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**Working Paper**

## Growth and Redistribution: Is there 'Trickle Down' Effect in the Philippines?

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**Philippine Institute for Development Studies**  
*Surian sa mga Pag-aaral Pangkaunlaran ng Pilipinas*

## Growth and Redistribution: Is there 'Trickle Down' Effect in the Philippines?

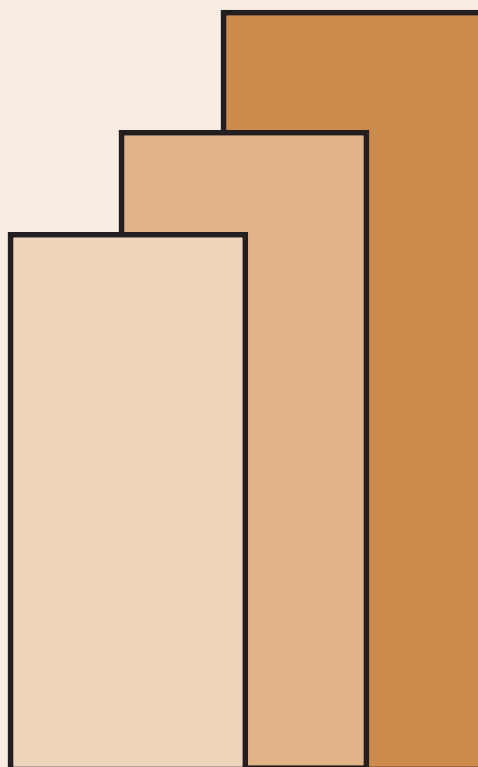
*Danileen Kristel C. Parel*

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## **Abstract**

The aim of this research is to explore the determinants of household income and expenditure growth, and assess whether the poor are benefitting from economic development. Using regression analysis, five factors were examined (1) location of the household, (2) access to infrastructure, (3) changes in rice prices, (4) peace situation, and (5) initial household endowments. The most important finding is that impacts of the five factors vary significantly across households belonging to different income groups—the rich benefit more than the poor. This calls for an effective policy intervention in targeting the poor.

Keywords: growth, redistribution, poverty, inequality, education

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## **GROWTH AND REDISTRIBUTION: IS THERE ‘TRICKLE DOWN’ EFFECT IN THE PHILIPPINES?**

Danileen Kristel C. Parel<sup>1</sup>

Poverty reduction has been a global development agenda since the signing of the Millennium Declaration in September 2000. Serious efforts have been undertaken by governments around the globe to solve the problem of poverty. Goal 1 of the Millennium Development Goals (MDGs) is to eradicate extreme poverty and hunger. It has two targets: “(1) halve, between 1990 and 2015 the proportion of people whose income is less than \$1 a day, and (2) halve, between 1990 and 2015, the proportion of people who suffer from hunger”(United Nations [UN], 2010, para. 1).

There is a general belief that economic growth is linked to poverty reduction because growth offers economic opportunities to the poor to improve their lot. According to the trickle-down theory (Todaro, 1997), economic growth is favorable because economic gains from growth are transmitted to the poor through various means such as favorable labor market conditions and improved service provisions by the government (e.g., health, schooling, infrastructure etc.). Thus, policies should be centered in boosting the economy and promoting growth to improve living conditions of the people, eventually reducing poverty and improving the living conditions of the poor.

The Millennium Development Goals Report 2011 of the United Nations Development Program stated that Goal 1, Target 1 is expected to be successfully met by 2015. The projected global poverty incidence in 2015 is now 15 per cent which is much below the previous target of 23 per cent. Much of the achievements in poverty reduction came from economic growth in Southeast Asia and East Asia, especially China. The Philippine case, however, appears to be an outlier. Despite efforts in alleviating poverty in the Philippines, targets of Goal 1, Target 1 of the MDGS have not been fully reached. The proportion of Filipinos living below the national poverty line went down from 41 per cent in 1994 to only 27 per cent in 2009 (UN:2011a), a rate below the target of 20%. According to the reports of the Asian Development Bank, growth gains did not trickle down to the poor in the Philippines (as cited by Doronila, 2012). In fact, economic growth has slowed down from 7 per cent in 2010 to only 3.7 per cent in 2011. Furthermore, there was “weak job creation, a large infrastructure spending gap, and wide income inequality” (Doronila, 2012, para. 2).

The aim of this study is to review the literature on the impact of growth on poverty reduction, measure empirically the difference between the determinants of growth and poverty in the Philippines, and examine how these two are related. This study intends to answer the question: Does the poor benefit from economic growth? The empirical part focuses on the Philippines, a country characterized by a relatively modest economic growth, high levels of income inequality, and weak performance in poverty reduction.

This paper consists of five sections. Section II presents the review of literature, which looks into the relationship between growth, poverty reduction and income distribution, as well as the underlying mechanisms of the trickle down

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phenomenon. Section III presents the data and methodology that were used to reveal the determinants of growth and poverty. Section IV presents the descriptive analysis as well as the results of the regression models. Finally, Section V presents the summary and conclusions.

## **Literature Review**

### ***Growth and Poverty Reduction***

One of the many reasons why growth is desirable is because it translates to poverty reduction. The claim that economic growth leads to poverty reduction has been supported by Dollar and Kraay (2002), Bhunumurthy and Mitra (2004), and Owyong (2010). These authors argue that fast-paced sustainable growth is needed to reduce poverty. Dollar and Kraay (2002) looked into a sample of 92 countries spanning 40 years and found that the average income of the poorest changes at the same rate as the change in average income of the whole population. This relationship existed not only in specific regions or specific economic conditions, but in all areas of the country, and in all periods including times of economic crisis. His findings do not support that economic growth trickles down from the rich to the poor, but rather, economic growth creates “a good environment for poor households and everyone else to increase their production and income” (Dollar & Kraay, 2002, p.219).

Bhunumurthy and Mitra (2004) looked into the sources of changes in poverty in India between two periods—1983 to 1994 and 1994 to 2000. The authors employed two poverty decomposition techniques. First, poverty index was decomposed in terms of inequality effect, growth effect and population shift. Economic growth characterized by improved infrastructure, health and education services, leads to a higher employment rate, which in turn, results to lower poverty. In addition, the effects of the movement of the population to urban areas, where more productive jobs are available, were to reduce poverty as well. Second, the authors furthermore decomposed poverty in terms of changes in income per capita, sectoral composition, labor productivity, and employment. A shift of the production mode away from agriculture to industry and tertiary activities was found to increase employment opportunities and increase labor productivity, which are important in reducing poverty.

A bulk of research measures the extent poverty is reduced by macroeconomic growth. Owyong (2010) extended his analysis by using impulse response functions to include the speed by which the growth trickles down to the poor in Singapore. Using quarterly pawnshop data (i.e., volumes of pledges and redemptions as a measure of the financial situation of individuals) it was found that the trickle-down effect takes place three years after an initial increase in the Gross Domestic Product (GDP). The author explains the transmission of the effects of growth is a result of “ample employment opportunities, high wages due to a labor shortage, and a well-developed charity network” (Oyong, 2010, 538) — findings that are fairly similar to that of Bhanumurthy and Mitra (2004).

Although the significance of growth on poverty reduction has been acknowledged, evidences across, and even within countries, show mixed results. It has been regarded that high pace of growth per se is not enough to reduce poverty. Rather, the nature of growth matters equally. For the importance of economic growth to be realized, growth needs to be “broad-based across sectors and inclusive of the large part of the country’s labor force” (Ianchovichina & Lundstrom, 2009, p. 1). Datt and Ravallion (2002) looked into the relationship between growth and poverty reduction in India during the 1990s. Results of their

study show that although growth reduces poverty in India, the rate of reduction is not accelerating. According to the authors, this is so because of sectoral and geographical imbalances of growth. Furthermore, they argue that there are other factors in addition to economic growth, i.e. rural and human capital development that could effectively reduce poverty.

The importance of sectoral composition of growth has also been recognized by Warr (2001) mainly because of its distributional implications. Warr (2001) looked into the determinants of poverty changes in various countries in Southeast Asia namely Thailand, Indonesia, Malaysia, and the Philippines from the 1960s to 1999. The author argues that in Southeast Asia, a large percentage of the poor resides in the rural area where agriculture is the major source of income. Thus, it is expected that growth in the agriculture sector would translate to reduction in poverty.

The significance of the agriculture sector in poverty reduction has also been supported by the work of Gafar (1998) in South America. Statistical evidences from the 1960s to the 1970s assert that growth and the character of growth are both important in reducing poverty. In the case of Guyana, a South American country, poverty is observed to be high in rural areas, where agriculture is the main source of income. Thus, according to Gafar (1998), for poverty reduction, policy should focus on rural and agricultural development.

Some studies on African countries show similar results. Block (1999) looked into the contribution of agricultural growth on the growth of the non-agriculture sectors in Ethiopia. The author developed a four-sector model consisting of the agriculture, services, modern industry and traditional industry sectors, where the growth multiplier that results from the shocks in each sectors can be determined. Findings of this study show that the effects of shocks in each sector have varying impacts on economic growth. The agriculture sector was found to be the most progressive of the four sectors, and that, should be the focus of development strategies to promote overall growth. This, in the long run, can reduce poverty.

Khan (1999) attempted to decompose poverty in South Africa using a Social Accounting Matrix (SAM) patterned from that formulated by the Central Economic Advisory Service. Using household data in South Africa, the decomposition exercise revealed that growth in agriculture contributes, most importantly, in reducing poverty in South Africa. Boccanfuso and Kabore (2004) looked into the case of Burkina Faso. Adopting the Shapley (as cited by Boccanfuso and Kabore, 2004) approach of sectoral and growth redistribution decomposition, the author found that 80 per cent of incidence, gap and severity of poverty can be attributed to agricultural growth.

Although the agriculture sector plays a crucial role in most developing countries, other sectors can also play a role in the growth-poverty relationship. Results of the study by Khan (1999) on South Africa show that services and manufacturing sector also contribute to poverty reduction. In addition, the study of Warr (2001) showed that growth in the service sector contributes to poverty reduction, while the growth industry sector does not have a significant effect in all countries in Southeast Asia included in the study. He attributed this to the country's industry policies and protectionist stance, which in turn, affects the type of capital formation being created. This claim is supported by Basu and Mallick (2008), who assert that the type of capital formation that comes with economic growth determines how growth will alleviate poverty. They further argue that if capital formation results to labor-saving production mode like in the case of India, poverty reduction is less likely to happen. Hence, for growth to have an effect on

poverty, labor intensive growth is needed (Gafar, 1998) because labor is the most important asset of the poor.

Deininger and Okidi (2003) looked at the relationship between growth and poverty at the household level. Using micro-level panel data in Uganda spanning 1992 to 2000, they found that the determinants of household income and consumption growth were the same as the poverty determinants. The authors argue that endowments, both physical and human capital, as well as improvements in health services, play a crucial role in poverty reduction. Furthermore, Deininger and Okidi (2003) pointed out the importance of public services, most importantly infrastructure, in reducing poverty. Ogun (2010) also recognizes the importance of infrastructure in his study on Nigeria between 1970 and 2005. However, he argues that social infrastructure, instead of physical infrastructure, is of greater importance.

Overall, the review of literature shows that macroeconomic growth is translated to poverty reduction. The major pathway is through the expansion of economic opportunities available to the poor. Many authors argue for a continuous effort to improve health and education services and expand physical infrastructure that will be targeted specifically to the poor.

### ***Growth and Income Distribution***

It has been recognized that in addition to the nature and sustainability of economic growth, another factor that explains the differences in the effects of economic growth on poverty reduction is inequality in income distribution. Increased income is not sufficient to reduce poverty because although growth would allow households to escape poverty through increased productivity and income, and improved social services, a large number of households (the ultra poor, for example) could still be left out (Gottschalk & Danziger, 1985). For growth to be translated to lower poverty incidence, additional income should be distributed to the poor (UN: 2011b).

Cross-country evidences support this claim. In Ethiopia, although initial inequality was found to be relatively low, the inequality that resulted from growth in the economy is the main reason why poverty did not substantially decline in the rural areas (Gelaw, 2009). Kurita and Kurosaki (2007) compared the significance of inequality on the growth-poverty relationship in Thailand and the Philippines. Inequality not only slowed down economic growth, but also decelerates the rate of poverty reduction that should result from growth in the economy (Kurita & Kurosaki, 2007). Although importance of inequality was found to be larger in Thailand, estimates of Kurita and Kurosaki show that the effects of inequality, although indirect, are also be higher in the Philippines, which may explain why the Philippines has a less impressive record on poverty reduction. Reyes and Tabuga (2011) assert the importance of resource redistribution on poverty alleviation in the Philippines. According to the authors, poverty in the Philippines has increased in regions characterized by high levels of poverty mainly because of lack of income growth, as measured by the regional gross domestic product. Thus, in addition to sustainable and high-paced growth, it should be accompanied by a favorable income distribution for poverty reduction to take place.

Despite the claim that inequality affects how economic growth contributed to poverty reduction, the relationship between inequality and growth has not been fully established yet. The study on the relationship between the two can be traced back to Simon Kuznets (1955). He argues that as a country develops, market forces will initially increase inequality until a threshold income is reached and will decline thereafter. A number of country studies supported this hypothesis. For



example, Ali (2011) looked at the case of Nigeria using panel data and applying the Fixed-effects, Random-effects, Pooled and Weighted Least Square models. Ali (2011) was able to validate the inverted U-shaped hypothesis of Kuznets. He further argues that to decrease inequality, investments on education and providing employment opportunities are crucial. Galor and Tsiddon (1995) also provide evidence to the so-called Kuznets hypothesis. Using a general equilibrium model, the authors' analyses suggest that despite having high initial inequality, inequality will be reduced in the long run as more educated people invest in education which, in turn, is expected to result in increased income, increased savings, and eventually higher investments.

While some studies support Kuznets hypothesis, other country studies found that the relationship between growth and income distribution is simply linear and positive and not an inverted-U shaped. Odedokun and Round (2001) looked at 34 African countries in various period over the last four decades. Meng, Gregory and Wang (2005) studied the case of urban China during the period 1986 to 2000 using cross-section household survey data. Balisacan and Fuwa (2004) used a neoclassical growth model using provincial data to determine the relationship between growth, inequality and poverty in the Philippines. These studies support the claim that a positive relationship exists between growth and inequality. If growth tends to lead to a higher level of inequality (which means the poor do not benefit), the major question is why many studies show that growth is accompanied by poverty reduction. The results of the studies above may be specific to some areas only.

Other scholars believe that there is no systematic relationship between growth and income distribution. These include Deininger and Squire (1996) who presented a cross-country data set on inequality in income distribution and found no systematic relationship between growth and inequality. The World Development Review 2000/2001 in a substantial review of literature shows that there is no significant relationship between growth and inequality.

### ***The 'Trickle Down' Phenomenon: The Underlying Mechanisms***

For growth to be beneficial to the poor, it must be associated with the creation of new jobs to provide opportunities to the poor and aide them in moving out of the agriculture sector (McKay & Sumner, 2008). However, the growth-employment relationship is not absolute and is dependent on various factors. According to Melamed, Hartwig and Grant (2011), "the key determinants of the relationship between growth, poverty reduction and inequality are whether economic growth generates new jobs, the quality of these jobs, whether poor people are able to take up new opportunities, and whether jobs are stable enough to last in the face of economic shocks"(p.1).

The poor can also benefit from growth through "redistributive and transformative public expenditures" (McKay & Sumner, 2008, p. 3). The authors argue that with growth, government revenue can potentially increase. Because of this, the government should implement pro-poor policies like investments on education, health and infrastructure. This will not only promote the welfare of the poor, but will also result to further growth in the future.

According to McKay and Sumner (2008), the kind of economic growth that is needed for poverty reduction should be broad-based, that is to say, should cover all sectors, regions and population. In addition, the authors argue that since a large percentage of the poor is engaged in agricultural activities, growth in agriculture should be encouraged through "investment in market development,

research, infrastructure, and value added processing activities” (McKay and Sumner, 2008, p. 4).

Another mechanism through which the effects of growth are transmitted to the poor is through borrowing and lending in the capital market (Aghion, 1997). According to the author, increased growth is accompanied by increased capital accumulation, which raises the funds available for the poor to borrow. This will, in turn, increase investments, thus making them better off in the long run (Aghion, 1997). However, the author argues that this trickle down phenomenon is not enough to efficiently distribute the resources to all sectors in the economy. Rather, this should be accompanied by redistribution to increase equality and speed up the trickling down of growth effects throughout the economy.

Overall, the so-called trickle-down effect of macroeconomic could come through job creation, productivity growth in agriculture, and higher investments in health, schooling and infrastructure.

## **Methodology**

### ***Data***

This paper used the Family Income and Expenditure Survey (FIES) which is a survey conducted by the National Statistical Office (NSO) every three years beginning 1985. The FIES provides valuable information on “family income and family expenditure and related information affecting income and expenditure levels and patterns in the Philippines” (Ericta & Fabian, 2009, p. 2). Furthermore, this survey provides inputs to “the estimation of the country’s poverty threshold and incidence” (Ericta & Fabian, 2009, p. 2) to policy makers in the Philippines.

The FIES questionnaire contains household information that includes family size, number of family members both employed and unemployed, occupation, age and educational attainment of household head and spouse, and housing characteristics (Ericta & Fabian, 2009). Furthermore, it contains an extensive list of income and expenditure items. Sources of income, both in cash and in kind, were considered in the surveys. Family income takes account of primary income and receipts from other sources of all family members. Primary income includes salaries and wages, receipts of other sources, imputed rent, net share of agricultural commodities, livestock and poultry, received gifts in kind, entrepreneurial activities and family sustenance activities. Other non-income sources of funds are covered under “other receipts”. These include value of property sold, loans, payments for loans granted, withdrawals, profits from sales of stocks and bonds, back pay, proceeds from insurance, net winnings and inheritance.

On the other hand, data on expenditure captured in the FIES “refer to the expenses or disbursements made by the family purely for personal consumption” (Ericta & Fabian, 2009, p. 9). It includes food consumed, clothing, housing, medical, education, fuel, light and water, durable and non-durable finishings, taxes, and other disbursements. In addition, expenditure also includes expenses in relation to farm or business operations, investments ventures, purchase of properties and other disbursement not involving personal consumption. (Ericta & Fabina, 2009). Expenditures on items that are produced at home are imputed to avoid underestimated of home-produced goods.

A matched panel data was generated using the 2003 and 2006 rounds of FIES. These years were chosen because these survey rounds adopted the same master sample design which makes comparison more reliable. This new sample design takes into consideration changes in regional classifications from the FIES

in 2000, i.e. the division of MIMAROPA and Calabarzon regions, the transfer of Lanao del Norte province and Iligan City from Region 10 to Region 12, transfer of South Cotabato, Sarangani, General Santos City and Koronadal City from Region 11 to Region 12, and the transfer of Marawi City from Region 12 to the Autonomous Region of Muslim Mindanao (ARMM) (Erica & Fabian, 2009).

The new master sample design was based on a sample of 51,000 households, which was also the same sample used in the Labor Force Survey (LFS) in 2003 and 2004 (Erica & Fabian, 2009). To capture changes over time, this sample design provided a scheme where a sub-group of the original sample will be retained for the next survey years (Erica & Fabian, 2009). To ensure exact matching, the NSO retains a control group of 12,500 households. Of the 12,500 households, only 7,909 were found valid and were included in the final matched panel data released by the National Statistical Office. Information provided by this control group was utilized in this study to detect determinant of growth and poverty reduction in the household level.

In addition to the Family Income and Expenditure Survey (FIES), this study utilized data from other sources namely the Philippine Statistical Yearbook published by the National Statistical Coordination Board (NSCB) and the CountrySTAT Philippines database compiled by the Bureau of Agricultural Statistics.

### ***Determinants of Growth***

Growth can be affected by both macro and microeconomic factors. To determine what contributes to growth in the micro-level, this study utilized a model similar to Deininger and Okidi (2003) in Uganda, and Glewwe, Gragnolati, and Zaman (2002) in Vietnam. The growth equation regresses observed growth against a number of micro-determinants of growth. The econometric specification is as follows:

$$\Delta Y_i = \alpha + \beta X_{i,t-1} + \varepsilon_i$$

where  $\Delta Y_i$  is the change in observed growth from 2003 to 2006, and  $X_{i,t-1}$  is a vector of initial (i.e., 2003) characteristics that determine growth between 2003 and 2006. The model was first applied to the whole sample. To determine whether the determinants of growth are the same throughout the sample, separate regressions were run by income and expenditure quintile. This allows to determine the differences in the factors affecting growth between the poor and the non-poor.

Growth in the micro-level usually refers to household's living standards. It either refers to growth in income levels or in consumption levels. Deininger and Okidi (2003) looked at both income and consumption growth while Glewwe et al. (2002) focused on consumption expenditure, as it is easier to answer in survey and because households are hesitant to reveal their real incomes. Furthermore, according to Coudouel, Hentschel and Wodon (2002) consumption is considered a better indicator because it captures the ability of a household to satisfy its basic needs and that, income is only one of the many factors which allows a household to satisfy these needs. To add, they argue that consumption can be measured better because of the presence of other factors, like fluctuations in monthly income, presence of informal sectors, and the non-inclusion of the value of the items they produce that were utilized for personal consumption.

For comparison purposes, this study ran separate regressions for both indicators of growth in the micro-level, that is to say, changes in household

consumption and income. Household consumption refers to family expenditures, as categorized in the FIES. It includes expenses or disbursements made by the household for personal consumption, as well as other expenditures which do not involve personal consumption. Household income, on the other hand, refers to total family income, which comprises of primary income and receipts from other sources.  $\Delta Y_i$  was computed for each household  $i$ , i.e.  $\Delta Y_i = \ln(y_i^{2006}) - \ln(y_i^{2003})$ , where  $y_i$  is the actual consumption level and income level per household.

The vector  $X_{i,t-1}$  refers to consumption and income-relevant endowments which include initial individual and household characteristics, as well as community-level characteristics. According to Glewwe et. al. (2002), these initial characteristics are “pre-determined and thus likely to be exogenous to the change in consumption” (p. 24). Initial characteristics that were used in this model are chosen based on the studies of Glewwe et. al. (2002), Wodon (1999), and Deininger and Okidi (2003). Furthermore, the growth determinants used by Balisacan and Fuwa (2004) on the Philippines, although at the provincial level, were also considered.

Individual and household characteristics that were considered include initial income, human and physical capital endowments and household characteristics. This is to examine whether the initial situation of a household is important for subsequent growths. Human capital is measured using the head’s educational attainment as stated in the FIES. Physical capital endowment, on the other hand, was based on asset information listed in the same survey. An asset index was generated per household, using the Philippine National Statistical Office method. It uses “relative deprivation” in assigning weights to assets, that is to say, giving smaller weights to assets commonly owned while giving heavier weights to assets that are less commonly owned (Orbeta, 2006). Since it can only handle dichotomous variables, only dichotomous assets were considered. The asset index was computed using the formula:

$$A_j = (1 - \tilde{a}_1) * a_{j1} + \dots + (1 - \tilde{a}_N) * a_{jN}$$

where  $A_j$  is the asset index for household  $j$ ,  $\tilde{a}_k$  is the proportion of households owning asset  $k$ ,  $a_{jk}$  is the value of household  $j$ ’s  $k$ th asset (Orbeta, 2006). In addition to capital endowment, initial household characteristics were incorporated in the model, which include household size, number of household per age bracket, sex and age of household head.

Community-level characteristics, which include public capital, could also have an impact on growth. According to Kraybill and Bashaasha (2005), these characteristics can be considered either as a factor of production or a force that influences productivity. Community variables that were considered in this model include location of household, kind of community, infrastructure, social capital and government policies. Location of the household also is important because it affects the household’s accessibility to public goods provided by the government. Distance from Metro Manila, as well as whether the household is located in the rural or urban area, were considered for this model. Infrastructure has been linked to economic growth. The basic indicator of infrastructure is the household’s access to electricity and piped water. Next, social capital impacts growth in the household level through its effects on economic transactions, as well as its impacts on human and physical capital stock of the economy (Deininger & Okidi, 2003). According to Deininger and Okidi (2003), one type of social capital variable that has an effect on growth is that which is related to conflict and civil strife. For this study, the number of human rights violation at the regional level in the initial year was used as proxy for the occurrence of conflict and civil strife.

This data was drawn from the Philippine Statistical Yearbook. And finally, the role of government policies especially on agriculture, which remains to be the main source of livelihood of the poorest households in the Philippines, need to be looked into. According to Deininger and Okidi (2003) prices serve as indirect proxy for policy variables. One of the major issues surrounding the country's agriculture and trade policies is the protection of the rice sector and the maintenance of the quantitative restriction on rice, despite very high domestic prices of rice relative to the world rice prices. To capture the effect of high prices of rice on growth, the change in regional retail price of rice between 2003 and 2006 was used.

### ***Determinants of Poverty***

Whether the factors that determine consumption growth is the same as the factors that contribute to poverty reduction is crucial in determining whether growth indeed trickles down. This section looks at the factors that contribute to a household's being chronically poor and transient poor. Furthermore, factors that influences falling into or escaping poverty can also be determined. Using a multinomial logit regression, the probability that a household will belong to a poverty category can be predicted. The model is as follows:

$$P_{ij} = \frac{\exp(\beta_j x_i)}{\sum_{k=1}^4 \exp(\beta_k x_i)}$$

where  $P_{ij}$  is the probability that household  $i$  is in poverty state  $j$  (Glewwe et. al., 2002). Using the domestic poverty line constructed by the National Statistical Coordination Board (NSCB), the households were classified into 4 sub-groups, i.e. (1) households that are poor in both years (chronic poor), (2) non-poor in 2003 but poor in 2006 (fall into poverty), (3) poor in 2003 but non-poor in 2006 (escaped poverty), and (4) household that are not poor in both 2003 and 2006, which served as the baseline comparison group. This multinomial logit regression utilized the same explanatory variables as that used in the income and consumption growth model, except that the initial level of income and expenditure, and the change in rice prices variables were omitted because they are most likely to be endogenous. Initial level of rice prices were used in lieu of the change in rice prices as indicator of the current rice policy. In addition to detecting the statistical significance of the explanatory variables with the two poverty categories, the relative risk ratio (RRR) associated with these variables can be drawn. The RRR tells us the probability of being in a certain state relative to being in the base state. An RRR greater than 1 means that the probability of being in the state  $j$  is greater than being in the base state, while an RRR less than 1 means the probability of being in state  $j$  decreases relative to the base state.

## **Results**

### ***Descriptive Analysis***

This section discusses the descriptive analysis of household growth and poverty. Table 1 presents the changes in socio-economic characteristics of the whole population, as well as for the income poor and non-poor between 2003 and 2006. Around 40% of the sample resides in urban areas in 2003, while 60% still remains in the rural areas. Poverty is concentrated in the rural areas: about 80% of the poor live in rural areas. Furthermore, although the percent of population that

were poor in 2003 and 2006 did not change much, it is evident that of the poor families, the percentage of households living in rural areas increased.

A large percentage of households live in Central Luzon and the CALABARZON region, which consists of 9.42% and 8.42% of the total sample, respectively. The Cordillera Administrative Region only accounts for 3.76% of the sample. As expected, the National Capital Region (NCR) had the least number of households that were poor in both years. Only 0.88% and 1.18% of the poor households were from the NCR in 2003 and 2006, respectively. This is probably due to the relatively higher access to public goods and services. However, the poverty situation in the region slightly worsened—the share of poor households rose from 2003 to 2006. Poverty situation in the Bicol Region, Western Visayas, and Zamboanga Peninsula evidently improved from 2003 to 2006—these regions have a relatively higher share of poor households in the country. This is despite the fact that the share of these regions in the total household is only around the average. Finally, the share of the Autonomous Region of Muslim Mindanao of the poor households increased more than 2% from 2003 to 2006, insinuating that poverty worsened in this region.

The usual and most basic infrastructure services that are associated with poverty are the household's access to electricity and safe water. Overall, access to the two is fairly high, at almost 80%. Furthermore, there have been improvements in households' access from 2003 to 2006, especially in electricity. More than 80% of the non-poor households have access to electricity and piped water. This share is much greater than the share of poor households with access to both infrastructure services.

Access to education has not significantly improved. The shares of those households whose heads have no schooling, have completed primary and secondary levels are similar in both years. Those heads who have completed tertiary levels remain low at less than 9%, while those who have pursued post-graduate studies are negligible. To add, none of the poor households were able to pursue post-graduate studies. The link between poverty and education is evident. Almost 50% of the poor households have heads who have no schooling, while almost 40% of the poor only finished primary schooling. Less than 0.5% of the poor have earned a bachelor's degree, which tells us that having been able to finish tertiary level will more likely contribute to being non-poor.

Female-headed households account for only 15% in 2003 of the total households. This has slightly increased to 17% in 2006. However, contrary to what is expected that households that are female-headed is more vulnerable to poverty, the share of female-headed households is higher in the non-poor sub-group than in the poor sub-group in both years. This may not be attributed to the kind of community, because the shares of female-headed households in urban and rural are more or less the same. One reason for this finding is that female-headed households are mostly located in the NCR and CALABARZON, where poverty is considerably low. Furthermore, female household heads are predominantly employed in the services sector while male heads are mostly employed in the agriculture sector.

Table 1 shows that household heads remain to be mostly employed in the agriculture sector, followed closely by the industry sector. This indicates that the Philippines continues to be primarily a rural society. It can be seen that more than half of the poor is employed in the agriculture sector. On the other hand, only less than 10% of the poor were employed in the services sector in 2003. From 2003 to 2006, the percentage households whose heads are not employed increased. Heads who are unemployed in 2006 were previously employed in the agriculture and industry sector, as can be seen in the relatively stable share of the services sector.

Unexpectedly, the share of those who are unemployed is higher in the non-poor than in the poor sub-group. A probable explanation is that, households whose heads are unemployed or are not engaged in any business may have external sources of income, like remittances, which prevent them from falling into poverty.

Figure 1 illustrates the change in cumulative density of the logarithm of income per capita from 2003 to 2006. Since the overall income in 2006 dominates that in 2003, it can be said that on the whole, households in 2006 are better off than in 2003. Although in general, income per capita has grown between 2003 and 2006, the distribution of the gains across socioeconomic groups varies. Furthermore, whether the increase in income translates to lower poverty levels is ambiguous.

Table 2 illustrates the poverty profile of the panel household. Despite the evident growth in per capita income (Figure 1), it is apparent that it did not translate to poverty reduction. At the national level, households that are considered income poor increased from 22.94% in 2003 to 24.55% in 2006. Of the 24.55% in 2006, 15.36% are also poor in 2003, considering them as chronic poor (i.e., poor in 2003 and poor in 2006). Furthermore, the percent of households entering into poverty (i.e., non-poor in 2003 but became poor in 2006) is also higher than those who are able to escape from it. Table 2 also demonstrates the difference between urban and rural poverty. Urban households are found to be generally well off. In 2003, only 10.46% of the households were considered to be income poor. This, however, slightly worsened in 2006. Of the 11.09% that were income poor in 2006, 6.04% were chronically poor. Although 4.42% who were poor in 2003 were able to escape poverty, 5.05% of the households who were previously not poor fell into poverty in 2006. The situation in rural households is worse—31.18% of the households in rural areas were income poor in 2003. This has even increased to 33.45% in 2006 while 21.52% of which are poor in both years. Although 9.66% managed to escape from poverty, 11.93% of the rural households fell into poverty in 2006. Thus, it can be said that although growth in income was achieved from 2003 to 2006, the welfare gains may not have trickled down to the poor. In fact, not only did it not trickle down, the welfare of the lower-income groups was evidently worsened.

### ***Determinants of Overall Income and Expenditure Growth***

Here, we explore the factors affecting income and expenditure growth between 2003 and 2006. The factors are location (i.e., urban dummy (1=yes) and distance from Manila), access to infrastructure services (i.e., electricity and water), initial endowments (i.e., household expenditure or income in 2003, value of assets in 2003, and education of head in 2003), policy instrument (i.e., changes in rice prices), overall peace situation (i.e., violation of human rights), and initial household characteristics (i.e., dummy for female-headed households (1=yes), age of household head in 2003, numbers of members less than 25 years old in 2003 and number of members above 25 years old in 2003) The expected signs of the coefficients are as follows:

*Location:* A positive coefficient is expected for the urban dummy (1=yes), which means households in urban areas tend to have higher income and expenditure growth. A negative sign is expected for distance to Manila, which means that the farther the household is located at the center, the lower income and expenditure growth will be. Geographical aggregation matters in income and consumption disparities primarily because economic activities and development are more concentrated in urban areas, especially at the capital. These include

urban-biased investments, lower access to public goods, less accessibility to human and physical capital and infrastructure, to mention a few.

*Access to infrastructure:* Both access to electricity and piped water are expected to have positive impacts on household income growth. Access to basic services improves quality of life of households and plays a crucial role in households' economic activities, within and outside the home.

*Initial endowments:* A negative coefficient for initial income is anticipated, which means that households with higher initial income experience a lower growth in subsequent years. A positive coefficient for both physical and human capital endowment is also predicted. As the value of household assets increases, income and expenditure also rises as a result of increased economic activities of the household. With regard to human capital, households whose heads have achieved higher education levels tend to have higher income and expenditure growth.

*Policy instrument:* Changes in rice price, is expected to have a positive impact on income and expenditure growth. The government is protecting the rice sector in the Philippines, since rice is the country's staple food, and rice farming is a major source of livelihood for many, especially for the poorer households. The current rice policy targets self-sufficiency and rural poverty reduction. It involves the maintenance of the quantitative restriction on rice. The current rice policy, however, has been considered to be inefficient and has detrimental effects on consumer welfare. Local rice farmers are protected while rice consumers suffer from very high domestic prices, relative to the world price of rice. A positive coefficient on rice price means the net benefit of the current policy on overall welfare is achieved.

*Overall peace situation:* A negative coefficient for the level of human rights violation is expected, which means that households which reside in areas with higher social conflicts are more likely to have lower income growth. The impact of violence on growth can be direct, through physical capital damages caused by such conflicts, or indirect, by making the locality less conducive for investments and economic activities.

*Initial endowments:* The coefficient for female-headed households on growth could be either be negative or positive. Some perceive female-headed households as "more vulnerable to risk and economically less viable" (Arias & Palloni, 1999, p. 1). Conversely, some expect expenditure growth to be higher in female-headed households because of the relatively higher spending of female heads on their children's education and health (Bernardino, 2011).

*Initial household characteristics:* A positive coefficient is anticipated for the household head's age, which means that as the age of the head increases, income and expenditure growth also tends to increase. Older heads are more likely to have attained higher education level and may have more experience, which translates to higher income. Furthermore, according to the life-cycle model, there is a steady increase in income during the early twenties and it will continue on until retirement age.

*Household size:* Lastly, household size is expected to have a negative coefficient. Larger households are likely to have lower income and expenditure growth. Furthermore, since the first 25 years are considered schooling age, households are not expected to have any returns from members within this age range, thus expecting a negative coefficient for this factor. A positive sign, on the other hand, is expected for the number of members 25 years of age and above, since they are part of the labor force and can contribute to the household's productivity.



Table 3 shows the results of the regression runs. The individual, household and community characteristics that were included in the regression model explain 23% of the growth in consumption per capita and 22% of the growth in income per capita. The empirical results are consistent with the expected relationship between individual, household and community factors, and growth.

The kind of community and location of the sample households are significant in determining household growth. Households living in urban areas have consumption and income growth around 8% higher than in rural areas. Similarly, the negative impact of household distance from Manila is significant, as well. That is, as the distance of household from Manila increase by 1%, expenditure and income growth will decline by 5.10% and 3.88%, respectively.

Access to infrastructure services is found to be a contributing factor to income and expenditure growth. Specifically, access to electricity has a positive significant effect on both income and expenditure, while access to piped water was found to have a positive significant effect only on expenditure growth.

Initial level of income and expenditure of households have a negative and significant impact on succeeding household growth. This implies that over time households with high income and expenditure level will regress to the mean (Deininger & Okidi, 2003). On the other hand, initial physical capital endowments (i.e. value household asset in 2003) has a positive impact on growth, which means that physical assets will allow households to have permanently higher growth in the long run. Regarding human capital endowment, households whose heads have completed secondary, tertiary and post-graduate level have significantly higher income and expenditure growth than households with heads having little or no education (control). As the level of education increases, so is the impact on income and expenditure growth, as can be seen in the increasing coefficients of those who completed primary, secondary, and tertiary level, correspondingly.

Estimates of other community-level characteristics do not support the expected relationships with income and expenditure growth. The impact of rice price is not different to zero in both expenditure and income growth, implying that the current rice policy does not contribute to overall household growth. This must be because households are increasingly diversifying their income sources away from rice production. Additionally, level of human rights violation where the households are located have no significant impact on growth as well.

Impacts of households and individual characteristics conform to the expected outcome. Table 3 shows that female-headed households tend to have significantly higher growth compared to male-headed households. This could be due to the geographic location of households headed by females, as well as the sectors in which the female heads are employed. Age of the household heads, on the other hand, tends to have significantly higher income and expenditure growth. Lastly, the negative impact of household size on household growth can be seen in the significantly negative effect of both total number of members less than 25 and members more than 25 years of age. Although it is expected that the number of members above 25 should increase expenditure and income growth because they are most likely to be working, the results of the regression do not reflect this. This may be because members more than 25 years of age include the senior citizens who are no longer working. If this age group can be decomposed further, more meaningful insights can be drawn.

### ***Determinants of Income and Expenditure Growth in Quintile***

Here we compare the impacts of the different factors on income and expenditure growth across quintile groups. While geographical location, access to infrastructure, initial income and capital endowment, and a number of household characteristics affect overall growth, these factors affect income and expenditure growth in various quintiles differently. From the results of the regression runs shown in Table 4, six important findings can be drawn.

First, growth decomposition between quintile groups shows that although the kind of community and distance from Manila is significant in a number of groups including the second poorest quintile, it is not significant in the poorest quintile. This tells us that growth in the poorest household is the same regardless of the location. Hence, although the benefits of being close to the capital can be taken advantage of by the poor households, it does not reach the poorest of the poor.

Second, the impacts of infrastructure services vary across quintiles. The rich benefit more from electrification. In fact, the impact of having access to electricity on expenditure and income growth is more than twice higher in the highest quintile group compared to the lowest quintile group. While access to piped water is found to be significant in overall expenditure growth, coefficients are not significant in most of the quintile groups.

Third, negative impact of initial expenditure in the poorest quintile is as high as the impact of initial expenditure in the richest quintile, while the impact of initial income on income growth is highest in the poorest quintile. Consequently, the effect of household asset on both income and expenditure growth is highest in the poorest quintile.

Fourth, education of head has a highly significant impact on both income and expenditure growth. Returns of having completed secondary and tertiary levels are significant in all income levels. While the impact of having completed secondary schooling on growth is greater in higher income levels, benefits of having completed tertiary level is significantly high in the lowest quintile group. Hence, it can be said that to improve growth in the lowest quintile, what is critical is investments on both physical and human capital.

Fifth, high rice prices have little or no impact on both expenditure and income growth in all quintile groups. Rice price is statistically significant in the second quintile (for expenditure growth) and fourth quintile (income growth), but only at the 10% confidence level.

Sixth, and finally, household characteristics are significant in determining income and expenditure growth in all quintile groups. The impacts of female-headed households on growth are similar across most of the quintile groups. However, coefficients in only a few quintile groups are statistically significant. Furthermore, regressions per quintile somehow support the positive impact of household head's age across income and expenditure group. With respect to family size, although the negative impact of growth in family size on expenditure growth can only be seen in the poorest quintile, the negative impacts of the number members less than 25 years of age on growth is prevalent in low- to middle-quintile groups. Household size is also significant except in the richest quintile. With this, it can be said that to in order to promote growth as well as the welfare of the poor, an effective family planning program to control population growth is necessary.

With these findings, it can be suggested that although growth somehow trickled down to the poor, the richer households gain significantly more from growth. For the benefits to be transmitted better to the poor, more investments,

especially on providing basic education, should be made in rural areas where poverty is more prevalent.

### ***Determinants of Movements In and Out of Poverty***

In this section, we explore the factors that determine movements in and out of poverty. Table 5 presents the influence of these determinants on the likelihood of being chronically poor or being transient poor, relative to being non-poor (base outcome). All probabilities are relative to being non-poor unless stated otherwise.

The results of the multinomial logit regression highlight the following findings. Households living in urban areas are less likely to be chronically and transiently poor. For households who are transient poor, people living in urban areas are 10% more likely to escape than to enter poverty. On the other hand, a change in distance from Manila increases the probability of being chronic poor and transient poor. The effect of the distance from the center on rural households who are moving in and out of poverty is much smaller than the effect on urban households.

Access to electricity reduces the probability of being in chronic and transient poverty. Furthermore, for both urban and rural households, probability of being chronically poor is less likely than being transient poor. However, importance of infrastructure is much more pronounced in urban areas. Having access to electricity increases the probability of escaping poverty relative to being chronically poor by only 72% in rural areas and 140% in urban areas<sup>2</sup>. Hence, although investment on infrastructure is favorable overall, the benefits of infrastructure service on poverty reduction are greater in urban than in rural areas.

Initial endowment of physical assets decreases the likelihood of chronic and transient poverty. Furthermore, higher asset ownership decreases the probability entering into poverty relative to being chronically poor in both urban and rural areas. The impacts on both chronic poverty and entry to poverty are higher in urban than in rural areas.

Having secondary education reduces the probability being chronically poor almost equally in both rural and urban areas. However, impacts on transient poverty is much more pronounced in rural than urban areas. Secondary education decreases the likelihood of entering into poverty in rural areas, while it is not significant in urban areas. Furthermore, it also increases the probability of escaping poverty by 70% relative to being chronically poor, compared to only 20% in urban areas.

Tertiary education, on the other hand, decreases the probability of being chronic poor and entry to poverty in both urban and rural. Impact of tertiary education is much more pronounced in urban than in rural areas. Tertiary level increases the probability of escaping poverty relative to being chronically poor by 272% in rural areas and 720% in urban areas<sup>1</sup>. Government investment on providing secondary education especially in rural areas is crucial in preventing households from falling into poverty. However, to be able to improve overall poverty situation, investment on tertiary level education is extremely critical.

Initial rice price is found to be significant only in rural areas. Higher rice prices increase the probability of entering into poverty and being chronically poor by 15% and 48%, respectively. This is contrary to what is expected that rural households should benefit in the current rice policy since rice farming is their main source of livelihood. Results not only show that high rice prices do not

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<sup>2</sup> Probability relative to chronically poor is computed by dividing RRR of escaping and entering into poverty by the RRR of being chronic poor.

contribute in both income and expenditure growth, it also increases the probability of households being poor.

The sex of the household has no significant impact on changes in poverty. Household age, on the other hand, was found to have an impact on chronic poverty both in rural and urban areas, but has an effect on transient poverty only in rural areas. An increase in the head's age diminishes the probability of entering into poverty by 38%, and increases the probability of escaping poverty relative to being chronically poor by 257%. Finally, household size increases the probability of being chronically poor and entry into poverty especially in the rural areas. The number of members less than 25 increases the probability of being chronically poor and entering into poverty in urban more than in rural areas. The impact is more severe in urban areas probably because of the problems of congestion and higher competition for public and private goods. For this reason, population growth needs to be controlled in both rural and urban areas. Furthermore, benefits of government projects should reach the rural areas to control urban migration and avoid congestion.

### **Summary and Conclusions**

The main objective of this paper was to determine whether growth has trickled down to the poor. While the Philippines has experienced a fairly modest economic growth with an average GDP growth of 6% between 2003 and 2006, poverty situation has not significantly improved. Although results of this study showed that growth has trickled down to some extent to the poor, the rich benefitted significantly more.

We found that overall income and expenditure growth is determined by the household's location, infrastructure services, physical and human capital endowments, and initial household characteristics. However, these determinants were deemed to have varying impacts on household growth in different quintile groups. One of the reasons is that, a large gap between rural and urban areas still exists. Vulnerability and severity of poverty is extremely higher in rural areas because development tends to be focused on urban areas. This leaves rural development lagging behind. For the rural households to be able to take advantage of the benefits of urban development, rural-urban linkages should be strengthened.

Another reasons why the poor have not benefitted fully from growth is the lack of investments in areas where poverty is high. Although economic development is crucial for overall growth, intervention to poor communities is greatly needed to enhance the trickle down mechanism in the country. By improving infrastructure services and providing basic education to poor communities, poverty reduction can be better achieved. Providing basic education has been the top priority of the current administration of President Benigno Simeon Aquino III, which is a step in the right direction

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## Appendix A: Tables

Table 1. *Descriptive Statistics of sample households in the Philippines, 2003 and 2006*

	Total %		Poor %		Non-Poor %	
	2003	2006	2003	2006	2003	2006
Community type						
Urban	39.78		18.14	17.97	46.22	46.87
Rural	60.22		81.86	82.03	53.78	53.13
Infrastructure services						
Access to electricity	73.8	79.4	41.51	52.73	83.41	88.08
Access to piped water	78.6	79.68	65.27	66.37	82.58	84.01
Education of head						
No Schooling	28.52	28.5	47.74	46.81	22.8	22.48
Primary	32.61	32.68	37.87	38.11	31.05	30.92
Secondary	30.17	29.8	13.95	14.68	34.99	35.22
Tertiary	8.5	8.87	0.44	0.4	10.9	11.11
Post-graduate	0.2	0.15	-	-	0.26	0.27
Female-headed household	15.16	17.16	7.77	8.39	17.36	20.01
Occupation of head						
Agriculture	34.04	32.34	52.59	50.41	28.52	26.46
Services	20.00	20.53	5.90	7.83	24.20	24.67
Industry	32.72	31.55	34.56	34.29	32.17	30.65
No work/business	13.24	15.58	6.95	7.47	15.11	18.22

*Note.* Author's calculation based on 2003 and 2006 FIES.

Table 2. *Poverty Profile in the Philippines, 2003 and 2006*

	National %	Urban %	Rural %
Income Poor in 2003	22.94	10.46	31.18
Income Poor in 2006	24.55	11.09	33.45
Chronic Poor	15.36	6.04	21.52
Transient Poor	16.76	9.47	21.59
Enter poverty	9.19	5.05	11.93
Escape poverty	7.57	4.42	9.66
Never Poor	67.87	84.49	56.90

*Note.* Author's calculations based on 2003 and 2006 FIES.



Table 3. *Micro-determinants of Expenditure and Income Growth in the Philippines, 2003-2006*

Variables	All Households	
	Expenditure per capita growth	Income per capita growth
Urban Dummy	0.0758***	0.0795***
(1=yes)	(6.806)	(6.319)
Distance from Manila (log)	-0.0510***	-0.0388***
	(-5.429)	(-3.576)
Access to Electricity in 2003	0.0822***	0.0890***
(1=yes)	(6.447)	(6.092)
Access to Piped Water 2003	0.0246**	0.0195
(1=yes)	(2.059)	(1.431)
Expenditure/Income in 2003 (log)	-0.5023***	-0.4821***
	(-37.153)	(-36.663)
Value of Household Asset in 2003	0.0723***	0.0762***
	(18.159)	(17.390)
Head: high school graduate in 2003	0.1118***	0.1135***
(1=yes)	(9.197)	(8.248)
Head: college graduate in 2003	0.2903***	0.3273***
(1=yes)	(12.523)	(12.217)
Head: post-graduate in 2003	0.4951***	0.6026***
(1=yes)	(3.806)	(4.541)
Change in Rice Prices between 2003 and 2006	0.0099	0.0147
	(1.240)	(1.593)
Human Rights Violation in 2003	-0.0001	0.0000
	(-0.717)	(0.411)
Female-headed household in 2003	0.0484***	0.0476***
(1=yes)	(3.027)	(2.659)
Household age in 2003 (log)	0.1817***	0.2031***
	(8.618)	(8.538)
Total Members in 2003 (log)	0.0002	0.0217
	(0.006)	(0.548)
Members less than 25 in 2003	-0.0249***	-0.0269***
	(-3.462)	(-3.290)
Members 25 and above in 2003	-0.0073	-0.0117
	(-0.723)	(-1.031)
Constant	4.4639***	4.0895***
	(26.598)	(23.585)
R-squared	0.231	0.222
Number of Observations	7909	7909

Robust t-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 4. *Micro-determinants of Growth per Quintile Group in the Philippines, 2003-2006*

Variables	Expenditure Growth					Income Growth				
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Urban Dummy	0.0271	0.1150***	0.0429*	0.0645***	0.1187***	0.0646**	0.0930***	0.0711***	0.0559**	0.1084***
(1=yes)	(1.030)	(4.945)	(1.891)	(2.730)	(4.142)	(2.216)	(3.546)	(2.701)	(2.038)	(3.342)
Distance from	-0.0252	-0.0762***	-0.0318	-0.0472**	-0.0741***	0.0084	-0.0476**	-0.0593**	-0.0593**	-0.0397
Manila (log)	(-1.338)	(-3.975)	(-1.554)	(-2.145)	(-2.632)	(0.407)	(-2.172)	(-2.574)	(-2.298)	(-1.279)
Access to Electricity	0.0857***	0.0762***	0.1164***	0.0929*	0.2025**	0.0879***	0.1072***	0.1435***	0.0400	0.1903*
in 2003 (1=yes)	(3.753)	(3.271)	(3.838)	(1.872)	(2.071)	(3.505)	(4.077)	(4.135)	(0.738)	(1.682)
Access to Piped	0.0165	0.0117	0.0479*	0.0451	0.0217	0.0319	0.0130	0.0133	0.0088	0.0532
Water 2003 (1=yes)	(0.855)	(0.533)	(1.735)	(1.319)	(0.402)	(1.451)	(0.505)	(0.441)	(0.219)	(0.848)
Expenditure/Income	-0.5076***	-0.3405***	-0.3945***	-0.4172***	-0.5138***	-0.5937***	-0.4082***	-0.5521***	-0.4115***	-0.4979***
in 2003 (log)	(-13.561)	(-3.894)	(-3.993)	(-5.022)	(-10.711)	(-16.333)	(-4.542)	(-5.689)	(-5.026)	(-10.029)
Value of Household	0.0961***	0.0616***	0.0558***	0.0740***	0.0702***	0.0835***	0.0684***	0.0532***	0.0787***	0.0715***
Asset in 2003	(5.816)	(5.795)	(6.519)	(9.326)	(8.057)	(4.618)	(5.795)	(5.393)	(8.951)	(7.650)
Head: high school	0.1042***	0.0732***	0.1043***	0.1455***	0.1386***	0.1086***	0.0644**	0.0749***	0.1727***	0.1476***
graduate in 2003	(3.748)	(3.118)	(4.206)	(5.506)	(3.585)	(3.527)	(2.324)	(2.656)	(5.534)	(3.454)
(1=yes										
Head: college	0.2750**	0.2415***	0.2825***	0.2959***	0.2942***	0.3903**	0.1372	0.2239***	0.3700***	0.3526***
graduate										
in 2003 (1=yes)	(2.023)	(3.068)	(5.237)	(6.576)	(6.650)	(2.366)	(1.337)	(3.404)	(7.088)	(7.274)
Head: post-graduate				0.1519	0.5156***					0.6382***
in 2003 (1=yes)				(0.362)	(3.503)					(4.470)
Change in Rice	0.0075	0.0285*	-0.0086	0.0048	0.0283	-0.0200	0.0252	0.0227	0.0427*	0.0119
Prices between 2003	(0.501)	(1.766)	(-0.498)	(0.250)	(1.228)	(-1.196)	(1.356)	(1.129)	(1.949)	(0.458)
and 2006										

Table 4. *Micro-determinants of Growth per Quintile Group in the Philippines, 2003-2006 (cont.)*

Variables	Expenditure Growth					Income Growth				
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Human Rights Violation in 2003	0.0000	-0.0007***	-0.0000	0.0005*	-0.0004	0.0002	-0.0003	-0.0001	0.0001	0.0002
	(0.217)	(-3.456)	(-0.008)	(1.929)	(-1.238)	(1.009)	(-1.314)	(-0.204)	(0.360)	(0.592)
Female-headed household in 2003 (1=yes)	0.0583*	0.0514	0.0507	0.0572*	0.0268	0.0650	0.0264	0.0662*	0.0740**	0.0209
	(1.658)	(1.308)	(1.579)	(1.819)	(0.751)	(1.586)	(0.660)	(1.841)	(2.006)	(0.555)
Household age in 2003 (log)	0.1448***	0.2972***	0.2011***	0.0959**	0.1648***	0.2628***	0.2749***	0.1591***	0.1489***	0.1662***
	(3.785)	(6.926)	(4.744)	(2.007)	(2.932)	(6.115)	(5.919)	(3.275)	(2.715)	(2.671)
Total Members in 2003 (log)	-0.1458*	0.1238	0.0607	-0.0291	-0.0718	-0.0073	0.0685	0.0189	0.0347	-0.0092
	(-1.785)	(1.621)	(0.834)	(-0.393)	(-0.772)	(-0.081)	(0.776)	(0.227)	(0.423)	(-0.089)
Members less than 25 in 2003	-0.0014	-0.0504***	-0.0333**	-0.0243	0.0046	-0.0292*	-0.0329*	-0.0170	-0.0354*	-0.0177
	(-0.095)	(-3.272)	(-2.008)	(-1.357)	(0.187)	(-1.808)	(-1.841)	(-0.899)	(-1.789)	(-0.669)
Members 25 and above in 2003	0.0297	-0.0429**	-0.0149	0.0055	-0.0008	-0.0126	-0.0380	0.0030	-0.0025	-0.0045
	(1.471)	(-1.991)	(-0.698)	(0.242)	(-0.029)	(-0.537)	(-1.570)	(0.122)	(-0.098)	(-0.147)
Constant	4.5816***	2.6205***	3.2126***	3.8275***	4.6623***	4.7257***	3.1635***	5.0062***	3.6165***	4.2884***
	(11.575)	(3.054)	(3.250)	(4.444)	(8.225)	(11.909)	(3.548)	(5.081)	(4.130)	(6.996)
R-squared	0.161	0.154	0.135	0.169	0.214	0.194	0.118	0.118	0.158	0.201
Number of observations	1582	1582	1582	1582	1582	1582	1582	1582	1582	1582

t-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 5. *Multinomial Logit Regression Results, All Households, Urban and Rural*

Variables	All Households			Rural			Urban		
	Chronic poor	Entering into Poverty	Escaping Poverty	Chronic poor	Entering into Poverty	Escaping Poverty	Chronic poor	Entering into Poverty	Escaping Poverty
	RRR	RRR	RRR	RRR	RRR	RRR	RRR	RRR	RRR
Urban Dummy (1=yes)	0.5628*** (-5.182)	0.6020*** (-4.681)	0.6936*** (-3.086)						
Distance from Manila (log)	1.5626*** (6.907)	1.3027*** (4.107)	1.2710*** (3.320)	1.4084*** (4.636)	1.2566*** (3.042)	1.2033** (2.155)	2.0628*** (4.780)	1.3101** (2.042)	1.3998** (2.410)
Access to Electricity in 2003 (1=yes)	0.3803*** (-9.216)	0.6432*** (-4.128)	0.6726*** (-3.356)	0.4120*** (-7.570)	0.6125*** (-4.075)	0.7085*** (-2.584)	0.1696*** (-6.939)	0.6191* (-1.804)	0.4082*** (-3.292)
Access to Piped Water 2003 (1=yes)	1.0142 (0.144)	1.1283 (1.160)	1.1638 (1.309)	1.0008 (0.007)	1.1249 (1.018)	1.1942 (1.363)	0.9719 (-0.116)	1.1458 (0.555)	0.9537 (-0.186)
Value of Household Asset in 2003	0.3160*** (-17.637)	0.5519*** (-13.118)	0.4116*** (-15.088)	0.3369*** (-14.592)	0.5842*** (-10.022)	0.4223*** (-12.035)	0.2670*** (-9.115)	0.4875*** (-8.219)	0.4011*** (-8.695)
Head: high school graduate in 2003 (1=yes)	0.4125*** (-7.443)	0.6031*** (-4.459)	0.6368*** (-3.538)	0.4182*** (-6.396)	0.5768*** (-4.089)	0.7135** (-2.276)	0.3701*** (-3.843)	0.7012 (-1.644)	0.4401*** (-3.217)
Head: college graduate in 2003 (1=yes)	0.0483*** (-4.072)	0.2201*** (-3.810)	0.2195*** (-3.183)	0.0505*** (-2.867)	0.2126*** (-2.958)	0.1884** (-2.263)	0.0223*** (-3.394)	0.2214** (-2.419)	0.1829*** (-2.621)
Head: post-graduate in 2003 (1=yes)	0.0000 (-0.014)	0.0000 (-0.009)	0.0000 (-0.009)	0.0002 (-0.009)	0.0000 (-0.007)	0.0000 (-0.007)	0.0001 (-0.014)	0.0000 (-0.012)	0.0000 (-0.011)
Rice Price in 2003	1.4041*** (5.764)	1.0697 (1.130)	1.0817 (1.144)	1.4775*** (5.898)	1.1477** (2.048)	1.1010 (1.211)	1.0381 (0.277)	0.8412 (-1.304)	0.9977 (-0.016)

Table 5. *Multinomial Logit Regression Results, All Households, Urban and Rural (cont.)*

Variables	All Households			Rural			Urban		
	Chronic poor	Entering into Poverty	Escaping Poverty	Chronic poor	Entering into Poverty	Escaping Poverty	Chronic poor	Entering into Poverty	Escaping Poverty
	RRR	RRR	RRR	RRR	RRR	RRR	RRR	RRR	RRR
Human Rights	1.0030***	0.9998	1.0022**	1.0045***	1.0006	1.0032***	0.9963*	0.9980	0.9987
Violation in 2003	(3.651)	(-0.192)	(2.302)	(4.916)	(0.572)	(2.993)	(-1.706)	(-1.092)	(-0.617)
Female-headed household in 2003 (1=yes)	0.8026	0.7930	1.1433	0.7572	0.8662	1.1209	0.9274	0.5666*	1.1976
	(-1.304)	(-1.552)	(0.847)	(-1.460)	(-0.851)	(0.625)	(-0.199)	(-1.709)	(0.556)
Household age in 2003 (log)	0.4323***	0.6548**	1.5008**	0.4526***	0.6165**	1.6195**	0.3301**	0.8669	1.0703
	(-4.636)	(-2.437)	(1.969)	(-3.989)	(-2.474)	(2.066)	(-2.391)	(-0.371)	(0.150)
Total Members in 2003 (log)	6.0557***	1.0479	6.7968***	6.9710***	1.2370	6.0262***	4.7765	0.6790	21.9407***
	(4.460)	(0.170)	(4.570)	(4.287)	(0.660)	(3.873)	(1.570)	(-0.707)	(2.836)
Members less than 25 in 2003	1.3757***	1.2629***	1.1163	1.3109***	1.2045**	1.1170	1.6126***	1.4467***	0.9845
	(4.109)	(3.663)	(1.339)	(3.046)	(2.466)	(1.180)	(2.686)	(3.020)	(-0.081)
Members 25 and above in 2003	0.9951	1.1109	0.9285	0.9425	1.0992	0.9227	1.2241	1.0825	0.8482
	(-0.049)	(1.142)	(-0.693)	(-0.515)	(0.886)	(-0.650)	(0.891)	(0.417)	(-0.709)
Constant	0.0001***	0.0706*	0.0002***	0.0000***	0.0226**	0.0002***	0.0144	3.6275	0.0012*
	(-6.048)	(-1.676)	(-4.457)	(-5.776)	(-2.130)	(-4.002)	(-1.117)	(0.361)	(-1.708)
Pseudo R-squared	0.289	0.289	0.289	0.244	0.244	0.244	0.349	0.349	0.349
Number of observations	7909	7909	7909	4763	4763	4763	3146	3146	3146

z-statistics in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## Appendix B: Figures

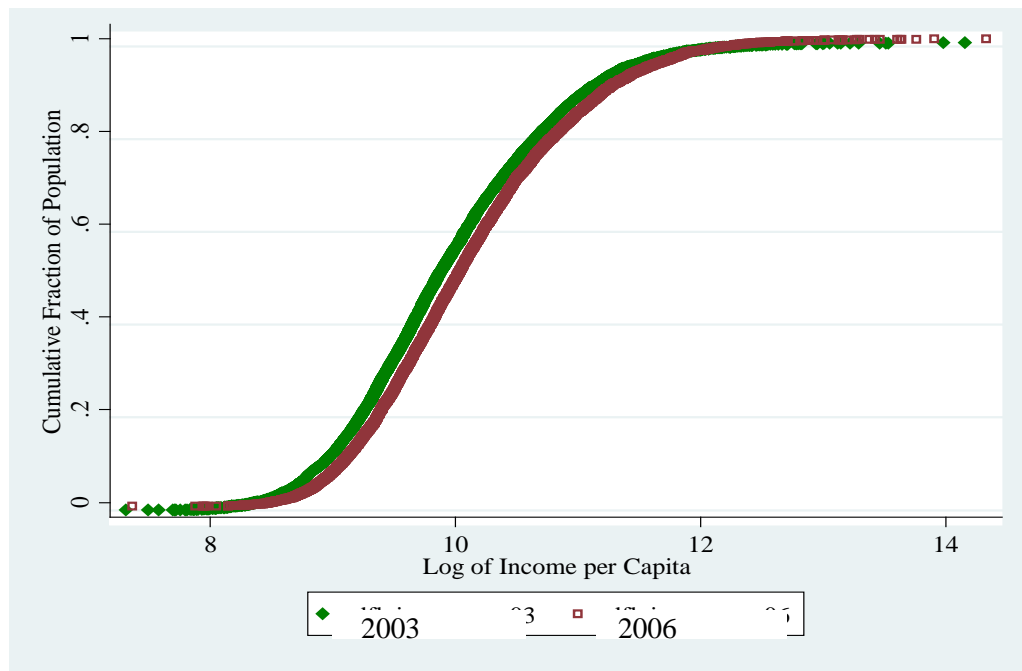


Figure 1. *Cumulative Distribution Functions of Income per Capita, Philippines, 2003 and 2006*

*Note.* Author's calculations based on 2003 and 2006 FIES.