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The effects of conditional cash transfers on female-headed households: Evidence from Philippines

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Abstract

The growing literature on the feminization of poverty and on the phenomenon of female-headed households being overrepresented in the poorest population has given place to a wide range of anti-poverty programs specifically targeted to women. In this thesis, a conditional cash transfer program in the Philippines is analyzed to determine whether female-headed households experience any differential labor supply, food and non-food consumption, and child development effects when participating in the Pantawid Pamilya Pilipino Program (4Ps). The empirical model employed uses data from an RCT conducted by the World Bank where poor villages are randomized into the program in order to estimate an intention to treat model. Results found show no differential effects on the targeted outcomes of adults and children living in female-headed households relative to male-headed households, suggesting a homogenous impact between the types of households exposed to the CCT intervention.

Key words: Conditional cash transfers, poverty, female-headed households, Philippines.

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ANNOTATIONS

ATT	Average treatment effect on the treated
CCT	Conditional cash transfer
DSWD	Department of Social Welfare and Development
FHH	Female-headed household
FIES	Family Income and Expenditure Survey
IIT	Intention to Treat
MHH	Male-headed household
NHTS-PR	National Housing Targeting System for Poverty Reduction
PHP	Philippine Peso
PMT	Proxy Means Test
RCT	Randomized Control Trial
4Ps	Pantawid Pamilya Pilipino Program

1. Introduction

In the past decades, development initiatives designed to target women have been prescribed as an ideal channel towards poverty alleviation and securing human development. Conditional cash transfer programs (CCTs) have proliferated to the developing world as an effort to incentivize poor families to comply with certain behavioral changes that improve the education, health, and wellbeing of its members, particularly children, in exchange for an additional sum of income. As implemented in some lower-income countries, policy advocates have concluded that the assignment of cash assistance to female beneficiaries in CCT and other social programs has resulted in improved household welfare and resource allocation directed to child's wellbeing as compared to circumstances where males are compensated. For instance, the design of many CCT programs such as *PROGRESA* in Mexico, *Mi Familia Progresa* in Guatemala, and Yemen's Basic Education Development Project have restricted the assignment of cash transfers to be exclusively collected by women in the household (Fizbein and Schady, 2009). Moreover, microcredit institutions have favored poor female entrepreneurs as the primary target borrowers for similar allocation and welfare arguments.

Extensive impact evaluations measuring the progress achieved by CCT programs have focused on the direct effects of children's targeted indicators such as stunting and school performance, as well as on the impact on the supply of labor, fertility, and saving rates of adult beneficiaries. Nevertheless, these evaluations are often performed with no differentiation between gender-disaggregated changes in the outcomes of mothers and female heads of household receiving the stipend. Given the limited literature on the impact of CCTs on women, this thesis evaluates a conditional cash transfer program in the Philippines to estimate the differential effects of anti-poverty initiatives on female-headed households (FHH). The program under study, Pantawid Pamilya Pilipino Program or 4Ps, is a CCT launched in 2007 and still in operation to this date for the provision of bimonthly lumps ranging from 500 to 1400 Philippine pesos (PHP) granted to poor families with children 0-14 years old and pregnant women living in the poorest areas of the country. The program requires the compliance of pre-specified conditions such as regular health care visits, persistent school attendance of children, prenatal care for pregnant women, and attendance of mandatory parent sessions in order for beneficiary families to receive the cash transfer. In this analysis, experimental data collected for a Randomized Control Trial (RCT) conducted for the impact evaluation of Pantawid Pamilya by the World Bank is exploited. The

evaluation results are retrieved from a one-period survey dataset collected in 2011, four years after the program initiated, including information on household characteristics, occupation, education, and health practices of poor families living in villages were 4Ps program was effective and those were it was not yet initiated.

To estimate the program's impact on its targeted development indicators, villages identified as poor were randomly assigned into the CCT program prior to the impact evaluation survey. Following the randomization, households living in treatment villages started receiving conditional transfers in 2009 while the remaining villages were withheld from the program until 2011 to serve as a comparable control group until the survey was completed. By exploiting the randomization of poor villages and households into the CCT program, this thesis studies the impact of Pantawid Pamilya on 1,418 families employing an Intention-to-treat (ITT) model. Specifically, estimation results will indicate whether female-headed households benefit more from the CCT stipend received relative to male-headed households (MHH) by estimating the differential effects on consumption and labor market participation, as well as changes in education, deworming, and labor practices of children. Following the growing debate on the overrepresentation of female-headed households among the poorest population that will be discussed in the following sections, this study test the hypothesis that due to the unequal deprivation FHH suffer, and if they are in fact "the poorest of the poor" as stated in some literature (Chant, 2006 b), the provision of CCT transfers would be more beneficial to FHH than other poor household groups. In addition, differential outcomes on targeted indicators in FHH would show that individual preferences and bargaining power within the household may affect household decision-making on resource allocation (Duflo, 2003; Fitzsimon and Mesnard, 2014)

Even though women targeting in poverty reduction initiatives has become popular on the basis of resource allocation and empowerment motives, targeting these programs to female-headed households is controversial and lacks precise and quantitative empirical evidence (Buvinic and Gupta, 1997). Results found in this analysis hence contribute to the still disputed debate on whether women, specifically female heads of households, should be targeted and prioritized as a channel to faster poverty alleviation and long-term child development. Moreover, results will provide insights on female targeting in the Philippines and whether FHH enrolled in Pantawid Pamilya engage in different behavioral practices regarding the household's consumption, labor supply and childcare relative to beneficiary male-headed households in the program.

The World Bank's Pantawid Pamilya impact evaluation found positive effects on the poor households' behavior regarding education and medical goods expenditures, dairy consumption, deworming practices, and school enrollment for children up to 11 years. When narrowing the impact analysis to FHH, results found in this thesis show no differential effects on the targeted outcomes of adults and children living in female-headed households relative to the rest of the treatment group, suggesting a relatively homogenous impact between the types of households exposed to the CCT. Additionally, this study provides evidence-based arguments that female headship targeting does not necessarily imply better anti-poverty program results in all scenarios.

The presented study is organized in 9 sections. Section 2 provides a literature review and theoretical framework on female headed households and a general overview on the main objectives and results of different CCT programs around the world. Section 3 provides a description of the Pantawid Pamilya program objectives, conditions, and targeting system, followed by a brief explanation of the methodology and results found on the RCT employed for the World Bank's impact evaluation in Section 4. A description on the data and empirical methodology used to study the effect of Pantawid Pamilya on FHH consumption, labor, and children outcomes is available on sections 5 and 6, respectively. Section 7 includes evaluation results and robustness checks are summarized in section 8. Finally, the limitations and a general discussion on the external validity of results and on efficiency of female targeting on CCT programs in available in section 9. Section 10 concludes.

2. Theoretical Framework

2.1 Poverty and female headed households

The "feminization of poverty" has been a widely discoursed term in the development and political debate to portray the widening and disproportionate share of women among the poorest population. It is argued that women in the developing world "bear an unequal burden of poverty" (Chant, 2006 b) and are often deprived not only of the basic needs to survive, but also from their capabilities, participation in society, and mobility. Though the feminization of poverty and the best approach to overcome it lacks quantitative and empirical evidence, it is clear that public social programs and international agencies around the globe have prioritized women's development and empowerment efforts as a central part of their agendas. For instance, the United Nation's

Sustainable Development Goals incorporate actions to achieve gender equality by eliminating discrimination and violence against women, ensure adequate health and education access, ameliorating their economic opportunities and ownership rights, and promoting shared responsibilities within households (UN, 2015).

Although it is often argued that 70% of the world's poor are women Marcoux (1998), empirical evidence on the origin of this statistic and on the circumstances under which this phenomenon prevails remain under study. As argued by Marcoux (1998), additional poverty assessments based on factors other than income such as social and capability indicators (e.g. access to education, mortality, time allocation, nutrition), can provide a better assessment on the underlying causes and poverty dimensions that women are subject to, while accounting for the fact that the magnitude and growth rate of this issue is heterogenous between countries and regions. It is important to disaggregate the feminization of poverty and disaggregate the particular dimensions of which women are suffering the most, which by itself requires the improvement and availability of sex-disaggregated data on poverty indicators (Chant, 2006a).

In this context, it is generally assumed that female-headed households (FHH) portray an overrepresented group among the poor, often referred to as the "poorest of the poor" in the development context (Barros et al, 1997; Senada & Sergio, 2007; Horrell & Krishnan, 2006). The reasoning behind this intuition include arguments such as higher dependency ratios in female-headed households, women's tendency to low-paying occupations, time constraints, and differences on average earnings and economic opportunities of women in general (Barros et al 1997; Buvinic & Gupta, 1997). In a study of female-headed households in 61 countries, Buvinic and Gupta (1997) find that FHH are overrepresented among the poor on about 63% of the countries, using a range of poverty measures such as income, consumption per capita, access to land, and asset ownership. Barros et al (1997) show that female-headed households are only a vulnerable group in some regions of Brazil and provide evidence on lower school attendance rates of children living in FHH only in some cities. While these studies contribute to the controversial dialogue of female-headed households as vulnerable groups, it provides evidence on the heterogeneity of FHH not only across countries, but also across regions within a country. Conversely, researchers have questioned this phenomenon and provide challenging evidence on the overrepresentation of FHH among the poor. Oginni et al (2013) employ an empirical strategy using welfare indices built from household survey data and find that female-headed households

are less likely to be poor as compared to male-headed households in Nigeria. Similarly, Klasen et al (2013) accounts for the differences in the nature of female headship by showing that in households where the husband migrated, women heads of household are economically better off than male-headed households in Taiwan but experience a higher shock exposure and severity. In a more extensive analysis, Quisumbing, Haddad and Peña (2001) analyze poverty measures in a total of 10 Asian, Sub-Saharan and Latin American countries categorized as low and middle-income. Out of the 10 countries, 6 showed a larger share of females living under the poverty line, with statistically significant differences found in only two of the 10 countries studies, Ghana and Bangladesh.

Chant (2006a) highlights the problem of the "over-emphasis" of female-headed households as the poorest population group by arguing that the causes that lead women to become (or choose to become) head of households are heterogenous and should not be subject to stereotyping. In particular, female headship as a variable used by governmental and international institutions to target welfare program recipients has become a popular approach due to the relationship between FHH and poverty. As it will be discussed later on this paper, providing additional income to women rather than men in human capital development programs has been proved to result in better educational and nutritional outcomes for children in some countries. Hence, a variety of anti-poverty programs such as microcredit, business founding, and conditional cash transfer initiatives have focused on allocating resources to women and female-headed households. In this paper, the differential effects of conditional cash transfers when received by female-headed households will be examined by exploiting experimental data on the Pantawid Pamilya conditional cash transfer program in the Philippines. Whereas the female targeting strategy has become popular among development agencies, one cannot assume that female-headed households are poor by default (Chant, 2006, b). More importantly, social assistance programs cannot rely on this assumption only to make targeting simpler for policymakers (Quisumbing et al, 2001). It is then important to thoroughly study the contexts under which female heads comprise a potential target group; in different countries, regions, and income levels.

2.2 Conditional cash transfers

With the purpose of reducing poverty and inequality in developing countries, conditional cash transfers programs (CCTs) have emerged since the 1990's as a means to incentivize low-income

families to invest in the human capital of children and ultimately break the vicious cycle of intergenerational poverty. In essence, CCT programs seek to incentivize poor households by periodically transferring an additional income share to poor families who comply with pre-specified conditions concerning the wellbeing and development of its members. These conditional activities encompass a wide scope of efforts towards the improvement of health and educational outcomes of program participants while also ameliorating their social inclusion, empowerment, and public service usage. Generally, many CCT programs demand for constant school enrollment and attendance, regular preventive health care, prenatal health, and immunization of children in order for parents to receive the offered stipend, though conditionalities vary depending on the primary goals of each intervention.

Originating in Latin America and through the successful results of the pioneer initiative *Programa de Educación, Salud y Alimentación* "PROGRESA" in Mexico, which sought to improve the education, nutrition, and health of Mexican children, the implementation of CCTs as a poverty alleviation policy has proliferated to developing regions in Latin America, Asia and Africa. Moreover, the implementation of CCT programs has not been exclusive to the underdeveloped world but has also expanded to the most indigent neighborhoods of developed economies such as New York City and Washington D.C in the United States, and to indigenous communities in Australia (Fizbein and Schady, 2009). The success of these programs has been so evident that as of 2016, 63 developing countries had at least one CCT program in place, compared to only 2 countries in 1997 (Bergstrom and Dodds, 2020). Additionally, international institutions such as the World Bank and the Inter-American Development Bank have extensively supported governments in the financial funding and organization of various CCT programs in low and middle-income countries, while evaluating the programs' progress in its objectives and assessing potential program scale up (Duflo and Kremer, 2003).

Evaluations on the impact and progress of CCT programs after implementation have shown advances in a range of fields. For instance, increases on primary school enrollment and grade promotion has been achieved in programs like *PROGRESA* and *Bolsa Scola* in Brazil (Behram et al, 2011), as well as improvements on preventive health use and doctor visits (Evans et al, 2019). Positive impacts on per capita consumption have been estimated for programs in Colombia, Nicaragua, and Honduras, as well as decreases in poverty measured in terms of the head count index (Fizbein and Schady, 2009). In other dimensions, CCTs have been found to mitigate child

farm work (as found in Nicaragua's *Atención a Crisis*; see De Carpio, Loayza, and Wada, 2016), and even decreased teenage girl's probability of becoming pregnant and marrying early by encouraging school attendance in Malawi (Baird et al 2010).

Although the provision of additional income granted by CCTs has been shown to alleviate some facets of poverty in the short run, various literature (Novella et al, 2012; Farrington and Slater 2006; Molina Millan et al 2019) argue that the long-term effects and sustainability of benefits surging from conditional transfer programs still need to be investigated. Kadelbach et al (2018) argue that early childhood developments in health, nutrition, and education achieved through CCT interventions do not provide insights on the long-term behavioral changes and cultural habits of participating households once the program is terminated or when they are no longer eligible to the cash bonus, and questions whether these temporary investments in human capital are enough to permanently nudge individuals out of poverty. Moreover, the long-run effects of children exposed to CCT in their adult life and life quality of next generations remain ambiguous due to the novelty of CCT interventions, which barely surged in the late 1990s (Molina-Millan et al, 2019). Due to its relative recentness and expansion in the developing world, studying the long-run effects and unintended spillovers of CCT programs among different subgroups and under different contexts is crucial for optimal resource allocation and policy design.

Labor market participation

As with any social assistance program, controversial arguments on the behavioral distortions of labor market participation of beneficiary adults receiving an exogenous income sum need to be carefully studied for the design of CCT programs. Beneficiary adults are susceptible to changing their labor supply due to an increase in current income and substitution effects (Baird et al, 2018). As observed by Novella et al (2012), beneficiary households may face a decrease in labor supply for a number of motives. First, income effects by the additional lump sum received with no labor performed might relax budget constraints and increase demand for leisure, thus decreasing the household's hours of work. Lower participation in the labor market might also be observed in order to continue program eligibility or due to increases in the time dedicated to the compliance of the program conditionalities (i.e. taking children to school, doctor visits and attending mandatory program sessions). On the other hand, an increase in adult labor supply might emerge to compensate for the foregone child labor income that that has been substituted for school attendance

or to being able to purchase school supplies and other necessities required to fulfill program conditionalities.

When studying the adult labor supply changes of three Latin American conditional cash transfer programs; *PROGRESA* in Mexico, *Programa de Asignación Familiar* in Honduras, and Nicaragua's *Red de Protección Social*, Alzúa, Cruces, and Ripani (2010) find mostly small and not significant changes in labor outcomes. For Mexico, an increase in hourly wages was found whereas a significant reduction in hours of work was estimated in Nicaragua. Extending the analysis of changes in labor supply caused by CCT's, Banerjee et al (2017) exposes the falseness of the "lazy welfare recipient" stereotype by analyzing CCT evaluation data from six different countries, including the Philippines' Pantawid Pamilya program. Evidence suggests no effects of cash transfers on work-related behavior, either for women or men. However, the external validity of results found in these CCT programs does not imply that labor dissuasion should not be considered in the design of existing or upcoming CCTs in developing countries (Alzúa, Cruces & Ripani, 2010). In fact, some studies find that transfer programs might discourage labor supply for some beneficiary subgroups, like women (Garganta et al, 2017).

The labor effects of additional income on women are ambiguous. In one hand, the stipend might now allow women to stop working and stay home with children if she prefers, reducing its labor supply. On the other hand, the additional income may grant women the possibility of affording childcare and work more hours than before the program (Banerjee et al, 2017). By disaggregating adults into 4 categories; female-heads of household, female spouses, male-head of households, and male-spouses, Medeiros et al (2008) finds that only female heads of households receiving transfers from Bolsa Familia are more likely to reduce their participation in the work force than the other groups. Similarly, Garganta et al (2017) finds that the Universal Child Allowance for Social Protection (AUH) program in Argentina has negative and significant effect on the probability that married, inactive women enter the labor force when participating in the CCT, whereas the same effect is smaller and not statistically significant for beneficiary men.

2.3 Female targeting for poverty alleviation

In conditional cash transfer and other safety-net programs such as microcredit institutions, providing financial support to women rather than men is believed to result in better children development outcomes and higher reliance on program success (Molyneux & Thomson, 2011).

Various literature has found that increasing income and assets controlled by women within a household generally results on higher expenditures directed towards nutritious foods, health, school materials, clothes, and other disbursements that are in line with the core objectives of welfare programs aiming to improve the wellbeing of children (Doss, 2006; Thomas, 1990; Ward-Batts; Lundberg et al 1997; Haddinott and Haddad, 1994). When studying the effects of a pension program in South Africa on children's anthropometric status by gender of the pension recipient, Duflo (2003) finds significant improvements in the height and weight measures of children when the pension is received by a female than otherwise, with a differential and positive effect on girls' weight and height when the pension is received by the maternal grandmother. Doss (2006) estimates a positive and significant relationship between budget shares assigned to food and education within the household associated with higher shares of assets and land owned by rural women in Ghana. Similarly, Lundberg et al (1996) finds a significant increase in children clothing expenditures relative to men's clothing when transferring child benefits from the husband to the wife in a natural experiment conducted in the United Kingdom.

The inclination towards assigning resources to female recipients is no exception in conditional cash transfer programs. In a collection of approximately 60 CCT program evaluations, Fiszbein and Schady (2009) provide an overview of the structure and performance results of different CCT programs around the world. Whereas social programs in Africa and Asia are generally directed to the parent or guardian of the households without any gender distinction, the majority of conditional transfers in Latin America and the Caribbean require that the stipend be specifically transferred to mothers or female heads for them to allocate within the household. From the 23 Latin American transfer programs under study, 17 emphasize that the transfer payment needs to be directly received by a woman in the household. Some of these women-restricted programs include Argentina's *Programa Familias*, *Bolsa Familia* and *Bolsa Escola* in Brazil, Guatemala's *Mi Familia Progresa*, and *Bono de Desarrollo Humano* in Ecuador. Similarly, a preference for mothers as transfer recipients is observed in Indonesia's *Program Keluarga Harapan*, Yemen's Basic Education Development Project, ROSC in Bangladesh, and the Social Risk Mitigation Program in Turkey (Fiszbein and Schady, 2009; 211-213).

In a randomized experiment, Armand et al (2016) study the effects of a CCT program implemented in Macedonia rewarding poor households on the condition of children's secondary school enrollment, where the gender of the cash recipient (mother/father) was randomized for the

first time in a CCT. Results found support the idea of differential resource allocation across gender and suggest that in municipalities where the transfer was targeted to mothers, expenditure shares directed to food were 4 to 5 percent points higher as compared to municipalities where heads of household, mostly fathers, where the targeted recipients. To further investigate female targeting, Schady and Rosero (2007) use the *Bono de Desarrollo Humano*, a program in Ecuador that transfers payments to women in eligible poor households, to analyze the differences in expenditures between beneficiary households were both adult men and women lived together relative to those where only a female head of household was present. As expected, results found an increase in food share expenditures in mixed households after women received the additional income sum, supporting the literature on women's inclination to invest transfers to the household's needs. Interestingly, however, estimation results showed no significant changes in food consumption on the households only headed by women. Authors conclude that the larger rises in food shares result in scenarios where the initial bargaining power of women is initially weak or non-existent (i.e. mixed-gender households), but not on female headed households were bargaining is not an issue. Due to the heterogeneity of programs results when assigning transfers t women, this thesis contributes to the existing literature by evaluating the impact of Pantawid Pamilya on FHH.

3. Institutional Background - Pantawid Pamilya Pilipino Program

3.1 Overview and coverage

With the objective of improving human development outcomes and reducing poverty rates in the most impoverished regions of the Philippines, the Pantawid Pamilya program was first implemented through the Department of Social Welfare and Development (DSWD) in conjunction with the Department of Education and Department of Health (Fernandez & Olfindo, 2011), and was partly financed by the World Bank and the Asian Development Bank (Crost et al, 2016). Funded in 2007, the Pantawid Pamilya conditional cash transfer program is launched for the provision of bimonthly grants to poor families with children 0-14 years old and pregnant women living in the poorest areas of the country who comply with specific health and education-related conditions such as regular school attendance and health care visits of children and pregnant women.

Pantawid Pamilya is characterized by its relative grant generosity in contrast to other CCT programs around the developing world, given that recipient households can receive up to 23 percent of their annual income when all health and education conditionalities are met (Chaudhury et al, 2013). In comparison, transfer payment levels in other CCT programs range from 0.6% of the beneficiaries' expenditures for the Female Secondary School Assistance Program in Bangladesh, 6.1% for *Bolsa Familia* in Brazil, and a high 29.3% in Nicaragua's *Red de Protección Social (*Fiszbein and Schady, 2009). The widely recognized pioneer CCT program "*PROGRESA"* in Mexico offers allowances equivalent to 21.8% of pre-transfer consumption among beneficiaries, a similar portion to the share received by Philippine households. Dependent on the number of children in the household and on the extent to which parents meet the stated program conditionalities, the stipend received by beneficiary families ranges from 500 to 1,400 Philippine pesos (PHP) per month, equivalent to $11 to $32 US dollars (Fernandez & Olfindo, 2011). Since its emergence, 4Ps has rapidly expanded and scaled up its coverage in subsequent phases, becoming one of the largest and most popular social protection and anti-poverty programs in the Phillipines (Fernandez & Olfindo, 2011). As of May 2012, approximately 3 million poor families were already covered by the Pantawid Pamilya program (Chaudhury et al, 2013).

3.2 Education and Health bonus

To be entitled to the conditional cash transfer, households registered in 4Ps are required to satisfy stated conditions concerning the wellbeing and development of household members. The program grant package consists of a health bonus and an education bonus encompassing different conditionalities and benefits. As described on the Pantawid Pamilya operations manual provided by the DSWD, compulsory activities for the health bonus include preventive health in the frequency enforced by the Department of Health, required immunization, deworming, and constant weight monitoring of children aged 0 to 14. Families with pregnant mothers are required to engage in antenatal care on each trimester of the pregnancy, give birth through a skilled health professional, and commit to periodic post-natal care services. Moreover, Beneficiary parents must also attend DSWD's Family Development Sessions where they are advised on nutrition and family dynamics on a monthly basis (Fernandez & Olfindo, 2011). The compliance of all health conditions yields a grant of PHP 500 per month to poor households, unconditional of the number of children in the family.

The Education grant strives to boost mandatory schooling and decrease the prevalence of child labor by encouraging primary and secondary school enrollment of children aged 6-14 years and day care or kindergarten enrollment of children 3-5 years old, amidst consistent school attendance. Depending on the educational level of each beneficiary children, a lump sum of PHP 300 for primary students and PHP 500 for high school students is granted to families where children maintain an attendance rate above 85 percent for each month in the academic year (DSWD). Once the fulfillment of conditionalities is verified, the cash sum is directly collected by the family grantee. As argued in Section 2, mothers are preferably assigned as transfer recipients in many CCT programs since they are more likely to spend the supplementary stipend on food, nutrition, and education of children. Nevertheless, this condition is not mandatory in Pantawid Pamilya and the transfer can also be withdrawn by the father or the "most responsible adult member in the household" (DSDW).

3.3 Program targeting

Institutionalized as the National Household Targeting System for Poverty Reduction (NHTS-PR), the targeting mechanism to determine eligible households prior to program registration consists of a two-step process where the poorest localities and households are identified through a geographic targeting stage and Proxy Mean Testing (PMT). In the first stage, the poorest provinces, municipalities, and villages in the country are identified based on household characteristics retrieved from the Family Income and Expenditure Survey (FIES), as well as on poverty incidence rates at the different geographic units. Once the poorest provinces are identified, selection into the program depends on the geographic eligibility criteria that is accounted at the time of assessment. For instance, the poorest municipalities in the poorest 20 provinces were given priority for selection during the first months since the creation of 4Ps, whereas municipalities with poverty incidence rates above a predetermined threshold were selected at the later expansion phases of the program. Following the geographic targeting of the poorest villages, a household targeting system is employed for the identification of potential beneficiaries living below the poverty threshold with children aged 0-14 years and who comply with the Pantawid Pamilya criteria. The ranking of the poorest households within selected villages is achieved through the application of a Proxy Means Testing method to predict per capita household income and identify potential beneficiaries (Fernandez & Olfindo, 2011).

3.4 Proxy Means Test

As for any other social protection program, a major challenge for Pantawid Pamilya is to accurately identify the poorest households eligible to receive program benefits. In comparison to developed economies where extensive and relatively accurate income data is available through tax systems, program targeting through income level data becomes challenging in developing countries where the majority of households work in the informal sector, are self-employed, or pay no taxes (Banerjee, 2020). Therefore, Proxy Means Testing (PMT) is considered a reliable statistical approach to predicting household income in countries where it is difficult to access concrete and reliable income data.

In essence, the PMT method employed by the NHTS-PR uses observable demographic and survey data that is highly correlated with household consumption and expenditures as a means to construct income proxies and veraciously classify potential eligible families into the program (Fernandez & Olfindo, 2011). The main variables used for the approximation of income in the PMT stage include observable socioeconomic conditions, household composition, asset ownership, access to public services, education, tenure status, and village characteristics (DSDW). Even though PMT uses observable indicators which can be hard to manipulate, the official PMT formula to determine CCT eligibility is not publicly available in order to avoid strategic misreporting from households seeking program qualification (Labonne, 2013). Once the assessment is finalized, a household is then recognized as poor if the PMT estimated income is below the official provincial poverty line and if it resides in a village, or *barangay*, selected during the geographic targeting stage (Fernandez & Olfindo, 2011).

4. Impact Evaluation – The World Bank

To audit Pantawid Pamilya's effectiveness and achieved progress in its fundamental objectives, a randomized control trial (RCT) was jointly designed by the World Bank and the DSWD for an impact evaluation of the program starting in 2009. In this experiment, households in eligible poor regions where randomly assigned into treatment and control groups, ensuring a valid comparison of program outcomes in households receiving the cash transfer with those who are eligible for the program but not receiving the stipend at the time of evaluation. In this section, the RCT design and main results found by the World Bank will be summarized. Although the

study has thoroughly analyzed the effect of Pantawid Pamilya on beneficiary children and adult development outcomes, the impact evaluation lacks a gendered analysis on the differential effects, if any, between female-headed households and male-headed households in treated and control *barangays*. In this thesis, the experimental randomization of households and villages into the program will be exploited as assigned in the World Bank's RCT.

4.1 Evaluation sample and geographical areas

Considering the financial constraints of enrolling all impoverished provinces and eligible families into the program at once, the Pantawid Pamilya intervention is released in different phases where the geographic coverage and eligibility criteria changes in every period of expansion, prioritizing the poorest areas in the Philippines. The World Bank's impact evaluation encompasses beneficiary areas during the first set "Set 1" of the program starting in 2008 after the program was piloted. During this phase, only municipalities belonging to the 20 poorest provinces identified in the geographic targeting stage were eligible for the cash transfer (Fernandez & Olfindo, 2011).

To determine the geographic areas where the World Bank's impact evaluation would be operated, four eligible provinces were selected at random following set 1's targeting process. The four experimental provinces selected include Mountain Province, Occidental Mindoro, Lanao del Norte, and Negros Oriental, and cover all three major island groups in the Philippines. Within the selected RCT provinces, eight out of nineteen municipalities with poverty incidence rates ranging from 54 to 73 percent were randomly selected (World Bank, 2012). Subsequently, a total of 130 barangays belonging to these eight municipalities were randomly assigned into treatment and control villages for the RCT experiment. Of the selected barangays, 17.69% belonged to the province of Occidental Mindoro, 13.08% to Mountain Province, 40% to Lanao del Norte, and 29.23% to Negros Oriental. Table 1 provides a comprehensive summary for a better understanding of the geographical units and randomization process of the RCT under study.

For evaluation purposes, households residing in villages assigned to the treatment group started receiving the program's cash transfers after the randomization process in 2008, whereas households in other eligible villages where purposely withheld from the program to serve as control group in the experiment. The RCT was hence designed for beneficiary households in treatment villages to start receiving the program stipend before the time of the survey while equally poor "control" villages were not exposed to the program until December 2011 to serve as

counterfactual until the survey concluded (Crost et al, 2016). From the 130 selected barangays in the impact evaluation sample, 65 where randomly allocated into the treatment group and 65 to the control group.

Table 1 – Impact evaluation geographical coverage

Island group	Province	Municipality	Treatment barangays	Control barangays	Total barangays
Luzon	Mountain Province	Paracelis	4	5	9
		Sadanga	4	4	8
	Occidental Mindoro	Paluan	6	6	12
		Santa Cruz	5	6	11
Minadanao	Lanao del Norte	Lala	13	14	27
		Salvador	13	12	25
Visayas	Negros Oriental	Basay	5	5	10
		Jimalalud	15	13	28
Total			**65**	**65**	**130**

Source: The World Bank (Chaudhury et al, 2013)

Because all barangays studied in the impact evaluation are identified as eligible for the 4Ps program in accordance to the geographic targeting criteria and PMT results of set 1, the random allocation of barangays into the program ensures that all units have an equal probability of being 4Ps participants in reference to pre-transfer household and village-level characteristics. Table 2 portrays summary statistics on barangay-level characteristics in treatment and control areas. As observed, barangays studied have similar population levels and access to public services such as electricity, water piping, schools, and health facilities. For the evaluation of the program's effects on its targeted outcomes, treatment and control households living in the experimental municipalities were surveyed in 2011 on a wide range of socioeconomic, demographic, and health characteristics at the household and individual level. At this point of the evaluation, households in control barangays had been program recipients since 2008, whereas control villages where not yet exposed to Pantawid Pamilya.

Table 2: Barangay characteristics by RCT group

	Treatment barangays *(N=65)*			Control barangays *(N=65)*		
	Mean	Min	Max	Mean	Min	Max
Population in barangay	2,402.19	187	20,000	2083.20	315	9,100
Number of households	403.825	70	2,400	421.83	70	2,457
Indigenous population	0.385	0	1	0.385	0	1
Electricity available	1	1	1	1	1	1
Water piped directly to households	0.231	0	1	0.203	0	1
Daycare/Pre-school in barangay, public	1.969	0	14	1.862	0	12
Daycare/Pre-school in, private	0.154	0	4	0.169	0	3
Complete elementary school, public	0.954	0	6	0.923	0	3
Complete elementary school, private	0.046	0	3	0	0	0
Complete high school, public	0.169	0	1	0.262	0	2
Complete high school, private	0.077	0	3	0	0	0
Health station within barangay	0.585	0	1	0.600	0	1
Rural unit available	0.077	0	1	0.108	0	1
Private clinic available	0.046	0	1	0.015	0	1
Experienced flood in last 5 years	0.615	0	1	0.508	0	1
Experienced volcanic explosion in last 5 years	0.015	0	1	0	0	0
Experienced drought in last 5 years	0.477	0	1	0.4	0	1

Source: The World Bank (Chaudhury et al, 2013)

4.2 Evaluation results

Overall, the World Bank's impact evaluation results found in Chaudhury et al (2013) show positive effects on the program's targeted education and health outcomes of children in beneficiary households. Importantly, no significant variance in education and health effects of girls compared

to boys was observed, suggesting a uniform impact between children without differential effects across gender. Regarding education results, the analysis found that day care and kindergarten enrollment rose by 10.3 percentage points, whereas elementary school enrollment was 4.5 percentage points higher among children in treatment barangays compared to the control group. An increase in school attendance was found across all school levels except for daycare and preschool groups, and the average age at which children drop out of school increased from 10 to 11 years old in treatment barangays. However, the drop out age in the treatment group converges with those of control villages after reaching 11 years, when children in both groups stop their education at the same rates. Finally, no improvement in enrollment rates was observed for older student groups including children aged 12 to 17 years even when cash bonuses are PHP 200 higher for secondary school attendance than the sum granted to primary students attending school on a regular basis, suggesting a major challenge for future intervention policies to nudge older children into continuing secondary education.

With respect to health indicators, the evaluation found that pregnant women are 0.6 times more likely to engage in antenatal care in treatment villages, whereas postnatal care the day after delivery was 10 percentage points higher relative to control areas. Children outcomes results suggest a strong decrease in severe stunting among the youngest children (below 3 years old), as well as a positive effect in deworming pills intake, health care utilization, and vitamin intake. However, the evaluation found no progress on the efforts made to increase the share of children receiving immunization as required in the program conditionalities.

Poor households in treatment villages were found to spend 34 percent more on medical expenses per capita, shifted expenditures towards more protein-rich foods such as dairy, and decreased gambling and alcohol spending. Interestingly, although education and health expenditures directed to children increased in Pantawid Pamilya villages, households receiving the additional income sum experienced no significant changes in aggregate food and non-food consumption per capita, suggesting a rise in savings.

Contrary to the general idea that transfer programs are susceptible to creating dependency behavior among the beneficiary groups, the impact evaluation found no changes in adult labor supply. From the experiment households surveyed, both the proportion of adults seeking a job and the reported number of hours worked in main and secondary jobs remained unchanged in both treatment and control villages. Similarly, evaluation evidence shows no significant differences in non-financial

asset accumulation including land, appliances, and animals in villages where Pantawid Pamilya was in effect.

5. Data

The empirical strategy employed in this analysis uses data retrieved by the World Bank for the impact evaluation of the Pantawid Pamilya Program. The dataset, available via the Department of Social Welfare and Development, consists of survey data from a total sample of 1,418 households categorized as program eligible after the geographic and PTM targeting stage and which were located in the eight randomly assigned municipalities for the RCT. Survey data collection took place during October and November of 2011. At the time, the treated group beneficiaries were already receiving lump sums from the 4Ps transfer program, whereas the control group was withheld from receiving the stipend at the time of survey to serve as counterfactual. Upon the termination of the data collection process, the control group was released into the program and could start receiving the program cash transfers (Chaudhury et al, 2013). Of the total sample, 714 households belonged to the treatment group and 704 to the control group living in 130 different barangays.

In the dataset, surveyed individuals within each family are differentiated by an identification number, and data on the municipality, barangay, and the treatment/control status of the household is observed. Households provide information on the age, sex, marital status, education, and employment of individuals, as well as on the number of members and relationship to the head of household. The survey data used for this study consists of three modules including individual and household characteristics of all family members and adult employment, information on school aged children (6-17 years old), and data on household-level average food and non-food consumption. The empirical strategy will make use of the mentioned modules and will provide an impact evaluation on the changes in employment outcomes, consumption, and children wellbeing of beneficiary female-headed households.

Data availability on the sex and headship of the household members make it plausible to identify female-headed households in the sample and analyze the impact of Pantawid Pamilya as compared to male-headed households. In the interest of the intended analysis of this paper, creating an interaction term of a female and head dummy identifies a total of 244 households headed by

women in the RCT sample, of which 126 are program beneficiaries and 118 belong to the control group.

In Table 3, summary statistics of female heads of households are observed for both treatment and control groups and are compared to individual characteristics of male heads of households being evaluated. From this subsample, it is observed that FHH in the treatment group are on average 8 years older than control FHH, and 10 years older than male heads of household in general. Also, larger shares of widowed and divorced heads of household are observed for females relative to males. Specifically, 38.89% of female heads in treatment villages reported to be widowed or divorced, 60.23% were married, and 18.3% were solo parents. It is also observed that a higher share of female heads in the treatment villages did not complete any grade of education (14.29%) relative to male heads of household in both treatment and control barangays (8.48% and 9.56%, respectively), but experience higher rates of elementary and college graduation than other household groups.

The outcomes of interest in this study determine whether differential effects in employment, consumption, and child wellbeing are observed in Pantwaid Pamilya female-headed households as compared to other household compositions. The estimation of changes in labor force participation is possible through the availability of occupation data on the nature and sector of employment, hours worked, and job seeking behavior at the individual level. The analysis performed in this thesis emphasizes changes in labor supplied by the heads of household, hence the labor data module is limited to a total of 1,418 heads of households residing in treatment and control barangays. Head of household employment variables used for the impact evaluation provide information on whether heads of household engaged in any type of work or looked for employment in the last week, total hours worked, and secondary occupation data. When analyzing the type of work of treatment FHH in Table 3, 20.63% where identified as unskilled laborers whereas 33.33% engaged in farming, forestry, or fishing occupations. Similarly, 33.79% of female head respondents worked for a private household, 8.28% worked on a private establishment or government corporation, and the vast majority was self-employed or worked on an own family-operated business or farm.

Table 3: Summary statistics FHH vs MHH characteristics

	Female-heads of household		Male-heads of household	
	Treatment *(N=126)*	Control *(N=118)*	Treatment *(N=578)*	Control (*N=596)*
Age of head (*Mean*)	53.04	45.068	43.306	43.295
Household count (*Mean*)	5.635	5.602	6.187	6.111
Indigenous group (%)	0.135	0.119	0.13	0.143
Marital Status (%)				
Single	0.79	0.85	0.87	0.34
Married	60.32	57.63	93.77	95.97
Widow	36.51	33.9	3.29	1.68
Divorced	2.38	6.78	1.04	0.67
Solo Parent (%)	18.3	21.2	1.2	0.05
Education (%)				
No grade completed	14.29	8.47	8.48	9.56
Elementary completed	21.43	20.34	17.30	19.30
High school graduate	11.11	13.56	12.28	11.74
College or higher	3.17	1.70	2.08	1.51
Occupation				
Farm/Forestry/Fishermen	33.33	32.2	60.9	61.74
Laborer/Unskilled worker	20.63	19.49	23.01	24.16
Services/Market sales	8.73	4.24	3.46	2.68
Machine Operators	0.79	0	3.98	2.85
Trade and related	1.59	0.85	1.90	2.85
None	31.75	41.53	4.15	4.53

Source: The World Bank (Chaudhury et al, 2013)

Changes in consumption attributed to the additional income granted by 4Ps can be estimated using available household-level data on the average weekly consumption of food and non-food goods in the last six months for all 1,418 households in the sample. For food consumption, data on cereal, fruit, dairy, meat, fish, alcohol, and tobacco is available at the household level. Consumption data consists of the average weekly consumption of these goods categorized by whether the family purchased the good with cash or credit, received it as a gift, or if it was produced by the own household in the last 6 months. For non-food consumption estimates, average weekly disbursements on education, clothing, personal care, and medical costs in the last 6 months is

provided at the household level. In specific, total school expenditures encompass tuition fees, books, school supplies, uniforms, and supporting materials. Health disbursements include costs incurred for drugs, medicine and hospital charges, and consumption of personal care include the purchase of goods such as soap, deodorant, creams, and other sanitary and hygiene goods.

Finally, children's well-being in the different headship settings is compared using data from 3,098 school aged children (6-17 years) living in 1,228 homes, of which 515 children belong to a FHH. The Pantawid Pamilya's child impact is measured by analyzing data on school enrollment, attendance rates, age of elementary school enrollment, whether they took deworming pills, and whether children aged 10-17 engaged in any type of work for pay in the last 7 days.

6. Empirical Method

6.1 Evaluating social programs

Estimating the causal effects of social interventions is crucial for policy makers, governments, and international development agencies to determine whether the targeted goals of a program are being achieved and whether resources are efficiently being allocated. Pantawid Pamilya's stakeholders are interested on estimating the program impact on consumption, education, health and labor of families receiving the cash transfer as compared to when they are not participating in the program. Ideally, the causal effect of the program can be obtained by estimating specification (1), where Y_{it}^{T} denotes the outcome of interest when the research unit *i* (i.e. individual, household, geographic area) is participating in the intervention at time *t* and Y_{it}^{C} represents the outcome of interest at time *t* when *i* is not exposed to the intervention. The effect of the program can be merely interpreted as the change in outcomes induced by the treatment:

$$Y_{it}^{T} - Y_{it}^{C} \qquad (1)$$

However, a fundamental problem arises when trying to estimate the effects that the intervention has on its beneficiaries. The causal effect of the program cannot be identified for each research subject since program evaluators cannot observe the same individual outcomes in both the treatment and control group at the same time. Thus, the estimation of the treatment effect needs to rely on interpersonal comparisons of the treatment group with a control group that is not exposed

to the intervention but is on average similar to the treated group in its characteristics. The focus of impact evaluation is thus to find a credible comparison group who in the absence of the program would have similar trends in outcomes to those in the treatment group (Duflo and Kremer, 2003). The Pantawid Pamilya RCT was performed through the randomization of municipalities and barangays who passed the geographic and PMT targeting phase into treatment and control groups, ensuring a valid comparison of program outcomes in areas where the cash transfer was operated with those villages eligible for the program but not receiving the stipend at the time of evaluation. The randomization performed leaves the analysis with 65 treatment villages and 65 comparable control villages. The selection bias problem, where pre-existing households or village characteristics can influence the allocation and impact of the program, can be fixed by ensuring the true randomization of individuals into treatment. This allows us to calculate the treatment effect of the evaluation's outcomes of interest between program eligible households in the treatment barangays and households in the control barangays, as specified in the following equation:

$$E\left[Y_{ij} \middle| T = 1\right] - E\left[Y_{ij} \middle| T = 0\right] \quad (2)$$

where Y_{ij} denotes the program outcome of interest of household *i* residing in barangay *j*, and *T* is a dummy variable equal to 1 if the household is in a treatment barangay and 0 if the household is in a control barangay. Targeted household outcomes are estimated for the World Bank's Pantawid Pamilya evaluation on treatments and control barangays using the following specification:

$$Y_{ij} = \alpha + \beta_1 T_j + \gamma Child_{ij} + \beta X_i + \varepsilon_{ij} \quad (3)$$

where Y_{ij} denotes the outcome of interest of household *i* in barangay j , *T* is a dummy variable equal to 1 if the household is in a Pantawid Pamilya village and 0 if it is in a control village, *Child* denotes age dummy variable when analyzing children-level outcomes between different age groups, X is a vector of additional controls, and ε_{ij} is the error term clustered at the barangay level. Equation (2) can then be employed to estimate the parameter of interest, β_1, using the following specifications:

$$E[y_{ij} | T = 1] = \alpha + \beta_1 T_j + \gamma Child_{ij} + \beta X_i + \varepsilon_{ij} \quad (4)$$

$$E[y_{ij} | T = 0] = \alpha + \gamma Child_{ij} + \beta X_i + \varepsilon_{ij} \quad (5)$$

$$E[y_{ij} | T = 1] - E[y_{ij} | T = 0] = \beta_1 \quad (6)$$

Prior to estimation, it is crucial to examine whether randomization was performed correctly by assuring that treatment into the program is independent of barangay-level characteristics. The World Bank economists in charge of the evaluation perform balance tests of household characteristics using the Household Assessment data that was collected by the NHTS-PR for the estimation of PMT scores (Chaudhury et al, 2013). By comparing average household composition, educational attainment, house amenities and household assets at the barangay level, balance test estimates show that barangays receiving Pantawid Pamilya and those eligible but not receiving the transfers are balanced on their characteristics. Balance test results are available in Table 7 of Chaudhury et al (2013, p. 47).

6.2 Evaluating program impact on female-headed households

Analyzing the impact of CCT programs on different population subgroups can provide better insights for program targeting and design. For the purpose of this study, econometric specification (3) can be modified to focus on gender differentiated outcomes by analyzing the impact of 4Ps on female-headed households. The collected survey data allows for "sex" and "head of household" variables to be included as an interaction term for the specification and analysis of the program's impact on FHH. Specifically, a binary variable *Head* equal to 1 when the respondent is identified as the head of the household, and the variable *Female*, which equals one when the respondent is female, can help create a variable that identifies female headed households, which can be included as an interaction with the Treatment variable *T* in the specification of interest. For the intended analysis on the impact effects of Pantawid Pamilya on labor force participation using individual data, changes on the head of household's employment hours and job seeking behavior can be measured by estimating the following model:

$$Y_{ij} = \alpha + \beta_1 T_j + \beta_2 (Female_{ij}) + \beta_3 (T_j * Female_{ij}) + \boldsymbol{\beta X_i} + \varepsilon_{ij} \quad (7)$$

In equation (7), *Female* denotes a dummy variable equal to 1 if the head of household under study is female, and β_3 captures the differential effect in labor supply outcomes when heads of household receiving the 4Ps stipend are headed by women. *X* represents a vector of individual characteristics (e.g. household count, age, marital status, solo parenting) of the observed units, and ε_{ij} denotes the error term. Standard errors are clustered at the barangay level and municipality fixed effects are absorbed due to the experiment's nature where treatment is randomly assigned to eligible barangays.

Similarly, changes in food and non-food consumption of FHH relative to male-headed households can be estimated by employing equation (8) using available data on average food and non-food expenditures at the household level.

$$Y_{ij} = \alpha + \beta_1 T_j + \beta_2 (FHH_{ij}) + \beta_3 (T_j * FHH_{ij}) + \boldsymbol{\beta X_i} + \varepsilon_{ij} \quad (8)$$

In this specification, *T* equals 1 if household *i* is in a Pantawid Pamilya beneficiary barangay, *FHH* is a dummy variable equal to 1 if the household under study is headed by a woman, and the interaction term β_3 is the program effect of FHH receiving the cash stipend. Turning the analysis to the impact of Pantawid Pamilya on the health and educational outcomes of children living under different types of headships, the empirical strategy uses sample data containing individual information on a total of 3,098 children aged 6 to 17 years.

For the estimation of differential effects between children living under FHH, the econometric specification (9) can be employed. In this specification, *T* is a dummy variable equal to 1 if child *i* is in a Pantawid Pamilya village and *FHH* denotes whether the child lives in a female-headed household. The parameter β_3 captures the differential effects of school enrollment, attendance, deworming behavior and child labor outcomes of children living in Pantawid Pamilya beneficiary FHH. *Child* is an age binary variable to narrow the analysis to school-aged children, *X* is a vector of controls, and ε_{ij} is the error term. Standard errors are clustered at the barangay level and municipality fixed effects are absorbed.

$$Y_{ij} = \alpha + \beta_1 T_j + \beta_2 (FHH_{ij}) + \beta_3 (T_j * FHH_{ij}) + \beta_4 Child_{ij} + \boldsymbol{\beta X_i} + \varepsilon_{ij} \quad (9)$$

Once the three main model specifications have been described, the interpretation of results obtained from this empirical strategy will be further explained. Converting equations (7) to (9) to a general equation:

$$Y_{ij} = \alpha + \beta_1 T_j + \beta_2 (FHH_{ij}) + \beta_3 (T_j * FHH_{ij}) + \beta X_i + \varepsilon_{ij} \quad (10)$$

where Y_{ij} denotes the variable of interest, *T* represents whether the variable of interest *i* (household or individual) belong to a treatment barangay, and *FHH* equals 1 if *i* is a female/female-headed household. The interest of this thesis relies on evaluating the effects of Pantawid Pamilya enrollment on treatment villages, and to determine whether FHH in treatment barangays experience any differential effects in Y_{ij} enrollment as compared to MHH. The total program effect of being in a treatment village is then equal to:

$$\frac{\partial \mathrm{Y}_{ij}}{\partial \mathrm{T}_j} = \beta_1 + \beta_3 (FHH_{ij}) \quad (11)$$

We can conclude that the program effect equals β_1 when the subject of study is a male-headed household (FHH = 0) in a treatment village, whereas the total Pantawid Pamilya impact on female-headed households (FHH = 1) is equal to $\beta_1 + \beta_3$. Hence, our parameter of interest β_3 indicates whether FHH experienced any significant and differential effects on labor supply, consumption, and child development attributed to the intervention program.

Equations (7) to (9) are based on Intention to Treat (ITT) estimates. This entails that the analysis accounts for all potential and eligible beneficiaries in the treatment group as program beneficiaries and all potential beneficiaries in the control group as not receiving the transfer, regardless of the group they are actually assigned to (Chaudhury et al, 2013). After randomization, whether a household enters or withdraws from the program is voluntary, and complete program take-up is unlikely. Thus, ITT generally provides conservative estimates by ignoring noncompliance, withdrawal, or any deviations after randomization (Gupta, 2011).

7. Results

7.1 Labor Supply Effects

Beneficiary adults participating in social and welfare programs can be susceptible to changing their labor supply behavior due to income and substitution effects (Baird et al, 2018). Recalling section 2.2, beneficiary households might reduce their labor participation due to income effects where the demand for leisure increases or due to the time dedicated for the compliance of 4Ps conditionalities. On the other hand, substitution effects might take place when households increase their amount of labor to compensate for the forgone income previously earned through child labor, or to being able to purchase education and medical expenses incurred for the program success (Novella et al, 2012). Results found on the World Bank's impact evaluation suggest positive but not statistically significant changes on the likelihood of beneficiary adults engaging on paid labor and on the hours worked in primary and secondary occupations when receiving a Pantawid Pamilya transfer.

When narrowing the analysis to female heads of household, results in column (1) of Table 2 report a significant decrease on the probability of working when exclusively analyzing FHH in control villages, but no significant effect is found on either FHH or MHH in treatment villages ($\beta_1 \; and \; \beta_3$). The labor effects of additional income on women can be contrasting. In one hand, additional income might now allow women to reduce its labor supply and stay home with children if she prefers. On the other hand, the additional income may grant women the possibility of affording childcare and work more hours than before the program (Banerjee et al, 2017). Following the interest of this study on whether FHH experience differential effects from the transfer, regression results remain unsignificant at any level for every labor outcome studied.

Unchanged behavior on the labor supply, job seeking, and hours worked of both female and male heads of household in the treatment group suggests that the transfer program did not discourage the labor force participation of program beneficiaries. As concluded by Fizbein and Schady (2009), CCT programs generally find no significant effects on beneficiaries offsetting (or increasing) their labor supply. For instance, because program beneficiaries generally live in high poverty levels, the elasticity of leisure might be too low for poor households to reduce their labor supply. Also, beneficiary households might perceive the additional income as temporary rather

than a safe buffer for long-term consumption, and thus experience no incentive to reduce or stop looking for work in the short run. Additional reasoning behind these results can conclude that the Pantwid Pamilya transfer was not large enough to offset labor participation while maintaining pre-transfer expenditures incurred by the household. Nevertheless, as beneficiary households were not incentivized to increase their supply for labor the fact that welfare programs can discourage labor-related behavior in order for households to remain eligible for the program should not be neglected.

Table 4: Head of household labor supply– Pantawid Pamilya Impact on FHH

	Worked	Looked for work	Hours worked-Primary job	Other occupation
	(1)	(2)	(3)	(4)
Treatment	0.020	0.028	1.804	-0.053
	(0.17)	(0.059)	(1.392)	(0.044)
FHH	-0.367***	-0.064	0.498	-0.046
	(0.056)	(0.041)	(3.960)	(0.081)
Program Impact Treatment * FHH	0.047	-0.009	-6.895	0.094
	(0.508)	(0.061)	(4.646)	(0.134)
Additional controls	Yes	Yes	Yes	Yes
Municipal FE	Yes	Yes	Yes	Yes
Treatment mean-FHH	0.645	0	34.52	2.872
Control mean-FHH	0.583	0.023	39.227	2.821
Treatment mean-MHH	0.938	0.086	42.122	2.789
Control mean-MHH	0.918	0.061	40.838	2.835
Observations	1,408	174	1,208	1,232
R-squared	0.141	0.064	0.064	0.020

Note: ***p <0.01, **p <0.05, *p <0.1. Standard errors in parentheses, clustered at the *barangay* level. Dependent variables in columns (1), (3), and (4) are dummy variables on whether head of household worked, looked for work, or had other occupation(s) besides primary occupation in last 7 days, respectively. Dependent variable in column (2) is hours worked in the last 7 days.

7.2 Food and Non-Food Consumption Effects

The provision of additional non-labor income to poor households participating in conditional cash transfer programs assumes changes on the household's expenditures if families can better smooth their consumption. Because most beneficiary households belong to the poorest shares of the population, CCT's impact on immediate consumption is an important factor for the alleviation of poverty in the short run (Fizbein and Schady, 2009). It is also crucial to analyze differences in consumption for CCT recipients to guarantee that the cash grants are being reinvested on the enhancement of nutritional, health, and educational outcomes. Fizbein and Schady (2009) compare the impact of different CCT programs in developing countries and find significant increases on per capita consumption attributed to *PROGRESA* in Mexico, PRAF in Honduras, and *Familias en Acción* in Colombia, but find no effect on consumption in Cambodia and Ecuador.

Contrasting effects on consumption among social programs call upon the need to examine changes in consumption patterns that might have been caused by Pantawid Pamilya, especially on consumption categories that are related to the program conditionalities and that contribute to the human capital development. In the overall consumption changes estimated for Pantawid Pamilya's impact evaluation by the World Bank, results showed significant positive effects on household expenditures allocated to education (i.e. uniforms, tuition fees and books) for all child age groups, as well as on the consumption of dairy and medical-related goods and services. Similarly, a significant drop on alcohol consumption is estimated in treatment villages as compared to the control group; and negative but insignificant coefficients are found for the consumption of tobacco and gambling.

Considering previous arguments and empirical evidence on the beneficial outcomes of targeting women rather than men for better resource allocation within the household, results shown in Table 5 narrows the analysis of food consumption patterns in female-headed households. First, columns 1 to 5 estimate the differential effects on the average consumption of cereals, fruits, meat, dairy and fish in FHH receiving the CCT stipend. Results show significant rises in the consumption of cereals and dairy in treatment households relative to households living in control villages. However, estimates show no significant differences on consumption levels of any food category exclusively under FHH. As argued by Schady and Rosero (2007), these results can be explained by larger increases in food shares emerging in scenarios where the initial bargaining power of

women is weak or non-existent (male-headed households), whereas no effect on food consumption is observed in female headed households were bargaining is not an issue. In addition, columns 6 and 7 show no significant effect on consumption differences for alcohol and tobacco of FHH in treatment villages. Instead, estimates show that in general female-headed households have lower consumption expenditures of alcohol and tobacco relative to MHH, but consumption remains unchanged for FHH receiving Pantawid Pamilya transfers.

Shifting the consumption analysis to non-food expenditures strongly related to the objectives of Pantawid Pamilya, Table 6 presents estimation results on the annualized per capita consumption effects of education, medical, clothing, and personal care goods and services at the household level. The ITT estimates on the general RCT sample show significant increases on expenditures allocated to education and clothing in the treatment barangays as compared to the control areas. Interestingly, results suggest that the education level of the head of household has a significant influence in the expenditures designated to children's schooling, where an additional year of education represents a 0.7% increase in education costs per capita. In addition, estimates show no significant differences on non-food consumption in control or treated female-headed households as compared to male-headed households. Results found can be interpreted as the 4Ps stipend not being large enough for other consumption categories to significantly change. However, it can also be the case that households simply attribute a larger value to food and education consumption due to different consumption preferences, or that the Pantawid Pamilya grant contributes to a rise in savings or asset purchases among beneficiary households rather than short-term consumption.

Table 5: Food Consumption – Pantawid Pamilya Impact on FHH

Dependent variable- Log food consumption	Log cereal	Log fruit	Log meat	Log dairy	Log fish	Log alcohol	Log tobacco
Treatment	-0.103**	0.055	0.102	0.359***	-0.074	-0.357***	-0.115
	(0.052)	(.099)	(0.133)	(0.112)	(0.089)	(0.107)	(0.110)
FHH	-0.109	0.039	0.210	0.156	0.106	-0.767***	-0.683***
	(0.098)	(0.136)	(0.229)	(0.174)	(0.151)	(0.145)	(0.169)
Program Impact Treatment * FHH	0.157	-0.248	-0.225	-0.223	-0.036	0.192	0.215
	(0.133)	(0.186)	(0.286)	(0.239)	(0.175)	(0.174)	(0.212)
Additional controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Treatment mean-FHH	5.704	3.206	2.949	2.604	4.193	0.443	1.087
Control mean-FHH	5.663	3.403	3.065	2.518	4.327	0.618	1.024
Treatment mean-MHH	5.757	3.570	3.288	3.007	4.342	1.043	1.720
Control mean-MHH	5.863	3.556	3.230	2.704	4.437	1.417	1.895
Observations	1,417	1,417	1,417	1,417	1,417	1,417	1,417
R-squared	0.09	0.12	0.10	0.14	0.13	0.08	0.13

Note: ***p <0.01, **p <0.05, *p <0.1. Standard errors in parentheses, clustered at the *barangay* level. Dependent variables are ln average monthly expenditures for food categories in the last 6 months.

Table 6: Non-Food Consumption – Pantawid Pamilya Impact on FHH

	Log education costs	Log medical costs	Log clothing costs	Log personal care costs
	(1)	(2)	(3)	(4)
Treatment	0.330**	0.196	0.523***	0.004
	(0.144)	(0.151)	(0.149)	(0.106)
FHH	0.290	-0.07	-0.098	0.146
	(0.289)	(0.253)	(0.322)	(0.199)
Program Impact Treatment * FHH	-0.216	0.478	0.124	0.148
	(0.336)	(0.402)	(0.401)	(0.239)
Education (Head)	0.007***	0.005	0.003	0.001
	(0.003)	(0.004)	(0.003)	(0.003)
Additional controls	Yes	Yes	Yes	Yes
Municipal FE	Yes	Yes	Yes	Yes
Treatment mean-FHH	3.921	3.389	3.631	3.961
Control mean-FHH	3.984	2.722	3.016	4.09
Treatment mean-MHH	4.346	3.326	3.712	3.937
Control mean-MHH	4.027	3.147	3.223	3.967
Observations	1,415	1,415	1,416	1,417
R-squared	0.11	0.09	0.07	0.09

Note: ***p <0.01, **p <0.05, *p <0.1. Standard errors in parentheses, clustered at the *barangay* level. Dependent variables are annualized costs per capita.

7.3 Child outcomes

Because of the nature of conditional cash transfers as a means to improving human capital from early stages of youth and potentially breaking the intragenerational cycle of poverty, this section analyzes the impact of Pantawid Pamilya on different outcomes concerning children belonging in beneficiary families. Specifically, this section estimates the changes in education

enrollment and attendance rate after the implementation of 4Ps, as well as the program effect on deworming practices and child labor of 3,098 children in the RCT barangays.

In Table 7, regression results for educational outcomes of children exposed to the CCT program are reported. Evaluation results for the entire sample show significant increases in the likelihood of children aged 6 to 11 years being enrolled in day care and elementary school in villages where Pantwaid Pamilya was in effect. Among this age group, school enrollment appears to be 3.2 percentage points higher among children in treatment villages as compared to the control group (column 1). In column 5, the number of children attending school more than 85% of the days is suggested to increase by 5.3 percentage points in treatment barangays, whereas school attendance of children under FHH is estimated to be 4.8 percent points higher. In addition, no significant differences in educational outcomes of children living in treated FHH is found on the estimations. Results show, however, that school enrollment is positively impacted by the head of household's education level, as well as on the children's age. As seen in columns 2 and 3, the likelihood of children aged 12 to 17 being enrolled in school falls as the child ages, regardless of the head's gender. Results might be explained by the tendency of replacing school with paid labor to contribute to the household's income, especially for teenagers aged 15-17 which are not eligible for the education grant. These results suggest major challenges for the design of Pantawid Pamilya. First, the education grant for children above 12 years old might not be sufficiently large for parents to offset the cost of teenagers attending school instead of working for income. On the other hand, results suggest a challenge for program stakeholders to keep older children in school. For instance, the introduction of a cash grant for children 15 to 17 years old might have a positive impact on high school enrollment at later stages of the program.

On another note, Table 8 illustrates the effect Pantawid Pamilya has on deworming practices and the propensity of children to engage in paid labor. Results found in columns 1 and 2 suggest that participating in 4Ps increased the likelihood of children to take deworming kills offered at school in treatment villages relative to children in control barangays. Additionally, a significant increase in the frequency in which deworming pills were taken when engaging in the transfer program is observed. These results are unsurprising given that engaging in deworming practices were part of the program's health conditionalities. Estimates found in column 3 of Table 8 show no significant effects on the likelihood of children engaging on any form of paid child labor in beneficiary and female-headed households, and conclude that any increase in child labor is merely

attributed to children getting older and contributing to the household income, as suggested on the negative enrollment results found on children among the 12 to 17 age group in Table 7.

Table 7: Education Outcomes – Pantawid Pamilya Impact on FHH

	Enrollment 6-11 yrs	Enrollment 12-14 yrs	Enrollment 15-17 yrs	Elementary start age	Attendance >85%
	(1)	(2)	(3)	(4)	(5)
Treatment	0.032***	0.029	-0.001	-0.039	0.053***
	(0.012)	(0.023)	(0.043)	(0.033)	(0.014)
FHH	-0.007	0.0002	0.175	-0.038	0.048**
	(0.027)	(0.064)	(0.072)	(0.068)	(0.023)
Program Impact Treatment * FHH	0.019	-0.032	-0.121	0.0004	-0.019
	(0.029)	(0.071)	(0.109)	(0.913)	(0.029)
Child age	-0.002	-0.053***	-0.117***	-0.158***	-0.0003
	(0.003)	(0.016)	(0.021)	(0.013)	(0.002)
Education (Head)	0.0002*	0.001***	0.002**	0.001	-0.00003
	(0.0001)	(0.0004)	(0.001)	(0.001)	(0.0004)
Additional controls	Yes	Yes	Yes	Yes	Yes
Municipal FE	Yes	Yes	Yes	Yes	Yes
Treatment mean-FHH	0.992	0.856	0.536	0.526	0.950
Control mean-FHH	0.941	0.859	0.681	0.59	0.916
Treatment mean-MHH	0.992	0.900	0.606	0.58	0.939
Control mean-MHH	0.960	0.865	0.622	0.620	0.887
Observations	1,539	797	700	1,008	2,601
R-squared	0.056	0.032	0.10	0.16	0.02

Note: ***p <0.01, **p <0.05, *p <0.1. Standard errors in parentheses, clustered at the *barangay* level. Column (1) uses a dummy variable equal to one if child was enrolled in daycare, preschool, elementary or secondary school. Column (2) analyses children aged 6-9 on the age at which they started elementary school. The dependent variable of column (3) is a dummy equal to 1 if child attendance was above 85% during the last two weeks. Attendance rate was calculating using the number of days of school and the number of absent days claimed by the respondent.

Table 8: Child Outcomes – Pantawid Pamilya Impact on FHH

	Child deworming 6 -14 yrs		*Child labor 10-17 yrs*
	Took deworm pills	Took >1 deworm pills	Engaged in work for pay
	(1)	(2)	(3)
Treatment	0.053**	0.109***	-0.095
	(0.023)	(0.032)	(0.092)
FHH	-0.008	0.019	0.025
	(0.055)	(0.052)	(0.272)
Program Impact Treatment * FHH	-0.027	-0.097	-0.070
	(0.063)	(0.065)	(0.267)
Age in years	-0.024***	-0.008*	0.118***
	(.004)	(.004)	(0.021)
Additional controls	Yes	Yes	Yes
Municipal FE	Yes	Yes	Yes
Treatment mean-FHH	0.777	0.309	0.452
Control mean-FHH	0.752	0.303	0.639
Treatment mean-MHH	0.800	0.372	0.492
Control mean-MHH	0.744	0.261	0.573
Observations	2,157	2,140	1,911
R-squared	0.06	0.044	0.051

Note: ***p <0.01, **p <0.05, *p <0.1. Standard errors in parentheses, clustered at the *barangay* level. Dependent variable in column (1) is whether child aged 6 to 14 years old took deworm pill offered at school, column (2) indicates whether child took deworm pills more than once. Dependent variable in column (3) indicates whether children 10 to 17 years old engaged in any type of labor for pay during the past 7 days.

8. Robustness

Results found in section 7 represent the intention to treat estimates after the randomization of barangays into the Pantwid Pamilya program. This means that the analysis provided accounts for all potential and eligible beneficiaries in the treatment group as program beneficiaries and all potential beneficiaries in the control group as not receiving the transfer, regardless of the group

they are actually assigned to after randomization. Even if the initial assignment of the program was randomized, the actual allocation into treatment and control group might not be (Duflo and Kremer, 2003). In essence, ITT ignores whether a household assigned to the treatment group eventually finds itself in the control group due to withdrawal from the program. As discussed in section 6, the ITT provides more conservative estimates on the treatment effect but facilitates estimation of counterfactual outcomes by assuming households end up in the group they were initially assigned to. Alternatively, estimations on the Average treatment effect on the treated (ATT) can yield an impact assessment by limiting the main specification to households who are in fact in the treatment group and further assessing the validity of results.

Following Chaudhury et al (2013), ATT estimations to assess the robustness of ITT results can be employed by matching the actual household beneficiary status recorded in the official management information system of the program. Empirically, the random assignment of barangays to the treatment and control groups can be used as instrumental variable on the actual beneficiary status according to the program database to measure Pantawid Pamilya's impact on the variables of interest (Duflo and Kremer, 2003; Chaudhury et al, 2013). From the actual status data, it is observed that from the 704 beneficiary households randomly assigned to the treatment group during the randomization process, 57 ended up in the control group and not participating in the program. Running the empirical specifications previously introduced and using the beneficiary database, regression results in Tables 9-13 of Appendix A show that the statistical significance of the previous estimates remain robust with the exception of education costs. Interestingly, ATT results show that school enrollment of children 15 to 16 is not significantly affected by the parent's education (found significant in original results), and show a strong significance to the age of the children. The magnitude of the estimated significant coefficients is slightly larger in ATT results as compared to the ITT method, as ITT generally provides more conservative estimates on the treatment effect and ATT account for the actual status of treatment.

In the World Bank's impact evaluation of Pantawid Pamilya, the authors Chaudhury et al (2013) perform an ITT empirical model to assess the impact of the CCT program on a wide range of human development outcomes. It is important to highlight that the impact results reported by the evaluators only accounts for municipal effects without including any additional variables that control for individual or household characteristic in its estimations. In the empirical model used in this thesis, household and individual characteristics such as age, marital status, solo parenting, and

household count are included in the regressions and are in some cases found to have a significant effect on labor and consumption outcomes. As an additional robustness check, equations (7) to (9) are regressed on the labor, consumption, and child development variables of interests without including individual or household controls. Appendix B, Tables 14 to 18 report the ITT regression results without control variables and show that the statistical significance and magnitude of estimated coefficients remains robust to results found in section 7. It is generally observed that estimates without controls slightly overestimate the program impact relative to results where additional individual and household controls are considered.

9. Limitations

Results concluded in this study represent the differential impact of the Pantawid Pamilya on female-headed households in 8 municipalities around the Philippines. The external validity of these findings on other conditional cash transfer or social assistance programs should not be generalized without further investigation. Underlying conclusions should account for the fact that no intervention has a homogenous impact among different countries and at different points in time. Results will vary in different scenarios according to the intervention design and conditionalities. It is important to highlight that the experimental data for this study encompasses a single wave of survey data, and merely exploits the randomization of comparable villages and households into treatment and control groups to identify the impact of the Pantawid Pamilya program. Hence, results found in this paper portray the effects of the "Set 1" sample of recipient households in eight municipalities, which was not drawn to serve as a representative population of the entire country but for the impact evaluation matter (Chaudhury et al, 2013). Evaluation results are internally valid for the first phases of the program, and estimated outcomes might be different from later stages of the program. Furthermore, the spillover and long-term effects of the intervention at the general scale and on the FHH subgroup remains subject to study.

In addition to the external validity question of the general program impact on poor households, especial attention should be granted to the results focusing on female headed households. First, since FHH constitute a small subgroup in the Philippine population, the availability of a larger and richer data set can yield more consistent estimates were a higher number of FHH can be analyzed. Second, the impact of women targeted initiatives will vary depending on the living circumstances and share of female-headed households across countries and regions, as previously discussed in

section 2.1. In the Philippines, for instance, legal divorce has remained illegal with the exception of nullity under extreme cases (Source: Philippine Commission on Women), and 48% of FHH households consisted of widows in 1992, attributed the longer life expectancy of women at the time (Miralao, 1992). Hence, female-headed households might be generally composed of widows, solo mothers or women married to migrant workers. As of 2008, only 16.65% of households were headed by women, representing a minor 2.1 percent point increment since 1998. Relatively, the Philippines has a low FHH share if compared to Ukraine or Haiti, where the FHH comprised 49.4% and 45.1% of all households in 2007, respectively (World Bank Data). It is thus important to direct further research to analyze the CCT effects in different regions where economic and bargaining conditions vary for female head of households, and study regions where female headship is consistently growing.

10. Conclusion

In this thesis, the Pantawid Pamilya conditional cash transfer program in the Philippines was analyzed to identify differential effects on labor supply, consumption, and children outcomes when beneficiary female-headed households receive the program's cash grant. The empirical strategy exploits experimental data collected by the World Bank for the program impact evaluation and narrows an intention to treat (ITT) estimation to FHH in 8 poor regions in the Philippines. This thesis finds no differential effects on the labor market participation and on the consumption patterns of food and non-food goods in households that are headed by women and who are beneficiaries of the Pantawid Pamilya program, suggesting an homogenous impact between male-headed households and female-headed households exposed to the CCT program. In addition, the empirical strategy employed in this analysis suggests that children leaving in beneficiary FHH do not experience better results regarding school enrollment, attendance, deworming practices and child labor as compared to other beneficiary household structures.

Results found contribute to the debating literature on the use of female headship as a targeting strategy and suggest that no differential impact necessarily occurs under the headship of women receiving Pantawid Pamilya grants. However, results concluded in this thesis are not universal to other CCT programs, and the examination of adult female outcomes should continue to be studied in the different impact evaluations of anti-poverty programs around the world. Importantly, evidence on the underlying causes why treated FHH households experience no differential effect

relative to other beneficiaries in the analyzed program should be further studied. For this to be possible, gender-disaggregated data needs to be made available and accounted for. Evaluations of poverty programs should previously design and adopt strategies to not only target female recipients accurately, but also facilitate the evaluation of the program's impact not only on beneficiary children but also on female individual outcomes after being exposed to a CCT or other welfare programs.

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APPENDIX I: ATT results- Actual beneficiary status (Tables 9-13)

Table 9: Head of household labor supply– ATT

	Worked	Looked for work	Hours worked-Primary	Other occupation
	(1)	(2)	(3)	(4)
Treatment	0.022	0.027	1.557	-0.046
	(0.018)	(0.067)	(1.706)	(0.049)
FHH	-0.364***	-0.065**	-0.934	0.079
	(0.057)	(0.031)	(3.950)	(0.077)
Program Impact Treatment * FHH	0.049	-0.003	-5.956	0.070
	(0.070)	(0.063)	(4.685)	(0.135)
Additional controls	Yes	Yes	Yes	Yes
Municipal FE	Yes	Yes	Yes	Yes
Observations	1,408	174	1,208	1,232
R-squared	0.14	0.048	0.018	0.04

Note: ***p <0.01, **p <0.05, *p <0.1. Standard errors in parentheses, clustered at the *barangay* level. Dependent variables in columns (1), (3), and (4) are dummy variables on whether head of household worked, looked for work, or had other occupation(s) besides primary occupation in last 7 days, respectively. Dependent variable in column (2) is hours worked in the last 7 days.

Table 10: Food consumption– ATT

Dependent variable- Log food consumption	Log cereal	Log fruit	Log meat	Log dairy	Log fish	Log alcohol	Log tobacco
Treatment	-0.125**	0.062	0.051	0.319*	-0.108	-0.399***	-0.194
	(0.063)	(.137)	(0.181)	(0.172)	(0.136)	(0.127)	(0.167)
FHH	-0.187	-0.187	-0.115	-0.207	-0.053	-0.863***	-0.956***
	(0.095)	(0.143)	(0.232)	(0.174)	(0.151)	(0.143)	(0.170)
Program Impact Treatment * FHH	0.162	-0.191	-0.181	-0.166	-0.042	0.180	0.259
	(0.130)	(0.183)	(0.290)	(0.244)	(0.174)	(0.168)	(0.220)
Additional controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,417	1,417	1,417	1,417	1,417	1,417	1,417
R-squared	0.08	0.02	0.07	0.012	0.02	0.05	0.13

Note: ***p <0.01, **p <0.05, *p <0.1. Standard errors in parentheses, clustered at the *barangay* level. Dependent variables are ln average monthly expenditures for food categories in the last 6 months.

Table 11: Non-food consumption– ATT

	Log education costs	Log medical costs	Log clothing costs	Log personal care costs
	(1)	(2)	(3)	(4)
Treatment	0.302	0.181	0.509***	-0.023
	(0.202)	(0.204)	(0.209)	(0.139)
FHH	-0.066	-0.469	-0.356	-0.050
	(0.287)	(0.256)	(0.320)	(0.194)
Program Impact Treatment * FHH	-0.150	0.512	0.204	0.164
	(0.341)	(0.405)	(0.400)	(0.242)
Education (Head)	0.007***	0.008	0.005	0.002
	(0.003)	(0.004)	(0.004)	(0.002)
Additional controls	Yes	Yes	Yes	Yes
Municipal FE	Yes	Yes	Yes	Yes
Treatment mean-FHH	3.921	3.389	3.631	3.961
Control mean-FHH	3.984	2.722	3.016	4.09
Treatment mean-MHH	4.346	3.326	3.712	3.937
Control mean-MHH	4.027	3.147	3.223	3.967
Observations	1,415	1,415	1,416	1,417
R-squared	0.04	0.09	0.014	0.03

Note: ***p <0.01, **p <0.05, *p <0.1. Standard errors in parentheses, clustered at the *barangay* level. Dependent variables are annualized costs per capita.

Table 12: Education Outcomes – ATT

	Enrollment 6-11 yrs	Enrollment 12-14 yrs	Enrollment 15-17 yrs	Elementary start age	Attendance >85%
	(1)	(2)	(3)	(4)	(5)
Treatment	0.034***	0.029	-0.014	-0.051	0.056***
	(0.013)	(0.025)	(0.050)	(0.038)	(0.016)
FHH	-0.008	0.005	0.137	-0.043	0.049**
	(0.028)	(0.063)	(0.073)	(0.066)	(0.022)
Program Impact Treatment * FHH	0.017	-0.029	-0.127	-0.016	-0.0124
	(0.030)	(0.069)	(0.110)	(0.091)	(0.029)
Child age	-0.002	-0.053***	-0.113***	-0.159***	-0.0004
	(0.003)	(0.015)	(0.021)	(0.013)	(0.002)
Education (Head)	0.0003***	0.001***	0.007	0.001	-0.00004
	(0.0001)	(0.0003)	(0.001)	(0.007)	(0.0003)
Additional controls	Yes	Yes	Yes	Yes	Yes
Municipal FE	Yes	Yes	Yes	Yes	Yes
Observations	1,539	797	700	1,008	2,601
R-squared	0.02	0.03	0.06	0.14	0.008

Note: ***p <0.01, **p <0.05, *p <0.1. Standard errors in parentheses, clustered at the *barangay* level. Columns (1) to (3) uses a dummy variable equal to one if child was enrolled in daycare, preschool, elementary or secondary school. Column (4) analyses children aged 6-9 on the age at which they started elementary school. The dependent variable of column (5) is a dummy equal to 1 if child attendance was above 85% during the last two weeks. Attendance rate was calculating using the number of days of school and the number of absent days claimed by the respondent.

Table 13: Child Outcomes – ATT

	Child deworming 6 -14 yrs		*Child labor 10-17 yrs*
	Took deworm pills	Took >1 deworm pills	Engaged in work for pay
	(1)	(2)	(3)
Treatment	0.058**	0.118***	-0.109
	(0.028)	(0.037)	(0.106)
FHH	-0.028	0.047	-0.004
	(0.055)	(0.052)	(0.284)
Program Impact Treatment * FHH	-0.038	-0.110	-0.050
	(0.063)	(0.065)	(0.269)
Age in years	-0.026***	-0.009*	0.117***
	(.004)	(.004)	(0.021)
Additional controls	Yes	Yes	Yes
Municipal FE	Yes	Yes	Yes
Observations	2,157	2,140	1,911
R-squared	0.03	0.016	0.033

Note: ***p <0.01, **p <0.05, *p <0.1. Standard errors in parentheses, clustered at the *barangay* level. Dependent variable in column (1) is whether child aged 6 to 14 years old took deworm pill offered at school, column (2) indicates whether child took deworm pills more than once. Dependent variable in column (3) indicates whether children 10 to 17 years old engaged in any type of labor for pay during the past 7 days.

APPENDIX II: Impact evaluation results - No additional controls (Tables 14-18)

Table 14: Head of household labor supply– No additional controls

	Worked	Looked for work	Hours worked-Primary	Other occupation
	(1)	(2)	(3)	(4)
Treatment	0.021	0.032	1.661	-0.055
	(0.017)	(0.060)	(1.406)	(0.044)
FHH	-0.334***	-0.061	-0.716	-0.043
	(0.052)	(0.041)	(3.381)	(0.077)
Program Impact Treatment * FHH	0.039	-0.007	-6.784	0.116
	(0.072)	(0.064)	(4.518)	(0.137)
Additional controls	No	No	No	No
Municipal FE	Yes	Yes	Yes	Yes
Treatment mean-FHH	0.645	0	34.52	2.872
Control mean-FHH	0.583	0.023	39.227	2.821
Treatment mean-MHH	0.938	0.086	42.122	2.789
Control mean-MHH	0.918	0.061	40.838	2.835
Observations	1,408	174	1,208	1,232
R-squared	0.13	0.042	0.056	0.017

Note: ***p <0.01, **p <0.05, *p <0.1. Standard errors in parentheses, clustered at the *barangay* level. Dependent variables in columns (1), (3), and (4) are dummy variables on whether head of household worked, looked for work, or had other occupation(s) besides primary occupation in last 7 days, respectively. Dependent variable in column (2) is hours worked in the last 7 days.

Table 15: Food consumption– No additional controls

Dependent variable- Log food consumption	Log cereal	Log fruit	Log meat	Log dairy	Log fish	Log alcohol	Log tobacco
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treatment	-0.093*	0.06	0.113	0.364***	-0.072	-0.361***	-0.116
	(0.056)	(0.098)	(0.132)	(0.114)	(0.090)	(0.106)	(0.110)
FHH	-0.143	0.019	0.063	0.085	0.023	-0.729***	-0.646***
	(0.089)	(0.123)	(0.216)	(0.167)	(0.147)	(0.140)	(0.161)
Program Impact Treatment * FHH	0.143	-0.243	-0.196	-0.229	-0.015	0.199	0.210
	(0.138)	(0.186)	(0.283)	(0.235)	(0.178)	(0.173)	(0.212)
Additional controls	No	No	No	No	No	No	No
Municipality FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Treatment mean-FHH	5.704	3.206	2.949	2.604	4.193	0.443	1.087
Control mean-FHH	5.663	3.403	3.065	2.518	4.327	0.618	1.024
Treatment mean-MHH	5.757	3.570	3.288	3.007	4.342	1.043	1.720
Control mean-MHH	5.863	3.556	3.230	2.704	4.437	1.417	1.895
Observations	1,417	1,417	1,417	1,417	1,417	1,417	1,417
R-squared	0.03	0.1	0.09	0.14	0.11	0.07	0.12

Note: ***p <0.01, **p <0.05, *p <0.1. Standard errors in parentheses, clustered at the *barangay* level. Dependent variables are ln average monthly expenditures for food categories in the last 6 months.

Table 16: Non-food consumption– No additional controls

	Log education costs	Log medical costs	Log clothing costs	Log personal care costs
	(1)	(2)	(3)	(4)
Treatment	0.382**	0.248	0.535***	-0.002
	(0.149)	(0.151)	(0.151)	(0.108)
FHH	0.125	-0.146	-0.035	0.132
	(0.275)	(0.241)	(0.305)	(0.178)
Program Impact Treatment * FHH	-0.300	0.461	0.092	0.163
	(0.352)	(0.405)	(0.401)	(0.241)
Additional controls	No	No	No	No
Municipal FE	Yes	Yes	Yes	Yes
Treatment mean-FHH	3.921	3.389	3.631	3.961
Control mean-FHH	3.984	2.722	3.016	4.09
Treatment mean-MHH	4.346	3.326	3.712	3.937
Control mean-MHH	4.027	3.147	3.223	3.967
Observations	1,418	1,418	1,418	1,418
R-squared	0.084	0.076	0.067	0.065

Note: ***p <0.01, **p <0.05, *p < 0.1. Standard errors in parentheses, clustered at the *barangay* level. Dependent variables are annualized costs per capita.

Table 17: Education Outcomes – No additional controls

	Enrollment 6-11 yrs	Enrollment 12-14 yrs	Enrollment 15-17 yrs	Elementary start age	Attendance >85%
	(1)	(2)	(3)	(4)	(5)
Treatment	0.031 ***	0.033	-0.003	-0.036	0.051***
	(0.011)	(0.23)	(0.043)	(0.033)	(0.14)
FHH	- 0.020	-0.003	0.086	-0.038	0.025
	(0.027)	(0.051)	(0.069)	(0.061)	(0.21)
Program Impact Treatment * FHH	0.023	- 0.036	-0.112	-0.002	-0.012
	(0.029)	(0.067)	(0.111)	(0.091)	(0.029)
Child age	- 0.002	-0.054***	-0.117***	-0.160***	
	(0.003)	(0.016)	(0.021)	(0.012)	
Additional controls	No	No	No	No	No
Municipal FE	Yes	Yes	Yes	Yes	Yes
Treatment mean-FHH	0.992	0.856	0.536	0.526	0.950
Control mean-FHH	0.941	0.859	0.681	0.59	0.916
Treatment mean-MHH	0.992	0.900	0.606	0.58	0.939
Control mean-MHH	0.960	0.865	0.622	0.620	0.887
Observations	1,539	797	797	700	2,601
R-squared	0.047	0.01	0.025	0.078	0.019

Note: ***p <0.01, **p <0.05, *p <0.1. Standard errors in parentheses, clustered at the *barangay* level. Columns (1) to (3) uses a dummy variable equal to one if child was enrolled in daycare, preschool, elementary or secondary school. Column (4) analyses children aged 6-9 on the age at which they started elementary school. The dependent variable of column (5) is a dummy equal to 1 if child attendance was above 85% during the last two weeks. Attendance rate was calculating using the number of days of school and the number of absent days claimed by the respondent.

Table 18: Child outcomes – No additional controls

	Child deworming 6 -14 yrs		*Child labor 10-17 yrs*
	Took deworm pills	Took >1 deworm pills	Engaged in work for pay
	(1)	(2)	(3)
Treatment	0.051**	0.108***	-0.082
	(0.023)	(0.032)	(0.088)
FHH	-0.004	0.029	0.029
	(0.046)	(0.048)	(0.233)
Program Impact Treatment * FHH	-0.024	-0.097	-0.072
	(0.062)	(0.065)	(0.261)
Age in years	-0.024***	-0.008*	0.119***
	(.004)	(.004)	(0.021)
Additional controls	No	No	No
Municipal FE	Yes	Yes	Yes
Treatment mean-FHH	0.777	0.309	0.452
Control mean-FHH	0.752	0.303	0.639
Treatment mean-MHH	0.800	0.372	0.492
Control mean-MHH	0.744	0.261	0.573
Observations	2,157	2,140	1,911
R-squared	0.057	0.041	0.048

Note: ***p <0.01, **p <0.05, *p <0.1. Standard errors in parentheses, clustered at the *barangay* level. Dependent variable in column (1) is whether child aged 6 to 14 years old took deworm pill offered at school, column (2) indicates whether child took deworm pills more than once. Dependent variable in column (3) indicates whether children 10 to 17 years old engaged in any type of labor for pay during the past 7 days.