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The effect of old age pensions on child deprivation: revisiting the role of gender

Chloé van Biljon ¹

Abstract:

Existing work suggests that the South African state old age pension, through increasing female decision-making, has a positive impact on the well being of children. This study investigates this concept in two parts. Part 1 aims to answer the question of whether the old age pension has a different impact on child deprivation depending on the gender of the pension recipient. Part 2 investigates whether the old age pension influences household decision-making dynamics.

Using all four waves of the national income dynamics study, identification comes from comparing each individual before and after receiving a pension. This study finds some evidence of a gender bias by both male and female pension recipients; females favour girls while males favour boys. The effect of the state old age pension on child deprivation (as measured by weight for height) is however not found to be robust to different model specifications.

This paper exploits the effect of income on bargaining power to explain the effect of pensions on the relative decision making power within a household. We find evidence of shifts in the decision-making dynamics with pension receipt. These shifts are greater when the pension recipient is female. The results indicate that resources held by grandmothers enable women within the household to be primary decision makers. We conclude that the reason we see a differential effect on child outcomes depending on the gender of the pension recipient is because of a change in household decision-making dynamics. The gains in decision-making power of females, caused by the pensions, lead to lower child deprivation rates.

The evidence indicates that although the state old age pension is meant for the elderly it has important implications for child deprivation. Some light is shed on the mechanism through which the pension results in positive impacts for children – by increasing the decision making power of women. The evidence supports the hypothesis that resource control matters for intra-household allocation.

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The effect of old age pensions on child deprivation: revisiting the role of gender

Chloé van Biljon

1. Introduction

This study comprises of two parts. Part 1 aims to answer the question of whether the old age pension has a different impact on child deprivation depending on the gender of the pension recipient. This question can be tackled in two parts. First we test whether pensions improve the well-being of children. After which, we test whether the gains (if any) differ depending on the gender of the recipient and the gender of the child? Part 2 investigates whether the old age pension influences household decision-making dynamics. This question is of interest as it is the primary candidate for why we see differences in the impact on child deprivation depending on the gender of the pension recipient.

The simplest way to model household decision-making is through the unitary household model, which predicts that the identity of the income recipient should not influence how household income is spent. According to this theory all income received to members of the household is pooled. This assumption has since been shown to be unrealistic by Chiappori (1992) and has subsequently lost support in favour of more convincing household bargaining models. More recent models predict that preferences within a household vary and that household decision making is a function of the relative bargaining power of its members (Chiappori, 1988; 1992). One such framework is the standard collective approach. This framework assumes that household decisions are made by maximizing the weighted sum of its member's utility functions (Chiappori, 1988; 1992). This maximization is subject to the household's budget constraint, where the weight attributed to each member's utility is proportional to their bargaining power within the household. Current theory predicts that income, education, assets, and governmental policies as well as other factors all determine bargaining power (Doss, 2013). Empirical evidence supports this theory (Ambler, 2016).

Duflo (2000b) in her seminal paper "Grandmothers and granddaughters" finds that the anthropometric status of girls is significantly better when the pension recipient is female. On this basis, Duflo rejects the unitary model. Ambler (2011) agrees that a difference in the treatment effects between male and female could be indicative of a change in bargaining power, but argues that these differences alone is not enough to disprove the unitary model as it is possible that the differential effect could also be due to differential increases in total household income. Ambler proceeded to show that household income does not increase more with female eligibility than with male eligibility, strengthening the argument that the observe differences in the outcomes under male and female pensions is due to shifts in household bargaining power.

Like Duflo (2000b), most papers use the observed differences in outcomes based on the gender of the recipient and the symmetry in the change in household income to reject the unitary model. Few papers provide support of an alternative explanation. Part 2 of this essay addresses this gap by looking at how changes in relative income affect household decision-making. Direct measures of decision-making allow us to test whether components of relative bargaining power affect decision-making and conclude in favour of a collective bargaining model.

One author that has also attempted to address this gap in the literature is Ambler (2016). Ambler shows that receiving a pension increases a female's bargaining power within the household, but that there is no change in bargaining power among male recipients.

Working from Ambler (2011, 2016) and Duflo's (2000b) findings this essay assesses whether having access to a government old age pension continues to have an impact on household decision-making and the well-being of children. The impact of the pension is compared for when a male is the recipient to when a female is the recipient.

The approach followed in this essay, however, differs from the approach followed by Ambler (2011) and Duflo (2000b) in two crucial ways. It uses actual pensions instead of pension eligibility and uses longitudinal data. Rather than comparing households that get pensions to households that do not, we are able to see how the same households do before and after they receive a state pension.

This essay proceeds as follows. Section 2 provides context and background. Section 3 reviews the relevant literature. Section 4 introduces the data, providing some descriptive statistics. Part 1 begins with section 5 which discusses its identification strategy. Section 6 provides the main analysis of the impacts of the pension on child anthropometric status. Part 2 begins with the identification strategy for identifying the effects of the state pension on household decision-making in section 7. The results are discussed in section 8 and Section 9 concludes.

2. Background

Government cash transfers are becoming increasingly important as an anti-poverty tool (Ambler, 2016). For example the PROGRESA had aided in reducing hunger and poverty in Mexico and cash transfers in Kenya have shown to significantly improve the well-being of recipients and their household members (Hoddinott & Skoufias, 2004; Haushofer & Shapiro, 2013) . Given this trend it is important to understand what the effects of such transfers are and how the effects differ according to the identity of the income recipient. This requires an understanding of how households allocate resources and make decisions.

Unitary models formed the first and simplest theory of household resource allocation. Unitary models predict that household income is spent in the same way regardless of who earned the income (Becker, 1974). These models are however considered unrealistic

and there is a growing literature supporting this notion. Some of this literature will be reviewed in section 3. The general form that these papers follow is to compare outcomes based on the gender of the income recipient. Under the unitary model the outcomes should be identical regardless of the gender of the income recipient, since it should not matter in which way the money entered the household. If differences in outcomes are observed the unitary model can be rejected. For example, a study that exploited a natural experiment in the United Kingdom where child allowances were changed to be paid to woman instead of men found a shift in favour of spending on children (Lundberg, Pollak, & Wales, 1997).

Part 1 of this essay uses the South African state old age pension to study how a large, expected, permanent and exogenous change in individual income affects the anthropometric status of a child residing in the same household. If differential effects based on the gender of recipient are observed the unitary model can be rejected. We then go further and investigate an alternative. The hypothesis is that the observed differences in the outcomes under male and female pensions are due to shifts in household decision-making and resource allocation. Part 2 of this essay investigates whether the increase in personal income gives pension recipients greater ability to influence decisions within the household.

Bargaining power cannot be measured directly as it is a composite measure of many elements (Ambler, 2016). In the standard collective approach followed in this essay the weight attached to an individual's utility function in the maximization of household utility is proportional to their bargaining power (Chiappori, 1992). Bargaining power can therefore be thought of as a continuous latent variable. Therefore, by asking household members about the identity of the primary decision maker, we measure if this latent variable has surpassed a certain threshold. While we cannot measure bargaining power directly we can measure changes that cross the threshold².

In decision making section of the NIDS questionnaire adults are asked who the primary decision maker is in 5 different categories; day to day decisions, large unusual purchases, who is allowed to be a part of the household, where the household should live and schooling decisions. An individual is defined to be the primary decision maker in a category if the majority of household members reported them as such. Further an individual is defined as the overall primary decision maker if they are the primary decision maker in the majority of the categories. A change from not being the primary decision maker to being the primary decision maker thus represents a change in an individual's bargaining power across the threshold.

² The disadvantage of this measure is that small changes in bargaining power and changes that occur far away from the threshold cannot be observed.

If we find the pension to give recipients a greater chance of being the primary decision maker within a household we can conclude in favour of a standard collective approach. Understanding the implications of the old age pension is of policy concern as it is one of the most established, widespread and substantial cash transfers within a developing country (Ambler, 2016)

Further evidence that the shifts in decision-making power seen are shifts in bargaining power is provided by Ambler (2016). Personal income share is the element of bargaining power expected to be influenced by pension receipt. Ambler finds personal income shares to be highly correlated with decision-making power. This provides evidence that the bargaining power shift caused by a change in personal income share is observed when looking at decision-making power. Therefore, we are measuring shifts in bargaining power when we measure shifts in decision-making.

Child anthropometric measures, while not a perfect measure, are strong indicators of the nutritional status of a child (Beaton, Kelly, Kevany, Martorell, & Mason, 1990). There is consensus in the literature that nutrition during childhood is correlated to mental development, educational and labour market outcomes (Hall, Nannan, & Sambu, 2009). Anthropometric measures can usually be measured more accurately than food expenditure and while many anthropometric measures exist this paper will use weight given height to proxy for the nutritional status of children. Weight for age is a flow measure of short-term nutritional status measuring nutritional intake in the immediate past. Weight for height is a marker that responds quickly to a change in conditions (Beaton et al., 1990).

Weight for height z-scores are calculated and used in all analysis. The z-score is defined as the deviation of an individual's measure from the median of the reference population, standardized by the standard deviation of the measure within the reference population. I use the WHO international child growth standards for children as the reference population. Following Ambler (2011) I drop individuals with z-scores deemed biologically impossible (absolute z-scores greater than 5). Standardized measures are only defined for young children and thus, following the literature, I limit my sample to children between 6 months and 5 years old (Duflo, 2000a).

3. A Review of the Literature

The effects of the state old age pension have been widely researched. The literature is concentrated on the poverty alleviating effects of the pension within the context of three main categories; the effects on labour force participation, education and child health (Coetzee, 2013). This review of the literature will focus on the effects of cash transfers on child deprivation and household decision-making.

Edmonds (2006) studies the effect of the state old age pension on the educational outcomes of children. Using the 1999 Survey of the Activities of Youth in South Africa Edmonds observes significant decreases in the amount of hours spent working by boys

and a matching increase in completed schooling when residing with a pension eligible male. Girls experience a decrease in the amount of hours spent doing household chores when residing with a pension eligible male. The positive effect on completed schooling seen for boys residing with pension eligible males is present for girls too but is smaller. The levels of child labour and completed schooling seen when residing with a pension eligible male are comparable to those seen when children reside with females below eligible age. No effects on child educational outcomes are seen with female pension eligibility. When compared to Duflo (2000b) and Ambler's (2011) studies the results found by Edmonds introduces the theme of pension recipients favouring children of their own gender.

Earlier studies that found a significantly positive effect on the education of children residing with a pension recipient include *State social benefits in South Africa* (Lund, 1993) and *Experience and perceptions of poverty in South Africa* (May, 1998). Case, Hosegood & Lund (2005) compare children within the same households and find better school enrolment for younger children receiving the child support grant compared to their siblings who do not receive a grant. Their results suggest that improved health could be a channel through which the grant is affecting educational enrolment.

Two early studies by Case (2002, 2004) on the anthropometric status of black and coloured children find that residing with a pension recipient increases children's height for age by one standard deviation on average. This is roughly the amount of expected growth over a six-month period for a young child. In a recent study Coetzee (2013) used the first wave of the National Income Dynamics Study (NIDS) to find the causal effect of the child support grant on child deprivation measured by both anthropometric status of children and education outcomes of children. Coetzee finds positive effects to both outcomes attributable to the child support grant.

Duflo's 2000 study used the expansion of the old age pension to the black South African population to identify the effect of an increase in income on child anthropometric status. Duflo found that only when an eligible female was present in a household did the children improve in their anthropometric status. Furthermore, this increase was far greater for girls (improved weight given height by 1.19 standard deviations and their height given age by 1.16 standard deviations) than for boys (improved weight given height by 0.58 standard deviations and their height given age by 0.28 standard deviations). On this basis Duflo (2000b) rejects the unitary model of the household.

Ambler (2011) later finds results that are consistent with Duflo's conclusions but argues that Duflo did not have the necessary evidence to reject the unitary model of the household. Ambler argues that the different effects seen by Duflo under male and female eligibility could be due to either differential income increases or due to differential spending patterns based on the gender of the income recipient. Duflo concludes the latter without comparing the changes in total household income experienced under male and female eligibility.

Ambler uses the first wave of NIDS to identify how an increase in income provided by the state old age pension influences household decision-making. She finds that female eligibility increases female decision-making within the household by making females 12 to 16 percentage points more likely to be the primary decision-makers for expenditures. Male eligibility leaves the decision-making dynamics within the household unchanged. Ambler (2011) further finds no significant difference in the change in total household income experienced under male and female eligibility. Ambler's findings enable her to attribute improvements in child anthropometric status seen under female eligibility but not under male eligibility to an increase in female decision making.

Mexico's Progresa has seen to have positive effects on female participation in household decision-making (de la Briere, Mindek, Quisumbing, & others, 2000). Anderson and Eswaran's (2009) theoretical model predicts that earned income is more important than unearned income for female bargaining power. Empirical evidence from Bangladesh confirms this and further finds that employment outside of their spouses' business contributes to female bargaining power while employment by their spouse does not (Anderson & Eswaran, 2009).

Other components that are expected to contribute to an individual's bargaining power such as access to finance and employment have also been studied. One study that analysed the effects of the introduction of micro-finance to randomly chosen areas in India found no effects on female decision making, investment in education or community health (Banerjee, Duflo, Glennerster, & Kinnan, 2015). Another study found that access to an individually-held commitment savings product in the Philippines caused female decision-making to increase (Ashraf, Karlan, & Yin, 2010). Majlesi (2016) finds that labor demand shocks that increase the relative number of jobs available for women in the Mexican manufacturing sector increase the proportion of household decisions made by women. The relative increase in demand for female labour is associated with an improvement in children's health outcomes, and especially that of girls (Majlesi, 2016). The existing evidence indicates that although the state old age pension is meant for the elderly it has important implications for child deprivation. Some light is shed on the mechanism through which the pension results in positive impacts for children – by increasing the decision making power of women. The evidence supports the hypothesis that resource control matters for intra-household allocation.

4. The Data

NIDS is a nationally representative survey of over 28 000 individuals over a 6 year period. By incorporating all four waves of NIDS improvements to the commonly employed identification strategy are offered.

The means test for the government old age pension is set at a level such that it is accessible for majority of the black population simply by meeting the age requirement (Lam, Leibbrandt, & Ranchod, 2006). Given this I follow the convention in the literature and limit my sample to the black population. Throughout this paper an individual is

considered pension eligible if they are age eligible i.e. no means test is applied.

A problem commonly encountered when assessing the effects of a cash transfer program such as the state pension is that households receiving the pension cannot simply be compared to those not receiving it because of systematic differences between these two groups.

Table 1: Differences between HH's that receive pensions and those that don't

HH pension	Labour income	Children (mean)	Employed (%)	Urban (%)
No	4939.036	2.232591	.399959	.4698469
Yes	3673.963	2.87661	.174957	.242916
Total	4629.071	2.445913	.3245594	.3946795

Working-aged individuals that reside in a household that receives a pension are less likely to be employed (table 1, column 3). Compared to households that do not receive a state pension, households that receive a pension are more likely to be situated in a rural area (column 4), have on average lower income from labour (column 1) and have more children (column 2).

In figure 1 a strong positive trend is observed between household size and the probability of receiving a pension. Conversely, a strong negative trend is observed in figure 2; the higher an individual's education level the lower the probability of residing in a household that receives a pension.

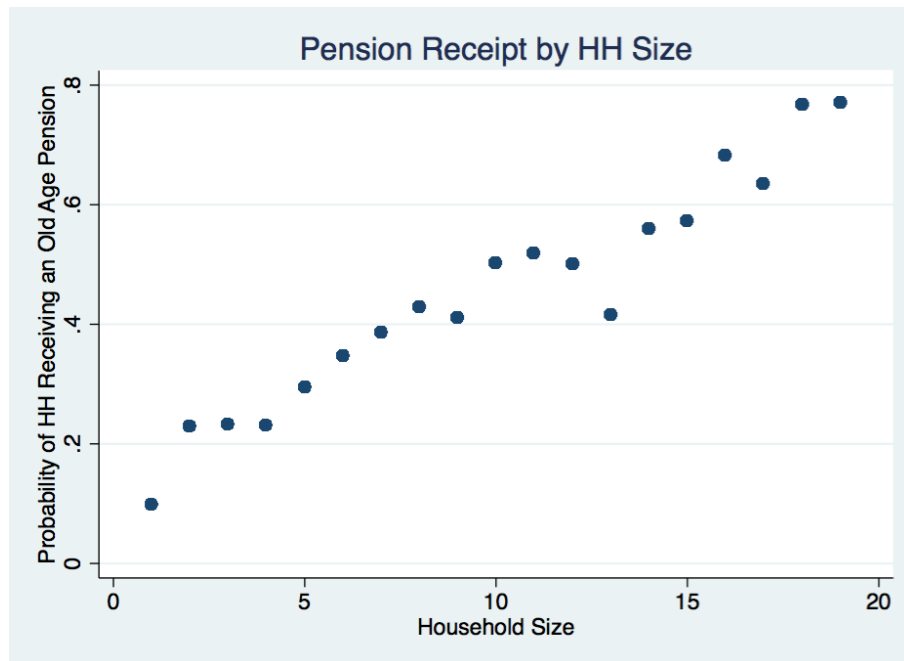


Figure 1

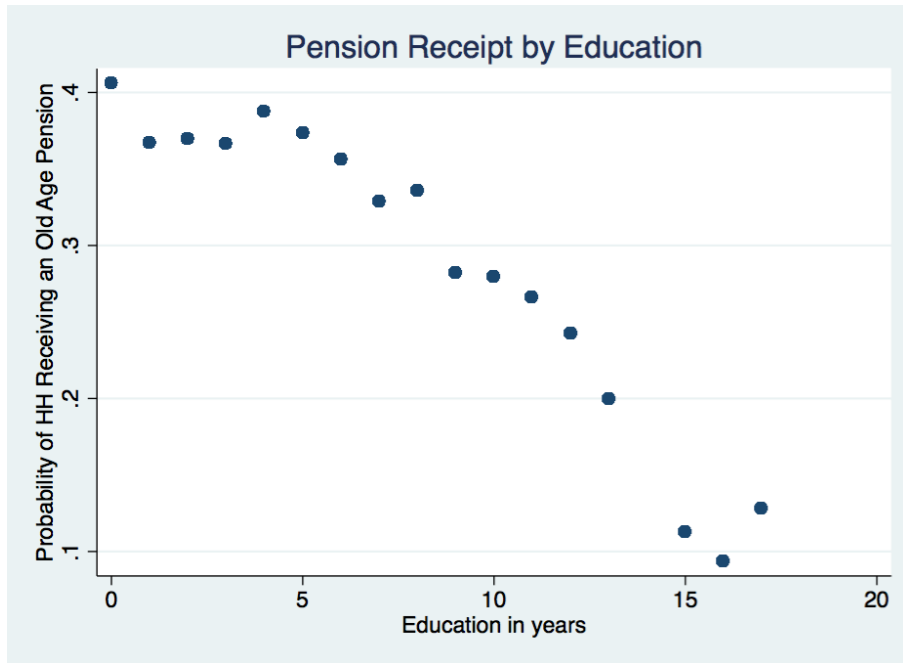


Figure 2

The structure of the means test does not incentivize potential recipients to alter their household formation in order to become eligible as it only considers the income of the individual and their spouse (Ambler, 2016). Of greater concern is that “the pension may induce households to reorganize, and that changes that are attributed to the pension may actually be characteristics of these new households” (Ambler, 2016). If for example we suspect that children are sent to live with their grandparents or that grandparents are kept in the household for longer when they receive old age pensions, then some of the measured effect might be due to the effect of living with a grandparent rather than the pension itself. Ambler (2016) investigates this possibility and finds evidence that changes in household composition are not driving the results.

PART 1: THE IMPACT OF THE STATE PENSION ON CHILD DEPRIVATION

5. Identification Strategy

Both Duflo (2000b) and Ambler's (2011) use of the arbitrary age threshold at which males and females become eligible for old-age-pensions as an exogenous source of variation. This approach relies on the assumption that households just under pension eligibility differ from those just beyond eligibility only through the effect of the pension itself (Ambler, 2011). Interestingly, both Duflo (2000b) and Ambler (2011) employ an intention-to-treat approach, where they measure the effect of pension eligibility rather than attempting to uncover the true effect of receiving a grant.

Since the eligible group comprises of both pension recipients and non-recipients, we would expect the pension eligibility (ITT) effect to be smaller than the actual pension effect.

Figure 3 shows pension receipt by age. The figure clearly demonstrates why pension eligibility would be a blunter measure of the effect of the pensions. We see that pension take up is not uniform at age 60. Although it appears that a few individuals have access to the pension prior to 60, this is unlikely to be the case. It is far more probable that this is due to measurement error in age³.

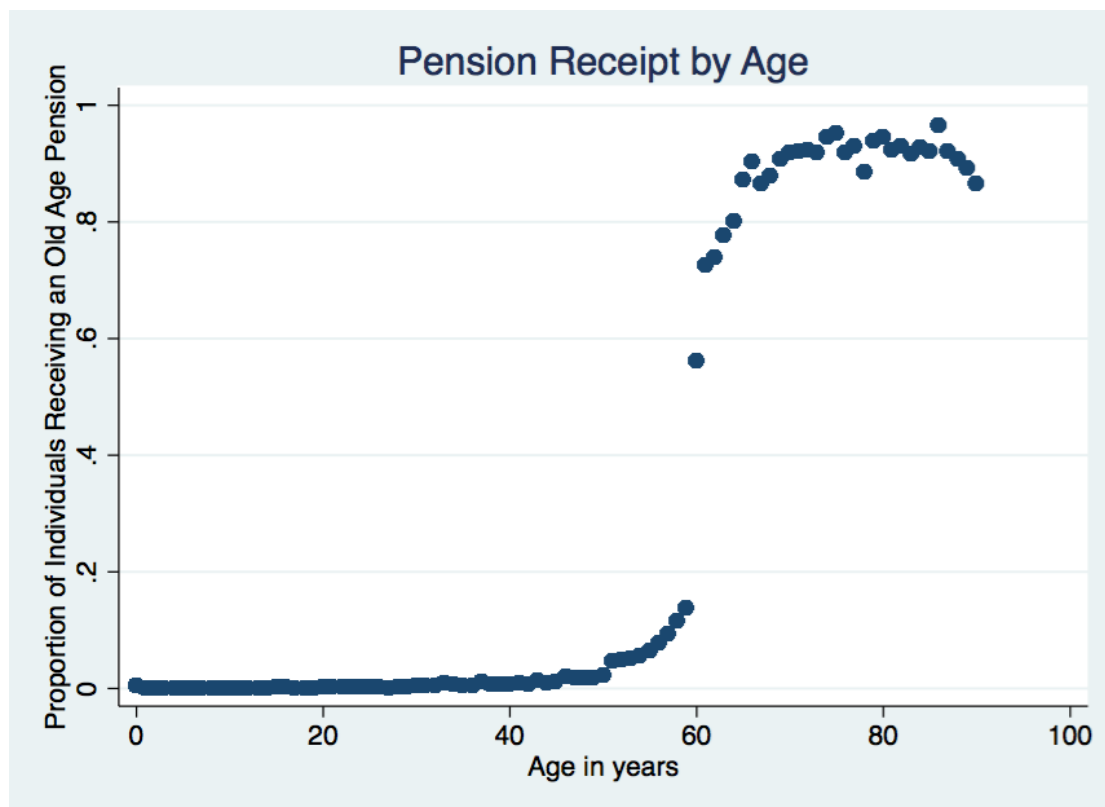


Figure 3

³ or due to confusion with the disability grant which has the exact same monthly benefit as the old age pension.

The figure also shows that not all individuals take up the pension immediately. Eligibility is a noisy measure of the actual take up of pensions. Ambler (2011) and Duflo (2000b) employ this measure so as not to confound the impact of the pension with systematic differences between those who receive the pension and those that do not.

This study has the advantage of a panel data set. Having longitudinal data allows us to make comparisons within individuals over time. Our identification comes from comparing each individual before and after receiving a pension. This means that concerns surrounding systematic differences between those who receive the pension with those that do not are no longer valid. Consequently actual pension receipt instead of pension eligibility can be used to identify the effect.

The identification strategy used in this essay is therefore an improvement on that used by Duflo (2000b) and Ambler (2011) in two ways. Firstly, the panel data allows us to view the same individuals before and after the pension income. As long as we are willing to assume that pensions are not correlated with any time-varying unobservables in our regression, this strategy allows us to causally attribute any changes in our outcome variable to the pension. And secondly actual pension receipt can be used in place of a noisy measure of itself (pension eligibility).

Following Duflo (2000a, 2000b), I limit the sample to children aged 6 to 60 months. In addition I follow Ambler (2011) in limiting the sample further to children who live with a person aged 50 to 75. This reduces influence from observations that are very far from the cutoff for pension eligibility. Using all four waves of NIDS pooled I replicate Ambler's (2011) exact estimation strategy and estimate the following equation:

$$w_{ij} = \alpha_f \text{Elig}F_j + \alpha_m \text{Elig}M_j + \theta_f F_j + \theta_m M_j + \gamma(\text{Age}M_j, \text{Age}F_j) + \beta \text{AgeChild}_{ij} + \delta X_{ij} + \varepsilon_{ij} \quad (1)$$

where w_{ij} is the weight given height z -score for child i in household j , $\text{Elig}F_j$ and $\text{Elig}M_j$ are indicators for the presence of an age eligible female or male in household j , F_j and M_j are indicators for the presence of a female or male between the ages of 50 and 75 in household j and $\gamma(\text{Age}M_j, \text{Age}F_j)$ is a third order polynomial in the age of the oldest male and the oldest female in household j . Further controls (X_{ij}) include the age of child i , the number of household members between the ages of 0-5, 6-14, 15-24, and 25-49, child i mother's educational attainment, and the presence of child i 's mother and father in the household.

The second model offers an improvement on the first by utilizing a fixed effects model specification. The following equation is estimated using all four waves of NIDS:

$$\ddot{w}_{ijt} = \alpha_f \ddot{\text{Elig}}F_{jt} + \alpha_m \ddot{\text{Elig}}M_{jt} + \theta_f \ddot{F}_{jt} + \theta_m \ddot{M}_{jt} + \beta_f \ddot{\text{Empl}}F_{jt} + \beta_m \ddot{\text{Empl}}M_{jt} + \delta \ddot{X}_{ijt} + \ddot{\varepsilon}_{ijt} \quad (2)$$

where $\text{Empl}F_{jt}$ is the number of employed women aged 50 or older residing in household j at time t and $\text{Empl}M_{jt}$ is the number of employed men aged 50 or older residing in

household j at time t . Each variable is time demeaned. For example, $\dot{w}_{ijt} = w_{ijt} - \bar{w}_{ij}$.

The third and final model offers an additional improvement by measuring the effect of interest with actual pension receipt instead of eligibility to receive pensions. The model is estimated with the following equation:

$$\ddot{w}_{ijt} = \alpha_f \text{Pension}F_{jt} + \alpha_m \text{Pension}M_{jt} + \theta_f \ddot{F}_{jt} + \theta_m \ddot{M}_{jt} + \beta_f \text{Empl}F_{jt} + \beta_m \text{Empl}M_{jt} + \delta \ddot{X}_{ijt} + \ddot{\epsilon}_{ijt} \quad (3)$$

where $\text{Pension}F_{jt}$ and $\text{Pension}M_{jt}$ are indicators for the presence of a female or male that receives an old age pension in household j at time t .

In Ambler's model α_f can then be interpreted as the average difference in weight for height between a child residing with a pension eligible female and a child residing with a female who is almost-eligible. α_m has the same interpretation for males. In the second model α_f can be interpreted as the average change in a child's weight for height when a female residing with them becomes pension eligible. Finally, in the final model α_f can be interpreted as the average change in a child's weight for height when a female residing with them starts to receive a state old age pension.

6. Regression Results

Table 2 shows the results from estimating equation (1). In this regression Pooled Ordinary Least Squares (OLS) is used to estimate the effect of pension eligibility on weight for height z-scores. All regressions make use of survey post-stratification weights. Column (1) and (3) present results indicating the effect of any pension eligible household member. The coefficient on eligibility is large and significant for girls and small and insignificant for boys. In column (2) and (4) separate indicators for female and male eligibility are included. The results for girls mirror Ambler (2011) and Duflo's (2000b) results. Only female pension eligibility is seen to have a significant effect on the weight for height of girls. The coefficients found here using all four waves of NIDS pooled are slightly smaller than those found by Ambler (2011) using only the first wave. Ambler found a 0.6 standard deviation higher weight for height for girls living with age eligible females. The results here indicate a 0.42 standard deviation increase in weight for height for girls living with an age eligible female.

Table 2: Effect of Pension Eligibility on Weight for Height z-scores (Pooled OLS)

	Girls		Boys	
	(1)	(2)	(3)	(4)
EligPerson	0.402*** (0.121)		0.194 (0.133)	
EligFemale		0.422*** (0.159)		-0.283* (0.161)
EligMale		0.240 (0.175)		0.440** (0.195)
Female	-0.0611 (0.119)	-0.0474 (0.123)	0.112 (0.124)	0.0502 (0.126)
Male	-0.397** (0.166)	-0.380** (0.167)	-0.0352 (0.173)	-0.0688 (0.173)
No. HH members aged:				
0-5	0.0290 (0.109)	0.0377 (0.109)	0.0220 (0.118)	0.00580 (0.118)
6-14	-0.0958 (0.112)	-0.0997 (0.112)	0.0554 (0.117)	0.0449 (0.117)
15-24	0.0738 (0.105)	0.0737 (0.105)	-0.0273 (0.110)	-0.0134 (0.110)
25-49	-0.131*** (0.0363)	-0.128*** (0.0363)	-0.00104 (0.0403)	0.00547 (0.0403)
Father in HH	0.274** (0.128)	0.261** (0.128)	0.141 (0.139)	0.205 (0.140)
Mother in HH	-0.0203 (0.106)	-0.0290 (0.106)	0.0580 (0.111)	0.0478 (0.111)
Mother's education	0.0705*** (0.0157)	0.0704*** (0.0157)	0.0140 (0.0165)	0.0124 (0.0165)
Constant	0.0771 (1.114)	-0.113 (1.162)	1.981 (1.496)	3.733** (1.565)
Observations	1,291	1,291	1,365	1,365
R-squared	0.062	0.061	0.014	0.018
Cubic in age of oldest male, female	Yes	Yes	Yes	Yes
Child Age	Yes	Yes	Yes	Yes

Standard errors in parentheses

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

The results for boys show an effect on male eligibility similar in magnitude to that seen for female eligibility in girls. The presence of an age eligible male increases boys weight for height by 0.44 standard deviations. This effect reflects the findings of Edmonds (2006) where only male eligibility was seen to have a significant positive affect on the educational outcomes of boys. The eligible female coefficient is negative for boys but this coefficient is not significant at the 5% level of significance.

Table 3: Effect of Pension Eligibility on Weight for Height Z-scores (FE)

	Girls		Boys	
	(1)	(2)	(3)	(4)
EligPerson	-0.0657 (0.267)		0.254 (0.268)	
EligFemale		-0.0352 (0.306)		-0.169 (0.256)
EligMale		-0.277 (0.343)		0.785** (0.303)
Female	0.549 (0.356)	0.584 (0.359)	1.129*** (0.247)	1.121*** (0.250)
Male	-0.249 (0.405)	-0.191 (0.420)	0.0132 (0.325)	-0.303 (0.345)
No. HH members aged:				
0-5	0.0503 (0.204)	0.0414 (0.204)	-0.352** (0.166)	-0.202 (0.175)
6-14	-0.233 (0.202)	-0.243 (0.202)	-0.207 (0.180)	-0.0822 (0.186)
15-24	-0.0266 (0.200)	-0.0119 (0.199)	0.320** (0.144)	0.198 (0.151)
25-49	0.160 (0.106)	0.167 (0.106)	0.0287 (0.0902)	0.0269 (0.0913)
Father in HH	1.541*** (0.351)	1.557*** (0.352)	-1.511*** (0.438)	-1.524*** (0.436)
Mother in HH	0.397 (0.389)	0.406 (0.389)	0.648* (0.338)	0.643* (0.336)
EmplF	0.0711 (0.234)	0.0707 (0.235)	-0.475** (0.216)	-0.496** (0.213)
EmplM	0.406 (0.315)	0.393 (0.314)	0.0948 (0.247)	0.0854 (0.246)
Constant	-0.118 (0.538)	-0.163 (0.546)	-0.736 (0.476)	-0.617 (0.459)
Observations	2,210	2,210	2,164	2,164
R-squared	0.078	0.080	0.117	0.133
Number of pid	1,860	1,860	1,823	1,823

Standard errors in parentheses

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

Table 3 shows the results from estimating equation (2). A fixed effects (FE) specification is used to estimate the change experienced in a child's weight for height when a person in their household becomes pension eligible. The effect seen in the pooled OLS regression of female eligibility on girls falls away here. For girls, no significant change in weight for height is associated with a female or male becoming pension eligible. For boys, in changing to the FE specification, the effect of male eligibility has remained significant and has grown larger. For boys a male household member becoming age eligible is associated with a 0.8 standard deviation increase in weight for height. Given the average

boy in the sample is 0.6 standard deviations below the recommended median, male eligibility increases boys weight for height to the recommended healthy median.

Table 4: Effect of Pension Receipt on Weight for Height Z-scores (FE)

	Girls		Boys	
	(1)	(2)	(3)	(4)
HHPension	0.0557 (0.221)		0.277 (0.222)	
FemalePension		-0.00223 (0.266)		0.137 (0.212)
MalePension		0.00758 (0.299)		0.337 (0.272)
Female	0.530 (0.353)	0.536 (0.357)	1.127*** (0.247)	1.111*** (0.248)
Male	-0.253 (0.405)	-0.254 (0.419)	0.0464 (0.326)	-0.00746 (0.334)
No. HH members aged:				
0-5	0.0585 (0.203)	0.0555 (0.206)	-0.381** (0.166)	-0.353** (0.171)
6-14	-0.224 (0.201)	-0.226 (0.202)	-0.233 (0.178)	-0.210 (0.182)
15-24	-0.0382 (0.197)	-0.0354 (0.198)	0.329** (0.143)	0.308** (0.149)
25-49	0.154 (0.107)	0.158 (0.107)	0.0353 (0.0885)	0.0311 (0.0909)
Father in HH	1.532*** (0.352)	1.539*** (0.354)	-1.473*** (0.436)	-1.469*** (0.437)
Mother in HH	0.397 (0.389)	0.396 (0.390)	0.644* (0.337)	0.652* (0.338)
Empl_F	0.0787 (0.235)	0.0735 (0.237)	-0.452** (0.213)	-0.438** (0.213)
Empl_M	0.425 (0.314)	0.417 (0.317)	0.102 (0.247)	0.0851 (0.247)
Constant	-0.148 (0.539)	-0.130 (0.545)	-0.702 (0.463)	-0.659 (0.462)
Observations	2,210	2,210	2,164	2,164
R-squared	0.078	0.078	0.119	0.120
Number of pid	1,860	1,860	1,823	1,823

Standard errors in parentheses

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

Table 4 shows the results from estimating equation (3). The effects of pension receipt on girls are small and insignificant. The change in a boy's weight for height when a male in the household starts receiving a pension is seen to remain large but is imprecisely estimated. No significant changes in child weight for height due to pension receipt are observed.

The results found here indicate that the results found by Duflo (2000) and Ambler (2011) are not robust to a fixed effects model specification. There is some evidence of an improvement in boy's wellbeing with male, but not with female, pension receipt but the results are not conclusive.

PART 2: THE IMPACT OF THE STATE PENSION ON HOUSEHOLD DECISION-MAKING

7. Identification strategy

Table 5: Summary Statistics for individuals aged 15 to 60

	Women		Men	
	Not Eligible	Eligible	Not Eligible	Eligible
	(1)	(2)	(3)	(4)
Age (mean)	32,36	70,92	30,23	69,14
HH size (mean)	5,94	5,39	5,41	5,48
Urban (%)	0,42	0,28	0,45	0,32
Employed (%)	0,31	0,08	0,42	0,19
Years of Education (mean)	8,90	2,77	8,90	3,43
Is primary decision maker for:				
Day to Day decision (%)	0,51	0,82	0,36	0,70
Large purchases (%)	0,48	0,80	0,39	0,78
Household members (%)	0,47	0,83	0,38	0,82
Schooling decisions (%)	0,44	0,56	0,21	0,42
Location of HH (%)	0,47	0,82	0,38	0,82
Overall (%)	0,47	0,78	0,34	0,66

Table 5 reveals that pension eligible individuals tend to have less years of education, are more likely to be unemployed and more likely to live in a rural area. These are important factors to control for when looking at the effects of the pension. Pension eligible males and females are more likely to be the primary decision-makers across all categories. Whether this can be causally attributed to receiving a pension is the focus of this part of the essay.

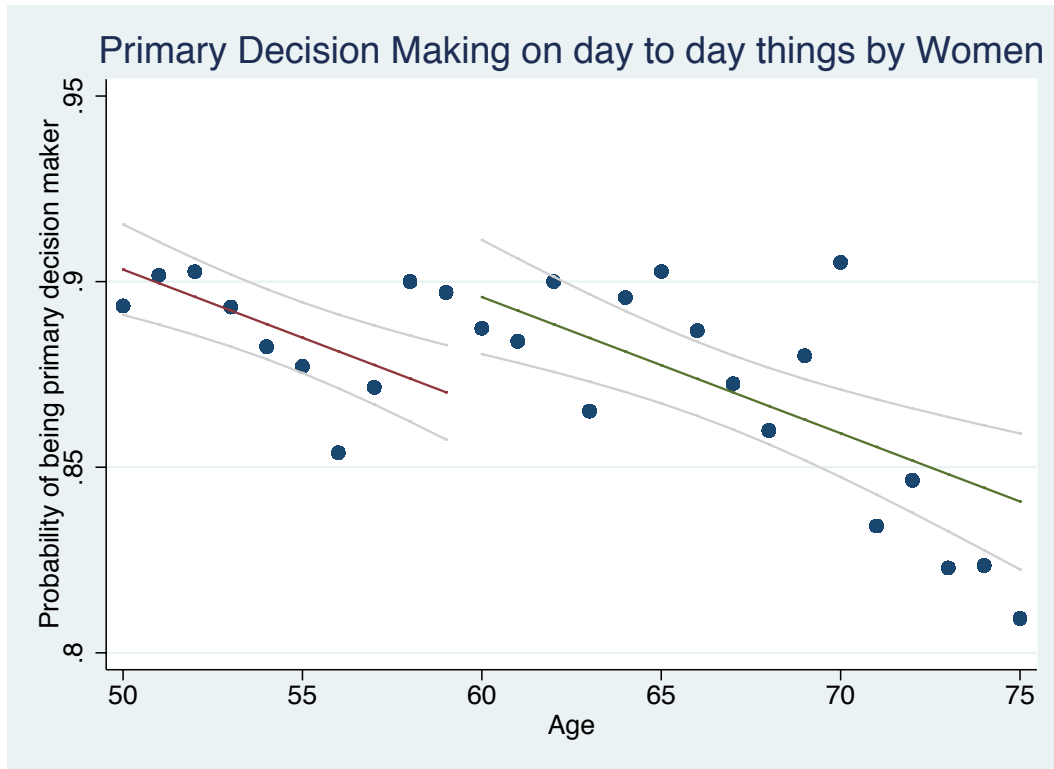


Figure 4

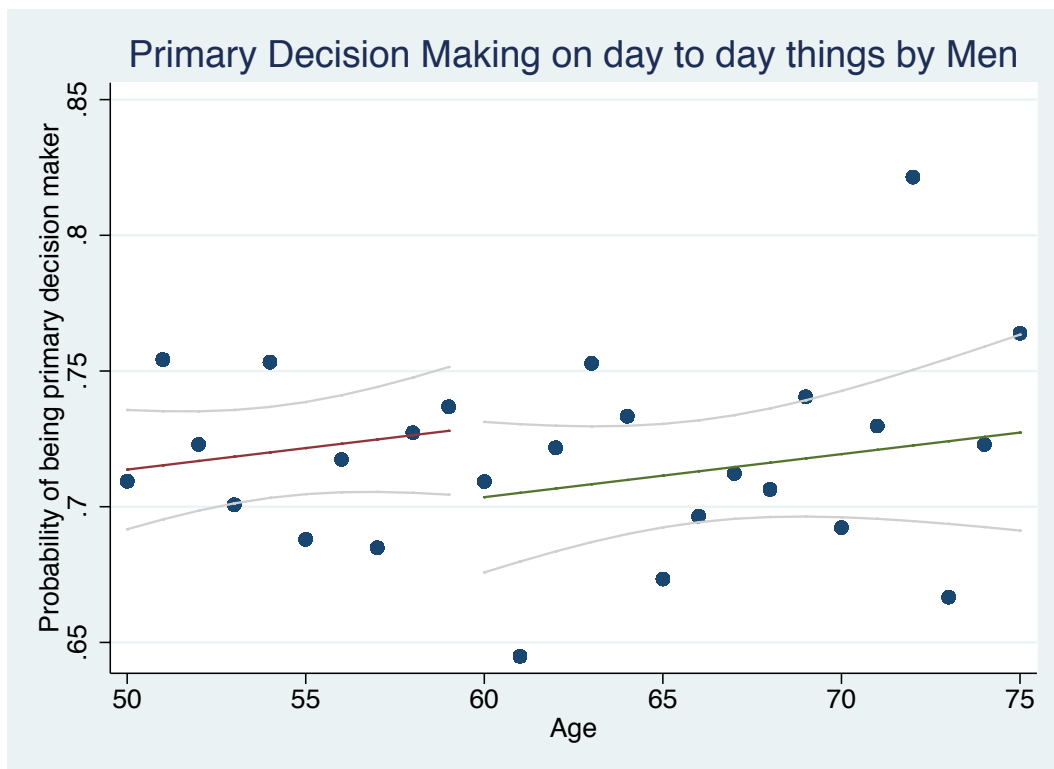


Figure 5

Figure 4 and 5 show the probability of being the primary decision maker on day-to-day things by age for women and men respectively. These figures are representative of the findings of this essay. A significant increase in the probability of being the primary

decision maker is seen for females at age 60. The effect of pension eligibility is not significant for males⁴. The remainder of this section is dedicated to isolating the causal effect of pension receipt on household decision-making as implied by these descriptive figures.

Three different questions are asked to identify the impact of the state pension on household decision-making: (I) What is the effect of being a pension recipient on the probability of being the primary decision maker? Does this effect differ based on gender? (II) What is the effect of living with a pension recipient on an individual's probability of being the primary decision maker? Does this effect differ based on the gender of the recipient and the gender of the individual? (III) How does having a male/female pension recipient within a household affect the probability that the household has a female primary decision maker?

For each of these questions we plan on running three specifications: In specification (a) the relationship of interest is estimated using Pooled OLS and pension eligibility. These models were included to make the results comparable to the work of Ambler (2011, 2016) and Duflo (2000b). Neither of the authors made use of the longitudinal dimension of the data. Specification (b) makes use of within individual/household variation over time through fixed effects. Specification (c), the preferred final model, also uses fixed effects, but uses actual pension recipient instead of pension eligibility as treatment.

Following the methodology used by Ambler (2016), a linear probability model is estimated on a subsample of females between the ages of 50 and 75 with the following equation:

$$DecisionMaker_{ijt} = \alpha Pension_{ijt} + \theta_1 EligM_{jt} + \theta_2 \check{M}_{jt} + \beta Empl_{ijt} + \delta \check{X}_{ijt} + \check{\epsilon}_{ijt} \quad (4)$$

where $DecisionMaker_{ijt}$ denotes whether individual i was the primary decision maker in household j at time t . $Pension_{ijt}$ denotes whether a individual i is a pension recipient. $EligM_{jt}$ is an indicator for the presence of an age eligible male in household j at time t and \check{M}_{jt} indicates the presence of any elderly (above the age of 50) male. $Empl_{ijt}$ denotes whether individual i was employed at time t . Further controls (X_{ijt}) include the a third order polynomial of age, the number of household members between the ages of 0-5, 6-14, 15-24, and 25-49, years of education and rural status. Each variable is time demeaned. For example, $\check{Pension}_{ijt} = Pension_{ijt} - \overline{Pension}_{ij}$.

The coefficient α on $Pension$ is the variable of interest. α indicates the effect of being a pension recipient on the probability of being the primary decision maker. By estimating α the model answers question (I): *What is the effect of being a pension recipient on the probability of being the primary decision maker?* To see if the effect differs by gender an analogous model

⁴ The same figures for the remaining four categories are shown in the appendix. The results are the same except for the category on schooling decisions where no discontinuity is seen at the age of 60 for females or males.

is estimated for males⁵.

The next model answers question (II): *What is the effect of living with a pension recipient on an individual's probability of being the primary decision maker?* We estimate the following model on individuals between the ages of 15 and 60:

$$\text{DecisionMaker}_{ijt} = \alpha_f \text{PensionF}_{jt} + \alpha_m \text{PensionM}_{jt} + \theta_f \ddot{F}_{jt} + \theta_m \ddot{M}_{jt} + \beta_f \text{EmplF}_{jt} + \beta_m \text{EmplM}_{jt} + \delta \ddot{X}_{ijt} + \ddot{\varepsilon}_{ijt} \quad (5)$$

PensionF_{jt} indicates the presence of a female pension recipient within household j and PensionM_{jt} indicates the presence of a male pension recipient within household j . This model estimates the effect of living with a pension recipient on the probability of being the primary decision maker. α_f is the estimated effect of living with a female recipient and α_m the estimated effect of living with a male recipient.

Question (III) asks: *How does having a male/female pension recipient within a household effect the probability that the household has a female primary decision maker?* This question is tackled with the following linear probability model:

$$\text{FemDecisionMaker}_{jt} = \alpha_f \text{PensionF}_{jt} + \alpha_m \text{PensionM}_{jt} + \theta_f \ddot{F}_{jt} + \theta_m \ddot{M}_{jt} + \beta_f \text{EmplF}_{jt} + \beta_m \text{EmplM}_{jt} + \delta \ddot{X}_{ijt} + \ddot{\varepsilon}_{ijt} \quad (6)$$

$\text{FemDecisionMaker}_{jt}$ indicates whether household j has a female primary decision maker at time t . The final model estimates the separate effect for having a male or female pension recipient in the household on the probability that the primary decision maker is female.

8. Results

The results of the regressions are reported in table 6, 7 and 8. In each table Column (1) and (2) report the results from specification (a) for females and males respectively, column (3) and (4) report the results from specification (b) for females and males respectively and (5) and (6) report the results from specification (c) for females and males respectively.

Table 6 represents the results for question (I): *What is the effect of being a pension recipient on the probability of being the primary decision maker?* A significant effect to pension eligibility was observed for females. The effect was significant under the OLS specification when limiting the sample to the first wave but this was not robust to including the latest 3 waves, the preferred specification. These results mirror the results found by Ambler (2016) where significant results were found when restricting the sample to wave 1 but not when including wave 2 and 3. When comparing the same woman before and after they receive a pension the change in decision-making power is small and imprecisely

⁵ In the model for males the presence of age eligible and elderly females is controlled for.

estimated (column 5)⁶. For males, consistent with the results of Ambler (2016), pension eligibility is not significantly correlated to the probability of being the primary decision maker (column 2). This result is robust to the use of pension recipient as the variable of interest (column 4) and a FE specification to look at the change in pension status at the individual level.

Table 6: Effect of Pension on Propability of being Primary Decision Maker

	OLS		FE			
	Female	Male	Female	Male	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)
Eligible	-0.000 (0.017)	-0.028 (0.026)	-0.015 (0.017)	-0.002 (0.033)		
Pension					-0.005 (0.013)	0.002 (0.026)
EligF		-0.143 (0.017)***		-0.067 (0.031)**		-0.067 (0.031)**
EligM	-0.043 (0.010)***		-0.040 (0.018)**		-0.041 (0.018)**	
Educ	0.004 (0.001)***	0.007 (0.002)***				
Empl	0.037 (0.009)***	0.087 (0.014)***	0.001 (0.012)	0.010 (0.021)	0.001 (0.012)	0.011 (0.021)
Constant	8.610 (2.935)***	8.290 (5.244)	11.298 (3.713)***	9.381 (8.223)	10.207 (3.465)***	8.983 (7.021)

Standard errors in parentheses

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

Table 7 illustrates that for both women and men between the ages of 15 and 60 residing with an age eligible female decreases the probability of being the primary decision maker by 9 percentage points (column 1 and 2). Residing with an eligible male only decreases the probability of being the primary decision maker for females (column 1 and 2). The effect of male eligibility on woman is far smaller than the effect of female eligibility (column 1). For woman, residing with a pension eligible male only decreases the probability of being the primary decision maker by 2 percentage points. The same results hold when looking at the effects of residing with a pension recipient. The magnitude of the coefficients remain very stable (column 3 and 4). Finally the effect of living with a female pension recipient is robust to a FE model specification. An individual's probability of being the primary decision maker decreases by 6-7 percentage points when a female within their household becomes a pension recipient. The FE specification shows smaller effects on the probability of being the primary decision maker when a male within their household becomes a pension recipient for both males and females

⁶ Given that FE specifications are known to suffer from attenuation bias due to measurement error and loss of power it is challenging to observe significant results in such a specification.

(column 5 and 6). An individuals probability of being the primary decision maker decreases by about 2 percentage points when a male within their household becomes a pension recipient.

These results suggest that receiving the state pension allows females to gain bargaining power relative to younger males and females within their household. The effect of receiving a pension for males is smaller and less robust.

Table 7: Effect of Living with Pension on Propability of being Primary Decision Maker

	OLS		FE			
	Female	Male	Female	Male	Female	Male
	(1)	(2)	(3)	(4)	(5)	(6)
EligF	-0.090 (0.003)***	-0.093 (0.004)***	-0.084 (0.006)***	-0.083 (0.006)***		
EligM	-0.024 (0.005)***	-0.008 (0.005)	-0.026 (0.008)***	-0.029 (0.008)***		
PensionF					-0.061 (0.005)***	-0.067 (0.006)***
PensionM					-0.018 (0.007)**	-0.016 (0.007)**
Educ	0.001 (0.000)***	0.004 (0.001)***				
Empl_F	-0.019 (0.005)***	-0.041 (0.005)***	-0.012 (0.006)**	-0.020 (0.006)***	-0.010 (0.006)	-0.017 (0.006)***
Empl_M	-0.038 (0.006)***	-0.005 (0.006)	-0.019 (0.008)**	-0.004 (0.007)	-0.018 (0.008)**	-0.003 (0.007)
Constant	0.207 (0.005)***	0.230 (0.006)***	0.064 (0.015)***	0.176 (0.014)***	0.061 (0.015)***	0.174 (0.014)***

Standard errors in parentheses

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

Table 8 reveals that having an eligible female within a household increases the probability of having a female primary decision maker by 5 percentage points (column 1). The effect remains stable when considering pension receipt. Households that have a female pension recipient are 5 percentage points more likely to have a female primary decision maker (column 3). While the coefficient decreases slightly the effect remains highly significant when considering the change within a household. A 3-4 percentage point increase in the probability of having a female primary decision maker is associated with a female household member becoming pension eligible or starting to receive a pension (column 2 and 4).

According to table 8 male pension eligibility negatively affects the probability of having a female primary decision maker (column 1). The coefficient is less stable compared to the female effect but remains highly significant with the use of pension receipt and a FE specification (column 2 and 3). Therefore the probability of having a female primary decision maker decreases by roughly 2 percentage points when a male household member becomes a pension recipient (column 4). The results indicate that when woman

receive pensions female bargaining power within the household increases while when men receive pensions female bargaining power within the household decreases. The changes in bargaining power observed are larger when woman receive pensions compared to when men receive pensions.

Table 8: Effect of Pension on Propability of Female Primary Decision Maker

	OLS	FE	OLS	FE
	(1)	(2)	(3)	(4)
EligF	0.050 (0.003)***	0.036 (0.005)***		
EligM	-0.079 (0.003)***	-0.045 (0.006)***		
PensionF			0.050 (0.003)***	0.032 (0.005)***
PensionM			-0.057 (0.003)***	-0.021 (0.006)***
Empl_F	0.033 (0.003)***	0.018 (0.005)***	0.031 (0.003)***	0.018 (0.004)***
Empl_M	-0.042 (0.004)***	-0.033 (0.005)***	-0.043 (0.004)***	-0.033 (0.005)***
Constant	0.822 (0.005)***	0.670 (0.019)***	0.833 (0.006)***	0.675 (0.019)***

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

9. Conclusion

Existing work suggests that the state old age pension, through increasing female decision-making, has a positive impact on the well-being of children. The old age pension is considered a useful tool in alleviating child deprivation and aiding human development. This study finds some evidence of a gender bias by both male and female pension recipients; females favour girls while males favour boys. The effect of the state old age pension on child deprivation (as measured by weight for height) is however not found to be robust to different model specifications.

This paper attempts to exploit the effect of income on bargaining power to explain the effect of pensions on the relative decision making power within a household as well as the well being of children. We find evidence of shifts in the decision-making dynamics with pension receipt. These shifts are greater when the pension recipient is female. Resources held by grandmothers enable woman within the household to be primary decision makers. Evidence suggests that the reason we see a differential effect on child outcomes depending on the gender of the pension recipient is because of a change in household decision-making dynamics. The gains in decision making power of females, caused by the pensions, lead to lower child deprivation rates.

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11. Appendix

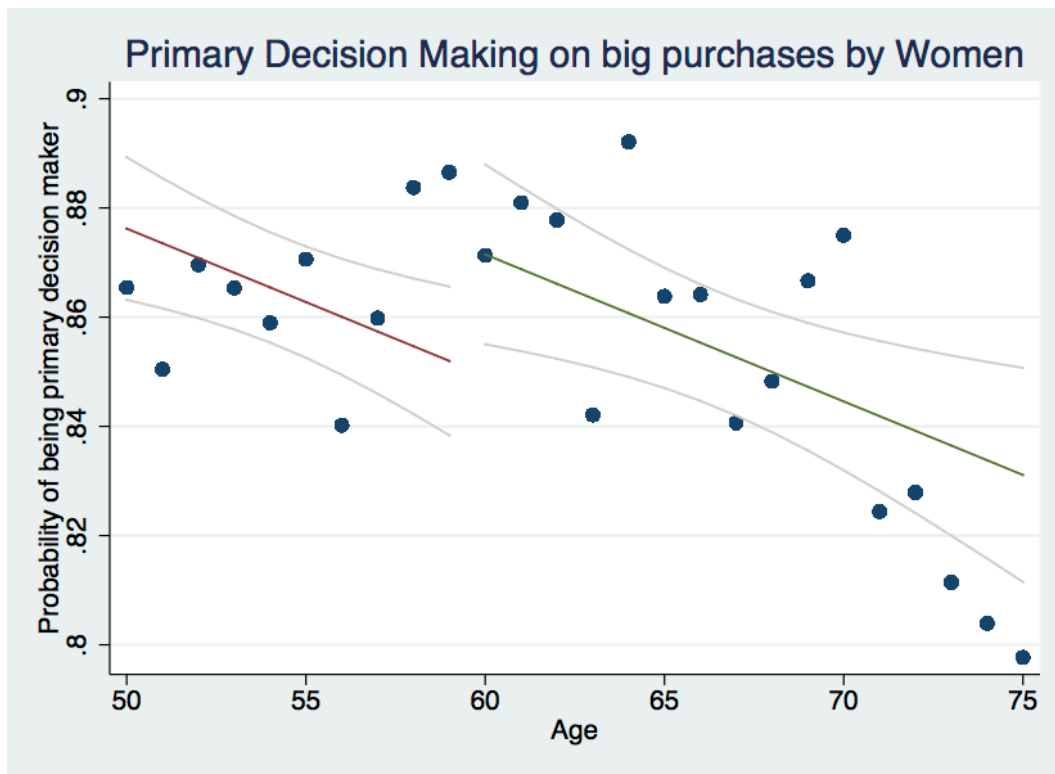


Figure a

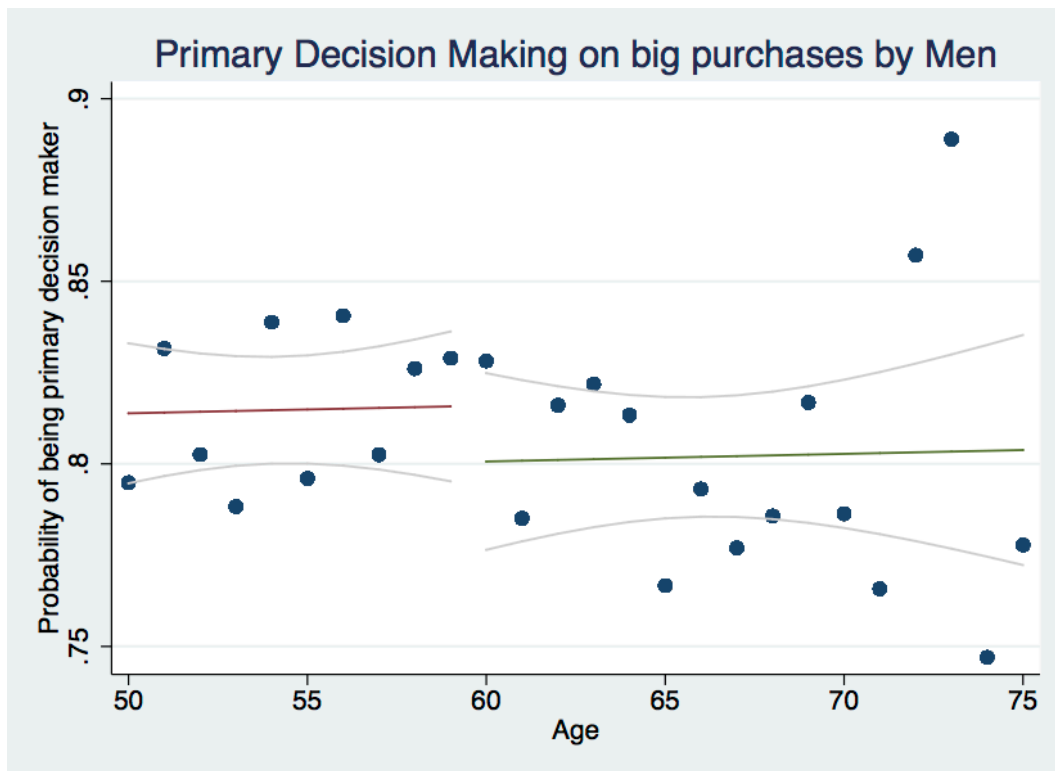


Figure b

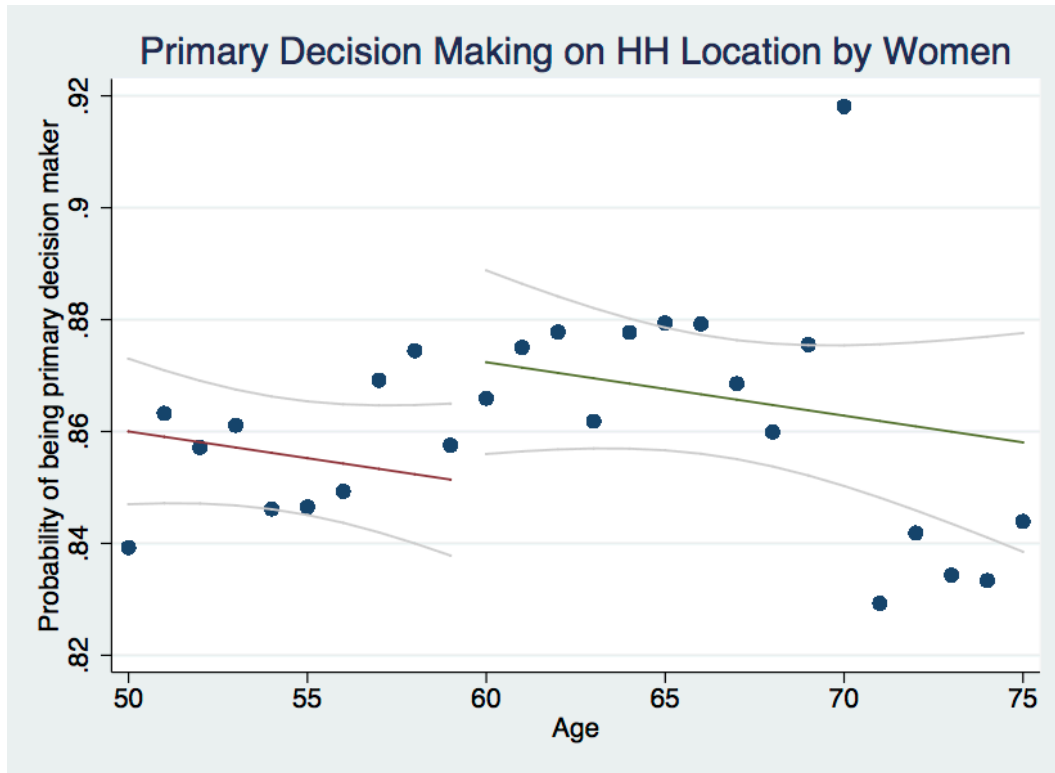


Figure c

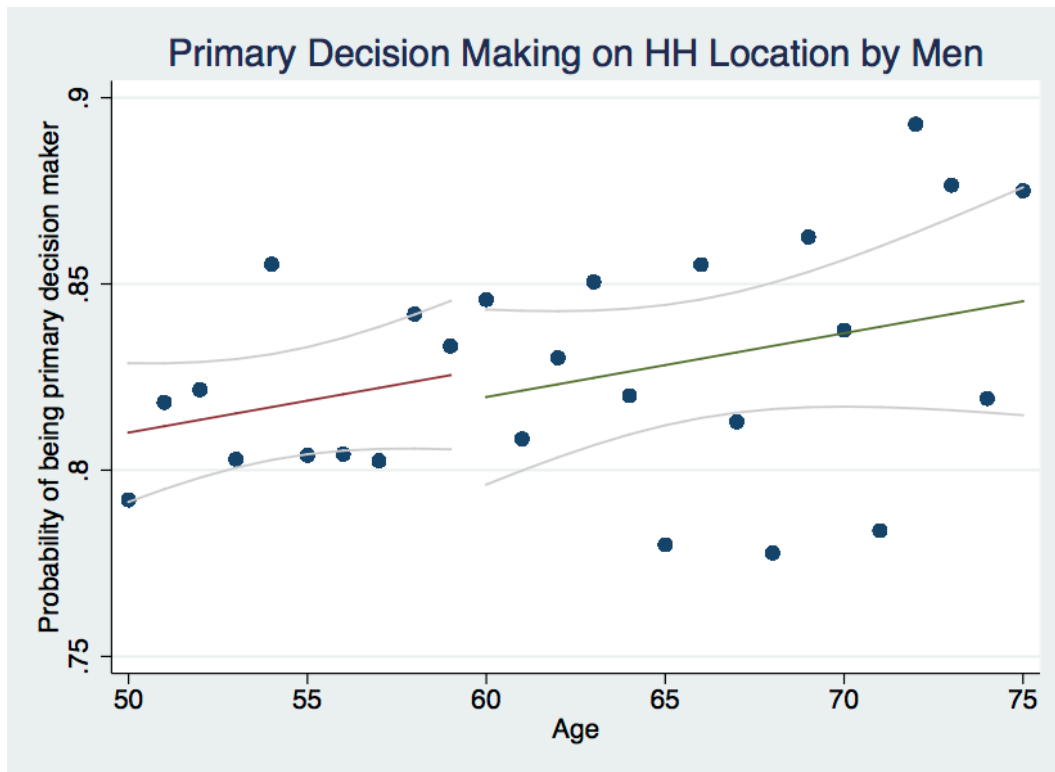


Figure d

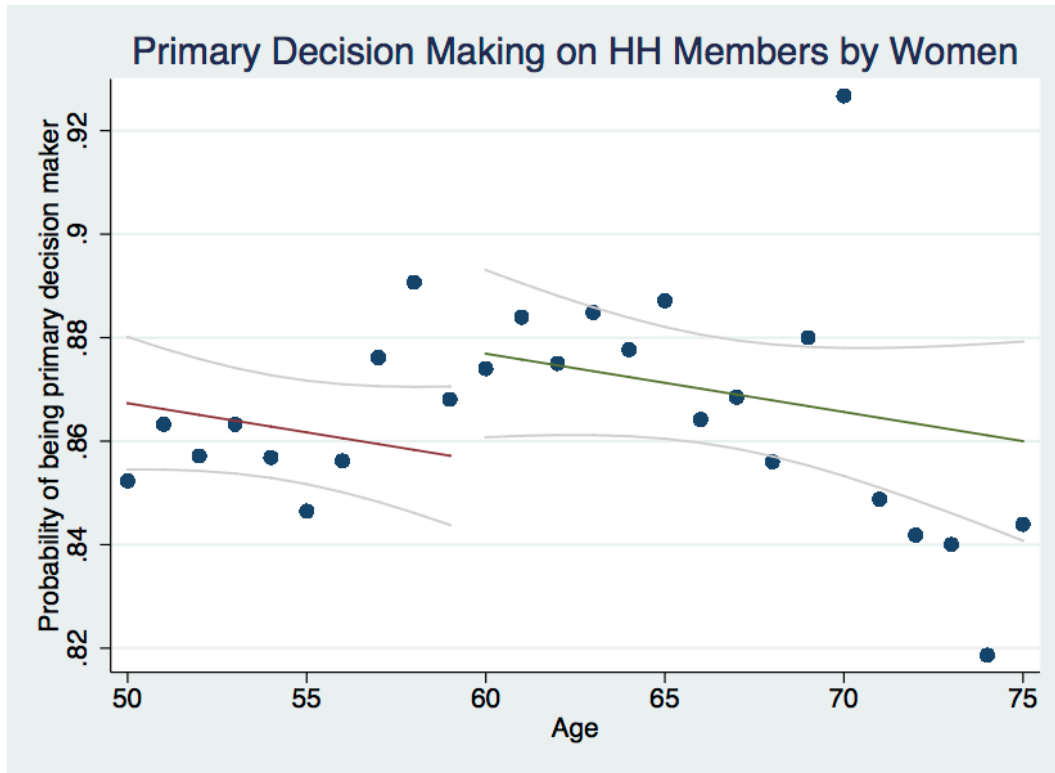


Figure e

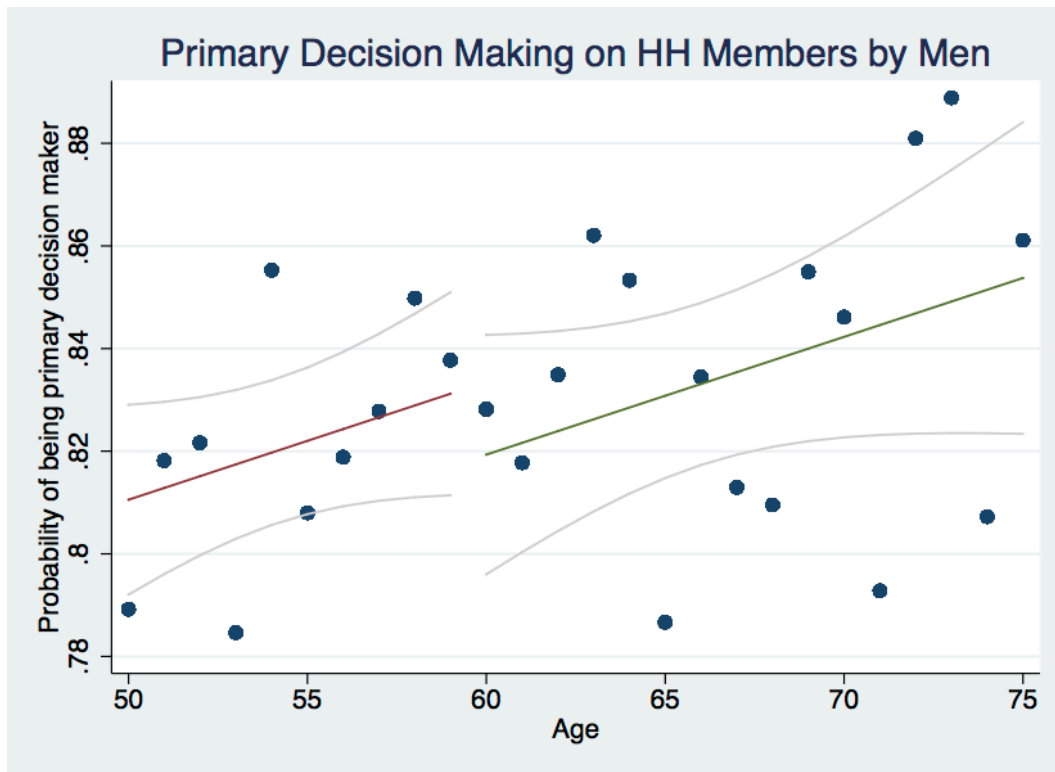


Figure f

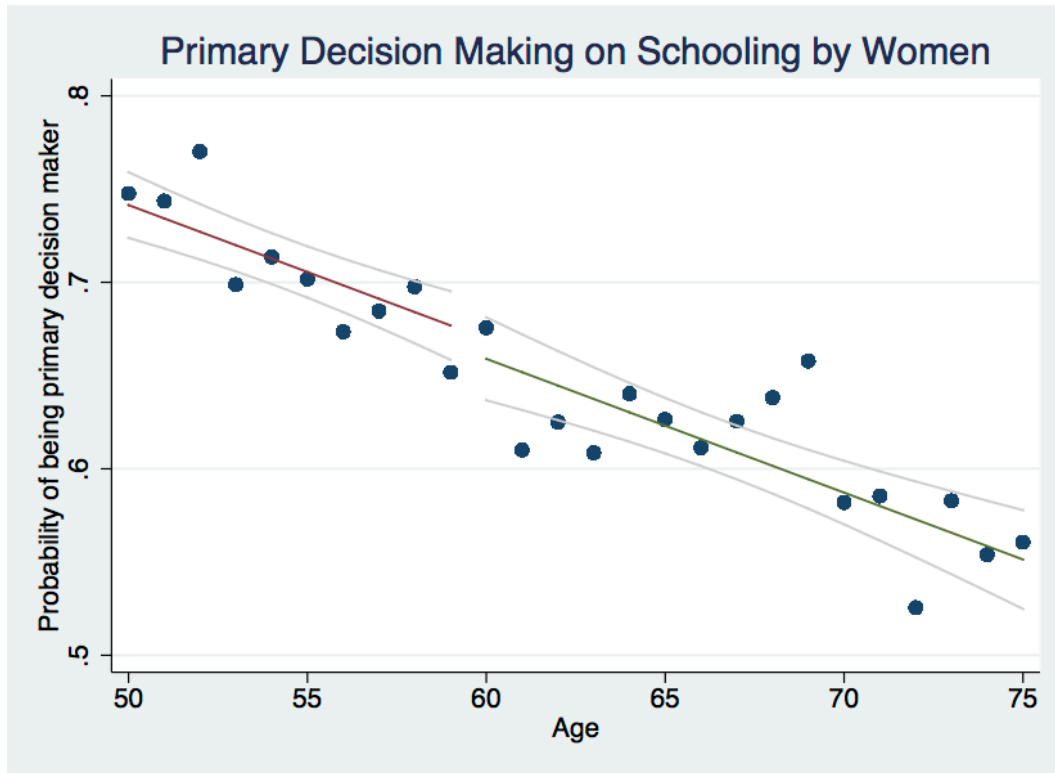


Figure g

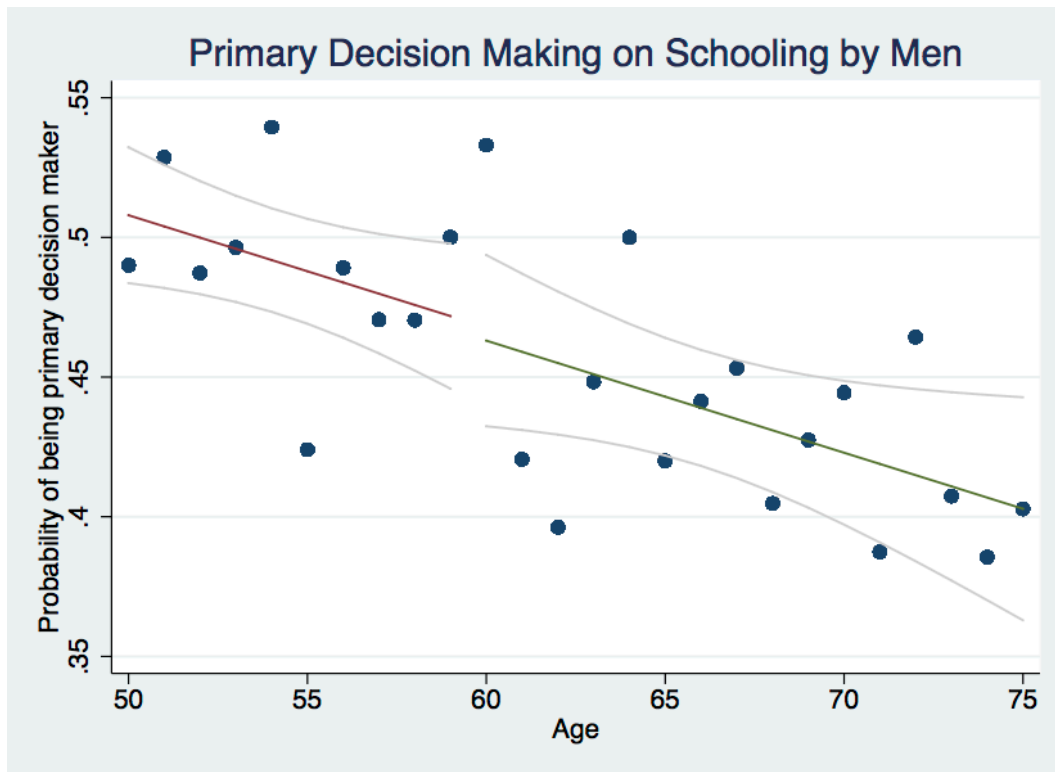


Figure b