Massachusetts Institute of Technology
Department of Economics
Working Paper Series

PUBLIC POLICY AND EXTENDED FAMILIES: EVIDENCE FROM SOUTH AFRICA

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Working Paper 01-31
March 2001

Room E52-251
50 Memorial Drive
Cambridge, MA 02142

Public Policy and Extended Families:

Evidence from South Africa

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March 27, 2001

Abstract

How are resources allocated within extended families in developing countries? To investigate this question, we use a unique social experiment: the South African pension program. Under that program, the elderly receive a cash transfer that represents roughly twice the per capita African income. We ask how this transfer affects the labor supply of working-age individuals living with these elderly. We find a sharp drop in the working hours of the *prime-age* individuals in these households when elder women reach 60 years old or elder men reach 65, the respective ages for pension eligibility. We also find that the drop in labor supply is much larger when the pensioner is a woman, suggesting an imperfect pooling of resources. The allocation of resources among prime-age individuals depends strongly on their absolute age and sex as well as on their relative age. The oldest son in the household reduces his working hours more than any other prime-age household member. The large labor supply response we observe raises important issues for the design of social policy programs in developing countries and also lead us to be wary of any model of intra-household allocation of resources that does not fully account for the endogeneity of earned income.

*We are extremely grateful to Abhijit Banerjee, Anne Case, Angus Deaton, Esther Duflo, Jon Gruber, Michael Kremer, Jonathan Morduch, and Jim Poterba. We have also benefited from feedback by seminar participants at the MIT Public Finance Lunch, Princeton Development Workshop, Harvard-MIT Development Seminar, and the NBER Summer Institute 2000. Miller acknowledges financial support from the National Science Foundation's Graduate Fellowship Program. e-mail: marianne.bertrand@gsb.uchicago; mullain@mit.edu; dlmiller@econ.berkeley.edu

1 Introduction

In many developing countries, large extended families often live together. Shared housing may suggest sharing of other resources, most notably money. If such resource sharing is prevalent, social policies may produce unexpected effects. A transfer targeted at one demographic group may eventually find itself in the pockets of relatives living in the same house. Who in the end benefits from the transfer will depend on the sharing rules in place between the targeted group and other family members. In this paper, we attempt to understand how resources are transferred in extended families.[1] To do this, we investigate a unique policy in South Africa: the old age pension program. Under this program, women over the age of 60 and men over the age of 65 receive what in practice is a very large lump sum cash transfer, roughly twice the average per capita income in African households.[2] The magnitude of the transfer makes it a useful "experiment," permitting us to track the flow of money more cleanly than more marginal changes would allow. Does the pension money eventually reaches family members other than the pensioners? If yes, how much of the cash is transferred and which family members receive most of it?

To address these questions, we study the labor supply of relatives living with pensioners. We focus on labor supply for two reasons. First, typical household survey data do not usually allow one to directly measure the transfers each family member receives. Our data is no exception. Expenditure data measure consumption at the household, not individual level. Only a few consumption

[1] A large literature has examined resource transfers in the close family (husband and wife or parent and young child). Lundberg and Pollak (1996) provide a survey. In the close family, one can reasonably assume that resource transfers do take place, for example between parents and young children. The rare evidence we have on resource transfers in the extended family comes from the U.S. (Altonji et al, 1992) and suggests that resource transfers are not large in that case. It is an open question whether such finding generalizes to developing countries where the extended family often live under a common roof.

[2] In theory, the transfer program is means-tested but this has little effect in practice for Africans whose income is quite low relative to the test. See Section 2.

items are exclusive enough that they can be matched to a specific sex or age group.[3] Leisure time, however, is a good that can easily be assigned (Chiappori 1992). By examining labor supply, we can infer (at least partly) how the pension money is allocated to the various prime-age individuals in a household.

Second, a labor supply response would most clearly underline the unexpected outcomes caused by family redistribution. Since the social pension targets a group who by and large is already out of the labor force, and conditions mainly on an unalterable variable, age, we might expect it to have little effect on labor supply in the economy.[4] On the other hand, if intrahousehold redistribution occurs, aggregate labor supply may fall as the working-age individuals that live with pensioners reduce their hours of work. How large such an aggregate effect will be directly depends on the direction and strength of redistribution flows inside households.

Anecdotal evidence and newspaper articles hint that the pension may well have affected relatives' labor supply. One article mentions that "the impact of pensions on communities with a high rate of unemployment was huge, as multi-generation households formed a constellation around the person receiving the pension" (Ngoro, 1998). Another describes a pensioner's "five children, who also live with him in his two-bedroom flat, contribute to the family income when they can find work. But none has a full-time job" (Caelers, 1998). Of course, such stories do not constitute causal evidence, but they provide a backdrop for our statistical work below.

To identify the effect of the pension, we will exploit the non-linearity in pension eligibility rules: only men over 65 and women over 60 can in theory receive a pension. Our strategy uses this sharp

[3] Subramanian and Deaton (1991) use expenditures on adult goods such as alcohol and tobacco to study discrimination based on children's gender. Browning et al. (1994) use expenditures on men's and women's clothing to study sharing rules between couples.

[4] A labor supply effect might arise because the pension increases the expected future income of the young. But this would affect all the young equally, not merely the relatives of pensioners as our results suggest.

rise in income when an elder crosses the threshold age to identify the pension's effect. The results suggest that the pension dramatically reduces the labor supply of the working age members of the household.[5] One sees a clear discontinuity exactly at the age-eligibility frontier, with labor supply dropping at the age of 60 for presence of female elders and 65 for presence of male elders in the household. Roughly speaking, the age of the elderly does not seem to affect labor supply except at these discontinuous points.

Despite this striking discontinuity, one may still worry that these results are driven by the elders' age operating through some channel other than the pension. Most notably, if the prevalence of ailments and diseases among the elderly displayed a similar discontinuity in age, our findings could reflect the fact that working age family members are staying at home to take care of the elderly living with them. To deal with concerns such as these, we first turn to data from the 1991 Population Census. The major expansion of the old age pension program took place after 1992 and our basic dataset is from 1993. If the labor supply response is truly driven by the pension and not by other factors associated with living with elderly people, we would not expect this response to be as large in the 1991 data. Indeed, when we replicate our analysis in that earlier period, we find an effect that is less than a fourth as large as in the 1993 data. It is hard to believe that sickness patterns changed so dramatically over a two year period. We also directly control for reported sickness in our basic 1993 data and find this does not change our original results. Nor do we find that reported sickness exhibits any non-linearities in age. As yet another robustness check, we exploit the fact that certain local authorities in South Africa have de facto equalized eligibility across sexes by extended the pension to males between 60 and 65 years old (who are ineligible otherwise). We find that in the regions practicing equalization, relatives' labor supply

[5]We find effects on both hours worked and on the work or not work margin. It is also important to note that our measure of employment includes all forms of employment (regular, casual and self-employment).

also responds to the presence of males between 60 and 65.

The tests above suggest there is a real effect of the pension, but is it truly an increase in "leisure" time? Perhaps we are observing a shift to casual or farm employment, which might be more difficult to measure than regular forms of employment. We find no evidence for this. Reported casual working hours actually declines and the level of self employment does not change at all. The level of home production activities, such as agricultural crop production or livestock production, does not change either.[6] Alternatively, could we be simply picking up on migrating behavior? The pension may make the unemployed more likely to move in with the pensioners or the employed more likely to move out. We also find no evidence for this. We directly study migration patterns and family size and find no sign that the pension significantly affected those variables either.[7]

All of our findings suggest that some pension money did in fact go to working age relatives, allowing them to reduce their work. But how exactly was the pension redistributed? We find that absolute age, relative age, and sex are important determinants of resource flows in that they affect the strength of the labor supply response. Holding family composition constant, we find that the marginal rand of pension income going to a female pensioner reduces labor supply more than the marginal rand of pension money going to a male pensioner. We also find that working-age women reduce their labor supply less than working-age men for each marginal rand of pension money received by the elderly. Working hours drop more as the age of the prime-age family members increase. Finally, controlling for the differential effect of the pension by sex and age, we find that the eldest prime-age male in the household reduce his labor supply more than other prime-age

[6] A related possibility is that prime-age individuals are investing more in human capital. We find no evidence for this either. As we will see below, it is the older relatives of the pensioners, not the school age ones, that show the largest drops in working hours.

[7] While changes in family composition seem an intuitive response to the pension, the relative recency of the program, at least in its most generous form, could explain the absence of such changes.

household member.

As a whole, these results paint a picture of significant resource transfers, with men and especially middle aged men being the biggest recipients, and female pensioners being the biggest contributors. These findings have broader implications for empirical and theoretical work on families. First, unlike the previous evidence for developed countries, resource transfers are large within extended families in South Africa. Second, the impact of the pensioner's sex on the flow of resources suggests that common preference models of the family (in which we can view the family as maximizing one common utility function) may not fit well for these extended families. In such models, the source of the pension income should not matter.[8] Third, our findings raise interesting issues for non-unitary theories of the family. If earned income (and hence labor supply) affects bargaining power, one would have expected very little negative (or even a positive) labor supply effect. Finally, and related, the large labor supply response we observe casts doubt on empirical strategies that focus on redistribution of earned income, since labor supply is likely to be endogenous to the redistribution process.[9]

The rest of the paper is organized as follows. Section 2 describes in detail the historical origin and institutional features of the South African social pension program. Section 3 describes the data. Our central finding of a labor supply response to the pension is presented in Section 4 and its robustness to alternative interpretations is studied in Section 5. In Section 6, we attempt to

[8] A few papers have tried to assess whether the demographic characteristics of the income recipient matter in resource allocation. More specifically, some researchers have studied whether money in the hands of women leads to a different resource allocation than money in the hands of men. For example, Schultz (1990) suggests that money in the hands of women rather than men leads to stronger decline in fertility. Thomas (1990) shows that female sources of unearned income are associated with improvement in child health. Unlike our work, male and female labor incomes in most of those previous studies result from different economic activities. They might thus vary with respect to their riskiness or liquidity, which makes the isolation of a gender effect very difficult. Moreover, one worries about the endogeneity of income in all of these cases.

[9] Previous research typically abstracts away from labor supply responses. It often focuses on samples of people working full time (see, e.g., Browning et al., 1994), which raises possible issues of selection. For example, relative income may appear to play a central role in defining how resources are shared because relative income determines which families have both parties working.

integrate this finding into existing models of the family. In the light of these models, Section 7 uses the distribution of the labor supply response to study the direction and strength of the resource flows between the different household members. We offer concluding remarks in Section 8.

2 The Old Age Pension Program

We now describe the South African old age pension program. Additional information about the historical background, institutional features, and practical implementation of this program can be found in Lund (1993), Van der Berg (1994) and Case and Deaton (1998).

Although the social pension program in South Africa dates back to the 1920s, it was historically intended for White South Africans only. The process of disintegration of the apartheid regime in the late 1980s and early 1990s led to pressures for more racial parity in pension eligibility and benefits. The major reforms of the pension program for African households took place after 1992, with the introduction of superior technologies in the pension delivery system (in part to improve access to remote areas) as well as with the equalization of both the means-test and the pension benefits levels across racial groups.

Eligibility for pension receipt is determined primarily by one's age. Only women over the age of 60 and men over the age of 65 are eligible for the state social pension. In practice though, some local authorities have been equalizing the pension eligibility age between men and women. Hence, a non trivial share of men between 60 and 65 years of age report receiving a pension. We will try to exploit this fact later on when we analyze the effect of the pension.

The state social pension is means-tested. The means-testing is such that most Whites get excluded from the pension while most Africans are entitled to the maximum benefits. Case and

Deaton (1998) show that 14% of White women and 7% of White men report receiving the pension; take up rates among African women and men are 80 and 77 % respectively.[10]

The South African social pension is a very generous program. The maximum benefit in 1993, the year the survey used in this paper was conducted, was 370 rand per month. This is an extremely large amount relative to Africans' average income level. 370 rand is about half the average African household income and more than twice the median per capita income among Africans. Because the pension transfers are so large, it is reasonable to expect that intrahousehold redistribution could lead to significant behavioral responses, such as a reduced willingness to participate in the labor force among the family members that are not originally targeted by policy makers. We proceed to empirically analyze these responses in the next sections.

3 Data and Summary Statistics

The primary data set used in this paper is the Integrated Household Survey of South Africa.[11]. This survey is the result of a cooperation between the World Bank and the South African Development Research Unit (SALDRU) at the University of Cape Town.[12] It consists of a random sample of 9000 households and was conducted during the second half of 1993. The survey classifies people into four different racial groups: White, Coloured, Indian and African. We will focus on African households only. Indeed, as we mentioned earlier, the means-testing of the pension is such that only a small share of elder white women and elder white men report receiving any pension transfer (14 and 7 % respectively). While a larger share of Coloured and Indian South-Africans do report receiving

[10] It is also worth mentioning that the means-testing formula does not take into account income from other family members than the elderly (Case and Deaton, 1998). Hence, there are no direct incentives in the program design for family dissolution or migration.

[11] The 1991 Population Census data used to check the robustness of our main results will be described in section 4.

[12] The database used in the paper can be directly downloaded from the World Bank webpage: http://www.worldbank.org/html/prdph/lsms/country/za94/za94home.html.

the pension, their participation rate is still well below the African levels (Case and Deaton, 1998). Moreover, the prevalence of the multi-generation households we wish to study is much larger among Africans than among any of the other racial groups (see Ardington and Lund, 1994).

To better focus on such extended families, we will further restrict ourselves to three-generation households. A three-generation household is defined as one containing at least a child, a parent of the child and a grand-parent of the child. Note that this restrictions also reduces the heterogeneity in our sample. Without it, pension ineligible households would also include individuals living away from their elders. Since such individuals would clearly be different from those living with their elders, this can introduce a selection bias. The restriction to three-generation households on the other hand guarantees that the age of the elderly is our only source of variation.

For these households, we will study the labor supply of working-age individuals between 16 and 50 years old. We use the conservative 50 year old maximum age in order to avoid any effect of the pension that could arise because people expect to get the pension themselves soon. More than a third of prime-age individuals in our original sample live in three-generation households. Moreover, a large proportion of women over 60 years of age and of men over 65 years of age live in a three-generation household. This fact has previously been noted by Case and Deaton (1998).[13]

In content and method, the SALDRU survey closely resembles the World Bank's Living Standard Surveys. It collects information on a wide variety of household and individual characteristics. We will use the data on labor force participation and employment status, working hours, migration, health status, home production activities, intrahousehold relationships and pension income receipt, as well as on a set of standard individual, household, and geographic characteristics.

The dependent variable used in most of our regressions is weekly working hours for working-age

[13] As naturally expected, households that contain eligible elderly but which are not three-generations are on average much smaller (a little less than 4 persons on average) and older.

individuals. The survey asks the following question for each person of 16 years of age or more: "How many hours did — work last week?". It is important to note that the working hours question relates to all forms of employment. Regular wage employment (self-employed professionals), casual wage employment, self-employment in agriculture and other forms of employment and self-employment are hence covered by the survey question.

Our analysis will also sometimes use a dummy variable for employment status as a measure of labor supply. Again, the employment status variable refers to all forms of employment and not exclusively regular employment. While employment status provides a cruder description of labor supply response, it will allow us to perform a comparison with the 1991 Population Census, which does not contain a working hours question but does ask about present work status.

We will also briefly document whether any change in employment status reflect a change in unemployment or labor force participation status. Individuals that report not being currently employed are asked if they have been looking for work during the previous week. We use answers to these two questions in order to classify people as employed, unemployed, and not in the labor force. Individuals out of the labor force are then asked why they did not look for work in the previous week. We define discouraged workers as the subset of individuals out of the labor force that did not look for work because they thought there was "no jobs or work available."

Table 1 presents means and standard deviations of the main variables of interest for African individuals between the ages of 16 and 50 who live in three generation households. Because our identification of the pension impact will eventually rely on the presence or not of age-eligible persons in the household, we also present these means and standards deviations separately for households that contain at least one elderly person that is age-eligible (woman over 60, man over 65) and households that do not.

We want to highlight several interesting facts in Table 1. First, only 23% of the individuals in this sample are employed. The employment rate among men is 26% while the employment rate among women is 21%. Average working hours, 6.3, are also very low. Of the remaining 77% that are not employed, 8% are unemployed and 21% are discouraged, leaving roughly 48% out of the labor force and not discouraged. This dramatically low employment and high discouragement and unemployment rates among prime-age African individuals is a characteristic of the South African labor markets that has already been well-documented in previous work.

Second, on background characteristics, the differences between eligible and ineligible households are small. For example, there is only limited differences in education, or in the geographical distribution across rural and urban areas. Age-eligible households appear a little bigger on average (9.1 versus 8.5).[14] One noticeable difference in Table 1 is that prime-age individuals in eligible households report being sick more often. One might argue that sickness is in fact a luxury good among those African households and that this might be looked at as an *outcome* of the social pension.

Third, on employment status and working hours, the difference between the two household types is dramatic. Raw differences in employment rates are more than three percentage points. The econometric work below will translate these raw differences into estimates of the effect of the pension.

Table 1 shows some other interesting facts. The average eligible household has .9 eligible women and .34 eligible men, for a total of 1.24 eligible members. Most of the pension income, therefore, comes through a woman and many households have more than one pensioner. Pension income in

[14] A similar exercise performed on all prime-age individuals, not only those living in 3-generation households produces dramatic differences on such variables. This underlines the importance of focusing on 3-generation households only.

these households also accounts for more than a quarter of the total household income. This allows us to stress one more time the generosity of the social pension program.

4 Basic Results

We begin in Table 2 by comparing the labor supply of working-age individuals that live with age-eligible elderly relative to those that do not. Each regression in Table 2 includes, in addition to the pension variable, a quartic in individual age, a dummy for whether the individual completed 8th grade, 14 province dummies, a rural area dummy, an urban area dummy, a metropolitan area dummy, a female dummy, household size, number of household members between 0 and 5, 6 and 15, 16 and 18, 19 and 21 and 22 and 24.[15] Table 2 considers the effect for both men and women between 16 and 50 years old. In this table and all the tables that follow, standard errors are corrected to allow for correlation in outcomes within household clusters.

Columns (1) to (3) use working hours as the dependent variable while columns (4) to (6) use employment status. Columns (1) and (4) estimate the basic OLS regressions of labor supply on continuous pension income. We find that more pension income significantly reduces both working hours and employment rates.

The simple OLS results, however, are not only exploiting the variation in pension receipt that comes from the age of the elders. By using information on actual pension receipt, they may be biased by endogenous take up or eligibility. The take up rates are high, but not complete, and the means test is low but some elderly do fail to get the pension. If those who actually receive the pension are different from those who do not, the OLS estimate will be biased. To address this, we

[15]The completion of matric (10th grade) is another important determinant of employment and unemployment probabilities among South African men and women. Our results are unaffected if we use the completion of 10th grade instead of the completion of 8th grade as a control for educational attainment.

examine the effect of pension eligibility rather than of actual pension receipt. In columns (2) and (5), we directly use the age-eligibility criterion as the source of variation. We find a similar negative labor supply response in the households that have at least one age-eligible person compared to the households that do not.

This eligibility measure cannot easily be transformed into a meaningful economic measure (such as an elasticity with respect to pension benefits). To ease economic interpretation, we instrument the amount of pension benefits received by a household with the number of age-eligible men and age-eligible women in that household. Columns (3) and (6) contain this specification where we instrument the continuous pension income variable with the number of females over 60 years old and the number of males over 65 years old in the household. The first-stage regressions associated with columns (3) and (6) (not reported here) show that both the number of age-eligible women and the number of age-eligible men are very significant determinants of monthly pension income. The coefficient on number of women over 60 years and number of men over 65 years old are very similar and one cannot reject the null hypothesis that these two coefficients are the same at standard confidence levels and hence that the men and women have similar take-up rates. The instrumental variable (IV) coefficients on pension receipt in columns (3) and (6) are even more negative than the OLS coefficients in columns (1) and (4). Each extra hundred rand of pension income reduces weekly labor supply of prime-age individuals by about 1.7 hours.[16]

How large are these effects? For simplicity, let's assume that the pension is split across all working age household members equally.[17] Since there are 4.7 working age people in the average

[16] One implication is that household income net of the pension declines when pension income increases. This can be verified in the household level data by studying the effect of pension income on non-pension total household income. In the IV specification, we found that non-pension income goes down by about 1.05 rand for each extra rand of pension money. Note that Jensen (1998) explores another channel, the decline in remittance income, through which the social pension can affect non-pension income.

[17] We will see later that equal sharing among all prime-age individuals does not occur in practice.

household, the coefficient of -17.07 in Table 2 suggests that a 1000 rand change in *individual* income reduces hours worked by $-17.07 * 4.7$. Average individual income (computed as household income divided by number of working age people in the household) is 272 rands. Average hours, conditional on working, equals 41.4.[18] Scaling by these gives us an elasticity of hours to income of $-17.07 * 4.7 * \frac{.272}{41.4} = -.53$. For employment, we can compute a similar elasticity of $-.099 * 4.7 * \frac{.272}{.229} = -.55$. These elasticities are large if viewed as pure income effects (see Imbens, Rubin and Sacerdote 1999 for US numbers). If we assumed that the pension were split over more household members, the elasticities would become even more negative.[19] One reason for the large magnitude is likely the very low employment rates in the first place. Such low employment rates make the marginal return to search quite small, lowering in effect the cost of leisure. An alternative interpretation is discussed in Section 6. We will show in that section that the elasticity of labor supply to the pension need not represent a pure income effect in bargaining models of household resource allocation.

4.1 Effect on Men and Women

Table 3 presents results from these regressions estimated separately on prime-age African men and women. We find that more pension income significantly reduces both working hours and employment rates among prime-age males. More pension income is also associated with less working hours for women, although the effect is smaller in magnitude than for men (-.01 versus -.015). Moreover, there is no apparent adjustment of female labor supply on the extensive margin in Panel B, column (4). Looking at columns (2) and (5), the only labor supply variable that does not appear to be significantly affected by the presence of eligible elderly is again female employment status.

[18] We scale on hours conditional on working because we will consider the effect on the work-not-work decision separately.

[19] How reasonable is the assumption that working-age people receive the full pension income? We will see below that women respond less, suggesting that men get a disproportionate share. Duflo (1999) show that the social pension improved the anthropometric status of girls under 5, suggesting that some of the pension income is spent on children.

While the point estimate is negative, it is not statistically significant. In our preferred specification in columns (3) and (6), the effect on hours worked is much larger for men (2.2) than for women(1.3).

Let's separately compute elasticities for both groups. Using calculations similar to those above (and assuming men and women earn similar incomes), we find an elasticity of $-22.48 * 4.7 * \frac{.272}{43.7} = -.66$ for men and $13.27 * 4.7 * \frac{.272}{39.6} = -.43$ for women on the hours dimension. On the employment front, we find elasticities of $-.201 * 4.7 * \frac{.272}{.26} = -.98$ for men and $-.023 * 4.7 * \frac{.272}{.21} = -.14$ for women, respectively. As before, these elasticities are quite large for men. Also, note that the difference in magnitude between men and women persists even after we scale by average employment and hours worked to form elasticities. This is because males and females are quite similar in their labor supply (43.7 versus 39.6 for hours and .21 versus .26 for employment). These numbers suggest that the greater response by men is not solely due to their greater employment but likely comes from their receiving a larger fraction of the pension money.

In regressions not reported here but available from the authors upon request, we have also studied in more details the nature of the drop in employment for men. More specifically, we asked whether the "missing" working men have entered a phase of unemployment or whether they have dropped out of the labor force. We found no difference in unemployment probabilities between eligible and non-eligible households. Rather, the missing working men appear to have left the labor force. Moreover, we found no sign that the social pension increases the probability of discouragement.[20]

[20] If the discouragement variable truly captures people's pessimistic beliefs about their chance of finding a job, there is no reason to think that the social pension should affect the discouragement rate. In fact, if the pension has any impact on labor market conditions, one would expect such an impact to be positive and lead to the creation of new working opportunities.

5 Possible Confounding Effects

There are several reasons to be cautious in interpreting these results as showing that the pension income increased leisure of working age people in the household. In this section, we investigate other possible interpretations.

5.1 Direct Effect of the Presence of Elderly in a Household

A primary concern is that individuals living in pension-eligible households are systematically different from individuals living in pension-ineligible households. For example, the prime-age living in eligible households are slightly younger than their counterparts in non-eligible households. Furthermore, pension eligible households are on average larger. It is conceivable that prime age men living with older individuals are less qualified for work, less willing to look for work, or in some other way less likely to find work. If this were the case, then our estimate of the pension's effects are biased: we would attribute to the pension the effect of these unobserved differences.

We take several approaches to address this problem. First, we exploit the non-linearity in pension receipt as a function of the elder's age to better isolate the pension effect from these confounding factors. The pension program rules predict a specific form for these non-linearities: the presence of a woman older than sixty years old or of a man older than sixty-five years old should have large effects. There are no obvious reasons to expect such specific non-linearities at these two age thresholds if what our estimates are capturing is a general impact of the presence of elderly people on the labor supply of younger household members.

Table 4 presents the results of this exercise for our sample of prime-age individuals living in a three-generation household. We examine how working hours for that group are affected by the

presence of elderly in different age groups. To start, we simply contrast the impact on prime-age labor supply of living with eligible vs. non-eligible elderly. We construct a new dummy variable that equals 1 if there is a woman between 50 and 60 or a man between 50 and 65 in the household. We find that the presence of a non-eligible elderly in the household has neither a statistically nor an economically significant impact on prime-age working hours. On the other hand, as we have already demonstrated before, living with an eligible elderly has a dramatic effect on working hours. The rest of this table further refines this finding.

Column (2) includes as regressors, in addition to the usual list of controls, the number of people in each of the following four age categories: 50-55, 55-60, 60-65, and 65 and over. The coefficients clearly show a negative effect of the presence of elderly between 60 and 65 and an even more negative effect of the presence of elderly over 65 years old. On the other hand, the presence of elderly people between 50 and 55 and 55 and 60 seems to have neither an economically nor a statistically significant impact on working hours among prime-age individuals. Moreover, the test statistics at the bottom of Table 4 clearly reject that the pre-eligibility coefficients are equal to the post-eligibility coefficients.

While these results provide some compelling evidence, one may still worry that the effect of the elder's age has an independent, non-linear effect. Most notably, the very old are more likely to have health problems and to require some assistance at home. This may cause prime-age individuals living with them to reduce their labor force participation in order to provide home care.[21]

The second strategy we use in Table 4 tries to deal directly with this problem. The SALDRU survey asks respondents to list any household member that has been sick or injured over the past

[21] At first glance, this story seems inconsistent with the fact that men reduce their work more than women do. If women provide the main input in home care, they ought to reduce their work hours more. One could however claim that women are expected to both care for the elderly *and* work, while men will either work or take care of the elderly.

two weeks, "*including* people who have some form of permanent injury, disability, or ailment." The survey then asks respondents to report the nature of the main and second illness, disability, or ailment. We are particularly interested in the health status of the elderly. In the entire SALDRU data set, we found that about 17% of all people over 50 years old report some kind of health problem. A very high fraction of those (22%) suffer from high blood pressure. Asthma, diabetes and rheumatic heart disease are other important forms of ailment in that age group. In regressions not reported here, we investigated whether health problems display the same non-linearity as the pension rule. To do this, we regressed for the entire SALDRU data the probability of having some health problem on 10 dummy variables for age and sex groups of elderly.[22] While people between 50 and 55 appeared healthier than people over 55 (this is true for both men and women), we found no statistically significant difference in the probability of being sick for the people between 55 and 60 and the people over 60. Hence, if any age discontinuity exists in health status, it appears to occur *before* the age of pension eligibility.

We then included the number of elders in the household that report health problems into our employment regression in column (3) of Table 4. While the coefficient on health problems is negative (each sick elder is associated with an hour less of work) and marginally significant, it does not affect the pension coefficients. The same discontinuity pattern as in column (2) is observed, suggesting that health status of the elderly does not drive our results.

Columns (4) and (5) replicate the specifications in columns (2) and (3) respectively but further break down the number of people over 65 into two groups: number of people between 65 and 70 and number of people over 70. The results are unchanged. The coefficients on all the age categories below the eligibility threshold are not statistically significant from 0. The coefficients on all the

[22]The 10 dummies are: woman between 50 and 55, woman between 55 and 60, woman between 60 and 65, women over 70, and the equivalent for men.

age categories above the eligibility threshold are statistically negative. Moreover, the test statistics in the notes of Table 4 show that we can reject the hypothesis of equality of the coefficients below and above eligibility threshold.

Our third strategy exploits regional differences in how the pension program is implemented. In certain areas, authorities deviated from the eligibility rule that women are eligible at an earlier age than men, a rule they viewed as "unfair". They de facto extended the pension to men between 60 and 65 years old.[23] If our results are in fact due to the pension, we would expect that in the regions that deviated from the official rule, the number of men between 60 and 65 *should* affect labor supply. As one might expect from the informal nature of the extension, we cannot get administrative data on which areas extended, but we can compute a proxy in our data. We can compute, by province, the fraction of households with men between 60 and 65 years old and no other age eligible elderly that report receiving some pension income.[24] This fraction ranges from 0 in the most obedient province to .66 in the least obedient province.

In column (6), we use this proxy. We interact this fraction with a dummy for the number of men between 60 and 65 in the household. We further break down all the age groups of column (4) by sex categories. The results are striking. None of the pre-eligibility coefficients are statistically different from zero. All the post 65 years old coefficients are significantly negative. The direct effect of number of men between 60 and 65 years old (i.e., its effect in the provinces that do not deviate from the eligibility rule) is not statistically different from 0. The interaction term between deviation from the eligibility rule and number of men between 60 and 65 years old is negative and significant. Finally, 10 out of the 12 tests statistics reject the assumption of equality between pre-eligibility

[23] As Case and Deaton (1998) report, the age differential in pension eligibility is technically unconstitutional and under revision at the central government level. Certain local authorities may have already gone ahead with age equalization by 1993.

[24] Remember that we do not observe pension income at the individual level but only at the household level.

coefficient and post-eligibility coefficient. Column (7) shows that the exact same results hold once we control for the number of elderly with health problems in the household. These results suggest that the extension did in fact correlates with the pension's estimated effect, bolstering the case that we are not capturing spurious effects of age.

Our final attempt to account for confounding factors associated with age of the elderly takes a completely different approach. We examine the relationship between employment and pension eligibility *prior* to the bulk of the reform of the social pension program in South Africa. To do this, we turn to the 1991 Population Census, another cross-sectional household survey that was carried out prior to the major extension of the social pension to African households. As we mentioned earlier, while the process of racial equalization of the social pension has been under way since the early 90s in South Africa, it is only after 1992 that the means-tests were unified, the racial parity in benefits levels achieved, and new technologies introduced to improve the benefits delivery system. Thus, while the 1991 Census was not exactly administered prior to the reform, it was administered at a time when the pension was far less generous and accessible to Africans. If we are in fact finding a causal effect of the pension, the effect of living with eligible elderly ought to be much smaller in the 1991 data.

Unfortunately, constructing a sample comparable to the SALDRU extract from the Census is no easy task. The first major hurdle is that the Census data does not allow us to isolate three-generation households. Because the variable detailing relationship to head is rather crude, we cannot insure that son/daughter, parent and grandparent live in the same household. Instead, we can insure that son/daughter, parent and some other family members (other than the parent's partner) live in the same household. We therefore select all the households that include these three kinds of family relatives. Not surprisingly, these households are on average younger than

the households we selected in the SALDRU data where we can select on the presence of three generations. We therefore decide to operate an additional cut of the data and force the maximum age in the selected households to be over 50 years old. To ensure comparability, we redefine our SALDRU extract along exactly similar selection rules.[25]

Another major limitation of the Census data is that it does not ask questions on working hours. The only labor supply variable we observe is employment status. Given that our previous findings on employment status were only important for men, we restrict both extracts to prime-age males only.

Simple summary statistics testify to the fact that the two samples are very similar, such as with household size (9.07 in SALDRU versus 9.16 in Census), average age (26.4 versus 26.9) and educational attainment. The employment rate in the SALDRU data is however lower than in the Census data (.26 versus .33). This may reflect deteriorating economic conditions during this time in South Africa.

Table 5 compares the impact of the presence of an age-eligible elderly in the two samples, controlling for the usual vectors of individual and household characteristics as well as indicators for area type. We find no evidence that the large negative employment effects found in the 1993 data in pension eligible households (-6.8%) are present in the 1991 data. While there is some negative effect associated with the presence of an age eligible elderly in 1991 (which is not surprising given that some limited pension program was already in place then), the effect is less than a quarter in size as the 1993 effect.

In summary, the results in this section provide multiple pieces of evidence all of which suggest

[25] A smaller issue is that the 1991 Census does not survey people living in the then four independent homelands (Transkei, Bophuthatswana, Venda, and Ciskei) while the SALDRU survey does. We therefore exclude people living in these 4 regions when we form our comparable SALDRU sample.

that we are in fact identifying a causal effect of the pension and not an independent effect associated with living with elderly people.[26]

5.2 Is the Labor Supply Response Real?

We now tackle a different concern. Taking as given that we are in fact identifying *some* causal effect of the pension, we ask what effect we are identifying. Perhaps we are capturing other behavioral changes induced by the program, rather than a decrease in labor supply.

5.2.1 Change in Type of Work

One behavioral response might be a change in the nature of work. Access to pension income might allow prime-age individuals to change the type of work they do. Prime-age individuals might now be able to leave their unrewarding regular jobs and instead start working locally in a more casual setting, or start working on the family farm. For example, the pension income may literally provide seed capital for farm production at home.

Remember, however, that our definition of employment includes both regular and non-regular (casual, self) forms of employment. One might still worry that, say, casual employment is less precisely or frequently reported than regular employment. Thus, a substitution towards casual employment might appear to be a drop in total employment if some part of that substitution is not reported.

We present two tests to assess the importance of such a potential source of bias. We start by

[26] Another robustness check of our finding would consist in assessing whether the size of the labor supply response depends on the size of the household. Indeed, if the labor supply response truly represents a sharing of the pension money between the various household members, one would expect that response to be smaller as the pension has to be split among a larger number of household members. In regressions not reported here but available from the authors, we have found that the labor supply response to the marginal rand of pension money does indeed decrease as the total size of the household increases.

focusing on prime-age males for whom we have observed a drop in employment rate. In Panel A of Table 6, we decompose this drop into a change in regular employment, a change in casual employment and a change in self-employment. We find that both regular and casual employment rates are negatively affected by the presence of social pension income, while the self-employment rate is unchanged. This contrasts with the expected *rise* in casual or self employment one might have expected under the changing type of work hypothesis. The significant reduction in casual employment is especially hard to reconcile with this hypothesis.

In Panels B and C, we investigate more thoroughly the seed capital story. The SALDRU survey reports information at the household level both on agricultural activities and livestock. In Panel B of Table 6, we collapse our original data set at the household level and ask whether farming activity is more intense among the pension eligible households, controlling for household characteristics and for the vector of geographic dummies. We consider three different measures of farming activity: a dummy variable for the production of any kind of crop in the household, the number of liters of milk obtained from the herd over the previous week, and the number of eggs obtained from the poultry over the previous week. We also investigate whether the farming capital stock is higher among the eligible households. The specific capital variables we consider are the value of tractors and farming equipment as well as the value of mechanized farm equipment and pumps. We find no evidence that either farming outputs or farming inputs are higher in the eligible households. This result holds true when we restrict our sample to the subset of households living in rural areas (Panel C). These results are inconsistent with the idea that prime-age individuals are leaving regular factory jobs to start working on the family farm.

The results in Table 6 contradict the idea that the measured reduction in employment is nothing more than a shift towards more poorly measured forms of employment.

5.2.2 Migration

Another behavioral response could be migration. The pension may induce the more employable prime-age individuals to move out and the less employable ones to move in. The pension may reduce pressure on the prime-age to financially care for the elderly and increase the pressure on the elderly to financially care for the prime-age. The measured labor supply response might then reflect a change in household composition rather than a change in labor supply of any given individual in the household.[27] While such a reshuffling in household composition would be an interesting behavioral response in itself, it is important to separate it from an increase in individual leisure time.

To investigate this issue, we first examine the education of individuals living in pension-eligible households. If selective migration of the least employable were driving our results, we might expect the pension eligible households to show lower levels of education.[28] In Table 7, we regress education on the same list of regressors as before (expect of course for educational attainment). We present both the OLS and IV specifications. The three dependent education variables we consider are a dummy for at least completing 4th grade, at least completing 8th grade, and at least passing the Matric (which corresponds roughly to finishing high school). The results suggest that higher pension income is insignificantly (though negatively for the two higher educational attainment variables) related to education. The magnitude of the coefficients is quite small. On education at least, there appears to be no change in household composition.

We now more directly study differences in migration patterns between eligible and non-eligible

[27] The short time frame between the bulk of the pension extension and the survey may be a practical hindrance to the migration interpretation. It is only after 1992 that the most dramatic extension of the social pension to African households took place. This would mean only about a year for the changes in household composition to take place.

[28] Simple regressions of employment on education show that, as might have been expected, education strongly predicts employment with the better educated more likely to be employed.

households. There are two major types of migration decisions worth considering here. First, a working-age person may formally be member of a household but decide to spend more time or less time away from the household once the pension income becomes available.[29] While the SALDRU survey reports employment status for all household members, one might be concerned that those reports are less accurate or maybe missing for the people that spend a significant time away from the household. This is especially problematic if the presence of a pension income allows the more employable people to migrate out part of the year.[30]

In the first two columns Table 8, we see that the average number of months spent away from the household by working age individuals, while negatively affected by pension income in the OLS regression (column 1), does not appear to be statistically related to it in the IV regression. The point estimates are also quite small, certainly not of the magnitude required to generate the observed drop in labor supply.

The second type of migration decision consists of formally leaving or joining a given household. The SALDRU data set allows us to assess whether the household composition was affected by the presence of age-eligible elderly. First, we use as a dependent variable a dummy variable that equals 1 if the prime-age individual reports having "move(d) here during the past 5 years." The results are in columns (3) and (4) of Table 8. The coefficients are insignificant and also extremely small, again not of the magnitude required to generate our findings (that is, if all the in migrants were at zero employment, such small in migration would barely affect average employment in the household).

While this indicates that there is little in migration, we still need to examine the possibility of out migration. The nature of the data precludes us from directly tracking leavers, but it does

[29] All individuals that spent at least 15 days of the last month in the household and contribute to or share in a common pool of resources are considered members of the household.

[30] In fact, our data set indicates that as much as 85 % of the people in our sample spend all their time in the household, suggesting that this is not a major issue in this sample.

provide us with family size. Since we have found that in-migration is not changing, then for migration to explain our results, family size ought to be decreasing significantly with the pension. In columns (5) and (6), we regress the number of prime-age people on pension income. The results are again statistically insignificant and tiny in magnitude, as before not large enough to explain the significant labor supply response. Together with the in migration findings, these results suggest that selective migration does not drive our results. While migration is an interesting outcome, we find that the pension did not affect it, perhaps because of the recency of the program.

As a whole, the findings in this section strongly suggest that the pension did have a causal effect and that we are not merely measuring an independent effect of elder age. They also suggest that the pension led to a drop in labor supply and did not only change the type of work performed or the composition of the family.

6 Models of Collective Labor Supply

6.1 Common Preference (Income Pooling) Models

Our results so far provide some evidence of a redistribution of the pension towards prime-age workers in the household. In this section, we push the analysis a step further and ask whether the South African experiment can teach us more about how resources are allocated and collective labor supply decisions made within these extended families.

There are several prominent theories about resource allocation within households. Probably the simplest one assumes that households can be described as jointly maximizing a single utility function (Samuelson, 1956).[31] Consider the following setup. A family is composed of 2 individuals,

[31]The common preference approach can be motivated either through the assumption of a family consensus, such as in Samuelson (1956), or through the assumption of altruistic behavior, such as in Becker's "rotten kid" theorem (Becker, 1974 and 1981). In this paper, we will not try to distinguish between these two models

1 and 2. Individual 1 is the working age person in the household. Individual 2 is the elderly in the household. Both individual 1 and individual 2 receive some non-labor income, y_1 and y_2 respectively. Individual 1 can also allocate some of his time T to working for a wage of w_1. The time spent not working, l_1, will be devoted to leisure. Both individuals 1 and 2 also have private consumption levels, C_1 and C_2 respectively. Let's normalize the price of one unit of private consumption to 1. Under the common preference approach, C_1, C_2 and working hours $T - l_1$ are derived from the maximization of a single utility function for the whole family under the whole family budget constraint:

$$\begin{aligned} \max_{C_1, C_2, l_1} \quad & U(C_1, C_2, l_1) \\ s.t. \quad & w_1\, l_1 + C_1 + C_2 \leq w_1\, T + y_1 + y_2 \end{aligned}$$

One simple way to think about this maximization is that the family collectively decides how many hours to work, and then completely pools labor and non-labor income to jointly purchase individual consumption.

A central result from the common preference approach is that money is money. Whoever gets the marginal dollar of non-labor income will affect neither the choice of private consumption levels nor leisure. Mathematically, this means that $\frac{\partial l_1}{\partial y_1} = \frac{\partial l_1}{\partial y_2}$. It is important to note the generality of this result. It holds even in the presence of differential altruism between different individual family members.

A second feature of these models is that the consumption responses to non-labor income can be viewed as a pure income effect in the joint utility function $U(C_1, C_2, l)$. With simple assumptions about the utility function, one can translate this labor supply response into the individual income effect.

A third interesting feature of these models relates to who gets allocated more resources. Individuals who get more resources are those who receive the greatest weight in the joint utility function. As this function is a black box, greater weight could be interpreted in several ways. Altruism between the family members may be such that one specific individual is "cared for" more by others. Alternatively, greater weight may arise because this specific individual sets the agenda.

6.2 Bargaining Models

Another strand of the literature on intra-household redistribution of resources rejects the idea that families can be reduced to a single optimizing agent. Instead, it assumes that household members have distinct preferences and studies how bargaining between them allocates resources. Most often the bargaining consists of a Pareto efficient process, such as a Nash bargaining between the different parties. Several authors, such as Manser and Brown (1980), McElroy and Horney (1981), or Lundberg and Pollak (1993), have developed cooperative Nash bargaining models of intra-household resource allocation. Chiappori (1992) produces a far more general model that includes all Pareto-efficient bargaining models.

In our setup, we model such bargaining as a Nash bargain. So, decisions will be a solution to the following program:

$$\begin{aligned} \max_{C_1, C_2, l_1} \quad & [U_1(l_1, C_1) - \overline{U_1}]^{\alpha} [U_2(C_2) - \overline{U_2}]^{1-\alpha} \\ s.t. \quad & w_1 l_1 + C_1 + C_2 \leq w_1 (T - l_1) + y_1 + y_2 \end{aligned}$$

Here $\overline{U_1}$ and $\overline{U_2}$ respectively represent the threat points of individual 1 and individual 2. These threat points are key to the model. They capture the "threat" the individual has over other household members. The higher is someone's utility in the threat point, the higher is their utility

in the Nash bargaining solution. α captures the relative bargaining power of individual 1. When α is larger, individual 1 captures more of the surplus.

Many of the bargaining models assume that threat points are determined by the level of utility that household members can achieve in case of household dissolution (see e.g. McElroy, 1990). In the context of this literature, the threat point in our simple set up can equal the utility if individuals go their separate ways multiplied by a factor $\delta < 1$, which indicates the cost of separation. So $\overline{U}_2 = \delta U_2(y_2)$ and $\overline{U}_1 = \delta U_1(l^*, w_1(T - l^*) + y_1)$ where l^* is the optimal leisure choice for individual 1 when by himself.[32]

Several results follow in this model. First, the strong fungibility result from before no longer holds: it matters who gets the money. The income controlled by the various household members will influence the bargained outcome. Non-labor income to individual 1 may result in a different consumption pattern than non-labor income to individual 2. A simple way to view this model is that $1 - \delta$ of each person's resources are pooled. A fraction α of these resources go to individual 1 and a fraction $1 - \alpha$ go to individual 2. Since only a fraction of the resources are pooled, it is clear why different people's money is spent differently.

Second, it is still true that the labor supply response to non-labor income y_i is a pure income effect. As far as individual 1 is concerned, he gets δ of own income and α of the shared income. His labor supply adjusts exactly because of this rise in income.

Finally, the bargaining model here offers an equally vague answer as to who captures more resources. The higher the bargaining power, the greater the resources that are received.[33]

[32] Other models assume that threat points are internal to the "marriage" and are determined by the level of utility that household members can achieve if they stop cooperating with each other when making resource allocation decisions (see, e.g. Lundberg and Pollak, 1993).

[33] For simplicity, this simple set up abstracts from altruism. The addition of altruism would alter the interpretation of "bargaining power". If individual 2 cares about 1, then 1 will receive more resources, holding constant the bargaining power, α. This should be kept in mind in interpreting the results below.

6.3 Endogenous Bargaining Power

A complication to the standard bargaining models would be to allow the threat point to depend on the labor supply choice. In our setup, the simplest way to incorporate this effect would be to allow α, the bargaining power of individual 1, to depend on the leisure choice l_1. The game would then have two stages. In the first stage, individual 1 would choose l_1. In the second stage, the Nash solution would arise but with person 1's bargaining power being a function of l_1, say $\alpha(l_1)$.

The implication of that model would closely match the implication of the exogenous threat model but with one important wrinkle. The labor supply decision is now subsidized or taxed depending on how labor supply affects bargaining power. Suppose increasing hours worked increases bargaining power. This could happen simply because working people have greater voice in the household. Then individuals actually face a subsidy to working, since the more they work, the bigger part of the total pie they capture. This effect means that, relative to the exogenous bargaining power case, individuals will adjust their labor supply less in response to the pension. In fact, if the effect is sufficiently strong, individuals may work *harder* in response to the pension. In other words, the income effect may be totally offset as individuals attempt to work hard to capture more of pension income.

Alternatively, suppose that increasing hours worked decreases bargaining power. This might occur, for example, if those who are around the house a lot can effectively capture a lot of bargaining power. In this case, one gets a tax to work, not a subsidy to work. Working harder reduces one's share of the pie. When the pension increases the pie, one may work less hard, not only because of the income effect, but also because one wants to stay home to capture a greater fraction of the pie. In other words, the income effect is now complemented by an additional "pie-grabbing" effect.

6.4 Relation to Results So Far

Both common preference and bargaining models are sufficiently flexible that they can all be made consistent with our findings so far. Under the common preference model, the pension money is placed into the communal pool and split. Labor supply decreases because of this positive income shock. Men decrease their labor supply more because they are given greater weight in the household utility function. In the simplest bargaining models, *some* of the pension money is placed in the communal pool. Labor supply of the working-age household members decrease again because of an income effect. If bargaining power increases with labor supply, this income effect is partly to totally offset by a desire to capture more of the pie. In other words, in this case our estimated elasticities actually *understate* the true income effect. If on the other hand bargaining power decreases with labor supply, then the drop in labor supply we observe overestimates the pure income effect. Given the substantial labor supply responses we observe, this last case seems more likely, though this of course depends purely on prior beliefs about the magnitude of the income effect. In all these cases, men decrease their labor supply more because of their greater bargaining power.[34]

As this exercise demonstrates, both common preference and bargaining models can explain many results. Yet one key prediction allows them to be separated. Under the common preference model, as we have noted, the labor supply response should not depend on who exactly is receiving the pension income. Since the money is completely pooled, it doesn't matter whose hands it passes through before it enters the common pool. In the bargaining model, since money is not pooled perfectly, the magnitude of the labor supply response may well depend on who receives the pension.

Previous tests of complete pooling typically do so by asking whether an individual's consumption

[34] Or, as noted above, because other family members show greater altruism towards prime-age men than towards prime-age women.

correlates with her own income. Perfect pooling would suggest that it should not. The working assumption of such a test is the exogeneity of income. Yet our results so far clearly highlight the limitation of this assumption.[35] If labor supply responds to other people's income, whatever income people earn may itself result from redistribution. It is easy to see that one might then reject the pooling hypothesis even when true or accept pooling even when untrue.[36]

7 Distribution of Effect

7.1 Test of Income Pooling

The social pension program in South Africa provides a rather unique experiment to separate common preference and bargaining models of the family. As we mentioned earlier, the social pension, while in theory means-tested, is in practice mainly a lump-sum transfer for the relatively poor African households. Hence, the pension transfer, especially when instrumented for by the presence of age-eligible elderly, does not depend on earned income or other possible choice variables in the household resource allocation decision. One can therefore test for income pooling by asking whether pension transfers made to elderly women have the same effect on prime-age labor supply than pension transfers made to elderly men, holding family composition constant.

In fact, the findings in Table 4 already suggest that pension money going to elderly women may have a larger negative effect on prime-age labor supply than pension income going to elderly men. That table showed that the coefficients on number of women above eligibility threshold tended to be systematically larger (in absolute value) than the coefficients on number of men above eligibility

[35] Another key problem is that different individuals' incomes may have different time series properties.

[36] While unearned income might be less subject to this endogeneity concern, it is often unclear what constitutes the bulk of unearned income. But to the extent that it is correlated with earned income flows or household expenditures, it would also be endogenous to the resource allocation process.

threshold. Column (1) of Table 9 confirms this earlier finding. In that column, we regress working hours of both men and women on the standard set of geographic, individual, and family controls. We add as regressors the number of women above 60 years old and the number of men above 65 years old. The coefficient on number of eligible women is more than twice as large as the coefficient on number of eligible men. It is important to note that such difference is not due to any measurement error in the number of eligible men. Even if we account for the fact that some men between 60 and 65 also receive pension income in certain South African provinces (column (2)), the coefficient on number of men over 65 years old is still only half the size of the coefficient on number of women over 60 years of age.[37] Finally, note that this finding still holds once we control for the number of prime-age males, number of prime-age females, number of male kids and number of female kids (column (3)). In other words, the fact that female pension money reduces labor supply more than male pension money cannot be explained away by any systematic difference in the number and sex composition of the non-elderly in households with eligible women compared to households with eligible men.

This first finding in Table 9 appears inconsistent with pooling of resources within the household and builds some preliminary support against a common preference model of collective labor supply here. The marginal dollar of pension income received by an elderly woman reduces labor supply more than the marginal dollar of pension money received by an elderly man. However, this first finding is not conclusive. It does not account for the possibility that the marginal rand of pension income going to an elderly woman may have to be distributed among a different set of individuals then the marginal dollar of pension money going to an elderly man. Of primary concern to us is

[37] Note that in this Table the coefficient on the interaction term between number of men between 60 to 65 and deviation from eligible rule is insignificant, though negative. The rise in standard error is due to the fact that we are not separately including each of the age categories.

the possibility that old women might have a lower weighting than old men in a household utility function. In such case, and assuming that households with eligible women have more elderly women than households with eligible men (a very likely event), our finding could still be reconciled with the common preference model. We deal with this concern by restricting our sample to the set of households that have *exactly* one elderly woman (a woman over 50 years old) *and* one elderly man (a man over 50 years old).[38] In this subset of households, the marginal rand of pension income, whether it comes from a female pensioner or a male pensioner will be reallocated among a fixed number of elderly of each sex. In column (4) of Table 9, we replicate the specification of column (1) on that subset of households. We still find a much stronger negative labor supply response to female pension money than to male pension money. The marginal rand of pension income going to a female pensioner reduces labor supply by about three times as much as the marginal rand of pension income going to a male pensioner. The coefficient on number of age-eligible men is however less precisely estimated.[39]

While we have forced the number and sex composition of the elderly to be the same in this restricted sample, one could further worry that the number and sex composition of the non-elderly systematically varies with the sex of the pensioner. We have checked our data for any such systematic difference. In the subset of households with exactly one woman over 50 and one man over 50, we found no statistically significant differences in the number and sex of prime-age individuals between the household with female pensioners and the households with male pensioners. However, we found that the households with female pensioners had slightly more kids than the household

[38] There are few households that contain two or more elderly of both sex.

[39] Differences in life span provides an alternative interpretation of the between male and female pensioners. Since women live longer (and get the pension earlier), the present value of the income shock is larger when the pensioner is a woman. While plausible, this does not seem to be the case as seen in Table 4. Even a 70+ year old female pensioner results in twice the effect of a 65+ year old male pensioner.

with male pensioners. This last difference suggests that the marginal rand of pension money needs to be split among slightly more individuals when the pensioner is a woman. Hence, under the common preference model, this could only lead the coefficient on eligible women to be *smaller* in absolute value than the coefficient on eligible men if children receive any weighting in the family utility function. This is exactly the opposite of what we find. In summary, our results in Table 9 strongly point towards rejecting the income pooling hypothesis for African extended families. We find that a marginal rand of pension income has drastically different effect on prime-age labor supply depending on whether that income is received by a man or a woman. This still holds true when we ensure that these households only differ through the sex of their pensioners and not through the number, age and sex composition of their members.

7.2 Who Benefits From the Old Age Pension?

Testing for income pooling is only way to look at how money is distributed inside of the household. One might more broadly want to ask who are the biggest beneficiaries of the reallocation of resources. Is pension money evenly distributed among all the prime-age individuals in the extended family or are certain family members able to reduce their labor more than others? Table 10 answers these questions. This table estimates our standard regression of hours worked on the pension variable, but now interacts the pension variable with several demographic characteristics. For the sake of space, we mostly report IV specification results in this table.

As the results in Table 3 already suggested, the pension reduces male labor supply more than it reduces female labor supply. Column (1) of Table 10 reiterates that fact. We find that the effect of the social pension on female labor supply is about half of the effect on male labor supply. Hence, prime-age women seem to benefit less from the social pension than prime-age men. Does

this effect depend on the sex of the pensioners? In column (2), we interact the female dummy with the number of eligible women and the number of eligible men in the household. Interestingly, we find that the presence of an additional male pensioner in a household does not have a statistically different effect on male and female labor supply. On the other hand, an additional female pensioner in a household benefit working-age females relatively less than working-age males. In other words, the greater effect of the pension on prime-age males occurs only when the pensioner is a female.

Another potential determinant of who benefits the most from the pension transfer is educational attainment. On the one hand, one might believe that individuals with higher educational attainment have higher outside options, which could increase their threat points when bargaining over resources with other family members. On the other hand, at a given level of redistribution, individuals with the lowest market wages may give up their job first. If educational attainment is positively correlated with market wage, we would in this case expect to see the least educated workers reduce their labor supply the most. The differential effect of the pension by education group thus appear to be a mostly empirical question, which we investigate in columns (3) and (4). In column (3), we isolate individuals with very low educational attainment. There are about 25% of prime-age individuals in our sample that have not completed fourth grade.[40] We find that individuals that have not completed fourth grade reduce their labor supply by about 50% more than the individuals that have at least completed fourth grade. In column (4), however, we find no difference in labor supply response between the people that have at least completed the Matric and the people that have not. All in all, it appears that it is among that the very least skilled that the labor supply response was the strongest, probably because these individuals face very unattractive labor market options to start with.

[40] That fraction is roughly identical for men and women.

Columns (5) and (6) ask how the age of the working-age individuals in the extended family affects the size of their labor supply response. One clearly sees in column (5) that the social pension depresses labor supply more as working-age men get older. In column (6), we allow for a quadratic relation between pension money and age in order to assess whether the effect of age peaks at any point over the range of working ages. The effect of age appears mostly linear and does not peak before 50 years old.[41]

One could further wonder whether it is absolute or relative age that matters in intra-household redistribution. More precisely, we want to focus on the special position that eldest sons are at least anecdotally believed to hold inside of their family. Does the oldest prime-age man in the household single-handedly receive more pension money than other household members? Clearly, we already know from previous results that older men are allocated more resources. Here, however, we want to assess whether there is anything special about being the oldest man, beyond the effect of absolute age and sex. In column (7), we control for the differential effect of the pension by age and by sex, and then ask whether the oldest man in the household reduces his labor supply more than other household members.[42] The result in column (7) supports the view that oldest sons are redistributed more resources in extended families. After accounting for the direct effect of *own age* and sex on resource distribution, we find that eldest men reduce their labor supply by about 50% more than other men in the household and about 70% more than women in the household.

How can we understand the results above in light of the bargaining models of household resource allocations? Two interpretations are possible. First, one could by and large attribute the differences in redistribution we observe to differences in the bargaining power parameter α. Men respond more

[41] These results also cut against the view that reduced labor supply was used to get education.

[42] The sample size is slightly smaller here than in the basic regression because we have excluded from the sample all the households that have only one prime-age individual. Only about 2% of the households in our basic sample have only one prime-age individual.

because they have more power inside of their household. That the male-female differential is largest when the pensioner is a women is quite suggestive of a situation in which dominant males captures resources. When the pensioner is male, prime age males' ability to capture resources is diminished and so is the male-female differential in labor supply response. The age results are in line with this picture. The oldest male seems most capable of capturing household resources.

Second, one could rely on differential altruism to explain the patterns observed in Table 10. Perhaps pensioners care more about males. To fit our results, one would have to argue that it is the female pensioners who care the most about males. Moreover, pensioners' altruism should be strongest towards their oldest working-age kids. Even if this pattern of altruism does not seem particularly intuitive, it nevertheless provides another lens for interpreting our findings.

8 Conclusion

With improving health conditions and lengthened life expectancy in many developing countries, many governments will soon have to introduce full-fledged social programs to provide for the needs of a growing elderly population. Before simply replicating the type of programs that have been put in place in more advanced nations, policymakers in those countries will have to consider how different living arrangements could interfere with their social objectives. While the elderly may often live on their own in developed countries, multi-generation households prevail in developing ones. The South African pension program provides a way to understand the effects of such targeted programs when extended family links are strong.

The South African government's state pension program was introduced as a way to improve living conditions for older individuals that are no longer active in the labor force and that do not

have access to a private pension. The vast majority of the older-age Africans in South Africa are participating in this pension program. This paper provides some evidence that, in practice, at least part of the cash transfers that are targeted to the pensioners by the South African government end up in the hands of a group that was not the originally targeted one: working-age individuals that cohabit with the pensioners. We find that African individuals between 16 and 50 years old reduce their labor supply when they live with pension beneficiaries. Hence, because of intra-family redistribution, a program targeted at a group that is out of the labor force unexpectedly altered the labor supply of a non-targeted group.

Moreover, we were able to relate this labor supply response to standard theories of intra-household resource allocation and collective labor supply choice. The different impact of male and female pension money on labor supply leads us to believe that a common preference model of family labor supply cannot adequately describe our results and that some amount of bargaining takes place within these families. In general, older prime-age men, and in particular the oldest prime-age man in a family, appear to be the biggest beneficiaries from the pension. Within the set of bargaining models of intra-household allocation of resources, one could interpret this finding as evidence that these men have relatively more bargaining power or are being cared for more by other family members. In the end though, one is struck by the flexibility of these interpretations and by the many questions that are left unanswered by the existing models of family bargaining. What determines bargaining power or altruism? Is it a generic fact that older males have more power or are cared about more? If so, why? If not, when do they? These questions are outside the scope of most of these models. But answering them seems crucial for understanding the process of resource allocation within families.

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TABLE 1

Descriptive Statistics: African Individuals, 16 to 50 Years Old Three-Generation Households

Means and Standard Deviations[a]

Sample:	All HHs		Age-Eligible HHs		Non Age-Eligible HHs	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
Variable:						
Age	27.5	9.3	27.5	8.7	27.5	9.9
Employed	.229	.420	.212	.409	.246	.431
Hours Worked	6.32	16.37	3.21	12.51	9.45	19.00
Unemployed	.079	.270	.087	.282	.071	.256
Discouraged	.211	.408	.232	.422	.191	.393
4th Grade or More	.754	.431	.748	.434	.760	.427
8th Grade or More	.348	.477	.338	.473	.360	.480
Matric or More	.130	.336	.128	.335	.132	.338
Household Size	8.81	3.62	9.13	3.88	8.50	3.30
Rural	.683	.465	.707	.455	.660	.474
Urban	.166	.372	.152	.359	.180	.384
Metro	.151	.358	.141	.348	.161	.367
Sick	.065	.246	.073	.261	.056	.230
Total Income	1325	1833	1318	1246	1333	2272
Pension Income	207	275	371	277	42	142
Number of Elig. Females	.454	.526	.906	.377	0	0
Number of Elig. Males	.169	.383	.338	.485	0	0
Sample Size	6326		3169		3157	

[a]Notes: Sample is composed of set of African individuals between 16 and 50 years old that live in a three-generation household. All variables are from the World Bank/SALDRU survey, August-December 1993.

TABLE 2

Effect of Old Age Pension Income on Working Hours and Employment Status of 16 to 50 Year Old Africans[a]

Dependent Variable:	*Hours Worked*			*Employment Dummy*		
Specification:	OLS	OLS	IV	OLS	OLS	IV
	(1)	(2)	(3)	(4)	(5)	(6)
Pension Income*1000	-12.32	—	-17.07	-.053	—	-.099
	(1.18)		(1.78)	(.022)		(.035)
HH Eligibility Dummy	—	-6.401	—	—	-.043	—
		(.580)			(.011)	
Female	-2.552	-2.666	-2.629	-.068	-.069	-.069
	(.447)	(.452)	(.452)	(.012)	(.012)	(.012)
Age	-6.526	-6.732	-6.585	-.394	-.395	-.394
	(3.640)	(3.709)	(3.611)	(.090)	(.090)	(.090)
Age^2	.407	.412	.404	.022	.022	.021
	(.187)	(.190)	(.185)	(.005)	(.005)	(.005)
Age^3	-.010	-.010	-.010	-.0004	-.0004	-.0005
	(.004)	(.004)	(.004)	(.0001)	(.0001)	(.0001)
Age^4*1000	.082	.081	.080	.0036	.0036	.0036
	(.032)	(.032)	(.032)	(.0008)	(.0008)	(.0008)
8th Grade or More	1.485	1.262	1.520	.064	.062	.064
	(.466)	(.468)	(.469)	(.012)	(.012)	(.012)
R^2	.126	.123	—	.192	.193	—

[a]Notes:

1. Standard errors are in parentheses. Standard errors are corrected to allow for group effects within SALDRU household clusters.
2. Sample size in all regressions is 6326.
3. Other covariates included in regression are 14 province indicators, 3 metro indicators (urban, rural and metro), household size, number of household members aged 0-5, 6-15, 16-18, 19-21, and 22-24.
4. In the IV specification, pension income is instrumented with the number of age-eligible women in the household and the number of age-eligible men in the household.

TABLE 3

Effect of Old Age Pension Income on Working Hours and Employment Status 16 to 50 Year Old Africans[a]

Panel A: Males

Dependent Variable:	*Hours Worked*			*Employment Dummy*		
Specification:	OLS	OLS	IV	OLS	OLS	IV
	(1)	(2)	(3)	(4)	(5)	(6)
Pension Income*1000	-15.13	—	-22.48	-.098	—	-.201
	(1.72)		(2.72)	(.034)		(.056)
HH Eligibility Dummy	—	-8.703	—	—	-.086	—
		(.849)			(.018)	
R^2	.163	.166	—	.234	.234	—

Panel B: Females

Dependent Variable:	*Hours Worked*			*Employment Dummy*		
Specification:	OLS	OLS	IV	OLS	OLS	IV
	(1)	(2)	(3)	(4)	(5)	(6)
Pension Income*1000	-10.29	—	-13.27	-.018	—	-.023
	(1.11)		(1.73)	(.029)		(.043)
HH Eligibility Dummy	—	-4.810	—	—	-.013	—
		(.646)			(.014)	
R^2	.107	.100	—	.178	.178	—

[a]Notes:

1. Standard errors are in parentheses. Standard errors are corrected to allow for group effects within SALDRU household clusters.
2. Sample size is 2532 in Panel A and 3794 in Panel B.
3. Other covariates included in regression are a quartic in age, a dummy variable for having completed at least 8th grade, 14 province indicators, 3 metro indicators (urban, rural and metro), household size, number of household members aged 0-5, 6-15, 16-18, 19-21, and 22-24.
4. In the IV specification, pension income is instrumented with the number of age-eligible women in the household and the number of age-eligible men in the household.

TABLE 4

Effect of the Presence of Elderly on Hours Worked by 16 to 50 Year Old African Individuals [a]

Dependent Variable: Hours Worked

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Eligible Elderly	-6.79	—	—	—	—	—	—
in HH	(.64)						
Non-Eligible Elderly	-.46	—	—	—	—	—	—
in HH	(.63)						
Number of 50 to 55	—	-.42	-.22	-.40	-.21	—	—
Persons in HH (n5055)		(.50)	(.50)	(.50)	(.50)		
Number of 50 to 55	—	—	—	—	—	-.65	-.49
Females in HH (n5055f)						(.67)	(.67)
Number of 50 to 55	—	—	—	—	—	-.23	-.03
Males in HH (n5055m)						(.96)	(.95)
Number of 55 to 60	—	-.23	-.09	-.22	-.08	—	—
Persons in HH (n5560)		(.70)	(.71)	(.70)	(.71)		
Number of 55 to 60	—	—	—	—	—	-.19	-.04
Females in HH (n5560f)						(1.04)	(1.04)
Number of 55 to 60	—	—	—	—	—	-.62	-.50
Males in HH (n5560m)						(.86)	(.87)
Number of 60 to 65	—	-2.54	-2.41	-2.53	-2.41	—	—
Persons in HH (n6065)		(.58)	(.58)	(.57)	(.57)		
Number of 60 to 65	—	—	—	—	—	-2.95	-2.81
Females in HH (n6065f)						(.94)	(.93)
Number of 60 to 65	—	—	—	—	—	-1.16	-1.03
Males in HH (n6065m)						(1.41)	(1.41)
n6065m*Deviation from						-7.47	-7.43
Elig. Rule in Region						(3.86)	(3.88)
Number of Persons	—	-5.37	-5.21	—	—	—	—
in HH Older than 65 (n65p)		(.51)	(.53)				
Number of 65 to 70	—	—	—	-5.17	-5.03	—	—
Persons in HH (n6570)				(.70)	(.72)		
Number of 65 to 70	—	—	—	—	—	-6.67	-6.52
Females in HH (n6570f)						(.86)	(.88)
Number of 65 to 70	—	—	—	—	—	-3.85	-3.74
Males in HH (n6570m)						(1.19)	(1.20)
Number of Persons	—	—	—	-5.49	-5.31	—	—
in HH Older than 70 (n70p)				(.56)	(.57)		
Number of Females	—	—	—	—	—	-7.47	-7.28
in HH Older than 70 (n70pf)	—	—				(.72)	(.71)
Number of Males	—	—	—	—	—	-2.87	-2.76
in HH Older than 70 (n70pm)						(1.13)	(1.14)
Number of HH members Over 50	—	—	-1.05	—	-1.04	—	-.94
With Health Problems			(.69)		(.69)		(.68)
R^2	.119	.124	.125	.124	.125	.129	.130

[a] Notes: see next page.

Notes:

1. Standard errors are in parentheses. Standard errors are corrected to allow for group effects within SALDRU household clusters.
2. Sample size in all regressions is 6326.
3. Other covariates included in regression are a quartic in age, a dummy for sex, a dummy for completion of at least 8th grade, 14 province indicators, 3 metro indicators (urban, rural and metro), household size, number of household members aged 0-5, 6-15, 16-18, 19-21, and 22-24.
4. "Deviation from Eligibility Rule in Region" is the fraction of households with men between 60 and 65 *and* no eligible elderly that are receiving a social pension in the region. This variable ranges from 0 (in the regions that do not deviate) to .67.
5. **Tests of Equality of Coefficients Below and Above Eligibility Threshold.**
   Column 2: n5055=n6065 (p=.004), n5055=n65p (p=.000), n5560=n6065 (p=.009), n5560=n65p (p=.000).
   Column 3: n5055=n6065 (p=.003), n5055=n65p (p=.000), n5560=n6065 (p=.009); n5560=n65p (p=.000).
   Column 4: n5055=n6065 (p=.004), n5055=n6570 (p=.000), n5055=n70p (p=.000), n5560=n6065 (p=.009), n5560=n6570 (p=.000), n5560=n70p (p=.000).
   Column 5: n5055=n6065 (p=.003), n5055=n6570 (p=.000), n5055=n70p (p=.000), n5560=n6065 (p=.009), n5560=n6570 (p=.000), n5560=n70p (p=.000).
   Column 6: n5055f=n6065f (p=.020), n5055f=n6570f (p=.000), n5055f=n70pf (p=.000), n5055m=n6570m (p=.011), n5055m=n70pm (p=.045), n5560f=n6065f (p=.030), n5560f=n6570f (p=.000), n5560f=n70pf (p=.000), n5560m=n6570m (.023), n5560m=n70pm (p=.100), n6065m=n6570m (p=.131), n6065m=n70pm (p=.379).
   Column 7: n5055f=n6065f (p=.018), n5055f=n6570f (p=.000), n5055f=n70pf (p=.000), n5055m=n6570m (p=.009), n5055m=n70pm (p=.037), n5560f=n6065f (p=.029), n5560f=n6570f (p=.000), n5560f=n70pf (p=.000), n5560m=n6570m (p=.022), n5560m=n70pm (p=.098), n6065m=n6570m (p=.129), n6065m=n70pm (p=.378);

TABLE 5

Effect of Presence of Age-Eligible Elderly on Employment of 16 to 50 Year Old African Males[a]

Dependent Variable: Employment Status

Data Set is:	**Population Census 91**	**SALDRU Survey 93**
HH Eligibility Dummy	-.016	-.068
	(.002)	(.026)
Age	-.317	-.728
	(.012)	(.180)
Age^2	.020	.040
	(.0006)	(.009)
Age^3	-.0004	-.0009
	(.00001)	(.0002)
$Age^4 * 1000$	.0034	.0073
	(.0001)	(.0016)
8th Grade or More	.034	.039
	(.002)	(.024)
R^2	.260	.171
Sample Size	358394	1697

[a]Notes:

1. Standard errors are in parentheses.
2. Samples are composed of set of African males between 16 and 50 years old that live in a household where: 1) a son or daughter is present, 2) another family member other than household head's partner is present, and 3) the maximum age in the household is over 50 years old.
3. Other covariates included in regression are a quartic in age, geographic controls, household size, number of household members aged 0-5, 6-15, 16-18, 19-21, and 22-24.

TABLE 6

Old Age Pension and Alternative Sources of Work[a]

*Coefficient on Pension Income**1000

Panel A: Males in 3-Generation HHs

Specification:	OLS	IV
Dependent Variable:		
Regular Employment	-.022	-.099
	(.036)	(.055)
Casual Employment	-.050	-.085
	(.018)	(.024)
Self Employment	-.004	-.009
	(.013)	(.030)

Panel B: All 3-Generation HHs

Specification:	OLS	IV
Dependent Variable:		
Crop Production in HH (Yes=1; No=0)	-.015	.059
	(.035)	(.067)
Litres of Milk Obtained from Herd	-.190	-.414
	(.291)	(.578)
Number of Eggs Obtained from Poultry	-1.095	-.483
	(.952)	(2.410)
Value of Mechanised Farm Equipment and Pumps	-22.91	-11.02
(in Rands)	(11.89)	(31.75)
Value of Tractors and Farming Vehicles	-69.91	.035
(in Rands)	(106.91)	(237.48)

Panel C: Rural 3-Generation HHs

Specification:	OLS	IV
Dependent Variable:		
Crop Production in HH (Yes=1; No=0)	-.023	.062
	(.045)	(.090)
Litres of Milk Obtained from Herd	-.250	-.612
	(.368)	(.774)
Number of Eggs Obtained from Poultry	-1.409	-.486
	(1.180)	(3.236)
Value of Mechanised Farm Equipment and Pumps	-30.88	-20.11
(in Rands)	(16.12)	(42.14)
Value of Tractors and Farming Vehicles	-100.53	-37.86
(in Rands)	(138.18)	(322.76)

[a] Notes: see next page.

Notes:

1. Each coefficient in the table belongs to a separate regression.
2. Sample in Panel A is the set of all African males between 16 and 50 years old living in a 3-generation households (sample size is 2532). Sample in Panel B is the set of all three-generation households with at least one individual between 16 and 50 years of age (sample size is 1849). Sample in Panel C is the set of all rural three-generation households with at least one individual between 16 and 50 years of age (sample size is 1305).
3. Standard errors are in parentheses. Standard errors are corrected to allow for group effects within SALDRU household clusters.
4. Other covariates included in all regressions are 14 province indicators, 3 metro indicators (urban, rural and metro), household size, number of household members aged 0-5, 6-15, 16-18, 19-21, and 22-24. Also included in Panel A are a quartic in age and a dummy variable for having at least completed the 8th grade.
5. In the IV specification, pension income is instrumented with the number of age-eligible women in the household and the number of age-eligible men in the household.

TABLE 7

Effect of Old Age Pension Income on Education Level of 16 to 50 Year Old Africans [a]

Dependent Variable:	*4th Grade +*		*8th Grade +*		*Matricp +*	
Specification:	OLS	IV	OLS	IV	OLS	IV
	(1)	(2)	(3)	(4)	(5)	(6)
Pension Income*1000	.022	.005	.023	-.042	-.016	-.021
	(.025)	(.041)	(.031)	(.044)	(.019)	(.030)
R^2	.129	—	.154	—	.092	—

[a] Notes:

1. Standard errors are in parentheses. Standard errors are corrected to allow for group effects within SALDRU household clusters.
2. Sample size in all regressions is 6326.
3. Other covariates included in regression are a quartic in age, a dummy for sex, 14 province indicators, 3 metro indicators (urban, rural and metro), household size, number of household members aged 0-5, 6-15, 16-18, 19-21, and 22-24.
4. In the IV specification, pension income is instrumented with the number of age-eligible women in the household and the number of age-eligible men in the household.

TABLE 8

Old Age Pension and Selective Migration[a]

Dependent Variable:	*Months Away from HH*		*Migrated in HH*		*Number of 16 to 50 in HH*	
Specification:	OLS	IV	OLS	IV	OLS	IV
	(1)	(2)	(3)	(4)	(5)	(6)
Pension Income∗1000	-.757	-.316	-.012	.029	-.200	-.272
	(.196)	(.340)	(.012)	(.027)	(.157)	(.256)
R^2	.111	—	.073	—	.068	—

[a]Notes:

1. "Months Away from HH" is the number of months the HH member spent away in the last 12 months; "Migrated in HH" is a dummy variable that equals 1 if the person "move(d) here during the past five years."
2. Standard errors are in parentheses. Standard errors are corrected to allow for group effects within SALDRU household clusters.
3. Sample in columns (1) to (4) is composed of the set of African between 16 and 50 years old that live in a three-generation household (Sample size is 6326). Sample in columns (5) and (6) is the set of 3-generation HHs that have at least one member betwen 16 and 50 years old (Sample size is 1951).
4. Other covariates included in all regressions are 14 province indicators and 3 metro indicators (urban, rural and metro). Also included in columns (1) to (4) are a quartic in age, a dummy for sex, a dummy for having completed at least 8th grade, household size, number of household members aged 0-5, 6-15, 16-18, 19-21, and 22-24.
5. In the IV specification, pension income is instrumented with the number of age-eligible women in the household and the number of age-eligible men in the household.

TABLE 9

Old Age Pension and Pooling of Resources[a]

Dependent Variable: Hours Worked

Sample:	All Prime-Age in 3 Gen HHs			Prime-Age Living With Exactly One Old Woman And One Old Man
	(1)	(2)	(3)	(4)
Number of Women Over 60	-5.02	-5.13	-5.13	-3.89
	(.58)	(.58)	(.57)	(1.44)
Number of Men Over 65	-2.32	-2.55	-2.54	-.71
	(.87)	(.87)	(.88)	(1.47)
Number of Men 60 to 65	—	-1.13	-1.12	—
		(1.46)	(1.43)	
Number of Men 60 to 65* Deviation from Elig. Rule	—	-5.31	-5.10	—
		(4.06)	(4.05)	
Number of Women Between 16 and 50	—	—	.089	—
			(.19)	
Number of Men Between 16 and 50	—	—	-.14	—
			(.22)	
Number of Women Between 0 and 16	—	—	-.41	—
			(.17)	
Number of Men Between 0 and 16	—	—	.01	—
			(.18)	
R^2	.118	.120	.122	.120

[a]Notes:

1. Standard errors are in parentheses. Standard errors are corrected to allow for group effects within SALDRU household clusters.
2. The sample in columns (1) to (3) is the original sample of prime-age Africans living in a three-generation households. The sample in column (4) is the subset of those individuals that live with *exactly* one woman over 50 years of age and one man over 50 years of age. Sample Size is 6326 in columns (1) to (3); sample size is 1471 in column (4).
3. Other covariates included in all regressions are 14 province indicators and 3 metro indicators (urban, rural and metro). Also included in columns are a quartic in age, a dummy for sex, a dummy for having completed at least 8th grade, household size, number of household members aged 0-5, 6-15, 16-18, 19-21, and 22-24.
4. "Deviation from Eligibility Rule in Region" is the fraction of households with men between 50 and 65 *and* no eligible elderly that are receiving a social pension in the region. This variable ranges (in the regions that do not deviate) to .67.

TABLE 10
Effect of Old Age Pension Income on Working Hours of 16 to 50 Year Old Africans: Distribution of Effect[a]

Dependent Variable: Hours Worked

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pension Income*1000	-21.04	—	-14.09	-15.55	25.48	39.35	20.79
	(2.51)		(1.85)	(1.63)	(3.45)	(12.37)	(3.66)
Pension Income*1000*	9.05	—	—	—	—	—	7.10
Female	(2.21)						(2.47)
Number of Women Over 60	—	-6.98	—	—	—	—	—
		(.81)					
Number of Men Over 65	—	-2.73	—	—	—	—	—
		(1.03)					
Number of Women Over 60*	—	3.23	—	—	—	—	—
Female		(.75)					
Number of Men Over 65*	—	.71	—	—	—	—	—
Female		(.89)					
Pension Income*1000*	—	—	-7.42	—	—	—	—
4th Grade or Less			(3.02)				
Pension Income*1000*	—	—	—	-.07	—	—	—
Matric or More				(3.93)			
Pension Income*1000*	—	—	—	—	-1.53	-2.54	-1.49
Age					(.14)	(.91)	(.14)
Pension Income*1000*	—	—	—	—	—	.02	—
Age^2						(.02)	
Pension Income*1000*	—	—	—	—	—	—	-9.08
Oldest Prime-Age Man in HH							(5.00)

[a]Notes:

1. Standard errors are in parentheses. Standard errors are corrected to allow for group effects within SALDRU household clusters.
2. Sample size in columns 1 to 6 is 6326. Sample size in column 7 is 6189.
3. Other covariates included in regression are a quartic in age, a dummy for sex, a dummy for having completed at least 8th grade, 14 province indicators, 3 metro indicators (urban, rural and metro), household size, number of household members aged 0-5, 6-15, 16-18, 19-21, and 22-24. Columns 3, 4 and 7 also respectively include a dummy for "4th grade or less", a dummy for "matric or more" and a dummy for "oldest prime-age man in the HH."
4. All columns except column 2 represent IV results. In the IV specifications, pension income as well as the interactions of pension income with the other variables of interest are instrumented.