4Ps as Poverty Reduction Tool:
A Macroeconomic Level Analysis

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Abstract

Poverty is still the major development problem in the Philippines and has been largely a rural phenomenon. Development in the country, according to the 1996 Strategy to Fight Poverty in the Philippines by World Bank, requires greater opportunities provided by higher overall economic growth, combined with increased emphasis on human capital development. The aim of this study is to assess the development of the Philippines in accordance with the 1996 Strategy to Fight Poverty prescribed by the World Bank for the past decade (2006-2015). Using the techniques in quantitative economics i.e. Time Series Regression Analysis, the assessment was empirically tested by correlating the level of poverty in the Philippines with the aftermath of implementing Pantawid Pamilyang Pilipino Program (4Ps) which has the purposes of directly targeting the rural poor. This study also employed descriptive statistics by using graphical analysis. The key findings of this study were the following: First, there is a significant decrease of poor population in the Philippines which was brought by economic growth and government policies during this time; second, the Pantawid Pamilyang Pilipino Program has succeeded in its aim of reducing rural poverty in the country. Rural poverty reduction in the Philippines therefore requires continuity of developing human capital through the Pantawid Pamilyang Pilipino Program. This study therefore provides an updated Strategy to Fight Poverty in the Philippines.

Keywords – Rural Poverty, Human Capital Development, Pantawid Pamilyang Pilipino Program (4Ps)

INTRODUCTION

In the Philippines, the proportion of households living below the official poverty line has declined very slowly and unevenly in the past four decades, and poverty reduction has been much slower than in neighboring countries such as China, Indonesia, Thailand, and Vietnam (ADB, 2009). From 1991, poverty incidence among the population decreased from 33.1 percent to 24.9 percent in 2003, however it rose to 26.4 percent in 2006 and slightly increased to 26.5 percent in 2009 (Reyes et al., 2012).

4Ps as human capital development

Human capital development plays a critical role in economic growth and in poverty alleviation and there are two ways to see this. One is in a macroeconomic perspective, human capital development improves labor productivity, it facilitates technological innovations, increases returns to capital, and it makes growth more sustainable, which in turn support poverty reduction (Son, 2010).

Given the conditions of poverty in the Philippines, the national government has initiated different programs that can help alleviate poverty and help the poor cope in terms of their everyday living. Price subsidy and feeding programs are done by the government for social protection to provide basic necessities for the poor (Orbeta&Paqueo, 2016). However, these programs are found to be less effective.

The Pantawid Pamilya Pilipino Program or 4Ps is the Philippines' version of Conditional Cash Transfer program which aims to help the poorest of the poor by emphasizing on human capital development (Padilla, 2011). Conditional cash transfer program is deemed by most policy makers and economists as a welcome tool for poverty alleviation (Padilla, 2011). This program focuses on two objectives–social assistance and social development (Reyes et al., 2015).

The first objective is achieved by directly providing cash to poor families to satisfy their immediate needs and the latter objective is achieved through imposing conditions in exchange for the cash assistance that is provided to the beneficiaries (Reyes et al., 2015). In addition, the second objective also aims to break the intergenerational poverty cycle by investing in human capital which helps in fulfilling the country's commitment in the Millennium Development Goals particularly in eradicating extreme poverty and hunger, achieving universal primary education, reducing child mortality, and improving maternal health.

4Ps and its components

In the Philippines, there are also other conditions that should be met by the beneficiaries (Reyes et al., 2015):
1) Pregnant women must avail of pre- and post-natal care and be attended during childbirth by a trained health professional;
2) Parents must attend family development sessions;
3) 0-5-year-old children must receive regular preventive health check-ups and vaccines;
4) 3-5-year-old children must attend day care or preschool classes at least 85% of the time;
5) 6-14-year-old children must enroll in elementary or high school and must attend at least 85% of the time; and
6) 6-14 years old children must receive de-worming pills twice a year (DSWD website). The household beneficiaries will receive the subsidy, so long as they comply with the conditionality, for at most five years.

The beneficiaries of the program must have an income that are equal or below the provincial poverty line, have children 0-14 years old and/or a pregnant woman at the time of assessment; and those who agree to meet the conditions of the program (Reyes&Tabuga, 2012). These are selected by the Department of Social Welfare and Development from the poorest municipalities based on the 2003 Small Area Estimates (SAE) of poverty generated by the National Statistics Coordinating Board (NSCB) (Reyes&Tabuga, 2012).

In early 2012, there were 2.3 million beneficiaries of the program and it doubled by August 2015. As of August 2015, there are 4,353,597 active household-beneficiaries, of which 570,056 are indigenous households and 217,359 have at least one PWD. The program also covers 10,235,658 schoolchildren aged 0 to 18, from the total registered with an average of two to three children per household (Official Gazette of the Republic of the Philippines, n.d.). Moreover, 8 out of 10 4Ps beneficiaries are from the rural areas which are considered mostly agricultural (Reyes et al., 2015).

OBJECTIVES OF THE STUDY

This study was conducted to determine how did the Philippines respond to World Bank's Strategy to Fight Poverty particularly the prescription on Human Capital Development during 2008 to 2015. Specifically, this aims to describe the poverty situation in the Philippines during 2008 to 2015. Second, the study aims to determine the trend of the number of household beneficiaries of 4Ps and its effect to the Magnitude of Poor Population, to verify the impact of the program in reducing rural poverty in the Philippines during 2008 to 2015.

METHODS

This study is descriptive in nature with the aim to assess the development of the Philippines in accordance with the Strategy to Fight Poverty prescribed by the World Bank for the past decade (2008-2015). Using the techniques in quantitative economics i.e. Time Series Regression Analysis, the assessment was empirically tested by correlating the level of poverty in the Philippines with the aftermath of implementing 4Ps which has the purposes of directly targeting the rural poor.

The Variables: Definition, Measure, and Sources

According to Bureau of Labor and Employment Statistics, poor refers to families or individuals with per capita income/expenditure less than the per capita poverty threshold. In other words, poverty is when a household does not satisfy the minimum income/expenditure for a family or individual to meet the basic food and non-food requirements [9]. Basic non-food requirements include clothing, footwear, light, water, medical care, education, transportation and communication, household operations, and personal care and effects (Philippine Statistics Authority, 2007).

This study used the framework of magnitude of the poor which refers to the number of families or population who are poor [9]. This can be measured by measuring the poverty incidence which is the percentage of poor families to total families in the population.

The data used in the study are secondary data gathered from two government agencies namely the Philippine Statistics Authority and the Department of Social Welfare and Development.

This study used the Magnitude of Poor Population by region for the year 1991, 2006, 2009, 2012, and 2015. The number of active household beneficiaries of the Pantawid Pamilyang Pilipino Program by region from 2008 to 2015 were also gathered from the Department of Social Welfare and Development- Cordillera Administrative Region.

Econometric Modelling

This study isolated the poverty situation in the Philippines from 2008 which marked the pilot implementation of the Pantawid Pamilyang Pilipino Program (4Ps) by the Arroyo administration, until 2015 which was the end of the Aquino administration. The data on the Magnitude of Poor Population is gathered from the Official Poverty Statistics of the Philippines Full Year 2015 publication of the Philippine Statistics Authority.

Since the data is collected and reported by the PSA once every three years, the researchers were able to gather data sets on the Magnitude of Poor Population for the years: 2006, 2009, 2012, and 2015. The study's scope is to study the Magnitude of Poor Population from 2008 to 2015, annually. This required the researchers to do interpolation for the data set on Magnitude of Poor Population 2006-2015 be tabulated annually. This was done using the operational formula:

UNKNOWN YEAR=	**VALUE OF LOWER YEAR+ ((UNKNOWN YEAR-LOWER YEAR)/ (UPPER YEAR-LOWER YEAR)) *(VALUE OF UPPER YEAR-VALUE OF LOWER YEAR).**

The very first assumption when dealing with time series regression analysis is that the data under study must be stationary. A time series is stationary if its mean, variance, and autocovariance (at various lags) remain the same no matter at what point we measure them; that is, they are time invariant (Gujarati, 2003).

Further, stationary time series will tend to return to its mean and fluctuations around this mean (measured by its variance) will have a constant amplitude (Gujarati, 2003).

Table 1. Autocorrelation function for l_MAG_POVERTY

***, **, * indicate significance at the 1%, 5%, 10% levels
using Bartlett standard errors for ACF

LAG	ACF	PACF	Q-stat. [p-value]
1	0.4781	0.4781	2.6125 [0.106]
2	0.0718	-0.2033	2.6812 [0.262]
3	-0.3697	-0.4244	4.8687 [0.182]

Generated using GNU Regression, Econometric, and Time-series Library (gretl)

According to Bartlett, if a time series is purely random, the sample autocorrelation is approximately distributed as follows:

$$\hat{\rho} \sim N(0, 1/n).$$

In the data set on Magnitude of Poor Population in the Philippines (2008-2015), the following statistics are computed to be:

$$n=8 \quad variance=0.125 \quad se= \sqrt{variance}= 0.3535533906$$

Following the properties of the normal distribution, the 95% confidence interval for ρ_k is [0±1.96(0.3535533906)] or (¬-0.6929646456 to 0.6929646456). All the estimated correlations fall under this interval. Therefore, we can conclude that all the estimated autocorrelation coefficients shown in the table are statistically insignificant. This is an indication that the logarithm of Magnitude of Poor Population is stationary.

Table 2. Autocorrelation function for l_CCT_BENEF

***, **, * indicate significance at the 1%, 5%, 10% levels
using Bartlett standard errors for ACF

LAG	ACF	PACF	Q-stat. [p-value]
1	0.2525	0.2525	0.7288 [0.393]
2	-0.1807	-0.2611	1.1642 [0.559]
3	-0.3374	-0.2452	2.9855 [0.394]

Generated using GNU Regression, Econometric, and Time-series Library (gretl)

In the data set on 4Ps Household Beneficiaries, Philippines (2008-2015), the following statistics are computed to be:

$$n=8 \quad variance=0.125 \quad se= \sqrt{variance}= 0.3535533906$$

Following the properties of the normal distribution, the 95% confidence interval for ρ_k is [0±1.96(0.3535533906)] or (¬-0.6929646456 to 0.6929646456). All the estimated correlations fall under this interval. Therefore, we can conclude that all the estimated autocorrelation

coefficients shown in the table are statistically insignificant. This is an indication that the logarithm of CCT Household Beneficiary is stationary.

Since the data sets are all stationary, the regression equation could be run using GNU Regression, Econometric and Time-series Library (gretl).

RESULTS AND DISCUSSION

Trend of Poverty in the Philippines

During 2008, there were 23,081,623 persons in the population who were considered poor. Poverty increased steadily until 2011 (second year of the Aquino administration) which recorded 23,597,411 persons in the population considered poor. In 2012 there were 23,745,895 persons considered poor in the population which marked as the peak of poverty during the said span of 4Ps implementation. After the height of poverty situation in the country, there was a dramatic decline in the number of persons considered poor during 2013 and further plunged until the end of Aquino's term.
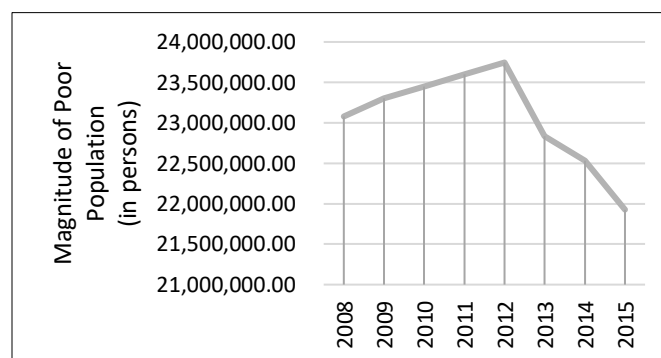

Fig. 1. Trend of Poverty in the Philippines

To comply with the suggestions that are stated in the 1996 Strategy to Fight Poverty in the Philippines by World Bank, which is to increase emphasis on human capital development, the Pantawid Pamilyang Pilipino Program was implemented by the government. The data on the 4Ps Household Beneficiaries is gathered from the Monthly Updates on Pantawid Pamilyang Pilipino Program as of 31 July 2017 publication of the Department of Social Welfare and Development-Cordillera Administrative Region.

On May 29, 2015, President Aquino signed Executive Order 183, joining the twin Negros provinces into one region — the Negros Island Region. It separated Negros Occidental and its capital Bacolod from Western Visayas (Region VI) and Negros Oriental from Central Visayas (Region VII), raising the total number of regions of the Philippines to 18.

The establishment of the Negros Island Region brought inconsistency with the regional breakdown of the data on 4Ps Household Beneficiaries during 2008-2014 and 2015 onwards. The researchers used the provincial and municipal breakdown of the data set provided by DSWD-CAR to split the Negros Island into Western Visayas (Region VI) and Central Visayas (Region VII), thus consistent with the regional divisions of the data set on Magnitude of Poor Population.

Implementation of 4Ps through the Years

In 2008, the first set amounted to 280,404 household beneficiaries of 4Ps which was mainly composed of households that engage in agricultural sector which are farming, fishery, and/or forestry as shown in figure 4. 72.4 percent or 202,879 of the households who engage in agriculture depends on 4Ps in 2008. The Autonomous Region of Muslim Mindanao had the highest share of household beneficiaries since 2008 with a total of 385,238 household beneficiaries.

With the threat of poverty, the Pantawid Pamilyang Pilipino Program expanded and aided more households. From 2009 to 2011, the second to fourth set of household beneficiaries increased by 1,774, 228 household. The increase in household beneficiaries catered more poor families who belong to the agricultural sector. From 2009 to 2011, there are 1,078,139 families who benefited from the program to satisfy their daily needs.

After reaching the peak of households who benefited from the program, there was a decline of beneficiaries from 2012 to 2015. From 1,164,034 beneficiaries in 2011, the fifth set declined to 808,638 beneficiaries.
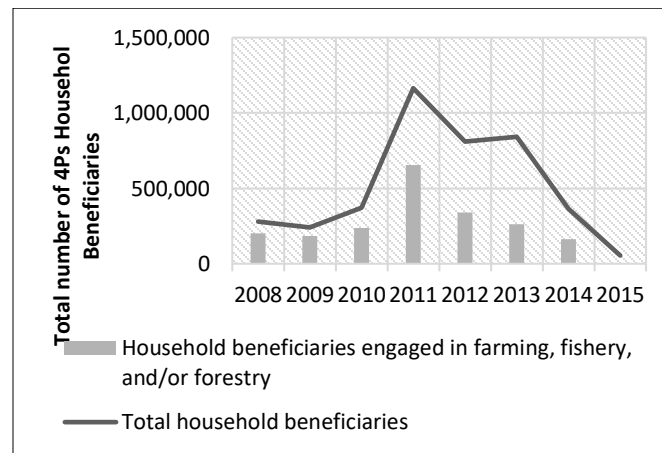

Fig. 2. Trend of Total Household Beneficiaries

This was due to the number of adjustments to the criterion set by the Department of Social Welfare and Development during its expansion: (1) Municipalities with poverty incidence equal to or above 26.67 percent and those municipalities that were not covered during from first to fourth set of beneficiaries, (2) all cities and municipalities with Indigenous Peoples based on the National Commission on Indigenous People list that was not covered from the first to fourth set, (3) cities and municipalities under the third set with remaining eligible households with poverty incidence equal to or above 31.19% (4) all remaining cities not covered from first to fourth set and lastly, (5) extremely vulnerable areas (susceptible to typhoons, landslides, floods, etc.) and areas with a high magnitude of poor household (Asian Development Bank, 2015).

In Figure 2, it is not evident whether the total number beneficiaries generally increase or declined overtime. Also, by using econometric method, there is no evidence whether the number of household beneficiaries increases or declines overtime.

Impact of 4Ps to Poverty Reduction

Empirically, it was proven that 4Ps has succeeded in its aim of reducing rural poverty in the country. This was verified by running a linear regression using the logarithm of number of 4Ps household beneficiaries as the determinant of Magnitude of Poor Population. In table 3, summary statistics of the said regression is presented.

Table 3. Regression: Logarithm of 4Ps Household Beneficiaries as a determinant of Logarithm of Magnitude of Poor Population (2008-2015)

$\hat{Y}$	17.5614	−0.046872
Se	0.167282	0.0132225
T	104.9804	−3.5449
P	< 0.0001	< 0.05
R^2	0.807274	

Generated using GNU Regression, Econometric, and Time-series Library (gretl)

The logarithm of 4Ps household beneficiaries could be considered as a determinant of the logarithm of Magnitude of Poor Population since it is significant at p-value less than 0.05. The logarithm of 4Ps household beneficiaries is statistically significant in explaining its relationship with the logarithm of Magnitude of Poor Population at 90 percent level of confidence. Hence, any relationship that the logarithm of 4Ps household beneficiaries has with the logarithm of Magnitude of Poor Population can be established. This is proven by the computed R^2 value of the regression equal to 0.807274 which implies that 80.73 percent of the changes in the logarithm of Magnitude of Poor Population could be explained by the logarithm of 4Ps household beneficiaries from 2008 to 2015.

The equation of the fitted line shown in table 13 is estimated to be:

$\hat{Y}$ = 17.564−0.0468720L_CCT HHBENEF_3

from the given equation, it can be generalized that the number of families with per capita income/expenditure less than the poverty threshold decreases by 0.05 percent as the number of 4Ps household beneficiaries increases by 1 percent from 2008 to 2015.

CONCLUSIONS AND RECOMMENDATIONS

From 2008 to 2015, there is a significant decrease of poor population in the Philippines which was brought by economic growth and government policies during this time. Empirically, the of Magnitude of Poor Population in the Philippines decreased by 0.71 percent per year from 2008 to 2015.

After the height of poverty situation in the country in 2012, there was a dramatic decline in the poverty during 2013 and further plunged until the end of Aquino's term. However, there is still a significant number of poor people, massively concentrated in the Visayan regions of the Philippines, that serves as a challenge to the current administration.

There was an increasing prioritization made by the government in directly targeting the rural poor through the rapid increase in the number of Pantawid Pamilyang Pilipino Program household beneficiaries from 2009 to 2011. The increase in household beneficiaries catered more poor

families who belong to the agricultural sector, relevant in directly targeting the rural poor in the Philippines. From these years there are approximately 1 million families who benefited from the program to satisfy their daily needs and be able to go to school.

In 2008, total household beneficiaries of 4Ps was mainly composed of households that engage in agricultural sector i.e. farming, fishery, and/or forestry. Majority of the households who engage in agriculture depends on the government subsidy in 2008.

With the threat of poverty, the Pantawid Pamilyang Pilipino Program expanded and aided more households during 2011. The increase in household beneficiaries catered more poor families who belong to the agricultural sector. After reaching the peak of households who benefited from the program, there was a decline of beneficiaries from 2012 to 2015. This was due to the number of adjustments to the criterion set by the Department of Social Welfare and Development during its expansion.

It could be affirmed that the Pantawid Pamilyang Pilipino Program has succeeded in its aim of reducing rural poverty in the country. Empirically, can be generalized that the number of families with per capita income/expenditure less than the poverty threshold decreases by 0.05 percent as the number of 4Ps household beneficiaries increases by 1 percent from 2008 to 2015.

We could therefore establish that the Philippines increased emphasis on human capital development necessary to fight poverty as prescribed in the 1996 Strategy to Fight Poverty in the Philippines by World Bank.

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