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Do International Remittances Encourage Participation in School and in the Labor Force?

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I. INTRODUCTION

Since 1975, temporary overseas labor migration has grown as a noticeable part of the Philippine economy. In the past four decades, the number of deployed overseas Filipino workers (OFWs) grew from around 36,000 in 1975 to 1.8 million in 2014 (International Organization for Migration 2013; and Philippine Overseas Employment Administration 2015). At the same time, the number of temporary overseas Filipinos[1] stood at 4.9 million (5%) while the total number is estimated at 10.2 million (10%) of the estimated 99 million population in 2014 (Commission on Filipinos Overseas 2016). Accompanying the rise of OFW deployments is the steadily increasing receipt of remittances from abroad, rising from USD 1 billion in 1989 to USD 25.3 billion in 2015 (Bangko Sentral ng Pilipinas 2015a; 2015b).

The role of OFWs in Philippine development since 1975 has also expectedly grown. Indeed, data show how OFWs have evolved to become a key feature of the Philippine labor market. The Philippines is also said to have the most sophisticated model for the export of labor (Mendoza 2015). On the broader national economy, the steady stream of remittances from OFWs has also been accompanied by a continuing rise in the country's gross international reserves from USD 2.4 billion in 1989 to an estimated USD 81 billion in 2015, translating to an import cover of 11 months (Bangko Sentral ng Pilipinas 2015a; 2015b). It is worth noting that

[1] The total number of overseas Filipinos is the sum of the number of permanent, temporary, and irregular migrants. According to the Commission on Filipinos Overseas (2015):

- Permanent migrants are comprised of Filipino immigrants and legal permanent residents, Filipino spouses of foreign nationals, naturalized Filipinos in their host countries, Filipinos holding dual citizenship, and their descendants;
- Temporary migrants are Filipinos whose stay overseas is temporary by virtue of the transitory nature of their employment status abroad and includes land- and sea-based workers, intra-company transferees, students, trainees, entrepreneurs, businessmen, traders, and their accompanying dependents; and
- Irregular migrants are those who are not properly documented or who do not possess valid residence or work permits, or who may be overstaying in a foreign country.

over the same period, net foreign direct investment averaged USD 1.8 billion per year but improved to an average of USD 3.2 billion per year since 2010 (The World Bank 2015). There is also broad agreement that remittances boost domestic demand (*The Economist* 2015) as it serves its consumption-smoothening purpose with ease (Villegas 2012).

At the household level, the effects of migration and remittances on education (apart from other dimensions such as health) are not always straightforward. As remittances increase household purchasing power, it may also expand spending on education. At the same time, households may also decide to increase investments in human capital with a view towards emulating family members who have gone abroad for employment. However, migration may also result in deleterious effects when family members are separated from each other. As will be seen in the next section, the net effect of migration and remittances is not clear, and requires further investigation of this issue.

It would be worthwhile to look at the possible effects of migration and remittances on the labor market. Although overseas employment was originally intended to alleviate domestic unemployment, the receipt of remittances can alter the motivation of recipient household members to enter the labor force. If the country's prevailing wage is low, remittances can increase the reservation wages of remittance-receiving household members, hindering their participation in the labor market (Tullao, Cortez, and See 2007; Ducanes and Abella 2008).

Finally, it should be noted that any study of the impacts of migration and remittances on education and labor market decisions has to account for potential endogeneity of the receipt of remittances through the relationship of remittances with prior household income or the rationale for migration.

Given the issues thus raised, this paper aims to provide a richer understanding of the migration phenomenon by looking at the potential mixed effects that may ensue particularly on school and labor force participation. This will be undertaken through the estimation of multinomial logit regressions using data from the 2008, 2010, 2011, and 2013 Annual Poverty Indicators Surveys (APIS). The quasi-experimental propensity score matching (PSM) technique is used to address the issue of endogeneity. This paper also aims to find out the difference between the impact of maternal migration and paternal migration on school participation. This

will be done using the PSM technique with the 2012 Merged Family Income and Expenditure Survey (MFIES) and Labor Force Survey (LFS).

The findings show that overall, the receipt of remittances increases school participation by anywhere from 1.9–8.4 percent. At the same time, households that receive remittances have anywhere between 9.3 percent and 16.3 percent lower labor force participation vis-à-vis non-remittance receiving households. However, estimated marginal effects and relative risk ratios suggest that higher probabilities of receiving remittances may lead to a greater chance of individuals to shift out of the labor force and into schooling rather than into idleness. In addition, findings using the gendered parental migration model shows that school participation is higher in households with either mother or father migrants although the effect is stronger for households with father migrants relative to those with mother migrants.

This study hopes to spur policy discussions regarding education in the Philippines as it relates to migration and remittances for development. It also aims to contribute to the current lack of literature in determining educational attainment of children in the Philippines, in particular, and in the developing Asia, in general.

II. REVIEW OF RELATED LITERATURE

This chapter looks at previous work on the relationship between migration and remittances and education. While the literature on this issue has grown in the past decade, it will be shown that results have not always been clear-cut. This is mainly due to the opposing effects suggested by the increased income owing to the receipt of remittances by the household vis-à-vis the family disruption brought about by migration. Extensions of these studies have also looked at how remittances may change the incentive of remittance-receiving household members to participate in the labor market. Methodological issues on the estimation of these effects, particularly due to the endogeneity problem of migration and remittances with education and labor market participation, have also been key points of discussion in the literature.

A. Migration, Remittances, and Human Capital Accumulation

The effects of migration and remittances on education may be expressed in two key ways—one of which looks at the effect on household spending on education. Previous studies have shown that expenditure shares on education and health are higher for households with migrants compared to those without migrants. Remittance-receiving households also tended to have higher expenditure elasticities, which meant migration and remittances contribute greatly to human capital investments (Orbeta 2008). Tullao, Cortez, and See (2007) and Tabuga (2007) also show that education-expenditure elasticities are greater in remittance-receiving households suggesting that families with migrants have larger responses on education expenditures to changes in income. Tabuga (2007) further shows through quantile regressions that households with higher income, due to higher remittances receipts, spend more on education and health. This implied, however, that rising inequality due to human capital expenditure across households might be caused by remittances. Similar results were reported by Pernia, Pernia, Ubias, and San Pascual (2014) at the level of the administrative regions of the Philippines, which showed that receiving higher remittances increases spending in education.

Analyzing the issue through a different route, Yang (2008, p. 607) found increased education expenditures brought about by remittances through favorable exchange rate shocks. As quoted from the study, the result showed that a “10% improvement in the exchange rate faced by a household’s migrant leads to a 13.7% increase in potentially investment-related disbursements.” There was also a small elasticity coefficient between consumption with respect to the exchange rate. These findings validated other works that showed a positive relationship

between migrant earnings and investment activity, such as those by Durand et al. (1996), Taylor et al. (2003), and Woodruff and Zenteno (2007), and in contradiction with other studies that indicated that migrant earnings are being primarily spent on consumption, such as that by Brown and Ahlburg (1999).

There are also other key studies looking at the effect of migration and remittances on schooling attendance, enrollment, years of schooling, or educational attainment. In most studies, there are conflicting results on the effect of remittances on these points of interest. As in the Philippines, Cruz (1987) showed no significant difference in a student's performance if the child has a migrant or nonmigrant parent based on conduct and discipline in class from the teachers. However, it is worthy to note that 81% of the children with nonmigrant parents perform better than 78% of the children who have migrant parents. Yang (2008) also stated that if migrant parents are receiving favorable exchange rate, this increases their children's school attendance as well. Alternatively, Fujii (2015) took a different approach by taking into account the relationship of the Filipino school-age individuals with their household head. In his study, he found a negative effect on school attendance and education expenditure if the children's parents have temporarily migrated and the children are being taken cared for by relatives. This is referred to as the "negative guardian effect," in which inputs from relatives are insufficient or ineffective substitutes to those of the parents', in addition to unintended, inefficient allocation of remittances toward the children's education by the receiving household. Not surprisingly, Zosa and Orbeta (2009) wrote about the impact of migration on Filipino family cohesion, noting that the most problematic families are often cited as those who are left behind by temporary migrants.

For other countries, Nepalese girls from remittance-receiving families were observed to have less absenteeism in school despite the fact that they are benefitting less than the boys (Bansak and Chesum 2009). In Mexico, Mackenzie and Rapoport (2006, p.1) found that when parents migrated, educational attainment increased for girls but boys had a "lower chance of … finishing junior high school and both girls and boys completing high school." Mexican children of a caregiver migrant parent were also observed to have academic, behavioral, and emotional problems (Lahaie et al.2009). On the other hand, results from rural Pakistan revealed positive impacts from remittances on school enrollment, attendance, and academic performance for girls and boys up to the primary school level, beyond which positive but decreasing impact is seen on male students (Khan 2016). Lastly, paternal migration was seen to have a negative impact

on Albanian children's school attendance (Giannelli and Mangiavacchi 2010), while it contributed to the detrimental effects of Swazi children's school readiness (Zoller Booth 1995). Overall, Banzaketal. (2015) attributed the mixed findings to differences between the countries under study and the variation with respect to the returns to education whereas Antman (2012) attributed the varying outcomes to the age and gender of the children sampled.

B. Gendered Migration and Human Capital Accumulation

A survey of the literature for the effect of migration and remittances on education showed that only a few papers focused on the effect of gendered migration on education. To be sure, Tyner (1994) stated that gendered migration had been overlooked as an issue since society assumed that female migration followed the same pattern as those for males. Indeed, men and women from the Philippines migrate in near equal numbers. For example, 55 percent of migrants being deployed as new hires in 2010 were women (POEA 2015). The Philippine Statistics Authority (PSA) (2015b) also reported that 50 percent of OFWs were women. However, going beyond mere percentages, it has been shown that more females than males are working in jobs that require fewer skills. This confirms the dominance of female OFWs in domestic household services and the entertainment sector (Tyner 1994).

This recurring dominant pattern of female OFWs dominating household services and the entertainment sector contributed to the rise of the concept coined by Hochschild (2000) called "global care chain." This refers to how Filipino women are hired in developed countries as domestic helpers but then leaves the female migrant's eldest daughter or grandmother to take care of the family that is left behind in the Philippines. The role left by the migrant mother in child-rearing and household management is then left unoccupied by the remaining father, a problem, which, according to Hochschild (2000) and others (e.g., Phizacklea 1998) may be due to the traditional gender division of labor. Thus, due to increased female migration, this dilemma led to the concept of what is termed as the social costs of migration. The "cost" is manifested in the Philippines as the disintegration of Filipino families where a relative or the eldest daughter becomes the substitute for the migrant mother in the conduct of household responsibilities.

Studies made on the impact on children being left behind by a parent, categorized by gender, are few given the lack of data (Fiore, 2015). In Sri Lanka, studies have compared performance and attendance of children from migrant and nonmigrant families and discovered lower levels of performance and attendance for children with migrant mothers (Pinto-

Jayawardena 2006). In the Philippines, Battistella and Conaco (1998) found that a Filipino mother's absence has the most disruptive effect on elementary school children in terms of school performance. It was reported that children of female migrants tend to score lower than children with nonmigrant parents and suggested the importance of the mother's presence on the academic performance of the children. Likewise, Cortes (2015) utilized both ordinary least squares (OLS) and instrumental variables to establish the relationship of maternal migration on children's education by using demand shocks such as economic crisis, changes in immigration laws, and even epidemic events as random sources of variation in the probability that the female parent migrates. This conclusion mirrors Battistella and Conoco's (1998) findings and found that a mother's migration leads to a higher probability of her children to lag behind in school as compared to children of a migrant father. This may be of potential concern in the Philippines given that one out of every seven Filipino children has a migrant parent (Bryant 2005).

Wang (2012) provides an excellent summative review of the various studies that have looked into the effects of parental migration on the educational outcomes of children that are left behind. He categorizes the effects into three: (1) a disruptive effect, (2) an income effect, and (3) and aspirational effect. The disruptive effect is a direct decreasing effect on participation and school performance of children due to lack of supervision and guidance, as well as of children being left to take up household responsibilities. Evidence of dominant disruptive effects were found in McKenzie and Rapoport's (2006) study on Mexico, Lu and Treiman's (2007) study on South Africa, Mansuri's (2006) study in rural Pakistan (especially for households with father migrants), and especially for children left by migrant mothers in Gamburd's (2005) study in Sri Lanka. The income effect is a positive effect on educational outcomes since this represents the effects of the remittances that have been sent. Remittances, as established in earlier sections, have a tendency to increase participation since it relaxes the income constraints of households and enables them to spend more on education. The aspirational effect increases educational outcomes since children will want to perform better and achieve higher levels of education in order to fulfill their aspiration of migrating in the future, following the example set by their parents (Czaika and Vothknecht 2014). The effect of this may vary per household depending on the rate of return of education as well as wage differentials in destination countries. Czaika and Vothknecht (2014) propose that aspirations serve as both cause and consequence of migration and eventually leads to self-selection among migrants. They find that strong aspirations prior to migration increases the likelihood of migrating and eventual migration causes an increase in

aspirations as well. In aspiring to migrate, children who were left behind are encouraged to participate more in school so as to be able to realize their aspirations in the future. Evidence where the income effect and aspirational effect are larger than the disruptive effect (positive net effect of parental migration) are found in the studies of Yang (2008), Parrenas (2005), and Battistela and Conaco (1998) in the Philippines. Yang (2008) and Mansuri (2006) suggest that children in households with migrant members have a higher likelihood of attending school and staying in school.

C. Migration, Remittances, and Employment

On the issue of labor market effects, Orbeta (2008) points out that migration may cultivate a culture of dependence among those left behind, lowering labor force participation and declining hours worked. The argument goes that if leisure is considered a normal good, then remittances, which raise household incomes, will not only increase the demand for consumer goods but also the demand for leisure.

In a comparative analysis, Tullao, Cortez, and See (2007) showed that labor force participation and employment rates are lower in remittance-receiving households relative to those that do not receive remittances. However, since data from the Family Income and Expenditure Survey (FIES) were used at the household level instead of the individual level, it is hard to discern and compare the level of participation or employment. Thus, the paper of Ducanes and Abella (2008) improved on this by using data from the Labor Force Survey and comparing the labor force participation and unemployment rates of households that have migrant workers and those without. It was further clarified that working age household members were used and the presence of migrant workers in the household was used as the indicator rather than the receipt of remittances. Results showed that the labor force participation rates of individuals were the same regardless of whether their household had a migrant member or none. Therefore, these findings were not consistent with the dependency argument.

Multivariate methods were utilized by Rodriguez and Tiongson (2001), Cabegin (2006), and Yang (2008). Rodriguez and Tiongson (2001) used probit analysis to investigate the impact of the presence of a migrant worker and remittances on labor participation and found evidence in support of the dependency theory as manifested by decreased labor force participation and hours worked. On the other hand, Cabegin (2006) concentrated on the labor force participation

of the non-migrating spouse and found that the presence of children is the more pronounced reason for left-behind wives to be in the labor force while larger remittances had created the dependency effect for husbands who were left behind. Lastly, Yang (2008) utilized the Asian financial crisis as a natural experiment to study the impact of remittances (via the exchange rate) on several household outcomes. He found that the receipt of remittances had no effect on the number of work hours, but increased the number of hours in self-employment, which is similar to a finding of Cabegin (2006). Despite the numerous studies, the problem of controlling for endogeneity for the migration variable remains to be a concern and would yield to unreliable estimates.

As seen from the above, it is imperative to analyze further the effect of migration and remittances on education, especially since the benefits of migration transcend individuals and households in the long run. At the same time, if indeed remittances have a negative impact on labor force participation rate, it is interesting to know what these individuals who are withdrawing from the labor force pursue instead. It may very well be that receipt of remittances may have addressed their liquidity constraints and are now attending school. In addition, with the inflow of remittances to the family, the relative wage effect may ensue and family members may invest in education to enhance their potential income in the future. Although the impact of remittance on labor force participation is negative, the overall effect may not be negative given that many of them are going to school to enhance their human capital. Thus, there is a need to empirically verify whether households indeed undertake human capital-augmenting activities when labor force participation declines with the receipt of remittance income.

D. Endogeneity of Migration, Remittances, and Education

By establishing a relationship between migration, remittances, education, and labor force participation, endogeneity bias may rise in the form of migrants' remittances. Some studies, including that of Bouoiyour and Miftah (2015), stated that to control for income effects and mitigate the bias, they used household wealth instead of income or consumption. Problems may arise with the two aforementioned variables since income could rise due to children who, in order to contribute to household expenses, abandon their studies in order to work. At the same time, a child in school may increase household expenses due to tuition fees and school materials. Thus, it is imperative to look for a good proxy for household-level income like nonwage income sources, such as rent or a typical income source such as wage. Bettin, Lucchetti, and Zazzaro (2011) find that remittances are strongly and positively associated with

pre-transfer income and negatively associated with a household's nondurable consumption. Abdih, Chami, Dagher, and Montiel (2008) add that remittances may be endogenous to the presence of corruption and the quality of domestic economic institutions. In one of their models, they provide a coastal area instrument for remittances because coastal areas are generally associated with higher rates of emigration as well as the distance between countries.

Papers that used OLS are being questioned on their findings, such as by Airola (2007) who studied to predict if remittances-receiving households differ in expenditure patterns from households not receiving any remittances. In this case, there might be biases arising from the study's findings since migrants are a self-select group. Since remittances- receiving households are not randomly selected, the results are correlated with the households sampled rather than with their characteristics as being recipients of a migrant's remittances (Bohra-Mishra 2011).

For studies that made use of the IV methodology to control for any endogenity bias in a migrant's remittances, questions are also raised in terms of the variables used as instruments. Like the study by Mackenzie and Rapoport (2006), an IV-Censored Ordered Probit method was used to show that Mexican children of a migrant parent are experiencing negative effects of migration in their school attendance and academic performance. Kusumawardhani (2012, p.10) doubted the validity of instrumental variable as it was mentioned that "historic state-level migration rate to affect current schooling through variables other than remittances, such as historical inequality level and historical schooling rate."

To answer one of the problems that surfaced during when using OLS with respect to remittances not being randomly allocated, Yang (2008, p.592) stated that "any observed relationship between migration or remittances and household outcomes may simply reflect the influence of unobserved third factors," which came in the form of exchange rate shock. Yang's study came as an experimental approach by identifying households with a migrant household member then assigning a random shock to a migrant and finally, analyzing the relationship between any changes in the household outcome and the size of the shock being responded by the migrant remittance-receiving household. A similar methodology is done via PSM, as seen in Kusumawardhani (2012) and Bohra-Mishra (2011), which "creates comparable control group that resembles the treatment group with respect to probability to participate in migration or to receive remittance based on a number of observable characteristics" (Kusumawardhani 2012, p.21).

III. DATA AND METHODOLOGY

A. Description of the Dataset

This study used the Annual Poverty Indicators Survey (APIS) to perform the analyses needed for this study. The APIS is a household survey conducted by the Philippine Statistical Authority (PSA), which provides information on wealth, income, and expenditure. It also provides demographic information such as age, educational level, and employment status at the individual level. Data for the years 2008, 2010, 2011, and 2013were used since these are readily available. Note that there is no 2009 and 2012 for APIS since the PSA conducts the Family Income and Expenditure Survey (FIES) instead of the APIS for these years. Furthermore, the "wide" household-level APIS 2013 was converted into a "long" individual-level dataset in order to run the multinomial logistic model on the effect of remittances on the human resource development (HRD) outcome of each household member. This study also made use of the merged Family Income and Expenditure Survey and Labor Force Survey (merged FIES-LFS) of 2012 to perform the analysis for the gendered parental migration model. This special edition dataset is provided by the PSA's Income and Employment Statistics Division, and combines FIES and LFS data. FIES is a household-level dataset that is much like APIS in the sense that it contains income and expenditure variables. However, it does not include member-specific demographic variables. That is why the LFS needed to be merged with the APIS because LFS is a household-level dataset but with purely member-specific variables, detailing not only demographic and employment variables, but most importantly, member-specific migrant indicators, which is necessary when determining the presence of parental migration in each household.

1. School participation

Table III-1: Average net school participation rates, per region
(% of school-age members in school)

Region	2008	2010	2011	2013
Region 1 – Ilocos Region	51.17	67.01	65.51	67.92
Region 2 – Cagayan Valley	51.06	65.22	66.40	70.00
Region 3 – Central Luzon	52.83	64.31	64.97	64.28
Region 4a – CALABARZON	51.43	61.56	65.01	67.68
Region 4b – MIMAROPA	54.96	67.59	69.15	70.14
Region 5 – Bicol Region	54.72	67.64	70.77	72.15
Region 6 – Western Visayas	52.54	64.50	69.47	72.53
Region 7 – Central Visayas	50.29	63.94	65.73	70.30
Region 8 – Eastern Visayas	51.52	66.90	70.73	72.51
Region 9 – Western Mindanao	50.05	61.78	68.00	70.33
Region 10 – Northern Mindanao	53.31	66.07	66.92	69.68

Region 11 – Southern Mindanao	48.97	61.86	63.88	66.91
Region 12 – Central Mindanao	52.80	65.42	66.12	67.39
Caraga Region	54.16	69.28	66.42	72.48
National Capital Region	52.72	65.53	64.79	66.36
Cordillera Administrative Region	53.34	68.28	69.82	64.74
ARMM	48.30	55.13	59.68	68.82
National Average	52.02	64.68	66.40	68.58

ARMM = Autonomous Region in Muslim Mindanao.
Source: Authors' computation from APIS dataset.

Net school participation rates in Table III-1 were computed as the proportion of school age children that are in school. School age in this case is taken as general school age or 3–24 years old. The national average, whichis52 percent in 2008, increased by 32–69 percent in 2013. This upward trend may be seen for all regions, which reflects improvements in access to education. Regions with higher-than-average school participation rates include (i) Cagayan, (ii) MIMAROPA (Mindoro, Marinduque, Romblon, and Palawan), (iii) Bicol Region, (iv) Western Visayas, (v) Eastern Visayas, (vi) Western Mindanao, (vii) Northern Mindanao, (viii) Caraga Region, and (ix) Autonomous Region of Muslim Mindanao (ARMM). According to the APIS samples, regions with the largest improvements from 2011 to 2013 include Central Visayas, which jumped from 69 percent to 73percent; and ARMM, which increased from 60 percent to 69 percent. The school participation rate has fluctuated, on the other hand, for regions such as Ilocos, Central Luzon, the National Capital Region (NCR), and the Cordillera Administrative Region (CAR). Variation of the school participation rate is quite large for households across all regions and time periods, which implies that there is still a large disparity when it comes to access in education.

2. Labor force participation

Table III-2: Average net labor force participation rates, per region (%)

Region	2008	2010	2011	2013
Region 1 – Ilocos Region	64.54	63.51	64.66	63.83
Region 2 – Cagayan Valley	72.77	73.42	74.81	74.76
Region 3 – Central Luzon	62.58	59.93	60.51	64.56
Region 4a – CALABARZON	61.39	64.62	63.04	66.80
Region 4b – MIMAROPA	74.27	74.34	74.19	73.00
Region 5 – Bicol Region	70.25	69.13	67.30	69.56
Region 6 – Western Visayas	69.98	69.00	71.06	72.45
Region 7 – Central Visayas	67.05	67.73	69.79	72.03
Region 8 – Eastern Visayas	70.76	67.22	69.91	72.72
Region 9 – Western Mindanao	68.60	71.36	69.91	74.62
Region 10 – Northern Mindanao	73.15	69.65	71.17	72.54
Region 11 – Southern Mindanao	67.46	66.97	67.61	68.51

Region 12 – Central Mindanao	70.60	69.36	72.48	71.49
Caraga Region	67.18	68.50	69.47	73.45
National Capital Region	59.02	60.03	61.26	62.94
Cordillera Administrative Region	72.41	73.19	72.69	71.30
ARMM	59.68	62.08	58.03	60.56
National Average	66.69	66.61	67.15	68.84

ARMM = Autonomous Region in Muslim Mindanao.
Source: Authors' computations from APIS dataset.

Net labor force participation rates reported in Table III-2 were computed as the proportion of working-age household members that are engaged in employment or business. The working age in this case is 15–64 years. According to the APIS samples, the national average has grown slowly but steadily over time, increasing from 67 percent in 2008 to 69 percent in 2013. Regions with higher-than-average labor force participation rates include (i) Cagayan; (ii) MIMAROPA; (iii) Bicol Region;(iv) the Western, Central, and Eastern Visayas; (v) Western Mindanao; (vi) Northern Mindanao;(vii) Central Mindanao; (viii) Caraga Region; and (ix) CAR. Regions that posted the largest improvements from 2011 to 2013 include Central Luzon, which jumped from 61 percent to 65 percent; Western Mindanao, which grew from 70percent to 75 percent; and Caraga Region, which increased from 69 percent to 73 percent. However, labor force participation rates have decreased from 2011 to 2013 for Ilocos, and even Cagayan, MIMAROPA, Central Mindanao, and CAR despite having above-average rates. Variation of the labor force participation rate is also very large across regions and time periods, implying that motivations to engage in labor vary greatly across households.

3. International remittances

Table III-3: Average annual receipt of international remittances, per region
(in PHP)

Region	2008	2010	2011	2013
Region 1 – Ilocos Region	141,294.96	155,476.44	185,900.88	177,957.60
Region 2 – Cagayan Valley	76,620.05	119,080.43	86,332.15	176,408.40
Region 3 – Central Luzon	159,804.36	179,283.48	196,662.72	284,641.44
Region 4a – CALABARZON	187,923.36	190,155.24	208,489.08	192,706.32
Region 4b – MIMAROPA	38,761.09	54,514.55	58,929.76	68,650.75
Region 5 – Bicol Region	72,092.69	57,696.74	70,315.09	81,233.87
Region 6 – Western Visayas	107,215.75	134,878.20	146,939.04	122,262.96
Region 7 – Central Visayas	107,259.13	135,340.08	143,133.72	155,854.20
Region 8 – Eastern Visayas	52,408.81	91,936.76	83,965.08	120,962.64
Region 9 – Western Mindanao	40,932.79	57,496.72	43,135.80	42,021.61
Region 10 – Northern Mindanao	66,439.22	88,549.08	82,064.27	151,138.32
Region 11 – Southern Mindanao	51,763.45	81,736.54	54,505.08	125,003.40
Region 12 – Central Mindanao	51,348.30	40,982.76	60,589.46	75,798.49
Caraga Region	62,224.63	57,499.43	68,133.11	102,747.17
National Capital Region	182,470.32	210,591.24	172,490.76	212,801.88

Cordillera Administrative Region	101,271.08	107,210.89	107,285.70	150,085.44
ARMM	18,558.58	18,173.75	21,925.88	23,006.63
National Average	103,861.07	121,282.92	120,082.92	146,980.92

ARMM = Autonomous Region in Muslim Mindanao.
Source: Authors' computation from APIS dataset.

In this study, remittances includes cash receipts and all forms of gifts and support coming from abroad, expressed in monetary value in terms of Philippine peso. It may be seen from Table III-3 that remittances have generally increased over time for the entire nation. Starting from an annual average of PHP 103,861 in 2008, it has grown by 42percent to PHP 146,981 in 2013. As of 2013, the largest remittance-receiving region is Central Luzon with PHP 284,641, followed by NCR with PHP 212,802. The largest increase in monthly received remittances (from 2011 to 2013) may be seen in Cagayan, Central Luzon, Eastern Visayas, Northern Mindanao, Southern Mindanao, and CAR. On the other hand, average remittances decreased from 2011 to 2013 for Ilocos, CALABARZON (Cavite, Laguna, Batangas, Rizal, and Quezon), Western Visayas, and Western Mindanao. Variation remains great for households across all regions and time periods and implies that remittance-receiving households are fewer relative to those that do not receive remittances. Not all households have the opportunity or the capacity to engage in international migration.

Based on this study's computations from the APIS datasets, the national average share of international remittances to total family income was 6.5 percent in 2008, 6.9 percent in 2010, 6.2 percent in 2011, and 7.2 percent in 2013. But accounting for only remittance-receiving households (which was 21% in 2008, 22% in 2010, 18% in 2011, and 24% in 2013), the average share was 38 percent in 2008, 39 percent in 2010, 41 percent in 2011, and 37 percent in 2013. Variation remains very large across households, and there is still a moderate number of households that receive remittances of up to 95 percent of their income or even higher. The growing figures of the share of remittances to total income (except for 2013) imply that households have depended more and more on remittances over time.

4. Wealth index

The wealth index was computed as proposed by Acosta (2011), Antón (2010), and Borromeo (2012). The wealth index comprised the dummy variables of the households' asset ownership such as vehicles, air conditioners, audio components, gas ranges, washing machines, refrigerators, compact disk players, video cassette players, televisions, karaoke sets,

landlines, cellular phones, and radios. The wealth index for the *ith* household is computed as follows:

$$WI_i = \sum_j f_j \frac{a_{ij} - m_j}{s_j}$$

Where a_{ij} is a dummy variable that indicates whether or not the *ith* household owns the *jth* asset, m_j as the sample mean and s_j as the standard deviation of the *jth* asset, and f_j is the weight assigned to the *jth* asset by using the first principal component via principal components analysis, which intuitively represents the extent of variation explained by the *jth* asset relative to the other assets.

Table III-4: Average wealth indices, per region

Region	2008	2010	2011	2013
Region 1 – Ilocos Region	0.28039	0.26448	0.16832	-0.21326
Region 2 – Cagayan Valley	-0.11767	-0.13906	-0.15148	0.01367
Region 3 – Central Luzon	0.84220	0.69506	0.76217	0.75839
Region 4a – CALABARZON	0.71295	0.52228	0.61387	0.44416
Region 4b – MIMAROPA	-0.69235	-0.83529	-0.60146	-0.54046
Region 5 – Bicol Region	-0.74094	-0.70797	-0.57141	-0.58475
Region 6 – Western Visayas	-0.43812	-0.45482	-0.32742	-0.42284
Region 7 – Central Visayas	-0.14728	-0.12241	-0.20836	-0.07614
Region 8 – Eastern Visayas	-0.60645	-0.48849	-0.52949	-0.23393
Region 9 – Western Mindanao	-0.84476	-0.75350	-0.78475	-0.67100
Region 10 – Northern Mindanao	-0.21266	-0.23598	-0.22696	-0.21949
Region 11 – Southern Mindanao	-0.35092	-0.22318	-0.29116	-0.02914
Region 12 – Central Mindanao	-0.62723	-0.71659	-0.62171	-0.51067
Caraga Region	-0.39045	-0.47975	-0.39979	-0.23681
National Capital Region	1.56091	1.49895	1.42495	1.17893
Cordillera Administrative Region	-0.21845	0.18484	-0.02981	0.16805
ARMM	-1.36740	-1.23569	-1.21639	-1.25597
National Average	0.00000	0.00000	0.00000	0.00000

ARMM = Autonomous Region in Muslim Mindanao.
Source: Authors' computation from APIS dataset.

As shown in Table III-4, wealth indices may range from negative to positive values without compromising the intuition of the variable. There is no special interpretation if the wealth index of a household is negative or positive. It only implies that if the wealth index is negative, a household possesses less assets than the sample in general. If an entire region has a negative mean wealth index, this implies that there are significantly more households that do not own the listed assets. The national average shows that there are more households that do not own the listed assets in 2010 and 2011. In 2008, the region with the largest asset holding is NCR with an

index figure of 1.56, followed by Central Luzon with .84. On the other hand, ARMM holds the least assets with -1.36, followed by Western Mindanao with -.84. NCR accounts for the highest ownership of assets across all time periods, while ARMM accounts for the lowest across all time periods. In general, there are more regions with negative wealth indices than those with positive wealth indices. This implies that there is a wide disparity in income and wealth across regions in the country.

5. Household head characteristics

Looking at a few demographic characteristics of household heads in the sample, Table III-5 reports educational attainment and Table III-6 reports the proportion of household heads with jobs or businesses.

Table III-5: Highest grade completed of household heads in terms of frequency and proportion of sample (%)

Educational Attainment	**2008**	**2010**	**2011**	**2013**
No grade completed	3.38	3.1	3.08	2.84
Preschool	0.12	0.16	0.14	0.05
Some elementary schooling	21.59	20.17	20.86	20.68
Elementary graduate	19.65	19.16	18.87	18.3
Some secondary schooling	11.64	11.4	11.58	12.06
Secondary graduate	21.13	21.32	22	22.82
Some technical vocational schooling	1.07	1.17	0.88	0.82
Technical vocational graduate	1.47	1.85	1.29	2.47
Some tertiary schooling	9.26	9.86	9.98	8.69
Tertiary graduate	10.61	11.55	11.22	10.84

Source: Authors' computation based on APIS dataset.

Looking at Table III-5, it may be seen initially that the proportion of household heads with no grade completed has declined over the years 2008–2013. Furthermore, it may be seen across all time periods that the majority of households in each sample have finished primary or secondary education, although there are still large proportions that have not finished primary or secondary. Only a relative few have finished tertiary education and there are even fewer numbers of technical and vocational education graduates.

Table III-6: Job indicator of household heads in terms of frequency and proportion of the sample

	2008	**2010**	**2011**	**2013**
Frequency	33,761	16,694	34,474	8,931
%	83.13	83.04	81.96	82.21

Source: Authors' computation based on APIS dataset.

Table III-6 shows that the proportion of household heads in each year with jobs or businesses has decreased from 83.13percent of the sample in 2008 to 82.21 percent in 2013.

6. Domestic salary

Table III-7: Average domestic monthly salary, per region(in PHP)

Region	2008	2010	2011	2013
Region 1 – Ilocos Region	25,366.46	30,524.04	33,672.66	36,407.09
Region 2 – Cagayan Valley	24,911.91	31,144.96	32,448.08	43,381.38
Region 3 – Central Luzon	44,004.48	43,298.58	49,516.93	57,019.13
Region 4a – CALABARZON	50,598.08	54,311.84	57,105.69	70,531.46
Region 4b – MIMAROPA	20,868.06	24,467.85	26,844.09	31,157.84
Region 5 – Bicol Region	22,714.68	28,560.55	30,521.22	31,506.08
Region 6 – Western Visayas	25,329.44	32,209.72	34,233.29	36,479.90
Region 7 – Central Visayas	34,611.47	38,384.58	40,006.75	48,900.49
Region 8 – Eastern Visayas	23,684.18	31,518.50	29,260.92	29,270.91
Region 9 – Western Mindanao	23,870.84	27,509.40	29,323.20	38,119.46
Region 10 – Northern Mindanao	31,786.55	31,322.65	36,721.42	43,518.24
Region 11 – Southern Mindanao	31,032.54	32,906.16	38,993.56	42,007.68
Region 12 – Central Mindanao	23,651.91	26,121.01	30,408.21	41,191.20
Caraga Region	22,991.41	28,331.20	33,276.07	41,995.64
National Capital Region	78,692.38	85,952.39	88,594.42	100,361.70
Cordillera Administrative Region	32,277.82	36,545.67	39,006.97	51,723.03
ARMM	9,330.20	12,850.91	10,870.90	14,478.89
National Average	35,389.16	40,133.22	42,444.50	49,795.23

ARMM = Autonomous Region in Muslim Mindanao.
Source: Authors' computations based on APIS dataset.

Table III-7 shows that the domestic monthly salary earnings of households in the samples have increased. The average was PHP 35,389 in 2008 and increased to PHP 49,795 (41%) in 2013. The highest wage across regions would be NCR, followed by other higher-than-average regions, such as CALABARZON, Central Luzon, and CAR. The growth in wages in the NCR has been the fastest as well among all regions.

B. Propensity Score Matching

A primary tool used in the analysis of the models in this study is propensity score matching (PSM). The output that is generated is the average treatment effect on the treated (ATT), which is the average difference in outcomes between the treatment and control groups. The aim of the study is to evaluate if households with remittances (the treatment group) have higher school and labor force participation rates as compared to those that do not receive remittances (control group). PSM estimates the effect of the treatment (i.e., remittances) on the outcome variable (i.e., school participation and labor force participation rates) by determining how a set of

controlled characteristics influences the probability of participating in the treatment (Khandker, Koolwal, and Samad 2010).

The comparison, or matching, between treatment and control groups is determined using a model for program selection, which is a model that estimates the probability of receiving remittances in both remittance-receiving and non-remittance-receiving households. This first step in PSM estimates the probability of receiving remittances in remittance-receiving households and non-remittance-receiving households using a set of observed characteristics. This is usually performed with a logit or probit model with a binary dependent variable that equals 1 if the household is receiving remittances and 0 otherwise. This step ensures conditional independence, which requires that given a set of characteristics, the outcome variables should be independent of the treatment. Whether or not the subject undergoes the treatment should not be dependent on the outcome variable. In this case, whether a household receives remittances or not should not be dependent on its school participation and labor force participation. At the same time, controlling for a set of characteristics of each household that influence the probability of receiving remittances to reduce the bias due to confounding coming from simply comparing outcomes between households that receive remittances versus those that did not (Rosenbaum and Rubin 1983).

The next step is to generate a subsample with good common support. This condition ensures that treatment households have comparison control households that are “nearby” in terms of the propensity score distribution (Heckman, La Londe, and Smith 1999). This ensures that the sample to be tested includes treatment and control that basically have nearly the same probability of households receiving remittances. Different approaches are used to match treated and non-treated households based on the propensity score: (i) nearest-neighbor matching, (ii) caliper matching, (iii) radius matching, (iv) stratification and interval matching, (v) kernel matching, and (vi) local linear matching (Khandker, Koolwal, and Samad 2010). The point of this step is to identify households in both treatment and control groups with the closest propensity scores based on the observed characteristics used in the logit/probit model. This ensures that compared observations in both treatment and control groups have nearly the same probability to receive remittances given the same observed characteristics, thereby removing any potential for selectivity bias regarding the receipt of remittances.

Finally, the ATT is calculated as

$$ATT = \left[E(Y(1)|T = 1) - E(Y(0)|T = 1]\right]$$
$$ATT = [Y(1) - Y(0)|T = 1]$$

Where *Y*(*T*) represents school and labor force participation, and *T* represents the receipt of remittances. This is interpreted as the difference in school and labor force participation of households receiving remittances as compared to those not receiving remittances for a household randomly drawn from a treated sample. This is then the average difference in outcomes between treatment observations and control observations:

$$ATT = \frac{1}{N_T}\left(\sum_{1}^{N_T}(Y_T - Y_C)\right)$$

Such that Y_T is the outcome of the treated household matched to the corresponding Y_C, which is the outcome of the matched control household. N_T is the matched sample. Standard errors are generated with the use of bootstrap (Khandker, Koolwal, and Samad 2010).

In sum, the ATT is the average difference in outcomes between remittance-receiving and non-remittance-receiving households that have close probabilities of receiving remittances given certain observable characteristics.

There are two primary justifications as to why PSM is used for the study. First, in contributing to the debate on the impact of remittances on labor force participation—as well as contributing to the literature on the impact of remittances on school participation—the study uses PSM to present quasi-experimental results viewing remittances as a treatment/policy targeted at the human capital accumulation and human resource development of the household.

Second, OLS falls short in the presence of endogeneity of the remittance variable as a determinant of school participation and labor force participation rates. Remittances may be endogenous with many factors that could influence whether or not a household will receive remittances. Furthermore, this study expects that if OLS were used to directly estimate the effect of remittances on the human resource development indicators, the coefficient may be misleading. In the presence of endogeneity, the usual solution is to perform instrumental

variable regressions, which entail providing instruments to account for all factors that may influence the endogenous regressor and confound the impact of the regressor to the model.

This study serves as a departure from the usual instrumental variable regressions (such as that by Abdih et al. 2008) to provide a different perspective using PSM, and to contribute or add rigor to the literature debates and discussions on the impact of remittances on human resource development.

C. Multinomial Logit

The question in this study as to the effect of remittances on an individual's outcome while at work, in school, or just being idle can best be answered by using a multinomial logistic regression (multinomial logit). Since this study is dealing with a categorical outcome that violates assumptions of linearity in a regular regression, the logistic regression becomes necessary. The multinomial distinction is used as there are three non-ordinal categories. Similar to a binary logistic model, a multinomial logistic model considers a dependent variable that can assume multiple outcomes, where Y_i = 1, 2,3,…,*j*, and the process entails the estimation of the probability of an observation to fall under a specific outcome $\pi_{ij} = \Pr[Y_i = j]$. One of the outcomes will be used as a reference category and the log-odds for all other categories will be computed relative to the reference, given a linear function of independent variables. Therefore, there will be *j – 1*number of equations that estimate how independent variables influence the log-odds of the outcome.

The multinomial logit's main contribution to the study is that it shows all at once the relative changes brought about by remittances on individuals' choices by demonstrating the changes in relative likelihoods of a person choosing to engage in the labor force or going to school compared to the base outcome of being in neither (which implies idleness). This is performed by calculating the log-odds of all other categories relative to the base outcome chosen, and then allowing the log-odds to be a linear function of remittances. The model would take on the simple form, as follows:

$$f(i,j) = log\frac{\mu_{ij}}{\mu_{iJ}} = x_j \times \beta_i$$

Where μ_{ij} is the probability of the *i*th individual being in the *j*th category, while μ_{iJ} is the probability of the *i*th individual being in the baseline category J. β_i is a set of regression coefficients, while x_j is a set of independent variables associated with observation *j*, for *j*=1,2,…,*J* – 1.

Using individual level variation in the APIS, the dependent variable for this model in the study will have four possible outcomes: (1) school, (2) work, (3) neither (implicitly idle), or (4) both (implicitly working and studying part-time). This model estimates the impact of remittances on the probability of the individual to be in either one of the four outcomes. In this case, the study looked into tertiary-level-aged individuals—15–24 years old—as this is the relevant age when an individual can choose which outcome is preferable. The model is presented as follows:

$$HRDOutcome_{ij} = f(Remittances_j)$$

such that

$$HRDOutcome = \begin{cases} 1 \text{ if } i\text{th member of the } j\text{th household is in school and not working} \\ 2 \text{ if } i\text{th member of the } j\text{th household is working and not in school} \\ 3 \text{ if the } i\text{th member of the } j\text{th household is neither working nor in school} \\ 4 \text{ if the } i\text{th member of the } j\text{th household is both working and in school} \end{cases}$$

In accounting for endogeneity of the remittance variable, a "first-stage regression" is provided to control for the wealth and domestic wage income and demographic characteristics of the head of the household that the individual belongs to. A logit model is used to predict the probability of receiving remittances given the observable characteristics previously mentioned. So, $Remittances_{ij}$ represents the probability that the *j*th household will receive remittances.

In testing for independence from irrelevant alternatives, the Hausman specification test was performed using all equations of an efficient model (censoring one outcome) and a consistent model (wherein all outcomes are used in the model). That the study found no systematic difference between the two models proves that the model is correctly specified (Appendix #/Log file).

D. Operational Framework and Presentation of the Model

1. Model for program selection for remittances

In estimating the model for program selection, the “treatment” or the program would be remittances, which takes the value of“1” if the household receives remittances and “0”if otherwise. The list of observable characteristics must satisfy conditional independence as mentioned earlier. If the balancing property is not satisfied, the propensity scores may still be estimated, but this would imply that recipient and non-recipient households may have similar probabilities of receiving remittances but there may be a systematic variation caused by having very dissimilar characteristics. Therefore, caution must be exercised by providing a large enough list of observable characteristics in formulating the model for program selection. This may be a disadvantage of PSM in contrast to IV regressions for which first-stage regressions or instruments may be freely chosen without worrying about satisfying a balancing property between treatment and control groups.

This study made use of three separate models for program selection where the balancing property is satisfied. These three models are also used as robustness checks on how the ATT will vary given the changes in observable characteristics. Probit regressions are used to estimate the propensity scores in all three models.

The first model looks at how the wealth index influences the probability of receiving remittances, and is specified as follows:

$$Remittances_i = f(\text{wealth index}_i)$$

Such that for all *i* households,

- $Remittances_i = \begin{cases} 1 \text{ if household receives remittances} \\ 0 \text{ if otherwise} \end{cases}$
- *Wealth index*$_i$ = is computed as discussed above and represents the asset holdings of a household and acts as a proxy for wealth.

This study opted to make use of a wealth index rather than total income or expenses of a household since remittances may impact income and expenses of a household. It may be argued that prior remittances muddle the observed characteristics because higher remittances add to household income, thus, leading to structural differences between treatment and control

groups. The wealth index is a reflection of the economic standing of households and may affect the decision of the households to send out migrant workers.

The second model looks at how the propensity of receiving remittances is influenced by characteristics of the household head. This characteristic is chosen due to the same reasoning as that of the first model, and demographic characteristics of the household head such as highest grade completed and job indication are not influenced by remittances. It is specified as

$$Remittances_i = f(HHHighestgradecompleted_i, HHHjobindicator_i)$$

such that for all *i* households,

- R*emittances*$_i$ is specified the same as above;
- *HHHighestgradecompleted*$_i$ is a set of ordinal values representing various levels of educational attainment. These levels of educational attainment are categorized as follows: no grade completed, preschool, primary school, primary school graduate, secondary school, secondary school graduate, post-secondary, post-secondary graduate, tertiary, and tertiary graduate; and
- *HHHjobindicator*$_i$ = 1 if household head is employed or is in a business, 0 if otherwise.

These characteristics were chosen because prior remittances do not necessarily impact these variables endogenously, but may play a part in determining whether or not the household receives remittances.

The third model looks at how the probability of receiving remittances is influenced by domestic salary and wages income. These variables were chosen because prior remittances are not expected to have an effect on the level of wages earned domestically. It is specified as

$$Remittances_i = f(\text{wages}_i)$$

such that for all *i* households,

- R*emittances*$_i$ is specified the same as above; and

- *wages*$_i$ = continuous, positive real-valued variable that represents the wage earnings of the household.

2. Effect of remittances on human resource development outcomes

Following earlier studies (see Section II) that show that remittances improve investment in education and even improve school attendance and participation, it is expected that remittance-receiving households have a higher school participation rate. The school participation rate will be computed as the proportion of school-age members in school to the number of school-age members.

As noted in Section II, there has been a long-standing debate on how remittances affect labor force participation. Given this, the study will have no particular a-priori expectation when it comes to the impact of remittances on labor force participation and idleness.

3. Model for program selection for parental migration

Similar to the model for program selection for remittances, three models for program selection were used where the balancing property is satisfied. Probit regressions were performed to generate the p-scores under each model. However, instead of presenting parental migration in general (regardless of whether father or mother was the migrant), the father migrant and mother migrant equations were separated for each model of program selection.

The first model is similar to the first model for program selection for remittances, which uses the wealth index as predictor. The level of wealth and asset holdings is an important factor in determining whether or not a household may send remittances as it reflects the socioeconomic status and ability of the household. Wealth is chosen instead of total income because migration and eventual remittances may cause endogeneity when it comes to income. The model is specified as follows:

$$MotherMigrant_i = f(\text{wealth index}_i)$$

$$FatherMigrant_i = f(\text{wealth index}_i)$$

such that for all households *i,*

- $MotherMigrant_i = \begin{cases} 1 \text{ if household has a mother migrant} \\ 0 \text{ if otherwise} \end{cases}$
- $FatherMigrant_i = \begin{cases} 1 \text{ if household has a father migrant} \\ 0 \text{ if otherwise} \end{cases}$
- *Wealth index*$_i$ = is computed as discussed above and represents the asset holdings of a household and acts as a proxy for wealth.

The second model is similar in nature to the second model for program selection for remittances in the sense that educational attainment of a working age member is used as predictor. The second model for program selection for gendered parental migration uses the highest grade completed of the migrant parent in determining the p-score for having a mother migrant and a father migrant, respectively. The second model is specified as follows:

$$MotherMigrant_i = f(MMhighestgradecompleted_i)$$
$$FatherMigrant_i = f(FMhighestgradecompleted_i)$$

Such that for all households,

- *MotherMigrant*$_i$ is specified the same as above;
- *FatherMigrant*$_i$ is specified the same as above;
- *MMhighestgradecompleted*$_i$ is a set of ordinal values representing various levels of educational attainment of the migrant mother. These levels of educational attainment are categorized as follows: no grade completed, preschool, primary school, primary school graduate, secondary school, secondary school graduate, post-secondary, post-secondary graduate, tertiary, and tertiary graduate; and
- *FMhighestgradecompleted*$_i$ is specified the same as *MMhighestgradecompleted*$_i$ but for the migrant father.

The third model is similar to the third model for program selection for remittances, which uses domestic wage earnings of the household to explain the probability of having a migrant parent. In the same sense as in the earlier model for remittances, domestic wage is used to prevent any endogeneity caused by possible remittances on the household's ability to send a migrant, and intuitively it may serve as a push factor that would drive an individual to migrate for higher wages. The third model is specified as follows:

$$MotherMigrant_i = f(\text{wages}_i)$$
$$FatherMigrant_i = f(\text{wages}_i)$$

such that for all *i* households,

- $MotherMigrant_i$ is specified the same as above;
- $FatherMigrant_i$ is specified the same as above; and
- $wages_i$ = continuous, positive real-valued variable that represents the wage earnings of the household.

4. Effect of parental migration on school participation rate

As discussed in Section II, parental migration has a mix of disruptive, income, and aspirational effects. The net effect will depend on which of these will provide the strongest impact. There is no well-established finding among parental migration studies that could generate an expectation. Some studies in various countries find a dominant disruptive effect, but most (if not all) studies focused on the Philippines find a positive net effect potentially due to a strong income and aspirations effect. Because of this, this study has no a priori expectation but is open to the likelihood that because of the history and motivations of the Filipino households regarding the decision to migrate, it can be seen that despite abandonment and lack of guidance, school-age household members may still be encouraged to attend school.

IV. RESULTS AND DISCUSSIONS

A. Results of PSM on the Impact of Remittances on School Participation and Labor Force Participation

Table IV-1: Average treatment effect on the treated of remittances on school participation rate using nearest-neighbor matching given the three models of program selection

Region	2008			2010			2011			2013		
	WI	HHDC	S&W	WI	HHDC	S&W	WI	HHDC	S&W	WI	HHDC	S&W
National	**0.019**	**0.066**	**0.061**	**0.064**	**0.084**	**0.078**	**0.033**	**0.060**	**0.044**	**0.029**	**0.058**	**0.038**
	(0.006)	**(0.006)**	**(0.006)**	**(0.008)**	**(0.007)**	**(0.007)**	**(0.006)**	**(0.005)**	**(0.005)**	**(0.011)**	**(0.010)**	**(0.010)**
	2.987	**11.214**	**10.221**	**8.018**	**11.356**	**10.954**	**5.729**	**11.052**	**8.393**	**2.725**	**5.988**	**3.914**
1	0.008	**0.069**	**0.073**	**0.055**	**0.104**	**0.087**	0.006	**0.055**	0.013	0.048	0.027	0.037
Ilocos	(0.025)	**(0.021)**	**(0.022)**	**(0.032)**	**(0.029)**	**(0.027)**	(0.023)	**(0.019)**	(0.019)	(0.045)	(0.040)	(0.041)
	0.315	**3.292**	**3.389**	**1.708**	**3.628**	**3.229**	0.265	**2.949**	0.669	1.076	0.663	0.911
2	0.037	**0.078**	**0.059**	**0.077**	**0.136**	**0.138**	**0.071**	**0.076**	**0.065**	0.065	**0.153**	**0.099**
Cagayan	(0.031)	**(0.028)**	**(0.029)**	**(0.035)**	**(0.031)**	**(0.031)**	**(0.026)**	**(0.022)**	**(0.024)**	(0.43)	**(0.038)**	**(0.039)**
	1.190	**2.783**	**1.996**	**2.221**	**4.339**	**4.453**	**2.716**	**3.388**	**2.766**	1.523	**4.007**	**2.501**
3	-0.002	**0.074**	**0.059**	**0.053**	**0.097**	0.039	0.009	**0.083**	**0.031**	0.020	0.041	-0.005
Central Luzon	(0.023)	**(0.019)**	**(0.020)**	**(0.029)**	**(0.029)**	(0.025)	(0.020)	**(0.018)**	**(0.018)**	(0.039)	(0.034)	(0.034)
	-0.070	**3.900**	**3.015**	**1.809**	**3.312**	1.568	0.471	**4.582**	**1.781**	0.523	1.215	-0.152
4a	0.034	**0.117**	**0.086**	**0.107**	**0.126**	**0.092**	**0.059**	**0.118**	**0.071**	**0.098**	**0.118**	**0.070**
CALABARZON	(0.021)	**(0.018)**	**(0.018)**	**(0.027)**	**(0.025)**	**(0.023)**	**(0.017)**	**(0.016)**	**(0.016)**	**(0.034)**	**(0.032)**	**(0.032)**
	1.645	**6.458**	**4.697**	**3.926**	**5.160**	**4.021**	**3.349**	**7.412**	**4.560**	**2.910**	**3.629**	**2.166**
4b	-0.001	0.018	0.038	0.007	**0.074**	0.056	0.042	0.013	0.013	0.074	0.072	**0.147**
MIMAROPA	(0.044)	(0.036)	(0.038)	(0.046)	**(0.038)**	(0.040)	(0.035)	(0.030)	(0.031)	(0.079)	(0.065)	**(0.067)**
	-0.020	0.491	0.984	0.142	**1.934**	1.404	1.208	0.445	0.426	0.941	1.118	**2.182**
5	-0.025	0.011	0.039	**-0.076**	0.009	-0.023	0.047	0.017	**0.048**	0.073	**0.110**	**0.085**
Bicol Region	(0.035)	(0.028)	(0.030)	**(0.044)**	(0.037)	(0.039)	(0.029)	(0.027)	**(0.026)**	(0.059)	**(0.046)**	**(0.047)**
	-0.718	0.410	1.267	**-1.745**	0.232	-0.591	1.614	0.626	**1.884**	1.234	**2.399**	**1.811**
6	-0.013	**0.069**	**0.081**	**0.061**	**0.079**	**0.086**	0.022	**0.050**	0.020	-0.001	**0.068**	0.039
Western Visayas	(0.030)	**(0.025)**	**(0.025)**	**(0.034)**	**(0.028)**	**(0.028)**	(0.026)	**(0.020)**	(0.021)	(0.042)	**(0.040)**	(0.037)
	-0.435	**2.739**	**3.195**	**1.825**	**2.795**	**3.042**	0.861	**2.481**	0.963	-0.013	**1.715**	1.050
7	0.007	**0.069**	**0.090**	0.019	**0.084**	**0.055**	0.030	**0.060**	**0.060**	-0.025	-0.046	0.013
Central Visayas	(0.029)	**(0.024)**	**(0.025)**	(0.041)	**(0.034)**	**(0.029)**	(0.026)	**(0.023)**	**(0.022)**	(0.050)	(0.049)	(0.043)
	0.224	**2.841**	**3.639**	0.459	**2.435**	**1.883**	1.117	**2.627**	**2.696**	-0.502	-0.947	0.303
8	-0.011	0.014	0.024	**0.077**	**0.103**	**0.141**	0.037	0.038	**0.060**	0.006	0.014	-0.013
Eastern Visayas	(0.033)	(0.028)	(0.031)	**(0.043)**	**(0.038)**	**(0.035)**	(0.029)	(0.025)	**(0.024)**	(0.055)	(0.043)	(0.042)
	-0.324	0.485	0.774	**1.786**	**2.717**	**3.968**	1.284	1.509	**2.480**	0.106	0.322	-0.299

Region	2008			2010			2011			2013		
	WI	HHDC	S&W	WI	HHDC	S&W	WI	HHDC	S&W	WI	HHDC	S&W
9	-0.006	-0.005	0.009	**0.137**	0.065	**0.090**	0.044	0.044	**0.076**	0.031	0.085	0.100
Western	(0.040)	(0.036)	(0.038)	**(0.052)**	(0.046)	**(0.046)**	(0.036)	(0.032)	**(0.034)**	(0.065)	(0.063)	(0.064)
Mindanao	-0.151	-0.136	0.246	**2.624**	1.424	**1.949**	1.201	1.379	**2.252**	0.470	1.355	1.1714
10	0.037	**0.091**	**0.081**	0.035	**0.091**	**0.115**	**0.074**	**0.086**	0.053	-0.035	0.034	0.005
Northern	(0.040)	**(0.032)**	**(0.035)**	(0.051)	**(0.037)**	**(0.037)**	**(0.036)**	**(0.032)**	(0.031)	(0.068)	(0.059)	(0.056)
Mindanao	0.915	**2.837**	**2.341**	0.676	**2.453**	**3.141**	**2.055**	**2.668**	1.1719	-0.519	0.570	0.091
11	0.001	0.031	0.011	0.002	0.056	0.021	-0.026	0.018	-0.007	**0.085**	0.038	-0.018
Southern	(0.037)	(0.031)	(0.033)	(0.045)	(0.038)	(0.038)	(0.035)	(0.031)	(0.032)	**(0.051)**	(0.043)	(0.045)
Mindanao	0.038	0.992	0.327	0.045	1.482	0.557	-0.745	0.580	-0.206	**1.667**	0.892	-0.397
12	0.052	**0.067**	**0.094**	**0.103**	0.062	0.050	-0.002	0.029	-0.009	-0.012	0.036	0.062
Central	(0.033)	**(0.029)**	**(0.031)**	**(0.041)**	(0.039)	(0.039)	(0.030)	(0.028)	(0.028)	(0.061)	(0.056)	(0.058)
Mindanao	1.541	**2.323**	**3.003**	**2.479**	1.585	1.271	-0.080	1.053	-0.310	-0.198	0.644	1.059
13	**0.046**	**0.094**	**0.067**	**0.105**	**0.126**	**0.068**	**0.060**	0.086	**0.034**	**0.077**	**0.123**	0.089
National Capital	**(0.019)**	**(0.016)**	**(0.018)**	**(0.022)**	**(0.020)**	**(0.020)**	**(0.017)**	(0.016)	**(0.016)**	**(0.032)**	**(0.029**)	(0.031)
Region	**2.508**	**5.684**	**3.801**	**4.741**	**6.152**	3.329	**3.652**	5.561	**2.190**	**2.445**	4.214	2.841
14	-0.009	0.033	0.022	0.053	**0.077**	0.049	**0.078**	0.079	**0.093**	-0.066	0.053	0.036
Cordillera	(0.035)	(0.031)	(0.031)	(0.040)	**(0.037)**	(0.035)	**(0.026)**	(0.024)	**(0.024)**	(0.050)	(0.048)	(0.046)
Administrative Region	-0.242	1.089	0.692	1.318	**2.065**	1.413	**2.992**	3.260	**3.926**	-1.333	1.095	0.786
15	0.045	**0.087**	**0.074**	-0.068	-0.066	-0.069	-0.040	-0.046	**-0.057**	**-0.101**	**-0.152**	**-0.156**
ARMM	(0.039)	**(0.036)**	**(0.037)**	(0.055)	(0.051)	(0.053)	(0.036)	(0.034)	**(0.033)**	**(0.060)**	**(0.049)**	**(0.049)**
	1.155	**2.420**	**1.996**	-1.232	-1.302	1.304	-1.121	-1.370	**-1.751**	**-1.678**	**-3.095**	**-3.194**
16	-0.011	**0.054**	0.026	0.006	0.010	0.019	-0.020	0.024	0.025	0.071	**0.161**	0.037
Caraga Region	(0.036)	**(0.031)**	(0.032)	(0.045)	(0.040)	(0.040)	(0.41)	(0.034)	(0.034)	(0.058)	**(0.059)**	(0.055)
	-0.296	**1.751**	0.805	0.132	0.246	0.484	-0.486	0.707	0.740	1.219	**2.730**	0.673

Data in each cell are ATT, standard errors in parentheses, t-values, respectively.
Highlighted values represent significant p-values at the 5 percent level.
ARMM = Autonomous Region in Muslim Mindanao.
Source: Authors' computations based on APIS datasets.

Table IV-1 summarizes the average treatment effect on the treated (ATT) of remittances on school participation given the three models for program selection. There appears to be a consensus across all models and time periods on the impact of remittances on school participation rates at the national level. It may be seen that households that receive remittances have a 1.9–8.4 percent higher school participation rate than households that do not receive remittances. This reinforces the results of many studies (Mara et al. 2012; Acosta 2006; Yang 2006; Cox and Ureta 2003) as well as the work of Theoharides (2014a), which finds that migration is positively associated with secondary school enrollment decisions.

Looking at the first model for program selection, it may be seen that at the national level, the ATTs are positive and fluctuate over time and seem to be highest in 2010. Households that receive remittances have 1.9–6.4percent higher school participation rates than non-remittance-receiving households. The ATT is, however, generally higher in the second model for program selection, considering the household head's highest grade completed and job indicator, ranging from 6.0 percent to 8.4percent higher in school participation rates. The third model for program selection paints a similar picture, indicating that the higher school participation rate ranges from 3.8 percent to 7.8percent. It may be noted that the impact of remittances is greatest in 2010.

At the regional level, results are much more varied. The positive impact on school participation appears for most regions across time periods and models, but there are some which report a negative impact, although insignificant, on school participation. Most of the negative, insignificant impacts on school participation occur when controlling for the wealth index for 2008, 2011, and 2013. However, looking at the picture for most regions, the impact of remittances appears to be generally positive, and impacts are quite stronger and more consistent for Ilocos, Cagayan, CALABARZON, Western Visayas, Central Visayas, Eastern Visayas, Northern Mindanao, and NCR. All of these regions receive higher-than-average annual remittances as compared to other regions. The share of remittances in total household income in Ilocos, Cagayan, CALABARZON, Western Visayas, and NCR are, in fact, higher than the national average—which is 7percent of total income—although standard deviations are relatively large. Similar to the national results, households that receive remittances tend to have higher school participation rates when controlling for the demographic characteristics of the household head and domestic wages, as compared to controlling for the wealth index.

On the other hand, it is quite notable that the Autonomous Region of Muslim Mindanao (ARMM) has negative and significant signs for the ATT for all models in 2013 and the domestic wage model in 2011 despite exhibiting the a priori signs in 2008. The region posts negative and insignificant results for 2010 and the other two models in 2011. It is also noteworthy that the negative and significant effect of receiving remittances on lowering school participation rates increased from 5.7 percent in 2011 to around 10-16 percent by 2013. Recalling the various indicators for ARMM, it may be seen that the region has a lower than the national average rating in terms of school participation, labor force participation, remittances, wealth index, and domestic wages. The average share of remittances to total income for the region is the lowest among all regions (only 2.2% with a 9.1 standard deviation). ARMM also has the lowest average total household income in all samples, and is the region that has lagged behind the most when it comes to economic development. Further investigation is still needed to find out why remittances impact school participation much differently for only ARMM in particular.

Table IV-2 summarizes the ATT of remittances on the labor force participation rate given the three models for program selection. It appears that there is also a consensus across all models and time periods at the national level that households that receive remittances have 9.3–16.3percent*lower* labor force participation rates as compared to non-remittance-receiving households. As to the debate on the impact of remittances on labor force participation, this study's results seem to reinforce the findings of Tullao, Cortez, and See (2007) and Rodriguez and Tiongson (2001). However, it is counter-intuitive to the findings of Cabegin (2006) and Yang (2006), which postulate that although recipients have less hours in employment, they spend more time in self-employment because the labor indicator used to compute for the labor force participation rate takes into consideration both employment and self-employment. Theoharides (2014b) finds that the increase in the share of performing artists overseas, coupled with regulations on migration, has no impact on total unemployment, but increases female unemployment. Migration tends to encourage child labor, short-term employment, and looking for additional work, but tends to discourage those that are looking for primary employment.

Comparing the ATTs of the first model of program selection, it may be seen that remittance-receiving households have 12.9–15.4percent lower labor force participation rates. Given the second model of program selection, it may be noted that labor force participation rates are lower by 9.3–11.1percent. And given the third model of program selection, the lower labor force participation rates are lower by 12.3–16.3percent. Among the three models for

program selection, the negative impact is noticeably largest in the model controlling for domestic salaries and wages, which may hint that members may be more discouraged to work locally given the gap in domestic and international wages, as well as the relative wage effect that Theoharides (2014a) posits (which is discussed further on p. 35). The negative impact is also relatively larger when controlling for the wealth index, which may hint at the possibility of becoming idle because of the increased income from remittances (which is further looked into with the multinomial logit model in the next section). The negative impact is lowest for when the models control for the household head's demographic characteristics, most likely because higher educational attainment induces a higher labor force participation rate (since higher levels of education entails higher productivity, earnings, and employability).

At a regional level, nearly all regions converge with the national level results, reinforcing the claim that remittances discourage participation in the labor force. The discouraging impact is larger when controlling for either the wealth index or domestic wages as compared to controlling for the household head's demographic characteristics. However, ARMM posted positive ATTs during 2010 and 2013, which implies that ARMM households receiving remittances have a higher labor force participation rate (9.5–9.8% higher in 2010 and 9.9–10.9% higher in 2013) as compared to those that do not receive remittances. It does, however, show the negative impact in 2008 (also in 2010 but ATTs are insignificant). Reviewing the indicators for ARMM, the region is known to have relatively little dependence on remittances despite being the region that has lagged behind the most when it comes to economic development. Remittances may act as an avenue that allows households to engage in employment or own businesses but at the cost of not sending children to school—but this may be an extrapolation. Further investigation is needed as to why the impact of remittances on human resource development outcomes is different from all other regions.

Table IV-2: Average treatment effect on the treated of remittances on labor force participation rate using nearest-neighbor matching given the three models of program selection

Region	2008			2010			2011			2013		
	WI	HHDC	S&W	WI	HHDC	S&W	WI	HHDC	S&W	WI	HHDC	S&W
National	-0.150	-0.111	-0.163	-0.151	-0.111	-0.157	-0.154	-0.104	-0.162	-0.129	-0.093	-0.123
	(0.005)	(0.005)	(0.005)	(0.007)	(0.007)	(0.007)	(0.005)	(0.005)	(0.005)	(0.009)	(0.009)	(0.009)
	-31.023	-24.304	-35.550	21.622	-16.908	-23.806	-29.967	-21.407	-33.049	-13.707	-10.752	-13.669
1 Ilocos	-0.116	-0.082	-0.103	-0.133	-0.089	-0.130	-0.129	-0.074	-0.133	-0.181	-0.140	-0.142
	(0.018)	(0.016)	(0.016)	(0.027)	(0.025)	(0.024)	(0.019)	(0.016)	(0.017)	(0.038)	(0.034)	(0.036)
	-6.370	-5.227	-6.400	-4.977	-3.555	-5.506	-6.831	-4.688	-6.720	-4.739	-4.102	-3.909
2 Cagayan	-0.161	-0.121	-0.164	-0.131	-0.099	-0.123	-0.131	-0.102	-0.145	-0.094	-0.070	-0.122
	(0.022)	(0.021)	(0.021)	(0.030)	(0.026)	(0.028)	(0.023)	(0.021)	(0.022)	(0.036)	(0.034)	(0.035)
	-7.384	-5.831	-7.728	-4.417	-3.745	-4.386	-5.754	-4.927	-6.648	-2.604	-2.030	-3.468
3 Central Luzon	-0.183	-0.131	-0.155	-0.197	-0.122	-0.144	-0.206	-0.144	-0.190	-0.130	-0.056	-0.114
	(0.016)	(0.014)	(0.014)	(0.023)	(0.021)	(0.021)	(0.017)	(0.015)	(0.015)	(0.031)	(0.028)	(0.029)
	-11.544	-9.314	-10.723	-8.497	-5.718	-6.796	-12.158	-9.796	-12.425	-4.166	-1.979	-3.930
4a CALABARZON	-0.198	-0.138	-0.176	-0.221	-0.131	-0.193	-0.182	-0.121	-0.175	-0.167	-0.088	-0.146
	(0.015)	(0.013)	(0.014)	(0.022)	(0.020)	(0.020)	(0.016)	(0.014)	(0.015)	(0.029)	(0.029)	(0.029)
	-13.211	-10.294	-12.847	-9.834	-6.565	-9.448	-11.656	-8.598	-11.964	-5.767	-3.073	-5.059
4b MIMAROPA	-0.050	-0.066	-0.090	-0.101	-0.106	-0.152	-0.104	-0.088	-0.149	-0.144	-0.037	-0.112
	(0.032)	(0.027)	(0.028)	(0.043)	(0.038)	(0.041)	(0.033)	(0.029)	(0.031)	(0.075)	(0.065)	(0.071)
	-1.573	-2.445	-3.173	-2.319	-2.755	-3.751	-3.172	-3.036	-4.761	-1.909	-0.578	-1.578
5 Bicol Region	-0.112	-0.082	-0.134	-0.075	-0.100	-0.129	-0.143	-0.057	-0.113	-0.122	-0.036	-0.073
	(0.027)	(0.023)	(0.024)	(0.040)	(0.034)	(0.039)	(0.028)	(0.025)	(0.026)	(0.055)	(0.047)	(0.051)
	-4.214	-3.652	-5.581	-1.882	-2.903	-3.295	-5.079	-2.258	-4.307	-2.212	-0.770	-1.429
6 Western Visayas	-0.109	-0.077	-0.135	-0.121	-0.092	-0.136	-0.129	-0.092	-0.147	-0.147	-0.075	-0.131
	(0.021)	(0.019)	(0.019)	(0.029)	(0.025)	(0.026)	(0.022)	(0.018)	(0.020)	(0.036)	(0.032)	(0.035)
	-5.172	-4.130	-7.227	-4.151	-3.715	-5.297	-5.960	-5.081	-7.357	-4.4043	-2.312	-3.708
7 Central Visayas	-0.178	-0.130	-0.212	-0.158	-0.0990	-0.190	-0.195	-0.132	-0.221	-0.247	-0.073	-0.220
	(0.022)	(0.019)	(0.019)	(0.035)	(0.030)	(0.029)	(0.023)	(0.020)	(0.021)	(0.045)	(0.043)	(0.043)
	-8.247	-6.970	-11.205	-4.550	2.997	-6.575	-8.426	-6.486	-10.474	-5.551	-1.686	-5.099
8 Eastern Visayas	-0.091	-0.054	-0.079	-0.125	-0.076	-0.152	-0.157	-0.166	-0.153	-0.126	-0.069	-0.143
	(0.024)	(0.021)	(0.023)	(0.039)	(0.034)	(0.035)	(0.029)	(0.026)	(0.026)	(0.052)	(0.044)	(0.046)
	-3.718	-2.510	-3.488	-3.217	-2.253	-4.320	-5.472	-4.442	-5.940	-2.417	-1.569	-3.078
9 Western Mindanao	-0.080	-0.057	-0.093	-0.159	-0.111	-0.158	-0.133	-0.101	-0.127	-0.255	-0.199	-0.230
	(0.029)	(0.027)	(0.028)	(0.044)	(0.038)	(0.040)	(0.031)	(0.028)	(0.030)	0.060	(0.057)	(0.060)
	-2.705	-2.104	-3.297	-3.633	-2.891	-3.917	-4.336	-3.645	-4.279	-4.249	-3.468	-3.825

Region	2008			2010			2011			2013		
	WI	HHDC	S&W	WI	HHDC	S&W	WI	HHDC	S&W	WI	HHDC	S&W
10	**-0.162**	**-0.144**	**-0.198**	**-0.098**	**-0.073**	**-0.166**	**-0.121**	**-0.086**	**-0.193**	**-0.211**	**-0.172**	**-0.174**
Northern	**(0.031)**	**(0.027)**	**(0.028)**	**(0.045)**	**(0.036)**	**(0.038)**	**(0.034)**	**(0.031)**	**(0.031)**	**(0.060)**	**(0.055)**	**(0.056)**
Mindanao	**-5.281**	**-5.428**	**-7.132**	**-2.177**	**-2.041**	**-4.336**	**-3.582**	**-2.808**	**-6.226**	**-3.538**	**-3.159**	**-3.092**
11	**-0.113**	**-0.063**	**-0.137**	**-0.069**	**-0.041**	-0.053	**-0.169**	**-0.105**	**-0.176**	**-0.107**	**-0.065**	**-0.146**
Southern	**(0.027)**	**(0.024)**	**(0.025)**	**(0.036)**	**(0.031)**	(0.033)	**(0.030)**	**(0.027)**	**(0.029)**	**(-0.043)**	**(0.039)**	**(0.042)**
Mindanao	**-4.128**	**-2.614**	**-5.411**	**-1.913**	**-1.320**	-1.621	**-5.592**	**-3.838**	**-6.104**	**-2.472**	**-1.675**	**-3.483**
12	**-0.097**	**-0.069**	**-0.059**	**-0.104**	**-0.104**	**-0.146**	**-0.125**	**-0.065**	**-0.141**	**-0.021**	-0.008	-0.049
Central	**(0.026)**	**(0.023)**	**(0.025)**	**(0.037)**	**(0.036)**	**(0.036)**	**(0.025)**	**(0.024)**	**(0.025)**	**(0.054)**	(0.049)	(0.055)
Mindanao	**-3.789**	**-2.938**	**-2.411**	**-2.773**	**-2.915**	**-4.012**	**-4.934**	**-2.743**	**-5.718**	**-0.398**	-0.174	-0.896
13	**-0.198**	**-0.164**	**-0.185**	**-0.202**	**-0.154**	**-0.150**	**-0.193**	**-0.135**	**-0.166**	**-0.173**	**-0.133**	**-0.127**
National Capital	**(0.013)**	**(0.012)**	**(0.012)**	**(0.019)**	**(0.018)**	**(0.019)**	**(0.014)**	**(0.013)**	**(0.014)**	**(0.026)**	**(0.023)**	**(0.026)**
Region	**-15.297**	**-13.855**	**-14.797**	**-10.651**	**-8.658**	**-8.061**	**-13.839**	**-10.347**	**-12.144**	**-6.783**	**-5.662**	**-4.912**
14												
Cordillera	**-0.226**	**-0.176**	**-0.271**	**-0.211**	**-0.170**	**-0.233**	**-0.145**	**-0.105**	**-0.163**	**-0.149**	**-0.082**	**-0.137**
Administrative	**(0.027)**	**(0.024)**	**(0.025)**	**(0.033)**	**(0.032)**	**(0.033)**	**(0.025)**	**(0.023)**	**(0.024)**	**(0.042)**	**(0.041)**	**(0.043)**
Region	**-8.457**	**-7.342**	**-11.017**	**-6.339**	**-5.273**	**-7.147**	**-5.814**	**-4.614**	**-6.792**	**-3.550**	**-2.009**	**-3.184**
15	**-0.100**	**-0.080**	**-0.096**	**0.095**	**0.098**	**0.098**	-0.020	-0.034	-0.029	**0.109**	**0.103**	**0.099**
ARMM	**(0.027)**	**(0.025)**	**(0.026)**	**(0.044)**	**(0.041)**	**(0.043)**	(0.029)	(0.028)	(0.028)	**(0.048)**	**(0.040)**	**(0.039)**
	-3.716	**-3.208**	**-3.753**	**2.152**	**2.391**	**2.294**	-0.685	-1.209	-1.066	**2.278**	**2.585**	**2.503**
16	**-0.122**	**-0.074**	**-0.135**	**-0.145**	**-0.144**	**-0.138**	**-0.156**	**-0.086**	**-0.142**	-0.061	-0.010	-0.077
Caraga Region	**(0.027)**	**(0.024)**	**(0.025)**	**(0.041)**	**(0.035)**	**(0.037)**	**(0.034)**	**(0.029)**	**(0.032)**	(0.053)	(0.047)	(0.052)
	-4.493	**-3.069**	**-5.439**	**-3.528**	**-4.077**	**-3.687**	**-4.556**	**-2.947**	**-4.496**	-1.157	-0.213	-1.484

Data in each cell are ATT, standard errors in parentheses, t-values, respectively.
Highlighted values represent significant p-values at the 5 percent level.
ARMM = Autonomous Region in Muslim Mindanao.
Source: Authors' computations from APIS datasets.

Despite these negative coefficients across the board, there may still not be sufficient evidence to conclude that remittances cause dependency or induce idleness among household members. One good question remains: though remittances appear to discourage participation in the labor force, could it be that these encourage household members instead to pursue further human capital accumulation through increased school participation? Do remittances induce a movement from labor force participation to school participation possibly among the younger members of the household?

Theoharides (2014a) elaborates on the liquidity effect and relative wage effect of migration (and implicitly, remittances). Following Theoharides (2014a), this study posits that remittances cause a shift from labor participation to school participation since (i) it relaxes the liquidity constraint of households, allowing them to invest further in their human capital, and (ii) because the relative wage of workers with higher levels of education attainment are higher. Remittances may act as their avenue (by way of relaxing the liquidity constraint) to access further education and invest in human capital, because higher human capital results in higher earnings in the long-run whether domestically or internationally (relative-wage effect). This may be evident in the ATTs of labor force participation controlling for domestic wages. The labor force participation reduction of remittances is greatest for those remittance-receiving households given a balanced level of domestic wages as compared to their non-remittance-receiving counterparts. This may imply that given the same wages, remittances-receiving households are more discouraged to enter the labor force because their relative wage is lower given their current educational attainment.

It could be that they may rather pursue higher levels of education rather than enter the labor force, and this may be seen from the ATTs of the school participation rate. The ATTs of the school participation rate controlling for domestic wages are generally higher than that controlling for the wealth index. This implies that the increase in school participation is higher for remittance-receiving households given a balanced level of domestic wages.

However, to prove this more strongly, there is a need to investigate deeper into how remittances impact the decision of individuals to be engaged in the labor force, school, or neither (that is, a state of idleness or dependency). This, however, calls for improvements in both methodology and the available dataset.

B. Results of Multinomial Logit on the Impact of Remittances on the Human Resource Development Outcomes

1. National estimates

In this section, the study estimates whether the receipt of remittances from abroad induces behaviors related to school, working, both (part-time in school and in work), or idleness for individuals 15–24 years old. This study focuses primarily on the outcomes for this particular age group for a number of reasons. First, prior to the implementation of the K to 12 Basic Education Program, the usual graduation age from high school were 15 or 16 years old. Upon graduation, these individuals could decide to be part of the labor force. The second reason has to do with the conceptual definition of the labor force, which comprises employed, underemployed, and unemployed individuals who are at least 15 years of age.

Multinomial logit was used to estimate the effect of the receipt by households of remittances on the following four possible outcomes: (i) being in school, (ii) being in the labor force, (iii) being in both school and the labor force, and (iv) being idle. However, due to the endogeneity of the remittances variable with household characteristics such as the wealth, education, job, and wages of its members, an instrumental variables logit model of the remittances variable is first run on these characteristic—as the first stage. The resulting predicted probability of receiving remittances is then used in the second-stage estimation.

In this section, the estimated marginal effects of the model are discussed. It should be noted that the estimated marginal effect for continuous variables refers to the instantaneous rate of change. In this case, if the probability of receiving remittances increased by some arbitrarily small amount, say, 0.001, given an estimated marginal effect of, say, 1.001, then the probability of being in school increases by 0.001×1.001=0.001.

Table IV-3: Marginal effects of the impact of remittances on the human resource development outcomes using APIS 2013

Region	School	Labor	Idle	School and Labor
National	1.02***	-1.33***	0.34***	-0.033***
	(0.03)	(0.04)	(0.03)	(0.02)
1 Ilocos	1.33**	-1.72***	0.66**	-0.28***
	(0.15)	(0.26)	(0.15)	(0.16)
2 Cagayan	1.03**	-1.23***	0.19***	0.005
	(0.13)	(0.18)	(0.10)	(0.10)
3 Central Luzon	0.78***	-0.99***	0.20***	0.01
	(0.07)	(0.10)	(0.08)	(0.03)
4a CALABARZON	1.02***	-1.52***	0.40***	0.09
	(0.08)	(0.13)	(0.08)	(0.03)
4b MIMAROPA	1.56	-1.89***	0.52	-0.19*
	(0.27)	(0.37)	(0.17)	(0.20)
5 Bicol Region	1.04	-1.22***	0.29	-0.12
	(0.18)	(0.25)	(0.14)	(0.15)
6 Western Visayas	1.89**	-2.42***	0.59**	-0.06***
	(0.18)	(0.27)	(0.12)	(0.14)
7 Central Visayas	0.84	-1.28***	0.36	0.07
	(0.12)	(0.18)	(0.09)	(0.06)
8 Eastern Visayas	1.26**	-1.99***	0.49**	0.25
	(0.12)	(0.19)	(0.11)	(0.03)
9 Western Mindanao	2.20**	-2.75***	0.76**	-0.20***
	(0.22)	(0.34)	(0.16)	(0.21)
10 Northern Mindanao	1.29	-1.86***	0.64	-0.07***
	(0.16)	(0.30)	(0.12)	(0.18)
11 Southern Mindanao	0.96***	-1.17***	0.28***	-0.07*
	(0.10)	(0.16)	(0.11)	(0.82)
12 Central Mindanao	1.37**	-1.52***	0.42**	-0.27**
	(0.18)	(0.27)	(0.15)	(0.17)
13 National Capital Region	0.72***	-0.76***	0.02***	0.02
	(0.07)	(0.09)	(0.07)	(0.02)
14 Cordillera Administrative Region	1.07	-1.06***	0.46	-0.47***
	(0.12)	(0.18)	(0.08)	(0.16)
15 ARMM	3.59***	-4.51***	1.28***	-0.37***
	(0.24)	(0.36)	(0.19)	(0.21)
16 Caraga Region	0.99***	-1.12***	0.22***	-0.09
	(0.15)	(0.24)	(0.15)	(0.13)

Data in each cell represent marginal effects. Standard errors are in parentheses.
Note: *represents 10percent, ** represents 5percent, and*** represents 1percent level of significance. P-values are based on multinomial logit regression rather than on marginal effects.
ARMM = Autonomous Region in Muslim Mindanao.
Source: Authors' computation from APIS 2013 dataset

Table IV-3 summarizes the marginal effects of the multinomial logit model. The resulting estimation shows that the remittances variable is shown to be statistically significant. The estimated marginal effects suggest that there is indeed a positive relationship between receiving remittances and being in school. In particular, it can be seen that the marginal effect of the probability of receiving remittances on the probability of being in school is 1.02. On the other hand, the marginal effect on the probability of being in the labor force is estimated to be -1.33. Similarly, the probability of being in both school and labor decreases by a small yet significant 0.033.These results are suggestive of the possibility that individuals 15–24 years old shift out of the labor force and into schooling when confronted with increased probabilities of receiving remittances. It should be noted, however, that the marginal effect of the probability of receiving remittances on the probability of being idle was also positive and estimated to be 0.34. This may suggest that an increasing probability of receiving remittances may also lead to idleness. It should be noted, however, that the marginal effect on schooling is larger than that on idleness. Therefore, higher probabilities of receiving remittances may lead to a greater chance of individuals to shift out of the labor force and into schooling rather than into idleness.

This finding on remittances potentially leading to idleness is not new. Remittances increase household income, may increase the reservation wage of working household members who are left behind, and may lower the opportunity cost of leisure and so they may no longer have as strong an incentive to work (Amuedo-Dorantes and Pozo 2006). Bridi (2005) writes that remittances do indeed promote idleness. Similarly, labor force participation among those who have received remittances has been observed to decrease in countries in Latin America and Asia (Acosta 2006; Rodriguez and Tiongson 2001; Tullao, Cortez, and See 2007). However, these findings should be weighed against what has been observed with regard to remittances increasing a household's investments and entrepreneurial activities. Such is the case in Viet Nam, where the receipt of remittances led households to increase investments in business and other capital-generating activities (Bui, Le, and Daly 2015).

2. Regional estimates

a. Probability of being in school

When disaggregated according to region, the findings tend to be supportive of the findings presented earlier, which is that when statistically significant (at least at the 5% level), the marginal effect of the probability of receiving remittances is positive on the probability of being in

school. However, this variable was not statistically significant for the (i) Bicol Region, (ii) Central Visayas, (iii) Northern Mindanao, (iv) Cordillera Administrative Region, and (v) MIMAROPA.

Compared to the national average marginal effect of the probability of receiving remittances on the probability of being in school, which is equal to 1.02, the marginal effect estimated for the following regions, namely (i) Cagayan Valley (1.03), (ii) CALABARZON (1.02), (iii) Southern Mindanao (0.96), and (iv) Caraga Region (0.99), are similar in magnitude. At the same time, there were regions with much higher magnitudes compared to that of the national average. Ilocos, Western Visayas, and Central Mindanao have marginal effects that ranged from 1.33 to 1.89

The estimated marginal effects for Western Mindanao and the ARMM were also seen to be much higher than that of the national estimate. Western Mindanao was estimated to have a magnitude of 2.20 while that for ARMM was estimated at 3.59.

In contrast to these results, the marginal effect on schooling was estimated to be less than the national estimate for Central Luzon at 0.78 and the NCR at 0.72.

b. Probability of being in the labor force

The negative impact on the labor force participation rate appears statistically significant for all regions. Relative to the national estimate of -1.33on the marginal effect of the probability of receiving remittances on the probability of being in the labor force, the following regions were estimated to have a less negative marginal effect:

(i) Cagayan Valley (-1.23)
(ii) Central Luzon (-0.99)
(iii) Bicol Region (-1.22)
(iv) Central Visayas (-1.28)
(v) Southern Mindanao (-1.17)
(vi) National Capital Region (-0.76)
(vii) Cordillera Administrative Region (-1.06)
(viii) Caraga Region (-1.12)

On the other hand, the marginal effects estimated for the following regions were seen to be more negative compared to the national estimate:

(i) Ilocos (-1.72)
(ii) CALABARZON (-1.52)
(iii) MIMAROPA (-1.89)
(iv) Western Visayas (-2.42)
(v) Eastern Visayas (-1.99)
(vi) Western Mindanao (-2.75)
(vii) Central Mindanao (-1.52)
(viii) ARMM (-4.88)

From the above, it can be seen that the estimated marginal effect of the probability of receiving remittances on the probability of being in the labor force was lowest in the NCR at -0.76 and highest for ARMM at -4.51.

c. Probability of idleness

The positive impact on being idle is statistically insignificant for MIMAROPA, Bicol Region, Northern Mindanao, and CAR. In terms of the estimated marginal effects of the probability of receiving remittances on the probability of idleness, the following regions were estimated to have higher marginal effects than the national estimate of 0.34:

1) Ilocos (0.66)
2) CALABARZON (0.40)
3) Western Visayas (0.59)
4) Eastern Visayas (0.49)
5) Western Mindanao (0.76)
6) Central Mindanao (0.42)
7) ARMM (1.28)

In contrast, the following regions posted lower marginal effects compared to the national estimate:

1) Cagayan Valley (0.19)
2) Central Luzon (0.20)
3) Central Visayas (0.36)
4) Southern Mindanao (0.28)
5) National Capital Region (0.02)
6) Caraga Region (0.22)

In this case, the highest marginal effect in terms of the probability of being idle was estimated in ARMM at 1.28 while the lowest was estimated for NCR at 0.02.

d. Probability of being in school and in the labor force

The low negative impact of remittances on the probability of being in both school and work appears to be statistically significant only for Ilocos, MIMAROPA, Western Visayas, Western Mindanao, Northern Mindanao, Southern Mindanao, CAR, and ARMM. The level of significance varies from 10percent to 1percent. It also appears that all these regions with significant marginal effects have marginal effects larger than the national average of 0.033. The estimates for other regions were insignificant.

Other regions post mostly counter intuitive or insignificant marginal effects, which may be attributed to sample properties.

C. Results of Multinomial Logit on the Impact of Remittances on the Human Resource Development Outcomes Using Relative Risk Ratio Coefficients

To further strengthen the argument of individuals “shifting from labor to school” when receiving remittances, this study made use of the relative risk ratio (RRR) coefficient of the multinomial logit model. The RRR is derived by taking the exponential of the coefficients of the multinomial logit model, or the risk ratio of a specific outcome, and multiplying this with the reciprocal of the risk ratio of the base outcome. It may be interpreted as the likelihood of an observation to be in the specific outcome relative to the base outcome given a fixed change in the set of predictors. Table IV-4 summarizes the RRR coefficients of the impact of remittances on three outcomes—school, labor, and both—and uses the neither outcome (idleness) as reference.

Table IV-4: Relative risk ratio coefficients of the impact of remittances on the human resource development outcomes with idleness as base category, using APIS 2013

Region	School	Labor	School and Labor
National	4.620***	0.003***	0.079***
	(0.769)	(0.001)	(0.030)
1 Ilocos	6.449**	0.000***	0.000***
	(4.707)	(0.000)	(0.001)
2 Cagayan	8.767**	0.008***	0.212
	(8.890)	(0.011)	(0.320)
3 Central Luzon	7.060***	0.020***	0.613
	(3.255)	(0.013)	(0.644)
4a CALABARZON	5.732***	0.001***	2.037
	(2.787)	(0.001)	(1.911)
4b MIMAROPA	2.328	0.000***	0.000*
	(3.129)	(0.000)	(0.001)
5 Bicol Region	3.596	0.004***	0.046*
	(3.495)	(0.006)	(0.086)
6 Western Visayas	7.210**	0.000***	0.002***
	(6.569)	(0.000)	(0.006)
7 Central Visayas	1.935	0.003***	0.377
	(1.179)	(0.003)	(0.425)
8 Eastern Visayas	6.336**	0.000***	0.523
	(5.369)	(0.000)	(0.632)
9 Western Mindanao	12.753**	0.000***	0.000***
	(16.001)	(0.000)	(0.000)
10 Northern Mindanao	2.841	0.000***	0.004***
	(2.351)	(0.000)	(0.007)
11 Southern Mindanao	12.121***	0.008***	0.066*
	(8.186)	(0.008)	(0.107)
12 Central Mindanao	8.710**	0.001***	0.001**
	(8.506)	(0.002)	(0.003)
13 National Capital Region	6.246***	0.0717***	3.535
	(2.597)	(0.040)	(4.295)
14 Cordillera Administrative Region	1.006	0.001***	0.000***
	(0.753)	(0.001)	(0.000)
15 ARMM	45.366***	0.000***	0.000***
	(58.453)	(0.000)	(0.000)
16Caraga Region	11.842***	0.012***	0.109*
	(10.932)	(0.017)	(0.199)

Data in each cell represent relative risk ratio coefficients. Standard errors are in parentheses.
Note: *,represents 10 percent, ** represents 5 percent, and *** represents 1 percent level of significance.
ARMM =Autonomous Region in Muslim Mindanao.
Source: Authors' computation from APIS 2013 dataset.

1. National estimates

A look at the national estimates shows that the school outcome has an RRR of 4.62, which means that a unit increase in the probability of receiving remittances entails that an individual is 4.62 times more likely to be in school. This is relative to being idle, which suggests that a higher

probability of receiving remittances means an individual would more likely go into school than be idle.

The RRR coefficient for the labor outcome is 0.003, which means that a unit increase in the probability of receiving remittances entails that an individual is 0.003 times more likely to be working, which is to say that one is less likely to be working, and more likely to be idle. The same may be said about the part-timer outcome with an RRR of 0.079. With higher probabilities of receiving remittances, individuals have a larger tendency to be idle than to be working or doing part-time at work and at school.

Tying together the lesser likelihood to be in work or in part-time relative to idleness, and the considerably larger (absolute value greater than 1) RRR for the school outcome, it can be said that individuals 15–24 years old "shift from labor to idleness and school, but much more likely to school." This further supports the previous findings using marginal effects.

2. Regional estimates

a. Probability of being in school

RRR coefficients were insignificant for MIMAROPA, Bicol Region, Central Visayas, Northern Mindanao, and CAR. Overall, it may be seem that all RRR coefficients are greater than one, which is consistent with the national estimate. This implies that individuals are more likely to be in school rather than be idle. The RRR coefficients range from 5.732 (CALABARZON) to 45.366 (ARMM), which means that given higher probability of receiving remittances, individuals are anywhere between 5.7 and 45.37 times more likely to be in school than to be idle.

b. Probability of being in the labor force

RRR coefficients were significant at the 1percent level across the board, and all are considerably less than 1 percent, which is consistent with the national estimate. The smallest likelihood that household members may go into labor is in ARMM, which is practically nil, and the largest likelihood would be in NCR, at 0.072. This means that individuals with higher probabilities of receiving remittances are less likely to be working and more likely to be idle. This is consistent with the national estimate as well.

c. Probability of being in school and in the labor force

The results appear to be significant for more than half of the regions. All coefficients are less than 1 (with the exception of NCR, although statistically insignificant), which coincides with the national estimate. The smallest likelihood for household members to go into labor is in ARMM, at 0, and the largest is in the Bicol Region, at 0.046 (although only at 10% significance). The implication is the same with that of the pure labor force outcome—that individuals with higher probabilities of receiving remittances are less likely to be working and schooling part-time, and more likely to be idle, which is consistent with the national estimate.

D. Synthesis of Results on the Effects of Remittances on Human Resource Development

Receiving remittances has a strong association with higher school participation rates, but at the same time, lower labor force participation rates. These have been backed by both the PSM and multinomial logit models. Taking these results together, the regional estimates tend to be similar to those estimated at the national level. When the probability of receiving remittances increases, the results are suggestive of the shift of individuals 15–24 years old being out of the labor force and into schooling, as well as into idleness. However, the marginal effects contributing to higher probabilities of being in school have consistently been higher than those for the probabilities of being idle. The RRR coefficients confirm this as well, seeing that for most regions, individuals will more likely be in school than be idle given a unit change in the probability of receiving remittances.

As noted earlier, however, for MIMAROPA, Bicol Region, Central Visayas, Northern Mindanao, and the CAR, the probability of receiving remittances is not a significant predictor of the probability of being in school. It should also be noted that in MIMAROPA, Northern Mindanao, and the CAR, a higher probability of receiving remittances is associated with a more negative shift out of the labor force compared to the national average, with marginal effects ranging from -1.06 in the CAR to -1.89 in MIMAROPA. At the same time, these three regions also have a higher marginal effect of remittances on the idleness variable relative to the national estimate. These findings may be indicative of the tendency of individuals in these regions, for those aged 15 to 24, to shift out of the labor force and into idleness when the probability of receiving remittances increases. This is especially evident when one looks at the RRR coefficients of the Labor Force outcome, which indicate that given an increase in the probability

of receiving remittances, individuals are more likely to be idle than to be workers. The same may be said about part-time school and work.

This study highlights the relatively small marginal effects estimated for NCR across the four possible outcomes relative to the national estimate and those for the other regions. On the other hand, the estimated marginal effects observed for Western Mindanao and ARMM have been relatively larger in magnitude compared to the national estimate as well as those for the other regions. In this case, large shifts may be expected out of the labor force and into schooling, and to a lesser extent, into idleness for individuals aged 15 to 24 in these regions owing to higher probabilities of receiving remittances.

These support Theoharides' (2014a) suggestion of a liquidity and relative wage effect increasing school participation (due to relaxed liquidity constraint) and decreasing labor force participation (due to higher relative wage when choosing to study for now instead of working), respectively. However, we still cannot dismiss the suggestions of Tullao, Cortes, and See (2007) and Rodriguez and Tiongson (2001) that receiving remittances induces idleness.

Therefore, this study reiterates what it has found: receiving remittances, or a higher probability of receiving remittances, shifts an individual from a labor force outcome to either idleness or school, but the likelihood of shifting into full-time education is far greater than the likelihood of shifting into full-time idleness.

E. Results of PSM on the Impact of Gendered Parental Migration on School Participation Rate

Table IV-5: ATT of mother migrants and father migrants on selected control variables

Control	Mother Migrant	Father Migrant
Wealth index	0.014	0.007
	(0.008)	(0.008)
Highest grade completed of migrant	-0.001	0.048
	(0.016)	(0.006)
Domestic wage earning	0.012	0.007
	(0.009)	(0.008)

ATT = average treatment effect on the treated.
Source: Authors' computation using 2012 Merged FIES-LFS dataset.

Table IV-5 summarizes the results of the parental migration model computed using the 2012 Merged FIES-LFS dataset. Looking across models of program selection for both mother migrant and father migrant indicators, we find that ATTs are generally positive (with the exception of the ATT of the mother migrant indicator for the second model for program selection) implying that given comparable levels of wealth, highest grade completed of migrants, and domestic wage earnings, households with parent migrants have slightly higher school participation rates relative to those that do not. For the case of the second model of program selection of the mother migrant ATT however, it may be seen that the ATT has a negative sign. At first glance this may imply that when controlling for migrant demographic characteristics, households with mother migrants have a 0.1percent lower school participation rate. Looking at the standard error, however, reveals that the ATT estimate may not be statistically significant because it is larger than the ATT.

Given comparably similar levels of wealth, migrant education and domestic wage earnings, households that have mother migrants have 1.2-1.4 percent higher school participation rates as compared to those with no mother migrants. Given comparably similar levels of migrant education, households with father migrants have a 4.8 percent higher school participation rate as compared to those without father migrants. It may be noted that the ATT for father migrants are higher than for mother migrants which is contrary to the findings of Mansuri (2006) in rural Pakistan.

A look at the positive ATTs across Table IV-5 suggests that study findings coincide with the findings of studies focused on the Philippines where parental migration leads to an overall increase in school participation rates (Yang 2006; Parrenas 2005; Battistela and Conaco 1998). This implies that the combined income and aspirational effects are larger than the disruptive effect. This is to be expected primarily because a larger portion of the sample with migrants receives remittances. In fact, remittances have served as the motivation for households to send migrants. At the same time, because the Philippines has relatively lower wages compared to other countries, aspirations among household members to migrate remain strong, hence, the stronger drive to attend higher levels of schooling. The combination of these effects may be inferred from the difference between the ATTs of mother migrants and father migrants. Parental migration in other countries is expected to have a disruptive effect on the education of children especially when mothers migrate (since mothers are traditionally assigned the roles of caregivers, guardians, or home teachers/tutors), hence, the lower mother migrant ATTs. There

is a tendency for the father migrant ATT to be higher when controlling for migrant education because of the aspiration effect since most migrant fathers usually take up professional occupations that require higher education. However, regardless of which parent migrated, the overall participation of children in school increases in the Philippines because of remittances, which relaxes liquidity constraints and perhaps increases the aspirations of children left behind, driving them to forego present employment and take up higher education in hope of future migration.

V. CONCLUSION AND POLICY RECOMMENDATIONS

This study seeks to establish the link between remittances and human resource development. Specifically, it aims to find out if remittances encourage participation in school and in the labor force. Using PSM, the ATT of remittances on school participation rate and labor force participation rate were computed using the APIS dataset; and given three models for program selection that consider the households' wealth index, household head's human capital and job indicator, and domestic wages, respectively. This study finds that households that receive remittances have a higher school participation rate, but a significantly lower labor force participation rate. Comparing the size of the ATTs across the models of program selection, the study finds that the increase in school participation is larger when domestic wages are accounted for as compared to the wealth index. At the same time, the ATTs for labor force participation are largest when domestic wages are accounted for. Looking at the impact of gendered parental migration on the school participation rates of households, the study finds that households with parental migration have a higher school participation rate than those without migrant parents. The study also finds that the increase in the participation rate is higher for households with father migrants as compared to mother migrants, which may point to a larger disruptive effect when mothers migrate due to their traditional role in society as nurturers and caregivers.

Migration has been perceived by society to cause issues such as brain drain and erosion of family ties, as well as disruptive effects on the schooling of children. Remittances, too, are perceived to cause dependency or complacency among recipients, and that it raises consumption of leisure goods and potentially vices (although this may depend on who receives and manages remittances).Despite the negative ATT for labor force participation, it may not be a significant evidence to conclude such since it may be inferred that remittances, in fact, lower

the opportunity cost for education. Controlling for the domestic wages, the study finds that the negative ATT is highest for labor force participation, and is higher than the wealth index-controlled positive ATT for school participation. This supports the findings of Theoharides (2014a) that remittances have a liquidity effect and relative wage effect. The liquidity effect may be seen directly in the larger school participation, but the relative wage effect may be seen in the domestic wage-controlled ATT where labor force participation is reduced, because the relative wage of a person with higher levels of educational attainment is higher. And with higher relative wage, a person would more likely study than work given the persisting level of domestic wage at the time. It can be inferred that remittances may reduce a household's labor force participation, but it could be because household members shift from joining the labor force, to being more active in pursuing higher levels of educational attainment due to higher relative wages in the future. Hence, the consequences of migration and remittances are not all brain drain and dependency, rather they also pave the way for human resource development and deeper human capital accumulation in the sending country.

Although remittances reduce labor force participation in the same time period, better human capital outcomes will eventually lead to better labor market outcomes, and potentially compensate for the perceived brain drain that migration causes.

In light of the importance of education in achieving inclusive growth and the country's commitment to achieving universal access to education, it is in people's best interest to capitalize on the human resource development dimension of migration and remittances and to enable segments of the population that need aid in sending children to school to harness the benefits of migration and remittances for themselves.

To strengthen the improvement that remittances contribute to human capital accumulation, the development of the channels of remittances is highly recommended. Pernia, Pernia, Ubias, and San Pascual (2014) mention that financial and administrative costs must be reduced to make the sending of remittances easier. They note that a significant portion of total remittances are sent through informal channels, and this may be indicative of high transaction costs in trying to access formal channels. In 2014, banks served as the largest mode of remittances among OFWs (64.8% of total remittances sent), followed by other unspecified modes (28.7%),that are most likely informal channels, followed by agencies (4.7%), door-to-door (1.6%), and friends/coworkers (0.2%) (PSA 2015a).

In channeling remittances to better educational outcomes, De Arcangelis, Joxhe, McKenzie, Tiongson, and Yang (2015) conducted a lab-in-the-field experiment among Filipino migrants in Rome and found that migrants tend to remit more when they are able to earmark their remittances for specific purposes and people. This implies that migrants send more remittances when they can loosely bind their beneficiary's future even though the money may not be directly used for education. Additionally, they found that hard commitments, paying money directly to schools rather than through their recipient household, also raises remittances, but not as much as soft commitments. In their experiment, migrants were introduced to a facility that enables them to pay their remittances directly to schools, and schools subsequently report their children's attendance records and report cards. This facility is known as EduPay. They found that migrants have a higher propensity for using EduPay if they have more children in the Philippines, and when they chose to tag specific amounts for direct payment to schools. Migrants also tended to have higher propensities to avail of the facility when they are able to loosely label their remittances for their intended purposes. Aside from EduPay, the authors also report other efforts from the private sector to link remittances directly to education, such as PhilSmile in the Philippines, and IME in Nepal. The concept of such a facility as EduPay holds a lot of promise as it gives the migrant workers confidence that their remittances will be used for their intended purposes. It also gives them more information and might alleviate some of the problems encountered with insufficient parental inputs since schools are compelled to send reports of the children's performance and attendance to them. With sufficient government and private sector support, the model of EduPay may pave the way for better educational outcomes in terms of both access and quality. However, a closer examination is still required to determine the impacts of such a facility on the migrant's decision to remit. Although it makes remitting easier, it may not give migrants the motivation to remit for the sake of education.

This study covers treatment effects of remittances on school participation rates and labor force participation rates in households, as well as the changes in human resource development outcomes among children in households that receive remittances. This study also covers the effects of parental migration according to gender on school participation rates of households. This study, however, does not provide a dynamic analysis on the decisions of households, since, due to data limitations, it cannot model the variation in human resource development decisions across time periods. At the same time, there may be different effects of remittances depending on how these are managed, rather, allocation may be different depending on who

receives remittances (perhaps female recipients are more likely to put remittances in productive activities rather than squandering them). It is well established in the literature that remittances smooth out consumption in general, but future studies may gain from looking into how remittances affect the likelihood of individuals to engage in productive activities aside from schooling and labor, particularly entrepreneurship. At the same time, looking into the differences in the human capital-related impacts of mother migrants as opposed to father migrants may contribute significantly to the existing literature. The same may be said with a study that differentiates the effects of whoever is left to care for children. Modeling aspirations may serve well in trying to determine the presence of a possible state dependence on migration and remittances, especially since temporary labor migration could be viewed as a solution in enhancing human capital accumulation and welfare.

There is still a lot to be learned in the field of migration and remittances, especially in a developing country like the Philippines where school participation rates remain low across regions, and many people still aspire to migrate because of the potential welfare improvements that it gives at the household level.

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