

# Bargaining with Grandma: The Impact of the South African Pension on Household Decision-making

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Abstract: I use the 2008 South African National Income Dynamics Survey to examine how the increase in income provided by the South African pension affects decision-making in the household. Exploiting the age discontinuity in pension eligibility, I find that eligible females are 12 to 16 percentage points more likely to be the primary decision-makers for expenditures--rare direct support for bargaining models of the household. There is no effect for men. This increase in decision-making power provides a channel through which the pension results in positive impacts for households. As in Duflo (2003), female eligibility leads to improved nutritional outcomes for girls and additionally, higher levels of durable goods ownership. An analysis of income data shows that due to labor force withdrawal, male income does not increase with eligibility, indicating that despite previous evidence, elderly women in South Africa do not necessarily direct income towards more productive uses than men.

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## **I. Introduction and Motivation**

The growing importance of government cash transfers as an anti-poverty tool in the developing world has highlighted the importance of understanding how households make decisions and allocate resources. Over the past three decades the theory of household resource allocation has evolved from unitary models that treat the household as a single entity to bargaining or collective models that recognize that control of resources is important for allocation outcomes. This shift has been supported by a growing amount of empirical evidence rejecting the predictions of the unitary model. However, these papers are largely based on the reduced form effect of transfers on outcomes and provide little evidence in support of alternative household dynamics. This paper will begin to address this gap in the literature by using the age discontinuity in eligibility to study how decision-making in the household is affected by receipt of the South African old age pension, a large government grant available to age-eligible elderly people in South Africa.

The expansion of the South African old age pension to all eligible South Africans at the end of apartheid has resulted in one of the most expansive government cash transfer programs in the developing world. Although the pension was initially a benefit for white South Africans, the equalization of pension benefits for all South Africans was achieved at the beginning of 1993 (Case and Deaton, 1998). Since that time the program and its impacts have been extensively studied by economists. The pension is interesting to economists first because it is a large cash transfer and the extent to which this money effectively increases the well-being of those who receive it is an important question from a policy standpoint. Second, because the pension is distributed on an individual, not household, level and is given to both men and women, it also

provides a setting for empirical examination of economic models of household decision-making and resource allocation.

Economic models of the household have a long history in economics. The first class of these models was termed unitary. Although the underlying assumptions of these various models differ, their main prediction is that income will be spent in the same way regardless of which family member earns or controls it (Samuelson, 1956; Becker, 1974, 1981). The analytical simplicity of these models is appealing, but the income-pooling prediction is generally thought to be unrealistic. This criticism of the unitary model led to a large literature exploring models that recognize the importance of resource control within the household. These models, usually known as bargaining models, use a game theoretic framework to describe how couples arrive at agreements over how to allocate resources within the household. The most well known bargaining models use cooperative game theory to describe an equilibrium maintained by a threat point that is partly determined by the household resources that each spouse controls (Manser & Brown, 1980; McElroy & Horney, 1981; Lundberg and Pollack, 1993). Another model of this type, termed collective, puts less structure on the decision-making process but applies neoclassical utility theory to the problem and assumes only that outcomes are efficient (Chiappori, 1988, 1992). Models based on non-cooperative game theory allow for the existence of inefficient equilibria (Lundberg and Pollack, 1994).

Empirical work on this topic has generally focused on rebutting the predictions of the unitary model by examining outcomes after exogenous changes in non labor income. The unitary model has been rejected when it can be shown empirically that these outcomes differ by the gender of the recipient. If the model held, the identity of the recipient should not matter for how money is spent. For example, Lundberg, Pollack and Wales (1996) analyze a change in the

child allowance policy in the United Kingdom in the late 1970s that shifted a government transfer from husbands to wives. Subsequent to the change the authors find increased relative expenditures on women's and children's goods, a sound rejection of the income pooling hypothesis. Nancy Qian (2008) studies sex specific agricultural activities in China and finds that girls benefit from increases in female income and are harmed by increases in male income. Particularly relevant to this paper, using the South African pension, Duflo (2003) finds that female pension receipt leads to a significant improvement in weight for height and height for age z-scores for girls 6 to 60 months old (but not for boys) while male pension receipt has no effect on child health.

These papers and others provide convincing evidence that control of resources matter for intra-household allocation and have resonated in the policy community. In fact, due to a number of studies that suggest that money given to or controlled by women is spent in a more productive way than money given to men particularly for children's outcomes (Thomas, 1990, 1994; Duflo, 2003), many cash transfer programs specifically target their benefits towards women. Yet these papers have only been able to examine the reduced form impact of income variation on outcomes; they do not shed light on the mechanisms that women use to translate control of income into household expenditures that better reflect their preferences. Although it is hypothesized that greater income control gives women greater power over decision-making in the household, these studies have not been able to directly address whether or not this is occurring. In other words, it is not possible to say in what way these transfers have affected women's bargaining power in the household.

A small number of studies have tried to examine changes in bargaining power directly. The randomized evaluation of the Progresa program in Mexico allowed for the comparison of

mothers in treatment villages who were eligible for conditional cash transfers to mothers in control villages who were not. De la Brière and Quisumbing (2000) measured impacts of the program on a range of questions about who in the household makes decisions. They find that Progresa transfers had a statistically significant negative effect on the husband being the sole decision-maker (as opposed to wife alone or joint) in five of their eight decision-making categories. Estimates also indicate that women are more likely to be the sole decision-makers on how they spend their extra income. However, all results are very small in magnitude, and because Progresa was specifically marketed as a program to benefit children and was not known to be permanent at the time of the evaluation, these results may not be generalizable to permanent increases in income for women. Additionally, the fact that Progresa transfers were only made to women does not allow for a comparison of the effects between genders.

Providing poor women with access to financial services in developing countries has long been billed as a tool for women's empowerment by giving women the means to start their own businesses, thereby increasing their income. However, while a recent randomized evaluation of microfinance in India finds impacts of credit access on expenditures in treatment villages, it finds no effects on female decision-making or child health (Banerjee, Duflo, Glennerster and Kinnan, 2010). Yet, another randomized experiment that provided commitment savings accounts in the Philippines does find effects. Women with below median decision-making power at baseline who were offered the commitment savings account show significant improvements in an index of a variety of decision-making variables, and there is a corresponding increase in female-oriented consumer durables (largely household appliances) (Ashraf, Karlan and Yin, 2010). Because the authors argue that the savings accounts do not increase income overall, just savings, this effect is attributed to the control over resources that women gain through their individual

savings accounts. When given the opportunity to save money in a place that only they have legal access to, women are able to translate those savings into purchases that mirror their preferences.

In contrast to these recent studies on credit and savings, this paper will use the South African old age pension to study how a permanent, large, and plausibly exogenous change in individual *income* affects the identity of the primary decision-maker within the household. Given that Duflo's 2003 paper on the pension and child nutrition is widely cited as one of the most important pieces of evidence against the unitary household model in the developing world, this is a particularly appropriate setting in which to investigate this question. The pension is also one of the most widespread, established and substantial cash transfers in the developing world so understanding how pension receipt affects recipient bargaining power is an important question for all policy makers considering the implementation of a cash transfer program. The structure of the pension is such that a vast majority of age-eligible members of the black population qualify simply by meeting an age requirement, allowing for a clean analysis of the causal impacts of the pension using the age requirement for pension eligibility to employ a regression discontinuity design.

Using the South African National Income Dynamics Survey (NIDS) collected in 2008 and exploiting the fact that pension receipt for black South Africans is almost universal contingent on meeting the age requirement, I find that age eligibility for the pension results in older women being 12 to 16 percentage points more likely to be the primary decision-maker in their household for both day to day and large, unusual purchases. There is no corresponding effect at the age of eligibility for older men. These results are robust to households with children, but are concentrated among households where the children's mother is not present, suggesting that the receipt of pension income can allow older women to transfer decision-making power to

another person in the household, possibly in this case to the child's mother. The increase in female decision-making power translates into positive household level impacts; female (but not male) pension eligibility results in an increase of 0.6 standard deviations in young girls' weight for height z-scores (a confirmation of Duflo's original 2003 result) and a 22 percent increase in the number of household consumer durables. The increase in durable goods is strongest among households with young children, suggesting that the pension, although meant for the elderly, has important effects on child well-being.

The paper proceeds as follows. Section 2 provides background on the South African pension and the data used in this paper. Section 3 discusses the identification strategy. Section 4 provides the main analysis of the impacts of the pension on decision-making. Section 5 does a series of robustness checks. Section 6 examines the impact of the pension on child nutrition and durable goods ownership and Section 7 concludes.

## **II. Background**

### *The South African pension*

The old age pension in South Africa originally existed primarily for white workers who did not have access to an occupational pension. Although it was gradually introduced for other racial groups, the pension system remained discriminatory throughout the apartheid period, with whites being eligible for much larger benefits and less stringent means tests (Lund, 1993). As the country began to transition from apartheid, the government made the commitment to equalize the pension across races. Benefits for blacks were increased throughout the 1980s while those for whites fell quickly. In 1992 the means tests was equalized for people of all races. In 1993 the maximum monthly benefit of 370 rand was more than twice the average per capita income of

black South Africans at that time (Duflo, 2003). Therefore, becoming pension eligible represented a significant increase in household income.

Eligibility for payments is determined by age and a means test. Women ages 60 and older are eligible for the pension. Initially, men did not become eligible until age 65. In 2008 a law was passed to equalize the age of eligibility between men and women by 2010. This was done in stages and the male age of eligibility immediately dropped to 63 (SouthAfrica.info, 2008). Because the law was enacted in mid 2008 and the data used in this paper were largely collected in the first half of 2008, the age of eligibility for men will be considered to be 65 for the purposes of this analysis.<sup>1</sup> The means test considers only the income of the pension eligible individual and his or her spouse and therefore should not incentivize potential recipients to alter their household structure in order to become eligible. The test is such that the vast majority of the black population easily qualifies (even if labor income is taken into account), but the majority of whites or anyone with a separate pension do not (Lam, Leibbrandt and Ranchhod, 2006). Because of this, as is standard in this literature, my analysis will be restricted to the black population.

In the 1993 data (used by Duflo and others), high percentages of age eligible men and women are already receiving the pension (60 and 77 percent respectively) despite the recent nature of its expansion. In 2008, according to the national survey data used in this paper,<sup>2</sup> these numbers had grown to 86 percent of age eligible men and 92 percent of age eligible women (Table 1). The grant has been nominally increasing since its expansion. The maximum pension benefit was R870 during most of the survey period, but was raised to R940 as survey work was

<sup>1</sup> Fewer than 5% of the elderly men in the sample used in this study were interviewed in the second half of 2008.

<sup>2</sup> The National Income Dynamics Survey (NIDS) will be discussed in the next sub-section.

concluding. Although the structure of the means test is such that there is some phase out of benefits above certain income levels, in practice less than 15% of pension recipients in 2008 report receiving less than the maximum amount. Mean per-capita income across South African blacks of all ages in the data used in this paper was about R750 and median per-capita income is R396.<sup>3</sup> The maximum benefit was 2.2 to 2.4 times the median income over the course of the survey period; a substantial increase in income for recipients.

Because pension receipt is widespread and the level of grants is relatively high, the pension system has prompted extensive research on its impact. Anne Case and Angus Deaton (1998) provide an overview of pension take-up patterns and an analysis of behavioral changes using the same 1993 survey data as Duflo. They find that pension receipt results in significant welfare increases for households. However, they also conclude that pension income appears to be spent in much the same way as income from other sources with some exceptions, including a few differences between men and women. The analysis of impacts on other outcomes is limited due to the short time that had passed since the expansion of the transfers.

Despite this lukewarm evidence for behavioral impacts, using the same survey Marianne Bertrand, Sendhil Mullainathan and Douglas Miller (2003) examine the effect of the pension on the labor supply decisions of other household members. They find striking reductions in the hours worked of household members other than the pension recipient, suggesting that pension receipt represents an income shock on the household level. However, the reduction in hours is highest when the pensioner is a woman, evidence that is complementary to Duflo's in terms of a rejection of perfect household income pooling. Other work on the labor market impacts of the pension includes Ardington, Case and Hosegood (2009), who study the impact of the pension on

<sup>3</sup> The exchange rate over the survey period ranged from 7 to 8 South African Rand to the United States dollar.

the labor supply of prime-aged adults. In contrast to Bertrand, et al., they use panel data to examine households before and after the gain or loss of the pension and find an increase in employment, an effect that is largely due to increased labor migration. Finally, using data from a 1999 child labor survey, Edmonds (2006) identifies changes in schooling and child labor when a household member becomes pension eligible. School attendance and completed schooling rise and market work declines. Interestingly, the effects are limited to pension eligible men, a departure from the majority of the work on the pension that finds larger effects for women.

Despite this large literature showing wide and varied impacts of the pension on household outcomes, this will be the first study to directly examine how this large change in income affects decision-making dynamics within the household. Many of the cited studies come from the early years after the expansion of the pension to the black population, so this paper will additionally provide some of the first longer-term evidence on the effects of the pension fifteen years after its expansion, in a setting where it is fully anticipated by the recipients.

### *Data*

This paper utilizes data from the first wave of the National Income Dynamics Survey (NIDS) conducted by the South African Labour and Development Research Unit (SALDRU) in 2008. NIDS is a nationally representative survey of about 7,300 households and 28,250 individuals. Detailed information was collected both at the household and individual level through a household survey and individual adult surveys for all people age 14 and over, as well as child surveys for children under 14. This dataset is the first wave of a planned long term panel study in South Africa, where the same households will be surveyed every two to three years. Households were selected through a two-stage cluster sampling design based on a “Master

Sample” of Primary Sampling Units (PSUs) developed by Stats SA and dwelling clusters within those PSUs (Leibbrant, Woolard and de Villiers, 2009). Because certain groups (including young adults) are underrepresented in the sample, post stratification weights are used in regression analyses when noted to provide a more representative analysis.

The main variables of interest for this study are derived from the household decision-making section of the individual adult questionnaire. Respondents are asked who in their household makes decisions in five different categories: day-to-day household expenditures; large unusual purchases such as appliances, vehicles, or furniture; where children should go to school; who is allowed to live in the household; and decisions about where the household should live. Interviewers note the person code of the main decision-maker, and if the decision-making is joint, they also note the person code of the second decision-maker.

I define indicator variables for each of the five decision-making categories that are equal to one if the person is the primary decision-maker in the relevant category and zero otherwise. I consider someone to be the primary decision-maker if everyone in the household who answered the survey question listed this person as the main decision-maker. I also define a similar variable that identifies someone as the secondary decision-maker if everyone in the household that answered the question listed this person as the second decision-maker.<sup>4</sup>

In this paper I will focus primarily on the first two measures of decision-making (day to day purchases and large, unusual purchases) because, given that they relate to expenditures, they are the measures most likely to be affected by a change in income. They are also the most closely related to the child nutrition and consumer durable outcomes that I will examine later in

<sup>4</sup> The results in this paper are robust to a definition of the decision-making variables that uses only the self reports of the elderly person in question.

the paper. Additionally, the measures of decision-making are highly correlated: among the population of older adults, 90% of women and 80% of men are indicated to be the primary decision-maker on either all four or none of the relevant measures.<sup>5</sup>

Table 1 presents summary statistics for the sample of older adults that will form the main analysis sample broken down by gender and pension eligibility. Differences in several key variables including years of schooling, residence in a rural area, percent married and employment status are highly evident. However, these differences alone do not invalidate the empirical strategy; pension eligible adults are by definition older than almost eligible adults, and these statistics reflect age trends in these variables. Consequently the analysis will control for age, estimating a break in an otherwise smooth trend at the age of eligibility.

Elderly adults tend to live in extended family households; more than half live with a younger woman and a lower but still significant fraction live with younger men. Many also live with an elderly adult of the other gender, although that number is higher for men than women, reflecting the longer life span of females and the fact that husbands are, on average, older than their wives. The presence of other adults in these households in South Africa makes the analysis of household decision-making particularly interesting because the options for who is the decision-maker are greater than just the elderly adult and her or his spouse. Studies of household decision-making are usually concentrated only on spouses, but the presence of many multi-generational households in this sample and the format of the survey question allows for the examination of changes in decision-making across a variety of household members. Very high percentages of older adults also live with children, although this is somewhat less so for men than women. In turn, a large fraction of children live with older adults. For example, 11 percent

<sup>5</sup> The variable for where to send children to school is only defined for households with school-age children.

of children under 5 live with men over 50 and 40 percent live with women over 50.<sup>6</sup> This high incidence of older adults and children living together invites the consideration of how households with children may be differentially impacted by the receipt of the pension.

### **III. Identification Strategy**

Although a simple comparison of those who receive the pension with those that do not would confound the impacts of the pension with systematic differences between the two groups, the age requirement for eligibility provides a discontinuity in receipt of the pension that allows for estimation of the causal impact of the pension at the age of eligibility using a regression discontinuity design. Because the means test for eligibility is not binding for the vast majority of black South Africans, this paper (and other studies on the pension) considers only the age eligibility rule when determining pension impacts. I follow the literature and employ an identification strategy that essentially compares people who are age eligible for the pension to those who are almost eligible. The identification assumption underpinning the results in this paper is that individuals or households just below pension eligibility differ from those just above eligibility only through the effect of the pension itself. Even though we expect to see age trends in many outcome variables including household decision-making that are independent of the effects of the pension, these trends should not result in large changes right at the age of eligibility. Therefore discontinuous changes in outcomes that occur at age 60 for women and age 65 for men can be causally attributed to the pension.

The plausibility of the identification assumption is better the more similar are the individuals included in the analysis. Consequently I follow Edmonds (2006) and limit my main

<sup>6</sup> Author's calculations from NIDS, results not shown.

estimation sample to elderly adults who are 50 to 75 years old, resulting in a sample of 1,756 women and 1,097 men. However, despite limiting the sample to elderly individuals, identification could still be threatened if there are discontinuities in individual and household characteristics other than pension receipt that might be driving the results. For example, if another large social program was implemented in the same population with the same eligibility rules. Although there are several other government grant programs in South Africa, none of them are similar to the pension in ways that might invalidate the identification strategy (Duflo, 2003).

A greater concern is that receipt of the pension may induce households to reorganize, and that consequently effects that are attributed to the pension are actually due to the types of households that form around the pension. For example, the decline in labor supply of prime age household members identified by Bertrand, et al. (2003) has been criticized as being a result of adults who are unable or unwilling to work moving in with older relatives to take advantage of the guaranteed income rather than a true decline in labor supply. Several papers have addressed this problem directly. Edmonds, Mammen and Miller (2005) find evidence of an increase in the number of young children and young women in pension eligible households and a decrease in the number of women in prime working ages. Hamoudi and Thomas (2005) find that adults who live with pension eligible adults are shorter and have lower levels of education, characteristics that are assumedly not impacted by the pension itself since these characteristics would already have been determined by the time of pension receipt. This work makes it clear that it is difficult to argue that the pension has no effect on household composition; rather it is important to understand whether or not the reorganization that is occurring is the cause of any results that are found. If, for example, an elderly woman were to use the pension income to move out of the

extended family home and live independently, any increase in decision-making power would be due to the her new living situation and not her improved position within her original household. These issues will be given careful attention in this paper in robustness checks presented in Section V. The balance of the evidence from these tests is convincing that changes in household composition are not driving the results.

In order to validate the use of the age discontinuity, I must first establish that the pension system works as it is described: that is, that there is actually a discontinuity in receipt of the pension at age 60 for women and age 65 for men. The NIDS survey asked each adult individually whether or not they had received the government old age pension in the past month. The averages of these responses in Table 1 clearly show that the likelihood of receiving the pension increases dramatically among the age eligible, from 9 percent to 91 percent for women, and from 8 percent to 86 percent for men. Figure 1 shows the age discontinuity in pension receipt graphically, plotting the average receipt by age as well the regression line of pension receipt on age calculated on both sides of eligibility. Although there is some slippage in pension receipt prior to eligibility, the discontinuity is unmistakable. Some of the slippage may be due to age misreporting, but there is also evidence that age ineligible people are able to receive the pension in some cases. This is especially true for men, given that the higher age of male eligibility was largely considered to be unfair, and the survey was conducted just months before the threshold was lowered. Indeed the discontinuity in pension receipt, while strong, is smaller for men than for women.

One of the advantages of regression discontinuity analysis is the ability to visually illustrate the results in a graphical framework before performing more formal regression analysis (Lee and Lemieux, 2010). The main results in this paper will be shown graphically before

proceeding to more in-depth regression analysis. The graphs will be composed using the same methods as in Figure 1 and will allow for a clear, visual understanding of the age trends and discontinuities in the outcome variables.

The regression analysis will allow for a more precise estimation of effect sizes and an exploration of heterogeneity in impacts. I estimate the following linear probability model on the sub-sample of females:

$$Dec_{ij} = \alpha_f ELIG_{ij} + \theta_1 ELIGMALE_j + \theta_2 OLDERMALE_j + \gamma(AGE_{ij}) + \delta CONTROLS_{ij} + \varepsilon_{ij}$$

where *ELIG* is an indicator for whether or not woman *i* in family *j* is pension eligible.

*ELIGMALE<sub>j</sub>* and *OLDERMALE<sub>j</sub>* are indicators for whether or not a pension eligible male or any male aged 50 to 75 also lives in the household.  $\gamma(AGE_{ij})$  is a third order polynomial in the age of the woman and flexibly controls for smooth age trends in the outcome variable. The inclusion of a polynomial to control for trends in the variable that determines treatment is one standard method in the regression discontinuity literature (Lee and Lemieux, 2010). A cubic in age was chosen because of its high level of flexibility, but the results are robust to the inclusion of linear or quadratic trends instead.

Included controls are a set of indicators for educational attainment, the number of household members aged 0-5, 6-14, 15-24, and 25-49, and rural status. Robust standard errors are clustered at the household level, and all regressions make use of survey post-stratification weights.<sup>7</sup> I estimate the analogous model for the male sample controlling instead for the presence of an eligible female and older female. The coefficient  $\alpha$  on the eligibility indicator is the coefficient of interest. It is an estimate of the impact of pension eligibility on the decision-

<sup>7</sup> The results are robust to the exclusion of the weights.

making outcome variable at the age of eligibility. Although some papers in this literature have used pension eligibility as an instrumental variable for actual pension receipt (Duflo, 2003; Hamoudi and Thomas, 2005), I choose to focus only on the reduced form impact of pension eligibility given the very high rates of pension receipt among the eligible population.

#### **IV. Impacts of Pension Eligibility on Decision-making**

The percentages of elderly women and men who are the primary decision-maker across four categories are listed at the bottom of Table 1. Both older men and older women are highly likely to be the primary decision-maker in their households, and in all cases those who are pension eligible are more likely than those who are not, but these differences are much smaller for men than for women. However, as noted in Section III, this simple comparison does not provide a causal estimate of the impact of the pension due the probable existence of age trends in decision-making that are independent of pension receipt. I now turn to the regression discontinuity analysis that will allow for an estimation of the causal impact of the pension at the age of eligibility.

##### *Graphical analysis*

As a first step in my analysis, in Figure 2, I graph the means of the day to day decision-making variable by age separately for women and men, and as in Figure 1, I also plot the regression line of decision-making on age estimated separately on either side of the discontinuity. These graphs are illustrative of the main result of this paper. Despite a pronounced negative age trend in decision-making for elderly women there is a large jump upwards at age 60, a difference that is statistically significant even given wide confidence intervals. The same is not true for men. Although the estimated discontinuity is positive, it is

very small and does not approach statistical significance. Despite this large jump evident in the regression lines for women, there is quite a bit of noise evident in the raw means. Appendix Figure 1 shows the same data but with the means smoothed over two year (instead of one year) age bins. Although this smoothing reduces the number of bins, it also reduces the noise significantly lending further credence to the estimated discontinuity for women.

To gain a more nuanced understanding of who is making decisions in the household, I present a series of graphs illustrating the identity of the primary decision-maker for day to day purchases in a variety of household types. For these graphs only, I limit the sample to the elderly in a five year age window on either side of the eligibility threshold – women aged 55 to 64 and men aged 60 to 69. Because I will be taking averages on either side of the discontinuity, limiting the sample will mitigate the effect of the age trends evident in Figure 2 and provide a more accurate picture of the impact of the pension itself. For every person in the sample I calculate whether the primary decision-maker is that person, a person over 50 of the other gender, a woman 18 – 49, a man 18 – 49, or the household does not agree on who the decision-maker is.<sup>8</sup>

Figure 3 presents the averages of these variables by household type. The rationale for performing this analysis by household type is twofold: first, effects may be heterogeneous by type of household and second, if decision-making power increases with pension eligibility, it is of interest who the power is shifting from. In order to cleanly address the second point, I must compare households of similar composition. Consequently, Figure 3a analyzes women who do not live with an elderly man, Figure 3b women who do live with an elderly man and Figures 3c and 3d analyze the analogous cases for men. Within each figure, I look at all women (men) and

<sup>8</sup> To eliminate the need for a sixth outcome category, for these graphs, I drop households where there is more than one elderly woman or man, less than five percent of my sample.

those who live with and without children under 15 and those children's mothers. Because all children in a household are not necessarily siblings, I define a household as being a child and mother household if the mother of at least one child in the household is present.

Figure 3a reveals that when an elderly male is not present, elderly women are overwhelmingly the primary decision-makers in their households. Despite the very high rates of being the decision-maker for non-eligible women, there is a significant jump of approximately 12 percentage points when comparing them to eligible women. This is roughly consistent across the different types of households presented and appears to come from slight reductions in younger men being the decision-maker and somewhat larger reductions in the extent to which households disagree. Interestingly, in households with children where the child's mother is present, there is also an increase in the decision-making for younger women who are presumably the mothers. This is a pattern that will be repeated in regression results and suggests that some transfer of decision-making power is possible.

Women who live with an elderly man are much less likely to be the decision-maker than those women who are the sole elderly member of their household. However, Figure 3b shows that there is still a large increase in the proportion of elderly women who are the decision-makers with pension eligibility. In this case the increase is roughly nine percentage points but the base mean is drastically lower. The increases seen by older women come both from a reduction in household disagreement and a reduction in the decision-making power of older men in the household. This shift from older men to older women is most decisively seen in those households where a child is present but no mother. In households with both a child and mother the same pattern as Figure 3a is present, a small but evident increase in the decision-making power of younger women.

The examination of male eligibility for the pension provides less consistent patterns. For men who do not live with older women (Figure 3c) there is very little change in male decision-making at eligibility. Overall there is a slight decrease, and small sample size in the sub-groups prevents any strong statements about effects that may be occurring. Certainly there is no evidence of the sizable, positive impacts that were seen in the case of the older women. There is however evidence of a positive impact for men living with older women (Figure 3d) and the effect is driven entirely by households with children and mothers. The increase comes almost completely from a reduction in disagreement over the decision maker's identity in these households. In sum, these graphs indicate that the major competitor for decision-making power is the presence of another elderly person in the household and that increases in decision-making with eligibility come both from reductions in disagreement about the identity of the decision-maker and, for elderly women, from a decrease in the decision-making power of elderly men. There is also suggestive evidence of heterogeneity in effects, patterns that can be more completely analyzed in a regression framework.

### *Regression Analysis*

In this section I address the question of how the pension impacts the identity of primary decision-maker in a formal regression framework to provide a precise estimate of the effects and investigate some of the heterogeneity suggested by the preceding graphs. Table 2 presents the results from the estimation of the regression model presented in Section III. The dependent variable in columns 1 and 2 is a binary variable equal to one if everyone in the household agrees that the person is the primary decision-maker for day to day purchases, and in columns 3 and 4, it is a binary variable equal to one if everyone in the household agrees that the person is the

primary decision-maker for large, unusual purchases. Columns 2 and 4 include household controls. The results for women are in panel 1 and the results for men in panel 2.

The expected patterns given the previous graphical analysis are present in these regressions. Eligible women are 15 to 16 percentage points more likely to be the primary decision-maker for day to day purchases, a result that is highly statistically significant. The estimated effect is an economically significant 25 percent of the sample mean. Unlike in the study of the results of the Progresa program on household decision-making where estimated impacts were negligible in size, the South African pension has a large and significant impact on the decision-making power of eligible women. The impact of pension eligibility on decision-making for large, unusual purchases is quite similar, 12 to 13 percentage points on a slightly lower sample mean. As expected, the presence of an elderly male in the household has a large, negative effect on both outcome variables, but interestingly, it does not matter if he is himself pension eligible. No significant effects are present for the male subsample, and given that the estimated coefficients are negative, there is not even suggestive evidence of a positive effect.

The survey questions used in this analysis also asked subjects to list the second decision-maker if decision-making in the household was joint. Although the main analysis has focused on the identity of the primary decision-maker, I can also examine whether or not the probability of being the secondary decision-maker changes discontinuously at pension eligibility. In Appendix Figure 2, I graph the mean of a variable equal to one if everyone in the household agrees that the person is the second decision-maker for day to day purchases by age and the regression line estimated separately on either side of the age discontinuity. There is no evidence of an increase in secondary decision-making, and in fact the discontinuity is negative for both men and women. However, these discontinuities are small and imprecisely estimated,

particularly for men. When taken together with the results for primary decision-making, these results reinforce the conclusion that men are not experiencing a meaningful change in their decision-making power at the age of pension eligibility. The suggestive evidence of a slight decrease in secondary decision-making at the age of eligibility for women is an interesting counterpoint to the large increases identified for primary decision-making and indicates that the pension is having a real, meaningful impact on women's status within the household, giving them primary control over decisions, not just a voice in the process.<sup>9</sup>

Next I explore the potential for heterogeneous impacts by household type. Because of the fact that large numbers of black South African children traditionally live with elderly family members and the existence of studies that find positive pension impacts on child outcomes (Duflo, 2000, 2003; Edmonds, 2006), I re-estimate the equation of interest, limiting my sample to elderly men and women aged 50 to 75 who live with at least one child under the age of 15. The age cutoff of 15 is chosen because that is the cutoff to be included in the NIDS child survey. The resulting estimation sample is 1,282 women and 670 men. Table 3 presents the results of estimating the regression model for the elderly who live in households with children. The dependent variable is primary decision-maker for day to day purchases.<sup>10</sup> Column 1 is a replication of column 1 of Table 2 for the sample of women who live with children. The results are very similar to the results from the full sample; the coefficient on the eligibility variable is 0.15, however the sample mean is somewhat higher in this sub-group, so the overall effect is slightly lower. Column 2 adds the control variables as well as controls for the presence of a

<sup>9</sup> To draw a comparison with other papers that utilize survey questions with a more common format that focuses on sole and joint decision-making, in results not shown I also create and graphically analyze variables that indicate whether or not the person in question is the sole decision-maker, a joint decision-maker, and a joint-primary decision-maker. This analysis follows the same pattern for men as in the main analyses. The positive effect for women is fully concentrated in the sole decision-maker variable (there is no increase in women as joint-primary decision-makers with pension eligibility).

<sup>10</sup> The results for decision-making about large, unusual purchases are analogous and not shown here.

child's mother or father in the household; as in the full sample control variables do not have an important effect on the estimated impacts for females.

Because of the suggestive evidence in Figure 3 that female eligibility leads to increased decision-making power for younger women when a child's mother is present, in column 3, I interact pension eligibility with whether or not a child's mother is present in the household. In households where no mother is present women who are pension eligible are 23 percentage points more likely to be the primary decision-maker. The impact of pension eligibility on older women in households where a child's mother is present is 14 percentage points lower, and the two effects are significantly different from each other. Although the heterogeneous effects by whether or not the mother is present could be due to variety of factors, the increases in decision-making power for younger women with the eligibility of older women seen in households with mothers present<sup>11</sup> is highly suggestive of an interesting dynamic of transferring decision-making; older women may be shifting newly won decision-making responsibilities to younger women or the younger women may be somehow co-opting these responsibilities from the older women. The decision-making dynamics in households may be changing with pension receipt even when it is not the older woman herself who takes on that responsibility.

Another piece of evidence in favor of the explanation that decision-making power is being transferred from older to younger women is that when this analysis is performed using the decision-making category of where to send children to school, the interaction term is even more strongly negative. Deciding where to send children to school is the decision-making category that is most directly related to child well-being, and consequently it makes sense that a child's mother (as opposed to a child's grandmother) would look to make that decision. Appendix Table

<sup>11</sup> As seen in Figures 3a and 3b.

1 presents these results for both men and women. Overall pension eligibility has less of an effect on the decision-making power of elderly women when it comes to deciding where to send children to school than it does in the other decision-making categories considered here, as seen in columns 1 and 2 of Appendix Table 1. However, when the interaction of pension eligibility and the presence of a child's mother is included (column 3), a strong pattern emerges. Elderly women in households where no mother is present are 23 percentage points more likely to be the primary decision-maker about where to send children to school, similar to the effect for day to day purchases (Table 3), but the coefficient on the interaction term is greater in magnitude -- a statistically significant 21 percentage points. This means that when a child's mother is present there is no increase in elderly women making decisions about where to send children to school.

<sup>12</sup> This evidence of interesting heterogeneous effects by the presence of a child's mother suggests that pension income may be important to the well-being of children who live with the elderly and motivates the examination of the pension's impacts on children to be conducted later in this paper.

The impacts of pension eligibility on decision-making for men who live with children are also explored in Table 3 (day to day decision-making) and Appendix Table 1 (decisions about where children should attend school). Column 4 of Table 3 presents the results from a regression of male eligibility on day to day decision-making that includes a cubic in the age of the elderly male and controls for the presence of elderly women in the household, but not the extended set of control variables. Here, in contrast to the full sample and as was evident in Figure 3, there is evidence of a positive effect of eligibility on decision-making, but it is not statistically

<sup>12</sup> The sample size in Appendix Table 1 differs from Table 3 because the dependent variable is only defined for households where there are school aged children. Performing the analysis in Table 3 using the sample in Appendix Table 1 shows that the differences in results are due to the different dependent variables, not the differences in the samples.

significant. However, this coefficient is very sensitive to the addition of control variables in columns 5 and 6. There is no evidence of impacts on the schooling decisions variable, although again the coefficients are more sensitive to the addition of control variables than in the female sample.

### *Discussion*

The household models that have informed the research question that this paper addresses are based on the assumption that the control of resources affects decision-making power within the household. If this is not true, then the pension should not necessarily have an effect on how decisions are made within the household. However, if the interpretation of the result that women's decision-making power increases when they are eligible for the pension is to be guided by these theories, then the non-result in the case of pension eligible men becomes puzzling. Given that men also experience a discontinuous increase in pension receipt at their age of eligibility (Figure 1b), this increase in income should also increase their position in the household in regards to decision-making.

It is instructive therefore to understand whether or not control of income is actually the channel through which the impact on female decision-making is operating. First, I examine whether or not control of income in general is correlated with decision-making in the household. Using the reports of individually earned income from the NIDS adult survey, for each elderly adult I calculate the percentage of total household income that he or she earns individually.<sup>13</sup> Figure 4 graphs the mean value of the primary decision-maker for day to day purchases variable

<sup>13</sup> The NIDS survey collects income data individually, except in the case of agricultural income which is collected on the household level.

against this income control variable in five percentage point bins by gender.<sup>14</sup> There is a strong, clear relationship between control of income in the household and decision-making for both men and women, and the relationship holds regardless of pension eligibility.<sup>15</sup> Although it is not necessarily causal, this figure strongly suggests that the amount of household income one controls has a large impact on the probability that you are the decision-maker in your household.

This strong relationship between income control and decision-making power draws a clear line to why there are strong impacts of the pension on decision-making, at least for women. Consequently, we should also see a discontinuity in income control at the age of pension eligibility. In Figure 5 I plot the mean of percent of household income earned or received by the elderly individual by age and the regression line, again estimated on either side of the age discontinuity. The discontinuity is clear and striking in the female sample and provides a convincing channel through which the increase in decision-making occurs. However, the corresponding increase at age 65 in the male sample is much smaller and very noisy. If household decision-making is determined through income control then this lack of significant increase in income controlled by men provides an explanation for why there is no increase in decision-making in the male sample. This same pattern is evident, although noisier, when examining raw individual income in Figure 6 (as opposed to personal income as a percent of household income). Despite this increase in individually controlled income, there is little evidence of an increase in total household income for either women or men (Figure 7).<sup>16</sup>

<sup>14</sup> In Figures 4 – 10 I drop the top half percent of male and female individual income earners (6 and 9 observations respectively) to eliminate several extreme outliers. Dropping the outliers is done only to allow for cleaner presentation of results and does not affect the qualitative implication of the figures. All results in the paper are robust to the exclusion of these observations.

<sup>15</sup> The relationship also holds in the entire sample of NIDS individuals, not just the elderly population.

<sup>16</sup> Because of evidence that the pension crowds out some private transfers previously received by households (Jensen, 2003) and leads to reductions in elderly labor supply (Lam, et al, 2006) it is not surprising that household income does not rise by the total amount of the pension.

Although the lack of increase in personal income or income controlled by men provides a convincing explanation for why there is not an increase in male decision-making, it is perplexing given the fact that there is a large discontinuity in male pension receipt at age 65. If male income is not increasing, where is the pension money going? Given previous evidence that both men and women exit the labor force in large numbers at the age of pension eligibility (Lam, et al., 2006) an obvious explanation is that the pension income received by men is cancelled out by the reduction in labor income caused by withdrawal from the labor force. However, given that the drops in employment were found for both men and women it is not immediately clear why this cancelling out effect would occur for one gender and not the other. Figure 8 uses the employment data collected in the NIDS adult survey to investigate the reduction in employment at the age of pension eligibility in the NIDS data.<sup>17</sup> As expected, pronounced negative trends in employment are visible for both men and women as they age, starting before pension eligibility and continuing after. Discontinuities are present at eligibility for both genders, but this discontinuity is much more pronounced and precisely estimated for females, the opposite of what would be hypothesized in order to explain the lack of income increase for men.

Considering that much work in South Africa is casual or on family farms, it may be more instructive to consider changes in individual labor income, rather than just employment status. Figure 9 performs this analysis. Although there are not sharp discontinuities in labor income for men or women, the age of pension discontinuity represents a leveling off in a downward age trend in labor income for both genders. After becoming pension eligible the average elderly person in South Africa earns very little in the labor market. It is interesting to note that prior to eligibility, men are earning substantially more than women in labor income. Figure 10 graphs

<sup>17</sup> I use employment instead of labor force participation because unemployment rates in South Africa are high and I am principally interested in changes in income.

the age trend, separately by gender, for individual labor income as a percentage of household, non-pension, income.<sup>18</sup> Strong discontinuities are present for both genders, but the means prior to pension eligibility for women are much lower than they are for men. Men earned more than women in the labor market prior to receiving the pension and their labor income was a more important part of the total household budget. Consequently, while the pension represents an increase over what women were earning in the labor market, it is more of a replacement for what men previously earned. This, combined with the fact that the age discontinuity in pension receipt is not as strong for men as for women, can explain why men do not see an increase in either income or control of income when they become pension eligible and male status in the household remains roughly constant.

## **V. Other Potential Explanations:**

Although the main decision-making results in this paper are robust to the addition of control variables and changes in sample, given the large literature that exists documenting a variety of impacts of the pension, it is important to explore the possibility that the increases in decision-making documented here are an effect of one of these other changes rather than a direct impact of increases in household income and shifts in who controls that income.

### *Changes in employment*

One important impact of the pension is its effect on the labor supply of those who are eligible. As discussed in the previous section of this paper Lam, et al., (2006) find significant decreases in employment at the age of eligibility and a similar pattern is found in the NIDS data, particularly among women. A potential explanation then for the increases in decision-making

<sup>18</sup> I perform the calculation in this way to mitigate the mechanical decrease in labor income as a percentage of household income when household income increases with the pension.

power is that they are being driven, at least in part, by women who are leaving the work force when they begin to receive the pension. Now retired, they spend more time at home and therefore assume more household duties, such as making decisions about purchases. If this explanation is true, then the increase in decision-making power seen in this paper is not due to the income that elderly women are now earning, but to their new role in the household. Two analyses already done in this paper rebut this explanation. First, the increases in decision-making power are seen not only for day to day purchases but also for large, unusual purchases, a category for which the labor supply explanation seems less well suited. While the daily shopping may be seen as a chore, it is less likely that infrequent, large purchases are. Additionally, if the extra time at home that resulted from leaving the labor force was the driving force behind the increase in decision-making power, then there should be an upward trend in decision-making in the years prior to eligibility as women steadily stop working (Figure 8a). However, in Figure 2a, the age trend in decision-making prior to pension eligibility is negative, suggesting that this is not the case.

The possibility that changes in employment are causing the observed increases in female decision-making can also be tested directly. I again estimate the regression equation in Section IV, now including an interaction term between pension eligibility and employment. If the decision-making impacts are being driven by those who have left the labor force, then the coefficient on the interaction term should be negative. The results are presented in Table 4. Columns 1 and 2 present the results for women and columns 3 and 4 for men. Columns 1 and 3 include the full set of controls as well as an indicator variable for employment status. Columns 2 and 4 add the interaction between eligibility and employment. The results for women are not suggestive of heterogeneous effects by employment status. The effect of pension eligibility

increases slightly when the interaction term is included, and the interaction itself, while negative, is small compared to the main effect of eligibility and insignificant. Additionally, the coefficient on employment status in Column 1 is a significant 6 percentage points. While this is not causal it does suggest that being employed tends to have a positive, not negative, impact on decision-making. Again no significant effects are present for men.

### *Changes in household composition*

Probably the most important threat to the validity of the results in this paper is the possibility that receipt of the pension causes households to reorganize and that the results are an artifact of this change in household structure rather than a direct impact of the pension itself. Because previous work has shown that some changes in household composition do seem to occur (Edmonds et al., 2005; Hamoudi and Thomas, 2005) the goal in this paper is to argue that any changes that may be occurring are not likely to affect the validity of the results. To that end I run a series of regressions to understand what these changes may look like in the NIDS data. I examine changes in household size and the number of household members in various age groups. This is similar in spirit to the analysis in Edmonds et al. (2005) that found increases in the numbers of young children and young woman and decreases in prime working age women living with elderly black women in South Africa. The regression specification that I employ is similar to that used to estimate changes in decision-making, but because the outcome variables are at the household level, the regression sample is households with an elderly woman (or man) aged 50 to 75. In practice this only slightly reduces the sample used in the individual level regressions as fewer than 3 percent of households contain more than one woman or more than one man aged 50 to 75. I include a third order polynomial in the age of the oldest man or woman in the 50 to 75 age range and indicators for the presence of an elderly person and pension eligible person of the

other gender. Control variables are the number of household members in different age ranges and rural status.

Table 5 presents the results of these regressions. Each cell is a separate regression; column 1 shows the coefficient on the female eligible variable in regressions on households with elderly females and column 2 the coefficient on the male eligible variable in households with elderly males. The dependent variables are household size and the number of males or females in different age groups. A decrease in the number of family members who are also likely to be the decision-maker (principally older men, but also middle aged men and women) would have been evidence that women were simply becoming the decision-makers by default when the previous decision-makers leave the household. This does not seem to be the case.

Female eligibility does not lead to a significant increase in household size or in the number of adults in most age categories. The exception is that there is a decrease of 0.18 in the number of men aged 25 to 49. However, because men in this age range are very unlikely to be the principal decision-maker regardless of whether or not the elderly woman is pension eligible, it does not seem likely that this weak decrease could be causing the robust increase in decision-making power. The only other significant change with female eligibility is an increase in older boys. Although this is an interesting result, because boys in that age range cannot be the household decision-makers, this change is unlikely to be driving the increase in female decision-making power. There is an evident increase in household size among pension eligible males, but that increase appears to be mostly due to an increase in the number of children and the number of women aged 25 to 49. Though household changes appear to be more of a concern with the

eligibility of males<sup>19</sup> these changes do not immediately suggest an explanation for the non-result in decision-making.<sup>20</sup>

## **VI: Household Outcomes**

This analysis of how pension eligibility affects decision-making in the household is interesting largely because we expect these changes to translate into positive increases in measures of well-being in the household. Although impacts of the pension have been extensively documented in the literature, this is the first study to look for them in the NIDS dataset, and it is important to document that they still exist in 2008, 15 years after the expansion of benefits. Here I examine impacts on child nutrition and ownership of consumer durables, two measures that are likely to be associated with the two main decision-making categories that I have addressed in this paper, decisions about day to day purchases such as groceries and decisions about large, unusual purchases such as many consumer durables.

### *Child nutrition*

One of the most well-known results in the pension literature is Esther Duflo's finding that female pension eligibility results in higher values of anthropometric indicators for young girls but not young boys. Utilizing anthropometric data collected from young children, she examines the impact of the pension on standardized measures of child nutritional status, including weight

<sup>19</sup> As evidenced by the greater sensitivity of the male regressions to the addition of control variables.

<sup>20</sup> Although there is no evidence of it here, two previous studies on the pension have found decreases in prime working age women with pension eligibility, likely related to the pension's ability to finance labor migration for these women (Edmonds, et al., 2005; Ardington, et al., 2009). Even if this effect is present in my sample and I am simply unable to find it due to lack of precision, given the very low percentage of decision-making power for non-elderly, adult women in this sample, it is unlikely that it could be driving the effects that I find.

for height.<sup>21</sup> Weight for height is a flow measure of nutrition, a marker that responds quickly when a child's conditions changes. A separate nutritional indicator, height for age, that Duflo uses in some analyses, is a stock measure of nutritional inputs and represents long-term nutritional investments. Duflo's identification strategy is similar in spirit to the strategy that I have employed thus far in this paper, but she includes all children in her sample (even those who do not live with an elderly person) and controls for the age trends of the elderly through a set of dummy variables for the presence of a woman over 50, a woman over 55, a man over 50, a man over 55 and a man over 60. In her main results, Duflo finds a 0.61 standard deviation increase in the weight for height measure for young girls with the presence of a pension eligible woman but a small and insignificant effect with the presence of a pension eligible man. There are no statistically significant impacts for boys.

Duflo uses a nationally representative household survey from 1993, similar in structure to NIDS,<sup>22</sup> to conduct her analysis, making this a feasible result to examine with the current data. Additionally, because this result is widely used to make inferences about household models and support arguments that giving income to women over men leads to improved outcomes for children, it is particularly appropriate in the context of the current paper.

Standardized weight for height measures are defined only for young children. Consequently, following Duflo, I limit my sample to children aged 6 to 60 months.<sup>23</sup> Importantly for this study, the NIDS survey collects anthropometric data from both children and adults,

<sup>21</sup> Weight for height Z-scores are calculated by subtracting the median and dividing by the standard error for the child's height and sex in a standard reference population. Duflo uses the reference group of well-nourished US children provided by the U.S. National Center for Health Statistics, standard prior to 2006.

<sup>22</sup> The 1993 survey is composed only of a household survey; it did not incorporate individual interviews with household members and does not contain questions on decision-making.

<sup>23</sup> Appendix Table 2 shows that the same patterns in decision-making are present among the elderly who live with children in this age group, although the effects are somewhat smaller and less precise.

allowing for the construction of standardized z-scores analogous to those used in Duflo’s 2003 paper. I construct z-scores for weight for height and height for age. As discussed earlier, weight for height is typically seen as an indicator of acute malnutrition while height for age is a measure of chronic malnutrition. Children who are severely malnourished are two or more standard deviations below the median weight or height. To construct the z scores I use the WHO international child growth standards for children up to age five as the reference population (WHO, 2006). These international growth standards improve on the previous National Center for Health Statistics standards that were based on a reference population of American children.<sup>24</sup> In all analyses, I drop observations with z-scores deemed biologically impossible (absolute z-scores greater than 5 for weight for height and greater than 6 for height for age).

When replicating Duflo’s exact estimation strategy in my data, the estimated coefficients follow a similar pattern to the effects that she finds, but are imprecisely estimated. Consequently, I implement an alternative strategy similar to the model used to estimate changes in household composition in Section V. I limit the sample to children aged 6 to 60 months who live with a person aged 50 to 75 in order to reduce influence from observations that are very far from the cutoff for pension eligibility. In this sample I estimate the following equation:

$$w_{ij} = \theta_f FEMALE_j + \theta_m MALE_j + \alpha_f ELIGFEMALE_j + \alpha_m ELIGMALE_j \\ + \gamma(AGE_{MALE_j}, AGE_{FEMALE_j}) + \beta AGE_{CHILD_{ij}} + \delta CONTROLS_{ij} + \varepsilon_{ij}$$

where *FEMALE* and *MALE* are indicators for whether or not there is a woman or man aged 50 to 75 in the household. *ELIGFEMALE* and *ELIGMALE* are indicators for the presence of an age-eligible man or woman in the household. Following Edmonds (2006)

<sup>24</sup> I used the WHO provided Stata macro, igrowup, to calculate the z-scores.

$\gamma(AGEMALE_{ij}, AGEFEMALE_{ij})$  is a third order polynomial in the age of the oldest man and the oldest woman in the household. In all specifications I control for the age of the child and further include controls for the number of household members who are 0-5, 6-14, 15-24, and 25-49, mother's educational attainment, and presence of mother and father in the household.<sup>25</sup>  $\alpha_f$  and  $\alpha_m$  can then be interpreted as the difference in weight for height between a child living with a pension eligible woman (man) and a child living with a woman (man) who is almost-eligible. This specification is similar to those used to estimate the impacts on decision-making, but because the level of observation is the child, not the elderly person, it controls for age trends in the age of the oldest man and woman in the household.

There are 593 boys and 572 girls aged 6 to 60 months who live with a person aged 50 to 75 in the NIDS database. Unfortunately, a significant amount of the sample is lost to missing or unfeasible anthropometric data, leaving 413 boys and 389 girls for analysis purposes.<sup>26</sup> Table 6 presents summary statistics for the children in the estimation sample. There are few differences between children who live with and without pension eligible men and women. The largest difference is that the percentage of fathers who are absent (very high across the board) is significantly lower for children who live with almost eligible men compared to those who live with eligible men. This is likely due to the fact that some of the almost eligible men are themselves the fathers of the children, but the eligible men are old enough that this is much less likely. The discontinuities in pension receipt at age eligibility of older people in the household are also evident from the means presented here.

<sup>25</sup> I do not control include controls for father's educational attainment because of the large number of missing values.

<sup>26</sup> A comparison of children with valid anthropometric data and those without shows few differences across a variety of relevant household characteristics. The exception is that children with missing data are more likely to live in an urban area.

Table 7 shows the results of estimating this equation. Columns 1 and 4 present results when a single eligibility indicator is used. The coefficient on pension eligibility is large, positive and statistically significant for girls, but small and negative for boys. Columns 2 and 5 include separate indicators for an eligible woman and an eligible man and control for the presence of a woman or man aged 50 to 75 and columns 3 and 6 add the set of control variables. The coefficient on woman eligible is large and stable to the addition of control variables for girls. The presence of a pension eligible woman increases weight for height of girls by about 0.6 standard deviations. The coefficients for eligible man are close to zero and have large standard errors. In the boys sample the coefficients on male and female eligibility are small and imprecise. A clear pattern emerges from these results, namely that the presence of a pension eligible woman (but not a pension eligible man) increases the weight for height of girls. There is no effect of pension eligibility of either gender for boys. The reduced form effect of eligible women on girls of roughly 0.6 standard deviations is large and remarkably similar to the 0.6 standard deviation reduced form estimate in Duflo (2003). However, because the percentage of women that receive the pension is significantly higher in 2008 than in 1993, an estimate for treatment on the treated would likely be lower.

Because weight for height is a flow measure of nutrition, it can be expected to improve quickly as children receive the better nutrition that is assumedly purchased with the pension income of the elderly women in their households. However, if pension eligibility caused household composition to change in such a way that young girls who were already healthier are more likely to live with eligible women, then the effects that we see are not necessarily a result of how elderly women choose to spend their pension income. In particular, given the fact that pension eligibility increases the number of young children in households with an age eligible

male (but not an age eligible female) of concern is the possibility that these extra children moving in with elderly men are the unhealthiest children and that improvements that may be occurring in their nutritional status are not showing up because of comparison to the relatively healthier group of children living with almost eligible men.

I check for this possibility using height for age, the stock measure of nutrition that represents the long term nutritional inputs that a child has received. Because this measure does not respond quickly when nutrition is improved, it contains information about the nutritional status of a child before they were exposed to the pension. Duflo (2003) also uses height for age as a check for the effects of endogenous household formation, but because the strategy that she uses depends on the recent introduction of the pension in that time period I cannot employ it here. I instead re-estimate the same equation, but use the height for age z-score as the dependent variable. Because of the long term nature of this indicator, positive or negative coefficients on the eligibility indicators will be suggestive of children who are already healthier or less healthy being more likely to live with a pension eligible person.

The results are shown in Table 8. The results for pension eligibility of women in the girls sample are large and significant, but negative. This suggests that if there is some sort of sorting of girls into pension eligible households, it appears to be those who are more unhealthy to begin with. This works against finding a positive effect on weight for height and suggests that the true effect may even be stronger. The coefficients on male pension eligibility are also negative, but smaller and insignificant. One explanation for why girls are positively affected by female pension eligibility and boys are not is then that the eligible women perceived the girls to be initially unhealthier and channeled more resources their way. The coefficients on male eligibility are positive but very small and imprecise for both boys and girls. This alleviates

concerns that the increase in children seen in households with eligible men could somehow be driving the non-result of male eligibility on weight for height.

### *Ownership of consumer durables*

The significant increase in income provided by the pension provides the opportunity not only to improve the quality of day to day purchases on food, but also to invest in larger household items that have the ability to improve quality of life. In particular certain consumer durables like modern stoves and refrigerators can contribute to improved health in the household, particularly for children. Additionally, Ashraf, et al. (2010) find that increases in decision-making due to control of commitment savings accounts is related to increases in the ownership of durable goods. The NIDS data offers the opportunity to study a similar question in a different setting. The NIDS survey collects information on 27 separate durable goods that may be owned by households. Here I consider the total number of what I term “household” durable goods, which are the 16 goods listed on the survey excluding ownership of vehicles, bikes, and large agricultural tools. The household durable goods include radios, televisions, cell phones, stoves, refrigerators, washing machines, and living room furniture.<sup>27</sup> I observe only whether or not a household possesses each type of good and do not know if they have more than one of each type. Consequently, I can detect if pension eligible households buy types of goods that they did not previously own, but not if they buy more of or replace goods that they already had.

I estimate the same model that I use in Section V to examine changes in household composition; the dependent variable here is the number of household durable goods. Table 9 presents the results. Results are shown both for all households with an elderly man or woman

<sup>27</sup> The list of included durable goods is: radio; Hi-Fi stereo, CD player, MP3 player; television; satellite dish; VCR or DVD player; computer; camera; cell phone; electric stove; gas stove; paraffin stove; microwave; fridge/freezer; washing machine; sewing/knitting machine; lounge suite.

and for those households with a young child. Columns 1 to 4 show results for households with an elderly woman aged 50 to 75. The results for households with an elderly man are in Columns 5 to 8. Columns 3 and 4 and 7 and 8 show results in the subset of households with young children. Columns 2, 4, 6, and 8 include control variables.

Among households with an elderly woman, female eligibility results, on average, in 1.1 more household durable goods, a 22 percent increase on the sample mean of 4.9. This is robust to the addition of controls. Women do appear to be channeling some of their pension income into the purchase of consumer durables, a nice complement to the fact that they were found to be significantly more likely to be the primary decision-maker for large, unusual purchases in the household. They are using that improved decision-making power to use their pensions to invest in consumer durables for the household. Interestingly, this effect appears to almost entirely driven by households with young children. In these households we see highly significant increases of 1.9 household durables (1.6 with controls), providing an additional channel through which the improvements in girls' nutrition may be operating. As expected given the lack of increase in household income or shifts in income control with male pension eligibility, the coefficient on male eligibility is small and imprecise across specifications.

Because there is no increase in total household income when females become pension eligible the positive effects on household outcomes cannot be due to higher levels of income in the household. Instead these effects must be due to the increased control of income and decision-making power that elderly women experience when they become pension eligible. Their individual incomes increase, leading to an elevated position in the household that translates to an enhanced ability to make household decisions according to their preferences. In this case they choose to channel their resources towards improved nutrition for young girls and consumer

durables for the household. These results are in the spirit of the balance of the recent empirical literature on household bargaining, but are some of the first to show direct evidence connecting income control to a mechanism for changing household outcomes.

## **VII. Conclusion**

The results in this study show that women experience an increase in personal income and the percent of household income they control when they become eligible for the pension. Bargaining models of the household predict that this increase should result in an increase in bargaining power, and I find that pension eligible women are more likely to be the primary decision-maker in their households across a variety of categories. This shift in decision-making power is accompanied by improved nutritional status for young girls and an increase in the ownership of consumer durables, particularly in households with children. These results showing improvements in household outcomes with female, but not male, eligibility, mirror previous results (Duflo, 2003) that have been used both to support bargaining models of the household and to argue that social programs should channel resources towards women as they will direct the money towards more productive uses.

Despite the fact that the child nutrition results so closely mirror Duflo's, the analyses in this paper cast doubt on some of the conclusions drawn from that important study. In the data used here, pension eligibility for men does not result in an increase in personal income, personal income as a percent of total household income, or total household income. The argument employed in Duflo's paper assumes the existence of an increase in income for both men and women, and that women are directing that income towards different ends. Here, because men do not see an increase in income, this same argument cannot be applied. However, the presence of

robust increases in decision-making power for pension eligible women supports the assertion that changes in who controls household income do affect how households allocate resources.

Given that there is no increase in income with male pension eligibility there is no *a priori* reason to expect to see evidence of positive impacts on household well-being as in the case of female eligibility. There may have been positive impacts if male income had increased. The results in this study highlight the need for caution when interpreting results (such as those on girls' nutrition and ownership of consumer durables in this paper) that seem to indicate that money given to women is better spent than money given to men.

With these arguments in mind, it is interesting to consider whether or not there was an increase in income for pension eligible males in the data used in Duflo's study. The analysis in that paper was done using the Project for Statistics on Living Standards and Development (PSLSD), a 1993 survey similar to NIDS in sample size, goals, and structure, although it consisted of a single household level survey. Using the PSLSD data I construct figures 11 through 14. Figure 11 shows that the discontinuity in pension receipt in 1993, while smaller for both men and woman than in the 2008 data, does exist at age 60 and 65 for women and men respectively. Figures 12, 13 and 14 are analogous to Figures 5, 6 and 7 from the NIDS data examining the changes in personal income as a percent of household income, personal income, and total household income a result of male and female eligibility. I do this only for elderly people who live with a child 6 to 60 months old, as that is the sample of interest in Duflo's paper.<sup>28</sup>

<sup>28</sup> As in Section IV, I drop the top half percent of female and male individual income earners.

Strong increases in individual income and percent of total income controlled (Figures 12 and 13) are present for pension eligible females, but not for pension eligible males. Although Duflo's argument that her results represent a rejection of the unitary model on its face necessitates an increase in both male and female income, the decision-making results in this paper (information not available in the earlier dataset) do support the claim that income control affects resource allocation. Additionally, the evidence in Figure 14a that overall household income does not increase with female pension eligibility in 1993 suggests that changes in outcomes are due to the change in income control and not increases in income. However, the interpretation of Duflo's results (and possibly of the results in this paper) by many policy-makers as evidence for the hypothesis that women direct resources towards more productive uses than men should be reevaluated, and the assumption that cash transfers necessarily result in increases in income should also be reconsidered.

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Figure 1a: Pension receipt by women

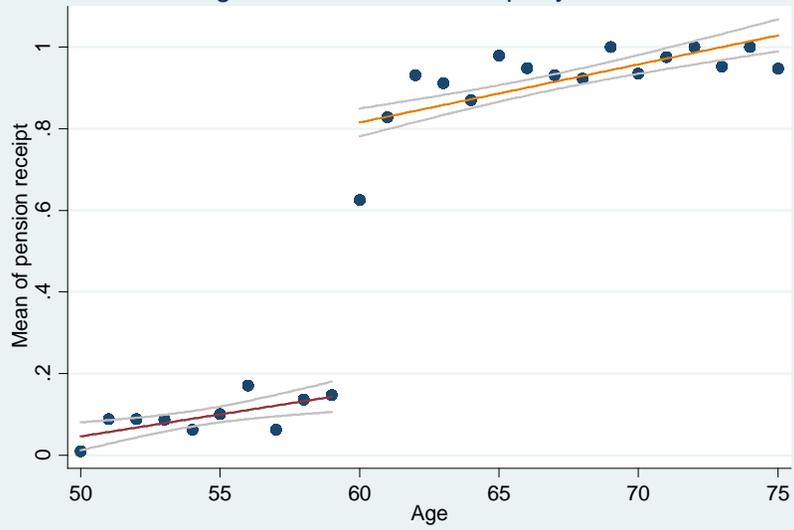


Figure 1b: Pension receipt by men

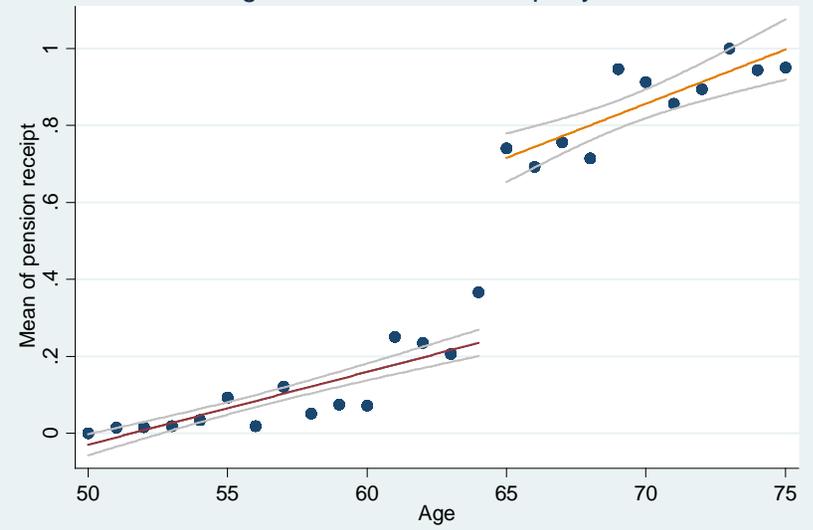


Figure 2a: Primary decision-making by women

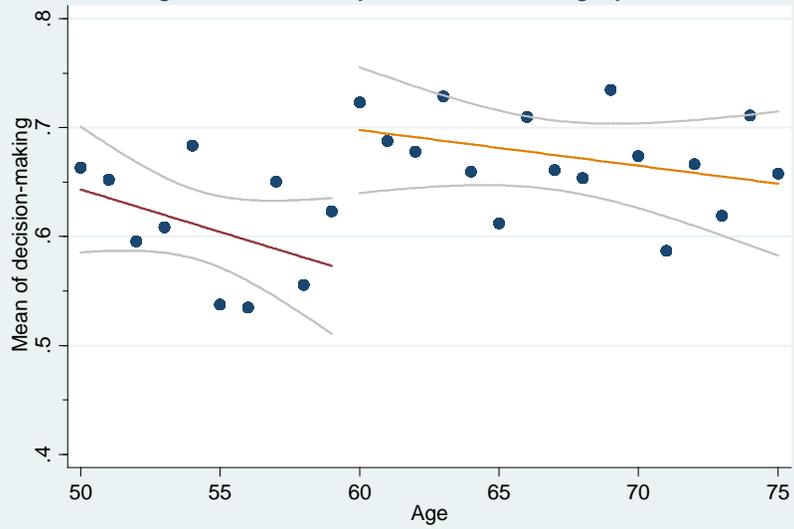
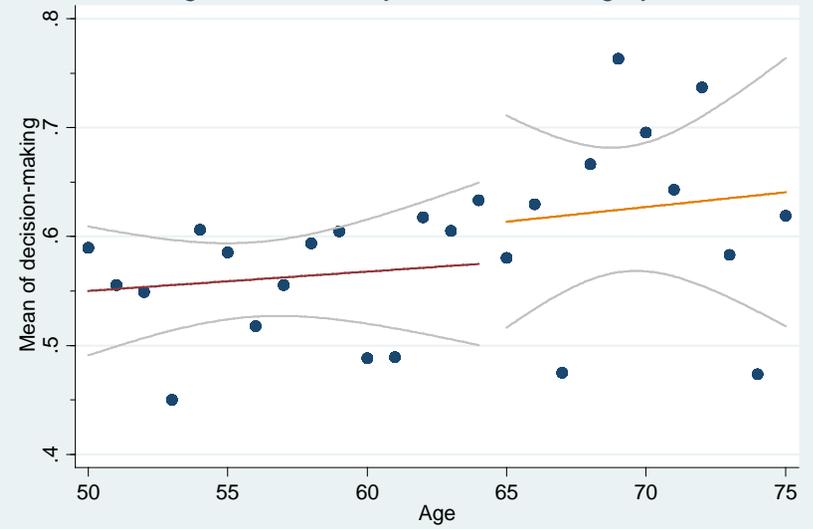
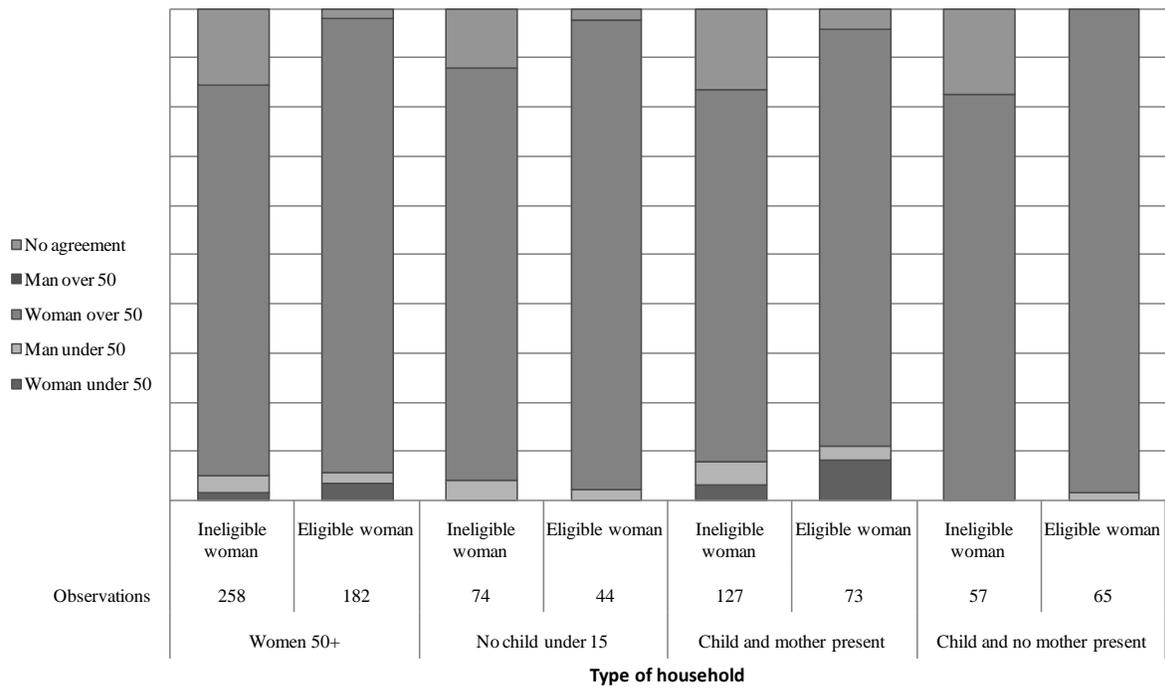


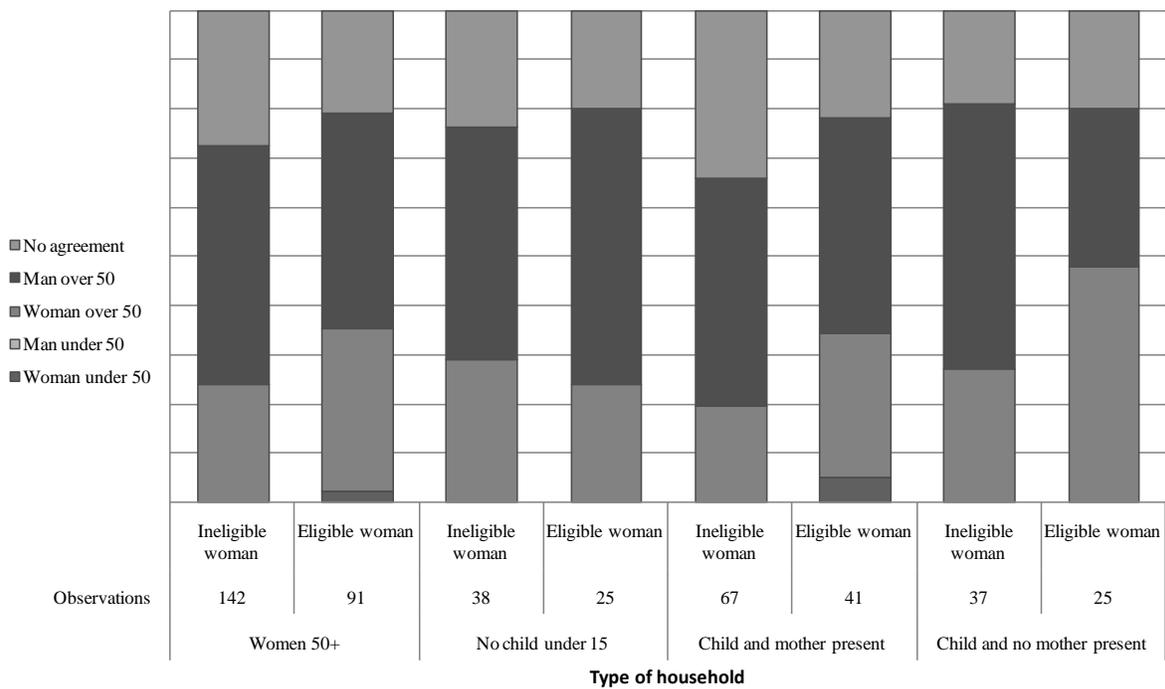
Figure 2b: Primary decision-making by men



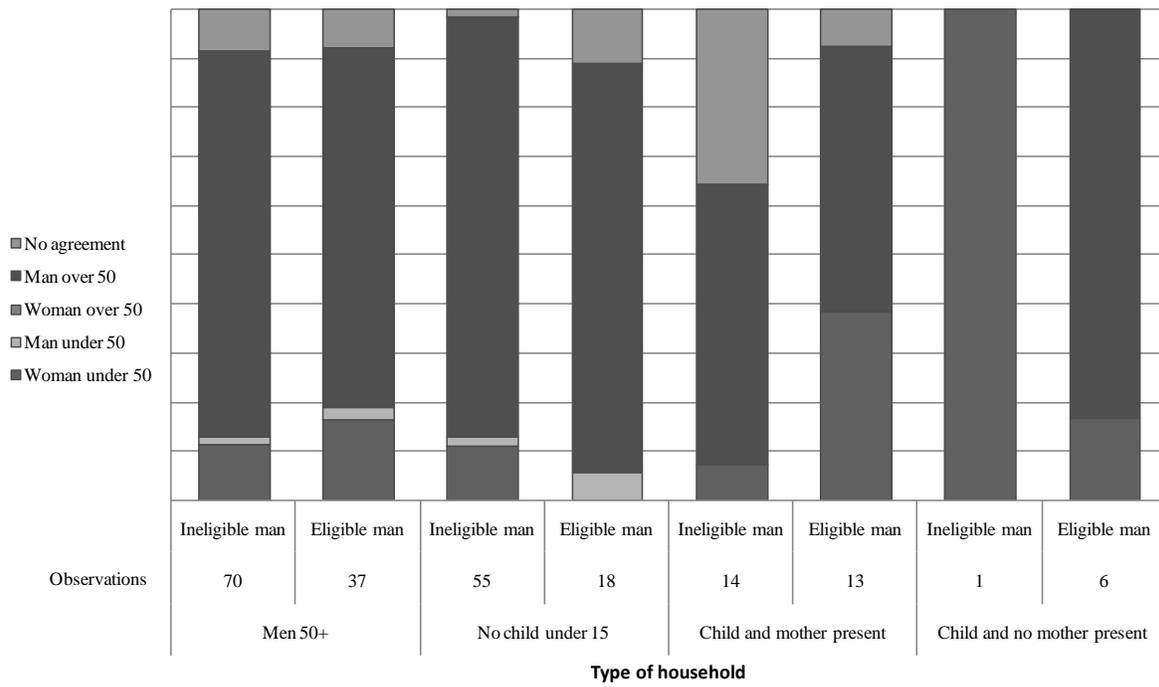
**Figure 3a: Identity of decision-maker by female eligibility:  
No man over 50 present**



**Figure 3b: Identity of decision-maker by female eligibility:  
Man over 50 present**



**Figure 3c: Identity of decision-maker by male eligibility:  
No woman over 50 present**



**Figure 3d: Identity of decision-maker by male eligibility:  
Woman over 50 present**

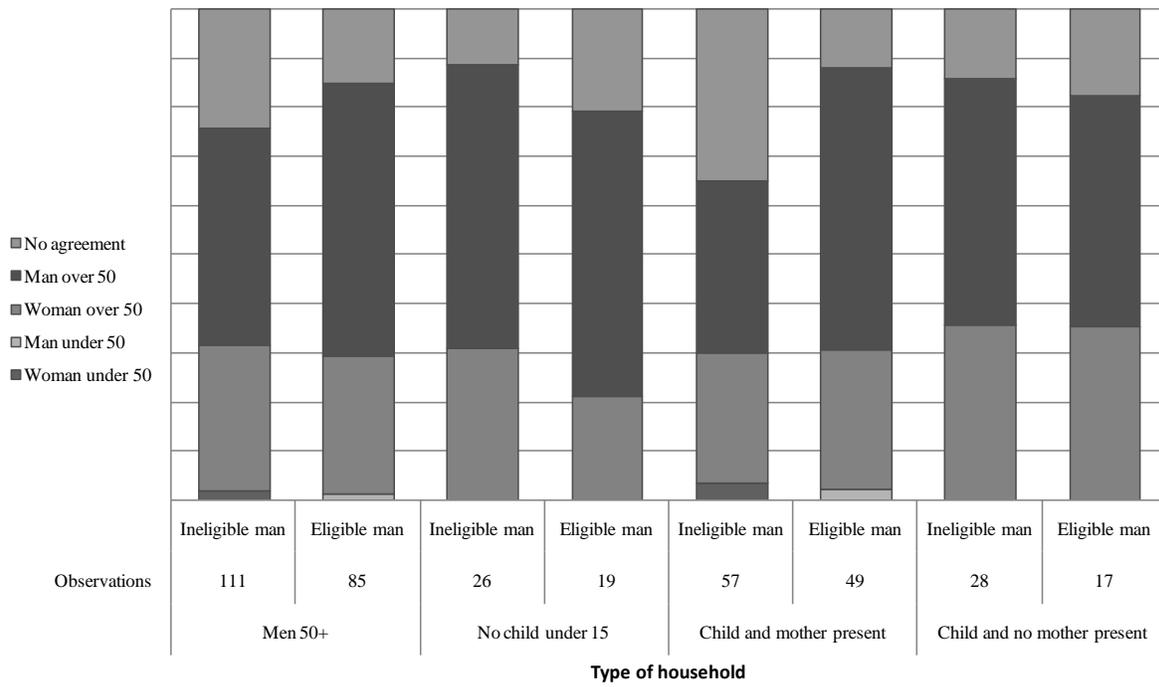


Figure 4a: Decision making by percent of hh income

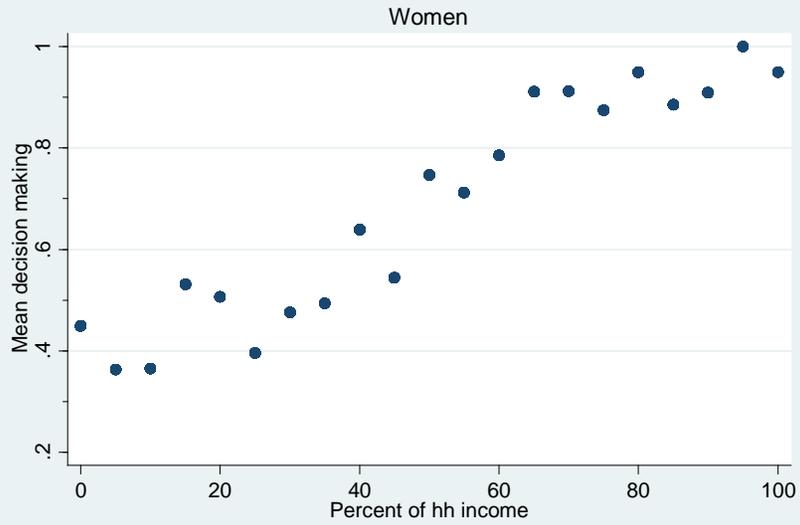


Figure 4b: Decision making by percent of hh income

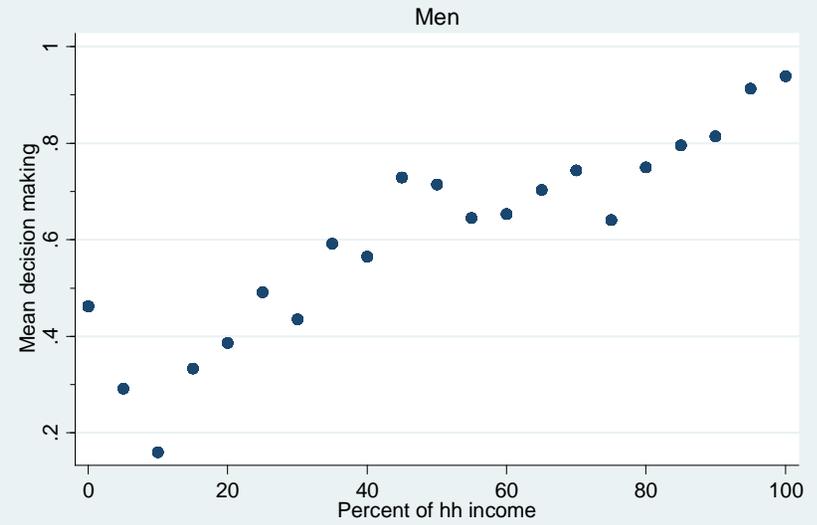


Figure 5a: Percent of household income - women

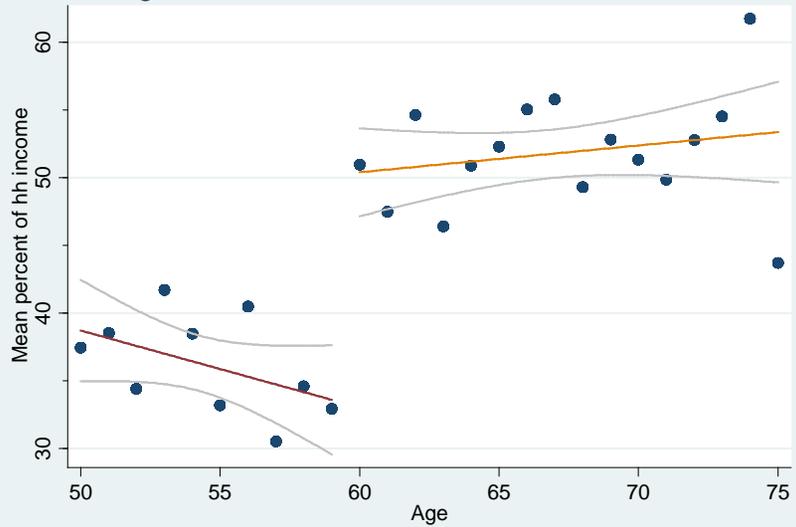


Figure 5b: Percent of household income - men

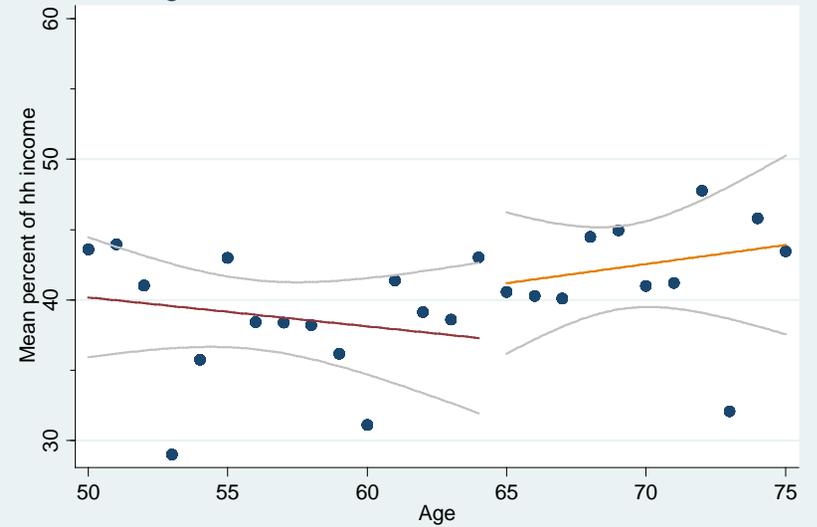
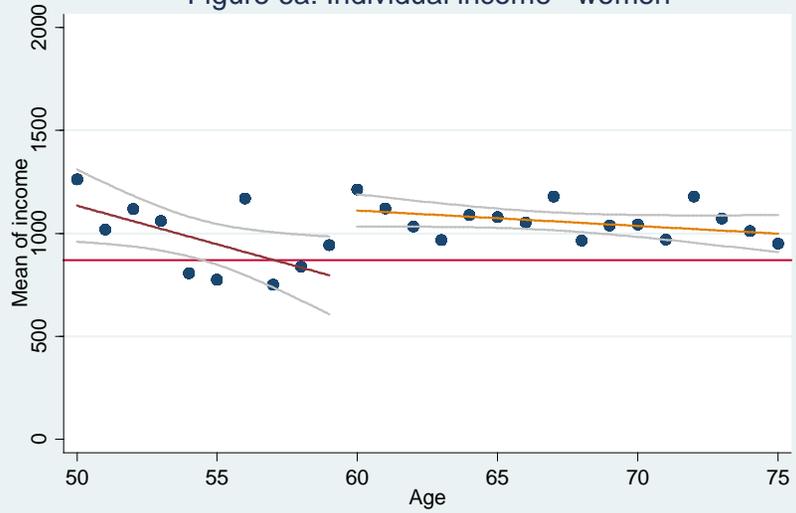
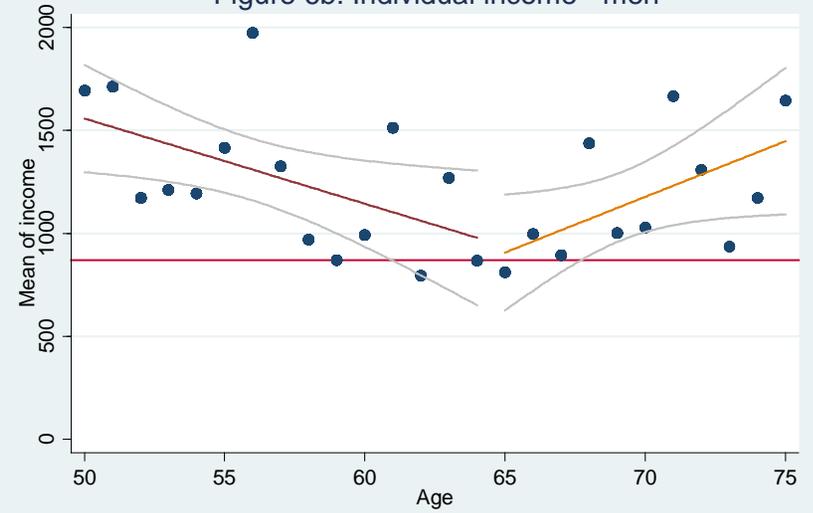


Figure 6a: Individual income - women



Note: The horizontal line at 870 Rand is the maximum pension amount for most of the survey period.

Figure 6b: Individual income - men



Note: The horizontal line at 870 Rand is the maximum pension amount for most of the survey period.

Figure 7a: Total household income - women

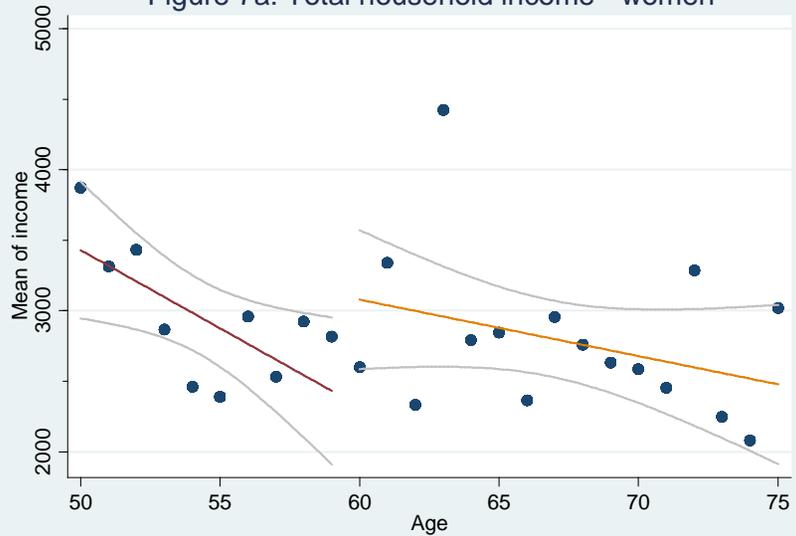


Figure 7b: Total household income - men

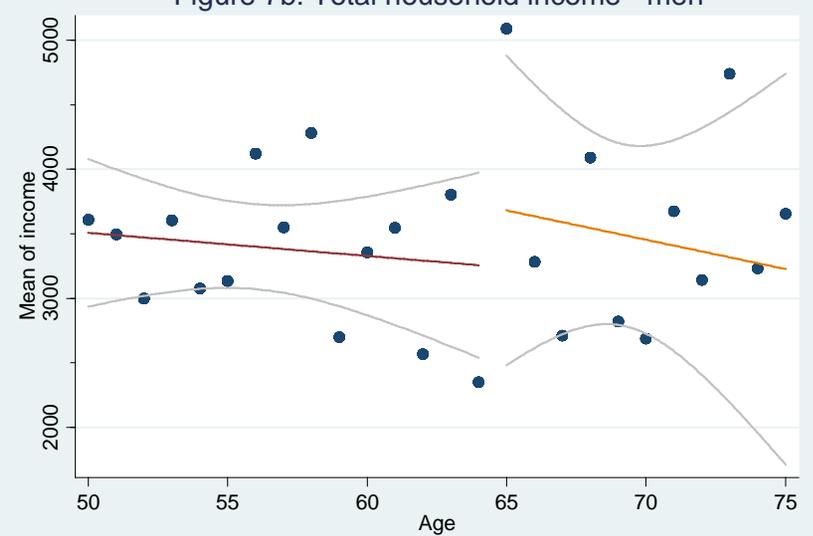


Figure 8a: Employment - women

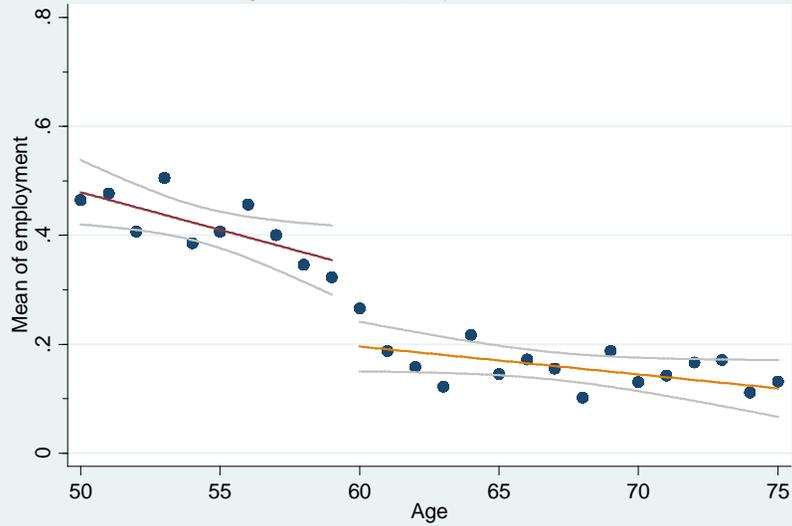


Figure 8b: Employment - men

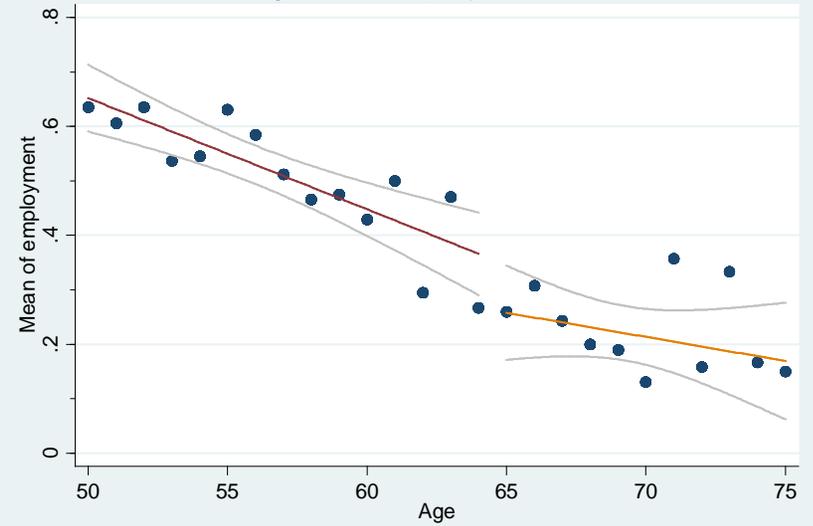
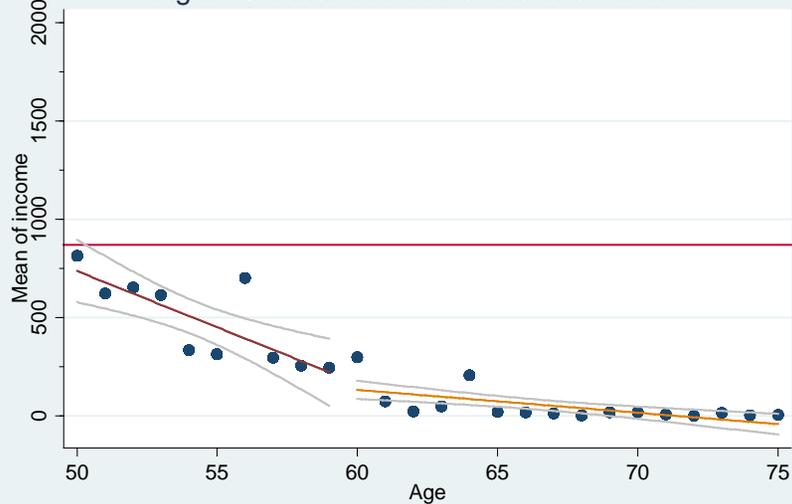
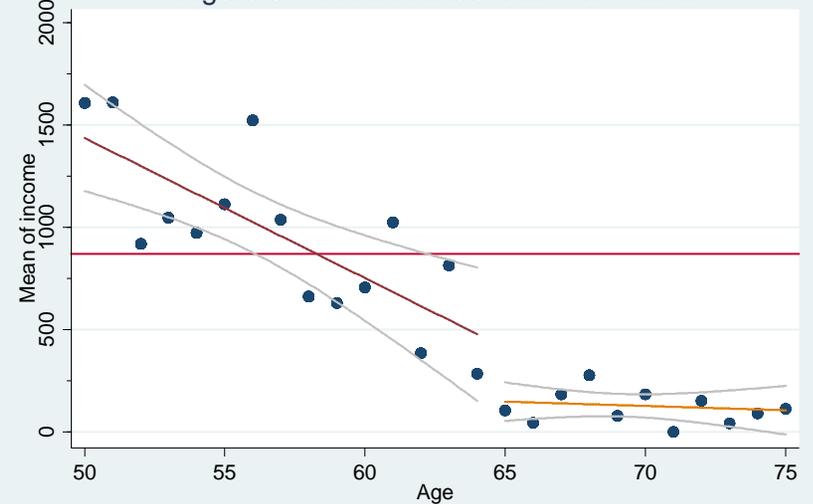


Figure 9a: Individual labor income - women



Note: The horizontal line at 870 Rand is the maximum pension amount for most of the survey period.

Figure 9b: Individual labor income - men



Note: The horizontal line at 870 Rand is the maximum pension amount for most of the survey period.

Figure 10a: Individual labor income - women  
Percent of household non-pension income

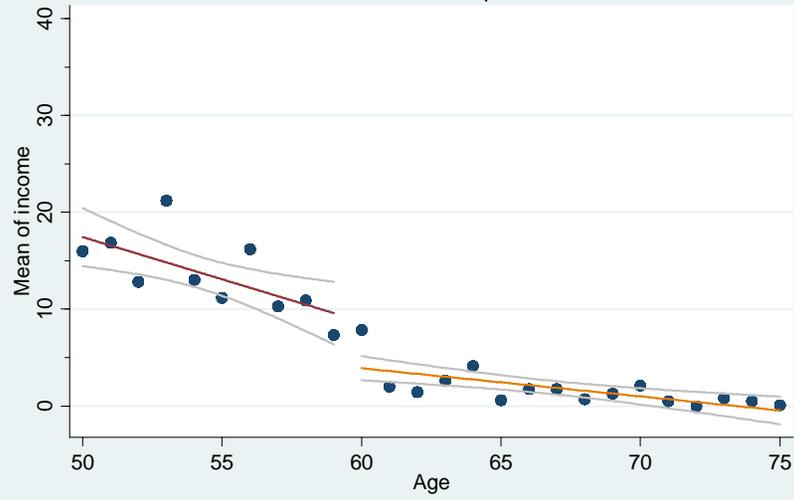


Figure 10b: Individual labor income - men  
Percent of household non-pension income

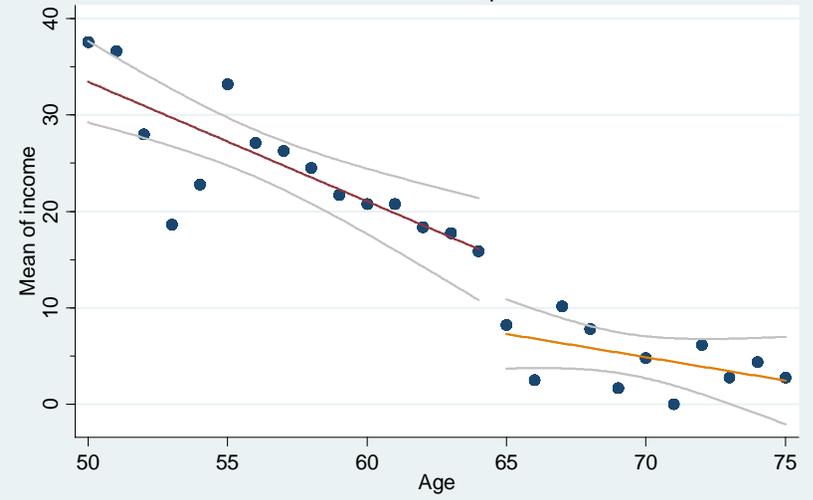


Figure 11a: Pension receipt by women in 1993  
Households with children 6 to 60 months

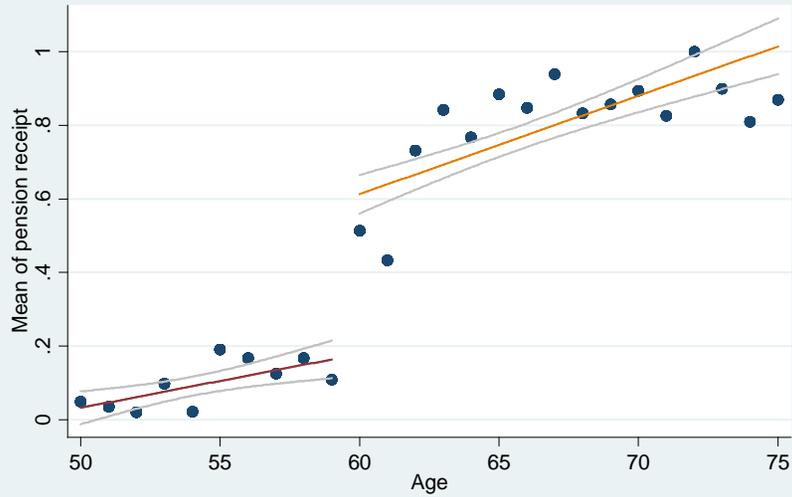


Figure 11b: Pension receipt by men in 1993  
Households with children 6 to 60 months

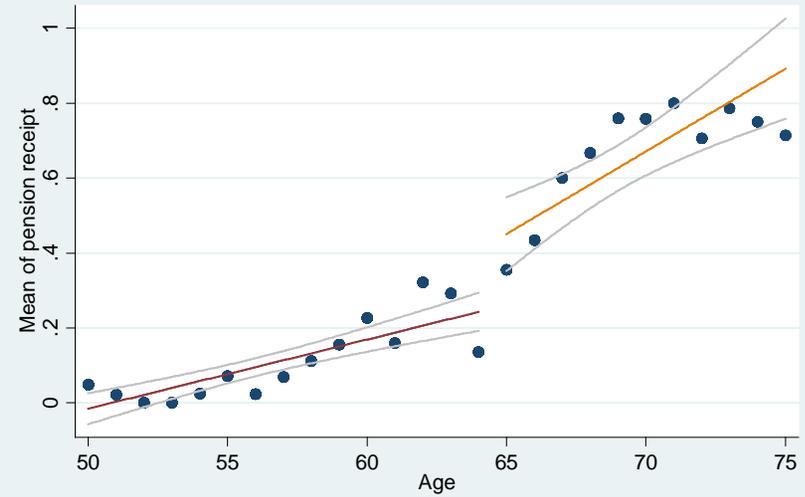
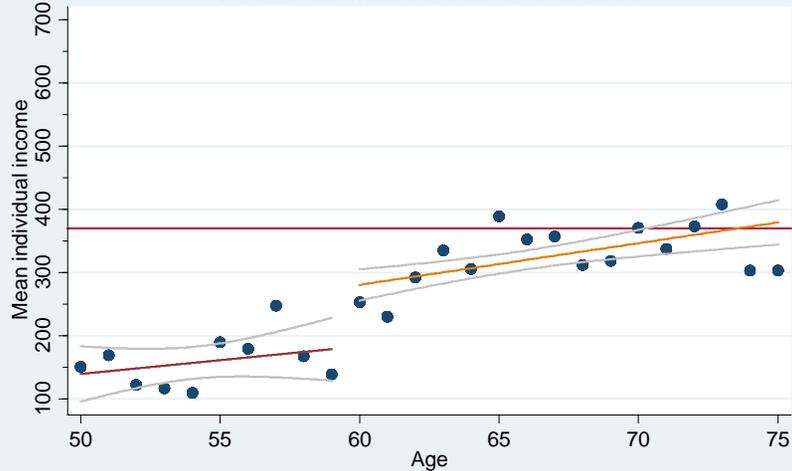
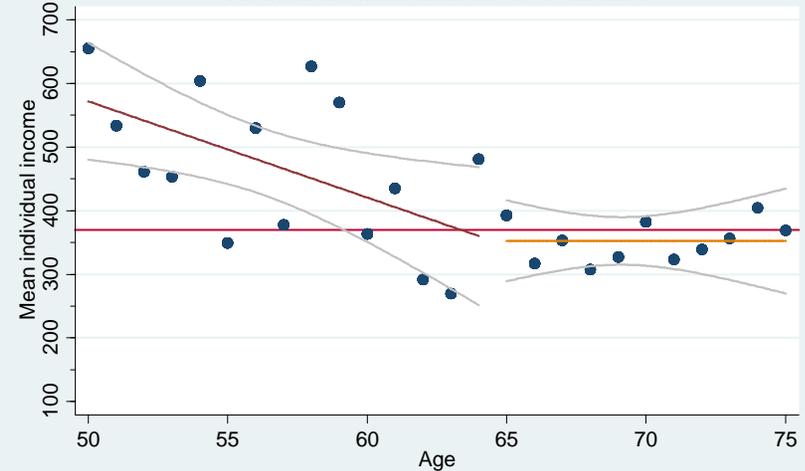


Figure 12a: Individual income - women in 1993  
Households with children 6 to 60 months



Note: The horizontal line at 370 Rand is the maximum pension amount in 1993.

Figure 12b: Individual income - men in 1993  
Households with children 6 to 60 months



Note: The horizontal line at 370 Rand is the maximum pension amount in 1993.

Figure 13a: Percent of household income - women in 1993  
Households with children 6 to 60 months

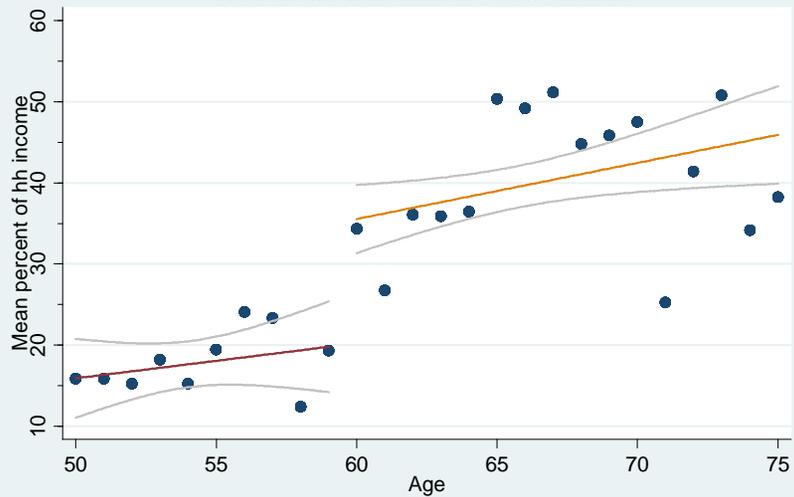


Figure 13b: Percent of household income - men in 1993  
Households with children 6 to 60 months

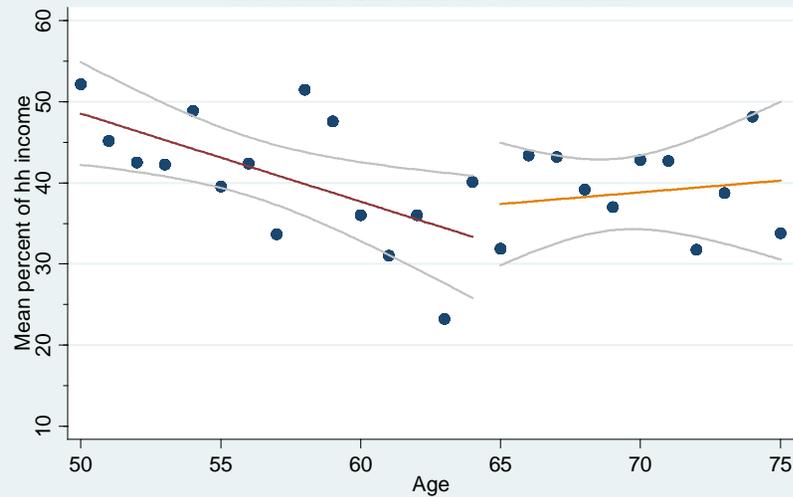


Figure 14a: Household income - women in 1993  
Households with children 6 to 60 months

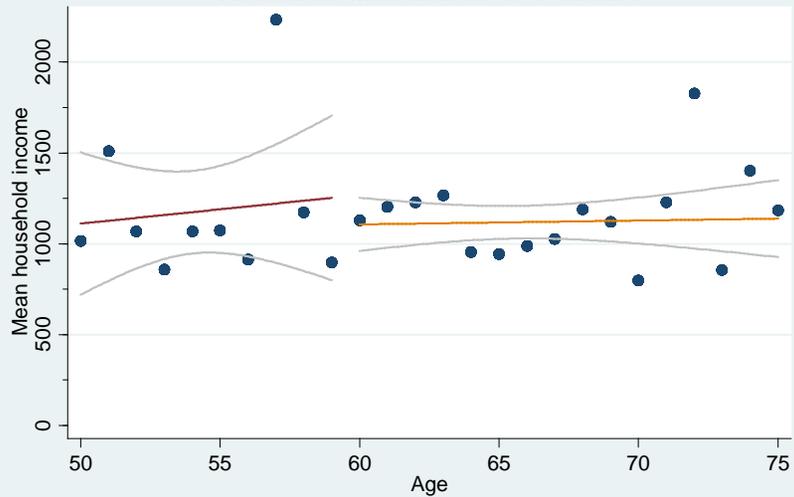


Figure 14b: Household income - men in 1993  
Households with children 6 to 60 months

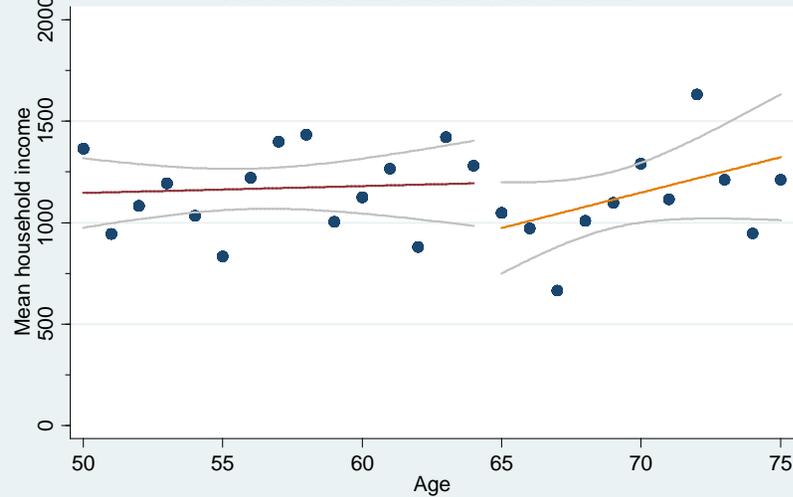


Table 1: Summary Statistics for Elderly 50 - 75

	<i>Women</i>		<i>Men</i>	
	Not eligible	Eligible	Not eligible	Eligible
<i>Demographics</i>				
Age	54.3	66.8	55.9	69.2
Household size	5.0	5.2	4.6	5.3
Years of schooling	4.3	2.8	4.8	2.7
Rural (%)	63.2	71.8	55.7	75.4
Married (%)	47.1	32.5	73.9	78.6
Presence of child under fifteen (%)	71.7	74.5	58.8	67.9
Presence of child under five (%)	42.0	41.8	31.6	42.5
Presence of man (woman) over 50 (%)	35.8	28.0	42.2	70.0
Presence of woman 18 - 49 (%)	51.4	54.3	56.1	56.4
Presence of man 18 - 49 (%)	44.1	43.9	34.1	39.6
<i>Income and employment</i>				
Employed (%)	42.2	16.1	53.4	22.0
Per-capita hh income (median)	427	480	531	570
Personal income (median)	650	940	870	870
Personal income as percent of total hh income (median)	32.0	48.1	36.6	40.0
<i>Pension receipt</i>				
Received pension (%)	9.2	91.2	8.3	83.6
Amount received (median, conditional on receipt)	870	870	920	870
<i>Is decision-maker for:</i>				
Day to day purchases (%)	61.0	67.5	56.1	62.5
Large, unusual purchases (%)	57.1	63.6	63.5	65.0
Who can live in household (%)	54.8	63.5	66.3	70.7
Where household lives (%)	54.9	64.3	69.0	71.4
Observations	918	838	817	280

Notes: Author's calculations from 2008 NIDS. All money amounts are in South African Rands.

Table 2: Effect of Pension Eligibility on Household Decision-making

	(1)	(2)	(3)	(4)
	Primary decision maker for day to day purchases		Primary decision maker for large, unusual purchases	
<i>Panel 1: Women</i>				
Pension eligible	0.160*** [0.0573]	0.147*** [0.0565]	0.134** [0.0640]	0.121* [0.0629]
Presence of man 50-75	-0.542*** [0.0370]	-0.550*** [0.0361]	-0.592*** [0.0342]	-0.591*** [0.0350]
Presence of pension eligible man	-0.0431 [0.0523]	-0.0209 [0.0520]	-0.0236 [0.0479]	-0.0145 [0.0487]
Observations	1756	1756	1756	1756
R-squared	0.308	0.332	0.338	0.348
Sample mean	0.64		0.60	
<i>Panel 2: Men</i>				
Pension eligible	-0.0780 [0.104]	-0.0485 [0.0903]	-0.127 [0.105]	-0.0882 [0.0910]
Presence of woman 50-75	-0.274*** [0.0460]	-0.253*** [0.0445]	-0.181*** [0.0465]	-0.162*** [0.0452]
Presence of pension eligible woman	-0.0579 [0.0580]	-0.0191 [0.0564]	-0.0588 [0.0603]	-0.0234 [0.0573]
Observations	1097	1097	1097	1097
R-squared	0.080	0.181	0.044	0.139
Sample mean	0.58		0.64	
Control variables	NO	YES	NO	YES
Cubic in age of person	YES	YES	YES	YES

Notes: Robust standard errors in brackets are clustered at the household level. Regressions are weighted with survey post-stratification weights. Sample is restricted to men and women aged 50 to 75. Control variables are number of household members who are 0 -5, 6 -14, 15 - 24, and 25 - 49, educational attainment category, and rural/urban status.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 3: Effect of Pension Eligibility on Household Decision-making: Households with Children

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: Primary decision-maker for day to day purchases						
	<i>Women</i>			<i>Men</i>		
Pension eligible	0.151** [0.0663]	0.146** [0.0652]	0.236*** [0.0741]	0.143 [0.135]	0.0716 [0.124]	0.0234 [0.150]
Presence of man (woman) 50-75	-0.536*** [0.0427]	-0.513*** [0.0449]	-0.508*** [0.0455]	-0.0954 [0.0631]	-0.134** [0.0610]	-0.0934 [0.0633]
Eligible man (woman)	-0.0283 [0.0589]	-0.0283 [0.0597]	-0.0267 [0.0594]	-0.0202 [0.0661]	0.00136 [0.0623]	-0.0210 [0.0647]
Mother of child in house		-0.0484 [0.0335]	0.0186 [0.0478]		-0.0395 [0.0620]	-0.185*** [0.0670]
Mother in house*Pension eligible			-0.140** [0.0614]			0.170 [0.114]
Father of child in house		-0.0758 [0.0469]	-0.0795* [0.0475]		0.0570 [0.0532]	0.117** [0.0548]
Observations	1282	1282	1282	670	670	670
R-squared	0.294	0.319	0.323	0.020	0.096	0.036
Sample mean	0.70			0.49		
Control variables	NO	YES	YES	NO	YES	YES
Cubic in age of person	YES	YES	YES	YES	YES	YES

Notes: Robust standard errors in brackets are clustered at the household level. Regressions are weighted with survey post-stratification weights. The sample is restricted to men and women aged 50 to 75 who live with a child under 15. Control variables are number of household members who are 0-5, 6-14, 15-24, and 25-49, educational attainment category, and rural/urban status.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 4: Effect of Pension Eligibility on Household Decision-making:  
Interactions with Employment

	(1)	(2)	(3)	(4)
Dependent variable: Primary decision-maker for day to day purchases				
	<i>Women</i>		<i>Men</i>	
Pension eligible	0.144*** [0.0543]	0.159*** [0.0557]	-0.0586 [0.0902]	-0.0642 [0.0917]
Presence of man (woman) 50-75	-0.549*** [0.0364]	-0.547*** [0.0364]	-0.233*** [0.0475]	-0.234*** [0.0476]
Eligible man (woman)	-0.0145 [0.0530]	-0.0150 [0.0528]	0.00253 [0.0596]	0.00408 [0.0605]
Employed	0.0618** [0.0277]	0.0803** [0.0346]	0.0654 [0.0403]	0.0609 [0.0442]
Employed*Pension eligible		-0.0559 [0.0570]		0.0228 [0.109]
Observations	1724	1724	1027	1027
R-squared	0.338	0.339	0.182	0.182
Sample mean	0.65		0.59	
Control variables	YES	YES	YES	YES
Cubic in age of person	YES	YES	YES	YES

Notes: Robust standard errors in brackets are clustered at the household level. Regressions are weighted with survey post-stratification weights. Sample is restricted to men and women aged 50 to 75 with non missing employment data. Control variables are number of household members who are 0 -5, 6 -14, 15 - 24, and 25 - 49, educational attainment category, and rural/urban status.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 5: Effect of Pension Eligibility on Household Composition

	<i>Households with a...</i>	
	Woman aged 50-75	Man aged 50-75
<i>Dependent variable:</i>		
Household size	0.323 [0.510]	1.345** [0.661]
<i>Number of:</i>		
Girls 0 - 5	0.00332 [0.110]	0.267** [0.109]
Boys 0 - 5	-0.00889 [0.119]	0.343*** [0.118]
Girls 6 - 14	0.0420 [0.132]	0.155 [0.144]
Boys 6 -14	0.431*** [0.166]	0.246* [0.144]
Women 15 - 24	-0.0469 [0.114]	0.197 [0.152]
Men 15 - 24	0.159 [0.135]	-0.0579 [0.182]
Women 25 -49	-0.115 [0.126]	0.290* [0.162]
Men 25 - 49	-0.182* [0.0960]	-0.0951 [0.210]
Men (women) 50 plus	0.00751 [0.0775]	0.128 [0.110]
Observations	1715	1067

Notes: Each cell is the coefficient on pension eligibility in a separate regression. Robust standard errors in brackets are clustered at the survey cluster level. Regressions are weighted with survey post-stratification weights. Samples are restricted to households with a woman or man aged 50 to 75. All regressions include a third order polynomial in the age of the oldest woman (man) aged 50-75 and control for the presence of a man (woman) aged 50-75 and a pension-eligible man (woman).

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 6: Summary Statistics for Children 6 - 60 Months

	<i>Child lives with:</i>			
	Woman 50-59	Eligible woman	Man 50-64	Eligible Man
Father is absent (%)	92.5	91.4	76.0	91.7
Mother is absent (%)	34.4	37.6	33.9	30.8
Caretaker is grandparent (%)	33.1	30.8	30.3	31.5
Household size (mean)	8.1	8.3	8.3	8.9
Man receives pension (%)	16.0	24.0	7.5	77.5
Woman receives pension (%)	11.3	84.7	12.3	47.0
Per capita income (median)	291	340	298	329
Observations	363	362	221	133

Notes: Author's calculations from 2008 NIDS. The sample is children 6 to 60 months old

Table 7: Effect of Pension Eligibility on Weight for Height Z-scores

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Girls</i>			<i>Boys</i>		
Eligible person	0.573**			-0.121		
	[0.261]			[0.256]		
Eligible woman		0.598*	0.550*		0.0293	-0.0341
		[0.349]	[0.324]		[0.336]	[0.337]
Eligible man		0.221	0.0508		-0.144	-0.173
		[0.417]	[0.412]		[0.393]	[0.414]
Presence of woman 50-75		-0.128	-0.0635		0.132	0.273
		[0.305]	[0.288]		[0.390]	[0.417]
Presence of man 50-75		-0.251	-0.598		0.355	0.293
		[0.428]	[0.457]		[0.605]	[0.605]
Observations	389	389	389	413	413	413
R-squared	0.108	0.107	0.146	0.060	0.063	0.102
Cubic in age of oldest man, woman	YES	YES	YES	YES	YES	YES
Control variables	NO	NO	YES	NO	NO	YES

Notes: Robust standard errors in brackets are clustered at the household level. Regressions are weighted with survey post-stratification weights. Sample is restricted to boys and girls who live with a person aged 50 to 75, who have non-missing, valid anthropometric data. All regression control for age of child. Control variables are number of household members who are 0 -5, 6 -14, 15 - 24, and 25 - 49, mother's educational attainment, and presence of mother and father in the household.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 8: Effect of Pension Eligibility on Height for Age Z-scores

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Girls</i>			<i>Boys</i>		
Eligible person	-0.461 [0.295]			-0.0123 [0.296]		
Eligible woman		-0.942** [0.430]	-0.871** [0.425]		-0.552 [0.375]	-0.463 [0.363]
Eligible man		0.117 [0.423]	-0.0438 [0.406]		0.0946 [0.442]	0.159 [0.415]
Presence of woman 50-75		-0.0915 [0.420]	-0.0751 [0.399]		0.241 [0.480]	-0.336 [0.471]
Presence of man 50-75		-0.362 [0.785]	-0.589 [0.712]		-0.138 [0.699]	-0.507 [0.679]
Observations	379	379	379	407	407	407
R-squared	0.078	0.090	0.163	0.095	0.105	0.179
Cubic in age of oldest man, woman	YES	YES	YES	YES	YES	YES
Control variables	NO	YES	YES	NO	YES	YES

Notes: Robust standard errors in brackets are clustered at the household level. Regressions are weighted with survey post-stratification weights. Sample is restricted to boys and girls who live with a person aged 50 to 75, who have non-missing, valid anthropometric data. Control variables are number of household members who are 0 -5, 6 -14, 15 - 24, and 25 - 49, mother's educational attainment, and presence of mother and father in the household.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

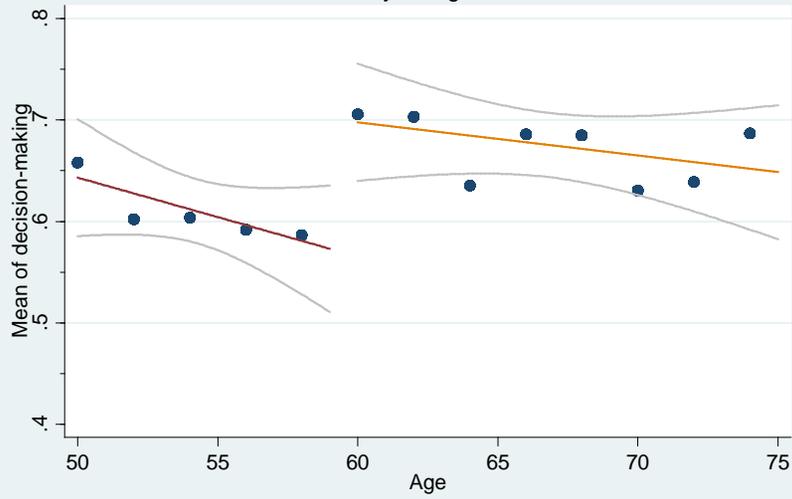
Table 9: Effect of Pension Eligibility on Number of Household Consumer Durables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<i>Households with a woman aged 50-75</i>				<i>Households with a man aged 50-75</i>			
	All	Hhs with young child		All	Hhs with young child			
Eligible	1.094** [0.432]	1.037** [0.434]	1.919*** [0.675]	1.614** [0.659]	-0.0374 [0.738]	0.319 [0.650]	-1.269 [1.334]	0.0833 [1.078]
Presence of man (woman) 50-75	0.667** [0.328]	0.621** [0.285]	1.194** [0.498]	1.077** [0.417]	1.331*** [0.364]	1.471*** [0.318]	0.0323 [0.583]	0.484 [0.491]
Eligible man (woman)	-0.182 [0.454]	0.105 [0.384]	-0.687 [0.624]	-0.279 [0.540]	0.159 [0.445]	-0.0415 [0.383]	0.570 [0.641]	0.611 [0.526]
Observations	1,715	1,715	675	675	1,067	1,067	339	339
R-squared	0.024	0.180	0.056	0.218	0.051	0.234	0.028	0.280
Sample mean	4.9		5.0		4.9		5.3	
Cubic in age of oldest woman (man) 50-75	YES	YES	YES	YES	YES	YES	YES	YES
Control variables	NO	YES	NO	YES	NO	YES	NO	YES

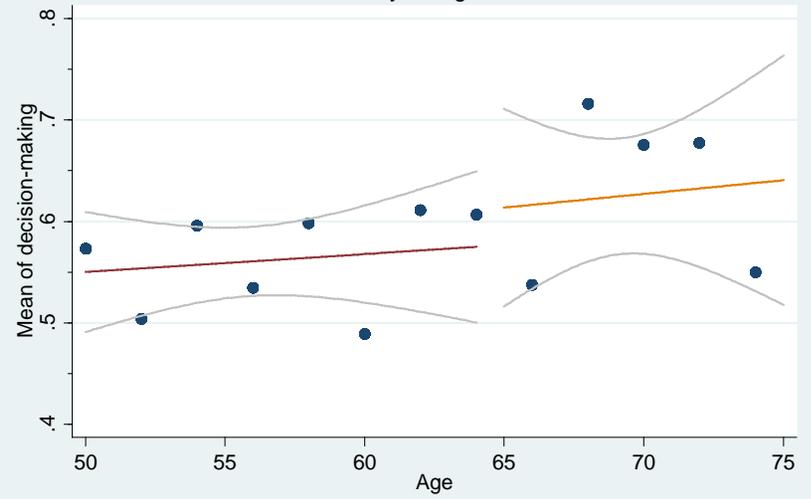
Notes: Robust standard errors in brackets are clustered at the survey cluster level. Regressions are weighted with survey post-stratification weights. Sample is restricted to households with a woman (man) aged 50 to 75. Control variables are number of household members who are 0 -5, 6 -14, 15 - 24, and 25 - 49. Household durable goods include radio; Hi-Fi stereo, CD player, MP3 player; television; satellite dish; VCR or DVD player; computer; camera; cell phone; electric stove; gas stove; paraffin stove; microwave; fridge/freezer; washing machine; sewing/knitting machine; lounge suite.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

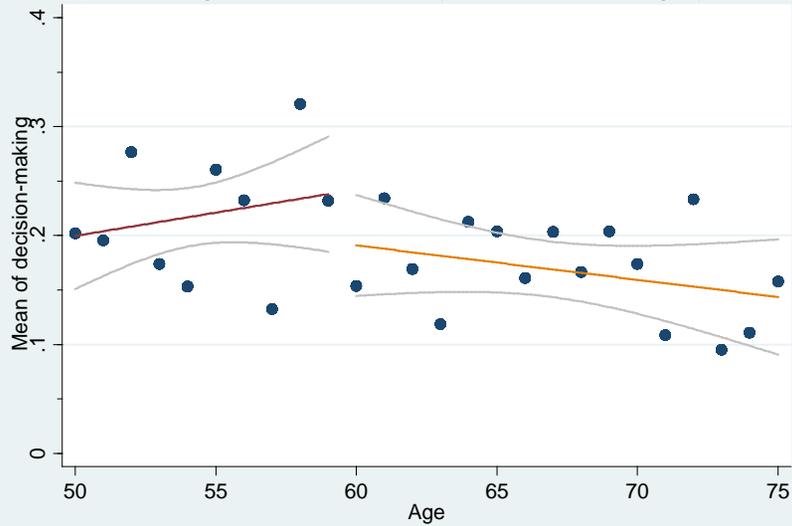
Appendix Figure 1a: Primary decision-making by women  
Two year age bins



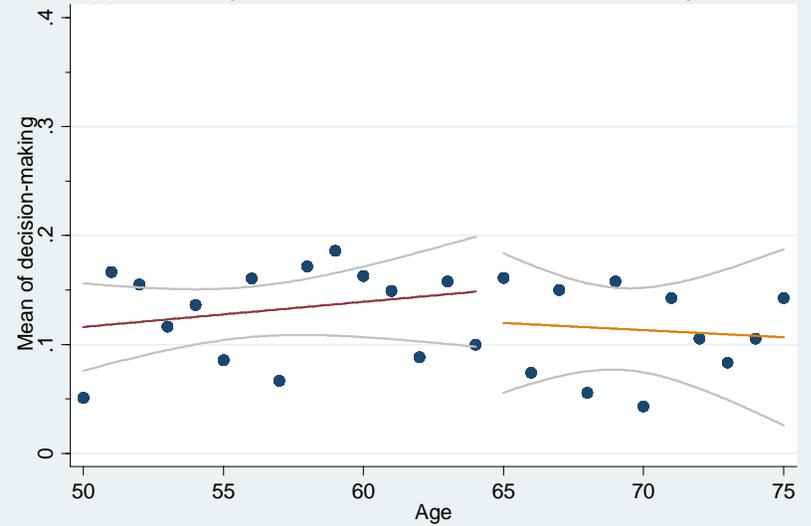
Appendix Figure 1b: Primary decision-making by men  
Two year age bins



Appendix Figure 2a: Secondary decision-making by women



Appendix Figure 2b: Secondary decision-making by men



Appendix Table 1: Effect of Pension Eligibility on Household Decision-making: Households with School-age Children

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: Primary decision-maker for where children attend school						
	<i>Women</i>			<i>Men</i>		
Pension eligible	0.105 [0.0774]	0.0899 [0.0737]	0.225*** [0.0798]	-0.00715 [0.137]	-0.0910 [0.121]	-0.0585 [0.144]
Presence of man (woman) 50-75	-0.521*** [0.0435]	-0.497*** [0.0465]	-0.491*** [0.0468]	-0.0198 [0.0649]	-0.0463 [0.0613]	-0.0461 [0.0613]
Eligible man (woman)	-0.0316 [0.0588]	-0.0373 [0.0609]	-0.0345 [0.0608]	-0.0770 [0.0676]	-0.0620 [0.0611]	-0.0621 [0.0613]
Mother of child in house		-0.0755** [0.0351]	0.0234 [0.0480]		-0.0630 [0.0580]	-0.0474 [0.0676]
Mother in house*Pension eligible			-0.207*** [0.0632]			-0.0463 [0.114]
Father of child in house		-0.0830* [0.0483]	-0.0879* [0.0491]		0.127** [0.0545]	0.123** [0.0541]
Observations	1229	1229	1229	647	647	647
R-squared	0.267	0.306	0.315	0.008	0.118	0.119
Sample mean	0.56			0.49		
Control variables	NO	YES	YES	NO	YES	YES
Cubic in age of person	YES	YES	YES	YES	YES	YES

Notes: Robust standard errors in brackets are clustered at the household level. Regressions are weighted with survey post-stratification weights. Sample is restricted to men and women aged 50 to 75 who live with a school age child under 15. Control variables are number of household members who are 0 -5, 6 -14, 15 - 24, and 25 - 49, educational attainment category, and rural/urban status.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Appendix Table 2: Effect of Pension Eligibility on Household Decision-making: Households with Young Children

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: Primary decision-maker for day to day purchases						
	<i>Women</i>			<i>Men</i>		
Pension eligible	0.0915 [0.0850]	0.0800 [0.0860]	0.153 [0.101]	0.173 [0.178]	0.00938 [0.159]	-0.107 [0.187]
Presence of man (woman) 50-75	-0.539*** [0.0582]	-0.534*** [0.0584]	-0.531*** [0.0586]	-0.0601 [0.0862]	-0.155** [0.0753]	-0.158** [0.0745]
Eligible man (woman)	-0.00831 [0.0745]	-0.0135 [0.0772]	-0.0116 [0.0767]	-0.00873 [0.0863]	0.0160 [0.0796]	0.00854 [0.0790]
Mother of child in house		-0.0159 [0.0484]	0.0388 [0.0635]		0.00923 [0.0713]	-0.0568 [0.0854]
Mother in house*Pension eligible			-0.117 [0.0885]			0.172 [0.143]
Father of child in house		-0.152* [0.0798]	-0.148* [0.0805]		-0.00423 [0.0802]	0.00165 [0.0807]
Observations	691	691	691	352	352	352
R-squared	0.282	0.311	0.314	0.031	0.181	0.186
Sample mean	0.60			0.48		
Control variables	NO	YES	YES	NO	YES	YES
Cubic in age of person	YES	YES	YES	YES	YES	YES

Notes: Robust standard errors in brackets are clustered at the household level. Regressions are weighted with survey post-stratification weights. Sample is restricted men and women aged 50 to 75 who live with a child 6 - 60 months old. Control variables are number of household members who are 0 -5, 6 -14, 15 - 24, and 25 - 49, educational attainment category, and rural/urban status.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1