THE IMPACT OF SOCIAL CASH TRANSFERS ON YOUNG ADULTS LABOR FORCE PARTICIPATION, SCHOOLING, AND SEXUAL BEHAVIORS IN SOUTH AFRICA

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Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
DOCTOR OF PHILOSOPHY/ECONOMICS
July, 2012

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CHAPTER I

THE IMPACT OF SOCIAL CASH TRANSFERS ON LABOR FORCE PARTICIPATION AND SCHOOLING OF YOUNG ADULTS IN SOUTH AFRICA

I.1 Introduction

Over the past two decades, social cash transfers have emerged in many developing countries as one of the main social protection instruments used by governments or non-governmental organizations (NGOs) to reduce poverty and vulnerability (Barrientos and Hulme, 2008; Department for International Development, 2011). Usually, these transfers are non-contributory payments of cash made available to individuals or households by their government or NGOs. The transfers can be conditional or unconditional[1]. Also, the transfers explicitly target individuals or groups of individuals, i.e. poor households, women, children or the elderly who are often considered to be the most vulnerable (Samson, 2009; Carmona, 2009; Woolard and Leibbrandt, 2010). Over the last decade, researchers have increasingly focused on understanding the different channels through which social cash transfers help alleviate poverty and protect the most vulnerable (Department for International Development, 2011). Three main themes have dominated this strand of research. The first theme investigates the effects of social cash transfers on household investments in human capital, including children's health and

[1] Conditional cash transfers require recipient households to use educational or health services for the benefit of children living in the household (e.g. Mexico's Oportunidades require 85 percent children's school attendance rates) (World Bank, 2009). In contrast, unconditional cash transfers do not require recipient households to take any action but it usually targets school age or younger children.

educational outcomes (e.g. Duflo, 2003; Olinto, 2004; Samson et al., 2004; Adato and Bassett, 2008; Paxson and Schady, 2008; Baird et al., 2010). The second theme is interested in the role that social cash transfers play in mitigating the effects of negative income shocks on household consumption and decisions on investment in human capital (e.g. Subbarao, 2003; Dercon, 2006). Finally, a third theme focuses on how social cash transfers can promote gender equality (e.g. World Bank, 2008; Holmes and Jones, 2010). I build on these previous researches and use the South Africa's Old Age Pension (OAP) program to investigate the effects of social cash transfers on labor force participation and schooling of African young adults.

South Africa's OAP program was implemented in 1928 as a safety net for Whites and Colors who did not have private pension for retirement. It was later extended to Africans and Asians in 1944 with limited and discriminatory entitlement standards and benefits (Sagner, 1998). As the apartheid era came to an end, there was pressure on the South African government for racial[2] parity in pension eligibility and benefits (Bertrand, Mullaninathan, and Miller, 2003). A law was enacted in 1996 to abolish any form of discriminatory practice towards pensioners from any racial group (Sagner, 2000; Seeking 2003; and Seeking and Nattrass, 2005).

Since OAP is means-tested on an individual's income and assets, almost all Whites as well as richer Africans were excluded from this scheme, leaving majority of the African population to benefit the most (Case and Deaton, 1998). Thus, the main goal of OAP since its reform has been to alleviate poverty and improve the living standard of elderly South Africans. As a result of its generous payout of 370, 470, 1080, and 1140 rand that is twice the median per capita monthly household income for Africans in 1993, 1998, 2010, and 2011 respectively (Case and Deaton, 1998; Duflo, 2003; Woolard and Leibbrandt, 2010; South Africa Social Security Agency, 2011/12), there have been extensive studies by researchers and policy makers to

[2] The official racial categories in South Africa include: Africans (Blacks), Whites, Colored, and Asians (Indians) (Statistics South Africa, 2007).

understand the behavioral outcomes due to these large cash transfers. These studies focused on poverty and resource allocation (Case and Deaton, 1998; Maitra and Ray, 2003a; and Jensen, 2003); child welfare (Duflo, 2003 and Edmonds, 2006); labor force participation **(**Bertrand et al., 2003; Lam, Leibbrant and Ranchhod, 2005; Posel et al., 2006; Ranchhod, 2006; Sienaert, 2008); and household composition (Sagner, 2000; Klasen and Woolard, 2000; Wittenberg and Collinson, 2005; Edmonds et al., 2005).

Despite the end of apartheid rule and the promise of a new political and economic prosperity and equality for all South Africans, many South Africans still live in poverty and unemployment is an important socio-economic issue facing the government. Using the narrow and broad definitions of unemployment, 26% and 40% of the current labor force is unemployed, respectively (Banerjee et al., 2008). This unemployment rate is particular high among Africans who have the largest unemployment rate among all racial groups. In 1995, Africans accounted for 36.9% of the unemployment rate and it increased in 2003 to 48.8% (Kingdon and Knight, 2007). Also, young adults in South Africa are facing similar challenges of high unemployment in the labor market due to their lack of previous work experience, less educational attainment, and poor health status due to HIV/AIDS epidemic (Altman, 2007). Young adults aged 18-24 experienced 20% decline in employment from December 2008 to December 2010 and accounted for 30% of the overall unemployment in South Africa (National Treasury, 2011). African young adults accounted for 89.8% of unemployment (aged 15-19, 20-24, and 25-34 experienced 8.1%, 32.0%, and 49.7%, respectively) across all racial groups in South Africa (Statistics South Africa, 2002).

Previous studies on the effect of OAP on African prime age adults labor force participation has produced mixed results (e.g. Bertrand et al., 2003; Posel et al., 2006). Bertrand et al. (2003) using a representative rural household sample data in 1993 found that OAP reduced prime age adults aged 16-50 labor force participation especially for male living with female pensioners. On the other hand, Posel et al., (2006) using the same data as Bertrand et al. (2003)

and redefining household to include non-residents found that OAP had no negative effect on prime age adults aged 16-50 labor force participation; rather, households with pension recipients had positive impact on job search especially among unemployed female household members.

In term of human capital investment, Duflo (2003) found that female pensioners had a larger impact on the anthropometric status of girls than boys. The puzzling finding of Duflo (2003) is that the effect of OAP is an all-female channel; that is, the effect channel emerged from the grandmothers to mothers to the granddaughters and there is no impact at all if the pensioners are male. However, one possible explanation of this outcome is that females receive their pension earlier than males (females receive their pension at age 60, whereas males receive them at age 65) and females live longer (Duflo, 2003). Edmonds (2006) investigating the impact of OAP on child labor and schooling decision found that OAP reduced child labor but increased their schooling attendance to nearly 100%, especially for rural boys who were living with an elder male pensioner. Similar results were observed for elder females who are nearly eligible suggesting that males are at a greater credit constraint than are females. Thus, OAP reduced cash constraints, which allowed poor families to invest in their children educations as well as allowing their children to work less.

This paper investigates the impact of OAP on labor force participation and schooling of African young adults in South Africa. That is, to what extent does OAP impact labor force participation and school enrollment of African young adults? Does the effect of OAP differ by gender of the pension recipients? Does the effect of OAP differ by gender of the African young adults?" Answers to these questions will shed light on the impact of OAP household recipients' behavior and particularly how OAP affects labor force participation and schooling of African young adults. The main contribution of this paper is to simultaneously investigate the labor force participation and schooling of African young adults aged 14-22 in post-apartheid South Africa as they move through school and enter into the labor market. This paper differs significantly from previous studies which focused on the impact of OAP on child labor and

school attendance outcomes for aged 5-17 (Edmonds, 2006), children anthropometric status aged 0-5 (Duflo, 2003), and prime age adults labor force participation aged 16-50 (Bertrand et al., 2003; Posel et al., 2006; Sienaert, 2008).

Using Regression Discontinuity Design (RDD) identification strategy, I find that any OAP, OAPFemale, and OAPMale receipts did not have any significant impact on labor force participation and schooling of young adults (females and males) aged 14-20. In contrast, OAPFemale receipts have significant and negative impact on labor force participation of young adult males aged 21-26. Although, OAPFemale receipts have positive impact on school enrollment of young adult males aged 21-26, these estimates were not statistically significant. On the other hand, OAPMale receipts have positive and significant impact on labor force participation as well as negative and significant impact on school enrollment of young adult males aged 21-26.

I.2 The South African Old-Age Pension Program

South Africa's non-contributory state pension was introduced and restricted in 1928 to Whites and Colors as a safety-net for those who did not have private pensions as they reached retirement. This non-contributory state pension was extended to Africans and Asians in 1944 with limited and discriminatory entitlement standards and benefits (Sagner, 1998). Discriminatory entitlement benefits were withdrawn from Africans who had income larger than 700 rand compared to Whites 2250 rand, and Whites had 10 times the level of benefits as compared to Africans (Duflo, 2003). Also, White pensioners received their pension through mail compared to Africans who had to be at a particular location in order to receive their pension and it was sometimes impossible for Africans to receive their pension if they lived in far rural areas of South Africa. Moreover, the government manipulated Africans' age data to exclude individuals from the computer; thus, reducing the number of eligible pensioners as well as the cost associated with the pension program (Lund, 1993).

OAP is funded through taxation and it is means-tested on an individual's income and assets[3]. The maximum benefit in 1993 was 370 rand per month and that increased in 1998 to 470 rand per month (Case and Deaton, 1998). In 2010 and 2011, OAP payout increased to 1080 and 1140 rand per month (Woolard and Leibbrandt, 2010; South Africa Social Security Agency, 2011/12).[4] This scheme mainly targets poor individuals and age is the primary instrument used to determine pension eligibility. Hence, women over 60 years old and men over 65 years old are eligible for the pension[5]. About 14 percent of White women and 7 percent of White man receive OAP. By contrast, 80 percent of African women and 77 of African men reported receiving OAP (Case and Deaton, 1998).

I.3 Data and Descriptive Statistics

The data used for this paper is the Cape Area Panel Study (CAPS)[6]. CAPS is a longitudinal study of the lives of a representative sample of young adults aged 14-22 that live in the Cape Town Metropolitan area of South Africa. The aim of this longitudinal study was to document the transition from adolescents to adulthood in post-apartheid South Africa. Particularly, the survey intended to track the adolescents as they move through school, enter into the labor market, move into their own households, and start their own families.

[3] Means-testing only depend on elderly income and assets and not on the income of other household members. See Case and Deaton (1998) for more detail on how the means-test is implemented.

[4] These incomes are about half the average African household income and twice the median per capita income among Africans.

[5] Although age is the primary instrument used to determine pension-eligible individuals, individuals who are closer to this eligibility criterion may increase their reported age to receive the pension benefits. The system is not 100% perfect but there is little evidence of widespread cheating on age.

[6] The Cape Area Panel Study Waves 1-2-3-4 were collected between 2002 and 2006 by the University of Cape Town and the University of Michigan, with funding provided by the US National Institute for Child Health and Human Development and the Andrew W. Mellon Foundation.

There were approximately 5,250 households and 4,752 young adults who were randomly selected and interviewed from 2002-2006. In wave 1 (2002), all young adults and their household members as well as other households that did not have members between 14-22 years old were interviewed. Wave 2a and 2b re-interviewed a third and two-thirds of the young adults in Cape Town Metropolitan area in 2003 and 2004, respectively. In wave 3 (2005), the full young adults sample and approximately 2,000 co-resident parents of young adults were interviewed. In wave 4 (2006), the full young adults sample and a sample of older adults and all children born to female young adults were also interviewed. There were up to three young adults who were interviewed in every household.

The drawback of this panel survey as any other panel survey is attrition over time. The overall response rates of young adults in wave 2, 3, and 4 were 83%, 74%, and 72%, respectively. The attrition rate was the largest for the White young adults, followed by Africans and Colors. Successful response rates in wave 4 for Whites, Africans, and Colors were 41.8%, 74.2%, and 79.5%, respectively. The main reason given for non-response in African households was moving within South Africa. I used wave 1 (2002), wave 3 (2005), and wave 4 (2006) for my descriptive statistics and empirical analyses. Also, I used inverse probability weighting (IPW) method to correct for potential biases from sample attrition (Wooldridge, 2001). Table 1 presents household and individual level descriptive statistics, by reported OAP status and gender-specific age eligibility. Membership in a household was defined as living in the household for more than 15 days of the last 30 days.

In table 1, panel 1 shows that household size, children under 5 years old, children 6-15 years old, and age of oldest household member are larger for pension recipient compared to non-pension recipient households. Female pensioners had larger household size and more children 6-13 years old compared to male pensioners. On the other hand, male pensioners were slightly older and had more children under 5 years old compared to female pensioners. I observe from table 1 that females who reported not receiving OAP but who are eligible are just around the cut

off age of 60. This means that they are turning 60 or just close to turning 60. There were 37 females who reported not receiving OAP but who are eligible. The same observation can be made for males older than 65 who reported not receiving OAP. They are just on average around the cut off eligibility age of 65; thus, they may have just turned 65 or are close to turning 65. There were 26 males who reported not receiving OAP but who are eligible. In total, there were 61 individuals (females and males) who reported not receiving OAP but who are eligible and they constitute 1.72% of the data. Also, 11 individuals reported receiving OAP even though they are not eligible and they constitute 1.97% of the data.

Table 1: Household Descriptive Statistics: Mean (Standard Deviation)

OAP Receipt Recorded:	No				Yes			
Age-Eligible Members:	None	Yes: Female(s) only	Yes: Male(s) only	Yes: Both	None	Yes: Female(s) only	Yes: Male(s) only	Yes: Both
Panel 1: Household Composition								
Household size	6.068	7.730	6.923	7.397	6.091	8.154	7.041	7.961
	(2.655)	(3.421)	(2.111)	(2.960)	(1.375)	(3.598)	(2.520)	(3.459)
Children under 5 years old	0.646	0.622	0.654	0.635	0.273	0.831	0.938	0.849
	(0.857)	(0.758)	(0.562)	(0.679)	(0.467)	(1.054)	(1.289)	(1.098)
Children 6-15 years old	0.887	1.027	0.808	0.937	0.636	1.091	0.835	1.047
	(0.984)	(1.013)	(0.939)	(0.982)	(0.809)	(1.127)	(1.038)	(1.115)
Age of oldest household member	44.642	60.838	65.500	62.762	59.818	71.165	71.309	71.190
	(10.271)	(1.280)	(0.50	(2.532)	(1.779)	(7.998)	(5.593)	(7.630)
Panel 2: Young Adults								
Employed	0.245	0.228	0.423	0.311	0.333	0.264	0.250	0.262
	(0.430)	(0.426)	(0.504)	(0.467)	(0.500)	(0.441)	(0.435)	(0.439)
Age	19.875	19.270	21.346	20.127	20.727	19.859	20.402	19.953
	(3.051)	(3.517)	(3.149)	(3.499)	(3.717)	(3.184)	(2.882)	(3.138)
In school	0.608	0.621	0.533	0.591	1.000	0.626	0.554	0.613
	(0.488)	(0.494)	(0.516)	(0.497)	(0.000)	(0.485)	(0.500)	(0.488)
Matric completed	0.205	0.135	0.160	0.145	0.091	0.200	0.149	0.191
	(0.403)	(0.347)	(0.374)	(0.355)	(0.302)	(0.400)	(0.358)	(0.393)
Observations	3554	37	26	61	11	461	97	558

Table 1, panel 2 shows young adults' characteristics such as employment, age, school enrollment, and Matric completed (Grade 12). Pension-recipient households have more employed young adults on average (26.2%) than non-pension-recipient households (24.5%). Young adults in pension-recipient households were slightly older but they were on average less

likely to complete their Matric compared to young adults in non-pension recipient households. Also, more young adults in pension-recipient households were enrolled in school (61.3%) compared to young adults in non-pension-recipient households (60.8%). In addition, more young adults living with female pensioners were more employed, had higher school enrollment status, and completed their Matric compared to young adults living with male pensioners.

I.4 Empirical Model and Identification Strategy

To evaluate the impact of OAP on labor force participation and schooling of young adults, I will ideally want to estimate the following Ordinary Least Squares (OLS) regression:

$$Y_{ih} = \alpha_0 + \alpha_1 OAP_h + \alpha_2 X_{ih} + \varepsilon_{ih} \quad (1)$$

In equation (1), i indicates individual young adult in household h. The variable Y_{ih} is a dummy variable representing the outcome of interest (labor force participation and school enrollment), OAP_h is a dummy variable indicating whether a household member receives pension, X_{ih} is a vector of young adult and household characteristics, and ε_{ih} is the error term. However, the OLS estimates of equation (1) will be biased if there is a systematic difference between pension-receiving and non-pension receiving households (e.g. pension-receiving households are older on average compared to non-pension receiving household) (Bertrand et al., 2003; Sienaert, 2008). To address this issue, OAP identification in the survey made it possible to employ RDD to estimate the causal effect of OAP on labor force participation and schooling of young adults.

RDD was first introduced by Thistlethwaite and Campbell (1960) and later implemented by economists in the early 1990s to estimate program effect in a wide variety of economic contexts (Lee and Lemieux, 2009). The goal of this paper is to examine the causal effect of OAP on labor force participation and schooling of young adults. This estimation is made possible by age-eligibility rule of OAP for women and men at 60 and 65 years old, respectively. The causal effect is estimated as the discontinuity of labor force participation or schooling of young adults at the threshold of pension-eligibility age at 60 or 65 years old, respectively. The idea is that in the absence of OAP, age of oldest woman or man in the household will impact labor force

participation or schooling of young adults in a continuous fashion and ascribing any jump away from the trend at age 60 or 65 to the pension.

Also, this approach relies on the idea that households around the cutoff points have similar characteristics except for the pension status. RDD requires mild assumptions and its inferences are potentially more credible compared to other non-experimental approaches such as difference-in-differences or instrumental variables (Lee and Lemieux, 2009). Moreover, Lee (2008) proved that there is no need to assume that isolated treatment variation is "as good as randomized" but randomized variation occurs because the agents are unable to precisely manipulate or control the assignment variable near the known cutoff point. Thus, given the age-eligibility rule for receiving OAP, evidence from descriptive statistics in table 1 of "age of oldest household member" and figures 1, 2, and 3 (see Appendix) confirm that I can exploit sharp RDD in the "treatment" (labor participation or school enrollment) as a function of "OAP receipts" or "age of oldest household member". Also, figures 4 and 5(see Appendix) confirm the effect of the outcomes (labor force participation or school enrollment) around the cutoff age of oldest household member. Although these figures provide some confirmation regarding the nature of the data in term of assignment and treatment variables, they are not enough to establish any causal effect of OAP on labor force participation and school enrollment of young adults.

To quantify this causal effect, I estimated sharp RDD as follow:

$$Y_{ih} = \beta_0 + \beta_1 OAP_h + \beta_2 M_{ih} + \beta_3 M_{ih}^2 + \beta_3 M_{ih}^3 + T_t + \varepsilon_{ih} \quad (2)$$

In equation (2), i indicates individual young adult in household h. The variable Y_{ih} is a dummy variable representing the outcome of interest (labor force participation and school enrollment), OAP_h is a dummy variable indicating whether a household member receives pension, M_{ih} is age of oldest household member, M_{ih}^2 is age-squared of oldest household member, M_{ih}^3 is age-cubed of oldest household member, T_t is wave 1, 3, and 4 (2002, 2005, and 2006) respectively, and ε_{ih} is the error term.

I.4.1 Internal Validity

One of the underlying assumptions of RDD is that as a result of local random assignment "age-eligibility rule of OAP" (women at 60 and men at 65years old), individuals should not be able to manipulate the assignment variable. Although, I cannot test this directly, a graphical representation of the raw data using different baseline covariates as outcome variables against assignment variable "age-eligibility rule of OAP" can provide some validity to RDD that there is no discontinuity around the neighborhood of the cutoff point. Figures 6 to 12 (see Appendix) validate this assumption using baseline covariates. These covariates include household characteristics (Household size, Children under 5 years old, Household head educated, Marital status of household member) and household assets (Household ownership of home, Life insurance, and Washing machine).

By construct, RDD does not need any covariates due to the assumption that around the cutoff points, households exhibit similar characteristics and as such assignment to treatment is independent of covariates and the estimate of the treatment effect is consistent (Lee and Lemieux, 2009). To ensure that my results are not sensitive to the inclusion of covariates, I estimated the following sharp RDD equation:

$$Y_{ih} = \beta_0 + \beta_1 OAP_h + \beta_2 M_{ih} + \beta_3 M_{ih}^2 + \beta_3 M_{ih}^3 + X_{ih} + T_t + \varepsilon_{ih} \quad (3)$$

In equation (3), i indicates individual young adult in household h. The variable Y_{ih} is a dummy variable representing the outcome of interest (labor force participation and school enrollment), OAP_h is a dummy variable indicating whether a household member receives pension, M_{ih} is age of oldest household member, M_{ih}^2 is age-squared of oldest household member, M_{ih}^3 is age-cubed of oldest household member, X_{ih} is a vector of young adult and household characteristics, T_t is wave 1, 3, and 4 (2002, 2005, and 2006) respectively, and ε_{ih} is the error term.

I.4.2 Attrition: Test and Correction

While the 2002 sample was drawn randomly from the household that had young adults aged 14-22, attrition across waves as the survey progress is evidence. The overall response rates of young adults in wave 2, 3, and 4 were 83%, 74%, and 72%, respectively. The attrition rate was the largest for the White young adults, followed by Africans and Colors. Successful response rates in wave 4 for Whites, Africans, and Colors were 41.8%, 74.2%, and 79.5%, respectively. I only focus on African young adults and their households in this study. The main reason given for non-response in African households was moving within South Africa.

Table 2 presents the summary statistics by attrition using 2002 data. On average, stayers live in larger households, stay in households with more pension recipients, are less likely to complete Matric, are younger, show better attitude and behavior during the survey interview, and are in households with more young adult males. Testing for differences between the two samples of stayers and leavers, the p-value is statistically significant at 1% for the following variables: OAP, household size, and young adults' age. It appears that young adults in my analysis sample; that is, stayers are not random sample from the original sample in 2002. Therefore, I need to correct for any potential attrition bias that may underestimate or overestimate the effects of each factor on labor force participation or school enrollment of young adults. I use inverse probability weighting (IPW) method to correct for potential biases from sample attrition (Wooldridge, 2001). This procedure only requires the data that I have and differ from the traditional Heckman solution which require an instrumental variable that will be observable for the entire sample. The Heckman solution may not be feasible because it is difficult to find an instrumental variable that is observable throughout the entire sample (Mu, 2003).

Table 2: Descriptive Statistics in 2002 by Attrition: Mean (Standard Deviation)

	Stayers	Leavers	(1)-(2)
Variables	(1)	(2)	P-value
OAP	0.139	0.088	0.000
	(0.346)	(0.284)	
Household size	5.969	5.095	0.000
	(2.808)	(2.656)	
Young adults age	17.854	18.365	0.000
	(2.515)	(2.438)	
Young adults gender	0.444	0.420	0.262
	(0.497)	(0.494)	
Young adults completed Matric	0.103	0.124	0.125
	(0.304)	(0.330)	
Attidude of respond	2.930	2.912	0.160
	(0.262)	(0.297)	
Bahavior of respond	2.810	2.800	0.609
	(0.421)	(0.441)	
Observations	1201	939	

Notes: Stayers are young adults who stayed in all 3 waves since 2002 survey. Leavers are young adults who were in 2002 survey but dropped out either in 2005 or 2006 survey. P-value tests the null hypothesis that the variable mean is not different across the two samples. Attitude=1 if young adult's response is hostile; Attitude=2 if young adult's response is neither hostile nor friendly; Attitude=3 if young adult's response is friendly. Bahavior=1 if young adult's response is not at all attentive; Bahavior=2 if young adult's response is somewhat attentive; Bahavior=3 if the young adult's response is very attentive.

There are two stages that are required in order to employ the IPW procedure. In the first stage, at *t* (*t*=2005, 2006), an attrition probit model is estimated with young adults still in the sample at *t*-1[7]. Given this sample, some young adults are lost to attrition at time *t*, and some are not. Thus, the conditional probit model is estimated as follow:

$$\pi_{it}(s_{it} = 1[x_{it}\theta_t + \mu_{it}]|s_{it-1} = 1, s_{it-2} = 1, \dots, s_{i1} = 1) \quad (4)$$

where π_{it} is the probability that young adult *i* stay in survey *s* at time *t*=2005, 2006 and the error term is normally distributed as $\mu_{it}|x_{it} \sim Normal\ (0,1)$. However, since the sample may not be representative of the population in the original sample in *t*-1=2002, the IPW procedure cannot be used directly to mitigate the attrition bias associated with this sample. Using the joint probabilities computed from these predicted conditional probabilities can provide consistent estimators when using IPW procedure (Wooldridge, 2002d). In the second stage, these predicted

[7] The IPW procedure notations closely follow Mu (2003).

conditional probabilities from equation (4) are used to compute the joint probabilities that young adult *i* stay in survey *s* at *t*=2005, 2006. Therefore, the joint probability is computed as follow: $\hat{p}_{i2005}(s_{i2002}=1, s_{i2005}=1) = \hat{\pi}_{i2002} * \hat{\pi}_{i2005}$, $\hat{p}_{i2006}(s_{i2002}=1; s_{i2005}=1; s_{i2006}=1) = \hat{\pi}_{i2002} * \hat{\pi}_{i2005} * \hat{\pi}_{i2006}$. Hence, each young adult *i* at time *t* is assigned a weight, $w_{it=}\frac{1}{\hat{p}_{it}}$.

Table 3 presents the probit estimates of the conditional probabilities of young adults being in the survey in 2005 and 2006 (see Appendix). These estimates are conditional on household pension recipients, household size, young adults' demographic characteristics, and young adults' response to the survey. I found that OAP, household size, young adults age, gender, and attitude during the survey are statistically significant at 1% and 5% significance levels in explaining the probabilities of being in the survey. For example, young adults who are living with a pension recipient in 2002 are likely to stay in the survey in 2005. Also, young adults who attitude was not hostile but friendly in 2002 are most likely to remain in the survey in 2005 and 2006. Moreover, the larger households size in 2002 increase the probability of household members to stay in the survey in 2005.

I.5 Results

The results from estimating equation (2) are presented in table 4a, 5a, 6a, and 7a. In table 4a, columns 1, 2, 5, 6, 9, and 10 present the effect of any OAP, OAPFemale, and OAPMale receipts on labor force participation of young adult females and males without correcting for attrition. In contrast, columns 3, 4, 7, 8, 11, and 12 present the effect of any OAP, OAPFemale, and OAPMale receipts on labor force participation of young adult females and males correcting for attrition. Tables 5a, 6a, and 7a follow the same format as table 4a. Also, tables 4b, 5b, 6b, and 7b present results from estimating equation (3) using similar format as tables 4a-7a as part of the internal validity of RDD controlling for baseline covariates such as household characteristics and

assets as a robustness check as well as a way to reduce sampling variability in the estimator[8]. In addition, I divided the sample by age (14-20 and 21-26) to focus on young adults who are most likely to either be employed or in school. In South Africa, there are less than 3% of young adults aged 15-19 who are in the labor force because they are most likely in school. Also, those who are aged 20-24 account for 14% of the labor force but they are 27% unemployed (Altman, 2007).

In table 4a, results show that any OAP, OAPFemale, and OAPMale receipts have no significant impact on labor force participation of young adults (females and males) aged 14-20. In table 4b, I show that the estimates shown in table 4a are robust to the inclusion of additional controls. Any OAP, OAPFemale, and OAPMale receipts have no significant impact on labor force participation of young adults (females and males) aged 14-20.

The results from estimating equation (2) are presented in table 5a. OAPFemale receipts reduce the probability of labor force participation of young adult males aged 21-26 by 15.7% without attrition correction at the 10% significance level; however, this result became insignificant after correcting for attrition. In contrast, OAPMale receipts increase the probability of labor force participation of young adult males by 9.9% at the 10% significance level after correcting for attrition. I show that the estimates shown in table 5a are robust to the inclusion of additional controls in table 5b. Results indicate that OAPFemale receipts reduce the probability of labor force participation of young adult males aged 21-26 by 20.1% and 18.7% without and with attrition correction at the 5% significance level, respectively. On the other hand, OAPMale receipts increase the probability of labor force participation of young adult males aged 21-26 by 13.3% and 14.3% without and with attrition correction at the 10% and 5% significance levels, respectively.

In table 6a, results show the effect of any OAP, OAPFemale, and OAPMale receipts on the probability of school enrollment of young adults (females and males) aged

[8] Tables 4a-7b results are presented in the appendix section.

14-20. Results indicate that any OAP, OAPFemale, and OAPMale receipts have no significant impact on school enrollment of young adults (females and males) aged 14-20. In table 6b, I show that the estimates shown in table 6a are robust to the inclusion of additional controls. Any OAP, OAPFemale, and OAPMale receipts have no significant impact on school enrollment of young adults (females and males) aged 14-20.

In table 7a, results indicate that OAPMale receipts reduce the probability of school enrollment of young adult males aged 21-26 by 12.0% and 12.8% without and with attrition correction at the 10% and 5% significance levels, respectively. Inclusion of baseline covariates in table 7b shows that OAPMale receipts reduce the probability of school enrollment of young adult males by 17.5% and 18.4% at 5% and 1% significance levels, respectively.

I.6 Conclusion

This paper presents evidence of the impact of any OAP, OAPFemale, and OAPMale receipts on labor force participation and school enrollment of young adult males and females aged 14-20 and 21-26. Using RDD identification strategy, I find that any OAP, OAPFemale, and OAPMale receipts did not have any significant impact on labor force participation and school enrollment of young adult females and males aged 14-20. In contrast, OAPFemale receipts have significant and negative impact on labor force participation of young adult males aged 21-26. Although, OAPFemale receipts have positive impact on school enrollment of young adult males aged 21-26, these estimates were not statistically significant. On the other hand, OAPMale receipts have positive and significant impact on labor force participation of young adult males aged 21-26 but negative and significant impact on school enrollment of young adult males aged 21-26.

These results answer my earlier research questions: Does OAP impact labor force participation and school enrollment of African young adults? Does the effect of OAP differ by gender of the pension recipients? Does the effect of OAP differ by gender of the African young adults?" The answer is yes, OAP significantly impact labor force participation and school

enrollment of African young adults. Also, the effects of OAP differ by gender of the pension recipients as evidence provided by these results. These results also indicate that only African young adult males aged 21-26 and not African young adult females aged 21-26 were significantly affected when OAPFemale or OAPMale recipients were presented in the household.

These results illustrates that even though OAP is targeted toward the elderly in South Africa as a way to alleviate poverty and improve their living standard, it has secondary effects on other household members. In particular, these results are important because it suggests that OAP can improve African young adults' transition into the labor market in time when young adults in South Africa and especially African young adults are faced with high unemployment.

I.7 References

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I.8 Appendix

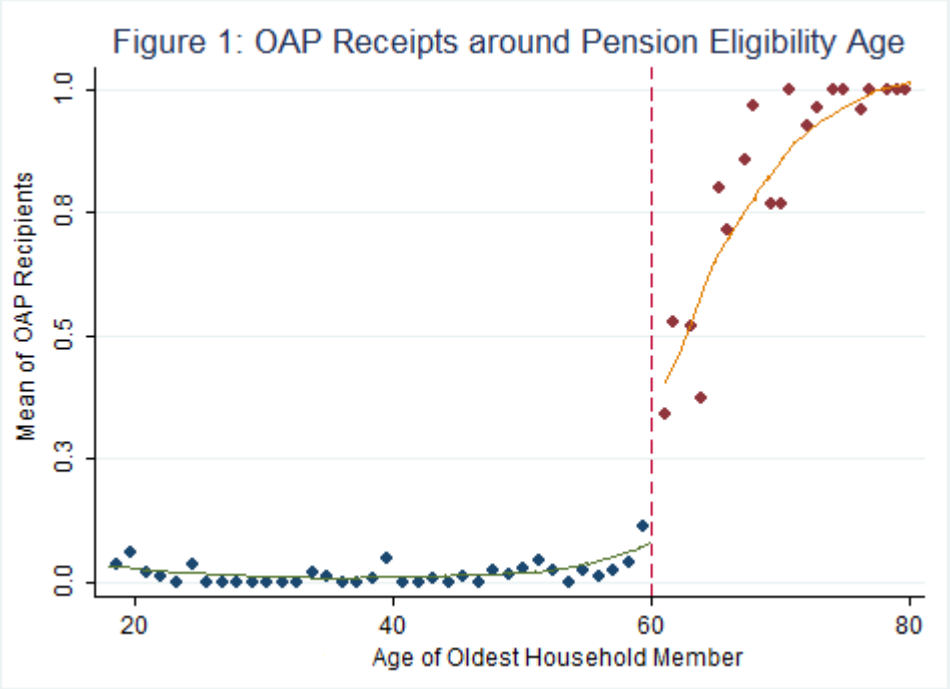
Figure 1: OAP Receipts around Pension Eligibility Age
Mean of OAP Recipients
0.0
0.3
0.5
0.8
1.0
20
40
60
80
Age of Oldest Household Member

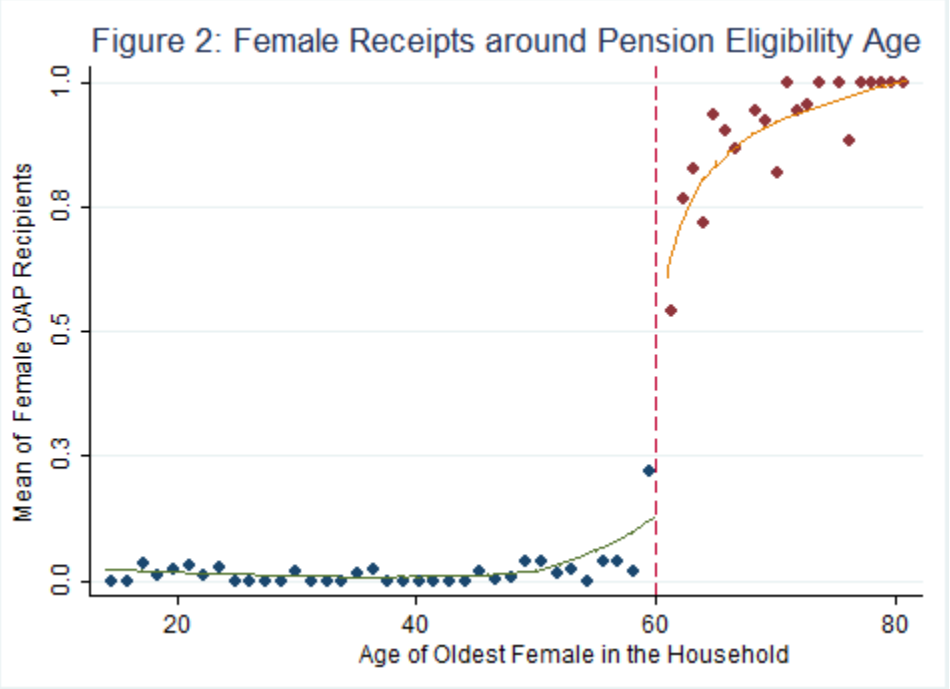
Figure 2: Female Receipts around Pension Eligibility Age
Mean of Female OAP Recipients
0.0
0.3
0.5
0.8
1.0
20
40
60
80
Age of Oldest Female in the Household

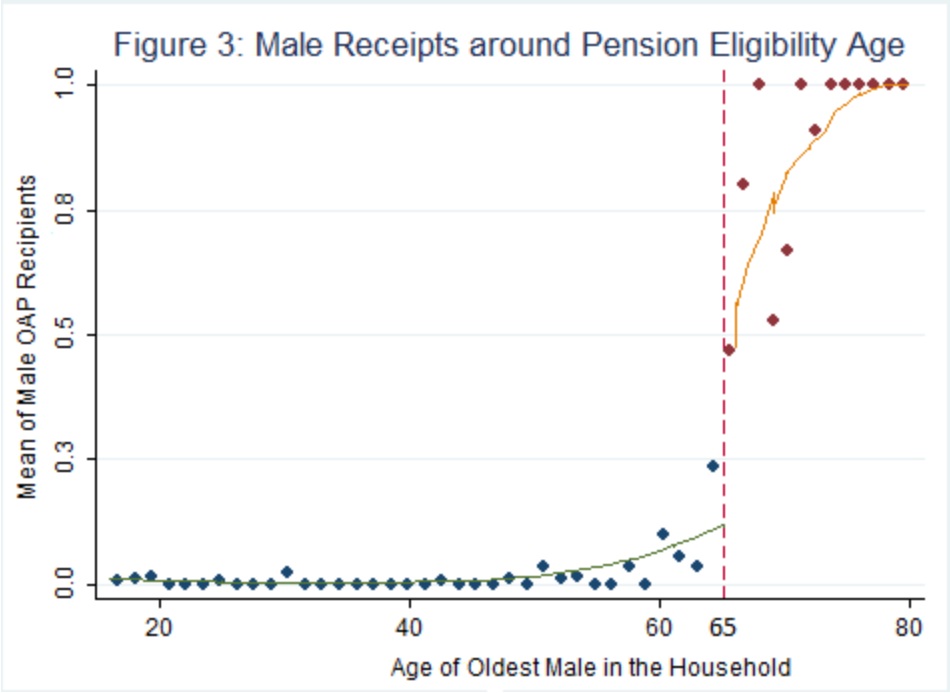
Figure 3: Male Receipts around Pension Eligibility Age
Mean of Male OAP Recipients
0.0
0.3
0.5
0.8
1.0
20
40
60
65
80
Age of Oldest Male in the Household

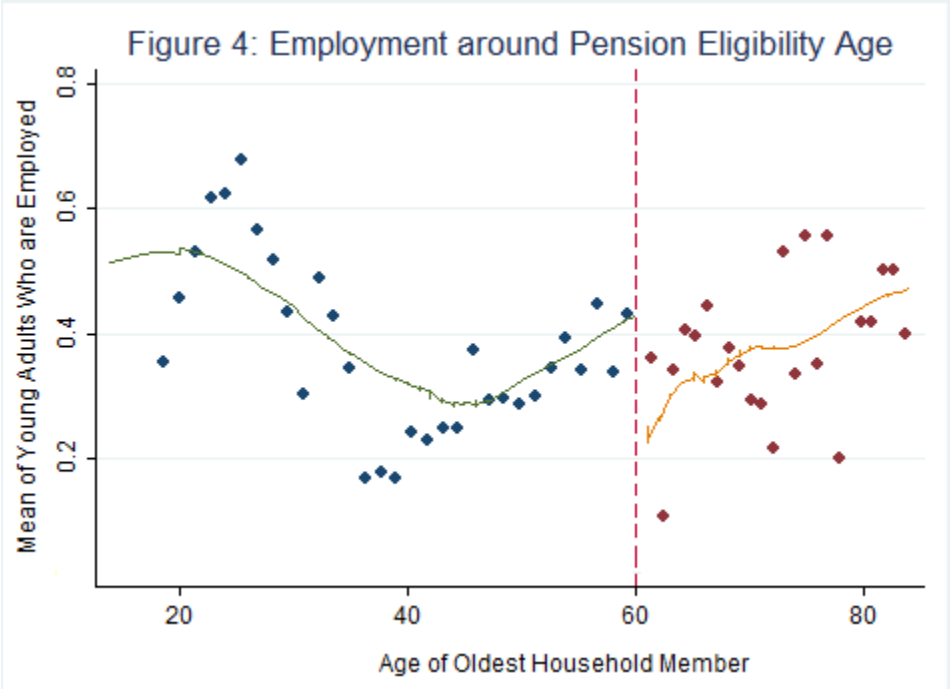
Figure 4: Employment around Pension Eligibility Age
Mean of Young Adults Who are Employed
0.2
0.4
0.6
0.8
20
40
60
80
Age of Oldest Household Member

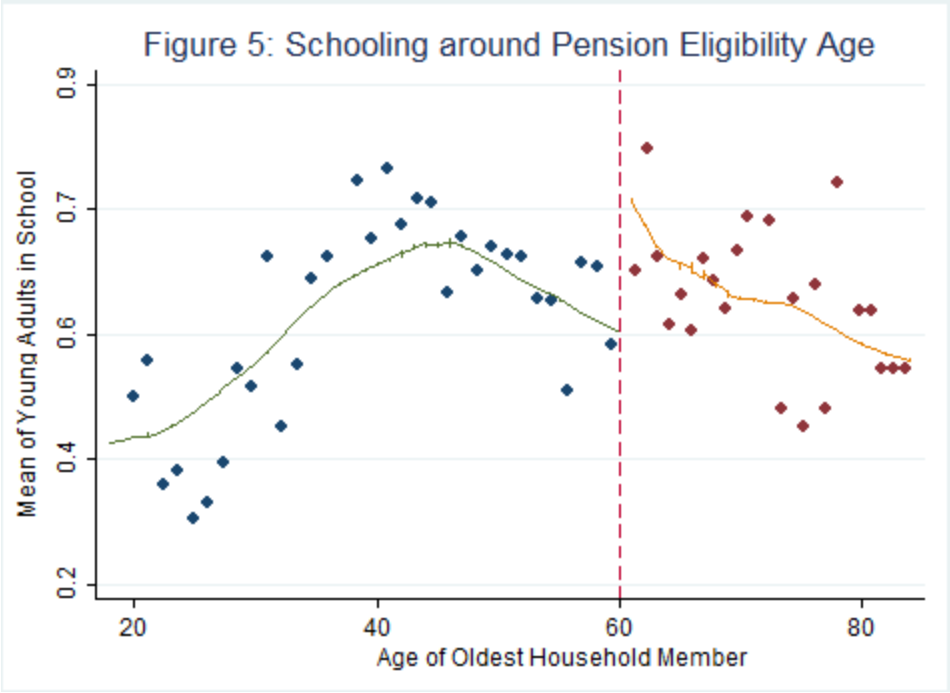
Figure 5: Schooling around Pension Eligibility Age
Mean of Young Adults in School
0.2
0.4
0.6
0.7
0.9
20
40
60
80
Age of Oldest Household Member

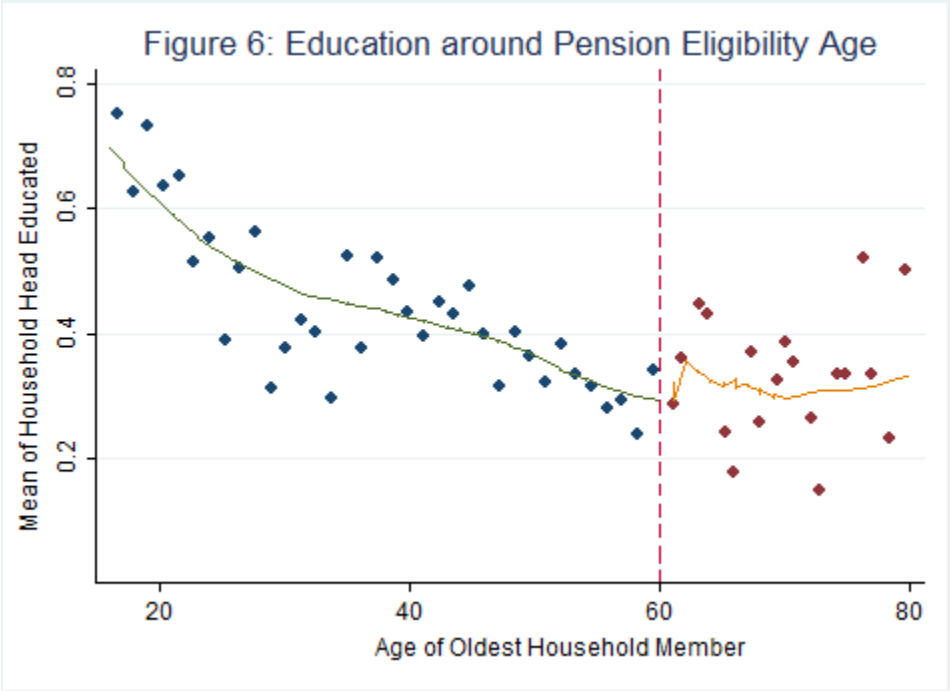
Figure 6: Education around Pension Eligibility Age
Mean of Household Head Educated
0.2
0.4
0.6
0.8
20
40
60
80
Age of Oldest Household Member

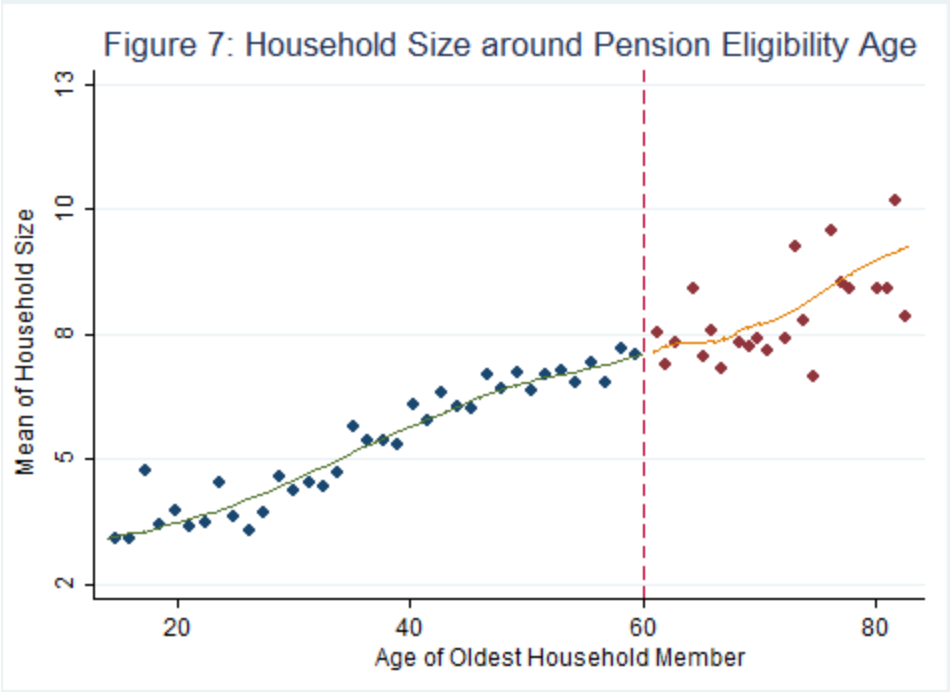
Figure 7: Household Size around Pension Eligibility Age
Mean of Household Size
2
5
8
10
13
20
40
60
80
Age of Oldest Household Member

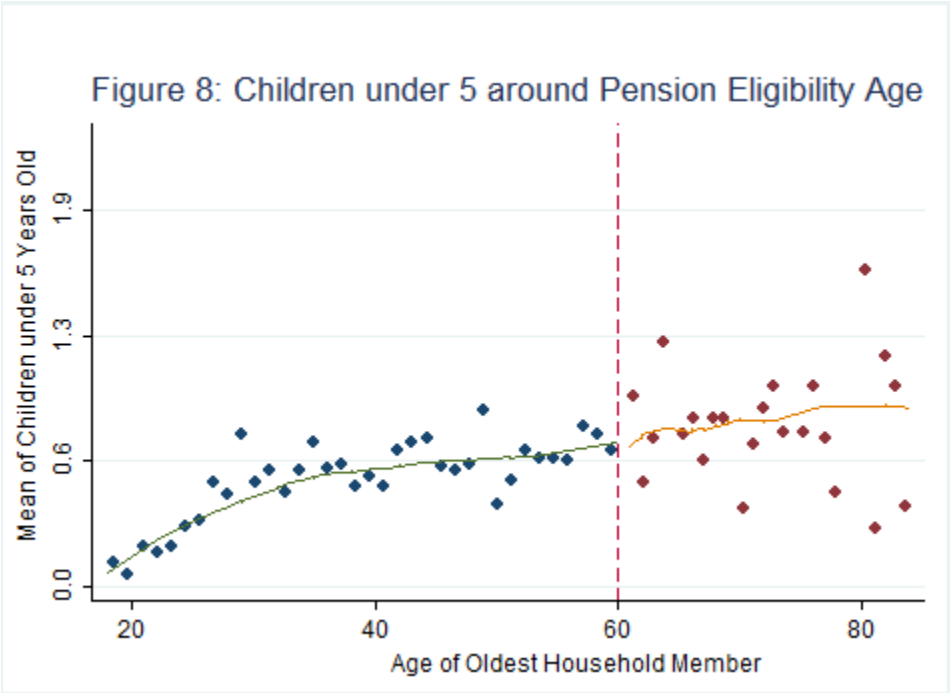
Figure 8: Children under 5 around Pension Eligibility Age
Mean of Children under 5 Years Old
0.0
0.6
1.3
1.9
20
40
60
80
Age of Oldest Household Member

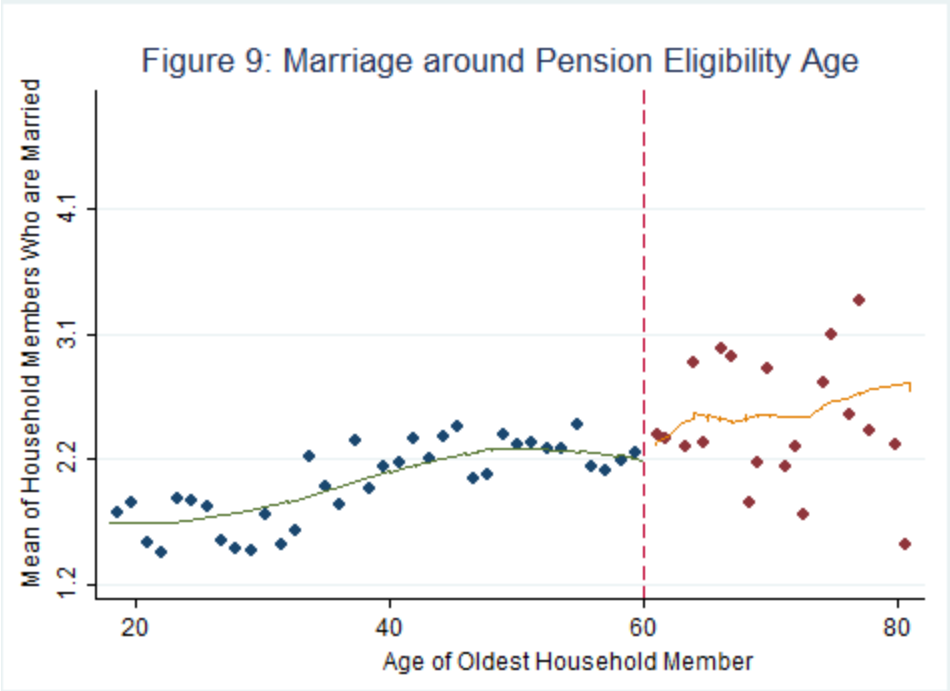
Figure 9: Marriage around Pension Eligibility Age
Mean of Household Members Who are Married
1.2
2.2
3.1
4.1
20
40
60
80
Age of Oldest Household Member

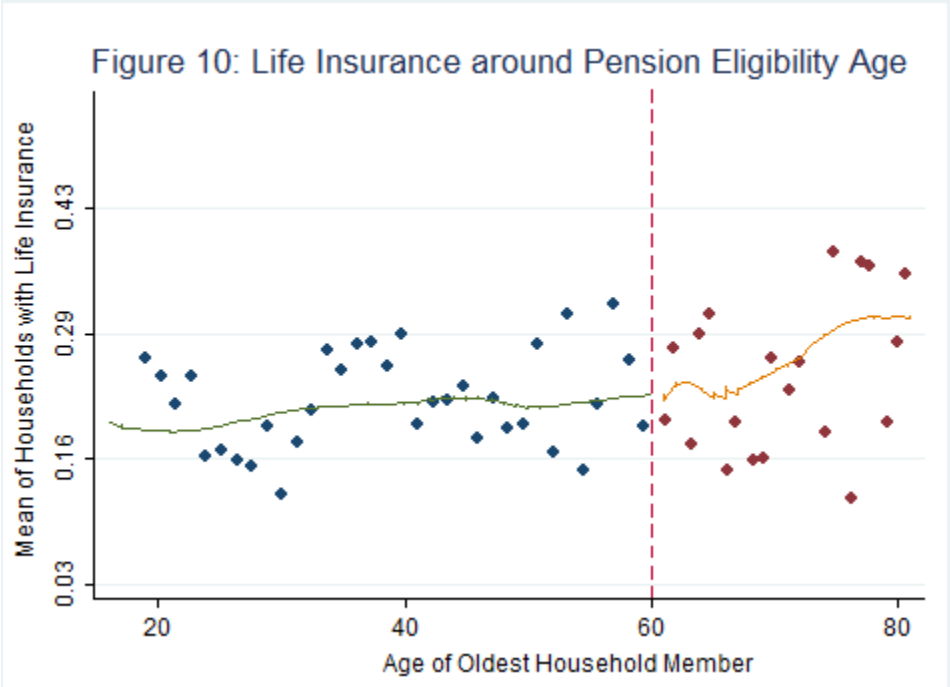
Figure 10: Life Insurance around Pension Eligibility Age
Mean of Households with Life Insurance
0.03
0.16
0.29
0.43
20
40
60
80
Age of Oldest Household Member

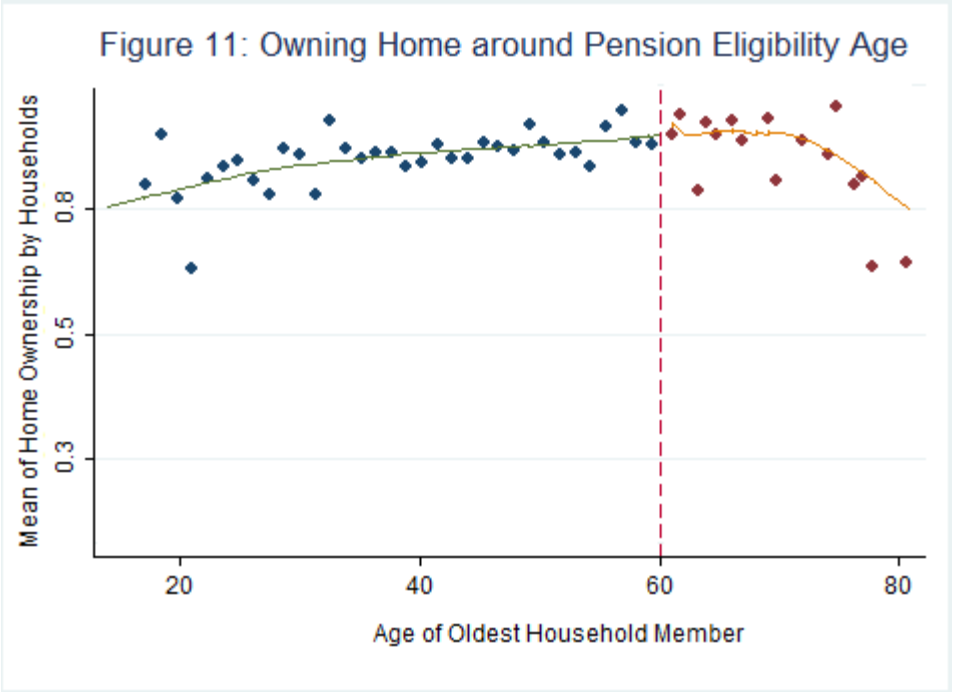
Figure 11: Owning Home around Pension Eligibility Age
Mean of Home Ownership by Households
0.3
0.5
0.8
20
40
60
80
Age of Oldest Household Member

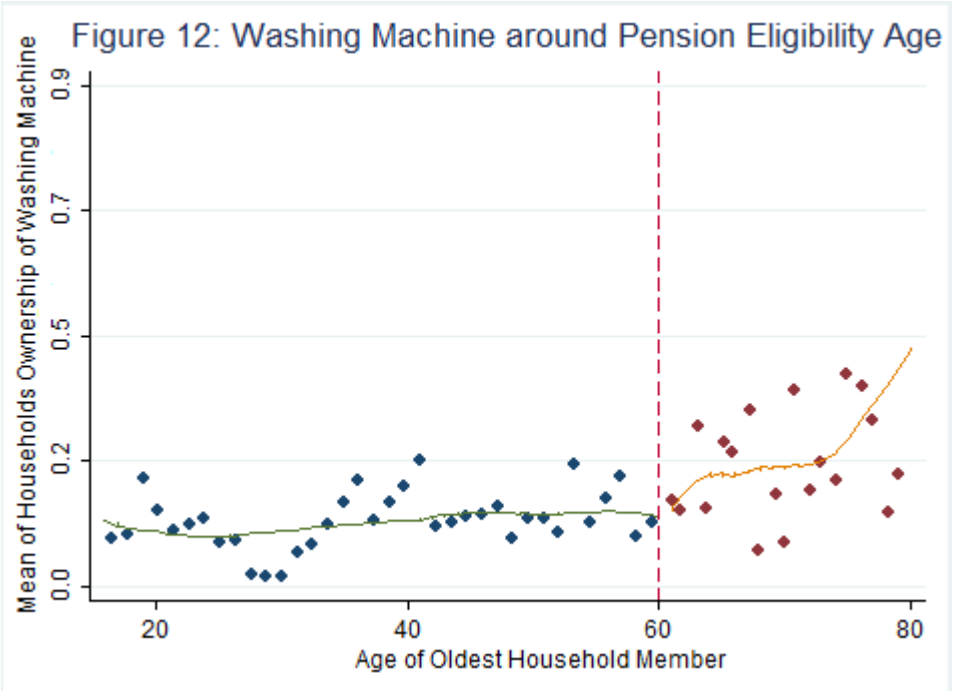
Figure 12: Washing Machine around Pension Eligibility Age
Mean of Households Ownership of Washing Machine
0.0
0.2
0.5
0.7
0.9
20
40
60
80
Age of Oldest Household Member

Table 3: Attrition Probability during 2002-2006

Dependent Variable: Stay=1; Leave=0		
Variables	(2005|2002)	(2006|2005, 2002)
OAP	0.273**	-1.498
	(0.106)	(0.130)
Household size	0.066***	0.007
	(0.014)	(0.016)
Young adults age	-0.038***	-0.012
	(0.013)	(0.017)
Young adults gender	0.151***	-0.222**
	(0.056)	(0.088)
Young adults completed Matric	0.085	-0.199
	(0.086)	(0.123)
Attitude2	0.659	-0.357***
	(0.598)	(0.190)
Attitude3	0.835	-0.342***
	(0.603)	(0.152)
Bahavior2	0.133	0.029
	(0.296)	(0.356)
Bahavior3	0.118	0.031
	(0.299)	(0.334)
Constant	-0.386	5.226***
	(0.669)	(0.468)
Observations	2125	2125

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. *** p<0.01, ** p<0.05, * p<0.1. Wave 1 =2002, Wave 3=2005, and Wave 4=2006. Attitude=1 if young adult's response is hostile; Attitude=2 if young adult's response is neither hostile nor friendly; Attitude=3 if young adult's response is friendly. Bahavior=1 if young adult's response is not at all attentive; Bahavior=2 if young adult's response is somewhat attentive; Bahavior=3 if young adult's response is very attentive.

Table 4a: Impact of Old Age Pension Program on Labor Force Participation of Young Adults Aged 14-20

	Dependent Variable: Employed Young Adults											
	Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
OAP	-0.024	-0.054	-0.027	-0.051								
	(0.042)	(0.048)	(0.042)	(0.050)								
OAPFemale					-0.012	-0.022	-0.012	-0.019				
					(0.040)	(0.051)	(0.041)	(0.054)				
OAPMale									-0.013	-0.030	-0.014	-0.034
									(0.051)	(0.058)	(0.053)	(0.062)
Maxage	-0.029**	-0.040**	-0.028**	-0.046**	-0.028**	-0.037**	-0.027**	-0.043**	-0.028**	-0.036*	-0.027**	-0.043**
	(0.012)	(0.018)	(0.013)	(0.019)	(0.012)	(0.018)	(0.013)	(0.019)	(0.012)	(0.019)	(0.013)	(0.019)
Maxage^2	0.001**	0.001	0.001**	0.001*	0.001**	0.001	0.000*	0.001*	0.001**	0.001	0.000*	0.001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Maxage^3	-0.000**	-0.000	-0.000*	-0.000	-0.000**	-0.000	-0.000*	-0.000	-0.000*	-0.000	-0.000*	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Wave_3	0.091***	0.099***	0.091***	0.094***	0.091***	0.099***	0.091***	0.094***	0.091***	0.100***	0.091***	0.094***
	(0.028)	(0.034)	(0.029)	(0.035)	(0.028)	(0.034)	(0.029)	(0.035)	(0.027)	(0.034)	(0.029)	(0.035)
Wave_4	0.241***	0.242***	0.236***	0.233***	0.241***	0.243***	0.235***	0.233***	0.241***	0.244***	0.235***	0.235***
	(0.034)	(0.042)	(0.035)	(0.042)	(0.034)	(0.042)	(0.035)	(0.042)	(0.034)	(0.042)	(0.035)	(0.042)
Constant	0.515**	0.836***	0.512**	0.929***	0.499**	0.791***	0.497**	0.891***	0.492**	0.783**	0.490**	0.889***
	(0.203)	(0.300)	(0.209)	(0.311)	(0.200)	(0.296)	(0.206)	(0.309)	(0.202)	(0.301)	(0.207)	(0.312)
Observations	1,125	960	1,125	960	1,125	960	1,125	960	1,125	960	1,125	960
R-squared	0.114	0.109	0.110	0.104	0.114	0.108	0.109	0.103	0.114	0.108	0.109	0.103

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. Employed young adults (females or males) equal 1 if young adults are employed, and 0 otherwise. OAP is a dummy variable equal 1 if any household member (female or male) receives OAP, and 0 otherwise. OAPFemale is a dummy variable equal 1 if only female household member is receiving OAP, and 0 otherwise. OAPMale is a dummy variable equal 1 if only male household member is receiving OAP, and 0 otherwise. Maxage is age of oldest household member, Maxage^2 is age-squared of oldest household member, and Maxage^3 is age-cubed of oldest household member. Wave 1=2002, Wave 3=2005, and Wave 4=2006. Parameter estimates are statistically different from zero at *** 1%, ** 5%, and * 10% significance levels, respectively.

Table 4b: Impact of Old Age Pension Program on Labor Force Participation of Young Adults Aged 14-20 Controlling for Baseline Covariates

	Dependent Variable: Employed Young Adults											
	Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
OAP	-0.030	-0.025	-0.032	-0.025								
	(0.040)	(0.044)	(0.041)	(0.046)								
OAPFemale					-0.019	0.019	-0.018	0.023				
					(0.039)	(0.047)	(0.040)	(0.050)				
OAPMale									0.001	-0.054	-0.003	-0.065
									(0.048)	(0.057)	(0.050)	(0.059)
Maxage	-0.023*	-0.029*	-0.023*	-0.033*	-0.022*	-0.026	-0.022*	-0.030*	-0.021*	-0.028*	-0.021*	-0.032*
	(0.012)	(0.016)	(0.012)	(0.017)	(0.011)	(0.016)	(0.012)	(0.017)	(0.011)	(0.016)	(0.012)	(0.017)
Maxage^2	0.000*	0.000	0.000	0.000	0.000*	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Maxage^3	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Wave_3	0.060**	0.083**	0.060**	0.079**	0.060**	0.084**	0.060**	0.079**	0.060**	0.084**	0.060**	0.080**
	(0.025)	(0.036)	(0.026)	(0.037)	(0.025)	(0.036)	(0.026)	(0.037)	(0.025)	(0.036)	(0.026)	(0.037)
Wave_4	0.172***	0.178***	0.167***	0.168***	0.172***	0.179***	0.166***	0.168***	0.172***	0.180***	0.166***	0.170***
	(0.035)	(0.042)	(0.036)	(0.042)	(0.035)	(0.042)	(0.036)	(0.042)	(0.035)	(0.042)	(0.036)	(0.042)
Age_15	0.000	0.026**	0.000	0.028**	0.000	0.027**	0.000	0.029**	-0.000	0.026*	-0.000	0.027*
	(0.005)	(0.013)	(0.005)	(0.014)	(0.005)	(0.013)	(0.005)	(0.014)	(0.005)	(0.013)	(0.005)	(0.014)
Age_16	0.001	0.054	0.000	0.057	0.001	0.057	0.001	0.059	0.002	0.054	0.001	0.057
	(0.009)	(0.035)	(0.009)	(0.036)	(0.009)	(0.035)	(0.009)	(0.036)	(0.009)	(0.035)	(0.009)	(0.036)
Age_17	-0.020	-0.012	-0.019	-0.009	-0.020	-0.011	-0.019	-0.008	-0.020	-0.012	-0.019	-0.009
	(0.013)	(0.027)	(0.013)	(0.027)	(0.013)	(0.027)	(0.013)	(0.027)	(0.013)	(0.027)	(0.013)	(0.027)
Age_18	-0.018	0.064**	-0.019	0.071**	-0.018	0.066**	-0.018	0.073***	-0.018	0.065**	-0.018	0.072**
	(0.016)	(0.026)	(0.015)	(0.028)	(0.016)	(0.026)	(0.015)	(0.028)	(0.016)	(0.026)	(0.015)	(0.028)
Age_19	0.053**	0.061*	0.048*	0.068*	0.053**	0.065*	0.048*	0.071**	0.054**	0.062*	0.048*	0.068*
	(0.025)	(0.034)	(0.024)	(0.035)	(0.025)	(0.035)	(0.024)	(0.035)	(0.025)	(0.034)	(0.024)	(0.035)
Age_20	0.256***	0.285***	0.259***	0.291***	0.256***	0.288***	0.260***	0.294***	0.257***	0.287***	0.260***	0.293***
	(0.037)	(0.042)	(0.038)	(0.043)	(0.037)	(0.041)	(0.038)	(0.042)	(0.037)	(0.041)	(0.038)	(0.042)
Household size	0.000	-0.003	-0.000	-0.004	0.000	-0.004	-0.000	-0.004	0.000	-0.004	-0.000	-0.005
	(0.003)	(0.004)	(0.003)	(0.005)	(0.003)	(0.005)	(0.003)	(0.005)	(0.003)	(0.005)	(0.003)	(0.005)
Children under 5 years old	0.027**	0.011	0.030**	0.010	0.027**	0.012	0.029**	0.011	0.027**	0.012	0.029**	0.011
	(0.013)	(0.015)	(0.013)	(0.015)	(0.013)	(0.015)	(0.013)	(0.016)	(0.013)	(0.015)	(0.013)	(0.016)
Household head educated	0.002	-0.004	0.002	-0.005	0.002	-0.005	0.002	-0.005	0.001	-0.004	0.002	-0.005
	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)
Marital status	0.010	-0.009	0.010	-0.010	0.010	-0.010	0.010	-0.011	0.009	-0.010	0.009	-0.010
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Owning home	0.018	0.043	0.019	0.040	0.018	0.042	0.019	0.040	0.017	0.040	0.018	0.037
	(0.022)	(0.037)	(0.022)	(0.039)	(0.022)	(0.037)	(0.022)	(0.039)	(0.021)	(0.037)	(0.021)	(0.039)
Life insurance	-0.001	-0.058**	0.001	-0.058**	-0.001	-0.057**	0.001	-0.058**	-0.001	-0.058**	0.001	-0.058**
	(0.020)	(0.027)	(0.020)	(0.027)	(0.020)	(0.027)	(0.020)	(0.027)	(0.020)	(0.027)	(0.020)	(0.027)
Washing machine	-0.013	0.008	-0.015	0.010	-0.014	0.006	-0.015	0.008	-0.013	0.004	-0.015	0.007
	(0.030)	(0.037)	(0.029)	(0.037)	(0.030)	(0.037)	(0.029)	(0.038)	(0.030)	(0.038)	(0.029)	(0.038)
Constant	0.335*	0.648**	0.336*	0.722**	0.319*	0.601**	0.321*	0.680**	0.305*	0.640**	0.310*	0.720***
	(0.185)	(0.268)	(0.189)	(0.280)	(0.182)	(0.265)	(0.186)	(0.278)	(0.183)	(0.264)	(0.187)	(0.274)
Observations	1,125	960	1,125	960	1,125	960	1,125	960	1,125	960	1,125	960
R-squared	0.223	0.187	0.224	0.185	0.223	0.187	0.224	0.185	0.223	0.188	0.223	0.186

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. Employed young adults (females or males) equal 1 if young adults are employed, and 0 otherwise. OAP is a dummy variable equal 1 if any household member (female or male) receives OAP, and 0 otherwise. OAPFemale is a dummy variable equal 1 if only female household member is receiving OAP, and 0 otherwise. OAPMale is a dummy variable equal 1 if only male household member is receiving OAP, and 0 otherwise. Maxage is age of oldest household member, Maxage^2 is age-squared of oldest household member, and Maxage^3 is age-cubed of oldest household member. Wave 1=2002, Wave 3=2005, and Wave 4=2006. Baseline covariates: young adults age dummies, household characteristics (Household size, Children under 5 years old, Household head educated, and Marital status of household member), and household assets (Household ownership of home, Life insurance, and Washing machine). Parameter estimates are statistically different from zero at *** 1%, ** 5%, and * 10% significance levels, respectively.

Table 5a: Impact of Old Age Pension Program on Labor Force Participation of Young Adults Aged 21-26

	Dependent Variable: Employed Young Adults											
	Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
OAP	0.078	-0.078	0.069	-0.065								
	(0.090)	(0.080)	(0.082)	(0.078)								
OAPFemale					0.118	-0.157*	0.107	-0.142				
					(0.091)	(0.092)	(0.088)	(0.092)				
OAPMale									-0.111	0.089	-0.098	0.099*
									(0.111)	(0.056)	(0.109)	(0.051)
Maxage	0.010	0.010	0.002	0.009	0.009	0.011	0.001	0.008	-0.002	0.016	-0.007	0.013
	(0.031)	(0.028)	(0.030)	(0.029)	(0.031)	(0.027)	(0.030)	(0.028)	(0.030)	(0.027)	(0.029)	(0.028)
Maxage^2	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.001	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Maxage^3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Wave_3	0.322***	0.306***	0.325***	0.306***	0.318***	0.308***	0.322***	0.307***	0.327***	0.303***	0.329***	0.303***
	(0.059)	(0.057)	(0.063)	(0.056)	(0.058)	(0.057)	(0.062)	(0.056)	(0.058)	(0.056)	(0.062)	(0.056)
Wave_4	0.539***	0.516***	0.538***	0.513***	0.538***	0.513***	0.537***	0.511***	0.540***	0.514***	0.539***	0.511***
	(0.055)	(0.052)	(0.058)	(0.052)	(0.055)	(0.052)	(0.058)	(0.052)	(0.055)	(0.053)	(0.058)	(0.052)
Constant	0.348	0.410	0.481	0.449	0.370	0.416	0.500	0.457	0.532	0.327	0.623	0.382
	(0.466)	(0.411)	(0.454)	(0.422)	(0.473)	(0.403)	(0.453)	(0.415)	(0.456)	(0.405)	(0.438)	(0.417)
Observations	563	577	563	577	563	577	563	577	563	577	563	577
R-squared	0.181	0.191	0.184	0.192	0.183	0.196	0.186	0.196	0.182	0.191	0.185	0.193

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. Employed young adults (females or males) equal 1 if young adults are employed, and 0 otherwise. OAP is a dummy variable equal 1 if any household member (female or male) receives OAP, and 0 otherwise. OAPFemale is a dummy variable equal 1 if only female household member is receiving OAP, and 0 otherwise. OAPMale is a dummy variable equal 1 if only male household member is receiving OAP, and 0 otherwise. Maxage is age of oldest household member, Maxage^2 is age-squared of oldest household member, and Maxage^3 is age-cubed of oldest household member. Wave 1=2002, Wave 3=2005, and Wave 4=2006. Parameter estimates are statistically different from zero at *** 1%, ** 5%, and * 10% significance levels, respectively.

Table 5b: Impact of Old Age Pension Program on Labor Force Participation of Young Adults Aged 21-26 Controlling for Baseline Covariates

	Dependent Variable: Employed Young Adults											
	Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
OAP	0.040	-0.098	0.038	-0.088								
	(0.090)	(0.078)	(0.083)	(0.075)								
OAPFemale					0.108	-0.201**	0.103	-0.187**				
					(0.082)	(0.086)	(0.078)	(0.086)				
OAPMale									-0.132	0.133*	-0.124	0.143**
									(0.099)	(0.067)	(0.096)	(0.062)
Maxage	0.015	-0.004	0.008	-0.008	0.017	-0.004	0.010	-0.008	0.006	0.003	0.000	-0.002
	(0.030)	(0.027)	(0.028)	(0.027)	(0.029)	(0.027)	(0.028)	(0.027)	(0.029)	(0.026)	(0.027)	(0.027)
Maxage^2	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Maxage^3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Wave_3	0.216***	0.185***	0.221***	0.179***	0.212***	0.185***	0.217***	0.179***	0.218***	0.179***	0.222***	0.174***
	(0.065)	(0.062)	(0.067)	(0.063)	(0.065)	(0.062)	(0.067)	(0.063)	(0.064)	(0.062)	(0.067)	(0.063)
Wave_4	0.378***	0.359***	0.378***	0.350***	0.379***	0.353***	0.379***	0.345***	0.378***	0.356***	0.378***	0.347***
	(0.068)	(0.063)	(0.069)	(0.063)	(0.069)	(0.063)	(0.069)	(0.063)	(0.068)	(0.063)	(0.069)	(0.064)
Age_22	0.045	0.168***	0.043	0.172***	0.044	0.174***	0.042	0.177***	0.043	0.171***	0.041	0.176***
	(0.054)	(0.055)	(0.055)	(0.057)	(0.054)	(0.056)	(0.055)	(0.057)	(0.053)	(0.055)	(0.055)	(0.057)
Age_23	0.234***	0.292***	0.219***	0.298***	0.229***	0.295***	0.216***	0.301***	0.231***	0.299***	0.216***	0.305***
	(0.054)	(0.061)	(0.056)	(0.062)	(0.054)	(0.060)	(0.056)	(0.062)	(0.053)	(0.061)	(0.055)	(0.063)
Age_24	0.240***	0.298***	0.230***	0.309***	0.239***	0.303***	0.228***	0.313***	0.240***	0.306***	0.230***	0.316***
	(0.063)	(0.064)	(0.063)	(0.065)	(0.062)	(0.064)	(0.062)	(0.065)	(0.061)	(0.065)	(0.061)	(0.066)
Age_25	0.349***	0.283***	0.344***	0.291***	0.350***	0.290***	0.346***	0.296***	0.355***	0.276***	0.349***	0.285***
	(0.055)	(0.060)	(0.055)	(0.061)	(0.054)	(0.060)	(0.055)	(0.062)	(0.053)	(0.059)	(0.054)	(0.061)
Age_26	0.272***	0.257***	0.276***	0.265***	0.271***	0.265***	0.276***	0.273***	0.274***	0.259***	0.279***	0.268***
	(0.082)	(0.063)	(0.073)	(0.065)	(0.082)	(0.062)	(0.073)	(0.064)	(0.081)	(0.064)	(0.073)	(0.066)
Household size	-0.014	0.002	-0.016	0.004	-0.015	0.002	-0.016*	0.004	-0.014	0.003	-0.016*	0.004
	(0.009)	(0.008)	(0.010)	(0.007)	(0.009)	(0.007)	(0.009)	(0.007)	(0.009)	(0.008)	(0.009)	(0.008)
Children under 5 years old	0.048**	0.067***	0.053**	0.066***	0.048**	0.069***	0.052**	0.068***	0.050**	0.066***	0.055**	0.065***
	(0.024)	(0.025)	(0.023)	(0.023)	(0.024)	(0.024)	(0.023)	(0.023)	(0.024)	(0.025)	(0.023)	(0.023)
Household head educated	-0.008	-0.004	-0.008	-0.006	-0.008	-0.004	-0.008	-0.005	-0.008	-0.004	-0.008	-0.005
	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)	(0.006)
Marital status	-0.005	-0.014	-0.007	-0.015	-0.006	-0.013	-0.008	-0.014	-0.007	-0.012	-0.009	-0.013
	(0.013)	(0.011)	(0.014)	(0.011)	(0.013)	(0.011)	(0.014)	(0.011)	(0.014)	(0.011)	(0.014)	(0.011)
Owning home	0.102	0.067	0.109*	0.068	0.099	0.065	0.107*	0.067	0.099	0.067	0.107*	0.068
	(0.064)	(0.049)	(0.063)	(0.051)	(0.064)	(0.049)	(0.063)	(0.051)	(0.065)	(0.050)	(0.064)	(0.051)
Life insurance	0.015	-0.057	0.012	-0.052	0.017	-0.060	0.013	-0.055	0.018	-0.056	0.014	-0.050
	(0.054)	(0.048)	(0.053)	(0.048)	(0.054)	(0.048)	(0.053)	(0.048)	(0.054)	(0.048)	(0.053)	(0.047)
Washing machine	-0.075	0.050	-0.087*	0.035	-0.080	0.053	-0.092*	0.038	-0.075	0.041	-0.085*	0.027
	(0.052)	(0.053)	(0.049)	(0.056)	(0.051)	(0.052)	(0.047)	(0.055)	(0.050)	(0.053)	(0.047)	(0.056)
Constant	0.274	0.541	0.389	0.613	0.246	0.549	0.368	0.621	0.424	0.422	0.512	0.512
	(0.457)	(0.415)	(0.439)	(0.423)	(0.455)	(0.407)	(0.431)	(0.415)	(0.452)	(0.403)	(0.429)	(0.412)
Observations	563	577	563	577	563	577	563	577	563	577	563	577
R-squared	0.276	0.271	0.281	0.275	0.279	0.279	0.284	0.280	0.279	0.272	0.284	0.276

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. Employed young adults (females or males) equal 1 if young adults are employed, and 0 otherwise. OAP is a dummy variable equal 1 if any household member (female or male) receives OAP, and 0 otherwise. OAPFemale is a dummy variable equal 1 if only female household member is receiving OAP, and 0 otherwise. OAPMale is a dummy variable equal 1 if only male household member is receiving OAP, and 0 otherwise. Maxage is age of oldest household member, Maxage^2 is age-squared of oldest household member, and Maxage^3 is age-cubed of oldest household member. Wave 1=2002, Wave 3=2005, and Wave 4=2006. Baseline covariates: young adults age dummies, household characteristics (Household size, Children under 5 years old, Household head educated, and Marital status of household member), and household assets (Household ownership of home, Life insurance, and Washing machine). Parameter estimates are statistically different from zero at *** 1%, ** 5%, and * 10% significance levels, respectively.

Table 6a: Impact of Old Age Pension Program on School Enrollment of Young Adults Aged 14-20

	Dependent Variable: Young Adults in School											
	Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
OAP	0.051	0.076	0.058	0.072								
	(0.044)	(0.049)	(0.045)	(0.050)								
OAPFemale					0.037	0.048	0.044	0.043				
					(0.045)	(0.054)	(0.046)	(0.057)				
OAPMale									-0.003	0.023	-0.004	0.029
									(0.056)	(0.060)	(0.059)	(0.064)
Maxage	0.047***	0.041**	0.049***	0.047**	0.046***	0.038**	0.048***	0.045**	0.043***	0.036*	0.046***	0.043**
	(0.015)	(0.018)	(0.016)	(0.019)	(0.014)	(0.018)	(0.015)	(0.019)	(0.014)	(0.019)	(0.015)	(0.020)
Maxage^2	-0.001***	-0.001	-0.001***	-0.001*	-0.001***	-0.001	-0.001***	-0.001*	-0.001***	-0.000	-0.001***	-0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Maxage^3	0.000***	0.000	0.000**	0.000	0.000***	0.000	0.000**	0.000	0.000***	0.000	0.000**	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Wave_3	-0.026	-0.035	-0.022	-0.025	-0.025	-0.035	-0.022	-0.025	-0.025	-0.036	-0.021	-0.026
	(0.031)	(0.036)	(0.032)	(0.037)	(0.031)	(0.036)	(0.032)	(0.037)	(0.031)	(0.036)	(0.032)	(0.037)
Wave_4	-0.179***	-0.184***	-0.172***	-0.171***	-0.179***	-0.185***	-0.171***	-0.171***	-0.179***	-0.186***	-0.171***	-0.173***
	(0.035)	(0.044)	(0.036)	(0.044)	(0.035)	(0.044)	(0.036)	(0.044)	(0.035)	(0.044)	(0.036)	(0.044)
Constant	0.135	0.052	0.090	-0.067	0.156	0.097	0.110	-0.027	0.187	0.131	0.139	-0.006
	(0.234)	(0.297)	(0.247)	(0.311)	(0.231)	(0.295)	(0.244)	(0.309)	(0.227)	(0.303)	(0.238)	(0.315)
Observations	1,174	1,002	1,174	1,002	1,174	1,002	1,174	1,002	1,174	1,002	1,174	1,002
R-squared	0.054	0.065	0.053	0.064	0.054	0.064	0.052	0.063	0.053	0.063	0.051	0.063

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. Young adults in school (females or males) equal 1 if young adults are currently enrolled in school, and 0 otherwise. OAP is a dummy variable equal 1 if any household member (female or male) receives OAP, and 0 otherwise. OAPFemale is a dummy variable equal 1 if only female household member is receiving OAP, and 0 otherwise. OAPMale is a dummy variable equal 1 if only male household member is receiving OAP, and 0 otherwise. Maxage is age of oldest household member, Maxage^2 is age-squared of oldest household member, and Maxage^3 is age-cubed of oldest household member. Wave 1=2002, Wave 3=2005, and Wave 4=2006. Parameter estimates are statistically different from zero at *** 1%, ** 5%, and * 10% significance levels, respectively.

Table 6b: Impact of Old Age Pension Program on School Enrollment of Young Adults Aged 14-20 Controlling for Baseline Covariates

	Dependent Variable: Young Adults in School											
	Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
OAP	0.047	0.027	0.052	0.028								
	(0.042)	(0.045)	(0.043)	(0.047)								
OAPFemale					0.035	-0.023	0.038	-0.027				
					(0.041)	(0.050)	(0.042)	(0.052)				
OAPMale									-0.007	0.065	-0.005	0.080
									(0.048)	(0.059)	(0.052)	(0.061)
Maxage	0.034***	0.025	0.035***	0.029*	0.033***	0.021	0.034**	0.026	0.031**	0.024	0.032**	0.028*
	(0.013)	(0.015)	(0.013)	(0.016)	(0.012)	(0.015)	(0.013)	(0.016)	(0.012)	(0.015)	(0.013)	(0.016)
Maxage^2	-0.001**	-0.000	-0.001**	-0.000	-0.001**	-0.000	-0.001**	-0.000	-0.001**	-0.000	-0.001**	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Maxage^3	0.000**	0.000	0.000**	0.000	0.000**	0.000	0.000**	0.000	0.000**	0.000	0.000**	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Wave_3	0.034	-0.007	0.034	0.000	0.034	-0.008	0.035	-0.000	0.035	-0.008	0.035	-0.001
	(0.030)	(0.038)	(0.030)	(0.038)	(0.030)	(0.038)	(0.031)	(0.038)	(0.030)	(0.038)	(0.030)	(0.038)
Wave_4	-0.056	-0.084*	-0.050	-0.072	-0.055	-0.085*	-0.050	-0.072	-0.055	-0.086*	-0.049	-0.074
	(0.039)	(0.045)	(0.039)	(0.045)	(0.038)	(0.045)	(0.039)	(0.045)	(0.038)	(0.045)	(0.039)	(0.045)
Age_15	-0.001	-0.028**	-0.001	-0.031**	-0.000	-0.029**	-0.001	-0.032**	0.000	-0.028**	-0.000	-0.029**
	(0.007)	(0.013)	(0.007)	(0.014)	(0.007)	(0.013)	(0.007)	(0.014)	(0.006)	(0.014)	(0.006)	(0.015)
Age_16	-0.004	-0.063*	-0.002	-0.067*	-0.004	-0.066*	-0.002	-0.070*	-0.005	-0.063*	-0.003	-0.066*
	(0.010)	(0.037)	(0.010)	(0.038)	(0.010)	(0.037)	(0.010)	(0.038)	(0.010)	(0.037)	(0.010)	(0.038)
Age_17	-0.026	-0.033	-0.025	-0.037	-0.026	-0.035	-0.025	-0.039	-0.026	-0.034	-0.026	-0.037
	(0.018)	(0.030)	(0.017)	(0.030)	(0.018)	(0.029)	(0.017)	(0.029)	(0.018)	(0.030)	(0.017)	(0.030)
Age_18	-0.062***	-0.145***	-0.058***	-0.155***	-0.063***	-0.148***	-0.059***	-0.157***	-0.063***	-0.146***	-0.059***	-0.155***
	(0.022)	(0.030)	(0.022)	(0.031)	(0.022)	(0.030)	(0.022)	(0.031)	(0.022)	(0.030)	(0.022)	(0.031)
Age_19	-0.161***	-0.141***	-0.152***	-0.151***	-0.161***	-0.145***	-0.152***	-0.155***	-0.162***	-0.141***	-0.152***	-0.151***
	(0.030)	(0.039)	(0.029)	(0.040)	(0.030)	(0.039)	(0.029)	(0.040)	(0.030)	(0.038)	(0.029)	(0.039)
Age_20	-0.408***	-0.433***	-0.413***	-0.445***	-0.408***	-0.436***	-0.414***	-0.448***	-0.409***	-0.435***	-0.415***	-0.447***
	(0.041)	(0.044)	(0.042)	(0.045)	(0.042)	(0.044)	(0.042)	(0.045)	(0.042)	(0.044)	(0.042)	(0.045)
Household size	-0.001	0.005	0.000	0.006	-0.001	0.005	-0.000	0.006	-0.001	0.005	0.000	0.006
	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)
Children under 5 years old	-0.030**	-0.012	-0.034**	-0.012	-0.030**	-0.012	-0.033**	-0.012	-0.030**	-0.012	-0.033**	-0.012
	(0.014)	(0.016)	(0.014)	(0.016)	(0.014)	(0.016)	(0.014)	(0.017)	(0.014)	(0.016)	(0.014)	(0.017)
Household head educated	-0.001	0.007*	-0.001	0.008*	-0.001	0.008*	-0.001	0.008*	-0.000	0.007*	-0.000	0.008*
	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)
Marital status	-0.005	0.012	-0.005	0.012	-0.005	0.013	-0.005	0.013	-0.004	0.012	-0.003	0.013
	(0.008)	(0.009)	(0.008)	(0.008)	(0.009)	(0.009)	(0.009)	(0.009)	(0.008)	(0.009)	(0.008)	(0.008)
Owning home	-0.036	-0.047	-0.041	-0.042	-0.037	-0.046	-0.042	-0.041	-0.035	-0.044	-0.040	-0.039
	(0.025)	(0.039)	(0.025)	(0.041)	(0.025)	(0.039)	(0.025)	(0.041)	(0.025)	(0.039)	(0.025)	(0.041)
Life insurance	0.017	0.074***	0.013	0.074**	0.017	0.073**	0.013	0.073**	0.017	0.073**	0.013	0.074**
	(0.023)	(0.028)	(0.024)	(0.028)	(0.024)	(0.028)	(0.024)	(0.028)	(0.024)	(0.028)	(0.025)	(0.028)
Washing machine	0.003	-0.017	0.005	-0.018	0.004	-0.015	0.005	-0.015	0.004	-0.013	0.005	-0.014
	(0.037)	(0.040)	(0.037)	(0.041)	(0.037)	(0.040)	(0.037)	(0.041)	(0.037)	(0.041)	(0.037)	(0.042)
Constant	0.499**	0.359	0.473**	0.279	0.518**	0.411	0.492**	0.327	0.544***	0.367	0.515**	0.281
	(0.206)	(0.252)	(0.214)	(0.264)	(0.203)	(0.252)	(0.210)	(0.264)	(0.202)	(0.249)	(0.208)	(0.258)
Observations	1,174	1,002	1,174	1,002	1,174	1,002	1,174	1,002	1,174	1,002	1,174	1,002
R-squared	0.223	0.209	0.229	0.215	0.223	0.209	0.229	0.215	0.222	0.210	0.228	0.216

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. Young adults in school (females or males) equal 1 if young adults are currently enrolled in school, and 0 otherwise. OAP is a dummy variable equal 1 if any household member (female or male) receives OAP, and 0 otherwise. OAPFemale is a dummy variable equal 1 if only female household member is receiving OAP, and 0 otherwise. OAPMale is a dummy variable equal 1 if only male household member is receiving OAP, and 0 otherwise. Maxage is age of oldest household member, Maxage^2 is age-squared of oldest household member, and Maxage^3 is age-cubed of oldest household member. Wave 1=2002, Wave 3=2005, and Wave 4=2006. Baseline covariates: young adults age dummies, household characteristics (Household size, Children under 5 years old, Household head educated, and Marital status of household member), and household assets (Household ownership of home, Life insurance, and Washing machine). Parameter estimates are statistically different from zero at *** 1%, ** 5%, and * 10% significance levels, respectively.

Table 7a: Impact of Old Age Pension Program on School Enrollment of Young Adults Aged 21-26

	Dependent Variable: Young Adults in School											
	Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
OAP	-0.075	0.023	-0.067	0.013								
	(0.093)	(0.082)	(0.085)	(0.080)								
OAPFemale					-0.114	0.098	-0.105	0.087				
					(0.095)	(0.095)	(0.091)	(0.094)				
OAPMale									0.110	-0.120*	0.099	-0.128**
									(0.119)	(0.062)	(0.116)	(0.058)
Maxage	-0.007	-0.017	0.001	-0.019	-0.006	-0.016	0.002	-0.017	0.004	-0.021	0.009	-0.022
	(0.028)	(0.027)	(0.028)	(0.028)	(0.028)	(0.027)	(0.027)	(0.027)	(0.027)	(0.027)	(0.026)	(0.027)
Maxage^2	0.000	0.001	0.000	0.001	0.000	0.000	0.000	0.001	0.000	0.001	0.000	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Maxage^3	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Wave_3	-0.096*	-0.050	-0.093*	-0.053	-0.093*	-0.051	-0.090	-0.053	-0.102*	-0.051	-0.098*	-0.054
	(0.056)	(0.051)	(0.056)	(0.051)	(0.055)	(0.052)	(0.055)	(0.051)	(0.055)	(0.051)	(0.055)	(0.051)
Wave_4	-0.321***	-0.257***	-0.313***	-0.257***	-0.320***	-0.254***	-0.313***	-0.254***	-0.322***	-0.258***	-0.314***	-0.257***
	(0.054)	(0.044)	(0.053)	(0.043)	(0.054)	(0.044)	(0.053)	(0.043)	(0.054)	(0.044)	(0.053)	(0.043)
Constant	0.339	0.469	0.203	0.480	0.317	0.441	0.184	0.454	0.172	0.531	0.075	0.528
	(0.427)	(0.407)	(0.417)	(0.417)	(0.431)	(0.402)	(0.415)	(0.412)	(0.408)	(0.401)	(0.396)	(0.411)
Observations	606	640	606	640	606	640	606	640	606	640	606	640
R-squared	0.105	0.088	0.104	0.088	0.107	0.091	0.106	0.090	0.106	0.091	0.105	0.091

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. Young adults in school (females or males) equal 1 if young adults are currently enrolled in school, and 0 otherwise. OAP is a dummy variable equal 1 if any household member (female or male) receives OAP, and 0 otherwise. OAPFemale is a dummy variable equal 1 if only female household member is receiving OAP, and 0 otherwise. OAPMale is a dummy variable equal 1 if only male household member is receiving OAP, and 0 otherwise. Maxage is age of oldest household member, Maxage^2 is age-squared of oldest household member, and Maxage^3 is age-cubed of oldest household member. Wave 1=2002, Wave 3=2005, and Wave 4=2006. Parameter estimates are statistically different from zero at *** 1%, ** 5%, and * 10% significance levels, respectively.

Table 7b: Impact of Old Age Pension Program on School Enrollment of Young Adults Aged 21-26 Controlling for Baseline Covariates

	Dependent Variable: Young Adults in School											
	Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
OAP	-0.041	0.034	-0.039	0.026								
	(0.093)	(0.084)	(0.086)	(0.081)								
OAPFemale					-0.112	0.139	-0.107	0.127				
					(0.086)	(0.093)	(0.083)	(0.092)				
OAPMale									0.139	-0.175**	0.134	-0.184***
									(0.104)	(0.072)	(0.101)	(0.068)
Maxage	-0.012	-0.004	-0.004	-0.003	-0.013	-0.002	-0.005	-0.002	-0.002	-0.009	0.004	-0.008
	(0.028)	(0.026)	(0.027)	(0.026)	(0.028)	(0.026)	(0.027)	(0.026)	(0.027)	(0.025)	(0.026)	(0.025)
Maxage^2	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Maxage^3	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Wave_3	0.007	0.054	0.008	0.055	0.010	0.055	0.011	0.056	0.004	0.054	0.006	0.055
	(0.066)	(0.057)	(0.065)	(0.058)	(0.066)	(0.057)	(0.065)	(0.058)	(0.065)	(0.056)	(0.064)	(0.057)
Wave_4	-0.168**	-0.111**	-0.164**	-0.107*	-0.169**	-0.104*	-0.165**	-0.101*	-0.169**	-0.111**	-0.164**	-0.106*
	(0.072)	(0.055)	(0.070)	(0.055)	(0.072)	(0.055)	(0.070)	(0.056)	(0.071)	(0.055)	(0.069)	(0.056)
Age_22	-0.045	-0.190***	-0.040	-0.197***	-0.045	-0.193***	-0.039	-0.199***	-0.044	-0.195***	-0.038	-0.201***
	(0.054)	(0.053)	(0.055)	(0.054)	(0.054)	(0.053)	(0.055)	(0.055)	(0.054)	(0.053)	(0.055)	(0.054)
Age_23	-0.232***	-0.305***	-0.215***	-0.312***	-0.228***	-0.306***	-0.212***	-0.314***	-0.229***	-0.313***	-0.212***	-0.320***
	(0.056)	(0.059)	(0.057)	(0.061)	(0.056)	(0.059)	(0.057)	(0.061)	(0.054)	(0.060)	(0.056)	(0.062)
Age_24	-0.240***	-0.311***	-0.227***	-0.323***	-0.239***	-0.314***	-0.226***	-0.325***	-0.240***	-0.318***	-0.227***	-0.329***
	(0.062)	(0.063)	(0.062)	(0.063)	(0.061)	(0.063)	(0.062)	(0.063)	(0.059)	(0.064)	(0.060)	(0.064)
Age_25	-0.357***	-0.294***	-0.349***	-0.303***	-0.358***	-0.300***	-0.352***	-0.308***	-0.363***	-0.290***	-0.355***	-0.299***
	(0.055)	(0.058)	(0.056)	(0.060)	(0.055)	(0.058)	(0.056)	(0.060)	(0.055)	(0.058)	(0.056)	(0.060)
Age_26	-0.272***	-0.278***	-0.274***	-0.288***	-0.271***	-0.284***	-0.275***	-0.293***	-0.274***	-0.281***	-0.278***	-0.291***
	(0.084)	(0.062)	(0.076)	(0.064)	(0.084)	(0.061)	(0.076)	(0.063)	(0.083)	(0.063)	(0.075)	(0.065)
Household size	0.014	-0.002	0.015	-0.003	0.015	-0.002	0.016*	-0.003	0.014	-0.002	0.016*	-0.003
	(0.009)	(0.008)	(0.009)	(0.007)	(0.009)	(0.007)	(0.009)	(0.007)	(0.009)	(0.008)	(0.009)	(0.008)
Children under 5 years old	-0.041*	-0.057**	-0.046**	-0.057**	-0.041*	-0.058**	-0.046**	-0.059***	-0.043*	-0.057**	-0.048**	-0.057**
	(0.023)	(0.023)	(0.022)	(0.022)	(0.023)	(0.022)	(0.022)	(0.022)	(0.024)	(0.023)	(0.023)	(0.022)
Household head educated	0.008	0.005	0.009	0.006	0.008	0.005	0.009	0.006	0.009	0.004	0.009	0.006
	(0.007)	(0.006)	(0.007)	(0.006)	(0.007)	(0.006)	(0.007)	(0.006)	(0.007)	(0.006)	(0.007)	(0.006)
Marital status	0.009	0.007	0.012	0.008	0.011	0.007	0.013	0.008	0.012	0.005	0.014	0.006
	(0.014)	(0.011)	(0.014)	(0.011)	(0.014)	(0.011)	(0.014)	(0.011)	(0.014)	(0.011)	(0.014)	(0.011)
Owning home	-0.109*	-0.048	-0.114*	-0.050	-0.107*	-0.048	-0.112*	-0.050	-0.107*	-0.052	-0.114*	-0.054
	(0.060)	(0.046)	(0.059)	(0.047)	(0.060)	(0.046)	(0.059)	(0.047)	(0.061)	(0.046)	(0.060)	(0.047)
Life insurance	-0.045	0.081	-0.049	0.074	-0.046	0.085*	-0.049	0.078	-0.048	0.082	-0.051	0.074
	(0.054)	(0.050)	(0.053)	(0.049)	(0.054)	(0.049)	(0.052)	(0.049)	(0.054)	(0.049)	(0.053)	(0.048)
Washing machine	0.091	-0.029	0.103*	-0.014	0.095*	-0.033	0.107**	-0.019	0.090*	-0.023	0.101**	-0.008
	(0.056)	(0.053)	(0.053)	(0.055)	(0.055)	(0.052)	(0.051)	(0.055)	(0.054)	(0.052)	(0.051)	(0.054)
Constant	0.404	0.364	0.269	0.349	0.432	0.327	0.289	0.316	0.259	0.459	0.150	0.426
	(0.435)	(0.398)	(0.427)	(0.401)	(0.427)	(0.393)	(0.417)	(0.397)	(0.417)	(0.385)	(0.409)	(0.390)
Observations	606	640	606	640	606	640	606	640	606	640	606	640
R-squared	0.200	0.176	0.201	0.180	0.203	0.181	0.203	0.184	0.203	0.182	0.204	0.185

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. Young adults in school (females or males) equal 1 if young adults are currently enrolled in school, and 0 otherwise. OAP is a dummy variable equal 1 if any household member (female or male) receives OAP, and 0 otherwise. OAPFemale is a dummy variable equal 1 if only female household member is receiving OAP, and 0 otherwise. OAPMale is a dummy variable equal 1 if only male household member is receiving OAP, and 0 otherwise. Maxage is age of oldest household member, Maxage^2 is age-squared of oldest household member, and Maxage^3 is age-cubed of oldest household member. Wave 1=2002, Wave 3=2005, and Wave 4=2006. Baseline covariates: young adults age dummies, household characteristics (Household size, Children under 5 years old, Household head educated, and Marital status of household member), and household assets (Household ownership of home, Life insurance, and Washing machine). Parameter estimates are statistically different from zero at *** 1%, ** 5%, and * 10% significance levels, respectively.

CHAPTER II

THE IMPACT OF SOCIAL CASH TRANSFERS ON SEXUAL BEHAVIOR OF YOUNG ADULTS IN SOUTH AFRICA

II.1 Introduction

There is a striking correlation between poverty and income shocks on the one hand and HIV/AIDS on the other hand (e.g. UNAIDS, 2008). HIV/AIDS (or illness in general) can push people and households into poverty, by reducing household labor supply and/or by increasing medical expenses. On the other hand, there is increasing evidence showing that transactional sexual activities, one of the channels through which HIV spread (Hallman, 2004; Dunkle et al. 2004; Gillespie et al., 2007), increase in response to income shocks (Dinkelman, Lam and Leibbrandt, 2008; Robinson and Yeh, 2011). The evidence suggests that when faced with economic hardship women are more likely to trade sexual favors for money and/or gifts (Silberschmidt and Rasch, 2001; Luke, 2002; Hunter 2002; Kaufman and Stavrou, 2002; Dunkle et al. 2004; Dinkelman, Lam and Leibbrandt, 2008; Robinson and Yeh, 2012). Hence, by providing a cushion against unanticipated income loss, social protection could potentially reduce transactional sexual activities, and hence the spread of HIV.

While many existing social protection schemes were designed to primarily influence sexual behaviors, their potential to contribute to a comprehensive HIV response is increasingly recognized. Baird et al. (2010) show that in Malawi, young girls who received cash transfers were less likely to engage in sexual intercourse with older men, increase condom use, less likely to get pregnant or married early, and reduce the number of multiple partners. In a slightly different context, De Walque et al. (2012) demonstrate that conditional cash transfers (a particular form of social cash transfers) can be used to incentivize people to remain free of sexually transmitted diseases, providing strong evidence that transfer recipients indeed altered their sexual behaviors. Cash transfers whether conditional or unconditional[9] are one form of social transfers. Furthermore, De Walque et al. (2012) experiment was designed specifically to alter sexual behaviors. There is no evidence that these findings hold either for other forms of cash transfers or in a non-experimental setting, i.e. when the policy targets a more general population.

This paper fills these gaps in the literature. I investigate the effect of an Old Age Pension (OAP) program on sexual behavior of young adults in South Africa. I focus on the impact of OAP on sexual behaviors (sexual debut, number of multiple partners, condom use, and marital status) of African young adults, and whether that impact differs by gender of the young adult and by gender of the pension recipient. This is important because young adults in South Africa have one of the highest HIV prevalence rate in the world and it is particular high among individuals aged 15-24 who account for 14% of all HIV global infections in 2001 (UNICEF-UNAIDS-WHO, 2002). Also, HIV infection among young adults who are entering the labor market is 13% and it is 33% for all females aged 25-29 (Altman, 2007).

Two features of my study are substantially different from Baird et al. (2010) and from De Walque et al. (2012). First, as social cash transfers, OAP differs substantially from unconditional

[9] Conditional cash transfers require recipient households to use educational or health services for the benefit of children living in the household (e.g. Mexico's Oportunidades require 85 percent children's school attendance rates) (World Bank, 2009). In contrast, unconditional cash transfers do not require recipient households to take any action but it usually targets school age or younger children.

cash transfers. OAP targets old people unlike unconditional cash transfers that usually target school age or younger children. Moreover, unlike conditional cash transfers OAP does not seek to alter the recipient behavior. Second, the policy experiment that I investigate, the South African OAP, is not a controlled experiment. Also, two closely related previous studies by Dinkelman et al. (2007, 2008) used the same CAPS data to examine the link between negative economic shocks and household and community level poverty on risky sexual behavior of young adults and found little evidence of this relationship. This paper differ significantly from Dinkelman et al. (2007, 2008) in that I examine the effect of permanent income shock (OAP) on sexual behavior of young adults instead of negative income shocks (e.g. death, job loss, and illness) used by Dinkelman et al. (2007, 2008). Moreover, my focus is on the effect of providing social cash transfers rather than on how households react to negative income shocks as in Dinkelman et al. (2007, 2008).

Using Regression Discontinuity Design (RDD) identification strategy, I find that young adult females who live with OAPFemale recipients become sexually active later 15.3% on average. There were no significant impact of any OAP, OAPFemale, and OAPMale receipts on self-reported condom use and number of multiple partners of young adults. Young adult females and males who live with OAPFemale recipients reduce their probability of getting married by 9.1% and 24.1% on average, respectively. On the contrary, young adult females and males who live with OAPMale recipients increase their probability of getting married by 21.4% and 23.8% on average, respectively. The evidence that OAP alters sexual behaviors implies that previous evidence on the role of unconditional cash transfers on sexual behaviors applies to other forms of social cash transfers as well. Furthermore, to some extent what really matters is the income effect and not the conditionality per se. These results also provide some suggestive evidence that previous findings from randomized control trial (e.g. Baird et al. 2010, De Walque et al., 2012) could be generalized.

II.2 The South African Old-Age Pension Program

South Africa's non-contributory state pension was introduced and restricted in 1928 to Whites and Colors as a safety-net for those who did not have private pensions as they reached retirement. This non-contributory state pension was extended to Africans and Asians in 1944 with limited and discriminatory entitlement standards and benefits (Sagner, 1998). Discriminatory entitlement benefits were withdrawn from Africans who had income larger than 700 rand compared to Whites 2250 rand, and Whites had 10 times the level of benefits as compared to Africans (Duflo, 2003). Also, White pensioners received their pension through mail compared to Africans who had to be at a particular location in order to receive their pension and it was sometimes impossible for Africans to receive their pension if they lived in far rural areas of South Africa. Moreover, the government manipulated Africans' age data to exclude individuals from the computer; thus, reducing the number of eligible pensioners as well as the cost associated with the pension program (Lund, 1993).

OAP is funded through taxation and it is means-tested on an individual's income and assets[10]. The maximum benefit in 1993 was 370 rand per month and that increased in 1998 to 470 rand per month (Case and Deaton, 1998). In 2010 and 2011, OAP payout increased to 1080 and 1140 rand per month (Woolard and Leibbrandt, 2010; South Africa Social Security Agency, 2011/12).[11] This scheme mainly targets poor individuals and age is the primary instrument used to determine pension eligibility. Hence, women over 60 years old and men over 65 years old are eligible for the pension[12]. About 14 percent of White women and 7 percent of White man

[10] Means-testing only depend on elderly income and assets and not on the income of other household members. See Case and Deaton (1998) for more detail on how the means-test is implemented.

[11] These incomes are about half the average African household income and twice the median per capita income among Africans.

[12] Although age is the primary instrument used to determine pension-eligible individuals, individuals who are closer to this eligibility criterion may increase their reported age to receive the pension benefits. The system is not 100% perfect but there is little evidence of widespread cheating on age.

receive OAP. By contrast, 80 percent of African women and 77 of African men reported receiving OAP (Case and Deaton, 1998).

II.3 Data and Descriptive Statistics

The data used for this paper is the Cape Area Panel Study (CAPS)[13]. CAPS is a longitudinal study of the lives of a representative sample of young adults aged 14-22 that live in the Cape Town Metropolitan area of South Africa. The aim of this longitudinal study was to document the transition from adolescents to adulthood in post-apartheid South Africa. Particularly, the survey intended to track the adolescents as they move through school, enter into the labor market, move into their own households, and start their own families.

There were approximately 5,250 households and 4,752 young adults who were randomly selected and interviewed from 2002-2006. In wave 1 (2002), all young adults and their household members as well as other households that did not have members between 14-22 years old were interviewed. Wave 2a and 2b re-interviewed a third and two-thirds of the young adults in Cape Town Metropolitan area in 2003 and 2004, respectively. In wave 3 (2005), the full young adults sample and approximately 2,000 co-resident parents of young adults were interviewed. In wave 4 (2006), the full young adults sample and a sample of older adults and all children born to female young adults were also interviewed. There were up to three young adults who were interviewed in every household.

The drawback of this panel survey as any other panel survey is attrition over time. The overall response rates of young adults in wave 2, 3, and 4 were 83%, 74%, and 72%, respectively. The attrition rate was the largest for the White young adults, followed by Africans

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[13] The Cape Area Panel Study Waves 1-2-3-4 were collected between 2002 and 2006 by the University of Cape Town and the University of Michigan, with funding provided by the US National Institute for Child Health and Human Development and the Andrew W. Mellon Foundation.

and Colors. Successful response rates in wave 4 for Whites, Africans, and Colors were 41.8%, 74.2%, and 79.5%, respectively. The main reason given for non-response in African households was moving within South Africa. I used wave 1 (2002), wave 3 (2005), and wave 4 (2006) for my descriptive statistics and empirical analyses. Also, I used inverse probability weighting (IPW) method to correct for potential biases from sample attrition (Wooldridge, 2001). Table 1 presents household and individual level descriptive statistics, by reported OAP status and gender-specific age eligibility. Membership in a household was defined as living in the household for more than 15 days of the last 30 days.

In table 1, panel 1 shows that household size, children under 5 years old, children 6-15 years old, and age of oldest household member are larger for pension recipients compared to non-pension recipient households. Female pensioners had larger household size, more children 6-13 years old and slightly older compared to male pensioners. On the other hand, male pensioners had more children under 5 years old compared to female pensioners. I observe from table 1 that females who reported not receiving a pension but who are eligible are just around the cut off age of 60. This means that they are turning 60 or just close to turning 60. There were 39 females who reported not receiving a pension but who are eligible. The same observation can be made for males older than 65 who reported not receiving a pension. They are just on average around the cut off eligibility age of 65; thus, they may have just turned 65 or are close to turning 65. There were 25 males who reported not receiving a pension but who are eligible. In total, there were 64 individuals (females and males) who reported not receiving a pension but who are eligible and they constitute 1.84% of the data. Also, 11 individuals reported receiving OAP even though they are not eligible and they constitute 1.97% of the data.

Table 1, panel 2 describes young adults' age, sexual activities, and marital status. Pension recipient households had more young adults using condom on average (50.6%) compared to non-pension recipient households (37.8%). Young adults in pensioner households

are slightly older but they are on average less likely to sexual debut (71.8%) compared to young adults in non-pension recipient households (74.3%).

Table 1: Household Descriptive Statistics: Mean (Standard Deviation)

OAP Receipt Recorded:	No				Yes			
Age-Eligible Members:	None	Yes: Female(s) only	Yes: Male(s) only	Yes: Both	None	Yes: Female(s) only	Yes: Male(s) only	Yes: Both
Panel 1: Household Composition								
Household size	6.095	7.615	6.960	7.359	6.090	8.168	7.144	7.991
	(2.663)	(3.384)	(2.150)	(2.962)	(1.375)	(3.598)	(2.508)	(3.453)
Children under 5 years old	0.649	0.615	0.680	0.641	0.273	0.829	0.948	0.850
	(0.860)	(0.747)	(0.557)	(0.675)	(0.467)	(1.053)	(1.286)	(1.097)
Children 6-15 years old	0.890	1.025	0.840	0.953	0.636	1.091	0.814	1.043
	(0.988)	(1.013)	(0.943)	(0.983)	(0.809)	(1.127)	(1.044)	(1.117)
Age of oldest household member	44.735	60.795	65.520	62.641	59.818	71.145	71.123	71.141
	(10.241)	(1.260)	(0.509)	(2.541)	(1.779)	(8.036)	(5.457)	(7.647)
Panel 2: Young Adults								
Age	19.883	19.384	21.240	20.109	20.727	19.903	20.381	19.986
	(3.038)	(03.507)	(3.166)	(3.474)	(3.717)	(3.223)	(2.852)	(3.165)
Ever had sex	0.743	0.657	0.706	0.673	0.500	0.712	0.747	0.718
	(0.437)	(0.482)	(0.470)	(0.474)	(0.535)	(0.453)	(0.438)	(0.450)
Multiple partners	1.434	1.500	1.300	1.409	1.714	1.460	1.324	1.435
	(1.213)	(0.933)	(0.733)	(0.844)	(1.254)	(1.113)	(0.891)	(1.077)
Condom use	0.662	0.880	0.545	0.723	0.667	0.669	0.683	0.671
	(0.473)	(0.3312)	(0.510)	(0.452)	(0.516)	(0.471)	(0.469)	(0.470)
Married	0.404	0.357	0.500	0.417	0.636	0.206	0.639	0.307
	(0.491)	(0.488)	(0.513)	(0.498)	(0.505)	(0.405)	(0.483)	(0.462)
Observations	3484	39	25	64	11	462	97	559

Also, young adults living in pensioner households are less likely to have multiple partners on average (2.7%) compared to young adults in non-pensioner households (2.9%). In addition, young adults in pensioner households tend to delay marriage (69.3%) compared to young adults in non-pensioner households (59.6%).

II.4 Empirical Model and Identification Strategy

To evaluate the impact of OAP on sexual behavior of young adults, I will ideally want to estimate the following Ordinary Least Squares (OLS) regression:

$$Y_{ih} = \alpha_0 + \alpha_1 OAP_h + \alpha_2 X_{ih} + \varepsilon_{ih} \quad (1)$$

In equation (1), i indicates individual young adult in household h. The variable Y_{ih} is a dummy variable representing the outcome of interest (sexual debut, number of multiple partners, condom use, and marital status), OAP_h is a dummy variable indicating whether a household member

receives pension, X_{ih} is a vector of young adult and household characteristics, and ε_{ih} is the error term. However, the OLS estimates of equation (1) will be biased if there is a systematic difference between pension-receiving and non-pension receiving households (e.g. pension-receiving households are older on average compared to non-pension receiving household) (Bertrand et al., 2003; Sienaert, 2008). To address this issue, OAP identification in the survey made it possible to employ RDD to estimate the causal effect of OAP on sexual debut, number of multiple partners, condom use, and marital status of young adults.

RDD was first introduced by Thistlethwaite and Campbell (1960) and later implemented by economists in the early 1990s to estimate program effect in a wide variety of economic contexts (Lee and Lemieux, 2009). The goal of this paper is to examine the causal effect of OAP on sexual behavior of young adults. This estimation is made possible by age-eligibility rule of OAP for women and men at 60 and 65 years old, respectively. The causal effect is estimated as the discontinuity on sexual behavior of young adults at the threshold of woman or man pension-eligibility age at 60 or 65, respectively. The idea is that in the absence of OAP, age of oldest woman or man in the household will impact sexual debut, number of multiple partners, condom use, and marital status of young adults in a continuous fashion and ascribing any jump away from the trend at age 60 or 65 to the pension.

Also, this approach relies on the idea that households around the cutoff points have similar characteristics except for the pension status. RDD requires mild assumptions and its inferences are potentially more credible compared to other non-experimental approaches such as difference-in-differences or instrumental variables (Lee and Lemieux, 2009). Moreover, Lee (2008) proved that there is no need to assume that isolated treatment variation is "as good as randomized" but randomized variation occurs because the agents are unable to precisely manipulate or control the assignment variable near the known cutoff point. Thus, given the age-eligibility rule for receiving OAP, evidence from descriptive statistics in table 1 of "age of oldest

household member" and figures 1, 2, and 3 (see Appendix) confirm that I can exploit sharp RDD in the "treatment" (sexual debut, multiple partners, condom use, and marital status) as a function of "OAP receipts" or "age of oldest household member". Also, figures 4, 5, 6, and 7 (see Appendix) provide confirmation that there is an effect of the outcome of interests (sexual debut, multiple partners, condom use, and marital status) around the cutoff age of oldest household member. Although these figures provide some confirmation regarding the nature of the data in term of assignment and treatment variables, they are not enough to establish any causal effect of OAP on sexual behavior young adults.

To quantify this causal effect, I estimate sharp RDD as follow:

$$Y_{ih} = \beta_0 + \beta_1 OAP_h + \beta_2 M_{ih} + \beta_3 M_{ih}^2 + \beta_3 M_{ih}^3 + T_t + \varepsilon_{ih} \quad (2)$$

In equation (2), i indicates individual young adult in household h. The variable Y_{ih} is a dummy variable representing the outcome of interest (sexual debut, number of multiple partners, condom use, and marital status), OAP_h is a dummy variable indicating whether a household member receives pension, M_{ih} is age of oldest household member, M_{ih}^2 is age-squared of oldest household member, M_{ih}^3 is age-cubed of oldest household member, T_t is wave 1, 3, and 4 (2002, 2005, and 2006) respectively, and ε_{ih} is the error term.

II.4.1 Internal Validity

One of the underlying assumptions of RDD is that as a result of local random assignment "age-eligibility rule of OAP" (women at 60 and men at 65), individuals should not be able to manipulate the assignment variable. Although, I cannot test this directly, a graphical representation of the raw data using different baseline covariates as outcome variables against assignment variable "age-eligibility rule of OAP" can provide some validity to the RDD that there is no discontinuity around the neighborhood of the cutoff point. Figures 8 to 13 (see Appendix) validate this assumption using baseline covariates. These covariates include

household characteristics (Household size, Children under 5 years old, Household head educated, Marital status of household member) and household assets (Household ownership of home, Life insurance, and Washing machine).

By construct, RDD does not need any covariates due to the assumption that around the cutoff points, households exhibit similar characteristics and as such assignment to treatment is independent of covariates and the estimate of the treatment effect is consistent (Lee and Lemieux, 2009). To ensure that my results are not sensitive to the inclusion of covariates, I estimated the following sharp RDD equation:

$$Y_{ih} = \beta_0 + \beta_1 OAP_h + \beta_2 M_{ih} + \beta_3 M_{ih}^2 + \beta_3 M_{ih}^3 + X_{ih} + T_t + \varepsilon_{ih} \quad (3)$$

In equation (3), i indicates individual young adult in household h. The variable Y_{ih} is a dummy variable representing the outcome of interest (sexual debut, number of multiple partners, condom use, marital status), OAP_h is a dummy variable indicating whether a household member receives pension, M_{ih} is age of oldest household member, M_{ih}^2 is age-squared of oldest household member, M_{ih}^3 is age-cubed of oldest household member, X_{ih} is a vector of young adult and household characteristics, T_t is wave 1, 3, and 4 (2002, 2005, and 2006) respectively, and ε_{ih} is the error term.

II.4.2 Attrition: Test and Correction

While the 2002 sample was drawn randomly from the household that had young adults aged 14-22, attrition across waves as the survey progress is evidence. The overall response rates of young adults in wave 2, 3, and 4 were 83%, 74%, and 72%, respectively. The attrition rate was the largest for the White young adults, followed by Africans and Colors. Successful response rates in wave 4 for Whites, Africans, and Colors were 41.8%, 74.2%, and 79.5%, respectively. I only focus on African young adults and their households in this study. The main reason given for non-response in African households was moving within South Africa.

Table 2 presents the summary statistics by attrition using 2002 data. On average, stayers live in a larger household, stay in a household with more pension recipients, are less likely to complete Matric, are younger, show better attitude and behavior during the survey interview, and are in households with more young adult males. Testing for differences between the two samples of stayers and leavers, the p-value is statistically significant at 1% for the following variables: OAP, household size, and young adults' age. It appears that young adults in my analysis sample; that is, stayers are not a random sample from the original sample in 2002. Therefore, I need to correct for any potential attrition bias that may underestimate or overestimate the effects of each factor on sexual debut, number of multiple partners, condom use, and marital status of young adults. I use inverse probability weighting (IPW) method to correct for potential biases from sample attrition (Wooldridge, 2001). This procedure only requires the data that I have and differ from the traditional Heckman solution which require an instrumental variable that will be observable for the entire sample. The Heckman solution may not be feasible because it is difficult to find an instrumental variable that is observable throughout the entire sample (Mu, 2003).

There are two stages that are required in order to employ the IPW procedure. In the first stage, at *t* (*t*=2005, 2006), an attrition probit model is estimated with young adults still in the sample at *t*-1[14]. Given this sample, some young adults are lost to attrition at time *t*, and some are not. Thus, the conditional probit model is estimated as follow:

$$\pi_{it}(s_{it} = 1[x_{it}\theta_t + \mu_{it}]|s_{it-1} = 1, s_{it-2} = 1, \dots, s_{i1} = 1) \quad (4)$$

where π_{it} is the probability that young adult *i* stay in survey *s* at time *t*=2005, 2006 and the error term is normally distributed as $\mu_{it}|x_{it} \sim Normal\ (0,1)$.

[14] The IPW procedure notations closely follow Mu (2003).

Table 2: Descriptive Statistics in 2002 by Attrition: Mean (Standard Deviation)

	Stayers	Leavers	(1)-(2)
Variables	(1)	(2)	P-value
OAP	0.139	0.088	0.000
	(0.346)	(0.284)	
Household size	5.969	5.095	0.000
	(2.808)	(2.656)	
Young adults age	17.854	18.365	0.000
	(2.515)	(2.438)	
Young adults gender	0.444	0.420	0.262
	(0.497)	(0.494)	
Young adults completed Matric	0.103	0.124	0.125
	(0.304)	(0.330)	
Attidude of respond	2.930	2.912	0.160
	(0.262)	(0.297)	
Bahavior of respond	2.810	2.800	0.609
	(0.421)	(0.441)	
Observations	1201	939	

Notes: Stayers are young adults who stayed in all 3 waves since 2002 survey. Leavers are young adults who were in 2002 survey but dropped out either in 2005 or 2006 survey. P-value tests the null hypothesis that the variable mean is not different across the two samples. Attitude=1 if young adult's response is hostile; Attitude=2 if young adult's response is neither hostile nor friendly; Attitude=3 if young adult's response is friendly. Bahavior=1 if young adult's response is not at all attentive; Bahavior=2 if young adult's response is somewhat attentive; Bahavior=3 if the young adult's response is very attentive.

However, since the sample may not be representative of the population in the original sample in *t*-1=2002, the IPW procedure cannot be used directly to mitigate the attrition bias associated with this sample. Using the joint probabilities computed from these predicted conditional probabilities can provide consistent estimators when using IPW procedure (Wooldridge, 2002d). In the second stage, these predicted conditional probabilities from equation (4) are used to compute the joint probabilities that young adult *i* stay in survey *s* at *t*=2005, 2006. Therefore, the joint probability is computed as follow: $\hat{p}_{i2005}(s_{i2002}=1, s_{i2005}=1) = \hat{\pi}_{i2002} * \hat{\pi}_{i2005}$, $\hat{p}_{i2006}(s_{i2002}=1; s_{i2005}=1; s_{i2006}=1) = \hat{\pi}_{i2002} * \hat{\pi}_{i2005} * \hat{\pi}_{i2006}$. Hence, each young adult *i* at time *t* is assigned a weight $w_{it=}\frac{1}{\hat{p}_{it}}$.

Table 3 presents the probit estimates of the conditional probabilities of young adults being in the survey in 2005 and 2006 (see Appendix). Conditional on household pension recipients, household size, young adults' demographic characteristics, and young adults' response

to the survey, I found that OAP, household size, young adults age, gender, and attitude during the survey are statistically significant at 1% and 5% significance levels in explaining probabilities of being in the survey. For example, young adults who are living with a pension recipient in 2002 are likely to stay in the survey in 2005. Also, young adults who attitude was not hostile but friendly in 2002 are most likely to remain in the survey in 2005 and 2006. Moreover, the larger households size in 2002 the more likely the household members to stay in the survey in 2005.

II.5 Results

The results from estimating equation (2) are presented in tables 4a, 5a, 6a, and 7a. In table 4a, columns 1, 2, 5, 6, 9, and 10 present the effect of any OAP, OAPFemale, and OAPMale receipts on sexual debut of young adult females and males without attrition correction. In contrast, columns 3, 4, 7, 8, 11, and 12 present the effect of any OAP, OAPFemale, and OAPMale receipts on sexual debut of young adult females and males with attrition correction. Tables 5a, 6a, and 7a follow the same format as table 4a. Also, tables 4b, 4c, 5b, 5c, 6b, 6c, 7b, and 7c present results from estimating equation (3) using similar format as table 4a-7a as part of the internal validity of RDD controlling for baseline covariates such as household characteristics and assets as a robustness check as well as a way to reduce sampling variability in the estimator. In addition, I restricted the sample of sexual debut of young adults to aged 14-18 because most of the young adults ages 19 and older had sexually debuted and as such they add little variation in the sample. However, I included aged 14-26 in the sample for the condom use, number of multiple partners, and marital status outcomes.

In table 4a, results indicate that any OAP receipts reduce the probability of young adult females sexual debut by 14.8% and it is significant at the 5% level without attrition correction; however, this result is insignificant after attrition correction. OAPFemale receipts reduce the probability of young adult females sexual debut by 15.5% and 13.0% without and with attrition

correction at the 1% and 5% significance levels, respectively. Also, OAPMale receipts reduce the probability of young adult males sexual debut by 20.0% after correcting for attrition at the 10% significance level.

In table 4b, I show that the estimates shown in table 4a are robust to the inclusion of additional controls. Any OAP receipts reduce the probability of young adult females sexual debut by 16.8% and 13.6% without and with attrition correction at 5% and 10% significance levels, respectively. The effect is larger when pension recipient is female. OAPFemale receipts reduce the probability of young adult females sexual debut by 18.5% and 16.1% without and with attrition correction at 1% and 5% significance levels, respectively. On the contrary, a male receiving the pension has no significant effect on the probability of young adults starting sex (columns 9 to 12).

Tables 5a and 5b results show that OAP, OAPFemale, and OAPMale receipts did not have any significant impact on the number of multiple partners reported by young adults (females and males). Also, tables 6a and 6b results indicate that OAP, OAPFemale, and OAPMale receipts did not have any significant impact on self-reported condom use by young adults (females and males).

I use marital status (married or not married) in my analyses as one indicator of sexual activities. This is important because early marriage is perceived as protective strategy by parents against pre-marital pregnancy and sexually transmitted infections (Bracher et al., 2003; Clark, 2004). Clark (2004) show that in Kenya and Zambia, early marriage reduces condom use, increase coital frequency, and prevents girls' ability to abstain from sex. Also, early marriage exposures girls to HIV/AIDS because husbands of married girls are 3 times more likely to be HIV-positive compared to boyfriends of single girls.

Table 7a results indicate that any OAP receipts reduce the probability that young adult males get married by 19.0% and 17.5% at 1% and 5% significance levels without and with attrition correction, respectively. The effect is larger when the pension recipient is female. In

that case, OAPFemale receipts reduce the probability that young adult males get married by 28.2% and 26.9% at the 1% significance level without and with attrition correction, respectively. In contrast, OAPMale receipts increase the probability that young adult females get married by 23.3% and 22.7% without and with attrition correction, respectively. Likewise, OAPMale receipts increase the probability that young adult males get married by 25.3% and 24.3% without and with attrition correction, respectively.

Table 7b shows that the estimates shown in table 7a are robust to the inclusion of additional controls. Results indicate that any OAP receipts reduce the probability that young adult males get married by 16.8% and 15.3% at 5% significance level without and with attrition correction, respectively. OAPFemale receipts reduce the probability that young adult males get married by 24.0% and 22.9% at the 1% significance level without and with attrition correction, respectively. Also, OAPFemale receipts reduce the probability that young adult females get married by 10.2% and 9.2% at the 10% significance level without and with attrition correction, respectively. In contrast, OAPMale receipts increase the probability that young adult females get married by 20.7% and 19.5% without and with attrition correction at 5% significance level, respectively. Likewise, OAPMale receipts increase the probability that young adult males get married by 24.0% and 23.6% without and with attrition correction at 1% significance level, respectively.

Income is a main determinant of sexual behavior. Education is, however, endogenous for the age group that I considered. Moreover, receiving OAP influences education decisions as well. I show in tables 4c, 5c, 6c, and 7c that controlling for education does not change the main conclusion of the paper. Results in tables 4c, 5c, 6c, and 7c re-estimated equation (3) by including educational level completed by young adults.

In table 4c, results indicate that any OAP receipts reduce the probability of young adult females sexual debut by 18.1% and 15.1% without and with attrition correction at the 5% and 10% significance levels, respectively. OAPFemale receipts reduce the probability of young adult

females sexual debut by 19.1% and 16.9% without and with attrition correction at the 1% and 5% significance levels, respectively.

Tables 5c results shows that any OAP, OAPFemale, and OAPMale receipts did not have any significant impact on the number of multiple partners reported by young adults (females and males). Also, table 6c results indicate that any OAP, OAPFemale, and OAPMale receipts did not have any significant impact on self-reported condom use by young adults (females and males).

In table 7c, results indicate that any OAP receipts reduce the probability that young adult males get married by 16.4% and 15.0% without and with attrition correction, and both estimates are significant at the 5% level. OAPFemale receipts reduce the probability that young adult males get married by 23.6% and 22.5% at the 1% significance level without and with attrition correction, respectively. Also, OAPFemale receipts reduce the probability that young adult females get married by 10.0% and 9.0% at the 10% significance level without and with attrition correction, respectively. In contrast, OAPMale receipts increase the probability of young adult female get married by 20.6% and 19.5% without and with attrition correction, respectively. Likewise, OAPMale receipts does increase the probability of young adult male get married by 24.0% and 23.5% without and with attrition correction, and both estimates are significant at the 1% significance level.

II.6 Conclusion

This paper presents evidence of the impact any OAP, OAPFemale, and OAPMale receipts on sexual behavior of young adult males and females aged 14-26. Using RDD identification strategy, I find that young adult females who live with OAPFemale recipients become sexually active later 15.3% on average. There were no significant impact of any OAP, OAPFemale, and OAPMale receipts on self-reported condom use and number of multiple partners of young adults. Young adult females and males who live with OAPFemale recipients reduce their probability of getting married by 9.1% and 24.1% on average, respectively. On the contrary, young adult

females and males who live with OAPMale recipients increase their probability of getting married by 21.4% and 23.8% on average, respectively.

These results answer my earlier research questions: Does OAP impact sexual behavior of African young adults? Does the effect of OAP differ by gender of the pension recipients? Does the effect of OAP differ by gender of the African young adults?" The answer is yes, OAP significantly impact sexual behavior of African young adults. Also, the effects of OAP differ by gender of the recipient as evidence provided by these results.

These results illustrates that even though OAP is targeted toward the elderly in South Africa as a way to alleviate poverty and improve their living standard, it has secondary effects on other household members. In particular, these results are important because it suggests that OAP can improve African young adults transition into adulthood in time when HIV/AIDS infection rate is high.

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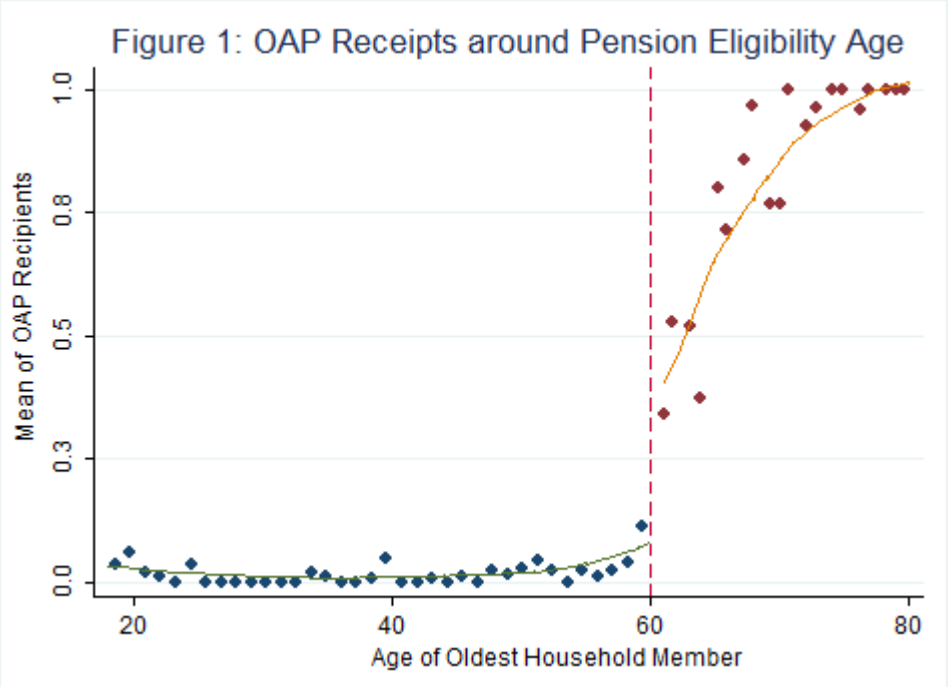
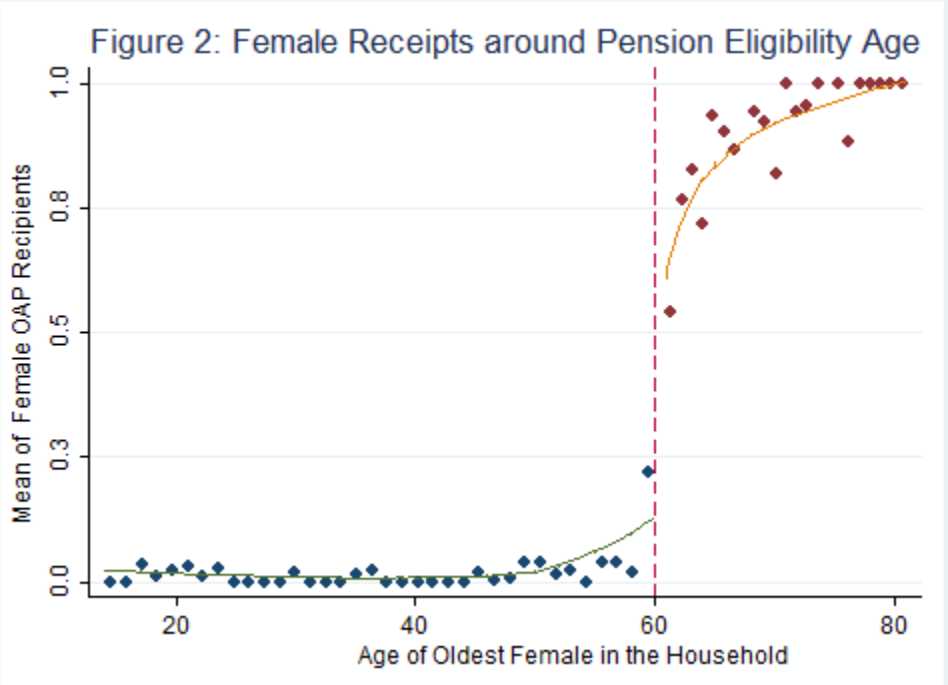
II.8 Appendix





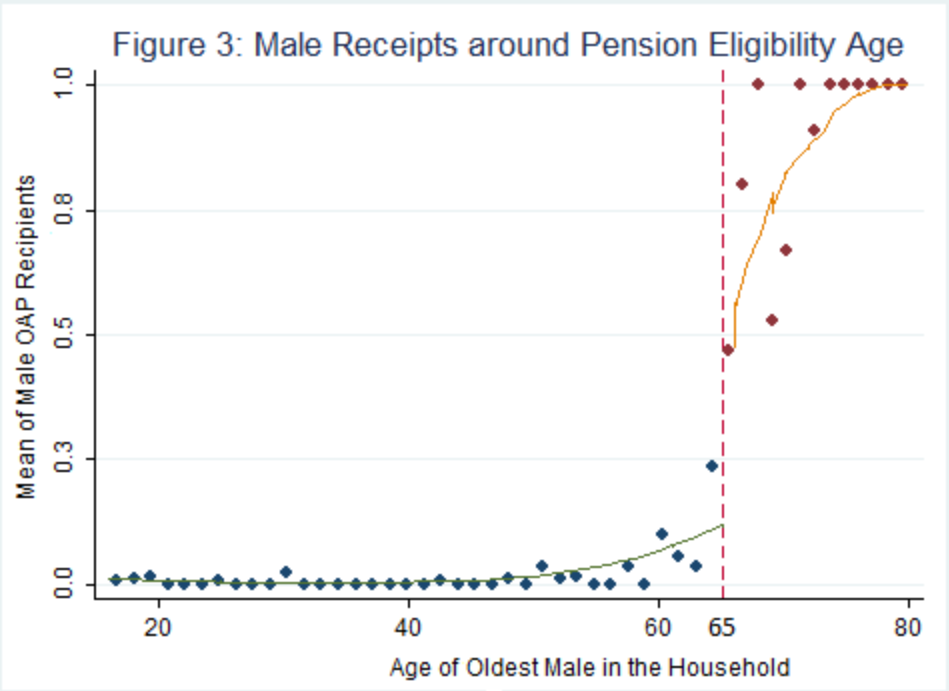


Figure 3: Male Receipts around Pension Eligibility Age
Mean of Male OAP Recipients
0.0
0.3
0.5
0.8
1.0
20
40
60
65
80
Age of Oldest Male in the Household

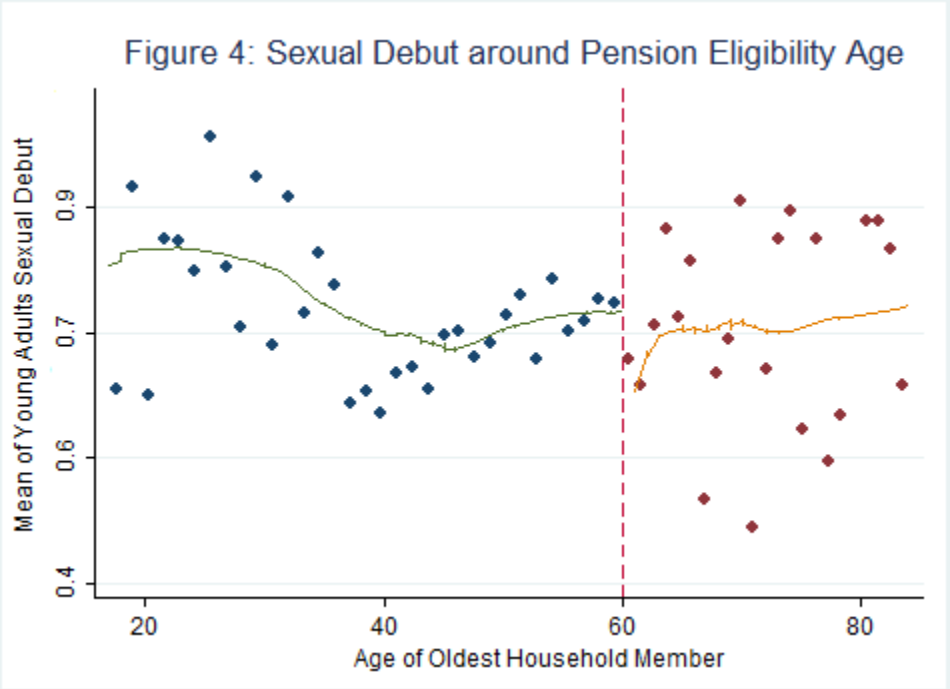


Figure 4: Sexual Debut around Pension Eligibility Age
Mean of Young Adults Sexual Debut
0.4
0.6
0.7
0.9
20
40
60
80
Age of Oldest Household Member

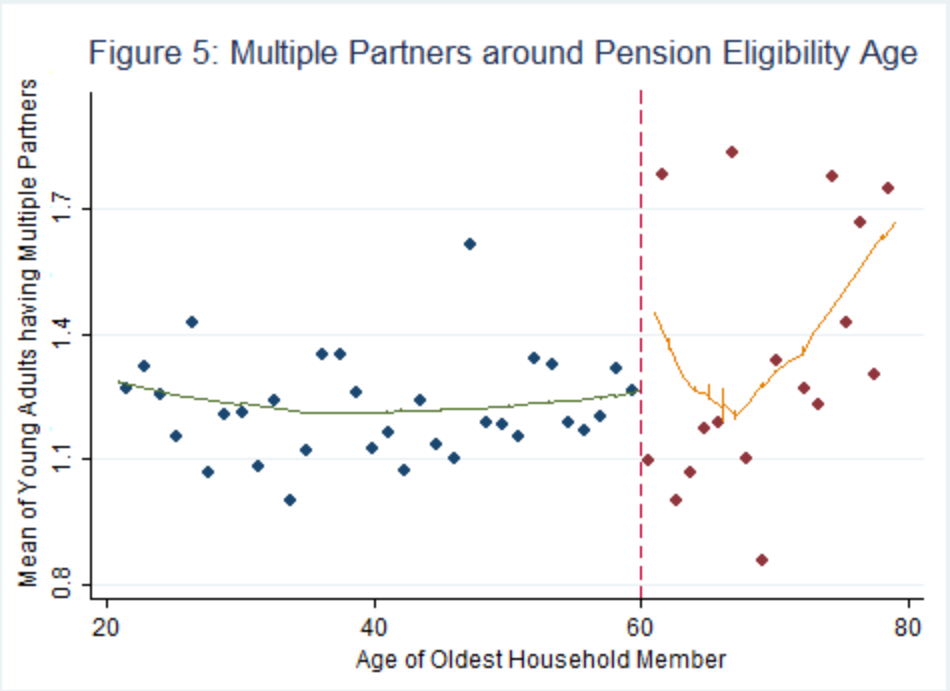


Figure 5: Multiple Partners around Pension Eligibility Age
Mean of Young Adults having Multiple Partners
0.8
1.1
1.4
1.7
20
40
60
80
Age of Oldest Household Member

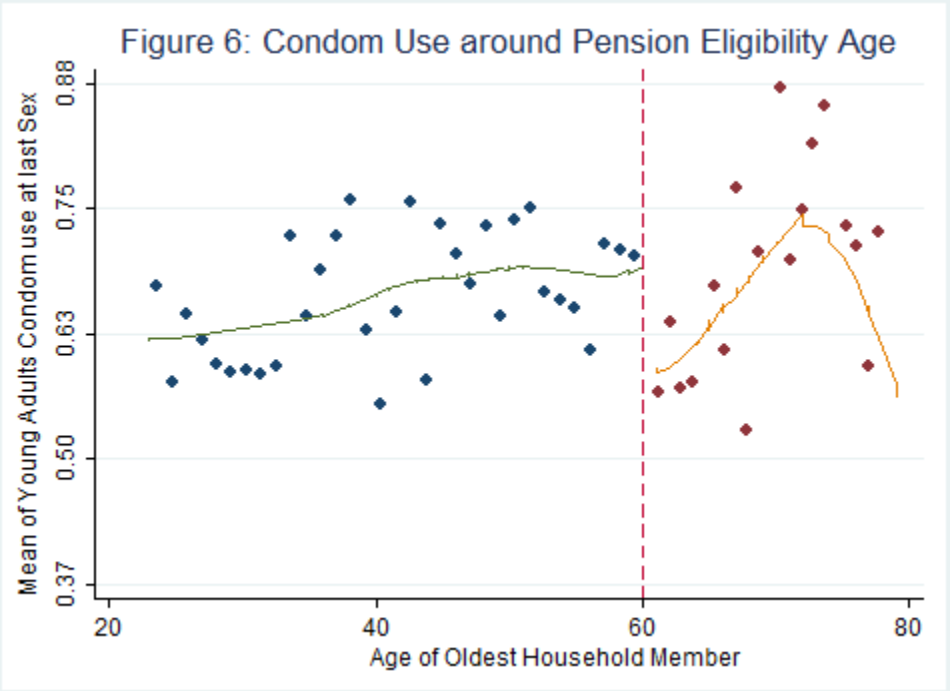


Figure 6: Condom Use around Pension Eligibility Age
Mean of Young Adults Condom use at last Sex
0.37
0.50
0.63
0.75
0.88
20
40
60
80
Age of Oldest Household Member

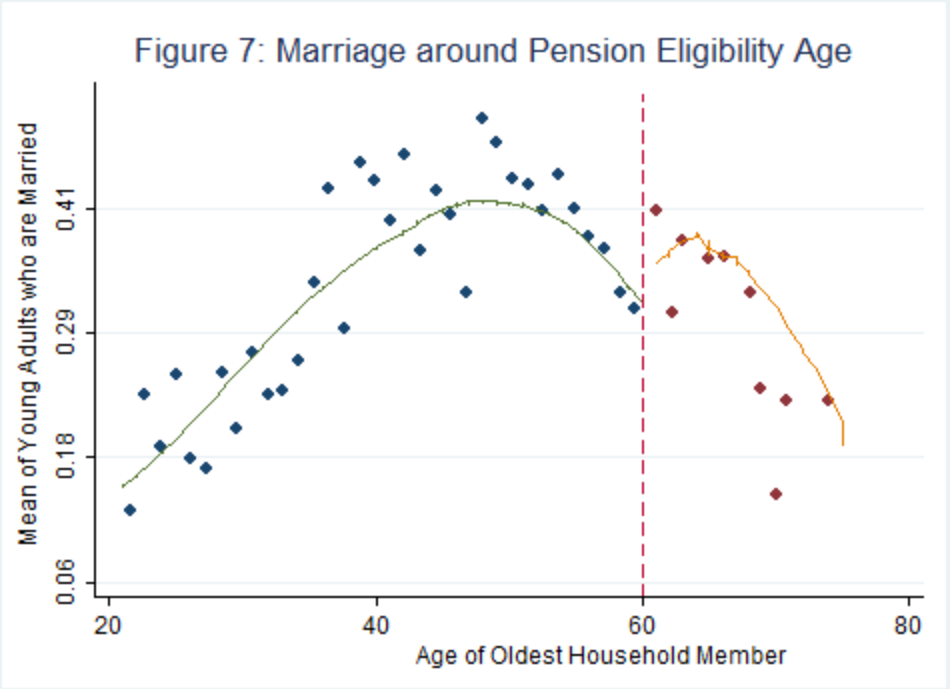


Figure 7: Marriage around Pension Eligibility Age
Mean of Young Adults who are Married
0.06
0.18
0.29
0.41
20
40
60
80
Age of Oldest Household Member

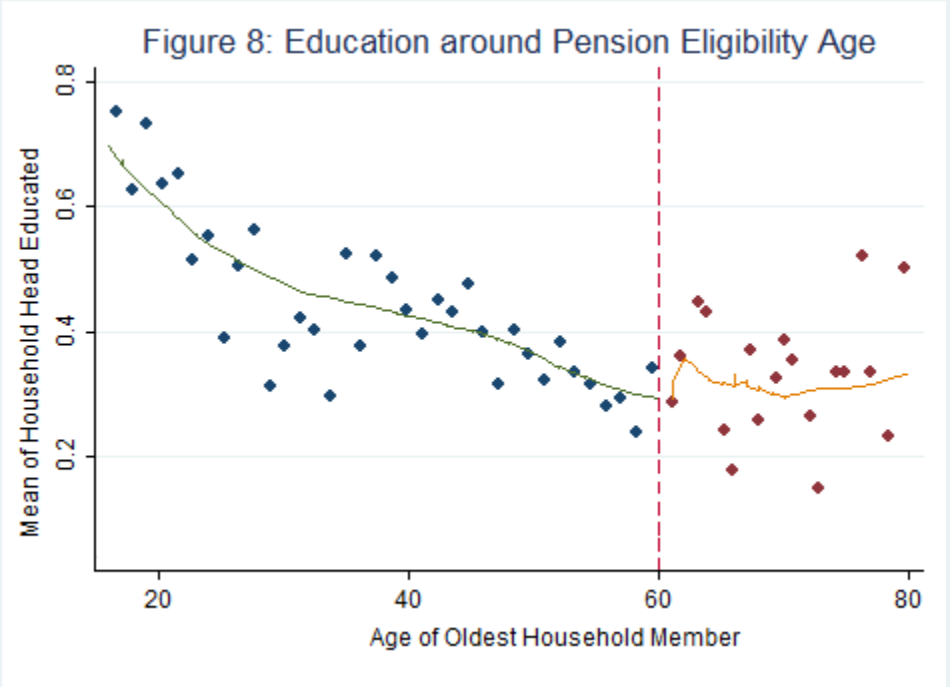


Figure 8: Education around Pension Eligibility Age
Mean of Household Head Educated
0.2
0.4
0.6
0.8
20
40
60
80
Age of Oldest Household Member

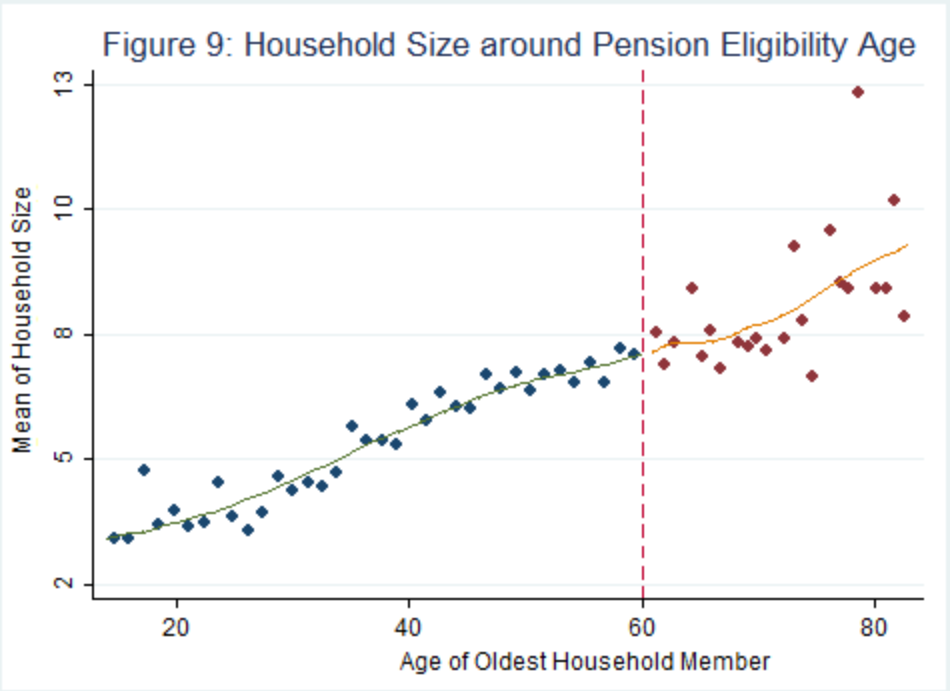


Figure 9: Household Size around Pension Eligibility Age
Mean of Household Size
2
5
8
10
13
20
40
60
80
Age of Oldest Household Member

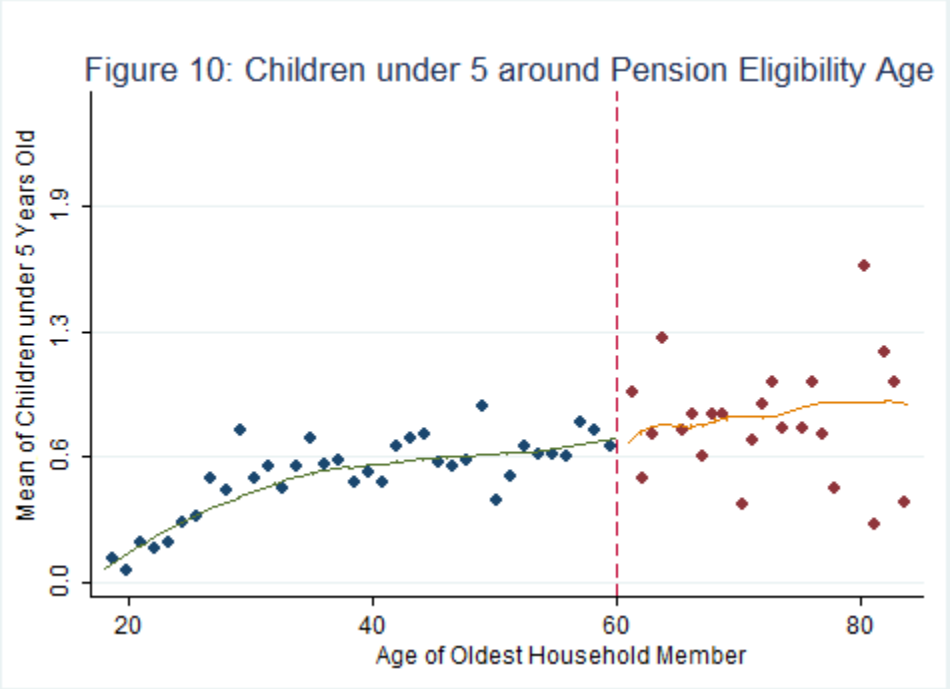


Figure 10: Children under 5 around Pension Eligibility Age
Mean of Children under 5 Years Old
0.0
0.6
1.3
1.9
20
40
60
80
Age of Oldest Household Member

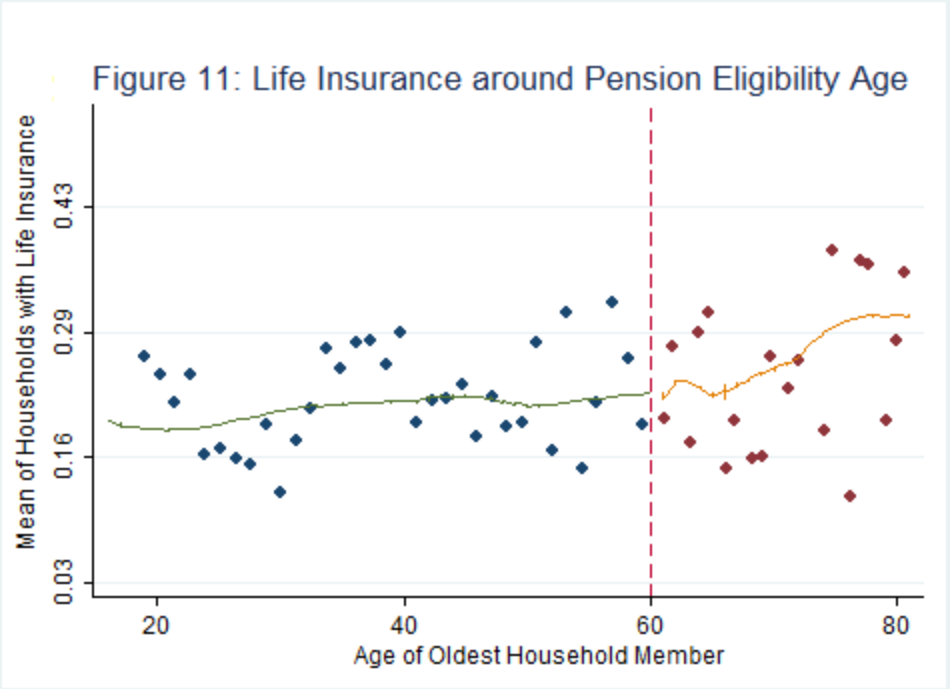


Figure 11: Life Insurance around Pension Eligibility Age
Mean of Households with Life Insurance
0.03
0.16
0.29
0.43
20
40
60
80
Age of Oldest Household Member

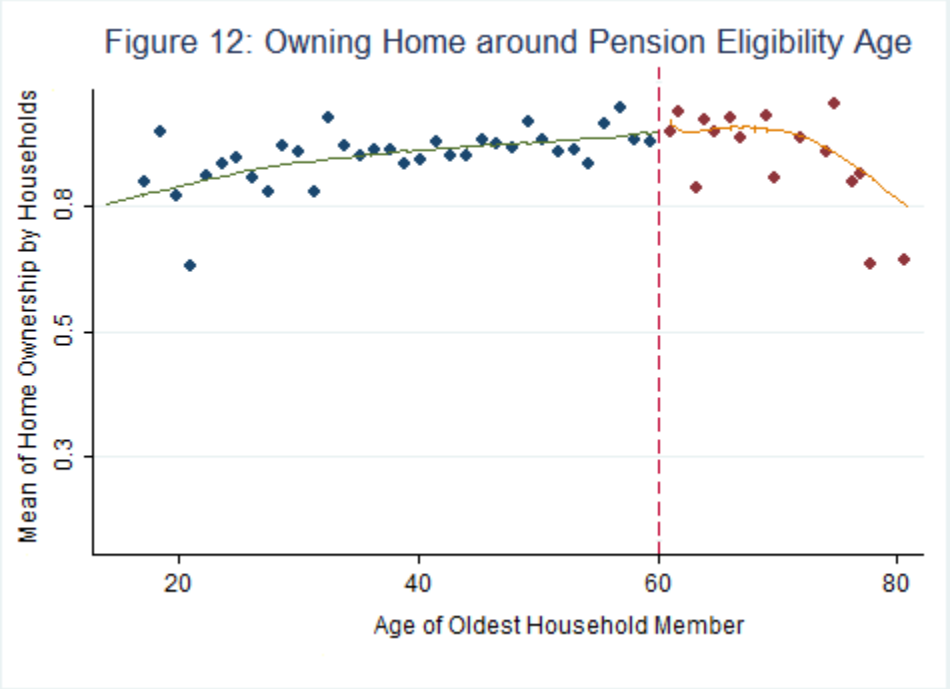


Figure 12: Owning Home around Pension Eligibility Age
Mean of Home Ownership by Households
0.3
0.5
0.8
20
40
60
80
Age of Oldest Household Member

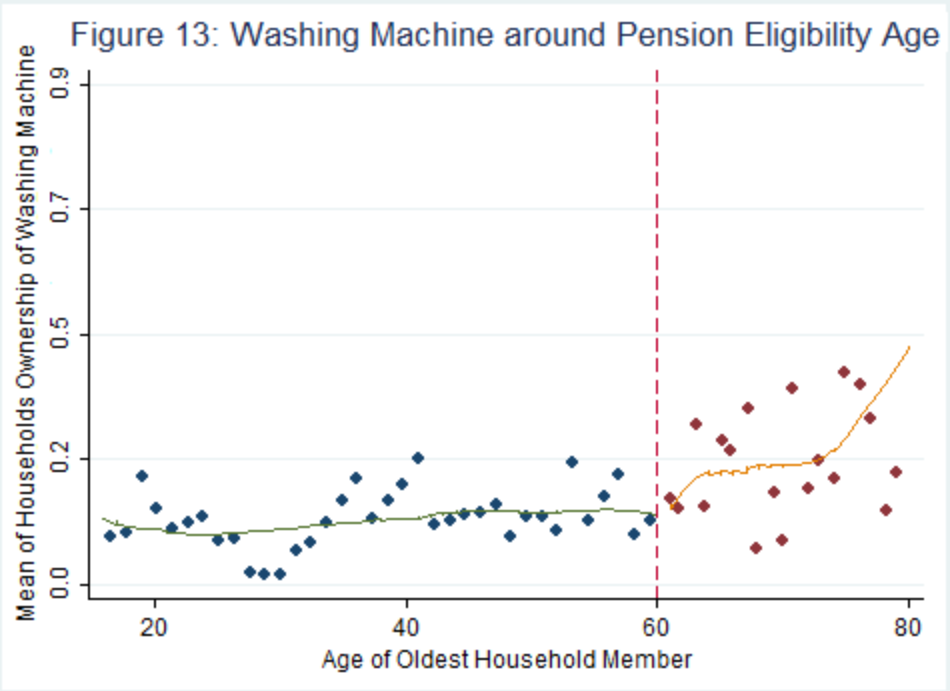


Figure 13: Washing Machine around Pension Eligibility Age
Mean of Households Ownership of Washing Machine
0.0
0.2
0.5
0.7
0.9
20
40
60
80
Age of Oldest Household Member

Table 3: Attrition Probability during 2002-2006

Dependent Variable: Stay=1; Leave=0		
Variables	(2005|2002)	(2006|2005, 2002)
OAP	0.273**	-1.498
	(0.106)	(0.130)
Household size	0.066***	0.007
	(0.014)	(0.016)
Young adults age	-0.038***	-0.012
	(0.013)	(0.017)
Young adults gender	0.151***	-0.222**
	(0.056)	(0.088)
Young adults completed Matric	0.085	-0.199
	(0.086)	(0.123)
Attitude2	0.659	-0.357***
	(0.598)	(0.190)
Attitude3	0.835	-0.342***
	(0.603)	(0.152)
Bahavior2	0.133	0.029
	(0.296)	(0.356)
Bahavior3	0.118	0.031
	(0.299)	(0.334)
Constant	-0.386	5.226***
	(0.669)	(0.468)
Observations	2125	2125

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. *** p<0.01, ** p<0.05, * p<0.1. Wave 1 =2002, Wave 3=2005, and Wave 4=2006. Attitude=1 if young adult's response is hostile; Attitude=2 if young adult's response is neither hostile nor friendly; Attitude=3 if young adult's response is friendly. Bahavior=1 if young adult's response is not at all attentive; Bahavior=2 if young adult's response is somewhat attentive; Bahavior=3 if young adult's response is very attentive.

Table 4a: Impact of Old Age Pension Program on Sexual Debut of Young Adults Aged 14-18

	Dependent Variable: Young Adults Ever had Sex											
	Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
OAP	-0.148**	-0.110	-0.115	-0.113								
	(0.070)	(0.093)	(0.072)	(0.093)								
OAPFemale					-0.155***	-0.079	-0.130**	-0.084				
					(0.058)	(0.089)	(0.060)	(0.088)				
OAPMale									-0.055	-0.192	-0.036	-0.200*
									(0.115)	(0.120)	(0.119)	(0.119)
Maxage	-0.044	-0.004	-0.046	-0.009	-0.043	-0.001	-0.045	-0.007	-0.034	0.001	-0.039	-0.005
	(0.028)	(0.028)	(0.028)	(0.029)	(0.028)	(0.028)	(0.028)	(0.029)	(0.028)	(0.029)	(0.029)	(0.029)
Maxage^2	0.001	0.000	0.001	0.000	0.001	-0.000	0.001	0.000	0.001	-0.000	0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Maxage^3	-0.000	0.000	-0.000	-0.000	-0.000	0.000	-0.000	-0.000	-0.000	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Wave_3	0.065	0.025	0.064	0.017	0.067	0.026	0.066	0.018	0.061	0.024	0.061	0.017
	(0.064)	(0.056)	(0.066)	(0.055)	(0.063)	(0.056)	(0.065)	(0.056)	(0.063)	(0.056)	(0.065)	(0.056)
Wave_4	0.269***	0.291***	0.254***	0.279***	0.274***	0.291***	0.258***	0.279***	0.266***	0.297***	0.252***	0.285***
	(0.051)	(0.046)	(0.052)	(0.047)	(0.051)	(0.046)	(0.053)	(0.047)	(0.050)	(0.046)	(0.052)	(0.048)
Constant	1.296***	0.573	1.338***	0.653	1.277***	0.530	1.334***	0.618	1.142***	0.493	1.239***	0.587
	(0.408)	(0.441)	(0.417)	(0.452)	(0.411)	(0.438)	(0.417)	(0.447)	(0.411)	(0.443)	(0.417)	(0.450)
Observations	797	650	797	650	797	650	797	650	797	650	797	650
R-squared	0.040	0.049	0.036	0.045	0.041	0.048	0.037	0.044	0.035	0.051	0.033	0.046

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. Young adults ever had sex (females or males) equal 1 if young adults reported ever having had sex, and 0 otherwise. OAP is a dummy variable equal 1 if any household member (female or male) receives OAP, and 0 otherwise. OAPFemale is a dummy variable equal 1 if only female household member is receiving OAP, and 0 otherwise. OAPMale is a dummy variable equal 1 if only male household member is receiving OAP, and 0 otherwise. Maxage is age of oldest household member, Maxage^2 is age-squared of oldest household member, and Maxage^3 is age-cubed of oldest household member. Wave 1=2002, Wave 3=2005, and Wave 4=2006. Parameter estimates are statistically different from zero at *** 1%, ** 5%, and * 10% significance levels, respectively.

Table 4b: Impact of Old Age Pension Program on Sexual Debut of Young Adults Aged 14-18 Controlling for Baseline Covariates

	Dependent Variable: Young Adults Ever had Sex											
	Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
OAP	-0.168**	-0.069	-0.136*	-0.069								
	(0.075)	(0.100)	(0.075)	(0.099)								
OAPFemale					-0.185***	-0.063	-0.161**	-0.064				
					(0.064)	(0.097)	(0.065)	(0.097)				
OAPMale									-0.049	-0.140	-0.026	-0.150
									(0.106)	(0.120)	(0.110)	(0.120)
Maxage	-0.042	0.000	-0.042	-0.003	-0.041	0.001	-0.043	-0.002	-0.029	0.004	-0.034	0.000
	(0.026)	(0.029)	(0.027)	(0.030)	(0.026)	(0.029)	(0.027)	(0.029)	(0.026)	(0.030)	(0.027)	(0.030)
Maxage^2	0.001	-0.000	0.001	-0.000	0.001	-0.000	0.001	-0.000	0.000	-0.000	0.001	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Maxage^3	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Wave_3	-0.043	-0.058	-0.044	-0.066	-0.041	-0.057	-0.042	-0.065	-0.047	-0.058	-0.046	-0.065
	(0.065)	(0.065)	(0.067)	(0.066)	(0.064)	(0.066)	(0.066)	(0.066)	(0.064)	(0.066)	(0.066)	(0.066)
Wave_4	0.104*	0.163***	0.087	0.146**	0.108*	0.163***	0.091	0.146**	0.103*	0.165***	0.086	0.149**
	(0.057)	(0.057)	(0.058)	(0.058)	(0.057)	(0.057)	(0.058)	(0.058)	(0.057)	(0.057)	(0.058)	(0.058)
Age_15	0.160**	0.092	0.171***	0.092	0.161**	0.093	0.172***	0.092	0.158**	0.091	0.169***	0.090
	(0.062)	(0.074)	(0.063)	(0.074)	(0.062)	(0.074)	(0.063)	(0.074)	(0.062)	(0.074)	(0.063)	(0.074)
Age_16	0.226***	0.232***	0.231***	0.230***	0.224***	0.233***	0.230***	0.231***	0.231***	0.232***	0.235***	0.229***
	(0.060)	(0.072)	(0.060)	(0.073)	(0.060)	(0.071)	(0.060)	(0.072)	(0.061)	(0.072)	(0.060)	(0.073)
Age_17	0.282***	0.185***	0.293***	0.188***	0.280***	0.185***	0.291***	0.187***	0.284***	0.186***	0.294***	0.189***
	(0.061)	(0.065)	(0.062)	(0.066)	(0.062)	(0.065)	(0.062)	(0.066)	(0.062)	(0.066)	(0.063)	(0.066)
Age_18	0.433***	0.331***	0.446***	0.341***	0.433***	0.331***	0.446***	0.342***	0.434***	0.334***	0.446***	0.344***
	(0.059)	(0.060)	(0.061)	(0.061)	(0.059)	(0.060)	(0.061)	(0.061)	(0.060)	(0.059)	(0.061)	(0.060)
Household size	0.012	0.021**	0.014*	0.023**	0.013*	0.021**	0.015*	0.023**	0.011	0.019*	0.013	0.022**
	(0.008)	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)
Children under 5 years old	-0.001	-0.010	0.003	-0.009	-0.002	-0.011	0.002	-0.010	-0.002	-0.010	0.003	-0.009
	(0.023)	(0.034)	(0.024)	(0.034)	(0.023)	(0.034)	(0.024)	(0.034)	(0.023)	(0.034)	(0.024)	(0.034)
Household head educated	0.006	-0.003	0.006	-0.002	0.006	-0.003	0.007	-0.002	0.005	-0.003	0.006	-0.003
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)	(0.006)	(0.006)
Marital status	0.027*	-0.002	0.026*	-0.001	0.028**	-0.002	0.027**	-0.001	0.021	-0.004	0.022*	-0.003
	(0.014)	(0.015)	(0.014)	(0.015)	(0.014)	(0.015)	(0.014)	(0.015)	(0.013)	(0.015)	(0.013)	(0.015)
Owning home	0.023	0.058	0.028	0.052	0.028	0.060	0.031	0.054	0.019	0.055	0.025	0.049
	(0.051)	(0.060)	(0.052)	(0.060)	(0.051)	(0.059)	(0.051)	(0.060)	(0.051)	(0.060)	(0.052)	(0.061)
Life insurance	-0.077	0.011	-0.075	0.008	-0.076	0.010	-0.074	0.007	-0.078*	0.011	-0.076	0.008
	(0.047)	(0.058)	(0.047)	(0.058)	(0.047)	(0.058)	(0.047)	(0.058)	(0.047)	(0.058)	(0.047)	(0.058)
Washing machine	-0.055	0.005	-0.059	0.002	-0.056	0.006	-0.060	0.003	-0.059	0.000	-0.062	-0.002
	(0.061)	(0.059)	(0.062)	(0.060)	(0.061)	(0.059)	(0.062)	(0.060)	(0.060)	(0.060)	(0.062)	(0.061)
Constant	0.830**	0.257	0.831**	0.301	0.818**	0.238	0.832**	0.286	0.665*	0.215	0.717*	0.269
	(0.393)	(0.438)	(0.402)	(0.447)	(0.389)	(0.437)	(0.398)	(0.445)	(0.388)	(0.444)	(0.398)	(0.449)
Observations	797	650	797	650	797	650	797	650	797	650	797	650
R-squared	0.116	0.107	0.116	0.105	0.118	0.107	0.118	0.105	0.110	0.108	0.112	0.106

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. Young adults ever had sex (females or males) equal 1 if young adults reported ever having had sex, and 0 otherwise. OAP is a dummy variable equal 1 if any household member (female or male) receives OAP, and 0 otherwise. OAPFemale is a dummy variable equal 1 if only female household member is receiving OAP, and 0 otherwise. OAPMale is a dummy variable equal 1 if only male household member is receiving OAP, and 0 otherwise. Maxage is age of oldest household member , Maxage^2 is age-squared of oldest household member, and Maxage^3 is age-cubed of oldest household member. Wave 1=2002, Wave 3=2005, and Wave 4=2006. Baseline covariates: young adults age dummies, household characteristics (Household size, Children under 5 years old, Household head educated, and Marital status of household member), and household assets (Household ownership of home, Life insurance, and Washing machine). Parameter estimates are statistically different from zero at *** 1%, ** 5%, and * 10% significance levels, respectively.

Table 4c: Impact of Old Age Pension Program on Sexual Debut of Young Adults Aged 14-18 Controlling for Educational Attainment

Dependent Variable: Young Adults Ever had Sex												
	Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
OAP	-0.181**	-0.064	-0.151*	-0.064								
	(0.076)	(0.100)	(0.077)	(0.099)								
OAPFemale					-0.191***	-0.057	-0.169**	-0.058				
					(0.064)	(0.098)	(0.066)	(0.098)				
OAPMale									-0.031	-0.146	-0.011	-0.156
									(0.102)	(0.122)	(0.107)	(0.122)
Maxage	-0.041	-0.002	-0.042	-0.006	-0.040	-0.001	-0.042	-0.006	-0.027	0.001	-0.032	-0.004
	(0.026)	(0.029)	(0.027)	(0.030)	(0.026)	(0.029)	(0.027)	(0.030)	(0.026)	(0.031)	(0.027)	(0.031)
Maxage^2	0.001	-0.000	0.001	0.000	0.001	-0.000	0.001	0.000	0.000	-0.000	0.001	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Maxage^3	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Wave_3	0.079	0.042	0.097	0.052	0.064	0.040	0.087	0.050	0.030	0.046	0.059	0.056
	(0.140)	(0.097)	(0.141)	(0.097)	(0.137)	(0.098)	(0.138)	(0.098)	(0.147)	(0.098)	(0.146)	(0.097)
Wave_4	0.114**	0.176***	0.096	0.158***	0.118**	0.176***	0.099*	0.158***	0.112**	0.179***	0.095	0.161***
	(0.056)	(0.057)	(0.058)	(0.058)	(0.056)	(0.057)	(0.058)	(0.058)	(0.057)	(0.057)	(0.058)	(0.058)
Age_15	0.161**	0.092	0.172***	0.092	0.162**	0.092	0.172***	0.093	0.159**	0.090	0.170***	0.090
	(0.062)	(0.075)	(0.063)	(0.075)	(0.063)	(0.075)	(0.063)	(0.075)	(0.062)	(0.075)	(0.063)	(0.075)
Age_16	0.227***	0.233***	0.232***	0.231***	0.225***	0.234***	0.230***	0.232***	0.232***	0.233***	0.236***	0.231***
	(0.060)	(0.073)	(0.060)	(0.074)	(0.060)	(0.072)	(0.060)	(0.073)	(0.061)	(0.073)	(0.060)	(0.074)
Age_17	0.285***	0.192***	0.296***	0.195***	0.282***	0.191***	0.294***	0.194***	0.286***	0.193***	0.297***	0.196***
	(0.061)	(0.066)	(0.062)	(0.067)	(0.062)	(0.066)	(0.063)	(0.067)	(0.062)	(0.066)	(0.063)	(0.067)
Age_18	0.439***	0.340***	0.451***	0.352***	0.437***	0.341***	0.450***	0.352***	0.439***	0.343***	0.451***	0.355***
	(0.059)	(0.061)	(0.061)	(0.062)	(0.059)	(0.061)	(0.061)	(0.061)	(0.060)	(0.061)	(0.061)	(0.061)
Household size	0.013	0.020*	0.015*	0.023**	0.014*	0.021**	0.015*	0.023**	0.012	0.019*	0.014	0.021**
	(0.008)	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)
Children under 5 years old	-0.003	-0.004	0.001	-0.004	-0.003	-0.005	0.001	-0.005	-0.003	-0.004	0.001	-0.004
	(0.023)	(0.033)	(0.024)	(0.034)	(0.023)	(0.033)	(0.024)	(0.033)	(0.023)	(0.034)	(0.024)	(0.034)
Less_than_Matric	0.008	-0.002	0.008	-0.001	0.008	-0.002	0.008	-0.001	0.006	-0.003	0.007	-0.002
	(0.006)	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)	(0.006)	(0.007)	(0.006)	(0.007)	(0.006)	(0.007)
Matric	-0.652***	0.107	-0.614**	0.152	-0.648***	0.106	-0.606**	0.150	-0.667**	0.116	-0.633**	0.159
	(0.236)	(0.183)	(0.240)	(0.199)	(0.235)	(0.184)	(0.238)	(0.200)	(0.267)	(0.181)	(0.270)	(0.197)
More_than_Matric	-0.690***	-0.099	-0.653***	-0.066	-0.675***	-0.101	-0.636***	-0.068	-0.706***	-0.096	-0.671***	-0.064
	(0.184)	(0.150)	(0.189)	(0.169)	(0.183)	(0.151)	(0.186)	(0.169)	(0.212)	(0.148)	(0.213)	(0.166)
Household head edcuated	-0.803***	0.008	-0.789***	0.031	-0.780***	0.009	-0.767***	0.033	-0.760***	0.013	-0.762***	0.034
	(0.135)	(0.158)	(0.142)	(0.173)	(0.133)	(0.158)	(0.139)	(0.173)	(0.155)	(0.157)	(0.162)	(0.172)
Marital status	0.026*	-0.003	0.025*	-0.002	0.028**	-0.003	0.027*	-0.002	0.021	-0.005	0.021	-0.004
	(0.014)	(0.015)	(0.014)	(0.015)	(0.014)	(0.015)	(0.014)	(0.015)	(0.013)	(0.015)	(0.013)	(0.015)
Owning home	0.021	0.056	0.026	0.050	0.026	0.058	0.030	0.051	0.018	0.053	0.024	0.047
	(0.051)	(0.061)	(0.051)	(0.062)	(0.051)	(0.061)	(0.051)	(0.062)	(0.051)	(0.061)	(0.051)	(0.062)
Life insurance	-0.075	0.006	-0.072	0.002	-0.074	0.004	-0.071	0.001	-0.077	0.006	-0.074	0.002
	(0.048)	(0.058)	(0.048)	(0.058)	(0.048)	(0.058)	(0.048)	(0.058)	(0.047)	(0.058)	(0.047)	(0.058)
Washing machine	-0.059	0.004	-0.063	0.002	-0.061	0.005	-0.064	0.003	-0.062	-0.001	-0.065	-0.002
	(0.063)	(0.061)	(0.064)	(0.061)	(0.063)	(0.061)	(0.064)	(0.061)	(0.063)	(0.062)	(0.064)	(0.062)
Constant	1.466***	0.184	1.436***	0.192	1.441***	0.168	1.421***	0.179	1.296***	0.141	1.325***	0.158
	(0.453)	(0.466)	(0.464)	(0.485)	(0.452)	(0.466)	(0.463)	(0.483)	(0.462)	(0.470)	(0.474)	(0.485)
Observations	797	650	797	650	797	650	797	650	797	650	797	650
R-squared	0.120	0.113	0.120	0.111	0.122	0.112	0.121	0.111	0.113	0.114	0.116	0.113

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. Young adults ever had sex (females or males) equal 1 if young adults reported ever having had sex, and 0 otherwise. OAP is a dummy variable equal 1 if any household member (female or male) receives OAP, and 0 otherwise. OAPFemale is a dummy variable equal 1 if only female household member is receiving OAP, and 0 otherwise. OAPMale is a dummy variable equal 1 if only male household member is receiving OAP, and 0 otherwise. Maxage is age of oldest household member , Maxage^2 is age-squared of oldest household member, and Maxage^3 is age-cubed of oldest household member. Wave 1=2002, Wave 3=2005, and Wave 4=2006. Baseline covariates: young adults age dummies, young adults educational attainment (Less_than_Matric, Matric, and More_than_Matric), (household characteristics (Household size, Children under 5 years old, Household head educated, and Marital status of household member), and household assets (Household ownership of home, Life insurance, and Washing machine). Parameter estimates are statistically different from zero at *** 1%, ** 5%, and * 10% significance levels, respectively.

Table 5a: Impact of Old Age Pension Program on Multiple Partnerships of Young Adults Aged 14-26

Dependent Variable: Young Adults having Multiple Partners in the Past 12 Months												
	Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
OAP	0.031	-0.054	0.034	-0.054								
	(0.037)	(0.061)	(0.039)	(0.063)								
OAPFemale					0.028	-0.062	0.027	-0.058				
					(0.042)	(0.064)	(0.044)	(0.065)				
OAPMale									0.070	-0.036	0.079	-0.036
									(0.068)	(0.063)	(0.072)	(0.065)
Maxage	0.001	-0.012	0.002	-0.012	0.000	-0.011	0.001	-0.011	-0.000	-0.009	0.001	-0.009
	(0.014)	(0.018)	(0.014)	(0.018)	(0.014)	(0.017)	(0.014)	(0.018)	(0.014)	(0.017)	(0.014)	(0.018)
Maxage^2	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Maxage^3	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Wave_3	-0.089***	-0.147***	-0.089***	-0.153***	-0.088***	-0.147***	-0.089***	-0.153***	-0.089***	-0.147***	-0.089***	-0.154***
	(0.025)	(0.029)	(0.026)	(0.029)	(0.025)	(0.029)	(0.026)	(0.029)	(0.025)	(0.029)	(0.025)	(0.029)
Wave_4	-0.054**	-0.022	-0.054**	-0.028	-0.054**	-0.022	-0.054**	-0.028	-0.054**	-0.021	-0.054**	-0.027
	(0.026)	(0.028)	(0.026)	(0.028)	(0.026)	(0.029)	(0.026)	(0.029)	(0.026)	(0.029)	(0.026)	(0.029)
Constant	0.228	0.594**	0.221	0.583**	0.241	0.584**	0.236	0.571**	0.246	0.550**	0.237	0.547**
	(0.198)	(0.262)	(0.197)	(0.269)	(0.201)	(0.254)	(0.200)	(0.263)	(0.199)	(0.249)	(0.197)	(0.260)
Observations	1,873	1,434	1,873	1,434	1,873	1,434	1,873	1,434	1,873	1,434	1,873	1,434
R-squared	0.012	0.017	0.012	0.017	0.012	0.017	0.011	0.017	0.013	0.016	0.012	0.017

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. Young adults having multiple partners (females or males) equal 1 if young adults reported having more than one sex partner in the last 12 months, and 0 otherwise. OAP is a dummy variable equal 1 if any household member (female or male) receives OAP, and 0 otherwise. OAPFemale is a dummy variable equal 1 if only female household member is receiving OAP, and 0 otherwise. OAPMale is a dummy variable equal 1 if only male household member is receiving OAP, and 0 otherwise. Maxage is age of oldest household member, Maxage^2 is age-squared of oldest household member, and Maxage^3 is age-cubed of oldest household member. Wave 1=2002, Wave 3=2005, and Wave 4=2006. Parameter estimates are statistically different from zero at *** 1%, ** 5%, and * 10% significance levels, respectively.

Table 5b: Impact of Old Age Pension Program on Multiple Partnerships of Young Adults Aged 14-26 Controlling for Baseline Covariates

	Dependent Variable: Young Adults having Multiple Partners in the Past 12 Months											
	Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
OAP	0.041	-0.040	0.047	-0.038								
	(0.036)	(0.063)	(0.038)	(0.065)								
OAPFemale					0.033	-0.046	0.034	-0.041				
					(0.041)	(0.065)	(0.043)	(0.067)				
OAPMale									0.078	-0.025	0.088	-0.026
									(0.067)	(0.063)	(0.071)	(0.066)
Maxage	0.001	-0.005	0.001	-0.004	-0.001	-0.004	-0.001	-0.003	-0.001	-0.003	-0.001	-0.002
	(0.013)	(0.018)	(0.013)	(0.019)	(0.014)	(0.018)	(0.013)	(0.019)	(0.014)	(0.017)	(0.013)	(0.018)
Maxage^2	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Maxage^3	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Wave_3	-0.081***	-0.170***	-0.077***	-0.173***	-0.081***	-0.170***	-0.077***	-0.174***	-0.083***	-0.171***	-0.078***	-0.174***
	(0.026)	(0.035)	(0.027)	(0.035)	(0.026)	(0.035)	(0.027)	(0.035)	(0.026)	(0.035)	(0.027)	(0.035)
Wave_4	-0.049*	-0.049	-0.048	-0.051	-0.049*	-0.049	-0.048	-0.051	-0.050*	-0.047	-0.048*	-0.050
	(0.029)	(0.036)	(0.029)	(0.036)	(0.029)	(0.036)	(0.029)	(0.036)	(0.029)	(0.036)	(0.029)	(0.036)
Age_15	-0.048	0.012	-0.038	0.005	-0.046	0.011	-0.036	0.005	-0.048	0.012	-0.038	0.005
	(0.112)	(0.105)	(0.113)	(0.107)	(0.113)	(0.105)	(0.113)	(0.107)	(0.112)	(0.105)	(0.113)	(0.108)
Age_16	-0.061	0.096	-0.062	0.101	-0.060	0.095	-0.060	0.100	-0.063	0.097	-0.064	0.101
	(0.102)	(0.099)	(0.102)	(0.100)	(0.102)	(0.099)	(0.103)	(0.100)	(0.101)	(0.099)	(0.102)	(0.100)
Age_17	-0.113	0.126	-0.101	0.122	-0.111	0.124	-0.099	0.121	-0.113	0.126	-0.101	0.122
	(0.094)	(0.089)	(0.095)	(0.092)	(0.095)	(0.089)	(0.096)	(0.092)	(0.094)	(0.089)	(0.095)	(0.092)
Age_18	-0.099	0.217***	-0.096	0.205***	-0.098	0.216***	-0.096	0.205***	-0.098	0.217***	-0.095	0.205***
	(0.096)	(0.076)	(0.097)	(0.078)	(0.096)	(0.077)	(0.097)	(0.078)	(0.096)	(0.077)	(0.097)	(0.078)
Age_19	-0.073	0.204***	-0.068	0.200**	-0.072	0.204***	-0.066	0.200**	-0.072	0.205***	-0.067	0.201**
	(0.099)	(0.077)	(0.100)	(0.078)	(0.100)	(0.077)	(0.100)	(0.078)	(0.099)	(0.077)	(0.100)	(0.078)
Age_20	-0.094	0.152*	-0.098	0.141*	-0.093	0.150*	-0.097	0.139*	-0.094	0.154*	-0.098	0.142*
	(0.090)	(0.078)	(0.091)	(0.079)	(0.091)	(0.078)	(0.091)	(0.079)	(0.090)	(0.079)	(0.091)	(0.080)
Age_21	-0.079	0.173**	-0.067	0.179**	-0.078	0.173**	-0.066	0.179**	-0.079	0.174**	-0.067	0.180**
	(0.097)	(0.085)	(0.098)	(0.088)	(0.098)	(0.085)	(0.098)	(0.088)	(0.097)	(0.085)	(0.097)	(0.088)
Age_22	-0.069	0.194**	-0.062	0.192**	-0.068	0.193**	-0.061	0.191**	-0.070	0.195**	-0.063	0.193**
	(0.099)	(0.077)	(0.100)	(0.080)	(0.099)	(0.077)	(0.100)	(0.080)	(0.098)	(0.077)	(0.099)	(0.080)
Age_23	-0.059	0.228**	-0.058	0.225**	-0.060	0.227**	-0.058	0.225**	-0.058	0.229**	-0.056	0.227**
	(0.104)	(0.095)	(0.107)	(0.095)	(0.104)	(0.095)	(0.107)	(0.095)	(0.104)	(0.095)	(0.107)	(0.095)
Age_24	-0.084	0.187*	-0.087	0.200**	-0.083	0.187*	-0.085	0.200**	-0.084	0.188*	-0.087	0.201**
	(0.098)	(0.099)	(0.100)	(0.099)	(0.099)	(0.099)	(0.100)	(0.099)	(0.098)	(0.099)	(0.100)	(0.099)
Age_25	-0.181*	0.062	-0.185*	0.057	-0.179*	0.060	-0.183*	0.056	-0.181*	0.062	-0.185*	0.057
	(0.098)	(0.089)	(0.098)	(0.091)	(0.099)	(0.089)	(0.099)	(0.091)	(0.098)	(0.090)	(0.098)	(0.091)
Age_26	-0.097	0.108	-0.094	0.101	-0.096	0.108	-0.093	0.101	-0.097	0.108	-0.095	0.100
	(0.106)	(0.100)	(0.106)	(0.101)	(0.106)	(0.100)	(0.107)	(0.101)	(0.105)	(0.100)	(0.105)	(0.101)
Household Size	0.008*	-0.005	0.008**	-0.005	0.008*	-0.004	0.008**	-0.005	0.008**	-0.005	0.009**	-0.005
	(0.004)	(0.007)	(0.004)	(0.007)	(0.004)	(0.007)	(0.004)	(0.007)	(0.004)	(0.006)	(0.004)	(0.007)
Children under 5 years old	-0.015	-0.036*	-0.020*	-0.033	-0.015	-0.036*	-0.020	-0.033	-0.016	-0.035*	-0.021*	-0.033
	(0.012)	(0.021)	(0.012)	(0.022)	(0.012)	(0.021)	(0.012)	(0.022)	(0.011)	(0.021)	(0.012)	(0.021)
Household head educated	-0.013***	0.001	-0.014***	0.002	-0.013***	0.001	-0.014***	0.002	-0.013***	0.001	-0.013***	0.002
	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)
Marital Status	-0.012	-0.001	-0.015*	-0.002	-0.012	-0.001	-0.015*	-0.002	-0.011	-0.002	-0.013	-0.002
	(0.008)	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)
Owning Home	-0.016	-0.011	-0.003	-0.010	-0.016	-0.010	-0.003	-0.010	-0.014	-0.012	-0.001	-0.011
	(0.027)	(0.046)	(0.027)	(0.046)	(0.027)	(0.046)	(0.027)	(0.046)	(0.027)	(0.046)	(0.027)	(0.046)
Life Insurance	0.001	-0.050	-0.007	-0.056*	0.000	-0.049	-0.007	-0.055*	0.001	-0.049	-0.006	-0.055
	(0.024)	(0.034)	(0.024)	(0.033)	(0.024)	(0.033)	(0.024)	(0.033)	(0.024)	(0.034)	(0.024)	(0.033)
Washing Machine	0.031	0.059	0.018	0.050	0.032	0.059	0.019	0.050	0.033	0.058	0.019	0.049
	(0.029)	(0.049)	(0.028)	(0.048)	(0.029)	(0.049)	(0.028)	(0.049)	(0.029)	(0.049)	(0.027)	(0.048)
Constant	0.466**	0.355	0.456**	0.324	0.485**	0.347	0.478**	0.315	0.488**	0.323	0.479**	0.299
	(0.229)	(0.270)	(0.229)	(0.278)	(0.229)	(0.260)	(0.229)	(0.271)	(0.227)	(0.255)	(0.227)	(0.267)
Observations	1,873	1,434	1,873	1,434	1,873	1,434	1,873	1,434	1,873	1,434	1,873	1,434
R-squared	0.027	0.038	0.028	0.039	0.027	0.039	0.028	0.039	0.028	0.038	0.029	0.039

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. Young adults having multiple partners (females or males) equal 1 if young adults reported more than one sex partner in the past 12 months, and 0 otherwise. OAP is a dummy variable equal 1 if any household member (female or male) receives OAP, and 0 otherwise. OAPFemale is a dummy variable equal 1 if only female household member is receiving OAP, and 0 otherwise. OAPMale is a dummy variable equal 1 if only male household member is receiving OAP, and 0 otherwise. Maxage is age of oldest household member, Maxage^2 is age-squared of oldest household member, and Maxage^3 is age-cubed of oldest household member. Wave 1=2002, Wave 3=2005, and Wave 4=2006. Baseline covariates: young adults age dummies, (household characteristics (Household size, Children under 5 years old, Household head educated, and Marital status of household member), and household assets (Household ownership of home, Life insurance, and Washing machine). Parameter estimates are statistically different from zero at *** 1%, ** 5%, and * 10% significance levels, respectively.

Table 5c: Impact of Old Age Pension Program on Multiple Partnerships of Young Adults Aged 14-26 Controlling for Educational Attainment

	Dependent Variable: Young Adults having Multiple Partners in the Past 12 Months											
	Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
OAP	0.039	-0.041	0.044	-0.039								
	(0.036)	(0.063)	(0.038)	(0.065)								
OAPFemale					0.032	-0.044	0.033	-0.039				
					(0.041)	(0.065)	(0.043)	(0.067)				
OAPMale									0.077	-0.029	0.087	-0.030
									(0.067)	(0.061)	(0.070)	(0.064)
Maxage	0.000	-0.005	0.001	-0.004	-0.001	-0.004	-0.001	-0.003	-0.001	-0.002	-0.001	-0.002
	(0.013)	(0.018)	(0.013)	(0.019)	(0.014)	(0.018)	(0.013)	(0.018)	(0.014)	(0.017)	(0.013)	(0.018)
Maxage^2	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Maxage^3	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Wave_3	-0.085**	-0.192***	-0.068*	-0.188***	-0.084**	-0.192***	-0.068*	-0.188***	-0.085**	-0.192***	-0.069*	-0.188***
	(0.035)	(0.047)	(0.036)	(0.048)	(0.035)	(0.047)	(0.036)	(0.048)	(0.035)	(0.047)	(0.036)	(0.048)
Wave_4	-0.046	-0.041	-0.044	-0.043	-0.046	-0.042	-0.044	-0.043	-0.046	-0.040	-0.045	-0.042
	(0.029)	(0.036)	(0.030)	(0.036)	(0.029)	(0.036)	(0.030)	(0.036)	(0.029)	(0.036)	(0.029)	(0.037)
Age_15	-0.047	0.012	-0.037	0.006	-0.045	0.012	-0.035	0.005	-0.047	0.012	-0.037	0.006
	(0.112)	(0.105)	(0.113)	(0.108)	(0.113)	(0.105)	(0.113)	(0.107)	(0.112)	(0.105)	(0.113)	(0.108)
Age_16	-0.059	0.097	-0.059	0.102	-0.058	0.097	-0.058	0.101	-0.061	0.098	-0.061	0.103
	(0.102)	(0.098)	(0.103)	(0.099)	(0.102)	(0.098)	(0.103)	(0.100)	(0.101)	(0.098)	(0.102)	(0.100)
Age_17	-0.109	0.128	-0.096	0.125	-0.108	0.127	-0.094	0.124	-0.110	0.128	-0.096	0.125
	(0.094)	(0.090)	(0.096)	(0.092)	(0.095)	(0.089)	(0.096)	(0.092)	(0.094)	(0.089)	(0.096)	(0.092)
Age_18	-0.095	0.217***	-0.091	0.205***	-0.094	0.216***	-0.090	0.205**	-0.094	0.217***	-0.090	0.206***
	(0.097)	(0.077)	(0.097)	(0.078)	(0.097)	(0.077)	(0.098)	(0.078)	(0.097)	(0.077)	(0.098)	(0.079)
Age_19	-0.066	0.207***	-0.060	0.205***	-0.065	0.207***	-0.059	0.205***	-0.066	0.208***	-0.060	0.205***
	(0.100)	(0.077)	(0.100)	(0.078)	(0.100)	(0.077)	(0.100)	(0.078)	(0.100)	(0.077)	(0.100)	(0.078)
Age_20	-0.086	0.160**	-0.087	0.150*	-0.085	0.158**	-0.086	0.148*	-0.086	0.162**	-0.087	0.151*
	(0.092)	(0.078)	(0.093)	(0.079)	(0.092)	(0.078)	(0.093)	(0.079)	(0.091)	(0.079)	(0.092)	(0.080)
Age_21	-0.071	0.181**	-0.056	0.189**	-0.070	0.181**	-0.055	0.189**	-0.071	0.182**	-0.056	0.190**
	(0.098)	(0.085)	(0.099)	(0.087)	(0.099)	(0.085)	(0.099)	(0.087)	(0.098)	(0.085)	(0.098)	(0.087)
Age_22	-0.058	0.200***	-0.049	0.201**	-0.057	0.200***	-0.048	0.201**	-0.059	0.202***	-0.050	0.202**
	(0.100)	(0.076)	(0.101)	(0.079)	(0.100)	(0.076)	(0.101)	(0.079)	(0.099)	(0.076)	(0.101)	(0.079)
Age_23	-0.050	0.239**	-0.046	0.239**	-0.050	0.238**	-0.046	0.239**	-0.048	0.241**	-0.044	0.240**
	(0.106)	(0.096)	(0.108)	(0.095)	(0.105)	(0.096)	(0.108)	(0.095)	(0.105)	(0.096)	(0.108)	(0.095)
Age_24	-0.072	0.193*	-0.073	0.208**	-0.071	0.193*	-0.072	0.208**	-0.072	0.195*	-0.073	0.209**
	(0.099)	(0.100)	(0.101)	(0.100)	(0.100)	(0.100)	(0.101)	(0.100)	(0.100)	(0.100)	(0.101)	(0.100)
Age_25	-0.171*	0.075	-0.174*	0.072	-0.169*	0.073	-0.172*	0.071	-0.171*	0.075	-0.174*	0.073
	(0.099)	(0.088)	(0.099)	(0.089)	(0.099)	(0.088)	(0.100)	(0.089)	(0.098)	(0.088)	(0.099)	(0.089)
Age_26	-0.087	0.115	-0.085	0.110	-0.086	0.115	-0.083	0.110	-0.088	0.115	-0.086	0.110
	(0.106)	(0.099)	(0.107)	(0.100)	(0.107)	(0.099)	(0.107)	(0.100)	(0.106)	(0.099)	(0.106)	(0.100)
Household size	0.008*	-0.005	0.008**	-0.005	0.007*	-0.004	0.008**	-0.005	0.008**	-0.005	0.009**	-0.005
	(0.004)	(0.006)	(0.004)	(0.007)	(0.004)	(0.007)	(0.004)	(0.007)	(0.004)	(0.006)	(0.004)	(0.007)
Children under 5 years old	-0.015	-0.035*	-0.021*	-0.033	-0.015	-0.035*	-0.021*	-0.033	-0.016	-0.035*	-0.022*	-0.033
	(0.012)	(0.021)	(0.012)	(0.021)	(0.012)	(0.021)	(0.012)	(0.021)	(0.011)	(0.020)	(0.012)	(0.021)
Less_than_Matric	0.014	-0.048	0.041	-0.024	0.013	-0.047	0.040	-0.023	0.015	-0.047	0.041	-0.023
	(0.075)	(0.104)	(0.075)	(0.106)	(0.075)	(0.104)	(0.076)	(0.106)	(0.075)	(0.105)	(0.074)	(0.106)
Matric	-0.020	-0.092	0.002	-0.080	-0.021	-0.090	0.001	-0.079	-0.020	-0.091	0.002	-0.079
	(0.072)	(0.091)	(0.072)	(0.092)	(0.073)	(0.091)	(0.072)	(0.093)	(0.072)	(0.091)	(0.071)	(0.093)
More_than_Matric	0.018	-0.010	0.026	0.003	0.017	-0.009	0.025	0.004	0.017	-0.009	0.025	0.004
	(0.063)	(0.087)	(0.064)	(0.089)	(0.063)	(0.087)	(0.064)	(0.089)	(0.062)	(0.088)	(0.062)	(0.089)
Household head educated	-0.012***	0.001	-0.013***	0.003	-0.012***	0.002	-0.013***	0.003	-0.012***	0.001	-0.012***	0.003
	(0.004)	(0.005)	(0.005)	(0.005)	(0.004)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.005)	(0.005)
Marital status	-0.012	-0.001	-0.014*	-0.001	-0.012	-0.000	-0.014*	-0.001	-0.011	-0.001	-0.013	-0.002
	(0.008)	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)	(0.008)	(0.010)
Owning home	-0.015	-0.012	-0.001	-0.012	-0.015	-0.012	-0.002	-0.012	-0.013	-0.014	0.000	-0.014
	(0.027)	(0.046)	(0.027)	(0.046)	(0.027)	(0.046)	(0.027)	(0.046)	(0.027)	(0.046)	(0.027)	(0.046)
Life insurance	-0.000	-0.050	-0.006	-0.056*	-0.000	-0.050	-0.007	-0.055*	0.000	-0.050	-0.005	-0.055
	(0.024)	(0.034)	(0.024)	(0.033)	(0.024)	(0.034)	(0.024)	(0.033)	(0.024)	(0.034)	(0.024)	(0.033)
Washing machine	0.033	0.055	0.020	0.046	0.034	0.055	0.021	0.046	0.035	0.053	0.022	0.045
	(0.029)	(0.049)	(0.028)	(0.049)	(0.029)	(0.050)	(0.028)	(0.049)	(0.029)	(0.049)	(0.027)	(0.049)
Constant	0.442*	0.398	0.404	0.343	0.460*	0.387	0.423*	0.331	0.462*	0.365	0.425*	0.317
	(0.244)	(0.284)	(0.244)	(0.291)	(0.240)	(0.274)	(0.241)	(0.284)	(0.241)	(0.272)	(0.242)	(0.282)
Observations	1,873	1,434	1,873	1,434	1,873	1,434	1,873	1,434	1,873	1,434	1,873	1,434
R-squared	0.029	0.041	0.030	0.042	0.029	0.041	0.029	0.042	0.029	0.040	0.030	0.042

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. Young adults having multiple partners (females or males) equal 1 if young adults reported more than one sex partner in the last 12 months, and 0 otherwise. OAP is a dummy variable equal 1 if any household member (female or male) receives OAP, and 0 otherwise. OAPFemale is a dummy variable equal 1 if only female household member is receiving OAP, and 0 otherwise. OAPMale is a dummy variable equal 1 if only male household member is receiving OAP, and 0 otherwise. Maxage is age of oldest household member, Maxage^2 is age-squared of oldest household member, and Maxage^3 is age-cubed of oldest household member. Wave 1=2002, Wave 3=2005, and Wave 4=2006. Baseline covariates: young adults age dummies, young adults educational attainment (Less_than_Matric, Matric, and More_than_Matric), (household characteristics (Household size, Children under 5 years old, Household head educated, and Marital status of household member), and household assets (Household ownership of home, Life insurance, and Washing machine). Parameter estimates are statistically different from zero at *** 1%, ** 5%, and * 10% significance levels, respectively.

Table6a: Impact of Old Age Pension Program on Condom Usage by Young adults Aged 14-26

Dependent Variable: Young Adults Reported Using Condom at Last Sex												
	Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
OAP	-0.070	-0.032	-0.064	-0.041								
	(0.046)	(0.054)	(0.049)	(0.055)								
OAPFemale					-0.042	-0.076	-0.045	-0.090				
					(0.046)	(0.071)	(0.049)	(0.073)				
OAPMale									-0.051	-0.049	-0.046	-0.054
									(0.068)	(0.066)	(0.071)	(0.070)
Maxage	-0.010	0.003	-0.007	0.003	-0.006	0.001	-0.004	0.002	-0.004	0.004	-0.003	0.004
	(0.016)	(0.018)	(0.017)	(0.019)	(0.016)	(0.018)	(0.017)	(0.019)	(0.015)	(0.018)	(0.016)	(0.019)
Maxage^2	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Maxage^3	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Wave_3	0.074**	0.066*	0.082**	0.064*	0.073**	0.066*	0.082**	0.065*	0.073**	0.066*	0.082**	0.065*
	(0.035)	(0.038)	(0.036)	(0.038)	(0.035)	(0.038)	(0.035)	(0.037)	(0.035)	(0.038)	(0.036)	(0.038)
Wave_4	-0.114***	-0.076**	-0.111***	-0.078**	-0.114***	-0.077**	-0.111***	-0.079**	-0.114***	-0.074**	-0.110***	-0.076**
	(0.034)	(0.034)	(0.034)	(0.033)	(0.034)	(0.034)	(0.034)	(0.033)	(0.034)	(0.033)	(0.034)	(0.032)
Constant	0.767***	0.704**	0.720***	0.703**	0.713***	0.728***	0.680***	0.723***	0.690***	0.686**	0.656***	0.680**
	(0.253)	(0.273)	(0.261)	(0.280)	(0.252)	(0.270)	(0.258)	(0.276)	(0.236)	(0.265)	(0.245)	(0.274)
Observations	1,558	1,236	1,558	1,236	1,558	1,236	1,558	1,236	1,558	1,236	1,558	1,236
R-squared	0.031	0.020	0.032	0.020	0.031	0.021	0.031	0.022	0.030	0.020	0.031	0.020

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. Young adults condom use (females or males) equal 1 if young adults reported using condom at last sex, and 0 otherwise. OAP is a dummy variable equal 1 if any household member (female or male) receive OAP, and 0 otherwise. OAPFemale is a dummy variable equal 1 if onle female household member is receiving OAP, and 0 otherwise. OAPMale is a dummy variable equal 1 if only male household member is receiving OAP, and 0 otherwise. Maxage is age of oldest household member, Maxage^2 is age-squared of oldest household member, and Maxage^3 is age-cubed of oldest household member. Wave 1=2002, Wave 3=2005, and Wave 4=2006. Parameter estimates are statistically different from zero at *** 1%, ** 5%, and * 10% significance levels, respectively.

Table 6b: Impact of Old Age Pension Program on Condom Usage by Young adults Aged 14-26 Controlling for Baseline Covariates

	Dependent Variable: Young Adults Reported Using Condom at Last Sex											
	Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
OAP	-0.080*	-0.031	-0.074	-0.039								
	(0.046)	(0.054)	(0.048)	(0.055)								
OAPFemale					-0.051	-0.080	-0.055	-0.093				
					(0.047)	(0.072)	(0.049)	(0.073)				
OAPMale									-0.049	-0.038	-0.042	-0.042
									(0.069)	(0.072)	(0.071)	(0.076)
Maxage	-0.013	0.005	-0.011	0.006	-0.009	0.003	-0.009	0.004	-0.007	0.006	-0.006	0.007
	(0.016)	(0.019)	(0.017)	(0.019)	(0.016)	(0.019)	(0.017)	(0.019)	(0.015)	(0.018)	(0.016)	(0.019)
Maxage^2	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Maxage^3	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Wave_3	0.095**	0.097**	0.109**	0.091**	0.094**	0.096**	0.107**	0.091**	0.094**	0.097**	0.108**	0.092**
	(0.042)	(0.045)	(0.042)	(0.045)	(0.041)	(0.045)	(0.042)	(0.045)	(0.042)	(0.045)	(0.042)	(0.045)
Wave_4	-0.080**	-0.046	-0.069*	-0.054	-0.081**	-0.048	-0.070*	-0.056	-0.080**	-0.044	-0.069*	-0.051
	(0.038)	(0.040)	(0.039)	(0.039)	(0.039)	(0.040)	(0.039)	(0.040)	(0.039)	(0.040)	(0.039)	(0.039)
Age_15	0.112	0.199**	0.137	0.204**	0.108	0.200**	0.133	0.205**	0.115	0.199**	0.139	0.204**
	(0.159)	(0.097)	(0.160)	(0.100)	(0.159)	(0.098)	(0.160)	(0.101)	(0.156)	(0.097)	(0.157)	(0.100)
Age_16	-0.013	-0.054	0.005	-0.042	-0.016	-0.059	0.002	-0.047	-0.009	-0.051	0.008	-0.039
	(0.165)	(0.122)	(0.170)	(0.123)	(0.166)	(0.123)	(0.171)	(0.124)	(0.162)	(0.121)	(0.167)	(0.123)
Age_17	-0.031	-0.209*	-0.017	-0.200*	-0.035	-0.211*	-0.021	-0.202*	-0.030	-0.208*	-0.016	-0.200*
	(0.154)	(0.116)	(0.158)	(0.120)	(0.154)	(0.117)	(0.159)	(0.121)	(0.151)	(0.115)	(0.156)	(0.120)
Age_18	-0.012	-0.126	-0.004	-0.115	-0.013	-0.127	-0.005	-0.116	-0.009	-0.125	-0.001	-0.115
	(0.159)	(0.117)	(0.164)	(0.119)	(0.159)	(0.117)	(0.164)	(0.119)	(0.156)	(0.116)	(0.161)	(0.118)
Age_19	0.025	-0.102	0.044	-0.086	0.023	-0.104	0.041	-0.088	0.028	-0.101	0.046	-0.086
	(0.154)	(0.117)	(0.159)	(0.120)	(0.154)	(0.117)	(0.159)	(0.120)	(0.152)	(0.116)	(0.157)	(0.119)
Age_20	-0.017	-0.162	-0.004	-0.152	-0.019	-0.165	-0.006	-0.155	-0.013	-0.159	-0.000	-0.150
	(0.152)	(0.114)	(0.157)	(0.117)	(0.152)	(0.115)	(0.157)	(0.118)	(0.150)	(0.114)	(0.154)	(0.117)
Age_21	-0.064	-0.123	-0.061	-0.112	-0.065	-0.126	-0.062	-0.113	-0.057	-0.122	-0.055	-0.111
	(0.157)	(0.112)	(0.161)	(0.115)	(0.157)	(0.112)	(0.161)	(0.115)	(0.154)	(0.111)	(0.158)	(0.115)
Age_22	-0.057	-0.113	-0.041	-0.098	-0.057	-0.115	-0.042	-0.100	-0.050	-0.111	-0.035	-0.096
	(0.153)	(0.121)	(0.157)	(0.124)	(0.153)	(0.121)	(0.157)	(0.125)	(0.150)	(0.120)	(0.155)	(0.124)
Age_23	-0.079	-0.121	-0.077	-0.112	-0.079	-0.124	-0.077	-0.115	-0.074	-0.120	-0.073	-0.112
	(0.159)	(0.111)	(0.162)	(0.115)	(0.158)	(0.112)	(0.162)	(0.115)	(0.156)	(0.111)	(0.160)	(0.115)
Age_24	-0.003	-0.120	0.002	-0.118	-0.005	-0.122	0.000	-0.119	0.000	-0.118	0.005	-0.117
	(0.157)	(0.114)	(0.159)	(0.118)	(0.157)	(0.114)	(0.160)	(0.118)	(0.154)	(0.113)	(0.157)	(0.117)
Age_25	-0.092	-0.111	-0.110	-0.098	-0.094	-0.112	-0.112	-0.099	-0.087	-0.110	-0.105	-0.098
	(0.168)	(0.119)	(0.173)	(0.122)	(0.169)	(0.119)	(0.174)	(0.123)	(0.166)	(0.118)	(0.171)	(0.122)
Age_26	-0.121	-0.144	-0.114	-0.112	-0.123	-0.144	-0.116	-0.111	-0.118	-0.145	-0.111	-0.113
	(0.162)	(0.115)	(0.167)	(0.117)	(0.163)	(0.115)	(0.167)	(0.117)	(0.161)	(0.115)	(0.165)	(0.117)
Household size	0.004	-0.003	0.005	-0.002	0.004	-0.002	0.005	-0.001	0.003	-0.003	0.005	-0.002
	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)
Children under 5 years old	-0.019	-0.059***	-0.020	-0.063***	-0.020	-0.060***	-0.021	-0.064***	-0.020	-0.058***	-0.021	-0.062***
	(0.016)	(0.021)	(0.015)	(0.022)	(0.016)	(0.021)	(0.015)	(0.022)	(0.016)	(0.021)	(0.015)	(0.022)
Household head educated	0.008*	0.003	0.009**	0.003	0.008*	0.003	0.009**	0.003	0.008*	0.003	0.009**	0.003
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Owning home	-0.018	0.013	-0.018	0.011	-0.018	0.014	-0.018	0.012	-0.021	0.012	-0.021	0.009
	(0.042)	(0.042)	(0.043)	(0.042)	(0.043)	(0.042)	(0.043)	(0.042)	(0.043)	(0.042)	(0.044)	(0.043)
Life insurance	-0.020	-0.012	-0.016	-0.014	-0.020	-0.013	-0.015	-0.015	-0.020	-0.012	-0.016	-0.014
	(0.032)	(0.029)	(0.032)	(0.030)	(0.031)	(0.029)	(0.032)	(0.030)	(0.032)	(0.029)	(0.032)	(0.030)
Washing machine	0.064**	0.039	0.061**	0.039	0.062**	0.041	0.060*	0.041	0.060**	0.036	0.057*	0.037
	(0.030)	(0.038)	(0.031)	(0.037)	(0.030)	(0.038)	(0.031)	(0.037)	(0.029)	(0.037)	(0.030)	(0.037)
Constant	0.761**	0.746**	0.695**	0.727**	0.704**	0.772**	0.654**	0.750**	0.665**	0.724**	0.613**	0.702**
	(0.301)	(0.313)	(0.312)	(0.323)	(0.299)	(0.309)	(0.308)	(0.318)	(0.283)	(0.307)	(0.295)	(0.318)
Observations	1,558	1,236	1,558	1,236	1,558	1,236	1,558	1,236	1,558	1,236	1,558	1,236
R-squared	0.046	0.042	0.049	0.042	0.045	0.043	0.048	0.043	0.044	0.042	0.048	0.042

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. Young adults condom use (females or males) equal 1 if young adults reported using condom at last sex, and 0 otherwise. OAP is a dummy variable equal 1 if any household member (female or male) receives OAP, and 0 otherwise. OAPFemale is a dummy variable equal 1 if only female household member is receiving OAP, and 0 otherwise. OAPMale is a dummy variable equal 1 if only male household member is receiving OAP, and 0 otherwise. Maxage is age of oldest household member, Maxage^2 is age-squared of oldest household member, and Maxage^3 is age-cubed of oldest household member. Wave 1=2002, Wave 3=2005, and Wave 4=2006. Baseline covariates: young adults age dummies, (household characteristics (Household size, Children under 5 years old, Household head educated, and Marital status of household member), and household assets (Household ownership of home, Life insurance, and Washing machine). Parameter estimates are statistically different from zero at *** 1%, ** 5%, and * 10% significance levels, respectively.

Table 6c: Impact of Old Age Pension Program on Condom Usage by Young adults Aged 14-26 Controlling for Educational Attainment

	Dependent Variable: Young Adults Reported Using Condom at Last Sex											
	Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
OAP	-0.077*	-0.029	-0.071	-0.037								
	(0.046)	(0.055)	(0.048)	(0.056)								
OAPFemale					-0.051	-0.078	-0.055	-0.091				
					(0.047)	(0.072)	(0.049)	(0.074)				
OAPMale									-0.050	-0.035	-0.042	-0.040
									(0.069)	(0.073)	(0.071)	(0.077)
Maxage	-0.011	0.007	-0.009	0.008	-0.007	0.005	-0.006	0.006	-0.005	0.008	-0.004	0.009
	(0.016)	(0.019)	(0.017)	(0.020)	(0.016)	(0.019)	(0.017)	(0.019)	(0.015)	(0.018)	(0.016)	(0.019)
Maxage^2	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Maxage^3	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Wave_3	0.009	0.066	0.016	0.058	0.008	0.067	0.015	0.058	0.008	0.067	0.015	0.059
	(0.054)	(0.054)	(0.055)	(0.053)	(0.054)	(0.054)	(0.054)	(0.053)	(0.054)	(0.054)	(0.055)	(0.053)
Wave_4	-0.084**	-0.054	-0.072*	-0.062	-0.085**	-0.056	-0.072*	-0.064	-0.084**	-0.052	-0.072*	-0.059
	(0.038)	(0.040)	(0.038)	(0.039)	(0.038)	(0.040)	(0.038)	(0.040)	(0.038)	(0.040)	(0.038)	(0.039)
Age_15	0.105	0.198**	0.129	0.203**	0.101	0.199**	0.125	0.204**	0.108	0.198**	0.132	0.203**
	(0.158)	(0.098)	(0.158)	(0.101)	(0.158)	(0.099)	(0.159)	(0.101)	(0.155)	(0.097)	(0.155)	(0.100)
Age_16	-0.021	-0.053	-0.004	-0.040	-0.024	-0.058	-0.007	-0.046	-0.017	-0.050	-0.001	-0.038
	(0.164)	(0.122)	(0.168)	(0.123)	(0.164)	(0.123)	(0.168)	(0.124)	(0.160)	(0.121)	(0.165)	(0.123)
Age_17	-0.049	-0.210*	-0.036	-0.201*	-0.053	-0.212*	-0.040	-0.203*	-0.048	-0.209*	-0.035	-0.200*
	(0.152)	(0.117)	(0.156)	(0.121)	(0.152)	(0.117)	(0.156)	(0.121)	(0.149)	(0.116)	(0.154)	(0.120)
Age_18	-0.033	-0.125	-0.025	-0.115	-0.034	-0.126	-0.027	-0.115	-0.029	-0.124	-0.023	-0.114
	(0.157)	(0.117)	(0.161)	(0.119)	(0.157)	(0.117)	(0.161)	(0.119)	(0.154)	(0.116)	(0.159)	(0.118)
Age_19	0.007	-0.104	0.023	-0.088	0.004	-0.106	0.021	-0.089	0.010	-0.103	0.026	-0.087
	(0.152)	(0.118)	(0.156)	(0.120)	(0.152)	(0.118)	(0.156)	(0.121)	(0.149)	(0.117)	(0.154)	(0.120)
Age_20	-0.047	-0.164	-0.037	-0.153	-0.049	-0.167	-0.039	-0.155	-0.043	-0.161	-0.034	-0.150
	(0.150)	(0.116)	(0.154)	(0.119)	(0.150)	(0.116)	(0.154)	(0.119)	(0.147)	(0.115)	(0.151)	(0.118)
Age_21	-0.097	-0.126	-0.097	-0.114	-0.098	-0.129	-0.098	-0.116	-0.090	-0.125	-0.091	-0.113
	(0.154)	(0.113)	(0.157)	(0.116)	(0.154)	(0.114)	(0.157)	(0.117)	(0.151)	(0.113)	(0.155)	(0.116)
Age_22	-0.092	-0.119	-0.079	-0.103	-0.093	-0.121	-0.080	-0.105	-0.086	-0.117	-0.074	-0.102
	(0.150)	(0.123)	(0.154)	(0.126)	(0.150)	(0.123)	(0.154)	(0.126)	(0.147)	(0.122)	(0.151)	(0.125)
Age_23	-0.114	-0.129	-0.116	-0.119	-0.115	-0.133	-0.116	-0.122	-0.110	-0.129	-0.112	-0.119
	(0.155)	(0.113)	(0.158)	(0.116)	(0.155)	(0.113)	(0.158)	(0.116)	(0.152)	(0.113)	(0.156)	(0.116)
Age_24	-0.036	-0.124	-0.033	-0.121	-0.038	-0.125	-0.036	-0.122	-0.032	-0.122	-0.031	-0.120
	(0.153)	(0.115)	(0.155)	(0.118)	(0.153)	(0.115)	(0.155)	(0.119)	(0.151)	(0.114)	(0.153)	(0.118)
Age_25	-0.122	-0.117	-0.142	-0.104	-0.124	-0.118	-0.145	-0.105	-0.117	-0.117	-0.138	-0.105
	(0.166)	(0.121)	(0.170)	(0.124)	(0.166)	(0.122)	(0.170)	(0.125)	(0.163)	(0.120)	(0.167)	(0.124)
Age_26	-0.151	-0.148	-0.143	-0.116	-0.153	-0.148	-0.146	-0.115	-0.148	-0.149	-0.141	-0.117
	(0.160)	(0.115)	(0.164)	(0.117)	(0.161)	(0.115)	(0.165)	(0.118)	(0.158)	(0.115)	(0.163)	(0.118)
Household size	0.003	-0.003	0.005	-0.002	0.004	-0.002	0.005	-0.001	0.003	-0.003	0.005	-0.002
	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)	(0.005)	(0.006)
Children under 5 years old	-0.013	-0.057***	-0.014	-0.062***	-0.015	-0.058***	-0.015	-0.063***	-0.014	-0.057***	-0.014	-0.061***
	(0.016)	(0.022)	(0.016)	(0.022)	(0.016)	(0.022)	(0.016)	(0.022)	(0.016)	(0.022)	(0.016)	(0.022)
Less_than_Matric	-0.135	0.034	-0.166*	0.030	-0.135	0.036	-0.166*	0.031	-0.135	0.034	-0.165*	0.029
	(0.087)	(0.099)	(0.089)	(0.098)	(0.087)	(0.100)	(0.089)	(0.099)	(0.087)	(0.098)	(0.089)	(0.098)
Matric	-0.065	0.056	-0.089	0.050	-0.064	0.058	-0.088	0.052	-0.065	0.055	-0.088	0.049
	(0.079)	(0.080)	(0.080)	(0.080)	(0.079)	(0.081)	(0.080)	(0.080)	(0.079)	(0.080)	(0.080)	(0.079)
More_than_Matric	0.008	0.086	-0.012	0.087	0.009	0.086	-0.012	0.087	0.009	0.086	-0.011	0.087
	(0.072)	(0.076)	(0.075)	(0.076)	(0.072)	(0.077)	(0.075)	(0.077)	(0.072)	(0.075)	(0.076)	(0.076)
Household head educated	0.006	0.002	0.006	0.002	0.006	0.002	0.006	0.002	0.006	0.002	0.006	0.002
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Owning home	-0.017	0.017	-0.017	0.016	-0.017	0.018	-0.017	0.017	-0.020	0.016	-0.020	0.015
	(0.042)	(0.042)	(0.043)	(0.042)	(0.042)	(0.042)	(0.043)	(0.042)	(0.042)	(0.042)	(0.043)	(0.043)
Life insurance	-0.029	-0.015	-0.024	-0.018	-0.028	-0.016	-0.023	-0.018	-0.029	-0.015	-0.024	-0.017
	(0.032)	(0.029)	(0.032)	(0.030)	(0.031)	(0.029)	(0.032)	(0.030)	(0.031)	(0.029)	(0.032)	(0.030)
Washing machine	0.058*	0.035	0.053*	0.035	0.056*	0.037	0.052*	0.037	0.053*	0.032	0.049	0.032
	(0.029)	(0.038)	(0.030)	(0.038)	(0.030)	(0.038)	(0.030)	(0.038)	(0.029)	(0.038)	(0.030)	(0.037)
Constant	0.901***	0.688**	0.866**	0.672*	0.847***	0.714**	0.828**	0.695**	0.809***	0.669**	0.786**	0.649*
	(0.319)	(0.332)	(0.331)	(0.341)	(0.319)	(0.326)	(0.328)	(0.335)	(0.303)	(0.326)	(0.315)	(0.337)
Observations	1,558	1,236	1,558	1,236	1,558	1,236	1,558	1,236	1,558	1,236	1,558	1,236
R-squared	0.052	0.044	0.056	0.044	0.051	0.046	0.055	0.046	0.051	0.044	0.055	0.044

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. Young adults condom use (females or males) equal 1 if young adults reported using condom at last sex, and 0 otherwise. OAP is a dummy variable equal 1 if any household member (female or male) receives OAP, and 0 otherwise. OAPFemale is a dummy variable equal 1 if only female household member is receiving OAP, and 0 otherwise. OAPMale is a dummy variable equal 1 if only male household member is receiving OAP, and 0 otherwise. Maxage is age of oldest household member, Maxage^2 is age-squared of oldest household member, and Maxage^3 is age-cubed of oldest household member. Wave 1=2002, Wave 3=2005, and Wave 4=2006. Baseline covariates: young adults age dummies, young adults educational attainment (Less_than_Matric, Matric, and More_than_Matric), (household characteristics (Household size, Children under 5 years old, Household head educated, and Marital status of household member), and household assets (Household ownership of home, Life insurance, and Washing machine). Parameter estimates are statistically different from zero at *** 1%, ** 5%, and * 10% significance levels, respectively.

Table 7a: Impact of Old Age Pension Program on Marital Status of Young Adults Aged 14-26

	Dependent Variable: Young Adults Married											
	Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
OAP	0.038	-0.190***	0.050	-0.175**								
	(0.061)	(0.072)	(0.059)	(0.071)								
OAPFemale					-0.087	-0.282***	-0.070	-0.269***				
					(0.053)	(0.061)	(0.053)	(0.061)				
OAPMale									0.233***	0.253***	0.227***	0.243***
									(0.077)	(0.070)	(0.077)	(0.070)
Maxage	0.056**	0.043**	0.056***	0.043**	0.050**	0.044**	0.051**	0.044**	0.060***	0.061***	0.060***	0.056***
	(0.022)	(0.020)	(0.021)	(0.019)	(0.022)	(0.020)	(0.021)	(0.019)	(0.022)	(0.019)	(0.021)	(0.019)
Maxage^2	-0.001**	-0.001	-0.001**	-0.001	-0.001*	-0.001	-0.001**	-0.001	-0.001**	-0.001**	-0.001**	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Maxage^3	0.000*	0.000	0.000*	0.000	0.000	0.000	0.000*	0.000	0.000*	0.000	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Wave_3	-0.002	-0.010	-0.003	-0.006	-0.001	-0.009	-0.002	-0.005	-0.005	-0.014	-0.005	-0.011
	(0.022)	(0.027)	(0.022)	(0.027)	(0.022)	(0.027)	(0.022)	(0.027)	(0.023)	(0.025)	(0.023)	(0.025)
Wave_4	-0.198***	-0.272***	-0.182***	-0.258***	-0.197***	-0.273***	-0.181***	-0.260***	-0.196***	-0.269***	-0.181***	-0.257***
	(0.027)	(0.027)	(0.027)	(0.025)	(0.027)	(0.026)	(0.027)	(0.025)	(0.027)	(0.027)	(0.027)	(0.025)
Constant	-0.592*	-0.473*	-0.598**	-0.485*	-0.503	-0.479*	-0.521*	-0.492*	-0.661**	-0.742***	-0.649**	-0.697***
	(0.304)	(0.282)	(0.290)	(0.270)	(0.308)	(0.280)	(0.294)	(0.268)	(0.305)	(0.274)	(0.291)	(0.263)
Observations	2,068	1,668	2,068	1,668	2,068	1,668	2,068	1,668	2,068	1,668	2,068	1,668
R-squared	0.051	0.108	0.046	0.106	0.052	0.116	0.047	0.113	0.059	0.110	0.053	0.108

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. Young adults marital status (females or males) equal 1 if young adults are married, and 0 otherwise. OAP is a dummy variable equal 1 if any household member (female or male) receive OAP, and 0 otherwise. OAPFemale is a dummy variable equal 1 if onle female household member is receiving OAP, and 0 otherwise. OAPMale is a dummy variable equal 1 if only male household member is receiving OAP, and 0 otherwise. Maxage is age of oldest member, Maxage^2 is age-squared of oldest household member, and Maxage^3 is age-cubed of oldest household member. Wave 1=2002, Wave 3=2005, and Wave 4=2006. Parameter estimates are statistically different from zero at *** 1%, ** 5%, and * 10% significance levels, respectively.

Table 7b: Impact of Old Age Pension Program on Marital Status of Young Adults Aged 14-26 Controlling for Baseline Covariates

	Dependent Variable: Young Adults Married											
	Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
OAP	0.019	-0.168**	0.023	-0.153**								
	(0.055)	(0.068)	(0.054)	(0.067)								
OAPFemale					-0.102*	-0.240***	-0.092*	-0.229***				
					(0.054)	(0.065)	(0.053)	(0.064)				
OAPMale									0.207**	0.240***	0.195**	0.236***
									(0.082)	(0.061)	(0.083)	(0.062)
Maxage	0.044**	0.053***	0.041**	0.051***	0.038*	0.054***	0.037*	0.051***	0.049**	0.069***	0.045**	0.063***
	(0.020)	(0.019)	(0.019)	(0.019)	(0.021)	(0.019)	(0.020)	(0.019)	(0.020)	(0.018)	(0.020)	(0.018)
Maxage^2	-0.001*	-0.001**	-0.001*	-0.001**	-0.001*	-0.001**	-0.001*	-0.001**	-0.001**	-0.001***	-0.001**	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Maxage^3	0.000*	0.000*	0.000*	0.000*	0.000	0.000**	0.000*	0.000*	0.000*	0.000**	0.000*	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Wave_3	0.045	0.051*	0.042	0.055*	0.047	0.052*	0.044	0.055*	0.042	0.048	0.039	0.050*
	(0.032)	(0.031)	(0.032)	(0.031)	(0.032)	(0.031)	(0.032)	(0.031)	(0.033)	(0.029)	(0.032)	(0.030)
Wave_4	-0.140***	-0.203***	-0.133***	-0.193***	-0.139***	-0.205***	-0.132***	-0.195***	-0.139***	-0.201***	-0.132***	-0.192***
	(0.031)	(0.035)	(0.031)	(0.033)	(0.031)	(0.034)	(0.031)	(0.033)	(0.031)	(0.035)	(0.031)	(0.033)
Age_15	-0.070	0.107	-0.071	0.103	-0.069	0.106	-0.070	0.102	-0.069	0.121*	-0.070	0.116*
	(0.069)	(0.068)	(0.070)	(0.069)	(0.069)	(0.067)	(0.070)	(0.069)	(0.070)	(0.067)	(0.071)	(0.069)
Age_16	-0.001	-0.024	-0.004	-0.036	-0.003	-0.024	-0.006	-0.037	-0.002	0.001	-0.004	-0.014
	(0.066)	(0.079)	(0.066)	(0.081)	(0.066)	(0.078)	(0.066)	(0.079)	(0.066)	(0.080)	(0.066)	(0.081)
Age_17	-0.072	-0.010	-0.075	-0.020	-0.078	-0.016	-0.079	-0.024	-0.073	-0.007	-0.075	-0.017
	(0.057)	(0.057)	(0.057)	(0.057)	(0.056)	(0.056)	(0.056)	(0.057)	(0.056)	(0.056)	(0.056)	(0.057)
Age_18	-0.164***	-0.000	-0.167***	-0.016	-0.165***	-0.003	-0.169***	-0.019	-0.165***	0.009	-0.169***	-0.008
	(0.056)	(0.063)	(0.057)	(0.063)	(0.056)	(0.062)	(0.056)	(0.062)	(0.057)	(0.063)	(0.057)	(0.063)
Age_19	-0.151***	-0.060	-0.159***	-0.076	-0.152***	-0.064	-0.159***	-0.079	-0.151***	-0.041	-0.158***	-0.060
	(0.056)	(0.067)	(0.057)	(0.068)	(0.056)	(0.066)	(0.057)	(0.067)	(0.057)	(0.065)	(0.058)	(0.067)
Age_20	-0.095	0.012	-0.104	-0.002	-0.099	0.002	-0.108*	-0.010	-0.095	0.016	-0.104	-0.001
	(0.064)	(0.066)	(0.064)	(0.066)	(0.064)	(0.065)	(0.064)	(0.066)	(0.065)	(0.065)	(0.065)	(0.065)
Age_21	-0.149**	-0.089	-0.151**	-0.107	-0.156**	-0.094	-0.157**	-0.111	-0.150**	-0.078	-0.152**	-0.098
	(0.071)	(0.069)	(0.071)	(0.068)	(0.069)	(0.067)	(0.071)	(0.067)	(0.071)	(0.067)	(0.072)	(0.067)
Age_22	-0.126*	-0.075	-0.128*	-0.089	-0.132*	-0.078	-0.133*	-0.091	-0.127*	-0.059	-0.128*	-0.075
	(0.067)	(0.068)	(0.068)	(0.067)	(0.067)	(0.067)	(0.067)	(0.066)	(0.068)	(0.065)	(0.068)	(0.065)
Age_23	-0.198**	0.016	-0.198**	0.005	-0.201***	0.008	-0.201**	-0.001	-0.192**	0.042	-0.192**	0.028
	(0.076)	(0.075)	(0.077)	(0.075)	(0.076)	(0.074)	(0.077)	(0.075)	(0.077)	(0.073)	(0.078)	(0.074)
Age_24	-0.115	-0.100	-0.101	-0.122	-0.117	-0.102	-0.102	-0.124	-0.118	-0.087	-0.103	-0.109
	(0.079)	(0.075)	(0.082)	(0.075)	(0.080)	(0.075)	(0.082)	(0.075)	(0.080)	(0.076)	(0.082)	(0.076)
Age_25	-0.208**	-0.045	-0.199**	-0.057	-0.214**	-0.048	-0.204**	-0.059	-0.213**	-0.050	-0.202**	-0.060
	(0.088)	(0.077)	(0.091)	(0.077)	(0.088)	(0.075)	(0.091)	(0.076)	(0.090)	(0.077)	(0.092)	(0.077)
Age_26	-0.009	0.035	-0.004	0.017	-0.009	0.035	-0.003	0.017	-0.011	0.054	-0.009	0.033
	(0.091)	(0.086)	(0.094)	(0.086)	(0.090)	(0.084)	(0.093)	(0.085)	(0.093)	(0.084)	(0.095)	(0.084)
Household size	0.013*	0.009	0.013*	0.011	0.013**	0.011	0.013**	0.012	0.014**	0.010	0.014**	0.012
	(0.007)	(0.008)	(0.007)	(0.008)	(0.007)	(0.008)	(0.007)	(0.008)	(0.007)	(0.008)	(0.007)	(0.008)
Children under 5 years old	0.024	0.033	0.027	0.036	0.026	0.032	0.029	0.035	0.021	0.032	0.025	0.036
	(0.018)	(0.022)	(0.019)	(0.023)	(0.018)	(0.022)	(0.018)	(0.023)	(0.018)	(0.023)	(0.018)	(0.024)
Household head educated	-0.058***	-0.052***	-0.058***	-0.050***	-0.058***	-0.051***	-0.058***	-0.049***	-0.058***	-0.052***	-0.058***	-0.050***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Owning home	-0.047	-0.053	-0.043	-0.047	-0.045	-0.050	-0.041	-0.045	-0.043	-0.046	-0.039	-0.042
	(0.038)	(0.035)	(0.036)	(0.033)	(0.037)	(0.035)	(0.036)	(0.034)	(0.037)	(0.037)	(0.035)	(0.035)
Life insurance	0.021	0.066*	0.023	0.062*	0.022	0.065*	0.023	0.061*	0.023	0.068*	0.025	0.064*
	(0.029)	(0.035)	(0.030)	(0.035)	(0.029)	(0.035)	(0.030)	(0.035)	(0.029)	(0.036)	(0.030)	(0.035)
Washing machine	0.084*	0.066	0.085*	0.072	0.086*	0.066	0.088*	0.072	0.084*	0.067	0.085*	0.072
	(0.045)	(0.048)	(0.045)	(0.047)	(0.045)	(0.047)	(0.045)	(0.047)	(0.044)	(0.046)	(0.044)	(0.046)
Constant	0.286	-0.083	0.321	-0.076	0.369	-0.096	0.391	-0.086	0.203	-0.343	0.254	-0.282
	(0.285)	(0.273)	(0.275)	(0.264)	(0.288)	(0.270)	(0.277)	(0.262)	(0.289)	(0.256)	(0.278)	(0.250)
Observations	2,068	1,668	2,068	1,668	2,068	1,668	2,068	1,668	2,068	1,668	2,068	1,668
R-squared	0.180	0.216	0.176	0.212	0.182	0.221	0.178	0.218	0.187	0.219	0.182	0.216

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. Young adults marital status (females or males) equal 1 if young adults are married, and 0 otherwise. OAP is a dummy variable equal 1 if any household member (female or male) receives OAP, and 0 otherwise. OAPFemale is a dummy variable equal 1 if only female household member is receiving OAP, and 0 otherwise. OAPMale is a dummy variable equal 1 if only male household member is receiving OAP, and 0 otherwise. Maxage is age of oldest household member, Maxage^2 is age-squared of oldest household member, and Maxage^3 is age-cubed of oldest household member. Wave 1=2002, Wave 3=2005, and Wave 4=2006. Baseline covariates: young adults age dummies, (household characteristics (Household size, Children under 5 years old, Household head educated, and Marital status of household member), and household assets (Household ownership of home, Life insurance, and Washing machine). Parameter estimates are statistically different from zero at *** 1%, ** 5%, and * 10% significance levels, respectively.

Table 7c: Impact of Old Age Pension Program on Marital Status of Young Adults Aged 14-26 Controlling for Educational Attainment

	Dependent Variable: Young Adults Married											
	Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction		Without Attrition Correction		With Attrition Correction	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Variables	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
OAP	0.019	-0.164**	0.023	-0.150**								
	(0.056)	(0.068)	(0.055)	(0.067)								
OAPFemale					-0.100*	-0.236***	-0.090*	-0.225***				
					(0.054)	(0.065)	(0.053)	(0.063)				
OAPMale									0.206**	0.240***	0.195**	0.235***
									(0.082)	(0.060)	(0.084)	(0.061)
Maxage	0.044**	0.056***	0.042**	0.053***	0.039*	0.056***	0.037*	0.054***	0.049**	0.072***	0.046**	0.065***
	(0.020)	(0.019)	(0.019)	(0.018)	(0.020)	(0.019)	(0.019)	(0.018)	(0.020)	(0.018)	(0.019)	(0.018)
Maxage^2	-0.001**	-0.001**	-0.001**	-0.001**	-0.001*	-0.001**	-0.001*	-0.001**	-0.001**	-0.001***	-0.001**	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Maxage^3	0.000*	0.000**	0.000*	0.000**	0.000*	0.000**	0.000*	0.000**	0.000*	0.000**	0.000*	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Wave_3	-0.016	-0.024	-0.017	-0.015	-0.015	-0.022	-0.016	-0.013	-0.018	-0.027	-0.020	-0.018
	(0.044)	(0.050)	(0.044)	(0.050)	(0.044)	(0.050)	(0.043)	(0.050)	(0.045)	(0.049)	(0.045)	(0.049)
Wave_4	-0.133***	-0.212***	-0.125***	-0.202***	-0.132***	-0.214***	-0.124***	-0.204***	-0.132***	-0.212***	-0.124***	-0.202***
	(0.031)	(0.035)	(0.031)	(0.034)	(0.031)	(0.035)	(0.031)	(0.033)	(0.031)	(0.035)	(0.031)	(0.034)
Age_15	-0.070	0.108	-0.071	0.104	-0.069	0.106	-0.070	0.102	-0.069	0.121*	-0.070	0.116*
	(0.069)	(0.068)	(0.070)	(0.069)	(0.069)	(0.067)	(0.070)	(0.068)	(0.070)	(0.067)	(0.071)	(0.069)
Age_16	-0.002	-0.027	-0.004	-0.039	-0.004	-0.027	-0.006	-0.039	-0.002	-0.002	-0.005	-0.017
	(0.066)	(0.080)	(0.066)	(0.081)	(0.066)	(0.078)	(0.066)	(0.080)	(0.066)	(0.081)	(0.066)	(0.082)
Age_17	-0.077	-0.017	-0.079	-0.026	-0.082	-0.022	-0.084	-0.030	-0.077	-0.014	-0.079	-0.023
	(0.057)	(0.056)	(0.057)	(0.057)	(0.056)	(0.056)	(0.056)	(0.057)	(0.056)	(0.056)	(0.056)	(0.057)
Age_18	-0.168***	-0.005	-0.171***	-0.020	-0.169***	-0.008	-0.172***	-0.023	-0.169***	0.004	-0.173***	-0.012
	(0.056)	(0.063)	(0.057)	(0.063)	(0.056)	(0.061)	(0.056)	(0.062)	(0.058)	(0.062)	(0.057)	(0.062)
Age_19	-0.154***	-0.067	-0.161***	-0.082	-0.154***	-0.070	-0.161***	-0.085	-0.154***	-0.049	-0.161***	-0.066
	(0.057)	(0.067)	(0.057)	(0.068)	(0.056)	(0.066)	(0.057)	(0.067)	(0.058)	(0.066)	(0.058)	(0.067)
Age_20	-0.101	0.007	-0.109*	-0.007	-0.105	-0.003	-0.113*	-0.015	-0.101	0.010	-0.109*	-0.006
	(0.065)	(0.066)	(0.065)	(0.066)	(0.065)	(0.066)	(0.065)	(0.066)	(0.066)	(0.065)	(0.066)	(0.066)
Age_21	-0.154**	-0.100	-0.155**	-0.119*	-0.161**	-0.105	-0.161**	-0.122*	-0.155**	-0.091	-0.156**	-0.111
	(0.072)	(0.068)	(0.072)	(0.068)	(0.071)	(0.067)	(0.071)	(0.067)	(0.072)	(0.068)	(0.072)	(0.067)
Age_22	-0.131*	-0.093	-0.132*	-0.106	-0.137**	-0.095	-0.138**	-0.108	-0.132*	-0.078	-0.133*	-0.092
	(0.068)	(0.067)	(0.068)	(0.066)	(0.068)	(0.065)	(0.068)	(0.065)	(0.069)	(0.065)	(0.069)	(0.065)
Age_23	-0.198**	0.004	-0.196**	-0.007	-0.201**	-0.004	-0.200**	-0.013	-0.192**	0.027	-0.190**	0.015
	(0.078)	(0.075)	(0.078)	(0.075)	(0.078)	(0.074)	(0.079)	(0.075)	(0.079)	(0.073)	(0.080)	(0.074)
Age_24	-0.113	-0.114	-0.099	-0.136*	-0.115	-0.116	-0.100	-0.137*	-0.117	-0.102	-0.101	-0.123
	(0.080)	(0.075)	(0.083)	(0.075)	(0.081)	(0.074)	(0.083)	(0.074)	(0.081)	(0.076)	(0.083)	(0.076)
Age_25	-0.207**	-0.053	-0.197**	-0.066	-0.213**	-0.057	-0.203**	-0.069	-0.212**	-0.061	-0.201**	-0.072
	(0.088)	(0.076)	(0.091)	(0.077)	(0.088)	(0.074)	(0.091)	(0.075)	(0.089)	(0.076)	(0.092)	(0.076)
Age_26	0.004	0.026	0.010	0.007	0.003	0.025	0.010	0.007	0.001	0.043	0.006	0.021
	(0.094)	(0.085)	(0.097)	(0.086)	(0.093)	(0.084)	(0.096)	(0.085)	(0.097)	(0.084)	(0.098)	(0.084)
Household size	0.012*	0.009	0.013*	0.011	0.013*	0.010	0.013*	0.012	0.013**	0.010	0.014**	0.012
	(0.007)	(0.008)	(0.007)	(0.008)	(0.007)	(0.008)	(0.007)	(0.008)	(0.007)	(0.008)	(0.007)	(0.008)
Children under 5 years old	0.027	0.033	0.030	0.037	0.028	0.032	0.032*	0.036	0.024	0.032	0.027	0.036
	(0.018)	(0.022)	(0.019)	(0.023)	(0.018)	(0.022)	(0.018)	(0.023)	(0.018)	(0.023)	(0.019)	(0.024)
Less_than_Matric	-0.060***	-0.054***	-0.059***	-0.052***	-0.059***	-0.053***	-0.059***	-0.051***	-0.059***	-0.054***	-0.059***	-0.052***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Matric	-0.235***	-0.118	-0.240***	-0.109	-0.231***	-0.108	-0.237***	-0.101	-0.236***	-0.101	-0.241***	-0.094
	(0.082)	(0.093)	(0.083)	(0.092)	(0.081)	(0.092)	(0.081)	(0.091)	(0.084)	(0.093)	(0.084)	(0.091)
More_than_Matric	-0.222***	-0.053	-0.231***	-0.046	-0.218***	-0.044	-0.227***	-0.039	-0.222***	-0.033	-0.231***	-0.028
	(0.075)	(0.085)	(0.075)	(0.083)	(0.074)	(0.084)	(0.075)	(0.082)	(0.077)	(0.084)	(0.077)	(0.082)
Household head educated	-0.144**	-0.003	-0.152**	-0.003	-0.141**	0.003	-0.148**	0.003	-0.147**	0.012	-0.154**	0.009
	(0.067)	(0.064)	(0.066)	(0.062)	(0.066)	(0.064)	(0.066)	(0.063)	(0.067)	(0.064)	(0.067)	(0.063)
Owning home	-0.047	-0.047	-0.043	-0.041	-0.045	-0.044	-0.041	-0.039	-0.043	-0.039	-0.039	-0.036
	(0.038)	(0.035)	(0.036)	(0.034)	(0.037)	(0.035)	(0.036)	(0.034)	(0.037)	(0.037)	(0.035)	(0.036)
Life insurance	0.017	0.062*	0.019	0.058*	0.017	0.061*	0.019	0.058*	0.019	0.064*	0.021	0.061*
	(0.029)	(0.035)	(0.030)	(0.034)	(0.029)	(0.035)	(0.030)	(0.034)	(0.029)	(0.036)	(0.030)	(0.035)
Washing machine	0.086*	0.063	0.087*	0.069	0.088*	0.063	0.089**	0.069	0.086*	0.064	0.087*	0.069
	(0.045)	(0.048)	(0.045)	(0.048)	(0.045)	(0.047)	(0.045)	(0.047)	(0.045)	(0.047)	(0.044)	(0.047)
Constant	0.530*	0.009	0.569**	0.008	0.608**	-0.013	0.635**	-0.008	0.448	-0.264	0.504*	-0.209
	(0.293)	(0.297)	(0.282)	(0.289)	(0.296)	(0.292)	(0.285)	(0.285)	(0.297)	(0.283)	(0.287)	(0.276)
Observations	2,068	1,668	2,068	1,668	2,068	1,668	2,068	1,668	2,068	1,668	2,068	1,668
R-squared	0.184	0.219	0.180	0.216	0.186	0.225	0.181	0.221	0.190	0.223	0.185	0.219

Notes: Robust standard errors in parentheses adjust for clustered at the enumeration areas. Young adults marital status (females or males) equal 1 if young adults are married, and 0 otherwise. OAP is a dummy variable equal 1 if any household member (female or male) receives OAP, and 0 otherwise. OAPFemale is a dummy variable equal 1 if only female household member is receiving OAP, and 0 otherwise. OAPMale is a dummy variable equal 1 if only male household member is receiving OAP, and 0 otherwise. Maxage is age of oldest household member, Maxage^2 is age-squared of oldest household member, and Maxage^3 is age-cubed of oldest household member. Wave 1=2002, Wave 3=2005, and Wave 4=2006. Baseline covariates: young adults age dummies, young adults educational attainment (Less_than_Matric, Matric, and More_than_Matric), (household characteristics (Household size, Children under 5 years old, Household head educated, and Marital status of household member), and household assets (Household ownership of home, Life insurance, and Washing machine). Parameter estimates are statistically different from zero at *** 1%, ** 5%, and * 10% significance levels, respectively.

VITA

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Candidate for the Degree of

Doctor of Philosophy

Thesis: THE IMPACT OF SOCIAL CASH TRANSFERS ON YOUNG ADULTS LABOR FORCE PARTICIPATION, SCHOOLING, AND SEXUAL BEHAVIORS IN SOUTH AFRICA

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Title of Study: THE IMPACT OF SOCIAL CASH TRANSFERS ON YOUNG ADULTS LABOR FORCE PARTICIPATION, SCHOOLING, AND SEXUAL BEHAVIORS IN SOUTH AFRICA

Pages in Study: 76 Candidate for the Degree of Doctor of Philosophy

Major Field: Economics

Scope and Method of Study: My dissertation consists of two papers examining the impact of South Africa's social cash transfers namely Old Age Pension (OAP) program on labor force participation, schooling, and sexual behaviors of African young adults aged 14-22 using Cape Area Panel Study (CAPS) data. Both papers use Regression Discontinuity Design (RDD) identification strategy to examine the causal effect of OAP on labor force participation, schooling, and sexual behaviors of African young adults. This estimation is made possible by age-eligibility rule of OAP for women and men at 60 and 65 years old, respectively.

Findings and Conclusions: The first paper examines the impact of OAP on labor force participation and schooling of young adults. I find that any OAP, OAPFemale, and OAPMale receipts did not have any significant impact on labor force participation and schooling of young adults aged 14-20. In contrast, OAPFemale receipts have significant and negative impact on labor force participation of young adult males aged 21-26. Although, OAPFemale receipts have positive impact on school enrollment of young adult males aged 21-26, these estimates were not statistically significant. On the other hand, OAPMale receipts have positive and significant impact on labor force participation as well as negative and significant impact on school enrollment of young adult males aged 21-26.

The second paper examines the impact of OAP on sexual behaviors of young adults. I find that OAPFemale receipts reduce the probability of young adult females sexual debut by 15.3% on average. There were no significant impact of any OAP, OAPFemale, and OAPMale receipts on self-reported condom use and number of multiple partners of young adults. Young adult females and males who live with OAPFemale recipients reduce their probability of getting married by 9.1% and 24.1% on average, respectively. On the contrary, young adult females and males who live with OAPMale recipients increase their probability of getting married by 21.4% and 23.8% on average, respectively.

Overall, these results are important because it suggests that OAP can improve African young adults transition into the labor market in time when unemployment is high as well as improve their transition into adulthood in time when HIV/AIDS infection rate is high.

ADVISER'S APPROVAL: Dr. Harounan Kazianga