Public Disclosure Authorized

Public Disclosure Authorized

WPS8229

Policy Research Working Paper 8229

What Are the Effects of Expanding a Social Pension Program on Extreme Poverty and Labor Supply?

Evidence from Mexico's Pension Program for the Elderly

Authors Clemente Avila-Parra
David Escamilla-Guerrero

WORLD BANK GROUP
Social Protection and Labor Global Practice Group
October 2017

Policy Research Working Paper 8229

Abstract

In 2013, Mexico's Social Pension Program for the Elderly was expanded by changing its eligibility threshold from age 70 to age 65. Using pooled cross-sectional data from Mexico's National Household Income and Expenditure Survey, the exogenous variation around eligibility age was exploited to uncover the causal effects of this expansion on extreme poverty and labor supply of the newly eligible population, and to explore potential transmission mechanisms. Applying quasi-experimental methods, results show that the expansion of Mexico's Social Pension Program for the Elderly not only reduced the probability of the elderly being extreme poor, but it also reduced the extreme poverty gap, and the extreme poverty severity indexes of the elderly population. These effects on extreme poverty are generalizable to all individuals of the treated household. The results suggest that the expansion of the Social Pension Program for the Elderly did not have short-term effects on the labor force participation of the elderly. Accordingly, the analysis does not find that the program reduced labor income. In contrast with other impact evaluations of similar programs, the analysis does not find that the expansion of Mexico's program had a crowding out effect on domestic or international private transfers to the elderly.

This paper is a product of the Social Protection and Labor Global Practice Group. It is part of a larger effort by the World Bank to provide open access to its research and make a contribution to development policy discussions around the world. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at cavilaparra@worldbank.org and D.Escamilla-Guerrero@lse.ac.uk.

The Policy Research Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

Produced by the Research Support Team

What Are the Effects of Expanding a Social Pension Program on Extreme Poverty and Labor Supply? Evidence from Mexico's Pension Program for the Elderly

Clemente Avila-Parra[†]
The World Bank
David Escamilla-Guerrero[‡]
London School of Economics

Keywords: Non-contributory pensions, poverty, labor supply, elderly
(JEL I38, J2, O15)

[*]We are grateful to Margaret Grosh for her guidance in our research and analytical approach. We are thankful to William Wiseman, Concha Steta, and Francesca Lamanna for their helpful comments on early discussions of this paper, and for their encouragement and support. We are particularly grateful to Pablo Gottret, Rafael Rofman, Gonzalo Reyes, Carolina Romero, and Ignacio Apella for their thoughtful comments and suggestions for improvements. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily reflect the views of The World Bank, its Board of Executive Directors, or the governments they represent. The World Bank does not guarantee the accuracy of the data included in this work.

[†]Social Protection and Jobs Global Practice, Av. Insurgentes Sur 1605 - Floor 24, Mexico City, 03900. (Tel: +52(55)54804274. e-mail: cavilaparra@worldbank.org).

[‡]Economic History Department, Houghton Street, London, WC2A 2AE. (Tel: +44(0)7477456964. e-mail: D.Escamilla-Guerrero@lse.ac.uk).

In this paper, we estimate the impact of the expansion of an Old-Age Social Pension Program –Pension Program for the Elderly or *Programa Pension para Adultos Mayores (PAM)*– on extreme poverty and labor supply of the elderly in Mexico, and explore potential underlying transmission mechanisms.

The expansion of PAM in 2013 in Mexico was a major policy decision. By 2014, PAM had become the second largest cash transfer program in Mexico, just below the well-known Conditional Cash Transfer Program PROSPERA (previously known as PROGRESA and as Oportunidades). Between 2012 and 2014, PAM almost doubled its budget reaching 36.5 billion pesos[1] in 2014 which represented 0.21% of the Gross Domestic Product (GDP) of that year and reached 5.5 million beneficiaries, 60% of the population of 65 years of age or older (CONEVAL, 2010-2014).

PAM's objective is to increase social security coverage and to ensure a basic income for the elderly who are poor or vulnerable and who do not receive any contributory pension or retirement income. While the majority of development economics literature that studies cash transfers shows that this type of program, and social pension programs in particular, have attributable effects on a wide range of welfare indicators, one cannot take these effects for granted. There are many factors that could be preventing programs from achieving their welfare improvement objectives such as reducing old-age poverty. The success of a social program depends greatly on both its design and its implementation. Some of the reasons why social pension programs may not achieve the objective of reducing extreme poverty are: inadequacy of benefit level; deficient targeting, that is, programs being too narrowly targeted or programs not reaching the poorest old age individuals; reduction in labor income through disincentives to work; and crowd out effects on other important sources of income such as private transfers from other households. Understanding the effects of expanding Mexico's PAM on extreme poverty and labor supply has important policy implications.

In Mexico, as in many other countries in Latin America and the Caribbean, most of the elderly[2] do not qualify for a contributory pension (Rofman, Apella and Vezza, 2015). This leaves the elderly population at risk of old-age poverty, with extremely limited choices (if any) but to keep working and/or to depend heavily on public and private transfers including social programs and aid from informal safety nets such as family members.

Data from the Socioeconomic Conditions Module of the Household Income and Expenditure National Survey (ENIGH-MCS) of 2012 and 2014, show that the elderly's income was more likely to fall below the official extreme poverty line than the non-elderly's income in Mexico. In 2012 and 2014, we estimate that the extreme poverty headcount index was about one percentage point higher for the elderly than for the non-elderly population and statistically different from zero. However, when we subtract PAM income from current per capita income, this difference is substantially higher: in 2012, the extreme poverty headcount index was about 8 percentage points higher for the elderly than for the non-elderly, and in 2014 it was 9 percentage points higher. While we acknowledge that in the absence of PAM, individuals are likely to modify their behavior, these differences give us a measure of the relative importance of social pensions as a source of income for the elderly in Mexico.

PAM in Mexico is relevant not only because the population ages 65 years or older has dramatically increased in the last two decades, but also because it will continue to increase in such a way in the

[1] In 2014, the average exchange rate was roughly 14 pesos per U.S. dollar.

[2] For the purpose of this study, we define elderly as any person of 65 years of age or older.

following years. Data from Mexico's National Population Council (CONAPO, for its acronym in Spanish) show that the population ages 65 years or older was 3.7 million in 1990 and it doubled by 2012. Projections from CONAPO show that the population ages 65 years or older will nearly double again by 2030 reaching almost 14 million people, 10.3% of the total projected population. Given that most of the adults that will reach 65 years of age in the coming years will not qualify for a contributory pension, PAM will face increased demand. Also, given the limited public resources, policy makers might be interested in knowing whether PAM is achieving its objective of reducing old age poverty or not and may want to better understand the effects of PAM on other important factors such as labor supply of the elderly.

Using the ENIGH-MCS of 2010, 2012 and 2014, we exploit the fact that the program's main eligibility feature is age. When PAM started in 2007, it only benefited adults of 70 years of age or older. However, in 2013 the program expanded its target population allowing the enrollment of adults from 65 years of age or older. We compare the average changes in outcomes for the group that became eligible with the expansion of the eligibility threshold with the group that is immediately below that age, before and after the intervention. While these two groups of individuals are not radically different from each other, we acknowledge that it would be inadequate to assume that their pre-treatment characteristics are identical at that life stage. Therefore, we used a regression discontinuity approach combined with a difference-in-differences strategy to improve statistical precision of the intention to treat effects. We also estimated the treatment on the treated effects using an instrumental variable methodology (IV).

Additionally, we investigate the potential transmission channels of the effects of the expansion of the social pensions program on extreme poverty and on labor supply, or lack thereof. Many of the beneficiaries of Mexico's social pension program are poor. Receiving this income shock, ceteris paribus, reduces poverty. However, other things may not be equal. Consumer choice theory and the labor-leisure standard model suggest that considering that leisure is a normal good and given that the consumer has a finite amount of time and rational preferences in the relevant preference range, an increase in income may cause an increase in leisure consumption and a decline of the amount of labor supplied. Hence, if the wage (or labor income) per hour remains constant, a reduction in the number of hours worked decreases total labor income. Therefore, whether the expansion of PAM decreases labor income and labor supply of the old age population, or not, remains an empirical question.

Moreover, we examine whether the expansion of the social pension program has a statistically significant effect on domestic private transfers from other households or on remittances. This can partially explain the effects of the program on poverty reduction and labor supply.

This paper aims to uncover the short term causal effects of the expansion of PAM on extreme poverty and labor supply of the elderly in Mexico. In Section I, we broadly describe the evolution and trends of pension systems with an emphasis on Mexico. Section II presents the focused literature review on the effects of social pension programs on consumption, poverty, labor supply, and private transfers from other households, among others. Section III describes the Pension Program for the Elderly over time and its expansion in 2013. In this section, we explain the characteristics of the data we used and of the elderly population in general, and we discuss the empirical strategy implemented

to estimate the causal effects. In Section III we also present and interpret the estimated results and the robustness checks performed using falsification tests. We will show that the expansion of PAM had a poverty reducing effect while it did not affect the labor supply of the elderly. We will also show the effects of the expansion of the program on time spent in activities other than work, and the crowding-out effects of the expansion of the program on private transfers from other households. Section IV discusses the policy implications of the intervention, the agenda for future research, and concludes.

1. Background

In the last century, pension systems worldwide were mainly contributory plans that commonly have a minimum eligibility requirement of hours or weeks worked. In many countries, these pension schemes leave out people that either did not work or did not work "enough" in formal jobs.

Those contributory pension systems had "pay-as-you-go" models, whereby active workers paid contributions into the social security system fund and some of those resources were used to pay pensioners then. In many countries, the fiscal sustainability of such systems became questionable in the 1980s and 1990s due to demographic changes (i.e. increased life expectancy and lower ratio of people working relative to retirees). As a result, governments undertook wide-ranging reforms to improve the fiscal sustainability of their pension schemes mostly changing from pay-as-you-go models to defined contribution pension systems. However, at that time, issues such as pension coverage were often left aside in said reforms (Rofman, Apella, and Vezza, 2015).

Mexico also undertook major reforms to improve the fiscal sustainability of its contributory pension system at the end of the twentieth and beginning of the twenty-first centuries. The first major reform was approved in 1995 for the Mexican Social Security Institute (IMSS, for its acronym in Spanish) and became effective in July 1997. The main change in this reform was that the IMSS pension program changed from a pay-as-you-go defined benefit program to a fully funded defined contribution program with individual accounts. The second major reform was approved in 2007 for the Institute for Security and Social Services for State Workers (ISSSTE), and this reform was similar to the one approved for IMSS in 1995. These reforms implemented by the two major social security institutions in Mexico improved the fiscal sustainability of the pension system (Villagomez and Dario-Ramirez, 2015).

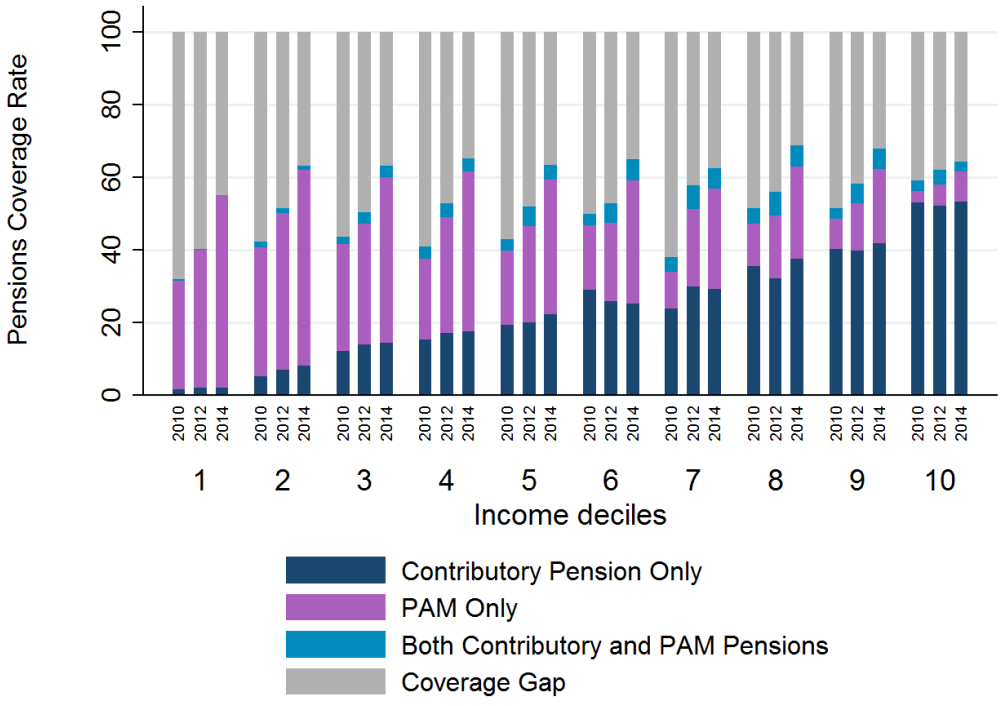
However, the contributory pension coverage rate in Mexico remained low in absolute and relative terms (Rofman, Apella and Vezza, 2015). In absolute terms, less than 40% of the economically active population contribute to the pension system and even lower than the percentage of contributors is the percentage of people of 65 years of age or older who receive a contributory pension. In relative terms, Rofman, Apella and Vezza (2015) shows that these rates in Mexico have been below the regional average since the 1990s and the contributory coverage rate in Mexico is low relative to conventional comparison countries in the region such as Argentina, Brazil, and Chile. This rate has remained below 40% more than two decades later and the trend does not suggest that a significant change is taking place.

Additionally, contributory pension coverage is usually biased towards the high-income old-age population (Rofman, Apella, and Vezza, 2015). This is because coverage under the contributory scheme is based on formal work history. Since formal jobs get higher average labor income than informal jobs, the share of the elderly getting benefits from contributory pensions is greater in higher deciles of the income distribution.

While the contributory pension coverage of the elderly in Mexico is biased towards the high-income population, even for the top deciles the contributory coverage rate is under 60%. The higher the income decile, the higher the contributory pension coverage rate of the elderly, consistently for 2010, 2012 and 2014. Figure 1 shows the pensions coverage rate by income deciles for 2010, 2012 and 2014.

In the beginning of the twenty-first century, the problem of low or incomplete coverage of the pension systems in many countries gained attention from policy makers spurring the implementation of noncontributory pension schemes to close the coverage gap. Social pensions rapidly became the most politically popular choice and the preferred instrument to do so. While social pensions have existed for decades, it was not until recently that they gained momentum (Rofman, Apella, and Vezza, 2015). In addition to addressing the coverage gap, governments may want to implement social pension programs for different reasons that are not mutually exclusive with the coverage gap concern. Other reasons for the implementation of social pension programs include: 1. To address old age poverty; 2. To provide social protection to a population who may face higher vulnerability to sickness and disability; and, 3. To comply with the Universal Declaration of Human Rights and International Labor Organization Conventions, among others (Rofman, Apella and Vezza, 2015; Robalino and Holzmann, 2009).

Figure 1: Pensions Coverage Rate in Mexico by Income Decile (2010 - 2014)



Source: Based on authors' calculations with the ENIGH-MCS 2010, 2012, and 2014.

To close the coverage gap of the pension system, to improve the life conditions of the elderly, and to prevent old-age poverty, in 2007, the Federal Government of Mexico through the Ministry of Social Development (SEDESOL) established a non-contributory pension program called Pension Program for the Elderly (PAM), previously known as *70 y mas* targeting adults of 70 years of age or older. This program arose during the 2007 budget negotiations in Congress (Villagomez and Dario-Ramirez, 2015) and in its first year of operation it executed $6 billion pesos, which represented 0.05% of GDP, and had 1.03 million beneficiaries that represented 16.2% of the 65 years of age or older population. Since then, PAM has been growing to date in terms of nominal executed budget and number of beneficiaries, becoming a flagship program of social protection policy in Mexico.

As shown in Figure 1, PAM has helped to close the pension coverage gap for the population in all income deciles, but has done so most notably in the lower income deciles. While significant progress has been made in closing the coverage gap, especially with the expansion of the program in 2013, the coverage gap remains substantial. This is particularly worrisome for the population at the bottom of the income distribution. As we will see, some state governments have implemented their own social pension programs, but many of these programs are very limited in the number of beneficiaries and/or size of the benefit offered with perhaps the only exceptions being the programs in Mexico City and in the state of Chiapas.

While PAM has existed since 2007, it was not the first non-contributory pension program in Mexico. There are three major programs that may have influenced the original design and establishment of PAM: the federal program Care for the Elderly in Rural Areas (which ended in 2006); the PROSPERA Elderly Component, added in 2006; and the Nutritional Pension Program for the Elderly implemented by the Government of Mexico City since 2001. A brief description of these programs follows.

The program Care for the Elderly in Rural Areas (Programa de Atención a Adultos Mayores en Zonas Rurales) is the predecessor of *70 y mas* (PAM). Care for the Elderly in Rural Areas started in September 2003 as part of the National Accord for the Countryside (Acuerdo Nacional para el Campo). This program started giving $700 pesos per person per month (about 25% of the monthly current per capita income of that year) in the last three months of 2003. In 2004, it was adjusted to $2,100 pesos annually (75% of one month's current per capita income of 2004) paid out in at least three payments. Care for the Elderly targeted people 60 years old or older who suffered from food poverty and who lived in highly or very highly marginalized rural villages. The year before PAM was launched (2006), the program Care for the Elderly in Rural Areas had a budget of $300 million pesos or less than 0.01% of GDP and a little over 127,000 beneficiaries that represented 2.1% of the population aged 65 years old or older, this was significantly less in terms of budget and number of beneficiaries than PAM had even during PAM's first year of operation (CONEVAL, 2004-2015; Sagarnaga, 2008).

In 2006, PROSPERA incorporated a new benefit called the Elderly Component. To be eligible for this component, PROSPERA beneficiary households must have at least one member who is 70 years old or older. In 2006, the benefit consisted of a grant in the amount of $250 pesos per elderly person per month (close to 8% of the monthly current per capita income of 2006). PROSPERA Elderly Component still operates, however, since PAM was established, PROSPERA has been migrating people that receive this component to PAM. PROSPERA Elderly Component is considered a remedial

measure that mainly operates in localities not currently reached by PAM.[3]

The Nutritional Pension Program for the Elderly in Mexico City was launched in 2001 to serve adults 70 years of age or older by providing $600 pesos per month (approximately 22% of the current per capita income of that year). The benefit consists of a monthly stipend, and access to prescription medicines free of charge. In its first year of operation, the program's coverage was 250,000 people that represented 45% of the population 65 years old or older of Mexico City and its budget was $1.21 billion pesos that represented 0.27% of Mexico City Government's total expenditure (IAAMDF, 2015). Since 2001, the beneficiaries have been increasing and the amount given has been annually adjusted. In 2008, the eligibility criteria were modified to include in the program people of 68 years of age or older, down from the original eligibility age of 70. In 2016 the program benefited 520,000 people, 62.5% of Mexico City's population aged 65 years old or older (IAAMDF, 2016).[4] These beneficiaries received a stipend of $1,075 pesos per month equivalent to 20% of Mexico City's average per capita income of 2014 (IAAMDF, 2016).

Since 2010, other state governments have implemented non-contributory pension programs to secure the well-being of their elderly population. Appendix A summarizes the main state-level programs and their characteristics.

2. Literature Review on Social Pension Programs

Previous research has shown that non-contributory pension programs have positive effects on consumption and result in poverty reduction. Using information from a survey collected by Mexico's National Institute of Public Health to evaluate PAM (previously known as *70 y mas*), Galiani, Gertler and Bando (2016), and Galiani and Gertler (2009) find that the *70 y mas* program had a positive effect on consumption. These studies also find that *70 y mas* had a positive effect on mental health of rural adults between 70 and 74 years of age.

Barrientos (2006) points out that "subtracting pension income of old age social pension programs from beneficiary households would raise indigence levels roughly by one sixth in Argentina, seven times in Chile, and by one third in Brazil." Bertranou, Ginneken, and Solorio (2002) argues that non-contributory pensions in Argentina, Brazil, Chile, Costa Rica, and Uruguay have largely been an effective tool in poverty and indigence reduction. Barrientos (2006), and Bertranou, Ginneken, and Solorio (2002) state that non-contributory pension programs generally have a positive impact diminishing poverty. Other studies such as Asher (2009) and Kidd and Whitehouse (2009) affirm that social pension programs have been effective in reducing poverty among the elderly.

[3] PAM and PROSPERA request a proof of life as many programs targeted to the elderly population usually do. One of the main differences between these two programs though, is the way that the proof of life is certified. The proof of life for PAM beneficiaries is obtained through attendance to a designated place by the program and certified by program staff, while for PROSPERA the proof of life is certified by health professionals when the elderly attend their regular health check-ups (once per semester), which are a requirement to receive the PROSPERA elderly component benefit. This difference raises questions with relevant public policy implications such as whether checking the proof of life at a health clinic by nurses or doctors could have a significant positive effect on health outcomes vis-à-vis checking the proof of life in a place different than a health clinic and by program staff without health professional credentials. While it is undeniably worth looking for answers to such questions, these questions cannot be answered with the publicly available data and are not within the scope of this study.

[4] The number of beneficiaries correspond to April 2016.

Some of the above-mentioned studies and others have also focused on the effects of social pension programs on labor supply. Galiani, Gertler and Bando (2016) find that the proportion of treated individuals doing paid work is reduced and most of these individuals switch to work in family businesses. Using data from Mexico's 2010 national census, Juarez and Pfutze (2015) finds that the *70 y mas* pension program had a negative effect on labor force participation of male beneficiaries, insignificant effects on female beneficiaries, and a negative effect on the same outcome variable for poor young adolescents. This study captured the effect for adults that are 70 years old or older who lived in villages with fewer than 30,000 inhabitants.

Other well-known studies also focused on labor supply, including intra-household effects. Using cross sectional data, Bertrand, Mullainathan, and Miller (2003) finds that the South African social pension program caused a reduction in the hours worked of prime-aged individuals living with an elderly in extended families. In contrast, Ardington, Case, and Hosegood (2009) uses longitudinal data and finds that the same South African social pension program has a small positive effect in the employment of prime-aged adults mainly because these prime-aged adults are significantly more likely to be labor migrants. Edmonds (2006) finds that social pensions in South Africa increased schooling attendance and reduced child labor.

Amuedo-Dorantes and Juarez (2015) finds that *70 y mas* had crowding out effects on private transfers from other households of rural beneficiaries, and concludes that the non-labor income of beneficiaries increases but not as much as the amount of the social pension cash transfer.

In sum, the literature reviewed for social pension programs and numerous other studies on the effects of cash transfer programs on poverty (e.g. Grosh et al, 2008; Fiszbein et al, 2009) suggest that it is likely that the expansion of the federal social pension program PAM in Mexico has attributable effects in reducing (old-age) poverty. Undoubtedly, social pensions can reduce poverty, although whether they actually reduce it and by how much remains an empirical question. Our contribution is answering the question of what are the effects of expanding PAM on extreme poverty and labor supply of old age individuals of 66 to 69 years of age.

3. Effects of PAM on Poverty and Labor Supply

3.1 The Pension Program for the Elderly – PAM

The Pension Program for the Elderly (PAM) started in 2007 providing a cash transfer of $500 pesos per month per beneficiary paid every two months,[5] with the objective to improve the life conditions of people 70 years old or older in rural villages. Since then, eligibility rules and other characteristics of the program have changed over time. In the next paragraphs, we briefly recount the evolution of the program's main characteristics and the interaction of PAM with other relevant social protection programs.[6] Appendix B also shows a summary of the changes to PAM over time.

[5] The Operating Rules also mentioned that in the villages where accessibility is an issue or paying the cash transfer every two months has a very high cost, the delivery of the cash transfer could be done every four months. The benefit of 500 pesos per month was 16% of the average monthly current per capita income of 2007.

[6] The specifics on the changes in the program's characteristics were obtained from the respective publication of the updated Program's Rules of Operation in the Official Federal Gazette.

In 2007 PAM was designed (only implicitly) for the elderly poor, using geographical targeting, e.g. elderly in rural villages of up to 2,500 inhabitants, where contributory pensions are extremely limited.[7] In 2008, changes were made to indicate that while priority was still given to the rural villages of up to 2,500 inhabitants, the program could extend its coverage to other villages of up to 10,000 inhabitants and, if budget allowed, the program could expand to villages of up to 20,000 inhabitants prioritizing those villages with higher marginality. In 2009, the program expanded its coverage to localities of up to 30,000 inhabitants. As we will see and as part of the important reform of 2013, the program's coverage was extended to the national level.

Regarding the definition of PAM's target population, it was until 2012 that the program included explicitly the exclusion of adults that received contributory pensions or retirement payments. Since 2014, the program modified its operating rules to allow people with a contributory pension to receive the program if their contributory pension is equal to or less than $1,092 pesos per month. This contributory pension threshold is equivalent to 31.5% of the average current per capita income of 2014.

From its initial implementation to date, the Operating Rules of PAM have clearly stated that the program cannot be combined with the elderly's Component of PROSPERA or any other federal program "similar" to PAM. According to ENIGH 2014, only about 8.4% of PAM beneficiaries are also members of a household that is a beneficiary of PROSPERA. However, even though there are multiple state-level social pension programs that coexist with the federal social pension program PAM, the Government of Mexico does not have an explicit policy on the eligibility of the elderly to receive more than one social pension program from different government levels.[8]

The average PAM benefit level from 2007 to 2014 was around 15% of the average monthly current per capita income of 2014. From 2007 to 2012, the benefit level of PAM was maintained at $500 pesos per beneficiary per month. In 2013, the benefit level was revised and increased to $525 pesos per beneficiary per month, and in 2014, the benefit changed to $580 pesos per beneficiary per month which is the current benefit level. In 2010, the program added a lump-sum payment of $1,000 pesos to be paid to another beneficiary of the program chosen by each beneficiary as their representative when they die.[9]

Finally, regarding the program's objective, in 2008 the program included in its specific objectives to support the personal development of the elderly and their incorporation to the family and community life through actions of promotion and social participation. In 2011, the program included in its objectives to ameliorate the deterioration of the elderly's mental and physical health. It is worth noting that it was only until 2015, that the program's objective was changed to explicitly include that

[7] In 2010, only 8.5% of the population 65 years old or older living in rural villages had a contributory pension, and less than 5% of elderly women did.

[8] One of the main reasons why we argue this is the case, is that there is a lack of evidence about the most effective and efficient policy choice for the interaction of federal and state level programs. Even though, the same could be argued for the interaction between PAM and the PROSPERA Elderly Component, the operation rules of both programs clearly establish that they cannot be combined. The lack of empirical evidence can partially be attributed to the limited data from federal and state-level governments on potential and actual beneficiaries. SEDESOL is currently developing the Integrated Social Information System (SIS), which may allow further research to soon be conducted in order to gauge what is the most effective and efficient policy choice for different government level programs coordination.

[9] Currently, the benefit level is not indexed to inflation. Thus, it has decreased in real terms during periods when its nominal level has remained constant.

PAM is a poverty targeted (or deprived-from-social-rights-targeted) program.

3.2 The Expansion of PAM

On December 1st, 2012 Enrique Peña Nieto took office as President of Mexico and that very same day he announced that he would aim to expand the social pension program and change its eligibility criteria from 70 years old and older to 65 years old and older. On February 26th, 2013, the Operating Rules of PAM reflected these changes. The coverage was expanded to the national level, by eliminating the village's size in terms of inhabitants as a restriction, and it also expanded its eligibility age to include adults from 65 years of age and older who did not receive a contributory pension. Thus, the program became an intervention aiming to reduce the coverage gap of the contributory pension system.

The expansion of PAM was remarkably fast. At the beginning of 2013, according to SEDESOL registry of beneficiaries' data there was virtually no one below 70 years old receiving PAM. Four months after the new operating rules were published in the Federal Official Gazette, there were already over half a million beneficiaries of ages under 70 and, before the end of 2013, there were already over one million beneficiaries between 65 and 69 years old. This rapid expansion was possible because the program was already operating in the 32 states of Mexico and serving 3 million beneficiaries. The expansion was still very fast, but possible because the program already had a major operational structure, institutional capacity, and the eligibility criteria at the time of the expansion was easy to verify, among others factors. According to ENIGH, by 2014, about 1 out of 3 people of 65 to 69 years of age were already PAM beneficiaries and about 1 out of 4 program beneficiaries were 65 to 69 years old.[10] In 2014, the number of program beneficiaries between 65 and 69 years of age had reached 1.5 million (SEDESOL, 2017), more than the whole population of each of the states of Baja California Sur, Colima, Campeche, Nayarit, Tlaxcala, and Aguascalientes, among others.

In order to identify the effects of the expansion of PAM on extreme poverty and labor supply, the testable hypotheses for our study are:

HYPOTHESIS 1: *The expansion of PAM reduced extreme poverty for adults who became eligible after the expansion of the program, that is the group between 66 and 69 years of age.*

HYPOTHESIS 2: *The expansion of PAM reduced the labor supply of adults who became eligible after the expansion of the program, that is the group between 66 and 69 years of age.*

3.3 The Data

The data used in this study to analyze the effects of the expansion of PAM on poverty and labor supply come from the Socioeconomic Conditions Module of the Household Income and Expenditure National Survey (ENIGH-MCS). The ENIGH-MCS has national, state, and urban-rural level repre-

[10] The data from SEDESOL's beneficiary registry differ moderately from the self-reported information of Mexico's Household Income and Expenditure National Survey from the Instituto Nacional de Estadística y Geografía (INEGI). It is usually the case that people underreport their income and its sources in the National surveys. This is most likely where the difference between these two data sources is coming from. For instance, in ENIGH 2014 data there are 1.1 million self-reported PAM beneficiaries below 70 years old, while SEDESOL's beneficiary registry reported for the same period 1.4 million beneficiaries.

sentativeness. It is collected every two years from August to November. We used ENIGH-MCS for 2010, 2012, and 2014 to construct a pooled cross-section dataset. The survey includes a wide variety of socioeconomic variables at the household and individual level such as: sex, housing conditions, years of education, marital status, income, hours worked in the previous week, indigenous language spoken if any, and disability condition, among others. ENIGH-MCS data has been collected since 2008, allowing the estimation of time-trends for all its variables. The publicly available data from ENIGH do not include the exact village size, although it includes a village size range.

The ENIGH-MCS also identifies individuals receiving a cash transfer from PAM and other important social programs that might impact poverty and labor supply, such as PROSPERA and PROCAMPO. It also captures "other" non-contributory pension cash transfers received besides PAM. This is particularly important since some state level social pension programs, could complicate the identification of PAM's effects. Studies that do not consider the existence of similar state-level non-contributory pension programs could produce biased estimations. These state-level noncontributory programs are usually not very large, except in a few cases. To avoid potentially biased estimations, and after performing a quantitative and qualitative analysis we concluded that data from Chiapas and Mexico City had to be excluded from this study.

The noncontributory pension programs in Mexico City and Chiapas started in 2001 and 2009, respectively; they target the population in the treatment and/or control groups of our study; and both programs are relatively large considering both budget size and number of beneficiaries. In 2014, both programs had a budget of over 1 billion pesos and over 100,000 beneficiaries each.[11]

While in-kind social programs for the elderly could have similar consequences in the estimations, in-kind social programs identified are relatively small in comparison to larger cash transfer programs. Additionally, the information to identify when an in-kind transfer program comes from a social program is not available.[12]

3.4 Characteristics of Mexico's Elderly Population

PAM aims to improve life conditions of older adults that are 65 years old and older who do not receive contributory pensions. In 2014, 64.6% of the elderly in Mexico reported that they had never contributed to a social security institution. Out of the 35.4% of the elderly who reported to have contributed to social security, they reported to have contributed 24.3 years, on average. Not surprisingly, those who reported to have contributed to a social security institution had significantly more years of schooling than those who reported that they had not contributed with 7.7 and 3.1 years of schooling, respectively.

Only 28.8% of the elderly reported in 2014 that they were receiving a contributory pension or retirement payment. However, 82.2% of the elderly have access to social security as defined in the multidimensional poverty indicator.[13] This can be partially explained by the fact that by receiving

[11] For the Government of Chiapas, the budget of its social pension program represented about 0.4% of GDP and benefited 45.2% of the population 65 years old or older in 2014. For the Government of Mexico City, the budget of its social pension program represented 2.1 percent of its GDP and benefited 61.2% percent of the population 65 years old or older in the same year.

[12] A detailed description of the methodology used to select what states to exclude is shown in Appendix C.

[13] The official poverty measurement methodology identifies the population with access to social security based on the following four

PAM, beneficiaries are considered to have access to social security in the official poverty measurement indicator.

In terms of income, the composition of the total current per capita income is different between the total population and the 65 years old and older subgroup in the 2010-2014 period. While labor income is the single most important source of income for both groups, there is a huge difference in the proportion of total income that it represents for each group. For the total population, labor income represents around 80% of their total income while it represents only about 50% of total income for older adults. Income from transfers is much more important for the latter group, representing about 40%, while for the total population it only represents about 13%. Table 1 describes the poverty and labor participation characteristics of the population 65 years of age and older in Mexico. Table 2 describes other relevant demographic characteristics of the elderly in Mexico. Appendix D shows more sociodemographic and economic conditions data of the older adults.

Table 1: Poverty and Labor Characteristics of Mexican Population 65 Years Old and Older (2010-2014)

	2010		2012		2014	
	Millions	%	Millions	%	Millions	%
Extreme Poverty Measures						
Multidimentional Poverty HC	0.9	11.0	0.8	9.7	0.8	8.5
Head Count Ratio	1.5	19.1	1.9	21.5	1.9	21.2
Poverty Gap Index	0.071		0.078		0.071	
Poverty Severity Index	0.039		0.042		0.035	
	Millions	%	Millions	%	Millions	%
Labor Condition						
Labor Force	2.2	27.6	2.6	29.9	2.6	28.5
Employed	2.1	95.9	2.5	95.4	2.5	96.5
Unemployed	0.1	4.1	0.1	4.6	0.1	3.5
Non Labor Force	5.6	72.4	6.1	70.1	6.5	71.5
Total	7.8	100.0	8.6	100.0	9.1	100.0
	Hours	%	Hours	%	Hours	%
Use of Time						
Work	11	17.5	11	19.2	11	18.2
Care-giving without pay	8	12.1	3	5.3	3	5.2
Housekeeping	16	24.0	14	24.2	15	25.0
Leisure	27	42.0	27	47.3	28	47.4
Others	3	4.4	2	4.0	2	4.2
Total	65	100.0	58	100.0	58	100.0

Source: Based on authors' calculations with the ENIGH-MCS 2010, 2012, and 2014.

criteria: 1. Out of the salaried economically active population, those who receive the benefits established by the Social Security Law; 2. Out of the independent or non-salaried economically active population, those who have access to medical services as a work benefit or by voluntarily participating in a social security program from a social security institution such as IMSS; 3. Any person who receives retirement or pension benefits, or who is related to someone who has access to social security; and 4. Any person of 65 years of age or older who receives a social pension (CONEVAL, 2014).

Table 2: Sociodemographic Characteristics of Mexican Population 65 Years Old and Older (2014)

	2014	
	Millions	%
Females	4.9	54.5
Urban	6.8	74.9
Indigenous Language Speakers	0.8	9.1
Single household	1.2	13.1
Household head	4.6	50.4
Without Access to Basic Services in the Dwelling	2.0	21.8
Illiterate	2.2	24.1
Educational Gap	5.5	60.7
Without Access to Food	1.8	20.0
Without Access to Health Services	1.2	13.1
With a Disability	3.3	36.15
Access to health services, by institution		
Seguro Popular	3.5	44.4
IMSS	3.1	39.6
ISSSTE	0.9	11.5
Other*	0.5	4.5
Total elderly with access to health services	7.9	100.0
Total adults of 65 years of age and older	9.1	100.0

Source: Based on authors' calculations with the ENIGH-MCS 2014.

* Include health services provided by Pemex, Defensa, Marina, other health services via social security and private health insurance.

Note: The mean years of schooling in the period was the following: 2014 (4.7).

3.5 Empirical strategy

This paper aims to uncover the Intention-To-Treat effects (ITT) and the Treatment-on the-Treated effects (TOT) of the expansion of PAM on extreme poverty and labor supply of the elderly. The outcome variables of interest in our study are: extreme poverty headcount index, extreme poverty gap index, extreme poverty severity index, multidimensional extreme poverty index, labor force participation, and use of time including work.

To evaluate the impact of the expansion of PAM on the outcomes of interest, having a randomized controlled trial with a sufficiently large sample would allow us to directly estimate the causal effects of the intervention and to minimize bias. However, the actual expansion-of-PAM treatment was not randomly assigned. Even though ENIGH-MCS identifies the self-reported PAM beneficiaries, using this data directly in a regression to estimate the effects of the expansion of PAM on extreme poverty and on labor supply would yield biased estimations due to endogeneity. The endogeneity of the treatment may be a result of the targeting strategy, the prioritizing operational mechanisms of PAM, or the self-selection of beneficiaries. Therefore, we used a quasi-experimental design to evaluate the effects of the expansion of PAM on extreme poverty and labor supply.

The eligible-for-treatment group (from now on the treatment group) are the adults between 66 and 69 years old that were not receiving contributory pensions or retirement payments before and after the change in PAM's eligibility criteria, and the control group are the non-elderly individuals aged 61 to 64 who are not receiving pensions or retirement payments and who are not eligible to participate in PAM.

Adults of 65 years of age are excluded from the analysis because even though at the time of the collection of the survey in 2014 these individuals were eligible for treatment; we do not know exactly when these individuals became eligible. Moreover, even if we could identify when these individuals became eligible, we could argue that these individuals did not have "enough" exposure to the eligibility-for-treatment to be taken into consideration for this analysis.

Adults receiving contributory pensions were not eligible to receive PAM in 2013, for this reason people who received a contributory pension were excluded from the analysis. The share of people receiving contributory pensions or retirement payments in the treatment group is 27.9, 26.9 and 29.1% for 2010, 2012 and 2014, respectively; and in the control group these numbers are 23.2, 23.1 and 22.8 for 2010, 2012 and 2014, respectively.

Using ENIGH – MCS, CONEVAL first estimates income at the household level, and then assigns income to individuals adjusting by household composition using an adult-equivalent scale. Hence, all members of the same household have the same income level. For this reason, we excluded from the sample those households with cohabitants from both treatment arms. This could also suggest that the effects of PAM on the beneficiary's income and poverty condition could be generalizable to all members of the beneficiary's household.

The expansion of the program was announced after the collection of the ENIGH-MCS in 2012. Thus, we do not presume anticipation effects. While President Peña Nieto was already elected president of Mexico by the time that the survey was being collected in 2012, it is unlikely that people would have modified their behavior based on his political campaign proposed initiatives without actual knowledge or information on future treatment. The campaign proposal was to establish a universal pension for the population 65 years old or older, however, it did not mention a specific benefit level or additional eligibility criteria such as wealth or income level conditions, disability status, and others. It is therefore hard to assume that people would have modified their behavior based on the limited information available, so we assume the data collected in the 2012 survey does not reflect anticipation effects.

We first estimate the ITT effects using a difference-in-differences estimation and then we estimate the TOT using an Instrumental Variable methodology with Two Stages Least Squares (2SLS).

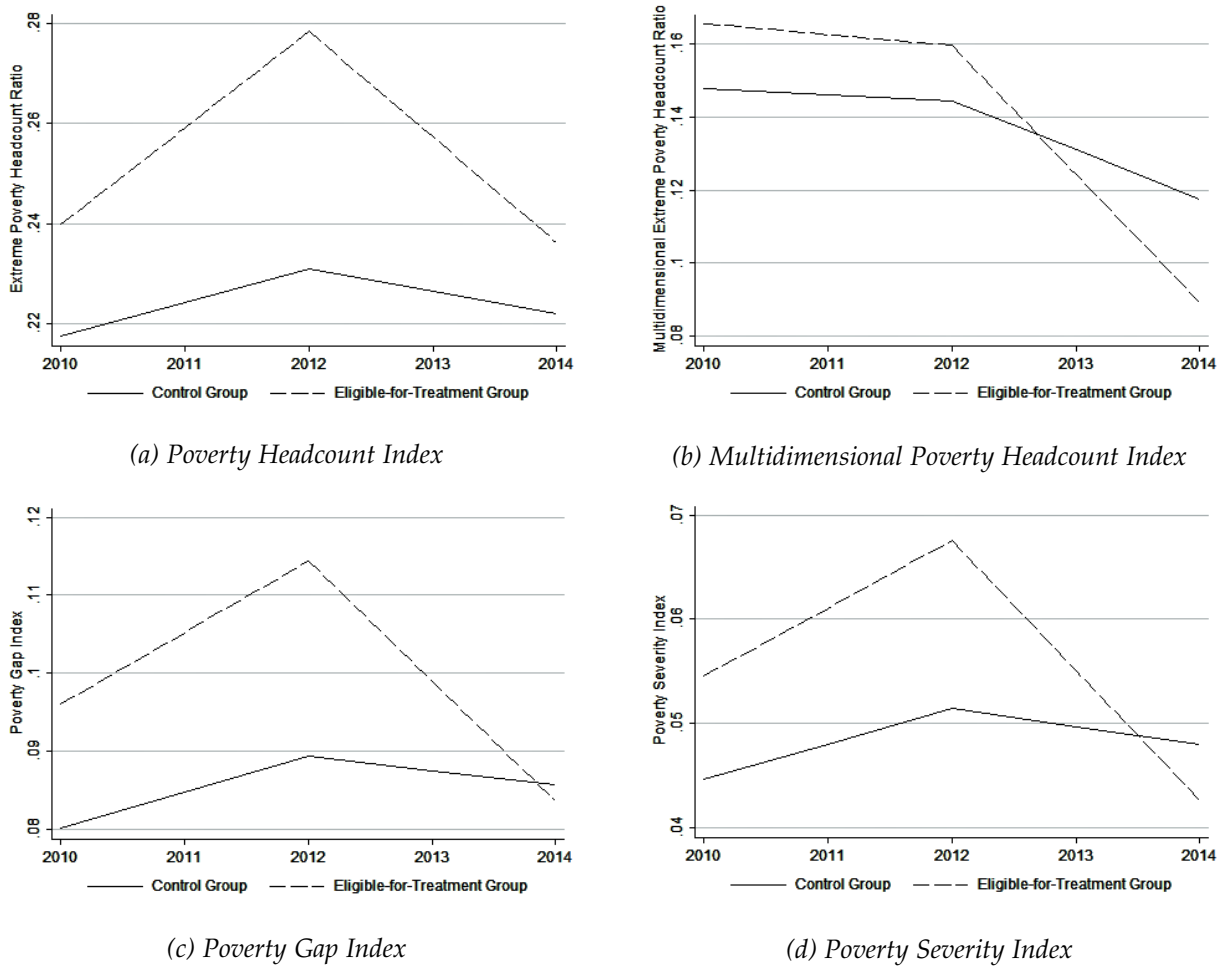
3.5.1 Intention-to-treat Effects (ITT)

The identification strategy consists of a difference-in-differences estimation (DD) with a discontinuity framework. We used the exogenous variation in the program's eligibility criteria at the beginning of 2013, that is the change in minimum eligibility age from 70 years of age and older to 65 years of age and older, as the intervention that allowed us to define treatment and control groups.

While the treatment and comparison groups may not have identical levels in their pre-intervention observed characteristics, their pre-intervention trends over time are similar. Thus, we assume that, in the absence of PAM, the average change in the outcomes would have been the same for the treatment and control groups. This is the well-known parallel trends assumption. While this assumption is untestable, Figure 2 shows that the treatment and control groups are moving in fact in parallel before the intervention took place and right after the intervention there is a sharp change in most of the

outcome variables for the treatment group. Note that by using the parallel trends assumption, the identification assumption for this model is weaker than it would be if we used the assumption that the two groups are non-different in all pre-treatment characteristics and that the only difference at the time of the intervention is the intervention itself. We will also rely on the assumption that the individuals cannot precisely control the assignment variable, which is the reported age with supporting documents, near the known cutoff eligibility age. Taking advantage of the cross-sectional structure of the data we controlled for unobserved characteristics.

Figure 2: Parallel Trends Assumption Evidence from Extreme Poverty Measures (2010-2014)



(a) Poverty Headcount Index

(b) Multidimensional Poverty Headcount Index

(c) Poverty Gap Index

(d) Poverty Severity Index

Source: Based on authors' calculations with the ENIGH-MCS 2010, 2012, and 2014.

In our general model, the outcome variable of interest is defined as:

Y = extreme poverty or labor supply.

The binary variable indicating treatment status is *treat*,[14] where:

[14]We also define $treat_h$, where $treat_h = 1$ for members of a household with at least one individual eligible for treatment, that is someone belonging to the age group between 66-69 years old who do not receive contributory pensions, and $treat_h = 0$ for members of a household with individuals who are not eligible to receive treatment, belonging to the group between 61 and 64 years old who do not receive contributory pensions. In this way, we also estimate our model including all members of the household in the treatment and control groups to test whether the effects of PAM are generalizable to all members of the household.

$$treat = \begin{cases} 1 & \text{if the individual is eligible for treatment, belonging to the group between 66-69 years old that do not receive contributory pensions.} \\ 0 & \text{if the individual is not eligible for treatment, belonging to the group between 61 and 64 years old that do not receive contributory pensions.} \end{cases}$$

The binary variable indicating the time dimension is *year2014*, where:

$$year2014 = \begin{cases} 1 & \text{if the observation year is 2014, after the program expansion was implemented.} \\ 0 & \text{if the observation year is 2012, before the program expansion was implemented.} \end{cases}$$

The empirical difference-in-differences model (DD) we estimate is:

$$Y = \beta_0 + \beta_1 treat + \beta_2 year2014 + \beta_3 treat * year2014 + e. \tag{1}$$

The β_1 coefficient captures the differences between the treatment and control groups prior to the program expansion; β_2 coefficient captures aggregate factors or secular changes that would cause changes in the average outcome Y even in the absence of the expansion of the program. The coefficient of interest is β_3, which is the interaction term between *treat* and *year2014*:

$$\beta_3 = (\overline{Y}_{treat=1,year2014=1} - \overline{Y}_{treat=1,year2014=0}) - (\overline{Y}_{treat=0,year2014=1} - \overline{Y}_{treat=0,year2014=0}). \tag{2}$$

The β_3 coefficient is the average change in the outcome variable for the treatment group from the period before to the period after the expansion of the program and nets out the change in means for the control group in the same time period.

To prove that the estimation is robust to different functional forms, we used three binary response methods to estimate the coefficients of interest. The linear probability model (LPM), and the index models for binary response: Probit and Logit. The LPM estimates marginal effects directly, thus the interpretation of the results is straightforward. However, this model is often criticized since the estimated probabilities could be below zero or above one, which would not make sense, and it assumes that the response probability is linear in its estimators. In contrast, the index models fit response probabilities between zero and one, but the marginal effects are a function of the estimated coefficient and the value of all the explanatory variables, making the interpretation of results difficult. For the non-linear models, we calculated the marginal effects for every observation and then averaged them, these are known as Average Marginal Effects (AME) and can be compared with the LPM results.

With these three methods, we estimated the DD model as specified above, and then we added a set of controls or covariates including a wide variety of factors at the individual and household levels that might influence our extreme poverty measures. In addition, we interacted the covariates with the time dummy variable to control for compositional changes of treatment and control groups. In all regressions, the standard errors are computed robustly and clustered at the primary sampling

unit level.[15]

For the cases of the continous variables, we estimated the DD model through Ordinary Least Squares. The OLS regressions were estimated with and without controls as well.

Finally, we performed five robustness checks to confirm the validity of the obtained results. First, we ran the same models, but for a previous period (2010-2012) to verify that these groups were actually moving in non-different (parallel) trends before the treatment. If the placebo difference-in-differences estimation for the period prior to the intervention is nonzero, the trustworthiness of the estimates comparing 2012 and 2014 would be low and it would be an indication that the estimates could be biased. Second, we implemented a placebo test for outcome variables that are ex-ante thought not to be affected by the program such as disability condition and access to drinking water. If the estimated effects for variables not supposed to be affected by the program is nonzero, this could also indicate that the obtained estimated effects might be biased. Third, we used adults 56-59 years old who do not receive contributory pensions as an alternative control group. We then looked for differences between the results obtained with the original control group and with the alternative control group, to check if results were sensitive to changes in the control group which could also affect the credibility of the estimated effects. As a fourth robustness check, we ran the same models without excluding the contributory pension receivers from the treatment and control groups to check if excluding this population explained the estimated effects. Lastly, we included the data from the states of Chiapas and Mexico City and used dummy variables in our model for each of these states to check if including these populations affected our estimated effects.

3.5.2 Treatment-on-the-treated Effects (TOT)

As explained before, directly regressing the ENIGH-MCS variable that captures the self-reported PAM beneficiaries on extreme poverty would result in biased estimations due to endogeneity. In fact, the states and municipalities with higher poverty rates also have higher PAM enrollment rates. This is the case because the Ministry of Social Development selected localities with high poverty and high social deprivation rates as strategic locations to provide information and promote enrollment into the program. Thus, the mechanism to "encourage" eligible population to apply for enrollment was not random. While we could control for a wide variety of socioeconomic characteristics, results would not be convincing evidence of the causal effects of the program.

We define the binary variable that indicates whether an individual reported being a beneficiary of the program as *p_pam*, where:

$$p\_pam = \begin{cases} 1 & \text{when the individual reported being a beneficiary of PAM.} \\ 0 & \text{when the individual reported not being a beneficiary of PAM.} \end{cases}$$

Using the equation:

$$Y = \alpha + \beta_1 p\_pam + ... + u. \tag{3}$$

[15] The primary sampling units are formed by groups of houses with differentiated characteristics depending on the area to which they belong. Primary sampling units can be formed by groups of houses in one locality or in neighboring localities that have the same village size range.

Where Y = *extreme poverty*, would yield biased and inconsistent estimators due to endogeneity.

To overcome this endogeneity problem, in addition to estimating ITT using DD, we also used an Instrumental Variable methodology with Two-Stages Least-Squares, in which the interaction term *treat*year2014* is the instrument.

An instrument is a variable that must satisfy two properties. The first property is that the instrument must be correlated with the variable it is instrumenting for, that is, the covariance between the binary variables PAM beneficiary (p_pam) and the interaction term of the eligible-for-treatment group and year 2014 $(treat * year2014)$ is different from zero i.e. $Cov(p\_pam, treat * year2014) \neq 0$. Second, the instrument must not be correlated with the error term in the equation (3), i.e. $Cov(treat * year2014, u) = 0$. We checked whether these two properties are met in our model or not, as follows:

1. The first property: the instrument must be correlated with the variable it is instrumenting for. In this case, the strong correlation between the instrument *treat*year2014* and *p_pam* emerges from the eligibility rules of the program. We test that the instrument satisfies this property with the equation:

$$p\_pam = \alpha_0 + \alpha_1 treat * year2014 + \alpha_2 treat + \alpha_3 year2014 + \alpha_4 X_1 + ... + \alpha_n X_n + v. \quad (4)$$

   Where α_1 coefficient will show the correlation between the instrument variable and the actual treatment variable. This estimate is similar to PAM's participation rate. This equation is also the First Stage in the 2SLS methodology, from which we collect the predicted values of *p_pam* $(\widehat{p\_pam})$.

2. The second property: the instrument must not be correlated with the error term. This property cannot be tested empirically because the error term is unobserved (Wooldrige, 2012). However, we argue that the instrument does not suffer from the same endogeneity issue that the original predicting variable *p_pam* did. The instrument cannot affect the outcome variable directly; rather, it can only affect it through the variable it is instrumenting for. That is, *treat*year2014* cannot affect extreme poverty or labor supply of the elderly directly; rather, it can only affect them through *p_pam*. The fact that a person could be between 66 and 69 years old in 2014 is not correlated with their poverty condition or with their preferences in allocating time to work. However, being this year and age range the new eligibility for treatment, it is hence only through the treatment that the age and year can be correlated with the poverty and labor supply outcomes.

Equation 5 is the Second-stage and estimates the TOT effects with IV:

$$Y = \beta_0 + \beta_1 \widehat{p\_pam} + \beta_2 treat + \beta_3 year2014 + \beta_4 X_1 + ... + \beta_n X_n + e. \quad (5)$$

Where Y is the outcome variable -extreme poverty or labor supply-; and $\widehat{p\_pam}$ is the predicted value of *p_pam* in the first stage. β_1 is the coefficient of interest and captures the effect of the participation in PAM on the outcome variable.

We then tested statistically whether *p_pam* is indeed an exogenous variable for the extreme poverty measures and labor supply variables of interest using a Wooldrige's robust regression based test.[16]

3.6 Results

3.6.1 Intention-to-treat Effects (ITT)

Results tables below show the three main variables: the interaction term of the treatment group dummy variable and the time dummy variable, which captures the treatment effect of the intervention (i.e. ITT); the treatment group dummy variable, which captures the potential differences between treatment and control groups prior to the expansion of the program; and the time dummy variable, which captures the aggregate factors or secular changes that would have happened even in the absence of the expansion of the program.

Results estimated using the LPM with the extreme poverty headcount index as the outcome variable, suggest that the expansion of the program reduced the probability of a person in the eligible-for-treatment group being poor by 5.4 percentage points. The difference-in-differences estimates for the effects of the expansion of the program on the poverty headcount index are similar in magnitude and consistent when calculated using the three methods: LPM, AME of the Probit model, and AME of the logit model, all with and without covariates to control for differences across treatment and control groups. Table 3 shows the estimates of the treatment effects of the expansion of PAM on extreme monetary poverty.

Results suggest that the income shock from the expansion of the program also reduced the poverty gap and the poverty severity indexes on the eligible-for-treatment group. The estimated effect of the expansion of PAM on the poverty gap index using the LPM is a reduction of 3.2 percentage points without covariates and of 3.5 percentage points with covariates. These results are statistically significant at the 5% level. Similarly, the estimated effect on the poverty severity index is a reduction of 2.5 percentage points without covariates and 2.6 percentage points with covariates. Table 4 shows the estimates of the treatment effects of the expansion of PAM on the extreme monetary poverty gap and the extreme poverty severity indexes.

We estimated the effects of the expansion of the program on the official multi-dimensional extreme poverty measure and found that the expansion of PAM also had a statistically significant reduction on this wellbeing indicator. The estimates obtained using the LPM and the AMEs of the Probit and Logit models with covariates, show that the expansion of PAM reduces de probability of multidimensional extreme poverty in 3.8 to 5.8 percentage points. Table 5 shows the estimates of the treatment effects of the expansion of PAM on the multidimensional extreme poverty index.

Results are consistent when we included all members of the household in both the treatment and control groups, showing that these findings are generalizable to all members of the treated household (Appendix E).

We also estimated the attributable effects of the expansion of PAM on social rights deprivation

[16] After a 2SLS estimation with robust clustered standard errors, a regression-based test can be implemented under the null-hypothesis that the variable under consideration is exogenous (Wooldridge, 1995). If the null-hypothesis cannot be rejected, then the OLS estimator is more efficient than the IV estimator.

indicators. The six social rights indicators are: access to social security, access to health care services, access to food (food security), quality and spaces of the dwelling, access to basic services in the dwelling, and educational gap. The program has an effect on the access to social security indicator, which considers that a person who receives PAM, by receiving it has access to social security. Our results suggest that the expansion of the program reduced the probability of being social security deprived by 30.6 percentage points using the LPM estimates with controlling variables, which are the most conservative estimates from the three specifications used with and without controls. Panel A of Table 6 shows the estimated treatment effects of the expansion of PAM on the access to social security deprivation indicator.

We also tested whether the program had a positive short term effect on the reduction of other social rights deprivations such as access to food (food security) and access to health care services, but found no direct short-term effects. The indicators used to develop the multi-dimensional extreme poverty measure such as educational gap and access to basic services in the dwelling did not show effects, which can also be considered a robustness check for our models because these outcome variables are ex-ante thought not to be affected by the program in the short term. Further research could provide valuable information on the medium and long term effects of the program on the dimensions mentioned above.

Our results also suggest that the expansion of PAM did not have a statistically significant effect on the elderly's decision to continue working or to leave the labor force and we did not find an effect on the number of hours spent working (excluding domestic work). The main reason why we think that the expansion of PAM did not have a significant effect on the labor force participation of the elderly is because the cash transfer amount is relatively small. For instance, in 2014 it only represented 16.7% of the average current per capita income. Other reasons why the expansion of PAM may not have had a significant effect on labor force participation is because the expansion of the program was relatively recent, which could have made beneficiaries unsure of whether the benefit was going to last or not, postponing retirement. This may not be the case in the future, when the perception of beneficiaries is that the benefit is well-established. In statistical terms, the heterogeneity of labor force participation of men and women, and of urban and rural localities is making the variance larger. Thus, an effect was not identified.

One of our findings suggests that the treated individuals increased the time spent on activities that they enjoy such as chatting with their neighbors, hanging out with their friends, and resting, among others by about 2 hours per week. We also find that the program had a negative effect of about 16 minutes in the time spent carrying water or firewood per week.

Our results do not provide sufficient information to understand where the reallocation of time to enjoyable activities comes from. Our intuition is that the results are consistent with the previous Gertler et al. studies (2009, 2016), where researchers find that beneficiaries of *70 y mas* did not reduce the number of hours worked, but rather that there is a substitution between time spent doing paid work, and time spent working for family businesses. Spending more time working in family businesses can potentially have an effect in other aspects of the beneficiaries' use of time such as transportation and the amount of time spent with relatives. Tables 7 and 8 show the effects of PAM on the labor force participation and on the use of time including work, accordingly.

Table 3: Program Effects on Extreme Poverty Headcount Index (FGT_0)

	No controls			*Controls*		
	LPM	**Probit**	**Logit**	**LPM**	**Probit**	**Logit**
Treat * year 2014	-0.046**	-0.043**	-0.042**	-0.054***	-0.051***	-0.051***
	[-0.021]	[-0.02]	[-0.019]	[-0.020]	[-0.019]	[-0.018]
Treat	0.056***	0.054***	0.054***	0.034**	0.034**	0.033**
	[-0.016]	[-0.016]	[-0.016]	[-0.015]	[-0.016]	[-0.015]
Year 2014	-0.006	-0.006	-0.006	-0.029	-0.038	-0.034
	[-0.016]	[-0.016]	[-0.016]	[-0.083]	[-0.087]	[-0.088]
Observations	13,120	13,120	13,120	13,120	13,120	13,120

Table 4: Program Effects on Extreme Poverty Gap Index (FGT_1) and Extreme Poverty Severity Index (FGT_2) (Ordinary Least Squares)

	Poverty Gap Index		*Poverty Severity Index*	
	No controls	**Controls**	**No controls**	**Controls**
Treat * year 2014	-0.032***	-0.035***	-0.025***	-0.026***
	[-0.010]	[-0.010]	[-0.007]	[-0.007]
Treat	0.029***	0.018**	0.019***	0.012**
	[-0.008]	[-0.008]	[-0.006]	[-0.005]
Year 2014	-0.005	0.007	-0.005	-0.011
	[-0.007]	[-0.039]	[-0.005]	[-0.030]
Observations	13,120	13,120	13,120	13,120

Table 5: Program Effects on Multi-dimensional Extreme Poverty Headcount Index

	No controls			*Controls*		
	LPM	**Probit**	**Logit**	**LPM**	**Probit**	**Logit**
Treat * year 2014	-0.054***	-0.052***	-0.051***	-0.058***	-0.043***	-0.038***
	[-0.016]	[-0.013]	[-0.013]	[-0.015]	[-0.009]	[-0.008]
Treat	0.021	0.018	0.018	0.006	0.002	0.002
	[-0.013]	[-0.012]	[-0.011]	[-0.012]	[-0.008]	[-0.007]
Year 2014	-0.023*	-0.022*	-0.022*	0.014	-0.006	-0.014
	[-0.013]	[-0.013]	[-0.013]	[-0.069]	[-0.051]	[-0.045]
Observations	13,120	13,120	13,120	13,120	13,094	13,094

Note: Estimates significance level *** p<0.01, ** p<0.05, * p<0.1. We report standard errors in brackets. Standard errors heteroscedasticity-robust and clustered at the primary sampling unit level, which takes into consideration the sampling design of the survey. Income variables used were adjusted to per adult-equivalent at August 2014 prices. The column titled "controls" shows the results of estimations in which the following conditioning variables were used: village size range, years of schooling, literacy, household size, dwelling's ownership status, sex, indigenouos language speaker status, disability condition, household structure, marital status, employment condition, access to Seguro Popular, income from Conditional Cash Transfer Program - PROSPERA, income from PROCAMPO, overcrowding, access to drinking water, access to sewage, access to electricity, and a full set of the preceding covariates interacted with the time dummy.

Table 6: Program Effects on Social Rights Deprivations

	No controls			*Controls*		
	LPM	**Probit**	**Logit**	**LPM**	**Probit**	**Logit**
Panel A: Effects on access to social security						
Treat * year 2014	-0.321***	-0.320***	-0.320***	-0.306***	-0.346***	-0.365***
	[-0.026]	[-0.024]	[-0.024]	[-0.025]	[-0.028]	[-0.028]
Treat	0.002	0.002	0.002	-0.026	-0.036	-0.033
	[-0.019]	[-0.020]	[-0.020]	[-0.017]	[-0.023]	[-0.024]
Year 2014	0.010	0.011	0.011	0.018	0.017	0.004
	[-0.018]	[-0.019]	[-0.019]	[-0.095]	[-0.119]	[-0.129]
Observations	13,120	13,120	13,120	13,120	13,120	13,120
Panel B: Effects on access to health care services						
Treat * year 2014	-0.013	-0.014	-0.014	-0.020	-0.020	-0.019
	[-0.021]	[-0.020]	[-0.020]	[-0.020]	[-0.019]	[-0.018]
Treat	-0.003	-0.003	-0.003	-0.002	-0.002	-0.001
	[-0.015]	[-0.015]	[-0.014]	[-0.015]	[-0.014]	[-0.014]
Year 2014	-0.028**	-0.028**	-0.028**	-0.038	-0.018	-0.020
	[-0.014]	[-0.014]	[-0.014]	[-0.090]	[-0.074]	[-0.070]
Observations	13,120	13,120	13,120	13,120	13,120	13,120
Panel C: Effects on access to food (food security)						
Treat * year 2014	-0.015	-0.015	-0.015	-0.011	-0.009	-0.011
	[-0.021]	[-0.02]	[-0.02]	[-0.021]	[-0.021]	[-0.020]
Treat	0.020	0.020	0.020	-0.001	-0.003	-0.001
	[-0.015]	[-0.016]	[-0.016]	[-0.015]	[-0.015]	[-0.015]
Year 2014	0.010	0.010	0.010	0.006	-0.016	-0.016
	[-0.014]	[-0.014]	[-0.014]	[-0.089]	[-0.083]	[-0.082]
Observations	13,120	13,120	13,120	13,120	13,120	13,120
Panel D: Effects on quality and spaces of the dwelling						
Treat * year 2014	-0.001	0.000	0.000	0.000	-0.003	0.000
	[-0.014]	[-0.014]	[-0.014]	[-0.014]	[-0.011]	[-0.010]
Treat	0.005	0.005	0.005	0.004	0.002	0.001
	[-0.010]	[-0.010]	[-0.010]	[-0.010]	[-0.008]	[-0.007]
Year 2014	-0.010	-0.010	-0.010	0.014	-0.006	-0.001
	[-0.010]	[-0.010]	[-0.010]	[-0.051]	[-0.042]	[-0.039]
Observations	13,120	13,120	13,120	13,120	13,112	13,112
Panel E: Effects on access to basic services in the dwelling						
Treat * year 2014	0.005	0.006	0.006	-0.002	0.001	0.001
	[-0.021]	[-0.021]	[-0.021]	[-0.016]	[-0.019]	[-0.016]
Treat	0.016	0.015	0.015	-0.008	-0.014	-0.013
	[-0.016]	[-0.016]	[-0.016]	[-0.012]	[-0.013]	[-0.012]
Year 2014	-0.033*	-0.034*	-0.034*	-0.006	-0.041	-0.038
	[-0.019]	[-0.019]	[-0.019]	[-0.059]	[-0.074]	[-0.070]
Observations	13,120	13,120	13,120	13,120	13,120	13,120

Continued

	No controls			*Controls*		
	LPM	**Probit**	**Logit**	**LPM**	**Probit**	**Logit**
Panel F: Effects on educational gap						
Treat * year 2014	-0.009	-0.011	-0.011	-0.011	-0.023	-0.022
	[-0.026]	[-0.027]	[-0.027]	[-0.024]	[-0.028]	[-0.029]
Treat	0.125***	0.126***	0.126***	0.103***	0.126***	0.127***
	[-0.020]	[-0.020]	[-0.020]	[-0.018]	[-0.021]	[-0.021]
Year 2014	-0.023	-0.023	-0.023	0.089	0.103	0.105
	[-0.019]	[-0.018]	[-0.018]	[-0.081]	[-0.093]	[-0.095]
Observations	13,120	13,120	13,120	13,120	13,120	13,120

Note: Estimates significance level *** p<0.01, ** p<0.05, * p<0.1. We report the standard errors in brackets. The standard errors are heteroscedasticity-robust and clustered at the primary sampling unit level. The column titled "controls" shows the results of estimations in which the following conditioning variables were used: village size range, years of schooling, literacy, household size, dwelling's ownership status, sex, indigenous language speaker status, disability condition, household structure, marital status, employment condition, income from Conditional Cash Transfer Program - PROSPERA, income from PROCAMPO, and a full set of interactions between the preceding covariates and the time dummy. In Panel F the estimations with controls exclude years of schooling, literary variables, and their respective time dummy interactions.

Table 7: Program Effects on Labor Force Participation

	No Controls			*Controls*		
	LPM	**Probit**	**Logit**	**LPM**	**Probit**	**Logit**
Treat*year 2014	-0.02	-0.02	-0.02	0.00	0.00	0.01
	[-0.025]	[-0.025]	[-0.025]	[-0.018]	[-0.032]	[-0.035]
Treat	-0.088***	-0.088***	-0.088***	-0.030	-0.061	-0.063
	[-0.018]	[-0.018]	[-0.018]	[-0.024]	[-0.043]	[-0.048]
Year2014	-0.005	-0.005	-0.005	-0.025	-0.078	-0.077
	[-0.016]	[-0.016]	[-0.016]	[-0.065]	[-0.108]	[-0.119]
Observations	13,120	13,120	13,120	13,120	13,113	13,113

Note: Estimates significance level *** p<0.01, ** p<0.05, * p<0.1. We report the standard errors in brackets. The standard errors are heteroscedasticity-robust and clustered at the primary sampling unit level. The column titled "controls" show the results of estimations in which the following conditioning variables were used: age, age-squared, relationship with the head of household, number of income earners in the household, number of employed persons in the household, village size range, years of schooling, literacy, household size, dwelling's ownership status, sex, indigenous language speaker status, disability condition, household structure, marital status, and a full set of interactions between the preceding covariates and the time dummy.

Table 8: Program Effects on the Use of Time Including Work

	Work		*Study*		*Community Service*		*Care-giving without pay*	
	No Controls	**Controls**	**No Controls**	**Controls**	**No Controls**	**Controls**	**No Controls**	**Controls**
Treat*year2014	-76.13	-19.73	0.743	0.373	-3.189	-3.961	39.2	40.31
	[-77.46]	[-62.92]	[-4.96]	[-5.4]	[-10.24]	[-11.89]	[-40.78]	[-37.56]
Observations	12,330	12,330	12,327	12,327	12,325	12,325	12,325	12,325
	Dwelling Maintenance		*Housekeeping*		*Carrying water or firewood*		*Leisure*	
	No Controls	**Controls**	**No Controls**	**Controls**	**No Controls**	**Controls**	**No Controls**	**Controls**
Treat*year 2014	1.12	11.71	83.5	27.97	-13.95	-15.95*	122.8**	119.1**
	[-13.02]	[-12.97]	[-53.88]	[-44.27]	[-9.91]	[-9.68]	[-49.46]	[-49.17]
Observations	12,324	12,324	12,320	12,320	12,329	12,329	12,297	12,29

Note: Estimates significance level *** p<0.01, ** p<0.05, * p<0.1. We report the standard errors in brackets. The standard errors are heteroscedasticity-robust and clustered at the primary sampling unit level. The column titled "controls" show the results of estimations in which the following conditioning variables were used: age, age-squared, relationship with the head of household, number of income earners in the household, number of employed persons in the household, village size range, years of schooling, literacy, household size, dwelling's ownership status, sex, indigenous language speaker status, disability condition, household structure, marital status, and a full set of interactions between the preceding covariates and the time dummy.

While Amuedo-Dorantes (2015) shows that *70 y mas* crowded out domestic private gifts by 37% for the rural elderly of 70 years of age or older between 2006 and 2008, we did not find an effect statistically different from zero for the elderly between 66 and 69 years old living in rural and urban localities between 2012 and 2014. We conclude that PAM did not have crowding out effects on international or domestic remittances received by the elderly 66 to 69 years old. Table 9 shows these results.

Table 9: Program Effects on Private Transfers from Other Households and Remittances

	Private Transfers		*Remittances*	
	No controls	**Controls**	**No controls**	**Controls**
Treat*year 2014	0.228*	0.167	-0.074	-0.263
	[-0.133]	[-0.110]	[-0.201]	[-0.180]
Treat	0.021	-0.017	0.0752	0.156
	[-0.081]	-0.073	[-0.15]	[-0.13]
Year2014	0.657***	0.437	0.055	-0.580
	[-0.098]	[-0.507]	[-0.161]	[-0.991]
Observations	5,553	5,553	1,163	1,163

Note: We report the standard errors in brackets. The standard errors are heteroscedasticity-robust and clustered at the primary sampling unit level. The column titled "controls" show the results of estimations in which the following conditioning variables were used: employment status, village size range, years of schooling, literacy, household size, dwelling's ownership status, sex, indigenous language speaker status, disability condition, household structure, marital status, income from the Conditional Cash Transfer Program - PROSPERA and a full set of interactions between the preceding covariates and the time dummy.

3.6.2 Robustness Checks for ITT

As a first robustness check, we implemented the difference-in-differences model with the treatment and control groups using data from a previous period, that is, instead of using 2012 and 2014, we used 2010 and 2012 data. We ran this robustness check for the extreme poverty headcount, the extreme poverty gap, the extreme poverty severity, and the multidimensional extreme poverty indexes. The results show that the estimates are not statistically different from zero. Similarly, we ran the robustness check to test whether the placebo intervention had an effect on social right deprivations from 2010 to 2012 and did not find any effects. These results are shown in Appendix F, Table F.1 through F.4. We show that not only did the intervention have an effect where it was expected to have one, but also, we show that a placebo intervention does not have an effect where one is not expected. Similarly, Tables F.5 to F.7 show no intervention effects on labor force participation, use of time and private transfers.

The second robustness check we implemented was to replace our outcome variables (e. g. FGT measures) with outcome variables that are not supposed to be affected by the program in the short term. We ran the difference-in-differences model with the LPM, Probit, and Logit models with and without controlling variables and found no effects on variables such as disability condition, indigenous language speaker condition, access to drinking water, or access to sewage. Table F.8 in Appendix F show these results.

As a third robustness check, we estimated the short term program effects on the eligible-for-treatment group aged 66 to 69 years old who do not receive contributory pensions but instead of comparing the average change of this group to the average change of the non-elderly individuals aged 61 to 64

who do not receive contributory pensions, we compared them to the average change of an alternative control group, that is, we compared the treatment group to the average change on the group of adults 56 to 59 years old.

The estimated effects of the expansion of PAM on the extreme poverty headcount index using the alternative control group are slightly smaller than with the original control group with an estimated reduction in the probability of being extreme poor of 3.4 percentage points compared to a 5.4 with the original control group. The results, however, are consistent, of similar magnitude, and statistically significant at the 5% level. These results are shown in Table F.9 in Appendix F.

The estimated effects on the extreme poverty gap index and on the extreme poverty severity index are somewhat larger when using the alternative control group, but still in the same direction and statistically significant at the 1% level (Table F.10). The results obtained of the effects of the program's expansion on multi-dimensional extreme poverty using the alternative control group are similar to the ones obtained when using the original control group. The estimation using the alternative control group showed a reduction of 4.4 percentage points on the probability of being extreme poor according to the multidimensional extreme poverty index, while the results obtained with the primary control group showed a reduction of 5.8 percentage points. Table F.11 in Appendix F shows these results.

In addition, when we ran the same model without excluding, from the treatment and control groups, those adults who receive contributory pensions, the estimated effects remained consistent with those obtained when contributory pensioners were excluded. Similarly, we ran the same models without excluding Chiapas and Mexico City data; instead, we used dummy variables to indicate whether an observation was from either one of these states. The results obtained using this approach were consistent with our main results.

3.6.3 Treatment-on-the-Treated Effects (TOT)

Table 10 shows the first-stage result of the estimation of the TOT effects using 2SLS. These results confirm that the instrument is effectively correlated with the variable it is instrumenting for, that is, the interaction term *treat*year2014* is correlated with the binary variable that indicates program participation, *p_pam*, and is statistically significant at the one 1% level.

The second-stage results of the 2SLS suggest that the expansion of PAM reduced extreme poverty. The results show poverty reducing effects on the treated population between 6.1 and 13.2 percentage points, depending on the poverty measure considered. Table 11 shows that the program had reducing effects of 11.5 percentage points on the probability of being extreme poor as measured by the headcount index, 7.9 percentage points on the poverty gap index, 6.1 percentage points on the poverty severity index, and 13.2 percentage points on the probability of being extreme poor as measured by the multidimensional poverty headcount index. These results are statistically significant at conventional confidence levels.

Previously, we explained our assumption that *p_pam* is endogenously correlated with the error term of the simple linear regression of *p_pam* on extreme poverty or labor supply variables. This could

be a result of the targeting strategy, the enrollment prioritizing mechanisms of the Program, or the self-selection of beneficiaries. Using the Wooldrige robust regression-based test we conclude that *p_pam* is indeed an endogenous variable for the extreme poverty headcount, the extreme poverty gap, and the extreme poverty severity indexes at least at the 5% significance level, and at the 10% level for the multidimensional extreme poverty headcount index.

The same procedure was followed with the labor supply variables, including labor force participation and hours worked in the previous week. In this case, the Wooldrige test suggests that the individual's labor supply decisions and expectations are exogenous.

Using OLS and equation (3) with Y = *labor supply*, we estimate the effects of the expansion of PAM on labor supply variables. OLS results suggest that the expansion of PAM did not have an effect on labor supply, consistent with what we found in the ITT estimations. Even though OLS estimates are more efficient than the IV estimates in this case, results from OLS by themselves should be taken with caution. The OLS estimates of the expansion of the program on labor supply is hardly rigorous evidence that the program did or did not have an effect on labor supply of the treatment group because we are not controlling for unobserved characteristics, which in this case may be a concern (e.g. self-selection bias).

Table 10: IV First-Stage Regression

	p_pam
Treat*year 2014	0.451***
	[-0.014]
Year 2014	-0.116***
	[-0.042]
Treat	0.007**
	[-0.003]
Observations	13,120
F (63, 13056) = 29.4	
Prob > F = 0.00	

Table 11: Treatment-on-the-Treated (TOT) Effect of PAM on Extreme Poverty
IV Second-Stage Regression

	Poverty Measures			
	Head Count Index	**FGT1**	**FGT2**	**Multi-dimensional**
p_pam	-0.115**	-0.079***	-0.061***	-0.132***
	[-0.045]	[-0.022]	[-0.016]	[-0.033]
year2014	-0.053	0.000	-0.013	0.005
	[-0.082]	[-0.038]	[-0.029]	[-0.067]
treat	0.039**	0.021***	0.015***	0.009
	[-0.016]	[-0.008]	[-0.006]	[-0.012]
Observations	13,120	13,120	13,120	13,120

Note: Estimates significance level *** p<0.01, ** p<0.05, * p<0.1. We report standard errors in brackets. Standard errors heteroscedasticity-robust and clustered at the primary sampling unit level, which takes into consideration the sampling design of the survey. Income variables used were adjusted to per adult-equivalent at August 2014 prices. The following conditioning variables were used: village size range, years of schooling, literacy, household size, dwelling's ownership status, sex, indigenouos language speaker status, disability condition, household structure, marital status, access to Seguro Popular, income from Conditional Cash Transfer Program - PROSPERA, income from PROCAMPO, overcrowding, access to drinking water, access to sewage, access to electricity, and a full set of the preceding covariates interacted with the time dummy.

4. Conclusions

In 2013 the Pension Program for the Elderly (PAM) became quasi-universal, excluding only those individuals with contributory pensions. In 2015 the Program became poverty-targeted and pensions-tested, explicitly targeting the elderly poor. We evaluate whether the expansion of the program reduced the probability of being extreme poor or not, and its effects on labor force participation of people of 66 to 69 years of age and by how much.

Applying a difference-in-differences estimation of the intention-to-treat (ITT) effects around two eligibility thresholds, beneficiary's age and year of program expansion, we find that the expansion of the program to the sub-population group of ages between 66 and 69 years old not currently receiving contributory pensions not only reduced the probability of this population being extreme poor under various poverty measures, but it also reduced the poverty gap, and the poverty severity indexes. Our results suggest that the expansion of PAM did not have any statistically significant effects on the labor force participation of the elderly. Accordingly, we did not find that the program reduced labor income. The PAM cash transfer amount was $580 pesos in 2014, or about 16.7% of the average current per capita income. Not surprisingly, the cash transfer did not significantly affect the labor supply of the elderly population.

The Treatment-on-the-Treated (TOT) effects were estimated using an instrumental variables methodology obtaining the same general conclusions of the effects of the expansion of PAM on extreme poverty and on labor supply. The TOT results on extreme poverty are stronger than the ITT results because TOT effects are not diluted among the entire eligible population which includes the group of eligible individuals that were not actually treated. Our results for both the ITT and TOT are robust and consistent. In Mexico, the per capita income variable, which is used in the official poverty measurement, is constructed with an equal income sharing assumption using an adult-equivalent scale. Thus, each person in a household has the same income and the same monetary poverty condition. Similarly, the income of all the individuals in the household, including the income from PAM is divided by the number of adjusted-adults in the household and then imputed to each individual. This methodology would suggest that the effect of the expansion of PAM on extreme poverty is generalizable to all individuals of the treated household, which was also shown in our results.

There is an ongoing debate of whether social pension programs should be separate or part of the broader safety net interventions such as PROSPERA that focus on the poorest households regardless of age or participation in social security. This discussion, however, exceeds the scope of this paper. Decision makers could have political reasons for not including all cash transfer programs in one single program, although we recognize that there is a potential efficiency loss by operating separate initiatives with similar objectives.

Jensen (2004), Juarez (2009), and Amuedo-Dorantes and Juarez (2015) find that social pension programs crowd out private transfers. Thus, concluding that social pension programs indirectly benefit the private transfer sender. In contrast, our results suggest that the expansion of the program did not affect the private transfers that the elderly received from other households (domestic remittances) nor the international remittances received, although the sample used to estimate the impact of the

program on received international remittances is relatively small.

Further research in at least four areas is a priority. First, the effects of PAM might also have heterogeneous effects on different population sub-groups. Understanding whether there are differentiated effects for different population sub-groups and their underlying causes can help policy makers understand where the impact is stronger and make informed policy decisions. Second, it is relevant for policy makers to understand the effects of PAM and its expansion on relevant outcome variables for other members of the household. Evidence shows that there usually is some extent of income sharing within households. Our work focuses on the causal effects of the expansion of the program on different outcomes for the elderly, however, to understand the impacts of the program or its expansion on individual outcomes for other members of the household further research should be conducted. Third, the stagnantly low coverage of contributory pension systems, the persistent high informality, the growing old-age population, and the relatively large size of Mexico's PAM, makes the question of PAM's fiscal sustainability increasingly important and one that should be revised often as updated data become available. Fourth, taking into consideration the above mentioned context, the incentives and interactions of contributory and noncontributory pension programs become also a critical area where further research is needed to understand how the design of social pensions may affect participation in contributory pension schemes or more generally in formal work.

References

Amuedo-Dorantes, C. and Juarez, L. (2015). Old-Age Government Transfers and the Crowding Out of Private Gifts: The 70 and Above Program for the Rural Elderly in Mexico. *Southern Economic Journal*, 81(3), 782-802.

Ardington, C., Case, A., and Hosegood, V. (2009). Labor Supply Responses to Large Social Transfers: Longitudinal Evidence from South Africa. *American Economic Journal. Applied Economics*, 1(1), 22-48.

Asher, M. (2009). Social Pensions in Four Middle-Income Countries In Holzmann, R., Robalino, D. and Takayama, N. (Ed.), *Closing the Coverage Gap: The role of social pensions and other retirement income transfers* (pp. 85-98). Washington, DC: World Bank.

Barrientos, A. (2006). Poverty Reduction: The Missing Piece of Pension Reform in Latin America. *Social Policy and Administration*, Vol. 40, No. 4, pp. 369-84.

Bertrand, J., Mullainathan, S. and Duflo, E. (2004). How much should we trust Difference-in-Differences Estimates? *Quarterly Journal of Economics* 119, No. 1, pp. 249-75.

Bertrand, J., Mullainathan, S. and Miller, D. (2003). Public Policy and Extended Families: Evidence from Pensions in South Africa. *The World Bank Economic Review*, 17(1), 27-50.

Bertranou, F., Ginneken, W. and Solorio, C. (2002). *Pensiones no contributivas y asistenciales: Argentina, Brasil, Chile, Costa Rica y Uruguay*. Oficina Internacional del Trabajo.

CONAPO (2017). Estimaciones y Proyecciones de la Población 1990-2010.

CONAPO (2017). Estimaciones y Proyecciones de la Población 2010-2030.

CONEVAL. (2012). *Informe de Pobreza en México 2010: el país, los estados y sus municipios*. Mexico City: CONEVAL.

CONEVAL. (2013). *Informe de pobreza en México, 2012*. Mexico City: CONEVAL.

CONEVAL (2014). *Metodología para la medición multidimensional de la pobreza en México*. México, DF: CONEVAL.

CONEVAL, (2010-2014). *Inventario CONEVAL de Programas y Acciones Estatales de Desarrollo Social*. Retrieved on January 19, 2017 from http://www.coneval.org.mx/Evaluacion/IPE/Paginas/historico.aspx

CONEVAL, (2004-2015). *Inventario CONEVAL de Programas y Acciones Federales de Desarrollo Social*. Retrieved on January 19, 2017 from http://www.coneval.org.mx/Evaluacion/IPFE/Paginas/historico.aspx

Diario Oficial de la Federación (2007-2016). Reglas de Operación del Programa Pensión para Adultos Mayores.

Diario Oficial de la Federación (2006-2016). Reglas de Operación de PROSPERA Programa de Inclusión Social.

Edmonds, E. V. (2006). Child Labor and Schooling Responses to Anticipated Income in South Africa, *Journal of Development Economics* 81, No. 2, pp. 386-414.

Fiszbein, A. and Schady, N.R. (2009). *Conditional Cash Transfers: Reducing Present and Future Poverty*. World Bank Policy Research Report. Washington, D.C.: World Bank.

Galiani, S. and Gertler, P. (2009). *Informe Final sobre los Cambios del Programa 70 y mas*. Mexico City: SEDESOL, Instituto Nacional de Salud Publica.

Galiani, S. Gertler, P. and Bando, R. (2016). Non-contributory pensions, *Labour Economics*, 38, pp. 47-58.

Grosh, M. et al. (2008). *For protection and promotion: The design and implementation of effective safety nets*. Washington, D.C.: World Bank.

Holzmann, R., Robalino, D. and Takayama, N. (2009). Closing the coverage gap: The role of social pensions and other retirement income transfers. Washington, DC: World Bank.

Holzmann, R. and Robalino, D. (2009). Overview and Preliminary Policy Guidance. In Holzmann, R., Robalino, D. and Takayama, N. (Ed.), *Closing the Coverage Gap: The role of social pensions and other retirement income transfers* (pp. 41-56). Washington, DC: World Bank.

INEGI (2017). Sistema de Cuentas Nacionales, Producto Interno Bruto Trimestral 1993-2017.

Instituto para la Atención del Adulto Mayor en la Ciudad de México - IAAMDF (2015). *Evaluación Interna 2015 del Programa: Pensión Alimentaria para Adultos Mayores de 68 Años, Residentes en el Distrito Federal*. Mexico City: IAAMDF.

Instituto para la Atención del Adulto Mayor en la Ciudad de México - IAAMDF (2016). *Evaluación Interna 2016 del Programa: Pensión Alimentaria para Adultos Mayores de 68 Años, Residentes en el Distrito Federal*. Mexico City: IAAMDF.

Jensen, R. (2004). Do private transfers 'displace' the benefits of public transfers? Evidence from South Africa. *Journal of Public Economics*, 88(1), 89-112.

Juarez, L. (2009). Crowding out of private support to the elderly: Evidence from a demogrant in Mexico. *Journal of Public Economics*, 93(3), 454-463.

Juarez, L., and Futze, T. (2015). The Effects of a Non-Contributory Pension Program on Labor Force Participation: The Case of 70 y Mas in Mexico. *Economic Development and Cultural Change*, Vol. 63, No. 4 (July 2015), pp. 685-713.

Kidd, S. and Whitehouse, E. (2009). Pensions and Old-Age Poverty. In Holzmann, R., Robalino, D. and Takayama, N. (Ed.), *Closing the Coverage Gap: The role of social pensions and other retirement income transfers* (pp. 41-56). Washington, DC: World Bank.

Malani, A. and Reif, J. (2015). Interpreting pre-trends as anticipation: Impact on estimated treatment effects from tort reform. *Journal of Public Economics* 124, pp. 1-17.

Rofman, R., Apella, I. and Vezza, E. (2015). *Beyond contributory pensions : Fourteen experiences with*

coverage expansion in Latin America. Human Development Unit. Washington, D.C.: World Bank.

Rofman, R. and Oliveri, M. (2012). *Pension Coverage in Latin America. Trends and Determinants.* World Bank Social Research & Labor Discussion Paper No. 1217. Washington, D.C.: World Bank.

Sagarnaga, M. (2008). *Informe Final de la Evaluacion de Consistencia y Resultados 2007 del Programa de Atencion a Adultos Mayores en Zonas Rurales*. Texcoco, Estado de México: Universidad Autonoma de Chapingo.

Villagomez, A. and Ramírez, G. (2009). Mexico. In Rofman, R., Apella, I. and Vezza, E. (Ed.), *Beyond contributory pensions : Fourteen experiences with coverage expansion in Latin America* (pp. 259-292). Human Development Unit. Washington, D.C.: World Bank.

Wooldridge, J. (1995). Score diagnostics for linear models estimated by two stage least squares. In Maddala, G., Phillips, P. and Srinivasan, T. (Ed.), *Advances in Econometrics and Quantitative Economics: Essays in Honor of Professor C. R. Rao* (pp. 66–87). Oxford: Blackwell.

Wooldrige, J. (2012). *Introductory Econometrics: A Modern Approach.* Ohio, USA: Cengaged Learning.

Appendix A

Table A.1: State Programs to Support the Elderly (2014)

State	Name	Objective	Eligibility (minimum age)	Payment Amount	Payment Frequency	Benefeciaries	Share in Elderly (%)	Budget (million pesos)	Share in GDP (%)
Aguascalientes	*Atencion al Adulto Mayor*	Secure the physical, mental and social well-being of the elderly population, and promote outdoors physical activities to improve their quality of life.	60	n.a.	n.a.	6,000	8.5	5	0.003
Chiapas	*Amanecer*	n.a.	64	550	Monthly	122,535	45.2	1,044	0.357
Guerrero	*Pension Guerrero*	Guarantee an income for the elderly population without any pension scheme.	65	800	Bimonthly	n.a.	n.a.	42	0.017
Jalisco	*Atencion a los Adultos Mayores*	Improve the well-being of the elderly population that do not receive any income under a contributory pension scheme.	65	1,009	Bimonthly	32,364	6.1	400	0.038
Nuevo Leon	*Apoyo Directo al Adulto Mayor*	Increase the income and well-being of the elderly population experiencing poverty.	70	700	Monthly	59,747	18.2	503	0.042
Mexico City	*Pension Alimentaria para Adultos Mayores*	Improve the well-being and health needs of the elderly in marginalized areas. The stipend aims to secure the access to food.	68	1,009	Monthly	480,000	61.2	57,629	2.141

Continued

State	Name	Objective	Eligibility (minimum age)	Payment Amount	Payment Frequency	Benefeciaries	Share in Elderly (%)	Budget (million pesos)	Share in GDP (%)
Coahuila	*Bienestar del Adulto Mayor*	n.a	60	292	Yearly	<1,000	n.a.	1	0.000
Chihuahua	*Chihuahua Vive a Plenitud*	Secure the access to food and basic needs for the elderly population.	65	1,009	Monthly	20,000	8.6	132	0.029
Estado de Mexico	*Gente Grande*	Provide a food basket to the elderly population experiencing multidemintional poverty.	60	Staple goods	Monthly	300,000	32.1	n.a.	n.a.
Sonora	Apoyo a *Adultos Mayores*	Improve the well-being of the elderly population through an integral scheme to satisfy basic needs.	65	1,000	Yearly	26,078	14.0	n.a.	n.a.
Veracruz	*Asistencia Alimentaria para el Adulto Mayor*	Guarantee the access to food for the elderly population.	65	n.a.	Monthly	n.a.	n.a.	n.a.	n.a.
Zacatecas	*Sumando a los Abuelos*	n.a	70	400	Quarterly	2,000	1.3	9	0.005

Source: Based on *Inventario CONEVAL de Programas y Acciones Estatales de Desarrollo Social (2012, 2013 y 2014)*, *Catalogo de Programas y Acciones Federales y Estatales para el Desarrollo Social* http://www.programassociales.mx/ and information from the state governments. Income per capita data comes from the ENIGH-MCS 2014, and state GDP data comes from INEGI.
Note: The programs *Pensión Alimentaria para Adultos de 70 y más años* (Oaxaca), *70 y mas urbano* (Puebla), and *Abuelito estoy contigo* (Quintana Roo) were discontinued in 2013. The average exchange rate in 2014 was roughly 14 pesos per U.S. Dollar. The average current per capita income in 2014 was $3,459 pesos per month. Elderly refers to population 65 years of age and older.

Appendix B

Table B.1: Pension Program for Older Adults - PAM

Year	Objective	Monthly amount	Share in Income	Lump-sum for death	Eligibility (minimum age)	Village size (inhabitants)	Beneficiaries	Share in Elderly (%)	Executed budget (million pesos)	Share in GDP (%)
2007	To improve the life conditions of older adults through cash transfers	500	16.1	0	70	Only villages of up to 2,500 inhabitants.	1,031,005	16.0	6,001	0.05
2008	To improve the life conditions of older adults through cash transfers and to support its personal development through social participation	500	16.3	0	70	Priority given to older adults living in rural villages of up to 2,500 inhabitants. Afterwards, priority given to villages of up to 10,000 inhabitants. If budget allows, extending coverage to villages of up to 20,000 inhabitants prioritizing from greater to less marginalization.	1,863,945	28.1	9,537	0.08
2009	To improve the life conditions through cash transfers and to increase social protection.	500	16.7	0	70	Priority given to villages of up to 30,000 inhabitants. If budget allows, the program could gradually increase coverage to larger localities.	2,050,626	29.9	12,407	0.10
2010	To improve the life conditions through cash transfers and to increase social protection.	500	17.2	1000	70	Priority given to villages of up to 30,000 inhabitants. If budget allows, the program could gradually increase coverage to larger localities.	2,105,306	29.8	12,923	0.10

Continued

Year	Objective	Monthly amount	Share in Income	Lump-sum for death	Eligibility (minimum age)	Village size (inhabitants)	Beneficiaries	Share in Elderly (%)	Executed budget (million pesos)	Share in GDP(%)
2011	To increase social protection and income, and to reduce physical and mental health deterioration of older adults	500	16.4	1000	70	Priority given to villages of up to 30,000 inhabitants. If budget allows, the program could gradually increase coverage to larger localities.	2,149,024	29.5	12,972	0.09
2012	To increase social protection and income, and to reduce physical and mental health deterioration of older adults	500	15.7	1000	70	Priority given to villages of up to 30,000 inhabitants. Program expansion to localities larger than 30,000 will be prioritized in the neighborhoods with higher poverty incidence.	3,056,816	40.7	17,693	0.11
2013	To increase social protection and income, and to reduce vulnerabilities and physical and mental health deterioration of older adults that do not receive pensions or retirement income.	525	15.8	1050	65	National coverage	4,851,025	62.7	24,324	0.15
2014	To increase social security coverage and to ensure a basic income for older adults that do not receive pensions or retirement income (greater than $1,092 pesos per month).	580	16.8	1160	65	National coverage	5,487,664	68.7	36,478	0.21

Continued

Year	Objective	Monthly amount	Share in Income	Lump-sum for death	Eligibility (minimum age)	Village size (inhabitants)	Beneficiaries	Share in Elderly (%)	Executed budget (million pesos)	Share in GDP (%)
2015	To increase social security coverage and to ensure a basic income for older adults that are poor or vulnerable, and that do not receive pensions or retirement income (greater than $1,092 pesos per month).	580	15.9	1160	65	National coverage	5,701,662	69.1	39,707	0.22
2016	To increase social security coverage and to ensure a basic income for older adults that are poor or vulnerable, and that do not receive pensions or retirement income (greater than $1,092 pesos per month).	580	15.2	1160	65	National coverage	n.a.	n.a.	n.a.	n.a.

Source: Authors' elaboration based on the Program Operating Rules, published in the Federal Official Gazzette (Diario Oficial de la Federacion - DOF), 2007-2016. Population projections come from CONAPO, and national GDP data come from INEGI.

Note: Frequency of the payment is every 2 months. Since 2012, the program has been "banking" (adding electronic card payments as a payment method) or promoting bancarization of its beneficiaries. Since 2014, the program eligibility requirements include being a Mexican national or foreigner with at least 25 years of residence in Mexico. While the program has never approved the coincidence with PROSPERA's Component for Older Adults, since 2010 it has been promoting access of its beneficiaries to other social programs such as INAPAM and Seguro Popular. Elderly refers to population 65 years of age and older.

Appendix C

In Mexico, PAM is not the only non-contributory pension program. To accurately estimate the effects of PAM's expansion, we eliminate from the sample some of the states where large similar social pension programs were implemented or still operate. Similar programs might impact both the poverty rates and the labor supply of the treatment and control groups. Therefore, by including states with large similar operating programs, results might be biased. We identify the states with other social pension programs using a methodology that involved two approaches.

First, with the ENIGH-MCS we estimated, at a state level, the mean value of the transfers received from any social pension program other than PAM. This estimate identifies the relative significance of these transfers across states. In the states with values above zero, we looked at the estimates' distribution to identify extreme values or outliers distorting the mean.[17] Finally, with a weighted scatter plot we examined the coverage of the transfers in each state.

Second, we checked the 2011 to 2014 national inventory of programs and actions for social development executed by public agencies at a federal, state, and local levels. This inventory is developed by the National Council for the Evaluation of the Social Development Policy (CONEVAL), and in principle registers any existing social pension programs. We complemented the previous information with the *Catálogo de Programas y Acciones Federales y Estatales para el Desarrollo Social*, a catalogue that collects the main characteristics of all the social programs implemented in Mexico since 2009.[18] Finally, the governments of the states of Zacatecas and Coahuila were contacted directly to corroborate that no social pension program was implemented over the period of analysis.

In the state of Chiapas and Distrito Federal (Mexico City) the mean value from other social pension programs were significantly different from zero, with an important coverage, and were registered in both inventories in all the years covered by this research (2010-2014). Thus, these were the only states eliminated from the sample. The elimination of other states might be debatable from different perspectives, and might generate the loss of statistical power for the research. In other words, to minimize any rule-out mistake, we used the intersection of the results from both approaches.

[17] We use the Nick Cox's "extremes" STATA command. This command lists five lowest and five highest extreme values of a numeric variable. Detailed information about the command is available at: https://ideas.repec.org/c/boc/bocode/s430801.html

[18] Information available at: http://www.programassociales.mx/

Appendix D

Table D.1: Sociodemographic Characteristics of Mexican Population 65 Years and Older (2010-2014)

	2010		2012		2014	
	Millions	%	Millions	%	Millions	%
Sex						
Males	3.6	46.1	3.9	45.7	4.1	45.5
Females	4.2	53.9	4.7	54.3	4.9	54.5
Social Context						
Urban	5.8	74.5	6.4	73.6	6.8	74.9
Rural	2.0	25.5	2.3	26.4	2.3	25.1
Indigenous Language Speaker						
Yes	0.8	10.3	0.8	9.4	0.8	9.1
No	7.0	89.7	7.8	90.6	8.2	90.9
Age Cohorts						
65-69	2.7	34.3	2.9	34.0	3.1	34.5
70-74	2.1	26.8	2.3	26.4	2.4	26.3
75-79	1.3	17.1	1.6	18.1	1.6	18.1
80+	1.7	21.8	1.9	21.5	1.9	21.1
Total	7.8	100.0	8.6	100.0	9.1	100.0
Household Structure						
Single household	1.0	12.5	1.1	12.8	1.2	13.1
Nuclear	3.3	42.5	3.8	43.5	4.0	44.2
Extended	3.4	43.7	3.7	42.3	3.8	41.6
Compound	0.1	1.1	0.1	1.2	0.1	1.0
Correspondent	0.0	0.2	0.0	0.2	0.0	0.1
Total	7.8	100.0	8.6	100.0	9.1	100.0
Relationship with the household head						
Household head	3.9	50.1	4.4	50.6	4.6	50.4
Single household	1.0	12.5	1.1	12.8	1.2	13.1
Partnership	1.6	20.4	1.8	20.9	1.9	21.3
Parenthood	0.8	9.7	0.7	8.1	0.7	7.6
Sibling	0.1	1.7	0.1	1.4	0.2	1.7
Father/Mother in Law	0.3	3.6	0.3	3.6	0.3	3.4
Other	0.2	2.0	0.2	2.4	0.2	2.4
Total	7.8	100.0	8.6	100.0	9.1	100.0
Dwelling Deprivations						
Quality and spaces of the dwelling						
Yes	0.8	10.4	0.7	8.3	0.7	7.7
No	7.0	89.6	7.9	91.8	8.4	92.3
Access to basic services in the dwelling						
Yes	1.8	23.7	1.9	22.3	2.0	21.8
No	5.9	76.3	6.7	77.7	7.1	78.2
Schooling						
Illiterate	2.1	27.6	2.2	25.7	2.2	24.1
Educational Gap	5.2	66.2	5.4	63.1	5.5	60.7
Access to Food Deprivation						
Yes	1.7	21.4	1.7	19.9	1.8	20.0
No	6.1	46.8	6.1	77.9	6.0	76.8
Access to Health Services Deprivation						
No	6.0	77.2	7.3	84.3	7.9	86.9
Yes	1.8	22.8	1.4	15.7	1.2	13.1

Continued

	2010		2012		2014	
	Millions	%	Millions	%	Millions	%
Access to health services, by institution						
Seguro Popular	2.0	33.2	3.0	40.6	3.5	44.4
IMSS	2.7	45.3	3.0	41.6	3.1	39.6
ISSSTE	0.8	12.7	0.9	11.7	0.9	11.5
Pemex, Defensa o Marina	0.1	2.1	0.1	1.6	0.1	1.5
Otros health services via social security	0.3	4.2	0.1	1.3	0.1	0.9
Private health insurance	0.0	0.8	0.1	0.7	0.1	0.9
Other	0.1	1.7	0.2	2.5	0.1	1.2
Total elderly with access to health services	6.0	100.0	7.3	100.0	7.9	100.0

Source: Based on authors' calculations with the ENIGH-MCS 2010, 2012 and 2014.

Note: The mean years of schooling in the period were the following: 2010 (4.2), 2012 (4.5) and 2014 (4.7).

Appendix E

Table E.1: Program Effects on Extreme Poverty Headcount Index (FGT_0) (All Household Members Included)

	No controls			*Controls*		
	LPM	**Probit**	**Logit**	**LPM**	**Probit**	**Logit**
Treat * year 2014	-0.060**	-0.055**	-0.054**	-0.055**	-0.051***	-0.049***
	[-0.025]	[-0.022]	[-0.021]	[-0.021]	[-0.018]	[-0.017]
Treat	0.049**	0.047**	0.047**	0.029*	0.028*	0.028*
	[-0.020]	[-0.019]	[-0.019]	[-0.017]	[-0.016]	[-0.016]
Year 2014	0.003	0.003	0.003	-0.020	-0.018	-0.016
	[-0.016]	[-0.016]	[-0.016]	[-0.057]	[-0.061]	[-0.059]
Observations	44,158	44,158	44,158	36,592	36,592	36,592

Table E.2: Program Effects on Poverty Gap Index (FGT_1) and Poverty Severity Index (FGT_2) (All Household Members Included)

	Poverty Gap Index		*Poverty Severity Index*	
	No controls	**Controls**	**No controls**	**Controls**
Treat * year 2014	-0.024***	-0.022***	-0.017***	-0.016***
	[-0.009]	[-0.008]	[-0.006]	[-0.005]
Treat	0.017**	0.009	0.011**	0.006
	[-0.008]	[-0.007]	[-0.005]	[-0.005]
Year 2014	-0.006	0.001	-0.004	-0.007
	[-0.006]	-0.025	[-0.004]	[-0.018]
Observations	44,158	36,592	44,158	36,592

Table E.3: Program Effects on Multi-dimensional Extreme Poverty Headcount Index (All Household Members Included)

	No controls			*Controls*		
	LPM	**Probit**	**Logit**	**LPM**	**Probit**	**Logit**
Treat * year 2014	-0.046**	-0.041***	-0.040***	-0.042***	-0.026***	-0.024***
	[-0.018]	[-0.014]	[-0.013]	[-0.015]	[-0.007]	[-0.006]
Treat	0.025	0.023	0.022	0.012	0.008	0.008
	[-0.016]	[-0.015]	[-0.014]	[-0.013]	[-0.008]	[-0.007]
Year 2014	-0.007	-0.007	-0.007	-0.006	0.001	-0.004
	[-0.011]	[-0.011]	[-0.011]	[-0.043]	[-0.029]	[-0.026]
Observations	44,158	44,158	44,158	36,592	36,518	36,518

Note: Estimates significance level *** p<0.01, ** p<0.05, * p<0.1. We report standard errors in brackets. Standard errors heteroscedasticity-robust and clustered at the primary sampling unit level. Income variables used were adjusted to per adult-equivalent at August 2014 prices. The column titled "controls" show the results of estimations in which the following conditioning variables were used: village size range, years of schooling, literacy, household size, dwelling's ownership status, sex, indigenouos language speaker status, disability condition, household structure, marital status, employment condition, access to Seguro Popular, income from Conditional Cash Transfer Program - PROSPERA, income from PROCAMPO, overcrowding, access to drinking water, access to sewage, access to electricity, and a full set of the preceding covariates interacted with the time dummy.

Appendix F

Table F.1: Placebo test - Absence of Program Effects on Poverty Headcount Index (FGT_0) (2010-2012)

	No controls			*Controls*		
	LPM	**Probit**	**Logit**	**LPM**	**Probit**	**Logit**
Treat * year 2012	0.032	0.031	0.030	0.033	0.034	0.034
	[-0.022]	[-0.023]	[-0.023]	[-0.021]	[-0.023]	[-0.023]
Treat	0.024	0.024	0.024	0.001	0.000	0.000
	[-0.015]	[-0.016]	[-0.016]	[-0.014]	[-0.015]	[-0.015]
Year 2012	0.010	0.011	0.011	0.159*	0.169*	0.165*
	[-0.017]	[-0.018]	[-0.018]	[-0.085]	[-0.09]	[-0.091]
Observations	13,122	13,122	13,122	13,094	13,094	13,094

Table F.2: Placebo test - Absence of Program Effects on Poverty Gap Index (FGT_1) and Poverty Severity Index (FGT_2) (2010-2012). Ordinary Least Squares

	Poverty Gap Index		*Poverty Severity Index*	
	No controls	**Controls**	**No controls**	**Controls**
Treat * year 2012	0.011	0.011	0.007	0.006
	[-0.010]	[-0.001]	[-0.007]	[-0.007]
Treat	0.017**	0.007	0.011**	0.005
	[-0.008]	[-0.007]	[-0.005]	[-0.005]
Year 2012	0.067	-0.040	0.007	0.050
	[-0.007]	[-0.041]	[-0.005]	[-0.031]
Observations	13,122	13,094	13,122	13,094

Table F.3: Placebo test - Absence of Program Effects on Multi-dimensional Extreme Poverty Headcount Index (2010-2012)

	No controls			*Controls*		
	LPM	**Probit**	**Logit**	**LPM**	**Probit**	**Logit**
Treat * year 2012	-0.001	-0.001	-0.001	0.009	0.005	0.008
	[-0.019]	[-0.019]	[-0.019]	[-0.017]	[-0.016]	[-0.014]
Treat	0.022	0.022	0.022	-0.002	-0.002	-0.003
	[-0.013]	[-0.013]	[-0.013]	[-0.013]	[-0.011]	[-0.01]
Year 2012	-0.005	-0.005	-0.005	0.074	0.066	0.072
	[-0.015]	[-0.016]	[-0.016]	[-0.076]	[-0.067]	[-0.061]
Observations	13,121	13,121	13,121	13,093	13,075	13,075

Note: Estimates significance level *** p<0.01, ** p<0.05, * p<0.1. We report standard errors in brackets. Standard errors heteroscedasticity-robust and clustered at the primary sampling unit level. Income variables used were adjusted to per adult-equivalent at August 2014 prices. The column titled "controls" show the results of estimations in which the following conditioning variables were used: village size range, years of schooling, literacy, household size, dwelling's ownership status, sex, indigenouos language speaker status, disability condition, household structure, marital status, employment condition, access to Seguro Popular, income from Conditional Cash Transfer Program - PROSPERA, income from PROCAMPO, overcrowding, access to drinking water, access to sewage, access to electricity, and a full set of the preceding covariates interacted with the time dummy.

Table F.4: Placebo test - Absence of Program Effects on Social Rights Deprivations (2010-2012)

	No controls			*Controls*		
	LPM	**Probit**	**Logit**	**LPM**	**Probit**	**Logit**
Panel A: Effects on access to social security						
Treat * year 2012	-0.023	-0.023	-0.023	-0.011	-0.015	-0.016
	[-0.027]	[-0.027]	[-0.027]	[-0.023]	[-0.031]	[-0.033]
Treat	0.025	0.025	0.024	-0.009	-0.016	-0.013
	[-0.018]	[-0.018]	[-0.018]	[-0.016]	[-0.021]	[-0.022]
Year 2012	0.020	0.019	0.019	0.013	-0.019	0.007
	[-0.019]	[-0.019]	[-0.019]	[-0.1]	[-0.129]	[-0.133]
Observations	13,122	13,122	13,122	13,066	13,066	13,066
Panel B: Effects on access to health care services						
Treat * year 2012	-0.033	-0.030	-0.029	-0.025	-0.026	-0.023
	[-0.022]	[-0.022]	[-0.021]	[-0.022]	[-0.022]	[-0.022]
Treat	0.030*	0.027*	0.026*	0.024	0.024	0.022
	[-0.017]	[-0.015]	[-0.015]	[-0.016]	[-0.015]	[-0.015]
Year 2012	-0.069***	-0.070***	-0.070***	-0.029	-0.029	-0.029
	[-0.016]	[-0.016]	[-0.016]	[-0.097]	[-0.088]	[-0.085]
Observations	13,122	13,122	13,122	13,094	13,094	13,094
Panel C: Effects on access to food (food security)						
Treat * year 2012	0.005	0.005	0.005	0.008	0.007	0.010
	[-0.022]	[-0.022]	[-0.022]	[-0.022]	[-0.022]	[-0.022]
Treat	0.015	0.015	0.015	-0.008	-0.010	-0.011
	[-0.016]	[-0.016]	[-0.016]	[-0.016]	[-0.016]	[-0.016]
Year 2012	-0.007	-0.007	-0.007	0.000	0.012	0.013
	[-0.015]	[-0.016]	[-0.016]	[-0.099]	[-0.093]	[-0.091]
Observations	13,122	13,122	13,122	13,094	13,094	13,094
Panel D: Effects on quality and spaces of the dwelling						
Treat * year 2012	-0.015	-0.013	-0.012	-0.004	-0.001	-0.003
	[-0.015]	[-0.014]	[-0.013]	[-0.014]	[-0.011]	[-0.01]
Treat	0.020*	0.019*	0.018*	0.008	0.004	0.003
	[-0.01]	[-0.01]	[-0.01]	[-0.01]	[-0.008]	[-0.007]
Year 2012	-0.010	-0.010	-0.010	-0.057	-0.013	-0.011
	[-0.011]	[-0.012]	[-0.012]	[-0.056]	[-0.046]	[-0.044]
Observations	13,121	13,121	13,121	13,093	13,093	13,093
Panel E: Effects on access to basic services in the dwelling						
Treat * year 2012	-0.046**	-0.045**	-0.045**	-0.023	-0.028	-0.027
	[-0.023]	[-0.022]	[-0.021]	[-0.018]	[-0.02]	[-0.018]
Treat	0.062***	0.062***	0.062***	0.016	0.0144	0.0139
	[-0.016]	[-0.016]	[-0.016]	[-0.013]	[-0.016]	[-0.014]
Year 2012	0.021	0.022	0.022	-0.029	-0.055	-0.045
	[-0.02]	[-0.021]	[-0.021]	[-0.074]	[-0.104]	[-0.109]
Observations	13,122	13,122	13,122	13,094	13,094	13,094

Continued

	No controls			*Controls*		
	LPM	**Probit**	**Logit**	**LPM**	**Probit**	**Logit**
Panel F: Effects on educational gap						
Treat * year 2012	0.018	0.014	0.013	0.032	0.037	0.036
	[-0.027]	[-0.027]	[-0.027]	[-0.024]	[-0.027]	[-0.028]
Treat	0.107***	0.109***	0.110***	0.072***	0.087***	0.088***
	[-0.017]	[-0.018]	[-0.018]	[-0.016]	[-0.018]	[-0.019]
Year 2012	-0.049**	-0.048**	-0.047**	-0.197**	-0.228**	-0.222**
	[-0.019]	[-0.019]	[-0.018]	[-0.088]	[-0.095]	[-0.097]
Observations	13,122	13,122	13,122	13,094	13,094	13,094

Note: Estimates significance level *** p<0.01, ** p<0.05, * p<0.1. We report the standard errors in brackets. The standard errors are heteroscedasticity-robust and clustered at the primary sampling unit level. The column titled "controls" show the results of estimations in which the following conditioning variables were used: village size range, years of schooling, literacy, household size, dwelling's ownership status, sex, indigenous language speaker status, disability condition, household structure, marital status, employment condition, income from Conditional Cash Transfer Program - PROSPERA, income from PROCAMPO, and a full set of interactions between the preceding covariates and the time dummy. In Panel F the estimations with controls exclude years of schooling, literary variables, and its respective time dummy interactions.

Table F.5: Placebo test - Absence of Program Effects on Labor Force Participation (2010-2012)

	No controls			*Controls*		
	LPM	**Probit**	**Logit**	**LPM**	**Probit**	**Logit**
Treat*year 2012	-0.012	-0.012	-0.012	0.000	0.006	0.005
	[-0.024]	[-0.024]	[-0.024]	[-0.018]	[-0.032]	[-0.036]
Treat	-0.075***	-0.076***	-0.076***	-0.038	-0.058	-0.057
	[-0.017]	[-0.017]	[-0.017]	[-0.025]	[-0.043]	[-0.049]
Year 2012	0.055***	0.055***	0.055***	0.021	0.072	0.053
	[-0.017]	[-0.017]	[-0.017]	[-0.072]	[-0.116]	[-0.129]
Observations	13,122	13,122	13,122	13,094	13,090	13,090

Note: Estimates significance level *** p<0.01, ** p<0.05, * p<0.1. We report the standard errors in brackets. The standard errors are heteroscedasticity-robust and clustered at the primary sampling unit level. The column titled "controls" show the results of estimations in which the following conditioning variables were used: age, age-squared, relationship with the head of household, number of income earners in the household, number of employed persons in the household, village size range, years of schooling, literacy, household size, dwelling's ownership status, sex, indigenous language speaker status, disability condition, household structure, marital status, and a full set of interactions between the preceding covariates and the time dummy.

Table F.6: Placebo test - Absence of Program Effects on the Use of Time Including Work (2010-2012)

	Work		*Study*		*Community Service*		*Care-giving without pay*	
	No Controls	**Controls**	**No Controls**	**Controls**	**No Controls**	**Controls**	**No Controls**	*Controls*
Treat*year 2012	-177.8**	-123.3*	-8.89	-7.73	9.081	8.878	-21.71	-39.69
	[-77.06]	[-63.02]	[-9.738]	[-9.469]	[-10.43]	[-11.84]	[-44.01]	[-40.33]
Observations	12,352	12,326	12,350	12,324	12,349	12,323	12,349	12,323
	Dwelling Maintenance		*Housekeeping*		*Carrying water or firewood*		*Leisure*	
	No Controls	**Controls**	**No Controls**	**Controls**	**No Controls**	**Controls**	**No Controls**	**Controls**
Treat*year 2012	28.31*	23.51	5.3	7.912	-16.06	-8.068	31.87	7.073
	[-14.53]	[-14.38]	[-54.16]	[-44.72]	[-13.13]	[-14.21]	[-50.75]	[-49.69]
Observations	12,348	12,322	12,344	12,318	12,350	12,324	12,293	12,267

Note: Estimates significance level *** p<0.01, ** p<0.05, * p<0.1. We report the standard errors in brackets. The standard errors are heteroscedasticity-robust and clustered at the primary sampling unit level. The column titled "controls" show the results of estimations in which the following conditioning variables were used: age, age-squared, relationship with the head of household, number of income earners in the household, number of employed persons in the household, village size range, years of schooling, literacy, household size, dwelling's ownership status, sex, indigenous language speaker status, disability condition, household structure, marital status, and a full set of interactions between the preceding covariates and the time dummy.

Table F.7: Placebo test - Absence of Program Effects on Private Transfers from Other Households and Remittances (2010-2012)

	Private Transfers		*Remittances*	
	No controls	**Controls**	**No controls**	**Controls**
Treat*year 2012	-0.105	-0.079	0.098	0.211
	[-0.149]	[-0.119]	[-0.202]	[-0.161]
Treat	0.126	0.057	-0.023	-0.070
	[-0.128]	[-0.096]	[-0.136]	[-0.118]
Year 2012	-1.080***	-1.724***	-0.247	-0.0401
	[-0.112]	[-0.434]	[-0.174]	[-0.882]
Observations	5,640	5,634	1,196	1,195

Note: Estimates significance level *** p<0.01, ** p<0.05, * p<0.1. We report the standard errors in brackets. The standard errors are heteroscedasticity-robust and clustered at the primary sampling unit level. The column titled "controls" show the results of estimations in which the following conditioning variables were used: employment status, village size range, years of schooling, literacy, household size, dwelling's ownership status, sex, indigenous language speaker status, disability condition, household structure, marital status, income from the Conditional Cash Transfer Program - PROSPERA and a full set of interactions between the preceding covariates and the time dummy.

Table F.8: Robustness check - Absence of Effects on "Outcomes" not Supposed to be Impacted by the Program

	No controls			*Controls*		
	LPM	**Probit**	**Logit**	**LPM**	**Probit**	**Logit**
Panel A: Effects on disability condition						
Treat * year 2014	-0.011	-0.013	-0.013	-0.022	-0.024	-0.022
	[-0.020]	[-0.019]	[-0.019]	[-0.020]	[-0.018]	[-0.018]
Treat	0.056***	0.058***	0.058***	0.038***	0.039***	0.038***
	[-0.015]	[-0.015]	[-0.015]	[-0.014]	[-0.014]	[-0.014]
Year 2014	0.022*	0.024*	0.024*	0.046	0.022	0.028
	[-0.013]	[-0.014]	[-0.014]	[-0.075]	[-0.074]	[-0.072]
Observations	13,120	13,120	13,120	13,120	13,120	13,120
Panel B: Effects on indigenous language speaker condition						
Treat * year 2014	0.015	0.016	0.016	0.011	0.010	0.006
	[-0.015]	[-0.016]	[-0.016]	[-0.014]	[-0.012]	[-0.011]
Treat	-0.006	-0.006	-0.006	-0.013	-0.014*	-0.011
	[-0.011]	[-0.011]	[-0.011]	[-0.011]	[-0.008]	[-0.007]
Year 2014	-0.011	-0.011	-0.011	-0.035	-0.025	-0.022
	[-0.014]	[-0.014]	[-0.014]	[-0.064]	[-0.056]	[-0.053]
Observations	13,120	13,120	13,120	13,120	13,120	13,120
Panel C: Effects on access to drinking water						
Treat * year 2014	0.010	0.009	0.009	0.008	0.006	0.004
	[-0.014]	[-0.014]	[-0.015]	[-0.014]	[-0.011]	[-0.009]
Treat	-0.008	-0.007	-0.007	-0.018*	-0.013*	-0.010*
	[-0.011]	[-0.01]	[-0.01]	[-0.01]	[-0.007]	[-0.006]
Year 2014	-0.025*	-0.025*	-0.025*	-0.061	-0.042	-0.031
	[-0.014]	[-0.014]	[-0.014]	[-0.051]	[-0.041]	[-0.039]
Observations	13,120	13,120	13,120	13,120	13,112	13,112
Panel D: Effects on access to sewage						
Treat * year 2014	-0.009	-0.008	-0.008	-0.008	-0.004	-0.003
	[-0.015]	[-0.014]	[-0.014]	[-0.014]	[-0.008]	[-0.006]
Treat	0.012	0.012	0.012	-0.001	-0.002	-0.002
	[-0.011]	[-0.011]	[-0.011]	[-0.011]	[-0.006]	[-0.005]
Year 2014	-0.007	-0.007	-0.007	-0.006	-0.035	-0.040
	[-0.012]	[-0.012]	[-0.013]	[-0.047]	[-0.047]	[-0.045]
Observations	13,120	13,120	13,120	13,120	13,120	13,120

Note: Estimates significance level *** p<0.01, ** p<0.05, * p<0.1. We report the standard errors in brackets. The standard errors are heteroscedasticity-robust and clustered at the primary sampling unit level. Income variables used were adjusted to per adult-equivalent at August 2014 prices. The column titled "controls" show the results of estimations in which the following conditioning variables were used: village size range, years of schooling, literacy, household size, dwelling's ownership status, sex, household structure, marital status, employment condition, access to *Seguro Popular*, income from Conditional Cash Transfer Program - PROSPERA, income from PROCAMPO, overcrowding and a full set of interactions between the preceding covariates and the time dummy.

Table F.9: Robustness check - Program Effects on Poverty Headcount Index (FGT_0) with Alternative Control Group (56 to 59 years old)

	No controls			*Controls*		
	LPM	**Probit**	**Logit**	**LPM**	**Probit**	**Logit**
Treat * year 2014	-0.034**	-0.030**	-0.029*	-0.034**	-0.031**	-0.032**
	[-0.017]	[-0.015]	[-0.015]	[-0.016]	[-0.014]	[-0.013]
Treat	0.046***	0.045***	0.045***	0.015	0.012	0.012
	[-0.013]	[-0.012]	[-0.012]	[-0.012]	[-0.012]	[-0.011]
Year 2014	-0.006	-0.007	-0.007	-0.043	-0.062	-0.051
	[-0.011]	[-0.012]	[-0.012]	[-0.068]	[-0.062]	[-0.061]
Observations	20,273	20,273	20,273	20,273	20,273	20,273

Table F.10: Robustness check - Program Effects on Poverty Gap Index (FGT_1) and Poverty Severity Index (FGT_2) with Alternative Control Group (56 to 59 years old). Ordinary Least Squares

	Poverty Gap Index		*Poverty Severity Index*	
	No controls	**Controls**	**No controls**	**Controls**
Treat * year 2014	-0.026***	-0.026***	-0.022***	-0.021***
	[-0.007]	[-0.007]	[-0.005]	[-0.005]
Treat	0.025***	0.012**	0.017***	0.009**
	[-0.006]	[-0.006]	[-0.004]	[-0.004]
Year 2014	-0.001	0.115	-0.002	-0.003
	[-0.005]	[-0.027]	[-0.003]	[-0.020]
Observations	20,273	20,273	20,273	20,273

Table F.11: Robustness check - Program Effects on Multi-dimensional Extreme Poverty Headcount Index with Alternative Control Group (56 to 59 years old)

	No controls			*Controls*		
	LPM	**Probit**	**Logit**	**LPM**	**Probit**	**Logit**
Treat * year 2014	-0.050***	-0.045***	-0.044***	-0.044***	-0.027***	-0.022***
	[-0.012]	[-0.009]	[-0.009]	[-0.013]	[-0.006]	[-0.005]
Treat	0.025**	0.022**	0.022**	0.000	-0.003	-0.003
	[-0.01]	[-0.009]	[-0.009]	[-0.01]	[-0.006]	[-0.004]
Year 2014	-0.008	-0.008	-0.008	-0.005	-0.001	-0.004
	[-0.009]	[-0.009]	[-0.009]	[-0.057]	[-0.032]	[-0.028]
Observations	20,272	20,272	20,272	20,272	20,272	20,272

Note: Estimates significance level *** p<0.01, ** p<0.05, * p<0.1. We report standard errors in brackets. Standard errors heteroscedasticity-robust and clustered at the primary sampling unit level. Income variables used were adjusted to per adult-equivalent at August 2014 prices. The column titled "controls" show the results of estimations in which the following conditioning variables were used: village size range, years of schooling, literacy, household size, dwelling's ownership status, sex, indigenouos language speaker status, disability condition, household structure, marital status, employment condition, access to Seguro Popular, income from Conditional Cash Transfer Program - PROSPERA, income from PROCAMPO, overcrowding, access to drinking water, access to sewage, access to electricity, and a full set of the preceding covariates interacted with the time dummy.

Table F.12: Robustness check - Program Effects on Social Rights Deprivations with Alternative Control Group (56 to 59 years old)

	No controls			*Controls*		
	LPM	**Probit**	**Logit**	**LPM**	**Probit**	**Logit**
Panel A: Effects on access to social security						
Treat * year 2014	-0.248***	-0.259***	-0.262***	-0.225***	-0.268***	-0.285***
	[-0.022]	[-0.02]	[-0.02]	[-0.021]	[-0.024]	[-0.024]
Treat	-0.084***	-0.083***	-0.083***	-0.106***	-0.135***	-0.139***
	[-0.018]	[-0.018]	[-0.018]	[-0.016]	[-0.021]	[-0.022]
Year 2014	0.012	0.012	0.012	-0.008	-0.011	-0.017
	[-0.016]	[-0.016]	[-0.016]	[-0.07]	[-0.088]	[-0.094]
Observations	20,273	20,273	20,273	20,273	20,273	20,273
Panel B: Effects on access to health care services						
Treat * year 2014	-0.027*	-0.030*	-0.030**	-0.021	-0.023	-0.021
	[-0.016]	[-0.015]	[-0.015]	[-0.017]	[-0.016]	[-0.015]
Treat	-0.021*	-0.021*	-0.020*	-0.024*	-0.022*	-0.022*
	[-0.013]	[-0.012]	[-0.012]	[-0.014]	[-0.013]	[-0.012]
Year 2014	-0.007	-0.007	-0.007	-0.045	-0.022	-0.026
	[-0.011]	[-0.011]	[-0.011]	[-0.07]	[-0.056]	[-0.053]
Observations	20,273	20,273	20,273	20,273	20,273	20,273
Panel C: Effects on access to food (food security)						
Treat * year 2014	-0.018	-0.017	-0.017	-0.010	-0.010	-0.010
	[-0.019]	[-0.019]	[-0.018]	[-0.019]	[-0.018]	[-0.017]
Treat	0.011	0.010	0.010	-0.021	-0.024*	-0.024*
	[-0.016]	[-0.016]	[-0.016]	[-0.014]	[-0.014]	[-0.013]
Year 2014	0.002	0.002	0.002	-0.018	-0.026	-0.029
	[-0.014]	[-0.014]	[-0.014]	[-0.071]	[-0.063]	[-0.061]
Observations	20,273	20,273	20,273	20,273	20,273	20,273
Panel D: Effects on quality and spaces of the dwelling						
Treat * year 2014	0.002	0.001	0.001	0.014	0.005	0.007
	[-0.012]	[-0.012]	[-0.012]	[-0.013]	[-0.01]	[-0.009]
Treat	-0.013	-0.012	-0.012	-0.021**	-0.016**	-0.015***
	[-0.009]	[-0.009]	[-0.009]	[-0.01]	[-0.007]	[-0.006]
Year 2014	-0.010	-0.010	-0.010	0.034	0.022	0.020
	[-0.009]	[-0.008]	[-0.008]	[-0.046]	[-0.03]	[-0.026]
Observations	20,273	20,273	20,273	20,273	20,273	20,273
Panel E: Effects on access to basic services in the dwelling						
Treat * year 2014	-0.007	-0.006	-0.005	-0.002	-0.001	0.000
	[-0.016]	[-0.016]	[-0.016]	[-0.014]	[-0.013]	[-0.011]
Treat	0.019	0.019	0.018	-0.014	-0.023**	-0.019**
	[-0.013]	[-0.012]	[-0.012]	[-0.011]	[-0.01]	[-0.008]
Year 2014	-0.019	-0.019	-0.019	0.026	0.017	0.018
	[-0.014]	[-0.014]	[-0.014]	[-0.047]	[-0.05]	[-0.045]
Observations	20,272	20,272	20,272	20,272	20,272	20,272

Continued

	No controls			*Controls*		
	LPM	**Probit**	**Logit**	**LPM**	**Probit**	**Logit**
Panel F: Effects on educational gap						
Treat * year 2014	-0.003	0.000	0.000	0.000	-0.008	-0.007
	[-0.022]	[-0.023]	[-0.023]	[-0.021]	[-0.024]	[-0.025]
Treat	0.208***	0.207***	0.206***	0.190***	0.229***	0.237***
	[-0.018]	[-0.018]	[-0.018]	[-0.016]	[-0.018]	[-0.019]
Year 2014	-0.038**	-0.041**	-0.041**	-0.012	-0.018	-0.009
	[-0.015]	[-0.016]	[-0.016]	[-0.065]	[-0.079]	[-0.084]
Observations	20,273	20,273	20,273	20,273	20,273	20,273

Note: Estimates significance level *** p<0.01, ** p<0.05, * p<0.1. We report the standard errors in brackets. The standard errors are heteroscedasticity-robust and clustered at the primary sampling unit level. Income variables used were adjusted to per adult-equivalent at August 2014 prices. The column titled "controls" show the results of estimations in which the following conditioning variables were used: village size range, years of schooling, literacy, household size, dwelling's ownership status, sex, indigenous language speaker status, disability condition, household structure, marital status, employment condition, income from Conditional Cash Transfer Program - PROSPERA, income from PROCAMPO, and a full set of interactions between the preceding covariates and the time dummy. In Panel F the estimations with controls exclude years of schooling, literary variables, and its respective time dummy interactions.

Table F.13: Robustness Check - Program Effects on Labor Force Participation Alternative Control Group (56 to 59 years old)

	No controls			*Controls*		
	LPM	**Probit**	**Logit**	**LPM**	**Probit**	**Logit**
Treat*year 2014	-0.0442**	-0.0454**	-0.0457**	-0.0222	-0.0324	-0.0375
	[-0.021]	[-0.022]	[-0.022]	[-0.017]	[-0.028]	[-0.031]
Treat	-0.193***	-0.193***	-0.193***	-0.0477	-0.0833	-0.096
	[-0.016]	[-0.016]	[-0.016]	[-0.039]	[-0.062]	[-0.068]
Year 2014	0.00351	0.00366	0.0037	-0.0219	-0.0409	-0.0434
	[-0.011]	[-0.013]	[-0.013]	[-0.056]	[-0.088]	[-0.096]
Observations	20,273	20,273	20,273	20,273	20,265	20,265

Note: Estimates significance level *** p<0.01, ** p<0.05, * p<0.1. We report the standard errors in brackets. The standard errors are heteroscedasticity-robust and clustered at the primary sampling unit level. The column titled "controls" show the results of estimations in which the following conditioning variables were used: age, age-squared, relationship with the head of household, number of income earners in the household, number of employed persons in the household, village size range, years of schooling, literacy, household size, dwelling's ownership status, sex, indigenous language speaker status, disability condition, household structure, marital status, and a full set of interactions between the preceding covariates and the time dummy.

Table F.14: Robustness check - Program Effects on the Use of Time Including Work with Alternative Control Group (56 to 59 years old)

	Work		*Study*		*Community Service*		*Care-giving without pay*	
	No Controls	**Controls**	**No Controls**	**Controls**	**No Controls**	**Controls**	**No Controls**	**Controls**
Treat*year 2014	-99.06	-46.24	7.391	3.342	0.775	0.164	23.89	5.947
	[-63.03]	[-57.33]	[-5.726]	[-6.234]	[-8.171]	[-9.822]	[-33.35]	[-32.15]
Observations	18,915	18,915	18,916	18,916	18,910	18,910	18,904	18,904
	Dwelling Maintenance		*Housekeeping*		*Carrying water or firewood*		*Leisure*	
	No Controls	**Controls**	**No Controls**	**Controls**	**No Controls**	**Controls**	**No Controls**	**Controls**
Treat*year 2014	21.68	25.25*	27.24	4.302	-11.05	-13.19*	98.76**	66.33
	[-14.17]	[-14.66]	[-42.59]	[-35.69]	[-7.177]	[-7.377]	[-44.59]	[-46.01]
Observations	18,907	18,907	18,903	18,903	18,916	18,916	18,859	18,859

Note: Estimates significance level *** p<0.01, ** p<0.05, * p<0.1. We report the standard errors in brackets. The standard errors are heteroscedasticity-robust and clustered at the primary sampling unit level. The column titled "controls" show the results of estimations in which the following conditioning variables were used: age, age-squared, relationship with the head of household, number of income

earners in the household, number of employed persons in the household, village size range, years of schooling, literacy, household size, dwelling's ownership status, sex, indigenous language speaker status, disability condition, household structure, marital status, and a full set of interactions between the preceding covariates and the time dummy.

Table F.15: Robustness check - Program Effects on Private Transfers from Other Households and Remittances with Alternative Control Group (56 to 59)

	Private Transfers		*Remittances*	
	No controls	**Controls**	**No controls**	**Controls**
Treat*year 2014	0.071	-0.041	-0.18	-0.127
	[-0.12]	[-0.115]	[-0.184]	[-0.174]
Treat	0.150**	0.080	0.152	-0.046
	[-0.073]	[-0.073]	[-0.133]	[-0.131]
Year 2014	0.793***	1.098**	0.167	1.248
	[-0.085]	[-0.427]	[-0.15]	[-0.812]
Observations	8,419	8,419	1,272	1,272

Note: Estimates significance level *** p<0.01, ** p<0.05, * p<0.1. We report the standard errors in brackets. The standard errors are heteroscedasticity-robust and clustered at the primary sampling unit level. The column titled "controls" show the results of estimations in which the following conditioning variables were used: employment status, village size range, years of schooling, literacy, household size, dwelling's ownership status, sex, indigenous language speaker status, disability condition, household structure, marital status, income from the Conditional Cash Transfer Program - PROSPERA and a full set of interactions between the preceding covariates and the time dummy.