Migration, Remittances and Poverty:
Evidence from the Community-Based Monitoring System (CBMS) Data in Selected Communities in the Philippines[1]

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Abstract: Migration is a very important issue in policy discussions as many developing countries, including the Philippines, view it as an important instrument for poverty reduction. Remittances sent by migrant workers is usually an important source of income for their origin households. This paper explores the characteristics of households with a migrant worker and compares them with their non-migrant counterpart. It also determines the profile of migrant workers and the patterns in remittances. The impact of migration and remittances on poverty of origin households is determined by generating counterfactual scenarios using different methods of estimation. Results show that although the magnitude of impact varies depending on how the counterfactual income is estimated, the results are consistent in showing that migration reduce poverty, albeit minimally. Focusing on the subsample of migrant households, however, revealed much larger impact. Although the poverty-reducing impact of remittances is recognized in many researches, this study contributes to the literature by providing empirical evidence on the topic using the unexplored household-level data collected through the community-based monitoring system (CBMS) in the Philippines.

1. Introduction

The World Bank (2013) reports that that more than 215 million people, live outside their countries of birth. This represents approximately 3.0 percent of the world population Meanwhile, remittances sent by workers abroad are estimated to have reached US$529 billion in 2012, bulk of which are received by developing countries. In fact, developing countries received US$401 billion in remittances, an increase of about 5.3 percent compared to the previous year. This figure does not include yet the large share of unrecorded remittances which are transferred through informal channels. While migration and remittance previously has been treated only marginally in the development agenda, these issues were given much attention in the last decade. This is due to the rapid growth of migration and the significant size of remittance flows, which even exceeded other financial flows to developing countries.
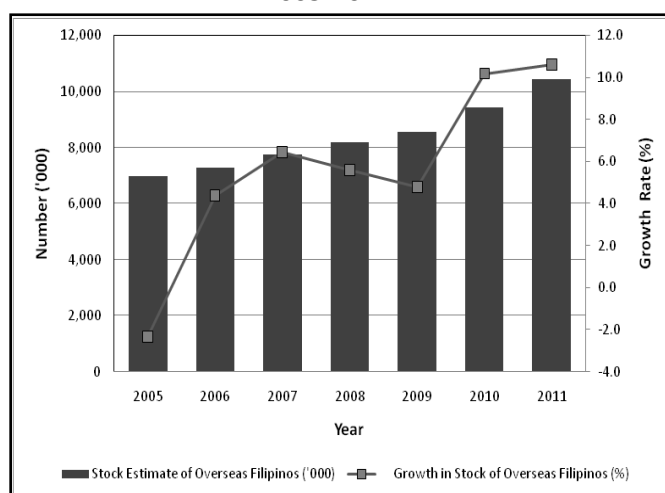
The Philippines remain to be one of the countries with the largest number of migrants residing or working abroad in recent years. As of 2010, the Philippines ranked ninth among the top emigration countries according to the World Bank report (2011). Latest estimates from the Commission on Filipinos Overseas (CFO) indicated that as of 2011, the stock of Filipinos overseas is about 10.5 million
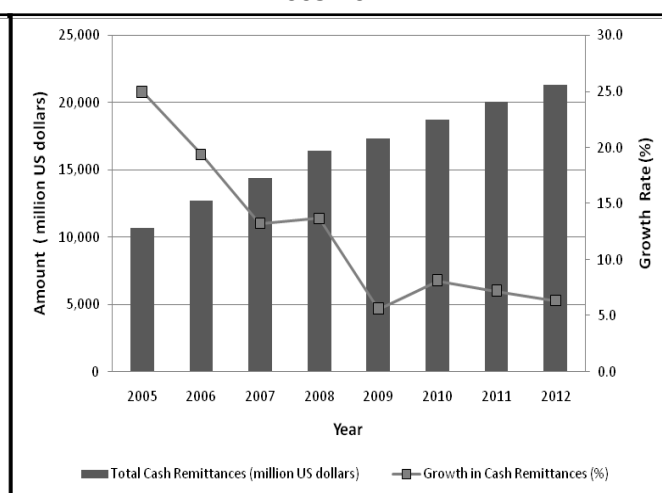
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which grew by 10.6 percent from the previous year's level (Figure 1). This accounted for about 11.1 percent of the country's total population during the period. Majority of these migrant workers go to more developed countries, including the United States, Saudi Arabia, Canada, United Arab Emirates, Qatar, Japan, United Kingdom and Kuwait. Furthermore, recent estimates show that the Philippines ranked third in terms of having the largest volume of remittances across all countries in the world (World Bank, 2013). Data from the Bangko Sentral ng Pilipinas show that while the growth in cash remittances has declined since 2005, especially during the global crisis in 2009, the total amount has continued to increase (Figure 2). They attributed this continuous growth to the increased demand for skilled overseas Filipino workers (OFWs)[3] in many countries and to the presence of large bank networks in the destination countries. In 2012, cash remittances reached US$21.4 billion which is about 6.5 percent of the country's gross national income. These figures highlight the importance of migration and remittances to the country's economy. The country had even labeled the OFWs as the "bagong bayani" or modern-day heroes which further encourages migration among Filipinos, viewing remittances as providing positive contribution to the country's economic development.

Figure 1. Trend in stock of Filipinos Overseas 2005-2011

Source of basic data: Commission on Filipinos Overseas

Figure 2. Trend in cash remittances in the Philippines 2005-2012

Source of basic data: Bangko Sentral ng Pilipinas

However, despite the continous growth in remittances in the Philippines, there seems to be no significant changes in poverty rates in the country. For instance, while cash remittances grew by an average of 10.5 percent per year during the period 2005-2012, the latest estimates of poverty by the National Statistical Coordination Board (NSCB) for 2012 remain high at 27.9 percent (which is only 0.9 percentage point lower than the 2006 figures). Many Filipinos still chose to migrate mainly for economic reasons[4] as reflected by the continuous increase in the number of deployed OFWs in recent years. In fact, based on the data of the Philippine Overseas and Employment Administration (POEA), the number OFWs deployed increased by 70.7 percent in 2011 when compared to 2005 figures. Although the growth in deployment slowed down after the global economic crisis in 2009, it remains positive.

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[3] In this paper, "migrant worker" and "OFW" are used interchangeably. In addition, "migrant household" and "household with OFW" are treated as the same.

[4] Despite the country's long history of migration, poor economic opportunities may have pushed people to migrate and work abroad. For instance, some people move in search for employment opportunities or higher wages in another place while others just want to learn new skills or gain new experiences.

Given the above, this paper aims to determine the impact of migration (and remittances) on poverty situation of origin households by constructing counterfactual scenarios based on different estimation methods. In doing so, the paper identifies first the characteristics of households with migrant workers (OFWs) and compares them with their non-migrant counterpart. It also presents some information on the migrant workers themselves and on the remittances sent by these migrant workers. It is recognized that understanding the complex issues surrounding migration and remittances and poverty could guide planners and policymakers on what interventions are necessary in order to achieve the full benefits from migration, especially in terms of poverty reduction. The study contributes to the literature by providing empirical evidence on the topic using the unexplored CBMS data that are available in several communities in the Philippines.

The rest of the paper is structured as follows. Section 2 presents a brief overview of migration, remittances and poverty. Section 3 presents the data and methods used in the analysis while Section 4 discusses the empirical results. The last section concludes and presents some recommendations.

2. Migration, Remittances and Poverty: An Overview

Migration is "a process of moving, either across an international border, or within State" (IOM, 2004). It continues to be an important issue in policy discussions as many developing countries, including the Philippines, view it as an important instrument for poverty reduction. While migration affects poverty through various mechanisms, the most evident channel is the income channel whereby remittances directly contribute to households' total income. The remittances sent by migrant workers usually serve an important source of income for their origin households and therefore, has the potential to improve their living standards. If remittances flow towards the poor, they could directly contribute to their welfare as they increase the levels of consumption and investments in human and physical capital. For instance, remittances can be used by households to make necessary investments in education and health. They can also serve as insurance allowing households to invest in riskier assets, and therefore, has the potential to contribute to country's growth in the long run.

However, the option to migration may not be available to all people or may not even be chosen by a certain group of people. Some studies (e.g.,Stahl, 1982) show that since migration can be very expensive, it is more likely that better-off households will be more capable of producing migrants. Furthermore, in terms of remittances, Adams (2004) found out that aside from having fewer children below 5 years old and living in urban areas, remittance recipient households have more education. This is in line with the human capital theory that suggests that it is more likely for educated people to migrate because of greater employment and income opportunities that are available for them in the area of destination.

Furthermore, in reality, the positive impacts of migration may not be realized because of several factors. For instance, remittances may not necessarily flow to the poor especially if migration involves huge costs, in the first place. Remittances could also increase pressure on the exchange rate that could lead to a real appreciation and would lower the profitability of tradable sector (Acosta, Fajnzylber, and Lopez, 2007). In addition, the economy's growth may be restricted if more skilled people migrate and less skilled workers are left behind[5]. Social tensions may also arise if income inequality increases between

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[5] Many earlier studies have looked at the issue of high-skilled migration and the so-called "brain drain" effect. Focus was given on "brain drain" in the earlier years while the role of migration in spreading knowledge and incentivizing the acquisition of skills was highlighted in the recent years.

migrant and non-migrant households. Due to long period of separation between the migrant worker and their families, there may also be costs to family members left behind, especially the children. For instance, children of migrant parents are more likely to perform poorly in school or drop out of school because of poor guardianship from their parents (Parreñas, 2005).

In general, although the importance of migration and remittances has been highlighted, data and research on poverty and remittances are limited, particularly in developing countries. In addition, studies focusing on techniques and methods of assessing the impact of migration and remittances on poverty are limted. Given these, there seems to be no consensus in the literature with regards to the impact of remittances on poverty in these countries. While most of the recent studies on the impacts of migration and remittances showed positive impact in the recipient countries in terms of poverty reduction (e.g.,Yang and Martinez, 2007; Adams, 2007; Adams and Page 2005; Barham and Boucher 1998; Rodrigez, 1998; Adams, 1989), the magnitude of impact varies across studies. For instance, Adams and Page (2005) found a significant reduction in the level, depth and severity of poverty in developing countries. In particular, after employing the instrumental variable strategy, they reported that a 10 percent increase in the share of international migrants in a country's population resulted in a reduction in the share of poor people by 2.1 percent. At the same time, they estimated a 3.5 percent decrease in the share of people living below the poverty line if per capita international remittances increase by 10 percent. These results are also consistent with Ratha (2007) when a regression analysis across countries worldwide was employed. On the other hand, Adams (1989) found that households which belong to the top income quintile in rural Egypt were the ones who benefitted most from remittances and therefore, remittances is shown to have a negative impact on rural income distribution. Acosta, et al. (2007) also demonstrated that the income gains from remittances are not enough to compensate for the losses from migration thereby resulting in an increase in poverty in general. The differences in the results in many studies, however, may be due to the differences in the migration histories of countries covered and the differences in the methodologies employed. (Jimenez & Brown, 2008).

There are several conceptual and empirical challenges in measuring the impact of migration and remittances on income poverty, inequality and human capital (McKenzie and Sasin, 2007). One important challenge identified is with regards to endogeneity as migration decisions may be simultaneously with many of the household decisions such as labor participation, school attendance, consumption and other household decisions. The characteristics that explain migration may also explain labor participation, education, consumption, etc. For example, a household may at the same time decide to send a member to work abroad and a child to go to school. An important relevant problem is the reverse causality whereby the outcome of interest influences migration and remittances. For instance, although migration and remittances may help reduce poverty, poverty may also affect migration decision and the amount of remittances received. Selection bias is also an important concern as migrants may differ fundamentally from non-migrants as they self-select. Hence, it is not possible to determine what would have happened to non-migrant households if they migrate by simply comparing the characteristics of migrant and non-migrant households. Since migrant households cannot be treated as a random selection, estimation should address the potential self-selection issues. Selection bias can also be thought of as an omitted variable bias households send migrants or receive remittances based on unobservable characteristics (e.g., risk averseness, ability, etc.)

There are various solutions proposed in the literature to address the abovementioned issues. The first, and maybe considered as the best solution is the use of a well-designed randomized experiment whereby the potential migrants are randomly denied the right to migrate (e.g., through a lottery system), thereby allowing the creation of a "control group" having the same profile as migrants but without the

opportunity to migrate (e.g. McKenzie, Gibson and Stillman, 2006). By comparing the outcomes of interest between the two groups, the (causal) effect of migration can be accurately estimated. However, in reality, it is very difficult to conduct such randomized experiments, and hence this method is rarely employed. The second possible solution is to use panel data as it eliminates many of the methodological problems i.e., it allows control for time-invariant unobservable characteristics. If panel data is available only for migrant households, the single difference can be estimated to compare the post-migration income with the pre-migration income. If panel data for both migrants and non-migrants are available, the difference-in-difference estimator can be employed. However, panel data is rarely available, especially in developing countries. The third possible solution is to use the Ordinary Least Squares (OLS) and supplementing it with a sample selection procedure. The Heckman selection model can be applied to the OLS framework in order to address the selection bias. The main challenge here, however, is identifying the exogenous variable that causes migration or the receipt of remittances in the firs-stage equation which, at the same time, has no direct effect on the dependent variable in the second-stage equation. The fourth option is to use instrumental variables, which is prevalent in the study on the impact of migration as it can address the biases that arise from endogeneity, omitted variable and selection bias. Again, the challenge here is the identification of a good instrument variable that is correlated with the explanatory variable but exogenous to the outcome variable. Selecting good instruments for migration is considered to be a big challenge in the whole literature on migration.

Different estimation procedures have been employed by researchers mainly to address the various issues in migration studies. The counterfactual income approach was first used in the migration and remittances literature by Adams (1989) and then, refined by Barham and Boucher (1998) and other researchers. In Adams (1989), the mean regression of incomes of non-migrant households was estimated and then the resulting parameters were used to estimate the counterfactual income of migrant households. The predicted incomes are then used to estimate the poverty rates. However, this method could also lead to biased estimates due to self-selection, especially since migrant households cannot be treated as a random selection of the population. Some modifications in the methodology were also employed by Rodriguez (1998) in his study of international migration and income distribution in the Philippines. In particular, he assumed that the differences between households with and without migrants are observable and can be reduced in a constant term. However, it is deemed that the estimates are still biased since it assumed no difference in the productivity of factors between these two groups of households. Since Adams (1989) method may result in underestimation of the variance of the predicted incomes of migrant households, Barham and Boucher (1998) refined the method by adding a stochastic term component to predicted incomes. At the same time, they employed the Heckman self-selection model which incorporates migration choice and labor-force participation. The same method of bootstrap prediction was adopted by Acosta, et al (2007) in determining the impact of migration and remittances on poverty in 11 Latin American countries. Nevertheless, Heckman self-selection model also has one important weakness such that it may lead to biases in the counterfactual estimators because of its strong distributional assumption (Deaton,1997).

3. Data and Methods

In many developing countries, censuses and other official data collections may be irregular and unreliable. In some cases, they are even lacking. This makes reliance on official data problematic in migration research. For some countries where migration statistics are available, particularly for more developed countries, data are collected based on different definitions and categories that reflect national policies and ideologies (Castles, 2012). Compared to other developing countries, however, the

Philippines is better-off in terms of the availability of information and datasets on migration and remittances. For instance, national surveys, including the Family Income and Expenditures Survey (FIES) and the Survey of Overseas Filipino, included some relevant questions on remittances. The FIES is a nationwide survey of households undertaken every three years and provides mainly information on the spending patterns of Filipino families, their levels of living, as well as disparities in income. Meanwhile, the Survey of Overseas Filipino (SOF) contains more information on the migrant workers who left during the last five years and their remittances using the past six months reference period. The SOF is a rider survey to the October round of the Labor Force Survey in the Philippines. Existing studies on migration and remittances on the Philippines, although limited, used mainly the datasets generated by these surveys.

However, aside from these national surveys, several local government units in the Philippines have been implementing the community-based monitoring system (CBMS)[6] in their localities. The dataset contains the demographic characteristics of all households in the selected communities and captures information on the different dimensions of poverty. It also collects data on different sources of income and relevant household- and individual-level characteristics. While CBMS data collection is not primarily aimed for migration and remittances statistics, it offers some migration-related information which are useful for the purpose of this study. For instance, it identifies households which have at least one migrant worker and receive remittances allowing us to understand the profile of migrant-sending households. It also includes information on the number of members working abroad as an OFW. The CBMS data has not been fully explored in the study of migration and remittances and their impact on poverty and therefore, this study, using the CBMS data in selected communities in the Philippines contributes to the literature by providing empirical evidence on these topics.

To limit this study, we focus on international migration and remittances received from OFWs who are considered as members of the household before leaving the country and/or expected to return to the same household when they return to the Philippines. The OFWs include those overseas contract worker who are "presently and temporarily out of the country to fulfill an overseas work for a specific length of time or who are presently at home on vacation but still has an existing contract to work abroad"[7]. We also adopt the more traditional definition of remittances as money sent by migrant workers to their origin households.[8] The remittances data from CBMS reflect the total remittances (in cash and in-kind) received by the households during the past 12 months from their OFW member. One advantage of the CBMS survey is that it covers all households in a particular community and hence, could reflect more the actual condition of households in a particular community.

In order to meet the objectives of this study, we focus on two selected sites in the Philippines, namely Pasay City which is part of the National Capital Region and Limay, Bataan which is a municipality located in the Central Luzon region. We believe these two sites represent good case studies for

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[6] CBMS is an organized way of collecting household level information at the local level that seeks to integrate the use of data in local level planning and program implementation. As of 08 April 2013, CBMS has been implemented in 68 provinces - 32 of which are implementing CBMS province-wide. This covers 791 municipalities and 63 cities covering 21,424 *barangays* (villages). For more information about CBMS, see http://www.pep-net.org/programs/cbms/about-cbms/

[7] This is the official definition used in national surveys, as well as in CBMS surveys in the Philippines.

[8] In some studies (e.g., Chappell, et al., 2010), the need to consider a much broader definition of remittances is highlighted. Remittances may be viewed broadly as "all the accumulated funds that flow from a migrant's country of destination to their country of origin as a result of their migration". This shall include, but not limited to, transfers to household members and to other family members and friends, money sent to bank accounts in country of origin and money they continue to receive (e.g., pensions) even after returning back to their country of origin.

examining migration and remittances as they belong to regions in the Philippines with the highest incidences of migrant households. Based on the CBMS census conducted in 2008-2009 in Pasay City, there were 70,496 households in the 201 *barangays* (villages) in the city, about 7.3 percent of which have at least one migrant worker. Meanwhile, the 2010-2011 CBMS census in Limay, Bataan covered 10,216 households in 13 *barangays* (villages) with about 13.1 percent reporting that they have at least one OFW member. Selection of these two sites for this study provided an opportunity to capture the patterns in communities with different characteristics.

In this study, we first understand the characteristics of migrant households by comparing them with their non-migrant counterpart. The profile of OFWs and the remittance patterns are explored using crosstabulations. Meanwhile, the impact of migration and remittances on poverty of origin households is determined by generating counterfactual scenarios using different methods of estimation. The first method treats remittances as an exogenous transfer and therefore, simply deducts the remittance received by households from their total household income (*Counterfactual 1*). Only the members of the households who are present domestically are considered in the estimation of per capita income as in previous studies.

In the second method, we estimate the household income of migrant households if no member had migrated (*Counterfactual 2*).This is done by imputing the income for migrant households in the counterfactual no-migration using the reduced form for the determinants of income among households without migration as shown in (1).

$$logY_i = \alpha_1 + \beta X_i + \gamma H_i + \mu_i \qquad (1)$$

where Y_i is the no-migration household income, X_i is the vector of household characteristics and H_i is the set of characteristics of the household head. The unobserved heterogeneity in income generation is captured by μ_i. In estimating the indicators, the observed income for non-migrant households and the counterfactual income for migrant households (excluding remittances) are used. All members, including domestic residents and migrant workers, are considered in estimating the per capita income. This second method, however, ignores self-selection among migrant households. If, indeed, migrants are not randomly selected, OLS estimation may suffer from selection bias. This also means that μ_i is not independently identically distributed and OLS estimates are inconsistent. Therefore, if we assume that there is selection bias, the Heckman estimation framework is more appropriate and this is adopted in the constructing the third scenario (*Counterfactual 3*)[9]. In this framework, two models were estimated where first one is the no-migration equation as follows:

$$M_i^* = \alpha_1 + \beta_i X_i + \gamma_1 H_i + \omega Z_i + \mu_i \qquad (2)$$

where M_i^* is the selection rule for having no migrant. We only observe whether the household has a migrant worker or not which corresponds to the negative and positive value for M_i^*. Meanwhile, X_i refers to the vector of household characteristics and H_i the set of characteristics of the household head. The challenge in this framework is the identification of exclusion restriction Z_i which includes variables that are related to the choice in migration but are not directly affecting the income of households. We

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[9] This basically follows the methods employed by Acosta, et al. (2007) in their study on the impact of remittances on poverty and human capital in Latin America.

ensure that Z_i contain at least one variable that does not appear in X_i. Meanwhile, the second equation is the income equation for no-migration as follows:

$$logY_i = \alpha_2 + \beta_2 X_i + \gamma_2 H_i + \theta \lambda_i + \varepsilon_i \qquad (3)$$

where Y_i is the no-migration income of household, X_i is the vector of household characteristics, H_i is the set of characteristics of the household head and λ_i is the selection inverse Mill's ratio. The selection inverse Mill's ratio is defined as

$$\lambda_i = \frac{\phi(\alpha_1 + \beta_1 X_i + \gamma_1 H_i + \omega Z_i)}{1 - \Phi(\alpha_1 + \beta_1 X_i + \gamma_1 H_i + \omega Z_i)} \qquad (4)$$

where $\phi(.)$ and $\Phi(.)$ denote the probability density and cumulative density functions of the standard normal distribution, respectively. The estimated coefficients based on this two-step estimation method are also used to predict the counterfactual no-migration income for migrant households. In estimating the per capita income, all members (including domestic residents and migrant workers) are taken into account. The indicators are then, estimated using the observed income for non-migrant households and the counterfactual income for migrant households. The poverty rates were estimated by comparing the households' per capita income with the official poverty threshold[10] estimated by NSCB for Bataan and Metro Manila. Aside from poverty rate, poverty gap was also estimated to show the total income shortfall (expressed as proportion to the poverty threshold) of households with income below the poverty line, divided by the number of households. The poverty measures based on the different counterfactual scenarios are, then, compared to the observed scenario in order to estimate the impact of migration on poverty situation in the selected sites. While previous studies on the impact of migration and remittances on poverty focused on the entire sample, this study also estimated the impact on the sub-sample of migrant households as employed by Schiff (2006).

4. Empirical Results

4.1 Migration and Remittance Patterns

Based on the CBMS data in Pasay City and Limay, about 8.0 percent of all households have at least one member who is working abroad. Looking at each site separately, the share of households with OFW in Pasay City and Limay is 7.3 percent and 13.1 percent, respectively. Table 1 presents the profile of households with and without and OFW in both sites, focusing on the household composition, school participation among children, characteristics of household heads and welfare level. Data revealed that while the composition of the households is generally the same for both groups, there is a slight difference in terms of the number of members aged 15 years old and above who are employed. In particular, households with OFW have more employed adults compared with those that do not have an OFW. It is possible that members of households without OFW may need to work to augment household income while those belonging to households with OFW can afford not to work since they can depend on remittances to support their needs.

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[10] The poverty threshold refers to the minimum income required to meet the food requirements and other non-food basic needs.

Table 1. Profile of households with and without OFW: Pasay City and Limay

	Pasay City (Metro Manila)			Limay, Bataan			All Sites		
	With OFW*	Without OFW	All HHs	With OFW*	Without OFW	All HHs	With OFW*	Without OFW	All HHs
No. of households	5,143	65,287	70,430	1,338	8,878	10,216	6,481	74,165	80,646
Proportion of HHs (%)	7.3	92.7	100.0	13.1	86.9	100.0	8.0	92.0	100.0
Household Composition									
HH size	3.8	3.8	3.8	4.1	4.2	4.2	3.8	3.8	3.8
Mean HH members 15 years old and above	2.6	2.7	2.7	2.6	2.8	2.8	2.6	2.7	2.7
Mean HH members less than 15 years old	1.1	1.1	1.1	1.5	1.4	1.4	1.2	1.2	1.2
Mean HH members 15 years old and above who are employed	0.9	1.4	1.3	0.8	1.2	1.2	0.9	1.3	1.3
School participation (%)									
Members 6-21 years old	81.1	73.7	74.3	82.6	72.5	73.8	81.4	73.6	74.2
Members 6-16 years old	95.5	93.2	93.4	94.8	90.2	90.9	95.4	92.8	93.0
6-12 years old	97.6	96.8	96.8	97.0	93.9	94.3	97.5	96.4	96.5
13-16 years old	66.8	62.5	62.9	66.6	59.9	60.8	66.8	62.2	62.6
17-21 years old	41.2	26.3	27.5	49.0	30.0	32.3	42.8	26.7	28.1
Household Head									
Mean age (years)	46.1	41.6	41.9	43.8	43.6	43.6	45.7	41.9	42.2
Male (%)	46.6	79.0	76.6	53.2	81.4	77.7	47.9	79.3	76.8
Married (%)	72.8	57.4	58.6	78.6	64.9	66.7	74.0	58.3	59.6
Employed (%)	38.6	79.5	76.5	48.6	74.4	71.0	40.6	78.9	75.8
Education level (%)									
No grade	0.2	0.1	0.1	0.5	0.9	0.9	0.3	0.2	0.2
Elementary	8.3	11.9	11.7	12.4	24.6	23.0	9.2	13.4	13.1
Secondary/post-secondary	45.3	51.5	51.1	56.4	55.2	55.3	47.6	52.0	51.6
College/postgraduate	46.2	36.4	37.1	30.7	19.3	20.8	43.0	34.4	35.1
Welfare Level (Actual)									
Mean annual per capita income (in pesos)	108,300	68,013	70,954	79,682	39,315	44,602	102,392	64,577	67,616
Proportion of poor HHs (%)	2.5	12.0	11.3	12.3	42.5	39.0	4.5	15.6	14.7
Proportion of poor population (%)	3.5	16.5	15.6	13.8	47.9	43.6	5.7	20.7	19.5

Source of basic data: CBMS Census, Pasay City (2008-09) and Limay (2010-11)

Meanwhile, school enrollment among school-aged children in households with OFW is generally higher compared to those without OFW. Although the difference is less among younger members, large disparities are observed among the older school-aged children. In fact, a significantly higher proportion of members 17-21 years old are enrolled among those belonging to households with OFW (42.8%) than among households without OFW (26.7%). The relatively large difference may reflect the importance put by households on higher education. The remittances sent by the OFWs might have provided additional

resources to support the children's educational expenses[11]. The higher level of school participation among households with OFW may also be due to the incentive effects which encourage people to gain education as they believe that educated people migrate successfully. Households, through the migrant workers, may have also gained attitudes and values that put greater emphasis on education. On the other hand, children in migrant households may have been forced to stop schooling due to the financial constraints and some may have even worked to augment household income. In fact, among non-migrant households in both sites, about 35.4 percent of members 17-21 years old who are not enrolled in school are working.
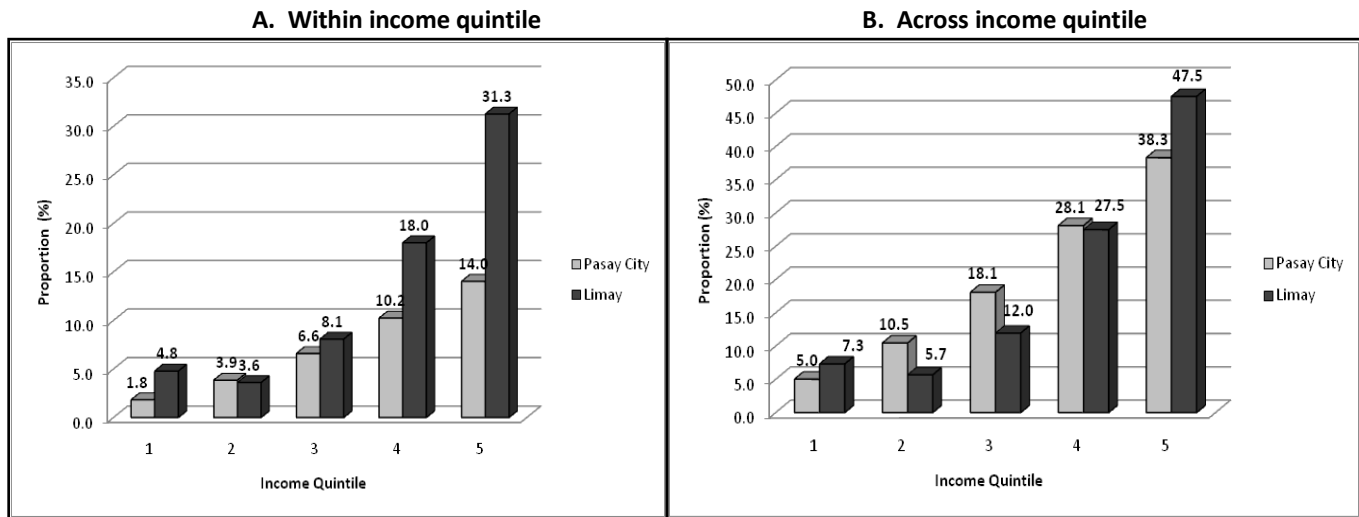
The characteristics of household heads also differ between the two groups of households. For instance, data showed that heads of households with OFWs are older by 4 years on average and are mostly married (74.0%). Moreover, heads in households with OFW are generally better educated with 43.0 percent reporting that they completed at least tertiary college education. A smaller proportion of households with OFW are headed by male. This may be due to the fact that most of the members who work abroad are husbands who are expected by the society to provide financial support to their families. This pattern may also be explained by the type of jobs demanded abroad. Moreover, since most households with OFW depend on remittances as a major source of income, only 40.6 percent of these households are headed by members who are working, which is lower compared to those without OFW (78.9%).

Data also showed that households with migrant workers generally have higher income than non-migrant households. In particular, looking at their observed poverty status, the proportion of poor among households with migrant worker is significantly less at 4.5 percent compared to 15.6 percent among non-migrant households. A similar pattern is observed in Pasay City and Limay. Disaggregating the migrant households by income quintile also revealed that the richest households have the highest proportion of households with migrant workers (Figure 3). For instance, in Pasay City, about 31.3 percent of households in the fifth income quintile have at least one OFW. These households represent 47.5 percent of all migrant households in the city. The same trend can be observed in Limay although the estimates in the same income quintile are lower compared to Pasay City. In particular, distribution of migrant households in the municipality of Limay revealed that 38.3 percent of all migrant households belong to the richest group.

Looking at the profile of OFWs in both areas, it is noted that a higher proportion (i.e., 65.7%) is accounted for by male migrant workers (Table 2). The domination of male is even more prominent in Limay compared to Pasay City as they accounted for 82.6 percent of all the OFWs in the municipality. Although a large proportion of the OFWs are the sons or daughters of the household head, the spouses remain to dominate the OFWs (i.e., 49.5%). Again, male spouses are the ones who usually work abroad to provide for their family's needs. In Limay, for instance, more than half of the OFWs are husbands of the household heads left behind. This may be due to cultural attitudes as men are the ones expected to provide for the family. In addition, the type of jobs demanded abroad may have played an important role in shaping these patterns of movement.

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[11] In Yang (2008), for instance, there was evidence that the higher amount of remittances received by households (due to favorable exchange rate movements in the Philippines) led to an increase in child schooling and educational expenditure and at the same time, reduction in child labor.

Figure 3.Proportion of households with OFW within and across income quintile
Pasay City (2008-09) and Limay (2010-11)

A. Within income quintile	B. Across income quintile

Note: Income quintile grouping is based on observed income.
Source of basic data: CBMS Census, Pasay City (2008-09) and Limay (2010-11)

Furthermore, data showed that a significant proportion of the OFWs are skilled workers (i.e., about 84.8%). For instance, *trade and related workers* alone accounted for about 18.7 percent of the OFWs in the two sites although there is a slightly different pattern when comparing Pasay City and Limay. *Trade and related workers* (44.4%) dominate the OFWs in Limay. On the other hand, *service workers and shop and market sales workers* (19.8%) accounted for the largest share of OFWs in Pasay City, followed by *plant and machine operators and assemblers* (16.0%). While the migration of highly skilled workers could negatively affect the country's stock of skills, it is difficult to conclude only based on these results. Assessing its impact and the issue of "brain drain" is beyond the scope of this study.

Meanwhile, the following belong to the top ten major country of destinations among OFWs in the two sites: 1) Saudi Arabia; 2) United States of America; 3) Japan; 4) Qatar; 5) Canada; 6) HongKong SAR of China; 7) Singapore; 8) United Arab Emirates; 9) Australia; and 10) Italy. Saudi Arabia seems to be the most popular in both sites. About 38.5 percent of the OFWs work in this country followed by United States of America and Japan with 11.6 percent and 5.8 percent, respectively. However, comparing the two sites, there are also some differences. While Canada, HongKong SAR of China, Australia, Italy and United Kingdom belong to the top destinations in Pasay City, only a small proportion of OFWs from Limay worked in these countries. In addition, United Arab Emirates, South Africa, Algeria, Kuwait and Taiwan are favorite destinations among OFWs from Limay but only a small share of OFWs from Pasay City went to these countries to work. In fact, not even one OFW from Pasay City work in Algeria and Taiwan. Most of the OFWs from Limay work in countries in the Middle East (Saudi Arabia, United Arab Emirates and Qatar). Although one would initially expect that the United States of America would account for a large share of OFWs, this is not very obvious in the case of Limay where only 2.0 percent of the OFWs are working here compared to Pasay City's figures of 13.9 percent.

Table 2. Characteristics of OFWs from Pasay City and Limay

	All Areas	Pasay City	Limay
Sex			
Female	34.3	38.5	17.4
Male	65.7	61.5	82.6
Relation to the HH head			
Wife/Spouse	49.5	46.7	60.9
Son/Daughter	29.1	30.7	22.8
Son in law/Daughter in law	4.5	4.8	3.2
Grandson/Granddaughter	0.3	0.3	0.3
Father/Mother	4.0	4.4	2.6
Other	12.3	13.1	9.1
Unspecified	0.2	-	1.1
Proportion of male spouses	40.1	36.1	56.1
Sector of employment			
Trades and Related Workers	18.7	12.2	44.4
Service Workers and Shop and Market Sales Workers	16.9	19.8	5.0
Laborers and Unskilled Workers	15.2	14.9	16.2
Plant and Machine Operators and Assemblers	14.5	16.0	8.2
Physical, Mathematical and Engineering Science Professionals	11.4	12.9	5.4
Clerks	8.2	9.5	2.8
Technician and Associate Professionals	7.7	8.1	6.2
Officials of Government and Special-Interest Organizations, Corporate Executives, Managers, Managing Proprietors and Supervisors	5.1	4.4	7.9
Special Occupations	0.3	0.2	0.5
Farmers, Forestry Workers and Fishermen	0.1	0.1	0.0
Unspecified	2.2	1.8	3.6
Country of destination			
Saudi Arabia	*38.5*	*38.3*	*39.4*
United States of America	*11.6*	*13.9*	*2.0*
Japan	*5.8*	*6.9*	*1.4*
Qatar	*4.9*	*3.5*	*10.7*
Canada	*4.0*	*4.8*	1.0
HongKong SAR of China	*4.0*	*4.8*	0.9
Singapore	*3.8*	*3.8*	*3.8*
United Arab Emirates	*2.7*	0.4	*11.9*
Australia	*1.8*	*2.0*	1.1
Italy	*1.7*	*2.1*	0.2
South Africa	1.0	0.3	*3.5*
Algeria	0.4	-	*2.2*
Kuwait	1.5	1.5	*1.6*
Taiwan	0.3	-	*1.5*
United Kingdom	0.0	*1.8*	0.4
Others countries	18.0	16.0	18.5

Note: For countries of destination, figures in bold and italic are for countries that belong to the top 10 destinations within each site.
Source: CBMS Census: Pasay City (2008) and Limay (2010-11)

Migrant households received an average of P158,082 per year (Table 3), which translates to an average of P52,996 of annual remittances per capita. One interesting observation that is revealed in the data in the two sites is that although remittances is expected to be the direct and major benefit of migration, not all households with OFWs received remittances during the reference period. In fact, only about 80.1 percent of households with OFW reported receiving cash or in-kind remittances from their migrant worker during the reference year. The proportion is even lower in Limay (57.6%) compared to Pasay City (85.9%). One of the possible reasons is that some of these OFWs may have left the country very recently[12] and still paying some of the migration expenses they incurred which they possibly pay directly to the recruitment agency. It is also possible that some migrant workers have no strong link with his/her family in the Philippines.

Table 3. Remittances from OFW: Pasay City and Limay

	Pasay City (Metro Manila)	Limay (Bataan)	All Sites
No. of households	5,143	1,338	6,481
Mean number of OFW per HH	1.1	1.1	1.1
HHs which received remittances from OFW	85.9	57.6	80.1
Mean annual remittances (in pesos)	165,727	128,700	158,082
Mean share of remittance to total HH income (%)	52.4	41.3	50.1

Source of basic data: CBMS Census, Pasay City (2008-09) and Limay (2010-11)

Based on the data collected from all households in the two sites, the total amount of remittances they received from OFWs in Pasay City reached P1.0 billion during the reference year. This accounted for about 6.0 percent of the total income of all households in the two sites. It is also noted that migrant households in both sites relied heavily on remittance income as 50.1 percent of their total income are derived from remittances (Figure 4). The share of remittances to total income is notably higher in Pasay City (52.4%) compared to Limay (41.3%). By urbanity, urban households also reported higher dependency on remittances as a source of income compared to their rural counterparts. Furthermore, examining the distribution of remittance-receiving households revealed that richer households in Limay are generally more dependent on remittances than poorer households (Figure 5). In particular, the share of remittances to total income of the richest group of household is almost half (i.e., 49.0%) which is higher compared to those in the poorest quintile (16.0%). This may suggest that poorer households are still relying mainly on other sources of income, such as wage income and entrepreneurial income. Meanwhile, in Pasay City, the pattern is slightly different. It seems that migrant households in the middle of the income distribution relied more on remittances as a share of their total income.

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[12] We do not have data to support this as the CBMS questionnaire does not include a question regarding length of time since the OFW has left the household. The proposed module on migration and remittances may include additional question on length of time since the member has left the household or length of stay abroad, among others.

Figure 4. Average share of remittances to total income among migrant households by site and urbanity
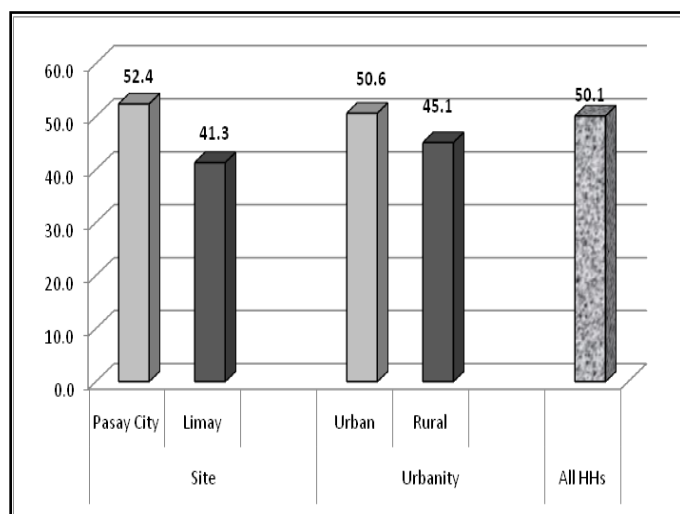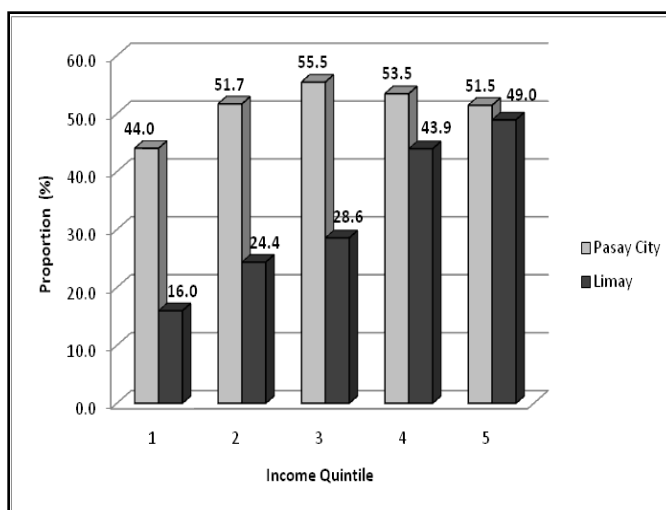

Figure 5. Average share of remittances to total income among migrant households by quintile, Pasay City and Limay

Note: Income quintile grouping is based on observed income.
Source of basic data: CBMS Census, Pasay City (2008-09) and Limay (2010-11)

4.2 Impact of Migration and Remittances on Poverty

Following the approach discussed in Section 2, the impact of migration on poverty situation of origin households were analyzed by comparing the constructed counterfactual scenarios with the observed scenario. Based on the counterfactual scenario that treats remittance as an exogenous transfer (*Counterfactual 1*), about 17.36 percent of the households will be poor (Table 4). Comparing this with the actual scenario, we see that poverty rates will increase by 2.65 percentage points in a no-migration counterfactual scenario. This, however is a naïve estimation and informs us only of what would have happened if migrant households stop receiving remittances from the current stock of migrants. Since it assumes that the migrants contribute only to household income if he works abroad, remittances seem to have a large positive impact on poverty situation of households as it underestimates the no-migration income. If the migrant member was earning prior to migration, the total no-migration income of the households may be lower after migration. It may also happen that some of the relatively rich households which would normally belong to the higher income groups erroneously fall in the lower income groups in the income distribution when we simply deduct the international remittances from total household income. This method is also limited such that it ignores the potential effects of the absence of the migrant and flow of remittances on the income and activities of the members left behind.

Table 5 shows the results of the household income regression using OLS which is the basis for estimating the income in the second counterfactual scenario (*Counterfactual 2*). The F-statistic confirms the overall goodness of fit of the regression model. All variables are significant and have the expected signs. In particular, household size and its square have the expected signs and are highly significant. In addition, dependency ratio is a significant variable and has a negative effect on income of households which implies that an increase in dependency ratio results in a decrease in household income. Having a household head who is male or is employed has positive effects on household income. Households

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headed by an older individual also tend to have higher income, but it will decrease at a certain age. In terms of education, an increase in the number of members with at least tertiary education increases household income. Furthermore, households located in Pasay City tend to have higher income than in Limay. Living in urban areas is also positively related to household income.

Table 4. Poverty indicators for observed and counterfactual scenarios (All Households)

	Observed	Counterfactual (No Migration)		
		Counterfactual 1: *Remittance as Exogenous Transfer*	Counterfactual 2: *Using OLS regression*	Counterfactual 3: *Heckman selection model*
Poverty Measures (%)				
All Sites				
Poverty rate	14.71	17.36	15.34	15.39
Poverty gap	5.29	7.06	5.35	5.36
Pasay City				
Poverty rate	11.26	13.62	11.31	11.34
Poverty gap	3.55	5.14	3.52	3.52
Limay				
Poverty rate	38.53	43.14	43.18	43.32
Poverty gap	17.29	20.27	17.96	18.04
% Change in Poverty Measures (Observed – Counterfactual)				
All Sites				
Poverty rate		-2.65	-0.63	-0.68
Poverty gap		-1.77	-0.06	-0.08
Pasay City				
Poverty rate		-2.36	-0.05	-0.08
Poverty gap		-1.60	0.03	0.02
Limay				
Poverty rate		-4.61	-4.65	-4.79
Poverty gap		-2.98	-0.67	-0.75

Source of basic data: CBMS Census, Pasay City (2008-09) and Limay (2010-2011)

After predicting the income of migrant households using the OLS regression results, we found that 15.34 percent of the population in the two sites could have been poor. This implies that migration helped reduce poverty only by 0.63 percentage points. The decrease in poverty rate is higher in Limay (4.65 percentage points) compared to Pasay City (0.05 percentage points). In addition, there seems to be no significant positive impact on the poverty gap in the two sites in general given the very small decrease in the poverty gap ratio. In fact, there is even worsening of the condition in Pasay City where the poverty gap increased, although very slightly, after migration. These results also imply that only few poor households benefitted from migration. Very few poor households were able to at least move closer up to the poverty line. This second method of generating the counterfactual has some advantage over the first method such that it considers the fact that migrant workers are likely to have contributed to their households' total income before leaving their country. It also corrects for the change in the size or composition of the household when the migrant has left to work abroad. Meanwhile, it is also important to understand its limitations, especially since it does not take into account the selection bias. In an attempt to address this issue, the third method adopting the Heckman estimation framework was employed in constructing the counterfactual scenario.

Table 5. OLS and Heckman estimation results for income of non-migrant households
(Dependent Variable: Log of household income)

	OLS			Heckman		
	Coefficient		Std. Err.	Coefficient		Std. Err.
HH size	0.10812	***	0.00497	0.10567	***	0.00575
HH size square	-0.00588	***	0.00046	-0.00640	***	0.00045
dependency ratio	-0.08966	***	0.00490	-0.07474	***	0.00621
male HH head	0.07975	***	0.00769	0.02667	***	0.01188
age of HH head	0.00696	***	0.00113	0.00763	***	0.00123
age of HH head square	-0.00002	**	0.00001	-0.00004	***	0.00001
married HH head	0.07642	***	0.00652	0.10742	***	0.00752
no. of members with at least	0.26149	***	0.00250	0.26343	***	0.00254
location dummy (Pasay City=1)	0.45659	***	0.01336	0.48684	***	0.01039
dummy for urbanity (urban=1)	0.09968	***	0.01919	0.07564	***	0.01485
lambda (λ)				0.26879	***	0.03862
constant	10.52457	***	0.02800	10.53994		0.03076
F-statistic	2956					
Probability> F	0.000					
R-squared	0.274					
rho				0392		
Wald Chi^2 (10)				27081		
Probability > Chi^2				0.000		

***significant at 1% level; ** significant at 5% level; * significant at 10%
Source of basic data: CBMS Census, Pasay City (2008-09) and Limay

In the third scenario, the counterfactual income was predicted based on the Heckman estimation framework (*Counterfactual 3*). Annex A shows the first step results. Based on the probit (first-step) results, we found that households with larger sizes generally have lower probability of not migrating although the probability also decreases at some point. Meanwhile, dependency ratio, age of household head (up to a certain limit) and having a male head have positive relationship with the probability of not migrating. Meanwhile, having a married household head decreases the probability of not migrating. Corollary, having a married household head increases the likelihood of having a migrant worker. An additional member with tertiary education also increases the likelihood of having an OFW member. At the same time, urban households and households located in Pasay City have higher propensity to not migrate compared to those in rural areas and in Limay, respectively. For this estimation the migration propensity of the village of residence[13] as the exclusion restriction which is computed as the proportion of households in the *barangay* (village) with a migrant worker (OFW) abroad. This variable can be treated as a proxy to migration networks. Estimates show that this variable is also a significant variable for predicting the probability of having a migrant household.

The variable coefficients resulting from the second step of the Heckman estimation method also have the expected signs. In fact, all the coefficients have the same signs as in OLS results. An important point to highlight is the significance of the selection variable λ as a predictor of household income. This

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[13] In Acosta, et al. (2008), one of the exclusion restrictions they used for the no-remittance selection equation is the percentage of households that receive remittances in the respective country of residence.

implies that the migrant households are not randomly selected from the pool of households. Households with higher propensity to not migrate are more likely to have higher income. This may be due to the fact that potential migrants tend to compare the income domestically and the potential income in the country of destination when making migration decisions. Furthermore, the estimated *rho* of the model, which indicates the correlation between the errors in the selection and outcome equation, is at 0.392. The Wald test also indicates that the correlation is highly significant. Given these, we can justify the use of the Heckman's technique in estimating household income.

Looking at the poverty impact, we noted that the third counterfactual scenario generally resulted in only slightly larger impact compared to the second scenario. Counterfactual 3 showed that the poverty rate in both sites is 15.39 percent which is higher than the observed scenario (14.71%). This means that migration resulted only in a 0.68 percentage point decline in poverty incidence. However, a significant decrease in poverty incidence is recorded in Limay which is about 4.79 percentage point lower compared to the observed scenario. Meanwhile, migration among households in Pasay City have helped reduced poverty incidence by only 0.08 percentage point. Again, the impact on reducing poverty gap in both sites is minimal at 0.08 percentage point. Nevertheless, a slightly larger impact is observed in Limay (0.75 percentage points) contrary to the case of Pasay City where estimates reflected a slight worsening of poverty as measured by the poverty gap.

Furthermore, aside from estimating the impact on poverty of the entire sample, we also examine the changes in poverty among migrant households which may also be useful in addressing some policy questions. Results show that the impact of migration on poverty among migrant households based on the three counterfactual scenarios is larger than the impact obtained using the entire sample (Table 6). For instance, based on the first counterfactual scenario, poverty incidence would be 32.9 percent higher if migrant households stop receiving remittances from OFW. However, the second and the third counterfactual scenarios showed smaller impact of migration with 7.9 percent and 8.4 percent, respectively. A similar pattern is observed when examining the results for each site although the impact is significantly higher in Limay than in Pasay City. For instance, based on the third counterfactual scenario, poverty among migrant households is reduced by 36.6 percent in Limay which is much larger than the reduction in poverty in Pasay City which is only 1.1 percent. These figures also reflect the proportion of poor migrant households which benefited from migration through improved welfare conditions.

Based on the results above, it can be noted that the decrease in poverty incidence is larger when remittances is treated simply as an exogenous transfer compared to when the counterfactual income was estimated using other methods, particularly OLS and Heckman estimation method. The results indicate some degree of underestimation of the income when remittances are simply treated as transfers, and hence, overestimation of the impact of migration. Therefore, estimating the counterfactual income that takes into account the fact that migrant workers may have also contributed to household income had he not migrated is more relevant. Furthermore, the significance of the selection variable confirms that a selection model is better than the OLS estimation presented earlier. Since the selection model is expected to provide consistent and asymptotically efficient estimates for all parameters while addressing the issue of selection bias, this method if preferred. Based on the results, it can be noted that taking into account the reduction in income associated with the absence of the migrant worker and addressing the selection bias in the estimation slightly changed the estimated impact of migration on poverty.

Table 6. Poverty incidence among migrant households: observed and counterfactual scenarios

Poverty Measures	Observed	Counterfactual (No-Migration)		
		Counterfactual 1: *Remittance as Exogenous Transfer*	Counterfactual 2: *Using OLS regression*	Counterfactual 3: *Using Heckman selection model*
All Sites				
Poverty rate (%)	4.5	37.4	12.4	12.9
% Change in poverty		-32.9	-7.9	-8.4
Pasay City				
Poverty rate (%)	2.5	34.8	3.1	3.5
% Change in poverty		-32.3	-0.7	-1.1
Limay				
Poverty rate (%)	12.3	47.5	47.8	49.0
% Change in poverty		-35.2	-35.5	-36.6

Note: The percent change in poverty rate is estimated by subtracting the counterfactual estimates from the observed estimates.

Source of basic data: CBMS Census, Pasay City (2008-09) and Limay (2010-2011)

5. Conclusion and Recommendations

Although the poverty-reducing impact of migration (and remittances) is recognized in many researches, this study contributes to the literature by providing empirical evidence on the topic using the unexplored CBMS data that are available in several communities in the Philippines. This study highlights that although the magnitude of impact varies depending on the method of estimating the counterfactual income, the results are consistent in showing that migration can reduce poverty, albeit minimally, for the communities in general. However, there seems to be no significant impact on reducing poverty gap. The magnitude of impact, however, differs between the two sites covered by the study. It is deemed that the degree to which migration affects the poverty situation in these communities is influenced by the proportion of households with migrant workers and the share of migrant households belonging to the lower income groups.

Results showed that the decrease in poverty incidence is larger when remittances is treated simply as an exogenous transfer compared to when the counterfactual income was estimated using other methods, particularly OLS and Heckman estimation method. In general, incorporating the counterfactual income in the estimation is more relevant because in reality, migration and the receipt of remittances affect the earning outcomes of the migrant-sending households. Although, estimation based on Heckman framework seems to provide better estimations as it addresses the issue of selection bias, the estimates are not very far from the OLS results. To expand this study, it might be useful to consider the fact that labor participation may also be non-randomly selected. In addition, while the use of Heckman estimation framework address the selection bias issues, a good panel data, for instance, may also be useful to address the biases due to omitted variables (e.g., unobserved individual characteristics), selection and endogeneity. This type of analysis can be considered for sites where panel data is available or can be generated.

Furthermore, while we acknowledge that CBMS is not primarily aimed at collecting migration and remittance data, it might be good to generate a module on migration and remittances that will collect additional details to better understand this phenomenon and its impact not only on income poverty but also on other dimensions. The module can be a rider to the standard CBMS household profile questionnaire which can be administered in selected local communities. This will provide a deeper understanding of migration issues at the local level. The following additional information, among others, may be considered for inclusion in the module: 1) migration history (including the length of stay abroad); 2) retrospective questions about pre-migration characteristics (e.g., income, work history); 3) intent to return; 4) specific migration locations within destination countries; 5) information on family networks abroad; 6) dynamics of how money is sent (e.g., how often the migrant workers make transfers, how they make them and who precisely the money is sent to). It may also be useful to determine the feasibility of surveying both areas of origin and areas of destination. Incorporating the insights from different fields (e.g., sociology) would also be useful in order to have a much broader perspective on the impact of migration on poverty.

Although this study provides further evidence on the positive impact of migration, it does not necessarily mean that the government should rely on it alone as a national strategy for poverty reduction. For instance, remittances alone is not likely to move people out of poverty. Instead, the interplay of remittances with other economic, social and cultural factors determines the impact on poverty reduction. Migration, first and foremost, should be considered only as an option for Filipinos. It should be acknowledged that while there are income benefits from migration (through remittances), there are also social costs that must be considered. The government should be able to provide more opportunities, such as better employment, among others, and affordable prices which would allow people to live decent lives in their home country.

However, since migration is expected to remain in the future, it is also important to maintain a good set of policy interventions. For instance, investing their remittances in more productive uses (e.g., for business development) is encouraged among remittance recipients and introducing return migrants to business activities are the usual interventions which are expected to result in lasting impacts on household welfare and to benefit the economy in general. Although the government has been implementing a number of programs for OFWs, one important question is whether the interventions currently in placed are effectively helping migrant households, especially in terms of improving their welfare. If not, which policies can enhance the development impact of migration? In order to answer these questions, a thorough evaluation is necessary. From the policy perspective, it is important to have a holistic view of migration and the various channels by which it affects poverty. Understanding the different channels of migration impact and identifying which channel could provide greater development impact can guide policymakers on what interventions or what type of policies should be promoted.

References

Acosta, P., Fajnzylber, P., and Lopez, J. H. (2007). The Impact of Remtttances on Poverty and Human Capital: Evidence from Latin American Household Surveys. *World Bank Policy Research Working Paper 4247* . Washington DC: The World Bank.

Adams, R. Jr. (2004). Remittances and Poverty in Guatemala. *Word Bank Policy Research Working Paper 3418* . Washington, DC: World Bank.

Adams, R. Jr. (2007). International Remittances and the Household. *Word Bank Policy Research Working Paper 4116* . Washington, DC: World Bank.

Adams, R. Jr. (1989). Worker Remittances and Inequality in Rural Egypt. *Economic Development and Cultural Change , 38* (1), 45-71.

Adams, R. Jr. and Page, J. (2005). "Do international migration and remittances reduce poverty in developing countries?," *World Development,* 33(10), 1645-1669.

Barham, B., and Boucher, S. (1998). Migration, remittances, and inequality: estimating the net effects of migration on income distribution. *Journal of Development Economics , 55* (2), 307-331.

Castles, S. (2012). Understanding the relationship between methodology and methods. In C. Vargas-Silva (Ed.), *Handbook for Research Methods in Migration.* Cheltenham, UK: Edward Elgar Publishing Limited.

Chappell, L., Angelescu-Naqvi, R., Mavrotas, G., and Sriskandarajah, D. (2010). *Development on the Move: Measuring and Optimixing Migration's Economic and Social Impacts* . Global Development Network (GDN) and Institute for Public Policy Research (ippr).

Deaton, A. (1997). *The Analysis of Household Surveys: A Microeconometric Approach to Development Policy.* Baltimore: John Hopkins University Press for the World Bank .

International Organization for Migration (2004). Glossary for Migration, IOM, Geneva, Switzerland. http://publications.iom.int/bookstore/free/IML_1_EN.pdf

Jimenez, E., and Brown, R. (2008). Assessing the Poverty Impacts of Remittances with Alternative Counterfactual Income Estimates. *School of Economics Discussion Paper No. 375* . Australia: The University of Queensland.

McKenzie, D., and Sasin, M. (2007). Migration, Remittances, Poverty, and Human Capital: Conceptual and empirical challenges. *World Bank Policy Research Working Paper 4272* . Washington DC: The World Bank.

McKenzie, D., Gibson, J., and Stillman, S. (2006). How Important is Selection? Experimental versus Non-Experimental Measures of the Income Gains from Migration. *World Bank Policy Research Working Paper 3906* . Washington DC: The World Bank.

Parreñas, R. (2005). *Children of Global Migration: Transnational Families and Gendered Woes*, Stanford University Press

Ratha, D. (2007). *Leveraging Remittances for Development*, Migration Policy Institute, World Bank, Washington, DC.

Rodriguez, E. (1998). International Migration and Income Distribution in the Philippies. *Economic Development and Cultural Change , 46* (2), 329-350.

Schiff M (2008). Migration's Income and Poverty Impact Has Been Underestimated, *IZA Discussion Paper No. 2088*, Institute for the Study of Labor, Bonn, Germany.

Stahl, C. (1982). Labour Emigration and Economic Development, *International Migration Review*, 16: 868-99.

World Bank (2011). *Migration and Remittances Factbook 2011*: Second Edition, World Bank. https://openknowledge.worldbank.org/handle/10986/2522

World Bank (2013). *Migration and Development Brief 20,* Migration and Remittances Unit, Development, Development Research Group, World Bank, April 2013.

Yang, D., and Martinez, C. (2007). Remittances and Poverty in migrants home areas: evidence from the Philippines. In C. Ozden, and M. Schiff (Eds.), *International Migration, Economics Development and Policy* (pp. 81-122). Washington DC: The World Bank

Yang, D. (2008). International Migration, Remittances and Household Investment: Evidence from Philippine Migrants' Exchange Rate Shocks, *The Economic Journal*, 118: 591-630.

Annex A.
First step (probit) results in estimating income of non-migrant households using Heckman framework
(Dependent Variable: No migration=1)

	Coefficient		Std. Err.
HH size	-0.51558	***	0.01414
HH size square	0.02900	***	0.00119
dependency ratio	0.51336	***	0.01570
male HH head	1.28624	***	0.01850
age of HH head	0.06924	***	0.00320
age of HH head square	-0.00074	***	0.00003
married HH head	-0.79413	***	0.02006
no. of members with at least tertiary education	0.06773	***	0.00653
location dummy (Pasay City=1)	0.09127	**	0.04746
dummy for urbanity (urban=1)	0.17073	***	0.04541
proportion of migrant HHs within the village	-0.00734	***	0.00222
_cons	0.62919		0.07638
Probability > Chi^2	0.000		
Pseudo R-squared	0.239		

***significant at 1% level; ** significant at 5% level; * significant at 10% level
Source of basic data: CBMS Census, Pasay City (2008-09) and Limay (2010-2011)