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Mental Health Effects of an Old Age Pension: Experimental Evidence for Ekiti State in Nigeria*

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Abstract

Many countries in the developing world have implemented old-age pensions. Evidence of the impact of such policies on the elderly in Sub-Saharan Africa is scarce. We provide the first evidence from a randomized evaluation of an unconditional old-age pension targeted at the elderly in Ekiti State, Nigeria. Our findings show that treated beneficiaries self-report better quality of life, more stable mental health, and better general health. We also provide evidence of spillover effects on labor outcomes on other household members and on household expenditure patterns as well as support for demand-side interventions aimed at improving the welfare of elderly poor citizens and other household members.

Keywords: Randomized controlled trials; Aging; Old-age pensions; Health; Developing Countries.

JEL Classification: C21, C93, H31, H55, H75 I38

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1 Introduction

In recent decades, social-protection programs have expanded notably in developing countries (Hanna and Karlan, 2017; Baird, De Hoop, and Özler, 2013; Blattman, Fiala, and Martinez, 2013; and Handa et al., 2018). Many countries—especially in Latin America—have implemented conditional cash transfers to protect vulnerable children and, to a lesser extent, pensions to protect individuals against poverty in old age (Levy & Schady, 2013). In most developed countries, pensions for old age are based on contributory systems (Walton & Levy, 2009), which depend upon formal employment history. In the context of developing countries with large informal sectors, such contributory schemes tend to protect only a few individuals and exclude the most vulnerable (Dethier, Pestieau, & Ali, 2010).

This paper presents the first experimental evidence of the effects of an old age pension on mental health in Africa and among the first in a developing country. We utilize a pilot program implemented by the local government of Ekiti state, Nigeria and conduct a randomized evaluation to test how an increase in income affects the mental health, as measured by a self-reported measure of the depression, and their labor force participation of the beneficiary.¹ The program, which was randomized at district level, provided pensions for citizens aged 65 and above who were receiving no other financial assistance from the government and whose income fell below the NGN 3,000 (\$19 USD) monthly threshold. Over a twelve-month period, the local government of Ekiti State provided eligible elderly with an unconditional monthly cash transfer of NGN 5,000 (approximately \$32 USD), one-fourth of the average monthly cost of living in Nigeria (NGN 22,094).

The pension program analyzed in this study represents a large and plausibly exogenous change in the elderly individual income. There are several pathways through which the increase in income affect mental health. On the one hand, the extra income may allow for the allocation of time to leisure activities of the elderly (Pfütze and Rodríguez-Castelán, 2015; Banerjee et al., 2015; Krueger and Mueller, 2012; Knabe, Rätzl, Schöb, and Weimann, 2010; Hamad, Fernald, Karlan, and Zinman, 2008; and Fernald, Hamad, Karlan, Ozer, and Zinman, 2008). Along the same lines, higher income has been causally linked to increases in access to health care (Ettner, 1996; Fang, Keane, and Silverman, 2008). Among the elderly, access to detection and treatment will slow or delay progression of physical cognitive issues which are closely related to mental health of the elderly (Ayyagari and Frisvold, 2016; Daviglius et al., 2010). Alternatively, the expansion of the budget set caused by the pension may lead to changes in utility maximizing goods with unintended negative effects on mental health. In Brazil, Carvalho de Filho (2008) find that older adults who received pensions increased their

¹Nigeria has over 200 million inhabitants. Poverty headcount (as measured by the \$1.90 USD a day) is over 50 percent (Atamanov et al., 2019). Ekiti State is a small, rural state located in southwest Nigeria. Its population is estimated at 2.4 million and 3.6% are 65 or older.

cigarette smoking. Similarly, Joubert (2015) find that an expansion of federal pension programs in Chile led to increases in alcohol consumption and transfers of workers from the formal to the informal labor market. Therefore, the net effects of income on mental health can be positive or negative, depending on whether the elderly benefit from better access to health care or harmed by changes in habits.

The effects of unconditional cash transfer policies on the wellbeing of the elderly has been considered in developing countries. For elderly citizens, Bando, Galiani, and Gertler (2016); Galiani, Gertler, and Bando (2016) study a federal government increase in old-age pensions in Mexico and Peru, respectively. They find that the additional income causally decreases both, geriatric depression and the number of paid work hours significantly. Similarly, Unnikrishnan and Imai (2020) consider an old age increase policy in India and find that it increased consumption expenditures and reduced the household labour supply of elderly women. Ambler (2016) consider how a South African pension affected the bargaining power of women. They find that eligible women are 15 percentage points more likely to be the primary decision-maker in the household.²

Recent experimental evidence emerging from studies shows that several cash transfer programs can increase mental health and well-being of adults. Haushofer and Shapiro (2016) analyze the effects of a randomized unconditional cash transfer household program in Kenya and find increases in overall levels of psychological well-being. They find a large impact on productive outcomes—livestock, durable assets, and agriculture—and on business revenue nine months after payments began. Additionally, several cash transfer programs decreased physical intimate partner violence in Mali (Heath, Hidrobo, & Roy, 2020) and Mexico (Angelucci, 2008). None of these studies directly targeted elderly populations.

To test whether the pension provided by Ekiti state had an impact on the mental health of the elderly, we follow Bando et al. (2016) and Galiani et al. (2016) and use a geriatric depression scale that measures the self-reported depression levels in a fifteen points scale.³ In addition, mental health is analyzed using the levels of life satisfaction and community integration; as well as a scale that measures risky behaviors. We study the extensive and intensive margins of elderly citizens' labor force participation. Over the year long pilot, we test these outcomes twice: at six and twelve months. Thus, we were able to estimate the lasting effects of the pensions in the short run, and after a year of time (long term). We also account for the possibility of spillovers by considering the short term effect of the program on other household members' labor force and number of household income and composition characteristics.

²The literature also finds positive spillovers on other family members. Duflo (2000) analyze the spillovers of a pension-reform program in South Africa that raised pensions for the black population and find that pensions had a positive impact on the height-for-age of girls born after the reform. Overall positive associations have, moreover, been reported for such outcomes as child enrollment (Duflo, 2003), household composition, and private transfers.

³In this scale, zero indicates no signs of depression and fifteen that individual's mental health is poor.

Our results are in line with recent literature on mental health in developing countries. We find that the program results in an decrease in depression, six months after the program’s introduction, by 0.283 points, on the 16 point scale. Additionally, we find a statistically significant eight and seventeen percent increase on self-reported satisfaction, six and twelve months after the start of the program, respectively. Elderly individuals in treated districts are 0.613 points more engaged in their communities after a year. Finally, our coefficients also suggest a reduction in the likelihood of engaging in risky behaviors such as drinking alcohol or smoking cigarettes (summarized by a composite health index) of 3.4 and 2.9 percent. In terms of the labor-market participation among elderly beneficiaries nor measures of community participation changed as a consequence of the pension. We do not find effects on the decision to work of other household members. The program does, however, have a statistically significant impact on the intensive margin of hours worked by 1.5 hours per week for the beneficiaries and approximately one hour per week for other household members.

In addition, we also examine whether the cash transfer had an impact on we find that households in treated districts have greater income and savings, compared to the control group. Intriguingly, treated households are also around half a person on average smaller.⁴ A reduction in household size could be consistent with a better bargaining position of the elderly as a consequence of their improved financial position; resulting in a similar effect to Ambler (2016). Also, younger members might have been free to leave the household once they no longer had to participate in the support of their elderly relatives. The observed increase in income and savings is also consistent with the increase in income from the transfer.

Our work is, to the best of our knowledge, the first randomized experiment to test the effect of a unconditional cash transfer on the elderly and is directly related to a more recent strand of literature that links increases in income to improved happiness and reduction in stress. Haushofer and Shapiro (2016) and Haushofer and Fehr (2014), have written specifically about the importance of mental health considerations in the design of poverty-alleviation programs. The Nigerian context provides additional insight because we included rural, poorer, and more vulnerable households.

A key challenge in public finance in developing countries is the question of how fiscal policy (such as cash transfers) can be used to address issues related to elderly poverty and their vulnerability to income shocks. A major aspect of this challenge is an assessment of the effectiveness of public-finance options in an environment of increasingly constrained budgets. The fact that the Ekiti program was implemented by a local African government points to potential expansion to other developing countries with vulnerable elderly populations.

The rest of the paper is organized as follows. In the next section, we discuss the dimension of the aging challenge in Nigeria, and describe the Ekiti State elderly

⁴Unfortunately, we do not have information about why household members left households, so we can only speculate.

pension. In section 3, we detail the research design, and data collection. The next section provides a description of the baseline and follow-up data summary statistics and the empirical strategy is shown in section 5. Sections 6 describe the empirical findings and Section 7 contains the concluding remarks.

2 Background

2.1 Elderly population in Nigeria

Since the end of the Nigerian civil war (1967-1970), the elderly (defined as those aged 65 and over) increased from 2.8 percent of the population in 1970 to 3.2 percent in 2011. This demographic transformation has largely been the result of declining fertility and increasing longevity (CIA, 2020).⁵ Thus, the aging population represents a challenge for Nigeria's ability to provide decent living conditions and improve the well-being of the elderly.

Over half of the Nigerian population lives in rural areas, and a significant percentage of these individuals are over 65. Rural-urban migration in Nigeria has been increasing at a rate of 3.5 percent per year, one of the highest rates in Africa. The major problem is that most of elderly population has worked in the informal sector all their productive lives, mainly in subsistence agriculture and, therefore, has no access to formal employment-related pensions or other retirement benefits. Moreover, alternative means of support in old age are limited because most elderly people do not have savings and are vulnerable to social and economic shocks.

The social-policy response of the Nigerian government to issues affecting the elderly has been weak. Some limited legislation has been passed to protect formal-sector workers, but it does not extend to informal-sector activities (Holmes, Samson, Magoronga, Akinrimisi, & Morgan, 2012).⁶ Given social norms and the level of informality in Nigeria, most of the elderly population has limited safety nets. For most individuals, their children or close relatives remain the most reliable source of support in old age (National Population Commission, 2011).⁷ The fact that many individuals of working age leave their homes means that an increasing number of elders have no completely reliable support system.

⁵The fertility rate dropped from 6.1 percent in 1990 to 5.2 percent in 2014 while the birth rate fell from 6 percent to 3.8 percent in the same period. Life expectancy also increased from 46.7 years in 2005 to 52.6 years population represents a key challenge for Nigeria in its capacity to provide decent living conditions and improve the well-being of the elderly.

⁶The National Policy on the Care and Well being of the Elderly in Nigeria, for example, was finalized in 2003 but successive administrations have failed to implement it.

⁷Seventy percent of the elderly reside with children or relatives, and only 10 percent live alone.

2.2 Ekiti’s pension program

This paper focuses on a program implemented in 2013 by the regional government of Ekiti, a small, rural state located in southwest Nigeria. Ekiti comprises sixteen Local Government Areas (LGA) and 163 electoral districts.⁸ Its population is estimated at 2.4 million, and most inhabitants are either public-service workers or are involved in informal-sector activities such as subsistence agriculture and local market trading. The elderly, defined as individuals 65 or older, account for 3.6 percent of the population, with a dependency ratio of 6.1 in 2006 based on the national census (National Population Commission, 2011).

Motivated by the government’s concern for the well-being of the elderly in the state, the government of Ekiti decided to implement an unconditional and non-contributory cash transfer program. The government’s concern was that the majority of elderly citizens were unable to engage in rigorous economic activities, thereby leaving them vulnerable to social and economic shocks and old-age poverty. Individuals in treated districts were informed of the program during the month of October 2013, and payment of cash benefits began in November 2013. Payments were made at designated centers monitored by the officials of the implementation agency.

Treated individuals received the transfer for twelve months between November 2013 and October 2014. Eligible beneficiaries; citizens aged 65 years who were not receiving pensions and whose monthly income was less than NGN 3,000 (\$19 USD); received a monthly cash payment of NGN 5,000 (approximately \$32 USD). The payment represents around 28 percent of the national minimum wage of NGN 18,000 at the time and 23 percent of the average monthly cost of living in Nigeria (NGN 22,094). This comes out to around one dollar per day, which is in line with the international poverty line.

3 Research Design

3.1 Randomization

To capture the effects of the policy intervention on the elderly, we designed a cluster-randomized controlled trial at the district level. Out of the 163 eligible districts, only 112 had the required number of registered elderly individuals according to the power calculations.⁹ The randomization design was then carried out using this sample 112 selected districts, 56 of which were assigned to the treatment group and the other half to the control.¹⁰

⁸Each LGA is administered by a Local Government Council and is subdivided into districts. A typical LGA has between ten and sixteen districts. At the time of our study, Ekiti was comprised of sixteen electoral districts.

⁹Power calculations were conducted using several variables from the baseline survey: total household income, *per capita* income, and *per capita* health expenditure. The intra-cluster correlation is 0.10.

¹⁰The population is highly homogeneous within a district so, to avoid contamination, every eligible individual in the district was assigned to the treatment or control group.

The random allocation of electoral districts was carried out after the baseline survey conducted between July and September 2013. The total sample consisted of 6,326 eligible individuals. The treatment group included 3,230 individuals (51.1 percent of the total), and 3,096 individuals were placed in the control group.¹¹

3.2 Data Collection

The data for our analysis came from three surveys carried out by the research team in partnership with the Government of Ekiti State. The data was collected in three stages: (i) at baseline, (ii) at first follow-up, six months following the baseline survey; and (iii) at second follow-up, six months following the first follow-up survey.

The baseline survey, conducted between July-September 2013, collected information on eligible beneficiaries and on some members of their households before the disbursement of cash transfers and before random assignment to treatment/control groups. The first follow-up survey was conducted between June-September 2014, after the program had been in operation for almost six months. As in the baseline survey, this round included a household module and an individual interview with the older adult. Finally, after a minimum of six months had elapsed since the first follow-up, a second follow-up survey was administered between April-July 2015.

All the surveys collected detailed information from the beneficiary concerning household demographics, household members' labor activities and outcomes, and household consumption. The questionnaires contained five modules: (i) the General Beneficiary information module, which collected information on the respondent's identity and relationship with the beneficiary, among other things; (ii) the Household Member module, which collected information on household members of eligible beneficiaries; (iii) the General Household module, which collected information on the household characteristics of the beneficiary; heads of household, defined as the person (beneficiary or otherwise) who provided the required information, were also interviewed; (iv) the Beneficiary module in which elderly persons were interviewed individually, including widows/widowers; and (v) the Program Implementation module, during which individuals in treated districts were interviewed in order to collect specific information regarding program implementation (e.g. how beneficiaries collected their pensions).¹²

¹¹An additional 23,517 household members of eligible beneficiaries were also interviewed at baseline in order to estimate spillovers.

¹²There are, however, several challenges to implementing rigorous impact evaluations in Sub-Saharan countries in which violence and fiscal policy constraints, among other factors, limit data collection. In fact, we encountered several problems with data collection, which was conducted by the statistical office of Ekiti State. Several baseline modules and follow-ups could not be administered because of budgetary constraints. A food diary to track food consumption could not be administered, for example, which made it impossible to estimate potential impacts on food consumption. Additionally, labor spillovers could not be identified in the second follow-up because we were not able to survey all household members. These points are important because household consumption and employment are direct mechanisms through which schemes affected beneficiaries (Haushofer and Shapiro 2016 and Angelucci and De Giorgi 2009). Our randomization, however, allowed us to make causal inferences regarding several important economic, social, and psychological

3.3 Compliance

Our research design takes advantage of the fact that districts were randomly assigned to the pension treatment. In the 56 treated districts, all individuals were granted a pension for a 12 month period. Therefore, we examine administrative records to understand whether all eligible individuals received less than 12 pensions. According to official records, every sampled individual received at least three transfers and nine percent of the individuals received less than the full year.

Besides checking how many months has a beneficiary received the cash payment, we also study the mode of collection and payments. Approximately 80 percent of the treated individuals collected the pension themselves. Around a third received the cash through home visits by government payment officials.

3.4 Attrition

As a consequence of the nature of the intervention, where it took place, and the fact that the beneficiaries were 65 or older, attrition was an important consideration. Attrition can result from relocation, migration to other cities, death, or other factors.

Table B.1 provides details of attrition in the two follow-ups. Unfortunately, the data do not allow us to establish the specific nature of attrition. Attrition was low in the treatment group (one percent of treated individuals) and higher in the control group (approximately nine percent). These attrition levels suggest that our results may be the upper bound for the effects of the pension program on the elderly population.¹³

Appendix Table B.2 provides a detailed description of the variable balance with attrition. Overall levels of attrition are low, specially given the targeted population. The distribution of the eligible beneficiaries remained balanced between the treatment and control districts even after attrition was accounted for. While the differences in individual characteristics between treatment and control districts were small and not significant, levels were also close to the baseline presented in Table 1.

3.5 Outcomes Variables

In this section, we describe the main outcome variables analyzed in this paper. We group the main set of variables into three sets: mental health, labor force participation, and indirect effects. The first two sets are comprised of variables for the elderly beneficiaries and the members of the control group. The third one includes only the rest of the household members who are not eligible for the pension program.

Mental Health

outcomes.

¹³Attrition is low in this study. Haushofer and Shapiro (2016), for example, find that 93.3% of the baseline households were surveyed at endline.

The main outcome variable in the present study measures the depression levels of the elderly population in Ekiti State. Although the baseline questionnaire does not include a mental health module, specific questions were added to both follow-up surveys. Fifteen yes or no questions were added to capture depressive symptoms and lack of self-esteem. Then, affirmative answers are summed to give individual scores that ranges from zero to fifteen. A higher score indicated a greater probability that the individual’s mental health was poor. This Geriatric Depression Scale was first developed by Sheikh and Yesavage (1986).¹⁴

The rest of the mental health variables includes a life satisfaction score, a measure of an individual’s community participation and a health risk assessment. The life satisfaction score is constructed summing over nine variables intended to asses happiness and satisfaction with aspects of life.¹⁵ Next, an additional variable, named Community Participation, was designed to measure whether beneficiaries felt integrated into their own communities. This variable is built using seven questions that aim to understand how much the individual feels included in their community. These questions are assigned values from 0 to 4 and summed to create a score. Finally, the health risk variable report how much the beneficiary drank or smoked in previous months.¹⁶

Labor Force Participation

Second, we examine the impact of the program on the beneficiary labor force participation. We first consider the intensive and extensive margin of treated individuals’ participation in the labor force. We create these variables using questions about if and how many hours they had worked during the previous six months. The questions were asked in both follow-ups. In the first follow-up, we also examined whether the other household members were employed and the number of hours worked in the past six months.

Household income and composition

To test for potential spillovers of the pension program, we examine a number of variables linked to the income and composition of treated households in the first follow-up. In particular, we consider the natural logarithm of the total income and savings. The composition is measured using the average age of all the household members and the size of households.

4 Baseline balance

Table 1 reports the balance table for the elderly population in our sample. This table shows the means and the standard deviations across treatment and control groups. We

¹⁴The complete set of questions is presented in Appendix A.

¹⁵The answers to these nine questions ranged from zero-if the answer is no- to two.

¹⁶Additional information regarding how each variable was constructed is presented in Appendix A.

also present the p-value of a joint test of equality of means across groups in Column 5. As expected from randomization, both groups are balanced in terms of age, gender, marital status, literacy, labor status, household monetary support, and health.

The beneficiaries in the treatment and control group are 78 years old on average; only about 30 percent of the sampled individuals are male. Neither difference is statistically significant. Most individuals in both groups are widows/widowers: 42.8 percent of treated individuals and 46 percent of the control group report reported this status. They are followed by individuals who reported being in a monogamous relationship (37.9 percent in the treatment group and 39.3 percent in control group) or in a polygamous relationship (13.5 and 10.8 percent, respectively). The differences are not statistically significant.

The average number of people living with the beneficiary was 3.030 among treated households and 2.91 among the control group. Individuals in the treated districts are also more likely than their counterparts in control localities to be literate (11.7 vs. 9.7 percent) and to have attended school (16.4 vs. 12 percent, $p < 0.1$).

Panel B is a list of variables that describe beneficiaries' labor characteristics. The percentage of the elderly population that works was 26.3 percent in treated districts and 24.2 percent in the control districts. Most employed beneficiaries works in subsistence farming (19.8 percent in the treatment districts and 18.9 percent in the control districts). In Table 1, we report that an additional 5.2 percent in the treatment districts and 3.9 percent in the control districts worked in non farming jobs, including as salespeople or artisans. Non-subsistence farming is insignificant among the individuals in our sample. None of these differences was statistically significant.

The panel in Table 2 displays the support given to the elderly population in the treated districts. The share of treated individuals receiving monetary support from someone in their social network is 41.8 percent, which is similar to the control group (45.5 percent). Ten percent of treated beneficiaries and 13 percent of non treated individuals receive support from a child, and approximately half of this group reported help from other relatives. The amount of support given to beneficiaries are NGN 1,001 on average in treated districts and NGN 1,082 in non treated districts.¹⁷

Finally, only a small share of the studied individuals across treatment and control groups report smoking or drinking alcohol (approximately 4.9 percent and 11.1 percent vs. 6.65 percent and 10.9 percent, respectively). We also present three self-assessment measures: an overall health level assessment, a measure of confidence in their abilities, and another that indicated to what extent subjects felt integrated into their communities. The self-reported health assessment score is 2.77 and 2.69 points on average out of a possible five in the treated and control groups, respectively. Both groups report an average confidence level score of 2.6, and an inclusion score of 2.3 points.

¹⁷We do not observe the set of outcomes in any of the follow-ups.

5 Empirical strategy

Equation 1 describes the intent-to-treat (ITT) effects of the Ekiti State pension program on the elderly six and twelve months after the start of the program:

$$Outcome_{ijt} = \alpha + \beta_1 Treated_district_j + \epsilon_{ijt} \quad (1)$$

where i denotes an individual, j denotes a district, and $t = 1, 2$ refers to either the first or second follow-up periods. Thus, y_{ijt} describes the outcome variables enumerated in Section 3.5. For example, $Outcome_{ij}$ might be the self-reported geriatric depression level of individual i who lives in the district j at the follow-up period t .

$Treated_district_j$ is an indicator variable of whether the district in which individual i lived was eligible to receive the unconditional cash transfer. The coefficient on $Treated_district_j$, β_1 , is the main coefficient of interest that captured the average difference in means between the treatment group (people who live in randomly selected treated districts) and the control group (those who do not reside in randomly selected districts). This coefficient can be interpreted as the impact of receiving an Ekiti State cash transfer. All the ITT estimates are calculated by adjusting the standard errors for clustering at the district level. ϵ_{ijt} was the error term.¹⁸

Next, Equation 2 describes the indirect effects of the intervention at the household level for the first follow-up survey:

$$Outcome_{sj} = \alpha + \gamma_1 Treated_district_j + v_{sj} \quad (2)$$

where s is the household identifier or the household members who are not the beneficiary and j is the district. Following a similar notation to the previous equation, $Outcome_{sj}$ denoted the outcome of interest at this level (such as household income level) and $Treated_district_j$ indicates of whether the household is located in a treated district. Standard errors are clustered at the district level. v_{sj} is the error term.¹⁹

5.1 Multiple hypothesis testing

In this paper we examine the impact of the Ekiti State pension program on outcomes related to the beneficiaries mental health, labor force participation, household composition and income levels of the beneficiaries. Because we are analyzing a significant number of outcomes, it is possible that the observed effects cannot be attributed to the intervention. Instead, statistically significant coefficients might be observed by chance.

¹⁸In Appendix Table 4, we undertake the analysis with the inclusion of controls. First, X_{ki} includes a variable equal to one if the beneficiary is male, another for literacy level, and another for the age of the individuals. We also include θ_k as the local government fixed effects. Every district in this study is governed by one of the 16 local governments.

¹⁹For the study of the household members who are not the beneficiary, we add individual level controls, X_{ki} , and local government fixed effects, θ_k .

To correct for the possibility, we follow the extensive literature on multiple hypothesis (see for example Gibson, McKenzie, and Stillman, 2011) and use the family-wise error rate (FWER) Hochberg (1988) correction for multiple testing. In each table we report a conservative p-value for a family of outcomes.

Alternatively, to deal with multiple outcomes, we create indexes of the dependent variables with-in the distinctive families of outcomes: mental health, own labor force participation, other household members' labor force participation and household composition.²⁰ Within each family, we normalize each variable by subtracting the mean of the control group and dividing by the standard deviation of the control group. We then follow Kling, Liebman, Katz, and Sanbonmatsu (2004) and construct a summary index for each group by estimating the average effect²¹ We then test whether each index is statistically different from zero. Statistically significant effects indicate that the program has an impact on treated individuals (Kling et al., 2004).

6 Results

In this section, we present our main findings from the ITT effects of the program (Equations 1 and 2).

6.1 Mental health

We first present the coefficients that describe the mental health effects of the pension program. As we described in the Empirical Strategy section, since we are testing a large number of outcomes, we correct all estimation coefficients for the issue of multiple inference using family-wise error rate correction.²²

Columns 1 and 2 of Table 2, report the program's significant positive effects on the mental health of those individuals who received the pension. First, depression (as measured by GDS score) decreases in the treatment group with respect to the control group by 0.283 (SE 0.135; $p < 0.1$) among beneficiaries at the six-month benchmark. The effect on the GDS does not significantly persist twelve months following implementation. A possible explanation for the lack of persistence is the existence of anticipation effects since the Ekiti State government made it public knowledge that the program would be implemented after a period of time.

²⁰The families are organized according to the type of outcome and the sample of individuals.

²¹To construct the mental health index, the geriatric depression scale and the risky behavior index are reversed such that higher numbers are assigned to lower levels of depression and risk. Therefore, the mental health index is greater for individuals who report better mental health. Across all the indexes that describe employment, the aggregation is such that lower values are associated with less hours of employment. Similarly, household outcome variables are summed over the levels.

²²The results remain unchanged when individual level controls and local government fixed effects are added, as shown by Appendix Table B.4. The effects maintained the same level of significance, and the coefficients are similar in magnitude.

Next, Table 2 also shows a significant effect of the program on beneficiaries' Life Satisfaction level for both periods in Columns 3 and 4. Six-months after the program began, treated individuals report a 0.491 (SE 0.188) points higher life satisfaction index than individuals in untreated districts. The coefficient for the twelve month regression increased to 1.024 (SE 0.290). Both estimates survive FWER correction and are significant at the five percent level.

The third variable we examine is the Community Participation Score (in Columns 5 and 6). Our estimates suggest that six month after the beginning of the program, treated individuals reported 0.046 increase in their participation. Statistical significance do not survive the FWER correction for the coefficient. Twelve months after the beginning of the program, the beneficiaries report an increase of 0.613 (SE 0.289) increase in their community participation; which is significant at the 5 percent level. Finally, treated individuals engage in less risky activities than the untreated group in the period under examination, as measured by the Risky Behavior score. The health-behavior scores significantly decreases by 0.097 (SE 0.045) and 0.068 (SE 0.046) for the six- and twelve-month periods, respectively.²³

6.2 Labor force participation

Labor force participation of the beneficiaries

Our evidence showed that beneficiaries' labor-market participation does not significantly change during the period under examination. Estimation results for our main labor variables are shown in Table 3. Columns 1 and 2 report the difference in the outcomes between control and treatment beneficiaries' labor participation, i.e. the extensive margin. These estimates are small and mostly insignificant, suggesting that the program does not affect the decisions regarding whether or not to work.

Furthermore, the intensive market is not affected by cash transfers in the short run because estimates were small and insignificant. For the twelve-month follow-up, however, the estimate more than tripled and became significant. In the second follow-up, the coefficient became -1.495 hours (SE 0.717, $p < 0.1$), indicating that beneficiaries worked an hour and a half less on average than individuals in the control group. It should be noted that the control group means were generally low such that few individuals in our sample reported holding full-time positions.

²³In Appendix Table B.3, I present the estimates for the dependent variable index analysis described in Section 5.1. All the indexes presented are statistically significant with the exception of the index for own and other household members employment in the first follow up (Columns 2 and 5). The coefficient for mental health six months and twelve months after the Ekiti State pension program began are 0.120 (0.036 SE, $p < 0.01$) and 0.153 (0.041 SE, $p < 0.01$), respectively. The beneficiary employment index coefficients are equal to -0.017 (0.023 SE) and -0.093 (0.047 SE, $p < 0.10$) in the first and second follow-up surveys. The index for other household members' employment amount to -0.036 (0.036 SE) and the household composition index coefficient is equal to -0.148 (0.060 SE, $p < 0.05$). Finally, the income index is equal to 0.125 (0.041 SE, $p < 0.01$). We conclude that the global impact of the Ekiti State pension program on the selected outcomes is positive.

Appendix Table B.5 presents the estimated regression coefficients for the same regressions with individual level controls and LGA fixed effects. As shown in this table, coefficients were consistent with those in the main specification.

Labor force participation of other household members

The estimated impact of the program on the labor outcomes of non-beneficiaries is shown in Table 6. It should be noted that these estimates were available only for the six-month survey, so they reflect only short-run spillover effects of cash transfers on beneficiaries' households. As Table 4 shows, the program does not have an impact on the likelihood that a household member would work (Columns 1 and 2).

In contrast, the next pair of columns show that the total number of hours worked decreases by 6.4 hours (SE 2.879), and the per capita level is significantly approximately one hour per week smaller (1.074 hours, SE 0.342). Thus, the Ekiti state cash transfer has an impact on the intensive margin rather than the extensive one. Finally, the coefficient for the weekly hours worked per household decreases by approximately 6.5 hours across the entire household. The statistical significance of the coefficient, however, does not survive the Hochberg (1988) multiple hypothesis correction.

6.3 Household income and composition

In Table 5, we present variables linked to the household expenses (Panel A) and household composition (Panel B). The top panel includes coefficients for the natural logarithm of the total monthly income and savings. As Column 1 shows, Ekiti program beneficiaries had higher incomes than do the control group (0.069 percentage points; SE 0.028). Second, the coefficients for the natural logarithm of household savings equal to 2.135 (SE 0.396, $p < 0.01$). The statistical significance of both coefficients survives the Hochberg (1988) correction for multiple hypothesis.

In Panel B Column 1, we show the coefficient for the size of households. Households in treated districts are 0.454 members smaller on average (SE 0.067, $p < 0.01$) than control group households. In Column 2, the coefficient of the mean household age shrinks by 0.547 years (0.465 SE). This coefficient is not statistically significant.²⁴

7 Conclusion

This study is motivated by the fact that developing countries, especially those in Africa, have large informal sectors. At the same time, traditional support systems based on family and kinship networks in Sub-Saharan Africa are very strong, and household and family members are still considered the main sources of support for the elderly. Thus, younger household members may find it costlier to accumulate human capital if they

²⁴Heterogeneous effects were examined through-out the analysis. Specifically, we considered gender and marital status. None of this results survived the multiple hypothesis correction, however.

have to allocate both pecuniary and non-pecuniary resources to the assistance of the elderly family member.

An important public-financing challenge in developing countries relates to how fiscal policies such as cash transfers can address elder poverty and the vulnerability of the elderly to shocks. Recent decades have seen expansions of social-protection programs in developing countries aimed at improving the well-being of vulnerable populations. Most such programs cater to the youngest population, and protections have been more limited for the elderly not covered by social security. More recently, some governments in developing countries have started schemes such as a non-contributory pensions targeted at elderly citizens who have no access to formal retirement pensions. It is believed that this provides a way to improve the well-being of the elderly as well as alleviate old-age poverty in a context in which the aging population is growing rapidly all over the world. This increase is largely the result of improved living conditions, higher incomes, and demographic changes.

As in other countries in Sub Saharan Africa, aging population is a significant challenge for Nigeria's capacity to provide decent living conditions and improve the well-being of the elderly. Over half of Nigerians live in the rural areas, and a considerable proportion of these are elderly. Most of the elderly population has worked in the informal sector all their productive lives, mainly in subsistence agriculture, and therefore have no access to formal employment-related pensions or other retirement benefits.

We conduct a randomized experiment to test the introduction of an unconditional pension targeted at the elderly in Ekiti State in Nigeria. Our findings show improvements in beneficiaries' mental health, quality of life, and health. Additionally, other household members reduces total hours worked, and household income dropped, and savings increased. Intriguingly, we find a reduction in number of household members.

Overall, our results suggest that the Ekiti State pension program had a positive effect on the lives of the individuals who received the cash transfer. As we have acknowledged, our data do not allow us to provide evidence of long term spillovers. However, the increase in the quality of life, the decrease in the vulnerability, and the reduction in household size are consistent with a change in the bargaining position of the elderly who were in an improved financial position as a consequence of the cash transfer. Alternatively, we hypothesize that cash transfers diminished younger members' cost of caring for the elderly, making it easier for them to leave the household while improving the conditions of those who stayed behind.

We demonstrate that demand-side interventions benefit not only the elderly who receive those benefits but also other household members. Our findings are in line with the growing recognition of the role of the older generation in the household as agents of change and development. Social protections for the elderly may produce greater spillovers in their networks by loosening budget constraints and allowing beneficiaries' family members the freedom to work less.

The Ekiti State intervention is the first of its kind to be implemented at the regional level in Nigeria and in West Africa, where properly assessing the effectiveness of public-finance options in the context of increasingly constrained budgets presents a special challenge. As our results suggest, a small but reliable and regular transfer income can help address the intergenerational transfer of poverty by improving the elderly population's overall mental health and changing the ways in which households allocate resources.

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Table 1: Balance Table - All sample

	Treatment		Control		Diff- erence	P- value
	Mean (1)	SD (2)	Mean (3)	SD (4)		
Panel A: Demographics						
Age	78.149	12.701	78.467	12.658	0.318	0.331
Male	0.306	0.856	0.315	0.849	0.009	0.674
Household size	3.030	6.258	2.910	6.192	-0.120	0.444
Monogamous status	0.379	1.353	0.393	1.340	0.014	0.671
Polygamous status	0.135	0.715	0.108	0.709	-0.027	0.131
Widowed	0.428	1.378	0.463	1.366	0.035	0.308
Literacy	0.117	0.628	0.097	0.623	-0.020	0.209
Attended School	0.164	1.004	0.120	0.995	-0.044	0.083
Panel B: Labor						
Employed	0.263	1.540	0.242	1.524	-0.018	0.582
Subsistence farmer	0.198	1.363	0.189	1.350	0.009	0.790
Non subsistence farmer	0.008	0.160	0.012	0.159	0.004	0.282
Other-non farming job	0.052	0.482	0.039	0.478	-0.013	0.276
Panel C: Social Network Support						
Receives Support	0.418	1.357	0.455	1.345	0.037	0.274
Support - Child	0.103	0.951	0.139	0.942	0.036	0.131
Support - Relative	0.067	1.034	0.097	1.024	0.030	0.239
Amount- NGN	1001.48	3679.80	1082.67	3647.41	81.19	0.380
Panel D: Health Behavior						
Smokes	0.049	0.672	0.026	0.665	-0.023	0.167
Alcohol consumption	0.111	1.025	0.109	1.014	-0.002	0.939
Self health assessment	2.769	3.515	2.686	3.478	-0.083	0.348
Confidence in own ability	2.570	6.101	2.562	6.028	-0.008	0.960
Inclusion level	2.338	4.530	2.203	4.467	-0.134	0.242
N		3286		3110		
Joint F-test						0.227

Notes: Household size indicates the number of people living in the same household as the beneficiary. ‘Literacy’ and ‘attended school’ are self-explanatory. All variables in panels B, C, and D are reported for the month prior to the interview. “Hours Worked” is reported as the average number of hours worked per day during the previous month. Amount is the number of NGN received in a month by the beneficiary. All variables in Panel D were self-reported. Health self-assessment scores ranged from 0 to 5. ***Significant at the 1 percent level. **Significant at the 5 percent level. *Significant at the 10 percent level.

Table 2: ITT Impacts of the Ekiti State Pension Program - Mental Health

	Geriatric Depression Scale		Life Satisfaction index		Community Participation Score		Risky Behavior	
	(1) 6-month	(2) 12-month	(3) 6-month	(4) 12-month	(5) 6-month	(6) 12-month	(7) 6-month	(8) 12-month
<i>Treated_district</i>	-0.283** (0.135)	-0.038 (0.166)	0.491** (0.188)	1.024*** (0.290)	0.046 (0.305)	0.613** (0.289)	-0.097*** (0.035)	-0.068** (0.027)
Hochberg-corrected P-value	0.072	0.820	0.027	0.002	0.88	0.067	0.022	0.033
Sample size	6059	6059	6059	6059	6059	6059	6059	6059
Adjusted R-Squared	0.005	0.000	0.011	0.026	0.000	0.003	0.009	0.005
Control Group Mean	9.133 (2.043)	8.583 (2.847)	6.658 (2.304)	6.000 (3.216)	21.159 (5.168)	20.892 (6.391)	0.278 (0.545)	0.228 (0.502)

Notes: Standard errors in parentheses, clustered at the district level. For all regressions, we also report the corrected P-values using the Hochberg's correction method. The Geriatric Depression Scale is constructed using a set of questions aimed at estimating the beneficiaries' depression level; higher scores were associated with greater depression. Life Satisfaction is the sum of yes/no questions related to the quality of life. Health behavior indicated the number of risky behaviors in which beneficiaries engaged in the previous six months.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table 3: Impacts of the Ekiti State Pension Program
Labor force participation

	Employed		Total Hours Worked	
	(1) 6-month	(2) 12-month	(3) 6-month	(4) 12-month
<i>Treated_district</i>	-0.003 (0.012)	0.039 (0.031)	-0.413 (0.401)	-1.495** (0.717)
Hochberg-corrected P-value	0.822	0.210	0.605	0.074
Sample size	6059	6059	6059	6059
Adjusted R-Squared	0.000	0.001	0.000	0.000
Control Group Mean	0.674 (0.469)	0.665 (0.465)	12.151 (16.469)	7.173 (11.537)

Notes: Standard errors in parentheses, clustered at the district level. For all regressions, we also report the corrected P-values using the Hochberg’s correction method. “Employed” is an indicator variable which is equal to 1 if the beneficiary is working and 0 otherwise. “Total Hours Worked” refer to the number of hours per household member.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table 4: Impacts of the Ekiti State Pension Program
Labor force participation of other Household members

	Employed	Hours Worked	Total Hours
	(1)	<i>per capita</i> (2)	Worked (3)
<i>Treated_district</i>	0.028 (0.038)	-1.074*** (0.342)	-6.411** (2.878)
Hochberg-corrected P-value	0.509	0.008	0.433
Sample size	23157	23157	23157
Adjusted R-Squared	0.001	0.001	0.003
Control Mean	0.492 (0.426)	32.253 (17.366)	65.13 (59.028)

Notes: Standard errors in parentheses, clustered at the district level. For all regressions, we also report the corrected P-values using the Hochberg’s correction method. The regression includes all those who lived in a household. “Employed” is an indicator variable of whether the individual is working or not, “Hours worked per capita” is the total number of hours worked in a week, and “Total Hours Worked” indicates the total number of hours worked by all members of a household.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table 5: Impacts of the Ekiti State Pension Program
Household Level Variables

Panel A: Household income and saving		
	ln(income) (1)	ln(Savings) (2)
<i>Treated_district</i>	0.069** (0.028)	2.135*** (0.396)
Hochberg-corrected P-value	0.030	0.000
Sample size	6132	6132
Adjusted R-Squared	0.002	0.012
Control Group Mean	9.765 (1.246)	-3.099 (3.139)
Panel B: Household composition		
	HH size (1)	Age (2)
<i>Treated_district</i>	-0.454*** (0.067)	-0.547 (0.465)
Hochberg-corrected P-value	0.000	0.240
Sample size	6132	6132
Adjusted R-Squared	0.009	0.000
Control Group Mean	4.97 (3.1481)	53.825 (8.836)

Notes: Standard errors in parentheses, clustered at the district level. For all regressions, we also report the corrected P-values using the Hochberg's correction method. In panel A, the outcome variables describe the natural logarithm of the household income and savings. In Panel B, the variables describe the average household size and age.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

A Outcome variables

We present the details of how the main outcome variables were constructed. Most of the outcome variables were composite variables constructed from the response options provided in the survey questionnaires.

Mental Health

We first consider the Geriatric Depression Scale (GDS), which quantifies depression symptoms and lack of self-esteem. This scale is based on the elderly respondent's answer to fifteen yes/no questions related to how they feel about life (whether they feel like valuable people or whether they have energy to undertake daily activities, for example). The responses were then added to give a total score for the individual. Higher scores indicated a higher probability of problems in mental health. This scale was first developed by Sheikh and Yesavage (1986) and later used by Galiani et al. (2016) and Bando et al. (2016).

The following questions were asked in the first and second follow-up surveys in order to construct the GDS:

1. In general, do you feel satisfied (happy) with your life?
2. Did you give up many activities or personal interests?
3. Do you feel your life is empty (something missing)?
4. Are you often bored?
5. Are you cheerful and in good spirit most of the time?
6. Are you afraid that something bad will happen?
7. Do you feel happy/pleased most of the time?
8. Do you feel helpless often or left aside (inattentive)
9. Would you rather stay at home than go out and do things new?
10. Do you think you have more memory related problems than most people?
11. Do you think it's wonderful to be alive?
12. Do you think your life is worthless or not important?
13. Are you a valuable person?
14. Do you have enough energy for everyday life?
15. Do you have enough money to cover your needs?

Similarly, we constructed a six-question measure of Life Satisfaction using the same methodology to sample whether subjects were satisfied with aspects of their lives: general health, themselves, the ability to perform everyday activities, personal relationships, the conditions of their homes, and relationships with family members. A higher score was associated with a higher level of satisfaction with life.

The list of questions is presented below:

1. How happy are you with your health?
2. How happy are you with yourself?
3. How happy are you with your ability to perform everyday life activities(on daily basis)?
4. How happy are you with your personal relationships?

5. How happy are you with the conditions of the place you live in?
6. How happy are you with the relationship you have with your children / grand children?
7. Considering all of the mentioned aspects, just how happy are you with your life today?
8. Are your or do you think your opinions count when taking household expenditure decisions?
9. Do you think that the relationship with your family is?

Next, we considered community participation with a variable called “Community Participation Score,” constructed as the sum of seven questions that assessed the level of integration of individuals within their communities. The set of questions included (i) whether beneficiaries felt included in their communities; (ii) whether the elderly individual participated in community activities; (iii) whether the community contributed to the well-being of the elderly individual; (iv) whether there was peer networking; (v) whether the Ekiti government provided care for the elderly individual; (vi) whether the program would continue; and (vii) whether the senior citizen was happy. Responses ranged from zero for strong disagreement to four for strong agreement.

The Health Behavior Score approximated the number and types of risky behaviors in which beneficiaries engaged in the previous six months. In particular, we focused on alcohol consumption and cigarette or other tobacco use. The variable was constructed as the sum of responses as follows: (i) between one and five points according to consumption of cigarettes, tobacco, or alcoholic beverages; and (ii) one, two, or three points for weekly spending on tobacco or alcohol. Higher values were associated with riskier behavior.

Labor force participation

We considered three beneficiary labor force participation outcomes. The first was an indicator of whether the beneficiary had worked for pay in the last six months. The second variable was the reported number of hours worked in the previous week.

We analyze the labor force participation of other household members by looking at three variables: their employment status, the number of hours worked individually, and the total hours worked per household. Employment Status was an indicator variable of whether household members had worked during the month prior to the interview. The “number of hours worked” was the average number of hours worked per week in the previous month. Finally, “total hours worked” was the arithmetic sum of the average reported hours worked by all the household members.

Household Income and expenditure

The final set of outcomes includes changes in household size (the number of individuals living in a household, including the beneficiary), the average household age and measures of total income and savings. Income was measured by summing self-reported income of all household members in the month prior to the interview. Similarly, the savings variables are estimated for the previous month. For both variables, we calculated the natural logarithm.

B Appendix Tables

Table B.1: Attrition

	Baseline (1)	Follow-ups (2)	Attrition Percent (3)
Treatment	3,110	3,071	1.254%
Control	3,286	2,988	8.764%
Total	6,396	6,059	5.268%

Notes: Data comes from the baseline and follow-up surveys.

Table B.2: Descriptive characteristics - Individuals in all periods

	Treatment		Control		Diff. P-value
	Mean	SD	Mean	SD	
Panel A: Demographics					
Age	78.149	12.701	78.467	12.658	0.331
Male	0.312	0.797	0.308	0.794	0.827
Household size	3.107	6.101	2.921	6.059	0.235
Monogamous	0.381	1.317	0.389	1.310	0.820
Polygamous	0.141	0.714	0.108	0.711	0.080
Widowed	0.426	1.379	0.468	1.371	0.248
Literacy	0.122	0.628	0.0974	0.625	0.127
Attended School	0.174	1.004	0.121	0.999	0.044
Panel B: Labor					
Employed	0.268	1.531	0.243	1.522	0.520
Subsistence farmer	0.208	1.366	0.191	1.358	0.637
Non subsistence farmer	0.007	0.161	0.012	0.160	0.226
Other-non farming job	0.053	0.483	0.039	0.481	0.268
Panel C: Support					
Receives Support	0.402	1.322	0.457	1.315	0.109
Support - Child	0.111	1.010	0.140	1.004	0.255
Support - Relative	0.068	1.042	0.098	1.036	0.252
Amount	941.68	3547.99	1085.31	3529.66	0.117
Panel D: Health Behavior					
Smoke	0.050	0.676	0.026	0.671	0.166
Alcohol Consumption	0.117	1.036	0.110	1.029	0.792
Self health assessment	2.761	3.500	2.687	3.469	0.417
Confidence in ability	2.527	6.104	2.575	6.048	0.759
Inclusion level	2.314	4.544	2.216	4.491	0.405
N	2988		3069		
Joint P-Value					0.356

Notes: Household size indicates the number of people living in the same household as the beneficiary. “Literacy” and “attended school” are self-explanatory. All variables in panels B, C, and D are were reported for the month prior to the interview. “Hours Worked” is the average number of hours worked per day during the previous month. “Amount” is the amount of NGN received in a month by the beneficiary. All variables in Panel D were self-reported. **Significant at the 5 percent level. *Significant at the 10 percent level.

Table B.3: Impact of the Ekiti State program - Indexes of dependent variables

	Mental Health 6-month (1)	Employment Beneficiary 6-month (2)	Mental Health 12 month (3)	Employment Beneficiary 12 month (4)	Employment Household (5)	Household Composition (6)	Household Income (7)
<i>Treated_district</i>	0.120*** (0.036)	-0.017 (0.023)	0.153*** (0.041)	-0.093* (0.047)	-0.036 (0.036)	-0.148** (0.060)	0.125*** (0.041)
Observations	6,059	6,059	6,059	6,059	23,157	6,132	6,132
R-squared	0.015	0.000	0.024	0.004	0.001	0.009	0.008

Notes: Standard errors in parentheses, clustered at the district level. Columns 1 through 7 contain indexes created for each family of dependent variables presented in the paper. Following Kling, Liebman, Katz, and Sanbonmatsu (2004), all indexes presented in this table are created using normalized transformations of each outcome where we subtract the mean of the control group and divide by the standard deviation of the control group. The summary index is the average of the normalized variables.

Table B.4: Impacts of the Ekiti State Pension Program with controls- Mental Health

	Geriatric Depression Scale		Life Satisfaction index		Community Participation Score		Risky Behavior	
	(1) 6-month	(2) 12-month	(3) 6-month	(4) 12-month	(5) 6-month	(6) 12-month	(7) 6-month	(8) 12-month
<i>Treated_district</i>	-0.282* (0.135)	-0.048 (0.169)	0.490** (0.186)	1.005*** (0.287)	0.032 (0.302)	0.575* (0.284)	-0.097** (0.035)	-0.067** (0.026)
Hochberg-corrected P-value	0.072	0.775	0.026	0.002	0.916	0.086	0.023	0.034
Sample size	6059	6059	6059	6059	6059	6059	6059	6059
Adjusted R-Squared	0.007	0.011	0.018	0.037	0.011	0.027	0.009	0.005
Control Group Mean	9.133 (2.043)	8.583 (2.847)	6.658 (2.304)	6.000 (3.216)	21.159 (5.168)	20.892 (6.391)	0.278 (0.545)	0.228 (0.502)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LGA Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Standard errors in parentheses, clustered at the district level. For all regressions, we also report the corrected P-values using the Hochberg's correction method. The Geriatric Depression Scale was constructed using a set of questions aimed at estimating the beneficiaries' depression level; higher scores are associated with greater depression. Life Satisfaction was the sum of yes/no questions related to the quality of life. Health behavior indicated the number of risky behaviors in which beneficiaries engaged in the previous six months. Controls include the gender, age and literacy levels of the studied individuals

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table B.5: Impacts of the Ekiti State Pension Program with controls
Labor force participation

	Employed		Total Hours Worked	
	(1) 6-month	(2) 12-month	(3) 6-month	(4) 12-month
<i>Treated_district</i>	-0.009 (0.011)	0.019 (0.015)	-0.393 (0.352)	-1.258* (0.693)
Hochberg-corrected P-value	0.916	0.225	0.908	0.225
Sample size	6060	5747	6060	5467
Adjusted R-Squared	0.225	0.217	0.121	0.053
Control Group Mean	0.674 (0.469)	0.684 (0.465)	12.151 (16.469)	7.309 (11.604)
Controls	Yes	Yes	Yes	Yes
LGA Fixed Effects	Yes	Yes	Yes	Yes

Notes: Standard errors in parentheses, clustered at the district level. For all regressions, we also report the corrected P-values using the Hochberg’s correction method. “Employed” refers to whether the beneficiary reports working and “Hours Work” refers to the weekly number of hours worked. Control variables included age, gender, and literacy of the beneficiaries.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table B.6: ITT Impacts of the Ekiti State Pension Program With Controls
Other Household members - Labor Force

	Employed (1)	Hours Worked <i>percapita</i> (2)	Total Hours Worked (3)
<i>Treated_district</i>	0.023 (0.038)	-1.145*** (0.347)	-6.542** (2.871)
Hochberg-corrected P-value	0.509	0.008	0.433
Sample size	23157	23157	23157
Adjusted R-Squared	0.001	0.001	0.003
Control Mean	0.492 (0.426)	32.253 (17.366)	65.13 (59.028)
Controls	Yes	Yes	Yes
LGA Fixed Effects	Yes	Yes	Yes

Notes: Standard errors in parentheses, clustered at the district level. For all regressions, we also report the corrected P-values using the Hochberg’s correction method. “Employed” is an indicator variable of whether the individual was working or not, ‘Hours worked per capita’ is the total number of hours worked in a week, and “Total Hours Worked” indicates the total number of hours worked by all members of a household. Control variables included age, gender, and literacy of the beneficiaries.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table B.7: Impacts of the Ekiti State Pension Program
Household Level Variables

Panel A: Household income and saving		
	ln(income) (1)	ln(Savings) (2)
<i>Treated_district</i>	0.007*** (0.066)	0.093*** (0.031)
Hochberg-corrected P-value	0.030	0.099
Sample size	6059	6059
Adjusted R-Squared	0.002	0.012
Control Group Mean	9.765 (1.246)	-3.099 (3.139)
Panel B: Household composition		
	HH size (1)	Age (2)
<i>Treated_district</i>	-0.426*** (0.066)	0.024 (0.596)
Hochberg-corrected P-value	0.000	0.240
Sample size	6059	6059
Adjusted R-Squared	0.009	0.000
Control Group Mean	4.97 (3.1481)	53.825 (8.836)
Controls	Yes	Yes
LGA Fixed Effects	Yes	Yes

Notes: Standard errors in parentheses, clustered at the district level. For all regressions, we also report the corrected P-values using the Hochberg's correction method. In panel A, the outcome variables describe the natural logarithm of the household income and savings. In Panel B, the variables describe the average household size and age. Control variables included age, gender, and literacy of the beneficiaries.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.