alleviation challenging; while economic factors such as entrepreneurship and government support are

also seen as interventions. Using APIS 2008 and 2011, this study constructs a model estimating the effect of these factors on state of poverty in the Philippines.

REVIEW OF RELATED LITERATURE

Poverty, defined and measured. Early studies of poverty used income as a measure of poverty. Rowntree (1902) divided poverty levels of families as primary and secondary. Families whose total earnings were insufficient for the maintenance of merely physical efficiency, which include food, rent, and household sundries (clothing, fuel and other needs) were classified as primary poverty. On the other hand, families whose earnings were enough for merely physical efficiency unless a portion of it were spent on other expenditures whether wasteful or not were categorized as secondary poverty.

Another perspective of poverty, according to Sen (2000), dealt with deprivation of capabilities or the freedom to choose to lead the kind of life that a person deems to be valuable. This approach focuses on deprivations and shows that the relation of income and incapability are variable and contingent on factors such as age and location, among other things.

Hulme (2009) stated that the United Nations (UN) declaration on poverty eradication has been hinged on a moral argument regarding poverty as a denial of basic human rights. Over the years in its major summits, UN has made a moral case for poverty which culminated in the Millennium Summit in 2000, in which 145 heads of states or governement and 189 countries resolved to end poverty as key goal for the 21st century together with peace, human rights, and democracy, and encapsulated in the Millennium Declaration (Fukuda-Parr & Hulme, 2011). The road map by which the declaration could be monitored quantitatively was documented as annex to the Millennium Declaration as the Millennium Development Goals (MDGs). The first MDG focused on cutting in half the population living in extreme poverty (or less than $1.25-a-day) by 2015, based on a Millennium Declaration categorizing extreme, dehumanizing poverty as morally unacceptable (Fukuda-Parr & Hulme, 2011).

Across the world, measures of poverty have been based on economic indicators such as income and consumption (Arcilla, Co, & Ocampo, 2011; Estudillo, Sawada & Otsuka, 2008; Mitiku, 2014; Orbeta, 2003, 2005), and other dimensions such as capacity (Ataguba, Ichoku & Fonta, 2013).

In the Philippines, Riverra, Pizzaro, and Aliping (2013) noted that poverty is officially measured through per capita income and food threshold. For instance, Reyes, Tabuga, Mina, Asis, and Datu (2010) studied income poverty movement 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. The authors used poverty status as dependent variable, and household head profile, income from agriculture, housing characteristics, ownership of assets, access to basic amenities or social services, and location as independent variables. They categorized poverty status as follows: (a) chronic poor, consistently income poor in each of the covered year; (b) transient poor, poor during a given period of time and non-poor for at least one year during the year under study; (c) previously poor, non-poor during a given point in time but poor for at least a year during the year under study; and (d) never poor, never been poor during the period of study.

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 as they are deprived of basic necessities such as food, clothing, and shelter (Boateng, Boateng & Bampoe, 2014; Todaro & Smith, 2011; Van den Berg, 2012).

Factors affecting state of poverty. Literature points to several reasons for poverty, ranging from unequal distribution of benefits of poverty alleviation initiatives (Sawada & Estudillo, 2012) to disjointed link among economic growth, employment and poverty reduction (Islam, Islam, & Abubakar, 2012). Dowling and Yap (2009) stated that the causes of poverty boils down to status or any disadvantage that can be ascribed to race, ethnicity, gender, religion, social class or age. Several factors have been studied to which poverty, deprivation, exclusion, and impoverishment can be attributed. In a study by Kim, Lee, and Lee (2010) of factors contributing to poverty in welfare states, they concluded that the poverty status of a household is dependent on the characteristics of the household head. They found that household heads characteristics being younger, female, having low levels of education, labor market participation, and not being married could lend the household poorer. At the country level, however, they found that government allocation from the gross domestic product for social service is the only factor significant in the level of poverty of a country.

METHODOLOGY

Empirical results generated in this study were based on the binary logistic regression technique developed by Cameron and Trivedi (2005) that was adapted by Conchada and Rivera (2012).

Basic research design was employed in order to address the objectives of the study regarding the relationship of demographic, economic and social factors on state of poverty of households in the Philippines. Data on household characteristics and demographics were sourced from the Annual Poverty Indicator Survey (APIS), which is a poverty and policy-impact monitoring system using database of household information at the local level for planning, program implementation, and facilitation.

Using data of households from APIS 2008 covering 190,171 households and APIS 2011 with 42,063 households to capture the entire Philippine behavior, we measure the effect of the demographic, economic and social factors on the state of poverty in the Philippines. The method of maximum likelihood estimation (MLE) is an a alternative approach that utilizes out of sample information and provides more efficient estimates (Greene, 2013, as cited in Conchada & Rivera, 2013). Since the dependent variable, state of poverty, is a dummy variable, it is modeled as a standard logit probability model. For a binary outcome data, it is modeled as a standard logit probability model. Hence, a logistic model was employed with the following specification:

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

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).

To trace 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

$$\ln\left(\frac{p_i}{1-p_i}\right) = f(FSIZE_i, AGE_i, AGE\ SQ_i, EDUC_i, WAGE_i, URBAN_i, ENTREP_i, GOVS_i) + \varepsilon_i \tag{2}$$

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, such that the greater the number, the smaller becomes the income distribution and thus the dwindling of purchasing power to access basic necessities such as food, clothing, shelter, sanitation, or to invest on human capital such as health and education. Also, with increase of number of children comes with diminishing household income because mothers would have to stop working to care for the child and fathers do not find it necessary to seek other income-generating activities even with this change in cash inflow.

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. This demographic factor is expected to produce the opposite effect of poverty status of being poor.

$AGE\ SQ_i$ 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. Furthermore, positive effect of age and a positive effect of age squared would mean that as the household head 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, public or private, for formal academic education at the elementary, high school, college or university level. The lack of this human capital limits job opportunities. Low educational attainment limits job options to unskilled job openings with lower pay; and the higher chance of being unemployed. Hence, it is expected that the higher the level of education, the lower the possibility of the household of having per capita income at poverty line or below.

$WAGE_i$ refers to the gross basic salary or wage earned by the household head from all his/her jobs, including any allowance for family living, transportation and representation, cost of living, clothing, housing, overtime pay, tips, bonuses, longevity pay, productivity pay, commissions, medical benefits, etc. received in cash. Wages also include deductions made for retirement, insurance premiums, social security, union dues, PAG-IBIG fund, Philhealth, salary loans and other deductions reflected in the payroll. Hence, it expected that a household that receives wages from employment would get the lower chance of earning per capita income at poverty line or below.

$URBAN_i$ (urbanity) is a dummy variable assigning the value of 1 if the household is residing in urban area and 0 in rural area. Urban-rural duality spells the difference in household income. Hence, holding other factors constant, it is expected that household per capita income would be higher for a household in urban area than one in rural area.

$ENTREP_i$ (entrepreneurship) indicates whether or not the household is engaged in entrepreneurship. Entrepreneurial activities include:

- crop faming and gardening,
- livestock and poultry raising,
- fishing,
- livestock forestry and hunting,

- wholesale and retail,
- manufacturing,
- community, social services,
- transportation, storage services,
- mining and quarrying,
- construction, and
- entrepreneurial activities not elsewhere classified.

GOVS (government support) indicates whether the household received government support under Kalahi-CIDSS program, poverty reduction project implemented at the barangay level, with community members working closely with local government units in planning and implementing projects consistent with their development needs (Asian Development Bank, 2012).

ε_i is the error term that captures all other variables that are not included in the equation.

RESULTS AND DISCUSSION

The following table shows the results of the logistic regression analysis to describe the relationship between the dichotomous characteristics of the dependent variable poverty status whether poor or non-poor; and a set of independent variables in the study that determines the outcome.

Table 1. Marginal effects after logit

	2008	2011
Y= poor: Probability	*.7416693*	*.51060522*
Exogenous Variables		
Family Size	.1105319	.1599913
Age	-.0070555	-.0070898
Age Sq	.0000259	.0000248
Wages	-6.76e-06	-8.69e-06
No Grade Completed	.1966439	.302918
Elementary Graduate	.0987187	.1157421
High School Graduate	-.030664	-.0694932
Post-Secondary Grad	-.1522777	-.2765478
College Graduate	-.3701875	-.3605692
Urbanity	.221244	.2911865
Government Support	-.0143485	.1755928
Entrepreneurship	-.1596564	-.1967397

As shown in Table 1, poverty incidence in 2008 of 74 percent decreased to 51 percent in 2011. Poverty gap lowered because of all the significant factors, as discussed below.

Family Size. Results of marginal effects after the logistic regression analysis show that independent variable family size significantly increases the probability of the household of being poor for both 2008 and 2011. The results indicate that family size increases the 74 percent probability of the households of being poor in 2008 by 11 percent; while it increases the 51 percent probability in 2011 by 16 percent. This result is in

congruence with the studies of Orbeta (2003, 2005), Reyes et al. (2010), Arcilla et al. (2011), and Son (2003) that identified household size as a determinant for households being poor.

Age. Age of the household head is statistically significant that decreases the probability of household of becoming poor for both 2008 and 2011 by 0.7 percent. Household head age decreases the probability of the household of becoming poor of 74 percent and 51 percent, for 2008 and 2011, respectively. This validates the study of Reyes et al. (2010) who found that prime-aged household heads increased the probability of household being non-poor. At that stage, I would surmise that these household heads are at their optimum to take on work that could significantly contribute to income.

Education. The results suggest some kind of threshold, i.e., educational attainment of the household head below high school (secondary education) increases the probability of being poor for both 2008 and 2011. A more interesting result is that the marginal negative effect increases for higher educational attainment, i.e., higher levels of education past the threshold (secondary education) reduces the probability of being poor for both 2008 and 2011 at an increasing rate. This would mean increasing 'returns' to higher educational attainment, with returns measured as "reduced probability of being poor", most likely due to greater capacity for earning but also lower deprivation in other aspects including education, obviously, but also in terms of health care, civic engagement, etc.

The study of Reyes et al. (2010) reaffirmed my own findings about the education qualification of the household as contributing to a household being poor on non-poor. Education increases the quality of human capital and opportunities for a higher paying job (Reyes et al., 2010) as jobs in the agriculture sector still contributed to households being poor (Reyes et al, 2010, 2012). It also contributes to adult literacy (Chatterjee, 2005; Hala & Ali, 2013; Kim & Terada-Hagiwara, 2013), a facet of quality human capital. In general, the proportion of poor decreases as educational level increases. Specifically, we note the results of the logistic regression pertaining to education, which refers to the highest educational attainment of the household head, as follows:

Elementary graduate. Independent variable education, specifically elementary graduate, significantly increases the probability of the household of being poor for both 2008 and 2011. The results indicate that 73.75 percent probability of the households being poor will increase by 9.02 percent for 2008 while 50.75 percent probability in 2011 will increase by 9.93 percent.

Secondary Graduate. Under the independent variable education, secondary graduate significantly decreases the probability of the household of being poor for both 2008 and 2011. The results indicate that 73.75 percent probability of the households being poor will decrease by 3.95 percent for 2008 while 50.75 percent probability in 2011 will decrease by 8.11 percent.

Post-secondary graduate. Independent variable education, specifically post-secondary graduate, significantly decreases the probability of the household of being poor for both 2008 and 2011. The results indicate that 73.75 percent probability of the households being poor will decrease by 16.3 percent for 2008 while 50.75 percent probability in 2011 will decrease by 28.4 percent.

College graduate or higher. College graduate or higher under the independent variable education significantly decreases the probability of the household of being poor for both 2008 and 2011. The results indicate that 73.75 percent probability of

the households being poor will decrease by 38.3 percent for 2008 while 50.75 percent probability in 2011 will decrease by 36.9 percent.

Wages. In my study as shown in Table 1, results of the marginal effects based on logistic regression analysis show that 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 percent probability of the households being poor in 2008 decreases by 0.0007 percent; while 51 percent probability in 2011 decreases by 0.0008 percent. We note however that although the probabilities are statistically significant, they exhibit minimal effect on poverty status.This finding is validated by the study of Reyes et al. (2012), which revealed that the probability of household being poor is higher when the head of the household receives wages from agricultural work, or if the household head has no job or business. Rowntree (1902) also showed the same trend, that low wages contribute to poverty.

Urbanity. Results of the logistic regression analysis resonated previous studies as they showed that the independent variable 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 percent probability of the households of being poor in 2008 increases by 22 percent; while 51 percent probability in 2011 increases by 29 percent. Reyes et al. (2012, 2010b) has classified poverty as a rural and agriculture issue. In Reyes et al. (2010b) showed that the probability of being poor becomes higher when one lives in the rural area. Research by Islam et al. (2012), Koveos and Zhang (2012), Kraay and McKenzie (2014), and Sawada and Estudillo (2012) all revealed that poverty is more obvious in the rural areas for a number of reasons such as low productivity and agriculture as main source of livelihood.

Entrepreneurship. Results of marginal effects based on logistic regression analysis show that 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 percent probability of the households being poor in 2008 decreases by 16 percent; while 51 percent probability in 2011 decreases by 20 percent. This suggests that the more Filipinos are involved in entrepreneurial activities, the lesser their chances of being poor.

We can observe from Table 1 that next to higher educational attainment among the significant factors included in the study, entrepreneurship plays a big role in decreasing poverty incidence in the Philippines. Entrepreneurship enabled by microfinance was shown in literature to have helped in the poverty situation of those who asked for credit (Aslanbeigui, Milgram, 2001; Oakes & Uddin, 2010; Shetty, 2010; Sigalla & Carney, 2012). The micro-entrepreneurs were able to increase their household income, improved their living conditions, and most importantly, gained the credibility to elevate themselves avail of commercial banking services (Moreno, 2011). Naudé (2009) stated that while entrepreneurship in the developing countries could not contribute to economic growth, it helps in alleviating the entrepreneurs' poverty.

Government Support. As shown in Table 1, the results of the logistic regression analysis show that government support to the households significantly decreases the 74 percent probability of the household of being poor by 15.8 percent in 2008 while 51 percent probability in 2011 increases by 18 percent as shown in Table 6.2. 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. This validates the study done by Sulistyowati (2013), which mentioned that an increase in investment by government on expenditures such as health, education, and infrastructure increases GDP, all sector workforce employment, including in the agricultural sector where poverty occurs, and reduced poverty.

CONCLUSION AND RECOMMENDATIONS

The different administrations of the Philippine government took turns in prioritizing poverty alleviation with programs to combat it. While we observed some progress in reducing poverty, poverty rate is still high and remains to be a great concern of the economy. Consequently, poverty studies continue to focus on factors for why someone becomes or is poor.

This study estimates the effect of some demographic, economic and social factors on the state of poverty of Filipino households. Demographic factor family size significantly increases the probability of the household of being poor. Bigger households with more dependents shrink the income distribution, and dwindles purchasing power to afford basic services such as education, sanitation and health. This finding validates the studies of Orbeta (2003, 2005), Reyes et al. (2010), Arcilla et al. (2011), and Son (2003) that identified household size as a determinant for households being poor. In addition, Orbeta (2005) argues that for poor families, increase in number of children comes with diminishing household income because mothers would have to stop working without income-generating activities to compensate for the change in cash inflow.

Another demographic factor, age of the household head, is found statistically significant that decreases the probability of household of becoming poor. Advancement in age helps increase their income as a result of quality human capital. This validates the study of Reyes et al. (2010) who found that prime-aged household heads increased the probability of household being non-poor. In contrast, if the household heads are younger or older, the probability of the household being poor increases as well. This finding is associated with dependency burden according to Todaro and Smith,(2011) and the dependency ratio, which implies that the higher the burden it places on the working members of the household, the higher the probability of poverty.

Education seemingly is a major route out of poverty. Regression results suggest that higher educational attainment of household heads decreases the likelihood of becoming poor. In particular, completing secondary school and higher decreases the probability of the household of becoming poor. On the contrary, household heads who are elementary graduates increases the likelihood of becoming poor. This implies that low educational attainment limits job options to unskilled job opportunities with relatively lower pay offers. This finding supports the study of Reyes et al. (2010) about the education qualification of the household as contributing to a household being poor on non-poor.

It has been found in my study that urbanity significantly decreases the probability of the household of being poor. This means that if the household is living in urban area, the results indicate that probability of the households being poor will decrease. This validates the study by Reyes et al. (2012) that showed the probability of being poor getting higher when one lives in the rural area. Hence, my study supports the policy suggested by Reyes et al. (2012) that increasing rural incomes by improving non-farm income opportunities is a key to reducing poverty in the rural areas; and provision of safety nets like health and crop insurance will help the poor from falling deeper into the poverty trap and the non-poor

into becoming poor in times of crises. Moreover, research by Islam et al. (2012), Koveos and Zhang (2012), Kraay and McKenzie (2014), and Sawada and Estudillo (2012) all revealed that poverty is more obvious in the rural areas due to low productivity and agriculture as main source of livelihood.

Economic factor wages significantly decreases the probability of the household of being poor. This finding conforms with the study of Reyes et al. (2012), which revealed that the probability of household being poor is higher when the head of the household has no job. Corollary to this finding, Rowntree (1902) showed that low wages contribute to poverty. Hence, it is recommended that the government must ensure effective policies on minimum wage in line with its objective of reducing poverty gap and employer control of wages. Consequently, legislators must determine the minimum income that should be guaranteed to each household. This is essentially linked to inequality of income by progressive income taxes levied on employee taxpayers. Over-rated compensation tax has been a dilemma of Filipino employees, whose wages are substantially sliced-down before their take home pay. Furthermore, some sort of incentives must be given to private employers in offering competitive wages to their employees. Lastly, strategies to boost employment and job creation to enhance human capital are recommended.

Results of the logistic regression analysis show that entrepreneurship decreases the probability of the household of being poor. This implies that the more Filipinos are involved in entrepreneurial activities, the lesser their chances of being poor. These finding supports Naudé (2009) stated that while entrepreneurship in the developing countries could not contribute to economic growth, it helps in alleviating the entrepreneurs' poverty. Thus, it is recommended that the government provide programs to help them initiate and support income-generating activities such as entrepreneurship. Entrepreneurship as an economic factor is found to be an important poverty intervention through valuable additional strategy, i.e. to create jobs and improve livelihoods and economic independence of entrepreneurs. Furthermore, it is recommended that the government be aggressive in its effort to disseminate information about the world of business and opportunities to create their own businesses. Providing these poor households with insight into entrepreneurship and enterprise would help them consider the options of starting and managing a business. Consequently, the government has to be flexible in creating ways to motivate potential and existing entrepreneurs to explore and target productivity of their ventures.

Factoring in government support has significant dramatic effect on state of poverty of Filipino households. This economic factor significantly decreases the probability of being poor for 190,171 households included in APIS 2008. This validates the study done by Sulistyowati (2013), which mentioned that an increase in investment by government on expenditures such as health, education, and infrastructure increases GDP, all sector workforce employment, including in the agricultural sector where poverty occurs, and reduced poverty. However, results show that government support significantly increases the probability of becoming poor for 42,063 households in APIS 2011. This counter-effect could be attributable to lower assistance by the government in 2011 (2.2 percent) than in 2008 (11.5 percent). Although the reasons behind the decline are difficult to pinpoint, this finding suggests that households do not get assistance they need and may be facing greater hardship. It implies that change in government support shows a disturbing trend affecting the poverty level of the households. Hence, it is recommended that government

should release long-term assistance to poor households; and extend programs that encourage and provide schemes to earn stable income toward self-sufficiency.

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