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| RESEARCH ARTICLE

The Effects of Labor Migration and OFW Remittances on the Level of Poverty in the Philippines

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| ABSTRACT
Global labor mobility and Overseas Filipino workers have been a topic of interest due to its rapid growth and its apparent links with development goals. Among the 197 countries in the world, the Philippines has one of the highest rates of migration. In this paper, the researchers have examined the statistical relationship between migration and poverty through a study, using panel data from the years 2006, 2008, 2012, 2015, and 2018 in the Philippines. Specifically, the paper examined the degree of impact of migration on poverty using the GINI coefficient and GRDP as determinants for poverty, whilst Remittances is the constant variable used. The study aimed to determine whether remittances reduce poverty as Overseas Filipino Workers continue to increase yearly. The end results showed that there is a relationship amongst poverty, international labor migration, and remittances via the fixed panel data done but show a low significance level among the said variables. Thus, there is a relationship within the variables but a low significance level to the poverty in the Philippines.

| KEYWORDS

Overseas Filipino Workers, Labor, Remittances, Poverty, GINI Coefficient, GRDP

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1. Introduction

1.1 background of the study

Global labor mobility has been a topic of interest lately due to its rapid growth and its apparent links with development goals. Among the 197 countries in the world, the Philippines has one of the highest rates of migration. A common belief is that one can find a Filipino in practically every corner of the world (Calzado, 2007). This migration is spurred by the Filipino's quest for greener pastures. Millions of Filipinos have gone abroad for decades now in the pursuit of permanent settlement or interim employment overseas as an answer to the country's 'weak' economy. As of late, more than 10 million Filipinos are either employed and/or residing overseas (Asis, 2017). Push and pull factors such as insufficient income levels in the home country, better job opportunities abroad that give higher compensation, the opening of borders, ease of mobility brought about by better communications and transportation infrastructure, and the expanding market for services around the world are what influenced migration (Calzado, 2007).

The Philippines is a country with a prevalent culture of labor migration spanning more than a century. From the time of the Manila-Acapulco trade when Filipinos manned Spanish fleets, the widespread migration during the American occupation, as a response to the need for labor workers in European countries after the Second World War, to the Marcos administration's adoption of labor export initiatives (Samonte, E, et al., 2007). In the last three decades, labor export has become the country's main weapon to combat the high rate of unemployment and strengthen the country's dollar reserve (Cai, 2011). Moreover, there have been shreds of evidence that labor migration has significant ramifications on the country's growth and development (Calzado, 2007; Garchitorena, 2007).

Filipinos who work temporarily abroad are either land-based or sea-based workers. OFW Land-based workers may range from service workers like cooks, domestic helpers, or factory workers to administrative and executive workers. Sea-based workers carry out a variety of occupations that can be found in any kind of sea vessel. Most OFWs come from the National Capital Region (NCR) and the Southern Tagalog Region, which is understandable since they are close to Metro Manila, the center of recruitment activities (Cosalan, 2010). OFWs contribute to the development of the Philippine economy in the form of the remittances that they send home ("Remittances and Domestic Consumption", 2020). "Remittances are funds or other assets sent to their home countries by migrants, either themselves or in the form of compensation (wages) for border, short-term and seasonal employees" (Pew Research Center, 2013). It was estimated by the Bangko Sentral ng Pilipinas (BSP) that in 2019, OFW remittances reached more than US$33.5 billion, almost 10% of the country's gross domestic product (GDP), putting the Philippines in the top four global receivers of remittances ("Remittances and Domestic Consumption", 2020).

The effects of remittances can be classified into the following: effects on the national level, community level, and household level. Remittances act as buffers in times when foreign investments are withdrawn. Also, they are a source of hard currency, improving the creditworthiness of the government. They infuse cash into neighbourhood trade and help foster monetary infrastructure and intermediation at the community level (Pew Research Center, 2013). Lastly, remittances, which are usually used on basic necessities, have been called the world's largest poverty reduction program (International Fund for Agricultural Development and the World Bank Group, 2015). Aside from providing the recipient household's basic needs, remittances can also be used in investments in local micro-enterprises or in physical capital such as land; thus, contributing to the welfare, growth, and development within and beyond the household (OECD/Scalibrini Migration Center, 2017). Remittances help Filipinos overcome poverty. According to data released by the Philippine Statistics Authority (PSA), somewhere in the range of 2015 and 2018, neediness rate - the level of percentage of families whose pay level falls underneath the poverty line - dropped from 22% to 16% ("Remittances and Domestic Consumption", 2020). Several national household surveys in Guatemala, Uganda, Ghana, Sri Lanka, and Bangladesh have also exhibited this particular effect of remittances (Adams, 2005; Higazi, 2005; Gustafsson and Makonnen, 1993; Ratha, 2005).

Since global remittances have grown considerably since 2000, the role that they play in the alleviation of poverty, economic growth, and development has also been a cause of interest and/ or controversy among development economists and international research agencies (Light & Lewandowski, 2015).

1.2 Research Question And Objectives

There have been controversies with regard to the effect of remittances on poverty. This paper will try to examine the statistical relationship between migration and poverty through a case study using panel data in the Philippines. Specifically, the paper will examine the degree of impact of migration on poverty using a different theoretical and empirical framework which will be presented in the succeeding sections. Second, the study will utilize 1 measure of poverty, namely, the poverty threshold, to capture the effects of migration and remittances on the different levels of poverty. Lastly, the study aims to consider only the role of overseas Filipino workers. The research questions of this study are:

RQ1: How does the relationship of remittances to international labor migration influence poverty in the Philippines?
RQ2: What is the impact of poverty on the volume of the remittance and level of migration?
RQ3: Do labor migration; remittances influence poverty reduction? Is the effect statistically significant?

The study aims to address three main research objectives: **(1)** To analyze and investigate how Overseas Filipino Workers remittances and international labor migration affect the level of poverty in the Philippines **(2)** To determine the degree of impact of the individual poverty effects of the volume of remittances and level of labor migration and **(3)** To test the level of significance of labor migration and remittances in poverty reduction. To address these objectives, this paper will use data from 2006, 2009, 2012, 2015, and 2018 from the Philippine Statistical Yearbook.

1.3 Formulation Of Hypotheses

Hypothesis for Research Question 1: How does the relationship of remittances to international labor migration affect the level of poverty in the Philippines?

Null Hypothesis (H0): There is no significant relationship between the level of poverty, the volume of remittances, and the International labor migration in the Philippines.

Alternative Hypothesis (H1): There is a significant relationship between the level of poverty, the volume of remittances, and the International labor migration in the Philippines.

1.4 Scope And Delimitation

This study will be limited in utilizing secondary data coming from the Philippine Statistics Authority (PSA) and from the Banko Sentral ng Pilipinas (BSP)**.** These data were taken from the Philippine Statistical Yearbooks' of the years 2006, 2009, 2012, 2015, and 2018 of the PSA. The data to be extracted from the pool of information will be limited to the following: a. volumes of remittances inbound to the Philippines b. level of international labor migration in the country (which will be substituted by the GINI Coefficient); and c. Gross Regional Domestic Product (GRDP) of the country, This study will determine the relationship between the level of poverty and the following variables: a. volumes of remittances inbound to the Philippines; b. level of international labor migration; c. Gross Regional Domestic Product (GRDP) in the Philippines. The researchers will use Multiple Linear Regression via Fixed Panel Data Analysis to treat the data.

There is a certain note to take in the researcher's study: The data gathered for OFW remittances was not by regional form; rather, it was in a sum of all OFW Remittances in the Philippines. However, the researchers decided to continue to use the data. Since the data of the BSP is in monthly form per year, the group opted to use the year 2006, 2008, 2012, 2015, and 2018 per region starting January until May of the next consecutive year to complete the 17 regions. There is no existing data on a regional OFW remittance history but only a cumulative remittance per sex and occupation. Using the BSP data gives a more specified remittance; it is not categorized under sex or occupation according to the PSA's Survey on Overseas Filipinos.

1.5 Significance Of The Study

The study contributes to the literature on the influences of labor migration and OFW remittances to poverty. Migration is an avenue for opportunities to grow financially and get outside of your comfort zone. Filipinos are known to be the biggest contributors to the migration scene as early as the 1970s for modern-era migration, and there are numerous advantages to identifying the effects of labor migration and remittances to certain areas in the metro. Remittances are increasingly being seen as the ultimate solution to poverty. This study will also raise awareness for our government to support our OFWs who are repatriated back to our motherland/support families of OFWs since they are the most neglected, thinking remittances are sufficient.

1.6 Outline Of The Study

Chapter 1 discusses the topic's background and brings out the research questions and objectives. Chapter 2 includes a review of literature, introducing some relevant theories and previous empirical studies that have been conducted on this topic. Chapter 3 covers the methodology and the data collection procedures. Chapter 4 presents the analysis of data and results. Chapter 5 consists of the discussion and recommendations for future research.

2. Review of related literature

2.1 Previous Research

2.1.1 Remittances

Remittances are defined by Shakur (2017) as the unrequited transfer of income from a family member working in another nation to their families at home, and they are a source of foreign exchange. Pratt (2018) that the Philippines is the most elevated work exporter among its neighbours in East and South-East Asia. In practice, this lift to labor productivity is largely acknowledged through the abundance of manpower being disseminated, starting with one area then onto the next where work is in demand and the compensation or wage rates are higher (Nijkamp, 2017). According to the Philippine Statistics Authority (2018), numerous OFW is estimated at around 2.3 million. The top countries were *Kuwait, Qatar, Hong Kong, Singapore,* "the leading country of OFWs", *Saudi Arabia, and the United Arab Emirates,* in 2017. Statistics show that the region has the largest proportion of OFWs, having a total of 20.7 percent were from *Calabarzon* and several more from *Central Luzon* having a total of 12.9 percent, and those from *Western Visayas* and from the *National Capital Region* with a total of 9.5 percent each. The smallest proportion of OFWs was from *Caraga*. The number of females (53.7%) working as an OFW is higher compared to males (46.3%), the largest proportion is from the age group of 30 to 34 years (21.7%), followed by those aged 25 to 29 years (20.4%). A higher percentage (24.1%) of females and (19.8%) of males were in the age group 25 to 29, resulting in a higher number of young female OFWs compared to young male OFWs. On the other hand, in the age group 35 years and over, more males than females had a percentage of (19.8%).

2.1.2 Poverty And Labor Migration

Poverty is one of the many reasons why the number of Filipino migrants is on the rise (Sarker, 2016). Instead of working in their own country, they usually work abroad to earn more for their families. Albert (2018) studied the low income of Filipinos, and the results were 7 in every 20 people—both the urban and rural populaces—are receiving low income yet not poor. A more detailed profile of persons with a low income but who are not genuinely poor resembles the helpless, poor Filipinos. These low pay non-poor people might be seen as being at a greater danger of falling into poverty (than the individuals who are non-poor and not low pay). Further, to those poor people, the very poor are bound to be poor later on than poor people who are not extremely poor (just as the non-poor).

In the paper of Messey, Durand, and Pren (2016), migrants from the United States and Mexico try to ultimately get back to their origin country and, in like manner, contribute their income back home or for some to invest. But, Hwang (2018) suggests that for Filipino workers, the challenge of achieving the material goals of migration, combined with obligation, the expense of regular everyday costs, and a sluggish beginning country economy with limited opportunities for income earning, could delay or shorten their return and force them to participate in intermittent relocations abroad.

Additionally, regular migrants have an ethical commitment to send some of their income to their children or direct relations to school, whereas spouses, grandparents, or other direct relations are focused on dealing with these children (Bergholm, 2018). They send their funds through remittances, which increment the income of the family and improve the welfare outcomes of the children (Pajaron 2016). The worldwide social protection discourse has principally centred around the conventional social security frameworks of governments in their endeavours to diminish poverty, income contrasts, and different components of poverty (OECD, 2016). Ongoing investigations have shown that there is a need to expand public social protection programs cross-country to secure migrants (Levitt, Viterna, Mueller, and Lloyd, 2017).

2.1.3 Poverty And Remittances

Azizi and Sobiech (2019) believed that remittances are incentives for economic growth and, for the most part, are through indirect channels. Most related studies have an ongoing discussion on the impacts of remittances on poverty and inequality. As indicated by the investigation of Akobeng (2016) and Yoshino (2019), remittances can bring down poverty and inequality, and most studies agree that remittances do decrease the rate of poverty. Interestingly, Nicholas (2016) affirmed that remittances are neither a remedy nor a solution for poverty, but it is advantageous in other aspects.

Based on the study of the Philippine Statistics Authority and the University of the Philippines (2019), around nine percent of all Filipino households have at least one family or household member who was out of the country, referred to here by the 2018 National Migration Survey as Overseas Filipinos. In the 2018 study of "Serial Labor Migration: Precarity and Itinerancy among Filipino and Indonesian Domestic Workers", Hwang asserts the challenges of fulfilling the material goals of migration, the expense of regular everyday costs, joined with debt and a dormant origin country economy that offers limited opportunities for income-earning of Filipino workers, could postpone or abbreviate their return and brief them to participate in recurrent migrations abroad and since migrant workers send their remittances to their families, who are highly dependent on them as their main source of income, remittances are generally consumed for basic needs. Thus, remittances keep Filipinos away from poverty.

Dridi, Gursoy, Perez-Saiz, and Bari (2019) stressed that remittances are more advantageous to a receiving country if the economy of that country is varied and if it has an integrated production structure. Remittances may help boost domestic consumption and basic commodities production, which is needed to keep up with rising consumption. Furthermore, even though remittances committed to sectors closely related to the rest of the economy do not immediately profit from the inflow of remittances, these sectors may nonetheless contribute to output growth. This increase in output will create job opportunities and demand for investment goods. Job opportunities mean fewer people are unemployed, reducing people living in poverty.

Masron and Subramanian (2018) contend that their study showed that the level of poverty tends to be lower in countries with a higher flow of remittances. The study concluded that the resulting outcome might be due to the increase in household income of the poor by remittances. However, Hassan (2016) initially stated that the growth impact of remittances is considered to be negative but later becomes positive. As presented in the study of Marhaennia in Western Colonization and Its Impact on Female Migrant Workers: The Study of Labor-Management of Domestic Migrant Workers from Indonesia and the Philippines (2021). The Philippines is positioned the ninth, and Indonesia has positioned the eleventh in terms of labor migration. There are around 10 million Overseas Filipino Workers (OFWs) worldwide, and more than 1,000,000 Filipinos work abroad yearly. The remittances sent by OFWs represented about US$31.15 million in 2016. More than 9,000,000 Indonesian Migrant Workers (PMIs) abroad address very nearly seven percent of Indonesia's absolute workforce. Therefore, PMIs contributed about US$8.9 billion in settlements in 2016. Today, Indonesia and the Philippines are two arising economies. Undoubtedly, labor migration is one of the motors to monetary development; besides, settlements improve the existence of the family abandoned.

According to Yoshino, Taghizadeh-Hesary, and Otsuka (2017), International remittances inflows are critical in Asia's endeavours to inspire the lives and government assistance of poor individuals. According to a cross-country study involving 10 migrant-sending nations in Asia, a 1% rise in the contribution to GDP of remittances inflow from overseas is associated with a 22.6 percent decrease in the poverty gap ratio and a 16 percent decrease in the poverty severity ratio. Furthermore, all poverty measurements appear to be diminished by per capita GDP and exchange transparency, and the inflation rate could be a component that fills them. Taking a gander at the examination generally, some arrangement suggestions can be offered as far as the connection between worldwide remittances and poverty measures. Therefore, this study may conclude that remittances have a significant impact on both the poverty gap and poverty severity.

In the 2018 examination of the Impact of International Remittances on Poverty Alleviation in Bangladesh, Pradhan and Mahesh found that remittances diminish poverty essentially in the non-industrial nations, while Islam and Rayhan (2016) tracked down similar discoveries by investigating 15 developing nations. Similarly, Azizi (2020) records a positive effect of remittances on monetary improvement in developing nations. This is especially significant as monetary advancement cultivates long-run growth and lessens poverty.

Findings of Pekovic (2017), the impacts of remittances on poverty easing on the developing economies, results affirm the speculation about the bad measurably critical connection among remittances and poverty measures. With regards to the endogenous regressor issue, the study shows that a 10 percent increase or expansion in remittance per capita will prompt decay, on average a 4.7 percent in poverty headcount, a 5.2 percent in poverty profundity, and 5.8 percent in poverty severity. In like manner, Vacaflores (2018) affirmed the adverse consequence of remittances on poverty.

Akhter and Islam (2019), in their examination "The Impact of Migration and Migrant Remittances on Household Poverty in Bangladesh", the measurable tests and the power test show both public and worldwide settlements diminish the occurrence, profundity, and severity of poverty. This study found that receiving global remittances reduces the risk of a family being impoverished by around 14 percent while receiving national remittances reduces the risk of a family being impoverished by around 8 percent. Results delineate that on normal as the instructive level of the household head or reserve funds expands, the likelihood of being poor altogether diminishes for the worldwide and domestic remittance beneficiary households.

Discoveries of Opiano and Ang (2020) In a new study of low pay remittance households, seven out of ten connect with the abroad relative when they run out of cash. This, without a doubt, gives unnecessary pressure to the transient. This is on the grounds that movement abroad, and the traveller expecting to send cash home, lead to emotional stress, hence influencing relationships (UniTeller, 2019). Haji and Sera (2016) additionally contended that an international remittance can really tell a family's poverty status. As per the investigation, its essence in a family implies that the family is less inclined to be experiencing neediness on account of the extra pay.

In the 2016 study “The impact of foreign remittances on poverty alleviation: Global Evidence”, Haseeb and Samsudin (2016) unfurls that both foreign remittance and help are the remarkable variables of monetary development, wherein the previous assumes a positive part, while the last assumes a negative part during the time spent neediness easing during the period under the study. The experimental proof approves those foreign remittances have a persuading and genuinely critical impact on poverty alleviation. The finding means that there are extensive possible advantages related to foreign remittances for the less fortunate.

2.1.4 Synthesis

When determining the level of poverty, numerous economic aspects are taken into account. Through remittances caused by labor migration, OFW's are able to send money to their families in the Philippines allowing the decrease of the rate of poverty. Moreover, the main focus of the paper would be to analyze and find the effects of labor migration and remittances from OFWs' on the level of poverty in the Philippines.

2.2 Theoretical Framework

The study’s theoretical framework was based on one of the works of Stark (1991) on the role of remittances to social welfare. In the work of Stark (1991), he hypothesized the basic model of the Labor Migration under Asymmetric Information. The model defined the role of migration and remittances in social welfare. Consider a situation where there are only two countries: a poor rural area with a group having low income, *r*, and the rich urban area or the higher income group, *u*. Let *f* be the total population of an income group. Therefore, f^{r} is the population share of the lower-income group and f^{u} is the share of the higher income group in the total population. Thus, $f^{r} + f^{u} = 1$. Letting *I* be the income, it can be said that the constant group incomes are I^{r} and I^{u}, respectively, and the total income would be $I = I^{r} + I^{u}$.

The social welfare, *S*, function as proposed by Yitzhaki (1982), as cited in Stark (1991), is in the form: $S = I(1 - G)$ where *G* is the income gap or inequality variable. This proposed function by Yitzhaki (1982) has the following properties: first, the social welfare is augmented as the income of any member of the society increases. This stated property conforms with social welfare and to the Pareto optimality criterion. This criterion states that to have a grip of welfare in this society, one should think about a capacity where the complete welfare increments at whatever point the wages of two groups of people develop and at the point where the income increase of one individual does not diminish the income of the other (Kakwani 2005). Secondly, the proposed function satisfies the "Dalton principle of transfer", stating the concept that the rural poor who earned one dollar is much more valuable than the rich urban who lost one dollar (Kakwani 2005). Thus, the transfer of wealth from the higher income group to the lower-income group will lead to an increase in social welfare.

With these in mind, it can be stated that the post-migration distribution A will be more preferable than the pre-migration distribution B *if*:

$$I^A \geq I^B \text{ and } S^A = I^A (1 - G^A) > S^B = I^B (1 - G^B)$$

When the total income of any homogenous group after the migration is higher than the income prior to migration, $I^A > I^B$, it can be hypothesized that the post-migration social welfare is also higher than the pre-migration social welfare, $S^A > S^B$. To ascertain this claim, substitute the given form of income inequality, *G* given by:

$$G = f^r - \frac{f^r I^r}{f^r I^r + f^u I^u}$$

Substituting the income inequality, *G*, the following is obtained:

$$S = f^r I^r + f^u I^u - f^r + f^r I^r$$

Expressing the f^r in terms of f^u, the following social welfare equation will be obtained:

$$S = (f^u)^2 (I^u - I^r) + I^r$$

Determining the derivative of this in terms of I^u will result to:

$$\frac{dS}{dI^u} = (2f^u)(I^u - I^r)df^u + [1 - (f^u)^2]dI^r$$

Since the population share of the higher-income group is less than 1, $f^u < 1$ and the income of the urban rich is higher than that of the rural poor, $I^u > I^r$, it can be said that with any $df^u > 0$ resulting to $dI^r > 0$, the social welfare, *S*, increases.

This only demonstrates that the urban society's higher-income sector facilitates migration to metropolitan areas. It can also be claimed that for every increase in the population share of the urban affluent society due to migration, the rural poor society's income will rise due to remittances from the migrants. As a result, the transfer of income from the urban elite to the rural poor via remittances, supported by migrants from rural societies, will improve social welfare. Remittances are sums of money sent from wealthy urban areas to impoverished rural areas. According to this idea, rural societies receive more remittances because of migration. In addition, social welfare improves.

2.3 Conceptual Framework

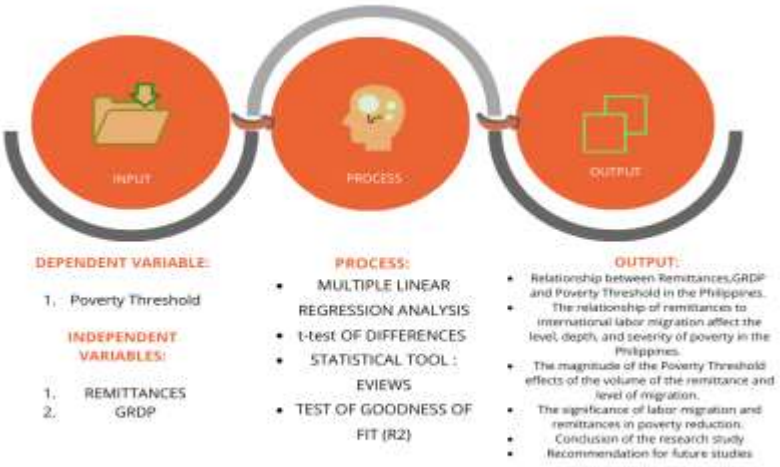

figure 1. conceptual framework of the study

Based on the criteria identified in the literature analysis, it is proposed that the dependent variable in this study be the level of poverty in the Philippines. Other variables such as remittances, GRDP, income inequality, and the level of labor migration were used as independent variables. This suggests that this study will test the causality relationship between the expressed independent and dependent variables. In doing so, this study will utilize strategies such as multiple regression analysis, T-test, and test of goodness of fit or R-squared to decide if there is a statistically significant relationship between the said variables.

3. Research methodology

This chapter will discuss the methods used in the development of the study. Such discussion will include the rationale of selecting the research topic, the scientific perspectives of the study, and the research strategies used. The data collection and analysis will also be discussed in this chapter.

3.1 Choice Of The Subject

With the goal of alleviating their families from poverty, Filipinos are known all over the globe for providing services to almost all countries in the world. The active and systematic migration of Overseas Filipino Workers (OFW) started in the 1960s. Specifically, the migration of workers started when the United States Government and private agencies recruited Filipinos to work as construction workers and service/ labor providers abroad. Some of the early OFW's were also employed in the Pacific and in Southeast Asian countries like Japan, Guam, Thailand, and Vietnam. A few decades later, the need for domestic and medical service providers abroad opened a wider opportunity for more Filipinos to work in different countries around the world. Thus, the inbound remittances to the Philippines increase as more and more workers migrate. This led to the wide-scale legislation of labor laws regulating the migration of Filipino workers.

Through the years, the Philippine economy and societies have benefited from the remittances received from OFW's. In 2005, the Philippines was able to record USD 11B remittances which are about 10% of the country's GDP. However, in the study of Ang (n.d.), he mentioned that there is the possibility that remittances have multiplier effects in some sectors like education, health, housing, entrepreneurship, etc. He also mentioned that most OFWs' come from regions that have low poverty rates. Ang (n.d) cited Taylor (2006), saying that most of those who are migrating to work overseas are not actually coming from poor societies. This phenomenon worsens the condition of economic inequality among the regions of the country. This supports the hypothesis of Pernia (2006), stating that the poor are less capable of migrating and working overseas due to economic causes.

3.2 Scientific Perspective

This part of chapter 3 focuses on the scientific perspective considerations, analysis of the scientific perspectives, and rationale of the decisions taken. This part also includes the theory and research, ontological considerations, and epistemological considerations, which according to Burrell & Morgan (1979), are philosophical assumptions.

3.2.1 Theory And Research

This study focuses on proving the applicability and reliability of a theory and an entirely different set of data of the same constructs. Following the deductive approach, the researchers will begin with a theory; the researchers will then develop hypotheses based on the theory that will lead them then to prove these hypotheses by gathering data and analyzing them to prove or reject the formulated hypotheses (Bryman & Bell, 2007).

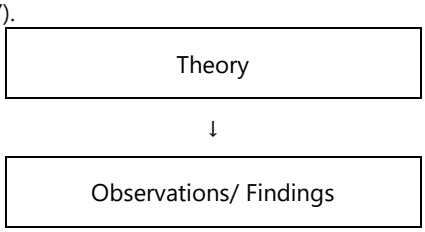

Figure 1. A deductive approach to the relationship between theory and research

Bryman and Bell (2007) further discussed that after the data were gathered and analyzed, the hypotheses then will either be rejected or accepted. The rejection or acceptance of the hypotheses will lead to the revision or amendment of the theory. The figure below shows the process of deduction as suggested by Bryman and Bell (2007).

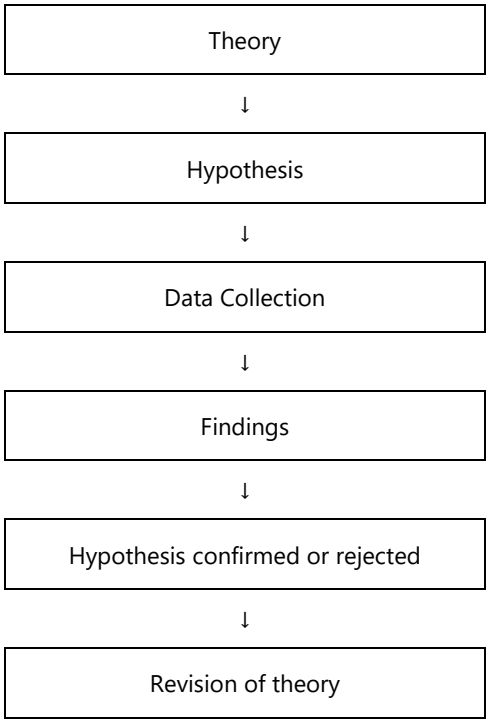

Figure 2. The process of deduction

This study will utilize deductive reasoning in developing its major findings. This study earlier discussed the hypothesis of Stark (1991), revealing the effect of remittances on the social welfare of societies. The basic model of the Labor Migration under Asymmetric Information shows how the transfer of income, from the urban rich societies to poor rural areas, in the form of remittances is directly proportional to income and to social welfare. With the theory, the researchers hypothesized that the remittances, level of labor migration, and other economic factors such as the GDP affects the level of poverty in a certain economic society.

3.2.2 Ontological Considerations

Ontology is defined as the study of reality or things that comprise reality (Slevich, 2011). According to Guba and Lincoln (1994), the ontological consideration is the structure and nature of the real world. Thus, it is how things really are and how they really work.

In this study, objectivism is the ontological consideration. The researchers of this study set the following objectives: (1) to investigate how OFW remittances and international labor migration affect the level of poverty in the Philippines (2) To quantify the magnitude of the individual poverty effects of the volume of remittances and level of labor migration and (3) To test the significance of labor migration and remittances in poverty reduction. This paper will use data from Philippine Statistical Yearbooks from 2006, 2009, 2012, 2015, and 2018 respectively, as its data set. After the collection of the said set of data, the researchers will estimate the coefficients of the volume of remittances and level of labor migration in relation to the level of poverty in order to successfully test the theory of Stark (1991).

3.2.3 Epistemological Consideration

Bryman and Bell (2013) defined epistemological considerations to the acceptable knowledge in a certain discipline. It primarily concerns the questions on how to study social reality. Positivism is one of the two epistemological positions. Positivism is a term used frequently in quantitative research design to describe the use of the scientific process to evaluate a hypothesis. Furthermore, with quantitative research, the researchers' participation in the process is too low and constrained, resulting in more objective outcomes.

To achieve realistic and reliable results, the researchers will employ the positivism position in order to properly address the research problems of the study, which are: a. how does the relationship of remittances to international labor migration affect poverty in the Philippines; and b. Do labor migration and remittances affect poverty reduction? The researcher decided to employ the positivism

paradigm. In addition to this, the data to be collected are a set of quantitative information that measures the volume of inbound remittances to the Philippines, the level of labor migration and GRDP in the Philippines, and the level of poverty in the said locale.

3.3 Research Strategy

This study will be utilizing the quantitative research strategy aligned with the study's ontological and epistemological considerations. The two main strategies are the qualitative and quantitative approaches. Qualitative research strategies gather and present data in the form of words, descriptions, pictures, and meanings. It is also inductive in nature, where the product is a generalization or a theory. Primarily, qualitative research is concerned with forming hypotheses or theories that will give meaning to phenomena. On the other hand, quantitative research strategy is focused on collecting measurements or quantities and analyzing them through statistical methods. Quantitative research strategy is deductive by nature. This strategy is commonly used in testing hypotheses and aims to determine the applicability of theories in controlled environments (Avilla, 2017).

Since this study will be collecting data like the volume of remittances, GRDP, income inequalities, and level of labor migration, all of which are expressed in quantities, the research strategy to be used is a quantitative approach.

3.4 Research Design

The researchers, for this study, will be utilizing the cross-sectional research design. Bryman and Bell (2007) stated the different types of research designs, and these are longitudinal (panel data), case study, experimental, cross-sectional, and comparative. Of these said designs, the researchers find the longitudinal design to be the most filling design for this study. The design is focused on collecting data from multiple cases at a given period. These data that describe multiple variables will then be analyzed, patterns of association and relationships will be determined.

The researchers, as stated above, will be using the longitudinal research design. This is because the researchers will be gathering data from the Philippine Statistical Yearbooks from 2006, 2009, 2012, 2015, and 2018 respectively. While the data on Remittances are archived from Banko Sentral ng Pilipinas reports on the volume of personal and total remittances of all the Overseas Filipino Workers.

3.5 Data Selection

The researchers will primarily be collecting data from reports of the Philippine Statistics Authority (PSA) and of the Banko Sentral ng Pilipinas (BSP). The data that will be collected will include the Philippine Statistical Yearbooks from 2006, 2009, 2012, 2015, and 2018. These data are essential in achieving the objectives of this study and in answering the major problems raised in this study.

As seen in the previous discussion, this study will analyze the data that concerns the total volume of remittances inbound to the Philippines. These data will represent the independent variable remittances. Another set of data will be the label of labor migration, an independent variable in this study, in the aforementioned region. The independent variable GRDP will also be included in the analysis. The GRDP will be used as an independent variable in this study since it is being hypothesized that GRDP also affects the rate of poverty in the Philippines. Lastly, the dependent variable in this study is the poverty level in the country.

3.5.1 Data Collection

The researchers will source their primary data from 2006, 2009, 2012, 2015, and 2018 reports of PSA and BSP. Other data needed in the development of this study are previously published research papers, journals, remittances from the central bank, and reports from the Philippine Statistics Authority. The data that will be generated from the said national agencies are the most reliable data available since PSA and BSP are both involved in data collection through complete enumeration method and analyzes data that will be used in economic decision making within the national government of the Philippines. After the successful collection of the needed data, the researchers will then proceed to the analysis of this gathered information with the use of MS Excel and Eviews.

3.5.2 The Choice Of Secondary Sources

The researcher will use secondary analysis in developing this study. Bryman and Bell (2007) defined secondary analysis as the process of evaluating and analyzing data that were gathered without the direct participation of the researchers involved in the development of this study. In the context of this study, the data to be used by the researchers were gathered, organized, and summarized by PSA and BSP researchers. The legitimacy and trustworthiness of the data acquired by the government institutions is a key reason why it will be utilized in this study. However, even if these data are highly reliable and easy to acquire, there are also possible problems that the researchers may encounter, such as issues in the completeness of the data they provide; also, the researchers may not be able to know how these data were exactly taken, organized, and summarized. Amidst these possibilities of having issues, the researchers will still be using the secondary data in the previous section since these data are the only reliable data that will fully quantify the volume of remittances, level of labor migration, level of poverty, and income inequality that are essential in the development of this study.

3.6 Data Analysis Procedure

This section will discuss the statistical analysis of the data that will be gathered. This study will be using the deductive approach, testing the applicability of a theory by analyzing quantitative data. This section will show the analysis procedure, specifically the model specification, statistical tool, and the statistical treatment that will be utilized in this study.

3.6.1 Econometric Model

This study utilizes the empirical approach patterned on the frameworks of Ravallion (1997) and Adams and Page (2005) in analyzing the effects of labor migration and volume of remittances on the level of poverty. The increase in the mean income, *i*, and income inequality, *g*, expresses the rate of poverty reduction, *p*, in an economic community. This function is represented by: $p = (1 - i)g$; where *p* is the rate of poverty alleviation and (1 – *i*)*g* is the "distribution-corrected" rate growth.

Adam and Page (2005) utilized the basic growth-poverty model developed by Racallion (1997). Adam and Page (2005) represented their empirical model in the form:

$$ln\ ln\ P_{ab} = f(ln\ ln\ \mu_{ab}, ln\ ln\ g_{ab}, x_{ab})$$

where (a = 1, …, N; b = 1, …, B_a). In the function, P_{ab} represents the poverty rate in region a at time b. μ_{ab} represents the mean per capita income of the region, g_{ab} is the Gini coefficient, a measure of the income distribution, and x_{ab} represents the level of labor migration and volume of remittances, and lastly, μ_{ab} represents the error term that includes errors in the poverty measures.

Focusing on the previous models presented, the researchers hypothesize that the poverty function be represented by:

$$P_{ab} = \alpha_{ab} + \alpha_1(GINI_{ab}) + \alpha_2\ ln\ ln\ (GRDP_{ab})\ + \alpha_3(X_{ab}) + \alpha_{ab}$$

Where:

P_{ab}	=	level of poverty in region a at year b
$GRDP_{ab}$	=	per capita income
$GINI_{ab}$	=	measure of income inequality
X_{ab}	=	volume of remittance or level of labor migration
α_{ab}	=	fixed effects across locales
α_{ab}	=	an error term

Poverty, P_{ab}, is dependent on the per capita income, income inequality, and either the inbound remittances or the level of international labor migration. Based on the literature provided, α_3, the coefficient for the inbound remittances or the level of international labor migration must be negative after influencing the *GRDP*. Likewise, α_2 is also expected to be negative in value; this can be explained through the fact that negative relationship between economic growth and poverty reduction.

The equation above will be estimated through Generalized Least Squares (GLS) - Fixed Effects Method Panel Regression Analysis using the software Eviews as stated previously in this study. This study will focus on estimating the coefficient of X_{ab} and of α_3. Lastly, the researchers will use a t-test on the coefficients of the said variables to determine their significance on the level of poverty.

3.6.2 Statistical Tool

This study will be collecting panel data subjects for analysis. The researchers, in achieving such a goal, will be utilizing Eviews and MS EXCEL. MS EXCEL is used for data gathering and is thus transferred to Eviews for proper statistical treatment. Eviews includes GLS Fixed Panel Data Analysis that will allow the researchers to estimate the coefficients needed to determine the effects of remittances and labor migration to the level of poverty. It also includes other inferential statistical treatments like the Residual Cross-section Dependence Test to test for dependencies amongst cross-sections.

3.7 Statistical Treatment

This study will be using the following statistical treatment in estimating the relationship among the earlier mentioned variables. Panel data will be the primary statistical method to be used as this is a cross-sectional series in varying regions. Regional studies often use

3.7.1 Multiple Linear Regression Analysis

The researchers, in order to estimate the relationship between the dependent variable: poverty, and the independent variables: volume of remittances, level of labor migration, and GRDP in the Philippines, will be using the Multiple Linear Regression Analysis.

The test will allow the researchers to determine how robust the relationship is between the independent variables and the dependent variable; also, it will allow the researchers to predict the value of the dependent variable given a certain value of the independent variables. This study also includes the Durbin-Watson Test to rule out if the model has autocorrelation.

3.7.2 Test Of Goodness Of Fit

The researchers, in order to determine the probability of predicting the dependent variable – poverty given the independent variables, will be using a test of Goodness-of-fit (R^2). The R-squared is a goodness-of-fit test for linear regression models. This specifies the percentage of the inconsistency in the dependent variable that the independent variables describe jointly. R-squared dictates how strong the relationship is between the hypothesized model and the dependent variable on a scale from 0 – 100%.

3.7.3 T-Test

The researchers will be using a t-test in order to test the hypothesis on the regression coefficients contained in the Multiple Linear Regression Analysis. This test will provide a statistic that will test the two-sided hypothesis stating that the true slope of the regression line is equal to some constant value.

3.7.2 Residual Cross-Section Dependence Test

The Residual Cross-section Dependence Test is used to check not only for residual, but It is also commonly assumed that disturbances in panel data models are cross-sectionally independent, especially when the cross-section dimension (N) is large. There is, however, considerable evidence that cross-sectional dependence is often present in panel regression settings. Ignoring cross-sectional dependence in estimation can have serious consequences, with unaccounted for residual dependence resulting in estimator efficiency loss and invalid test statistics. The researchers will use this to check for dependencies among cross-sections in the regression model to be used.

4. Results

This study aimed to determine a. the relationship of remittances to international labor migration that influence the poverty threshold in the Philippines; b. the degree of impact of the poverty threshold on the volume of the remittance and level of migration; and the influence of labor migration and remittances to poverty reduction.

4.1. Data Description, Sources, And Limitations

Table 1

The average Poverty Threshold, GRDP, Remittances, and GINI Coefficient per Region from 2006 to 2018

Region	Poverty Threshold	GRDP	Remittances in USD	GINI Coefficient
NCR	21,828	1,238,053	1,609	0.3905
CAR	19,745	149,165	3,204	0.4479
I	19,978	139,812	4,789	0.4052
II	19,624	103,957	6,507	0.4243
III	20,500	317,611	8,246	0.3911
IVA	20,596	498,762	10,053	0.4087
IVB	17,847	114,580	11,865	0.4298

V	19,070	105,479	13,602	0.4165
VI	18,620	199,623	15,371	0.4398
VII	19,556	250,012	17,193	0.4626
VIII	18,852	117,589	18,945	0.4755
IX	19,053	111,532	20,946	0.4630
X	19,397	196,511	4,063	0.4640
XI	19,915	197,132	3,233	0.4259
XII	18,965	136,921	5,089	0.4393
XIII	20,085	86,875	6,949	0.4460
BARMM	20,042	51,062	8,838	0.2921

Table 1 shows the summary of raw data taken from the Banko Sentral ng Pilipinas (BSP) and from the Philippine Statistics Authority (PSA). The GDRPs, Poverty Thresholds, and GINI Coefficients were all taken from the PSA's reports for the years 2006, 2009, 2012, 2015, and 2018. Meanwhile, the data for Remittances were taken from documents released by the BSP. The Remittances were stated in terms of US dollars (USD) as those are staples for currency exchange. In this study, the Poverty Threshold is the dependent variable.

This study used panel data analysis in analyzing the impact of international labor migration and remittances on Philippine poverty. The panel of data includes information on the Poverty Threshold, GRDP, Remittances, and GINI Coefficient per Region of the Philippines for the years 2006, 2009, 2012, 2015, and 2018.

4.2. Initial Regression And Results

In this study, the Fixed Panel Data via Panel Least Squares was utilized by the researchers in determining and describing the influences of the GRDP, Remittances, and GINI Coefficient to the Poverty threshold per Region of the Philippines for the years 2006, 2009, 2012, 2015, and 2018. In analyzing the data, the researchers used Microsoft Excel and EView applications. Results are presented below.

Table 2

The results of the Regression Test

Variables	**Coefficient**	**Standard Error**	**t – Statistic**	***p*-value**
Constant	23,350.29	2,159.278	10.81394	0.0000

GINI Coefficient	- 8,618.095	4,988.585	- 1.727563	0.0891
GRDP	- 0.000268	0.000280	- 0.957943	0.3419
Remittances	0.000238	0.032204	0.007384	0.9941

Root MSE	567.6450	R^2	0.983504
Mean Dep. Var.	1,9627.88	Adjusted R^2	0.977285
Stan. Dev. Dep. Var.	4,445.906	S.E. of Regression	670.0718
Akaike Info Criterion	16.08558	Sum Squared Residual	27,388,771
Schwarz Criterion	16.77527	Log Likehood	- 659.6370
Hannan – Quinn Criterion	16.36299	F – Statistic	158.1268
Durbin – Watson Stat	1.830659	*p*-value	0.000000

It can be observed that the F – Statistic computed is 158.1268 at 0.05 alpha level and a *p*-value of 0.000000; comparing the data presented, it can be said that the null hypothesis is rejected. These results indicate that there is a significant relationship between the poverty threshold to the GRDP, Remittances, and the GINI Coefficient observed. In general, the aforementioned independent variables collectively affect the dependent variable – poverty threshold. This result confirms the results of the study of Capistrano and Sta. Maria (n.d.) indicates that the volume of remittances significantly affects the poverty level.

The coefficient of determination R^2 has a value of 0.983504, indicating that 98% of the total variation in the Poverty threshold was explained by the regression. The standard error of the regression is 670.0718, which represents the unexplained variation.

With these data presented and results of the statistical test conducted, the researchers arrived at the model below, describing the relationship of the GRDP, Remittances, and GINI Coefficient to the dependent variable Poverty threshold:

where

P_{ab} = level of poverty in region a at year b

$GRDP_{ab}$ = per capita income

$GINI_{ab}$ = measure of income inequality

X_{ab} = volume of remittance or level of labor migration.

Going through the details, it can be observed that the relationship of the GINI Coefficient to the poverty threshold is not significant with -1.727563 t – statistic and 0.0891 *p*-values. This means that the GINI Coefficient does not affect the poverty threshold, considering that the GRDP and Remittances are constant. The same result was found for the Gross Regional Domestic Product (GRDP); this study shows that the GRDP does not also affect the Poverty threshold with GINI coefficient and Remittances held constant. This claim was proved by the computed t – statistic of -0.957943 with a *p*-value of 0.3419, which is higher than the alpha level 0.05. Lastly, with the computed t – statistic of 0.007384 and a *p*-value of 0.9941, the volume of Remittances do not contribute to the prediction of the Poverty threshold. In summary, the individual relationships determined between the Poverty threshold to the GRDP, Remittances, and GINI Coefficient are not significant. This is contrary to the initial regression analysis result, which claims the significance in the communal relationship between the GRDP, Remittances, and GINI Coefficient to the Poverty threshold.

4.3. Durbin – Watson Test

Another consideration that the researchers looked into was the autocorrelation in the panel of data. This error is a mathematical representation of the level of relation or similarity between time series. The researchers used the Durbin – Watson statistic to determine the probability of having autocorrelation in the data presented. The Durbin – Watson statistic of 1.830659, which is close to zero (0), indicates that the null hypothesis that there is no positive autocorrelation among the residuals must not be rejected. Thus, this proves that there is no positive autocorrelation observed from the panel of data provided.

4.4. Residual Cross-Section Dependence Test

Series of Residual Cross-Sectional Dependence Tests were conducted in order to test the dependence of the data that were presented and were subjected to panel data analysis. For this study, the researchers utilized the Breusch – Pagan LM, Pesaran Scaled LM, Bias – Correlated Scaled LM, and the Perasan CD.

Table 3

The results of the Residual Cross-Section Dependence Tests

Test	Statistic	*df*	*p*-value
Breusch – Pagan LM	167.3593	136	0.0350
Pesaran Scaled LM	1.901437		0.0572
Bias – Correlated Scaled LM	-0.223563		0.8231
Perasan CD	-0.940044		0.3472

The tests included 85 observations distributed within five (5) periods representing years and 17 cross-sections that represent the 17 regions of the Philippines. The null hypothesis of the test is: There is no cross-section dependence in residuals.

With the conventional alpha level, the Breusch – Pagan LM statistic of 167.3593 with a *p*-value of 0.0350 indicates that the null hypothesis is not rejected; thus, there is no relationship observed. With the Pesaran Scaled LM statistic at 1.901437 and with a *p*-value of 0.0572, the same result will be inferred: there is no correlation present. The Bias – Correlated Scaled LM statistic computed, -0.223563, and the *p*-value of 0.8231 indicates that there was no determined correlation as well. Lastly, the Perasan CD statistic -0.940044 and the *p*-value 0.3472 will lead to the non-rejection of the null hypothesis; thus there was no correlation observed.

These results of the series of post hoc tests conducted affirm the assumptions that disturbances in panel data models are cross-sectionally independent.

4.5 Final Model

Having no violations on the assumptions, the researchers arrived at the final form of the model, describing the relationship of the GRDP, Remittances, and GINI Coefficient to the dependent variable Poverty threshold, as stated below:

Where:

P_{ab}	=	level of poverty in the region a at year b
$GRDP_{ab}$	=	per capita income
$GINI_{ab}$	=	measure of income inequality
X_{ab}	=	volume of remittance or level of labor migration.

5. Conclusions and Recommendations

This study intended to analyze the impact of international labor migration and remittances to Philippine poverty using panel data analysis. Based on the related literature, few studies have been carried out to explore this topic, and most of these previous studies are macro-level in nature. These studies found evidence that migration and remittances reduce the level, depth, and severity of poverty. With these, the study aims to substantiate this finding by extending the analysis to a macro level, that is, by utilizing panel data on the regions of the Philippines for the years 2006, 2009, 2012, 2015, and 2018 reports of PSA and BSP and performing a fixed panel data analysis.

5.1. Conclusions and Insights

The study has arrived at 3 major findings. These findings are as follows:

First, the level of labor migration – expressed in terms of remittances, the Gross Regional Domestic Products (GRDP), and the income inequality – expressed in the GINI coefficient jointly influence the level of poverty with 98% accuracy in the regression. This indicates that the GRDP, the GINI coefficient, and the remittances per Region in the Philippines greatly affect the Poverty threshold per region in the country. This result supports the findings of Adams and Page (2005), indicating that both the international labor migration and the remittances significantly decrease the level and degree of poverty. On average, they found a 10% increase in the proportion of the international labor migrant from the set of a population will lead to a 2.1% decrease in the fraction of the people living on 1 USD and below per person per day.

Second, the income inequality – expressed in the GINI coefficient and the Gross Regional Domestic Products (GRDP) exerts a negative influence on the Poverty threshold. Meanwhile, the volume of remittances or level of labor migration applies a positive impact on the same dependent variable. Lastly, even if the GRDP, the GINI coefficient, and the remittances collectively influence the poverty threshold, the relationships of each of the individual independent variables to the dependent variable – poverty threshold, are not significant. Thus, the GRDP alone may not influence the poverty threshold. The same results were found for the GINI coefficient and the remittances, respectively. These independent variables may have a relationship with the poverty threshold that may be modelled using other polynomial regressions.

5.2. Outlook

With this paper's findings, policymakers can reduce the poverty threshold in the country by working on policies that may lead to easier processing of international labor migration leading to higher remittances. Policymakers may also work on providing economic policies that will ensure higher Gross Regional Domestic Product (GRDP) and Gross Domestic Product (GDP) and lower-income inequality.

5.3. Policies and Recommendations

Having cognizance of the collective effects of the income inequality, GRDP, and remittances to the poverty threshold, implementing, therefore, policies that increase international labor migration, increase GRDP and GDP, and decrease income inequality may lead to the alleviation of poverty in the country. Having these concepts in mind, the researchers are recommending the following set of policy recommendations that the government agencies and policymakers may consider.

1. Amplify Global Competitiveness

The policymakers, to increase domestic and international labor opportunities, must consider the upskilling of the potential contributors to the labor force – its citizens. This upskilling must be at par with the requirements of the local and international industries. One way of realizing this is by strengthening the K to 12 program that promotes global competitiveness among Filipino Basic Education graduates. The improvement of the K to 12 program that leads to globally competitive Filipino graduates will increase international recognition and accreditation of Filipino Basic Education and Higher Education graduates, thus increasing their chances to be employed by both domestic and international industries. Once this goal is achieved, this may lead to higher remittances and higher GDP.

2. Strengthen International Relations

The policymakers, to secure higher remittances, must open a wider door for Filipinos who are aspiring to work abroad and must also strengthen their international relations for these foreign lands to open their doors wider for Filipino workers. The Philippine government must strengthen the implementation of the ASEAN Economic Integration within Southeast Asia as this will allow Filipino Professionals to practice their professions in foreign lands. Strengthening international relations with developed countries may lead to better employment opportunities for Filipinos.

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Appendices

Appendix 1

Reviewed Articles

Author	Location	Model	Effects
Adams & Page	Chapter 3.6.1	$ln\ ln\ P_{ab} = f(ln\ ln\ \mu_{ab}, ln\ ln\ g_{ab}, x_{ab})$	Poverty Function
Racallion	Chapter 3.6.1	$p = (1 - i)g$	Rate of Poverty Reduction
Stark	Chapter 2.2	$I = I^{r} + I^{u}$	Income Groups
Yitzhaki	Chapter 2.2	$I^{A} \geq I^{B}$ and $S^{A} = I^{A}(1 - G^{A}) > S^{B} = I^{B}(1 - G^{B})$	Income Inequality

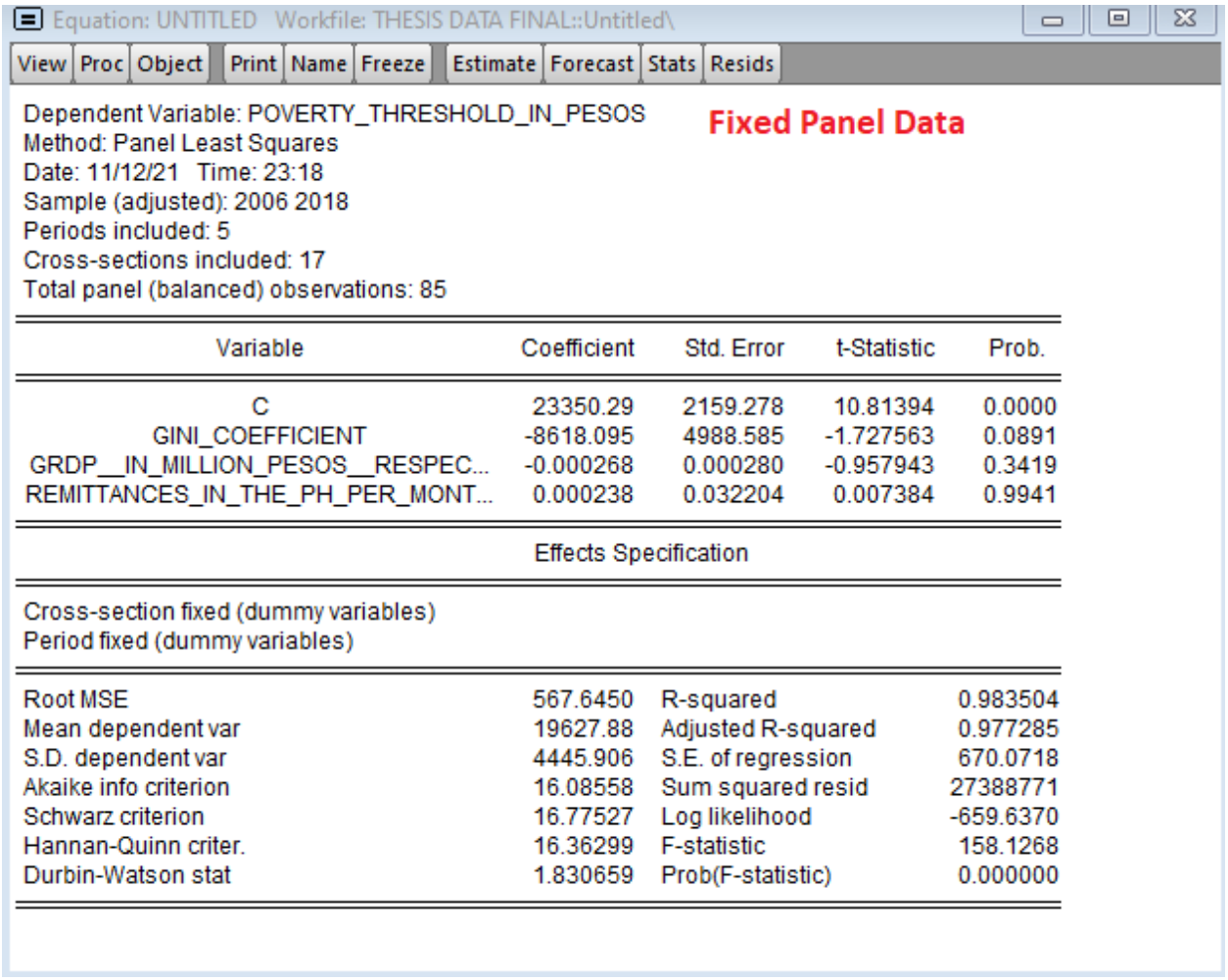
Appendix 2 Raw Data Table

REGION	YEAR	GRDP (In Milli	Remittances	Poverty Threshold	GINI Coefficient
NCR	2006	2,244,705	916.6	15,699	0.3988
NCR	2009	2,871,470	1,265.5	19,227	0.4081
NCR	2012	289,444	1557.084	20,344	0.4028
NCR	2015	352,467	1,927.3	25,188	0.3908
NCR	2018	432,181	2,379.2	28,682	0.352
CAR	2006	128,901	1,782.4	14,107	0.4418
CAR	2009	180,185	2,585.5	17,243	0.4658
CAR	2012	121,430	3144.493	19,483	0.4675
CAR	2015	141,660	3,863.0	22,985	0.4209
CAR	2018	173,651	4,646.6	24,907	0.4437
I	2006	172,724	1,782.4	14,107	0.3953
I	2009	250,039	4,057.0	17,595	0.417
I	2012	73,332	4842.258	18,373	0.4265
I	2015	89,496	6,257.2	22,762	0.3977
I	2018	113,471	7,006.2	27,055	0.3893
II	2006	105,960	2,814.4	13,944	0.4216
II	2009	147,641	5,498.8	17,330	0.456
II	2012	70,692	6543.336	19,125	0.4096
II	2015	87,924	8,327.2	22,622	0.4063
II	2018	107,568	9,353.1	25,099	0.4278
III	2006	463,833	3,712.9	14,422	0.3994
III	2009	701,757	6,980.9	18,188	0.3821
III	2012	114,072	8316.964	20,071	0.4084
III	2015	134,943	10,394.7	22,867	0.3939
III	2018	173,452	11,822.5	26,954	0.3717
IVA	2006	692,904	4,854.5	13,241	0.4082
IVA	2009	1,351,986	8,479.7	17,033	0.4203
IVA	2012	129,004	10127.91	19,137	0.4186
IVA	2015	144,351	12,621.5	25,642	0.4011
IVA	2018	175,563	14,179.3	27,928	0.3952
IVB	2006	124,245	5,958.9	12,645	0.4106
IVB	2009	154,485	9,973.7	15,613	0.4116
IVB	2012	81,570	11936.494	17,292	0.4476
IVB	2015	92,788	14,874.4	20,369	0.4564
IVB	2018	119,813	16,580.1	23,315	0.423
V	2006	147,773	7,006.8	13,240	0.4428
V	2009	170,957	11,342.8	16,888	0.4268
V	2012	53,486	13733.004	18,257	0.4233
V	2015	68,262	16,868.5	22,503	0.396
V	2018	86,916	19,056.6	24,461	0.3937

VI	2009	329,382	12,789.7	15,971	0.4309
VI	2012	72,392	15570.981	18,029	0.4754
VI	2015	88,727	19,102.5	21,921	0.4361
VI	2018	110,783	21,293.6	24,494	0.4241
VII	2006	417,046	9,112.1	13,963	0.4639
VII	2009	464,415	14,321.0	16,662	0.4711
VII	2012	95,761	17498.55	18,767	0.4712
VII	2015	120,360	21,266.1	22,644	0.4645
VII	2018	152,478	23,767.6	25,745	0.4425
VIII	2006	137,334	10,297.8	12,520	0.4828
VIII	2009	218,538	15,780.2	16,278	0.5008
VIII	2012	62,588	19416.804	18,076	0.4834
VIII	2015	73,279	23,136.7	22,398	0.4647
VIII	2018	96,204	26,094.0	24,987	0.4457
IX	2006	134,813	11,441.8	12,743	0.5054
IX	2009	170,433	17,348.1	16,260	0.4915
IX	2012	67,543	21391.332	18,054	0.4592
IX	2015	82,999	25,606.8	22,557	0.4359
IX	2018	101,872	28,943.1	25,650	0.4231
X	2006	276,456	12,761.3	12,917	0.4806
X	2009	302,238	1,372.8	16,878	0.486
X	2012	105,965	1,698.7	19,335	0.4844
X	2015	130,066	1,997.3	23,020	0.4633
X	2018	167,832	2,483.6	24,835	0.4059
XI	2006	263,832	1,099.4	13,389	0.4225
XI	2009	336,530	2,785.9	17,120	0.4339
XI	2012	97,856	3,398.8	19,967	0.433
XI	2015	123,401	4,095.2	23,146	0.4294
XI	2018	164,042	4,784.4	25,953	0.4108
XII	2006	195,866	2,184.9	13,319	0.4006
XII	2009	218,564	4,339.4	16,405	0.4462
XII	2012	75,779	5,167.2	18,737	0.457
XII	2015	87,659	6,456.9	21,341	0.4624
XII	2018	106,737	7,298.7	25,023	0.4303
XIII	2006	76,360	3,489.7	14,324	0.4452
XIII	2009	87,220	5,859.6	18,309	0.4732
XIII	2012	72,193	6,986.3	19,629	0.4397
XIII	2015	90,671	8,670.2	22,788	0.4336
XIII	2018	107,932	9,739.3	25,375	0.4383
BARMM	2006	53,038	4,681.3	12,647	0.3113
BARMM	2009	70,303	7,438.5	16,683	0.2991
BARMM	2012	39,533	8,865.3	20,517	0.2882

Appendix 3
Eviews Results
Fixed Panel Regression

Residual Cross-Section Dependence Test



Dependent Variable: POVERTY_THRESHOLD_IN_PESOS
Method: Panel Least Squares
Date: 11/12/21 Time: 23:18
Sample (adjusted): 2006 2018
Periods included: 5
Cross-sections included: 17
Total panel (balanced) observations: 85

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	23350.29	2159.278	10.81394	0.0000
GINI_COEFFICIENT	-8618.095	4988.585	-1.727563	0.0891
GRDP__IN_MILLION_PESOS__RESPEC...	-0.000268	0.000280	-0.957943	0.3419
REMITTANCES_IN_THE_PH_PER_MONT...	0.000238	0.032204	0.007384	0.9941

Effects Specification

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

Root MSE	567.6450	R-squared	0.983504
Mean dependent var	19627.88	Adjusted R-squared	0.977285
S.D. dependent var	4445.906	S.E. of regression	670.0718
Akaike info criterion	16.08558	Sum squared resid	27388771
Schwarz criterion	16.77527	Log likelihood	-659.6370
Hannan-Quinn criter.	16.36299	F-statistic	158.1268
Durbin-Watson stat	1.830659	Prob(F-statistic)	0.000000

Residual Cross-Section Dependence Test
Null hypothesis: No cross-section dependence (correlation) in residuals
Equation: Untitled
Periods included: 5
Cross-sections included: 17
Total panel observations: 85
Cross-section effects were removed during estimation

RESIDUAL CROSS-SECTION DEPENDENCE TEST

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	167.3593	136	0.0350
Pesaran scaled LM	1.901437		0.0572
Bias-corrected scaled LM	-0.223563		0.8231
Pesaran CD	-0.940044		0.3472