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VOLUNTARY SAVINGS, FINANCIAL BEHAVIOR AND PENSION FINANCE LITERACY: EVIDENCE FROM CHILE

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Voluntary Savings, Financial Behavior and Pension Finance Literacy: Evidence from Chile

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Abstract

Chileans have limited knowledge of the pension system, its rules and the consequences involved in their personal decisions within it. Using a variation in the household composition- having a pensioner in the household- as an instrument, we show that Chileans with more knowledge about the pension system are more likely to have additional financial savings, but not within the voluntary pension saving plans offered by the pension system. We find that getting one additional answer right in the pension literacy survey (out of six) generates approximately a 50% additional chance that the individual will save at least in one of the surveyed periods, and a 25% percent additional chance that the individual will save in both surveyed periods. We also test for evidence that pension literacy affects worker choices regarding their pension savings (what we call financial gymnastics). We find that more literate workers are more likely to engage in pension fund type switching and that independent workers are more likely to voluntarily enter the pension system as affiliates if they have more pension finance literacy. Getting one additional answer right in the pension literacy survey (out of six) increases in 20% the probability of pension fund type switching and in 30% the probability of voluntary affiliation to the pension system of self- employed workers.

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1. Introduction

Individual control over financial wellbeing in retirement is a central principle in Chile's system of personal pension accounts. Choices are balanced with government safeguards, which protect individuals from short-sightedness and adverse shocks. Nonetheless, the tight link between contributions while working and pension benefits in retirement, as well as the options for voluntary savings and account management are supposed to encourage members to tailor their retirement savings to their particular circumstances, future plans, planning horizons and risk bearing profiles.

Standard Modigliani style life cycle theories of savings based on rational individuals with concave utility and access to capital markets predict that individuals treated to a compulsory saving policy will adapt their non compulsory savings or debt to accommodate mandatory savings. We should also expect them to accommodate their investment policy for non-compulsory savings so as to make them fit with the financial properties of the investment policies of the pension funds. This global optimization of saving, debt levels and investment policies, should be sensitive to the different options within the system and particularly to the relative tax incentives that different savings systems are subject to.

A defined-contribution multi-fund personal account system vis-a-vis a defined benefit system should increase voluntary pension savings (assuming they are financially attractive) because it creates a direct link between the pension saving effort and the pension obtained. Hence, individuals interested in saving should be at least more likely to make additional contributions within the system. Also, in Chile since 2002 agents can choose among different investment policies according to their risk return preferences[1], and therefore could globally optimize their savings strategy with options that are within the system

Since individual accounts make individuals assume the financial consequences of the fund's performance, the more that the pension system moves in this direction, one would expect an increase in the sensitivity of agents (the frequency and likeliness of changes in their pension investment decisions) to changing financial circumstances, in particular to the performance of the financial intermediaries in charge of administrating the pension funds.

[1] The year 2002 the pension system was reformed creating the "multifund" system that allows contributors to choose among five investment policies that are ranked according to risk and return. There are also regulatory limits on the ages at which investing in the riskier types of funds is allowed and automatic "triggers" that shift passive contribuors to less riskier funds at certain ages. We discuss this system in more detail below.

A good summary on the, by now, well known shortcomings of life cycle theory can be found in Thaler (1994). He argues first, that the theory assumes that households are optimizing and does not consider the possibility that households can have bounded rationality when considering their retirement plans. The probability of finding these sorts of optimizing households depends on the difficulty of the problem, the possibility of learning the answer, and critically on how likely it is that the following of a couple of simple rules approximates a correct answer with less costs. Solving the optimal consumption path is difficult, and individuals have to solve it only once, so they do not have an opportunity of learning. As Thaler (1994) says "The only plausible ways in which people might approximate an optimal saving plan is either by learning from others (e.g., role models or experts) or by using good rules of thumb".

In contrast, the expected behaviors within the Chilean Pension System rely on the assumption of unbounded rationality among the agents involved. Almost three decades after its inception there is limited knowledge about the personal account system and even personal stakes in the system. For example only around 25% know the contribution rate (that is deducted from wages every month by law) and barely 12% knows how a pension is calculated. At the same time, there is doubt on the quality of their financial behavior, for example Bernstein and Ruiz (2005) show that the demand for pension fund manager (AFP) is inelastic to cost and returns: on average only 51.5% of pension fund administrator switches are towards AFP with higher return on the period 1993-2002. This is troublesome in a system, which is established on the assumption that consumers should be voting with their feet.

In the local public policy discussion the low level of knowledge is usually associated with the limited success of voluntary pension savings schemes and, together with the evidence of very low expected replacement rates, continuously fuels the agenda of providing more education and information to the public with the objective of increasing their voluntary savings (very simple calculations show anybody paying attention that the current compulsory saving rules lead to very low replacement rates). When the system was designed, it was expected to achieve a 75% average replacement rate, however it is estimated that only one third of affiliates will reach that rate (Bernstein et al (2006)). One of the public consequences of this widespread belief in the need for more information provision occurred in 2005. As a result of the first application of the Social Protection Survey in 2002 (released in 2004) that showed very low levels of pension literacy, the Pension Fund Administrator Superintendence decided to implement a public system of report letters that included the status of personal funds, pension projections and even a counterfactual exercise on the pension effect of delaying retirement dates.

However, despite the importance of pension literacy in the public policy agenda, there is little well identified evidence on the effect of information on financial decisions within pension systems. Mastrobuoni (2006) uses the introduction in 1995 of the Social Security Statement in the US as a natural experiment to show large information effects and some heterogeneous effects on financial decisions. For Chile, Miranda (2010) and Fajnzylber et al (2009) study the impact of these official pension fund reports, the first on the retirement decision, and the second on voluntary pension savings. Fajnzylber et al (2009) find that the report letter increased voluntary pension savings on individuals of 40-50 years of age. Miranda (2010) finds that it increased the retirement age. Although both studies address the same question of this paper (what is the impact of pension knowledge on pension behavior), the identification strategy is very different.[2] We identify the impact of information through the effect that having a pensioner in the household has on knowledge. We do not test the effect of the pension reports. Hence, the measure of pension literacy that we use is different and, in particular, has more dimensions.

There is a growing literature on the effects of information and financial literacy on financial behavior. Lusardi and Tufano (2009) use self-reported "financial experiences" as an instrument for information to find a demographically controlled effect on self-reported overindebtness. Duflo and Saez (2003) randomize the incentive to go to an information pension fair and find an effect on financial behavior. Chan and Stevens (2008) using self-reported and administrative data of retirement incentives solve the apparent empirical puzzle of the existence of a relationship between retirement incentives and retirement behavior, but little knowledge of the retirement incentives. They show that the behavioral response is driven by a strong response of individuals with lots of knowledge: uninformed individuals do not respond to retirement incentives.

In this paper we investigate the causal link between pension finance knowledge (or literacy as we shall call it hereafter) and voluntary savings as well as financial behavior within the system. Considering the possibility of bounded rationality, and how individuals can actually learn about the pension system, we will identify this effect using the presence of a parent pensioner in the household as an instrument for knowledge and understanding of the pension system. Our identification assumptions are that having a pensioner in the household is correlated with pension knowledge (directly by increasing knowledge of

[2] Miranda (2010) uses geographic heterogeneity to identify the effect of information, assuming that affiliates in Santiago are somewhat more exposed to the accurate and timely postal delivery. Implicitly this paper relies on a very general interpretation of the shortcomings of the Chilean posting system, and on the randomness of individual decisions to live in Santiago or in other parts of the country that should not be related to unobservable characteristics that could also determine their sensitivity to the information. Fajnzylber et. Al. (2009) use the actual recorded shortcomings of the postal system together with a matching procedure (to correct for the possible bias) which we think is a better approach.

the rules, or indirectly by making individuals more aware of this information) and that it only affects pension savings through this channel.

We cannot read what is the information that the pensioner is providing in each household. Information could be having three sorts of effects: reducing uncertainty or bias on the risks and returns involved in the canonical savings decision (for example by correcting the pension expectations conditional on savings levels), helping to sort investment options within the available savings systems (including the pension system), or reducing noise within the available systems making them more attractive for risk adverse affiliates. Furthermore, it is conceivable that it can increase the interest and effectiveness of information already available about retirement such as the pension reports distributed by the Superintendence that we discussed above.

We find that pension finance literacy is positively correlated with the presence of pensioners in the households, but we do not find any evidence of the exogenously provided extra pension knowledge on voluntary pension savings within the system at large. However we do find evidence that pension system knowledge increases savings in the financial system. We find that workers that have more pension literacy are more likely to engage in pension fund type switching, but not pension fund administrator switching and are not more prone to pension fund originality (deviations from the automatic rules for pension fund type). We also find that self-employed workers are more likely to become voluntary affiliates of the system when they have greater levels of pension literacy.

Limited information on members of the account system has previously impeded such micro-level studies forcing analysts to infer conclusions from aggregated data.[3] The first EPS, with its nationally representative sample of over 13,500 individuals with personal retirement accounts allows us to carefully examine decisions across a diverse group of members. The first wave of this survey of the Chilean pension system affiliates was conducted from May 24, 2002 to January 15, 2003.[4] The second wave is representative of both pension affiliates and non affiliates, and was conducted from November 2004 to March 2005; and the third wave was conducted between September 2006 and May 2007. The

[3] A large literature does exist on the macroeconomic effects of the Chilean personal account system, its institutional details, and the transition from a pay-as-you-go pension system. For example, Diamond and Valdés-Prieto (1994) Edwards (1998), Corbo and Schmidt-Hebbel (2003), Holzmann (1997), Iglesias-Palau (2000), Acuña and Iglesias-Palau (2001), Arrau (1991), Cifuentes (1996), Cerda (2008) and Todd and Velez-Grajales (2008). The Chilean account system has undergone numerous reforms. For a detailed description of the system rules and outcomes see Bernstein, Larraín, Pino and Morón (2006), Arenas de Mesa, Bravo, Behrman, Mitchell and Todd (2006) and Palacios (2003) and for a revision of the last reform to the Chilean pension system see Arenas de Mesa, Benavides, Gonzalez y Castillo (2008), Arenas de Mesa (2010) and Valdés-Prieto (2009).
[4] The survey includes 17,000 pension affiliates of which 78.7% have retirement accounts (or had an account before retiring), 18.8% are still in the old system, 0.3% are members of the armed forces or police (which have a separate defined benefit system), and 2.2% did not know their pension affiliation. In 2002, there were 6.3 million members in the account system representing 56% of the Chilean population over age 15.

survey has a panel structure following affiliates found in the first wave. The questionnaire allows us to use innovative survey measures of pension system knowledge, financial planning horizons and retirement plans to understand individuals' saving because it has a module that asks the members about these issues.[5]

We believe that this the paper contributes to the bounded rationality and behavioral finance literature since it gives evidence of an exogenous information enhancing shock having significative effects on savings behavior, levels and choices. Second, we also believe that this paper contributes to a related economic literature on financial literacy, since it actually tests determinants of and effects of a particular type of financial literacy which is the knowledge that individuals have on the functioning of the pension system. Third, we think that this paper should be interesting to those working on the pension reform literature since it actually measures an information effect in maybe the oldest privatized pension system in the world. Fourth, the paper contributes to the case literature on the Chilean pension system since there has been so much discussion on the need to provide more and better information to make the system work better without any real measure of the impact that these policies could potentially have.

The paper is organized as follows. Section 2 briefly discusses the theory that justifies the estimations and identification strategies that we have in this paper. Section 3.1 describes the interplay of individual choices and government safeguards in the Chilean personal account system; this is crucial to understand what are the actual options faced by the affiliates that provide a rationale for pension finance information use in globally optimizing a savings strategy. In Section 3.2, we document the limited knowledge of the retirement account system and discuss the potential demand for and supply of information and education on the system. Section 4 shows our attempt at estimating a causal effect of pension knowledge on saving strategies. In the final section, we offer our conclusions.

2. The Pension System and Pension Literacy in Chile

2.1. Briefly on the Chilean Pension system

While accumulating funds in their retirement accounts and later converting their balances to pension benefits, members can tailor their accounts to their particular needs and preferences, albeit with

[5] For a comprehensive analysis of the EPS see Arenas de Mesa, Bravo, Behrman, Mitchell and Todd (2006).

considerable government oversight and safeguards on their choices. In this section, we summarize the main choices facing members of the Chilean retirement account system and use the survey responses to characterize the overall utilization of these options. In characterizing the real choices available to the members we want to asses the actual use that they can give to marginal increases in pension finance literacy which is what we study empirically in this paper.

Our analysis focuses on voluntary saving for retirement with personal accounts and financial gymnastics. It is important to note that most affiliates in the survey are still in the accumulation phase. While the new pension system began in 1981, the demographics of the rules on which it was implemented imply that, for example, only 10% of members are receiving an old-age or disability pension. Moreover, according to EPS 2009, there are 9,229,009 affiliates in the pension system of which 5.46% receive retirement pensions, 3.03% receive anticipated retirement pensions and 2.26% receive disability pensions. Nonetheless, the structure of expected pension benefits should influence current savings decisions that we are able to observe. In converting their retirement account balances to pension benefits, members will face several choices and may be eligible for certain government safeguards so we need to carefully discuss these rules before attempting any identification of information or knowledge effects.

After reaching normal retirement age,[6] members can receive a pension from their accounts; however, there is no mandatory age at which an account must be converted to a pension and continued employment does not affect pension benefits so potential retirees can delay the liquidation of their funds. Early receipt of a pension is only possible for those members with sufficiently large account balances.[7] When retiring, members can use their pension funds to purchase a real annuity with their account balance from an insurance company, establish a programmed withdrawal flow from their account with their fund manager, or utilize a combination of these two options. Mitchell and Ruiz (2009) study how these options mainly differ in terms of the ownership of residual claims and individual risk-bearing and a modeling of these options is interesting in itself but exceeds the scope of this paper.

A profound pension reform was enacted in March 2008, changing the pension system structure and requirements particularly regarding the complementarity between the personal savings and the

[6]In Chile this is 60 years for females and 65 years for males, although for some time there has been a discussion on elevating the retirement age for females to 65, so it could be conceivable that there is some uncertainty (or at least some skepticism) on the expected effective female retirement age for current affiliates.

[7] To qualify for an early pension, the monthly pension benefit must be at least 50% of the individual's average real income in the last 10 years and at least 100% higher than the minimum pension guarantee.

minimum pension guarantees. We will describe the regulations previous to the reforms, because it is what was faced by the survey respondents when making voluntary savings and financial behavior decisions. In addition to regulating the conversion of accounts balances to benefits, the government provides a pension safety net. Members who have contributed at least 20 years (or 240 months) are guaranteed a minimum pension level throughout their retirement. Since December 2008, the minimum pension is 104,960 pesos per month (roughly US$ 2,500 per year) for persons under age 70, CH$ 114,766 per month (roughly US$ 2,750 per year) for those between 70 and 75 and CH$ 122,451 per month (roughly US$ 2,900 per year) for those 75 and older, which is approximately 50% of median monthly earnings. The level of the minimum pension is inflation-indexed. For eligible members, the government provides the difference between the pension they can finance from their retirement accounts and the minimum level. Regardless of their contribution history, individuals may be eligible for a welfare pension (PASIS) of 122,451 pesos per month in December 2008 (roughly US$ 2,900 per year).[8] The minimum pension, in particular, provides a significant insurance benefit for low-income members, who have made regular contributions to their retirement accounts but have not accumulated sufficient funds.[9] Studies elaborated for the pension reform of 2008 projected that any number between 10% to 50% of account members may end up receiving some government funds from the minimum pension guarantee.[10]

In the contribution phase individuals must make four critical decisions.

The first is whether to contribute or not. Employees in the formal sector with a contract make compulsory monthly contributions to their accounts. The basic tax exempt contribution, 10% of monthly earnings up to 60UF (roughly US$ 30,000 per year), is transferred directly by employers to their employees account managers.[11] When making basic contributions, members also pay 2-3% of their monthly earnings to their fund manager for fees plus disability and survivor insurance. For the self-employed, participation is voluntary. Among members, the self-employed also have full discretion over the frequency and amount of their continued contributions.

[8]Persons with income less than 50% of the minimum pension and over 65 years of age, disabled over age 18, or mentally handicapped are eligible for the welfare pension. The government caps the number of welfare pensions, so all eligible persons may not receive benefits. As with the minimum pension, the real value varies. The PASIS amount depends on the age: CH$ 48,000 for persons under 70, CH$ 51,169 for those between 70 and 75 and 55,949 for those 75 or older.

[9] One of the main stylized fact of the pension system issue in Chile is the significant ammounts of individuals that do not have a prospect of accumulating a sufficiently large fund. This is due to many factors, but two are salient: the low participation rates, particularly among females, and the frequent rotation in and out of the labor force of many low income workers.

[10] These figures were developed by Bernstein, Larraín, Pino and Morón (2006), Marcel (2006) and Melguizo, Muñoz, Tuesta and Vial (2009). For a review of this and other figures about the 2008 reform, see Kritzer (2008) and for a complete work about fiscal projections of the system, see Arenas de Mesa, Benavides, Gonzalez and Castillo (2008).

[11] The UF (Unidad de Fomento or Development Unit) is the Chilean official inflation index. In December 2007, the taxable maximum of 60UF was 1,173,046 pesos (US$ 2,349) and over three times the median monthly earnings among contributing members.

The second decision is the choice of Pension Fund Administrator (AFP). Members can freely select their fund manager and change managers at no cost based on their fees[12] and investment performance, yet government regulation limits the asset allocation of AFPs and diminishes the incentives to out-perform other AFPs, so differences are very slight and rankings variable.[13] In addition to the minimum return guarantee, the government regulates the investments of AFPs. In August 2010, 56,1% of the AFP funds were held in national instruments and 8,7% of that in public debt; 28,5% in other fixed rent contracts and 18,2% in variable rent. Also, the percentage of the pensions that was held in foreign variable rent contracts was 27,9% (Source: Superintendency of Pension Fund Administrators). Members pay no additional fees to switch AFPs, even though this involves administrative costs and time. Theoretically the system relies on free choice of AFPs to encourage competition among the fund managers however the limitations of this mechanism have been well known for quite some time and have also been the subject of recent regulatory reform. Moreover, the 2008 pension reform created a new mechanism for the allocation of new members to AFPs by auctioning off portfolios of new affiliates. The individuals, however, retain their right to choose individually their AFP manager and switch whenever they find it convenient to do so. With moderate differences in fees and returns, AFPs have frequently been involved in marketing wars that involved the hiring of large sales forces to influence members' choices. Survey data shows almost half of members have changed AFPs at least once, though most have done so quite infrequently.

The third decision is the type of fund into which the contributor will invest. The five types of fund available within the pension system vary in the limits to exposure to stocks and other variable yield instruments from the riskiest A fund (with maximum 80% and minimum 40% exposure) to the E fund (with maximum 5% exposure).[14] The choice of funds is completely voluntary up to the age of 55 and 50 for males and females respectively, from then onwards fund A is forbidden, and pensioners are also

[12] The Chilean government regulates and closely supervises the investments and account management of the AFPs. At present there are five AFPs (with one new entrant expected in the market), which vary modestly in their fee structure, which includes both flat and variable (% of monthly earnings) commissions, and real returns. Each AFP determines its own fee structure; however, it must apply to all its account holders. These fees cover both administrative costs and the purchase of disability and survivor insurance for their members.

[13] Specifically, regulation requires that each member receives a minimum real return on their account, where this minimum is defined relative to the average real return across all AFPs. There is a minimum return for each type of fund that AFPs manage. Before August 2002, AFPs managed two funds, one for pensioners and one for other members. Since then, AFPs offer five funds which differ in their risk profile. For each fund, an AFP must insure that its members receive an annualized real return over the past 36 months above the lower of two thresholds: 1) 2% below the average real return for the same fund across all AFPs during the same period or 2) 50% below the average return. For example, if the average return is 10%, members must receive a 5% return, whereas the minimum return is 0% when the average return is 2%. Likewise, AFPs are required to deposit returns in a reserve fund that must exceeds the higher of two thresholds: 1) 2% above the average or 2) 50% above the average. If an AFP cannot meet the minimum return payments with this reserve fund, the AFP is liquidated and the government provides the minimum return. This regulatory option, however, has never been used or required.

[14] Fund B has limits: 60%-25%, fund C has limits 40%-15%, fund D has limits 20%-5%.

forbidden to invest in fund B. In the case of voluntary saving schemes within the system (that we explain in detail below) there are no restrictions on the fund choice. Contributors are allowed to distribute their funds into up to two different types of funds. If the affiliate does not choose a fund he will be invested in B funds if his age is under 35; C funds if he is a male in the 36-55 range or a female in the 36-50 range; and D funds if he is a male older than 56 or a female older than 51.

Finally, members can increase their retirement funds or to move forward the pension age with additional pension savings. There are two financial instruments for additional pension savings within the system: voluntary pension saving and voluntary savings account.

All working members of the system can make additional voluntary contributions to their retirement accounts. Initially, members could contribute an additional 10% of monthly earnings tax-free and these funds could not be withdrawn from the accounts before retirement. These are tax free contributions (capped at 50 UF monthly) that the affiliated can make to his/her account held by an AFP or other authorized institution (banks, insurance companies, mutual fund administrators among others). Since 2002[15], the cap on additional contributions is much higher and additional contributions (plus the interest earned) can be withdrawn early at a tax penalty.[16] Theoretically with additional contributions to their retirement accounts, members can compensate for irregular contribution histories, reduce their current tax burden, and increase their future pension benefits; yet only 10% of members have ever utilized this option.[17] The question of estimating how many non credit constrained individuals have not used this option (which is the relevant one from a policy perspective) is open and interesting.

Voluntary savings accounts were introduced in 1987 to offer another form of saving for retirement and other purposes. While individuals use the same fund manager for their voluntary savings and retirement accounts, these accounts are separate. The self-employed can, however, make basic contributions to their retirement accounts with transfers from their voluntary savings account. At retirement, all members can use their voluntary accounts to increase the amount in their retirement accounts and obtain a larger pension. There are no tax benefits to contributions in voluntary savings accounts, but transfers to retirement accounts are not taxed so the taxes are deferred to retirement (when it is probable that they will face lower marginal rates). Other withdrawals from voluntary accounts (a maximum of four times per year) are subject to income taxes. These accounts are supposed to be preferable to other savings vehicles, for example: bank deposits which earn low interest rates and

[15] This mechanism was modified in March 2002.
[16] For the vast majority of workers, the 50 UF limit on additional contributions is far higher than the initial cap at 10% of wages. It's a cap of over US$ 25,000 per year.
[17] The exact figures are 9.78% of members in 2004 and 10% in 2006.

mutual funds which have relatively high fees. The EPS 2009 asks about voluntary savings accounts, inquiring if the affiliate has realized Voluntary Pension Savings (APV in Spanish abbreviation) between January 2006 and the period of the survey. Just 3.7% of affiliates have a voluntary savings account. The reason for this low number is the nature of the question, because some affiliates could have realized APV before 2006 and this fact isn't captured by the statistic. The most common reason (46.7%) among voluntary account holders is that they want increased pension benefits; but convenience (35,5%) and it "allows him or her to retire money" (11%) are also important factors. As with additional contributions to retirement accounts, most members are unaware of voluntary savings accounts and, again, the interesting and open empirical question (with policy implications) is how many non credit constrained individuals have not used this option. Other members, who do not have voluntary accounts, claim that the accounts are not necessary or they have too little income to save. Again, these accounts offer an option for increased saving, but few members choose to participate.

Part of the 2008 effort to reform the Chilean pension system included a reform to the Voluntary Pension Savings (APV) system. This reform included the possibility of establishing collective APV plans (APVC), consisting of a mechanism within companies and designed to supplement personal APV efforts by employees. Also a tax benefit for APV and APVC was implemented, consisting on the possibility of choosing the tax treatment of contributions and retirement of funds. The idea of this reform was to stimulate an increase in personal voluntary saving, mainly, for the middle classes. However, it is too soon to evaluate and is not possible within the time span of the last available EPS databases.

As we can see, there are a variety of voluntary savings alternatives available in the system as well as fund managers and fund type choices available to the affiliate that have the potential of being affected by pension finance literacy.

2.2. Stylized facts of pension finance literacy in Chile

Table 1 shows the descriptive statistic of our sample. We include individuals affiliated to an AFP in 2004 and 2006. The sample size is 10.903 individuals, the pension knowledge question goes from 0 to 1, and on average individuals have one third of the questions of the index correct. Around 16% of pension affiliated are less than 30 years old, 30% age 30-39, 14% are within 10 years of the normal retirement age (NRA) and 6% above the NRA. About 50% are married, male and household head. The average household size is 4.1, 42.5% of surveyed individuals are currently working, and 40.5% are informal (percentage of working individuals that do not have a contract, or are self employed). Finally,

27.8% have a long planning horizon (savings and expenditure planning considering one or more years ahead), 42% plan to never retire and 20% have no retirement plan.

To make well-informed decisions with their retirement accounts, and design optimal complimentary savings policies, members require some knowledge of the pension system. Yet, the value of such information and the costs of obtaining it are very likely to differ across members. We begin by assessing the overall knowledge of personal pension finance and find that most members reveal a very limited understanding, which is worrying since some of the logic of the system is based on the market disciplining virtues of rational and informed individual choice. We also show that more knowledgeable members are more active in the retirement account system, which is expected but of course impossible to disentangle in a statistical sense, and does not necessarily imply that knowledge increases active saving and management of accounts and could perfectly well indicate the other direction of causality. In section 4 we investigate the direction of causality of this relationship using our identification strategy.

To assess members' overall knowledge of the retirement account system, we use the EPS for years 2004 and 2006. We examine their survey answers in a module on knowledge and perceptions of the pension system. We focus initially on a subset of six questions with verifiable answers. For each question, respondents may reply with a specific answer or "don't know". The responses which we code as correct, follow each question in brackets.

The first three questions pertain to the contribution phase:

1. What is the monthly contribution as a percent of earnings? [10%-13%]
2. What is your account balance?
3. How are your funds invested?

The top panel of Table 2 displays the distribution of responses for AFP members in the 2004 wave. A minority of members (24.9%) gives a correct answer for the contribution percent. Employers deposit their employees' contributions with the AFPs, so most members do not require any knowledge of this rate for it to happen. This value would, however, be needed to assess the adequacy of these contributions for retirement savings goals and for the design of a globally optimal savings policy. The value also directly affects workers' take-home pay and other savings strategies.

Members seem to be most knowledgeable about their account balance, with 51.7% claiming to know it. We do not have access to administrative data to investigate if the balanced declared is what members actually have in their individual balance account, so this figure is probably an upper bound on the knowledge of the account.

Finally, 33.1% claim to know how their pension funds are invested. Members have a choice between five funds types differentiated in their risk level. We do not have access to administrative data to check if the claimed fund type is the fund they have, again we think that it is safer to take 33.1% is an upper bound on the knowledge of the level of risk the pension fund is bearing. Putting these figures together, at least half of the members do not know their balance and two-thirds do not know how their pension funds are invested. Both are critical figures to define the level of global savings needed and the portfolio of non pension system investments.

The next three questions address pension benefits from retirement account system:

4. How are pensions from the AFP calculated? [account balance and other factors like retirement age]
5. What is the legal retirement age for men? [65] For women? [60][18]
6. What are the conditions for the minimum pension? [contributions for 20 years or 240 months]

Only 11.8% members understand the most basic principle of the pension system: their account balance determines their pension benefit. While the system design tightly links contributions to benefits, there is little evidence that most members actually understand this connection. Unfortunately, this is not particular to Chile, for example in the United States, Gustman and Steinmeier (1999) also find misinformation about pensions, for example, only 50% of persons with employer pensions correctly identify their plan as either defined-contribution or defined-benefit.

In sharp contrast to the benefit calculation, Chilean members are quite knowledgeable about the timing of retirement. Over 75% of members know the normal retirement ages. The final question covers the government pension guarantee. Again, the vast majority of members do not claim any knowledge about this safety net in the account system: only 8.6% know the conditions for eligibility for the guaranteed minimum pension. In a study of Santiago workers, Barr and Packard (2002) suggest that some self-employed workers contribute to their accounts only to be eligible for the guarantee. Such strategic

[18] For this question, we combine responses from two related survey questions in a single item.

contribution behavior, which could be justified as rational is hard to reconcile with the general lack of knowledge about the pension guarantee, so there is probably some space here for further research.

There is some very significant pension literacy heterogeneity across different types of workers. Affiliates that are still working seem to be relatively more knowledgeable, dependant workers more so (only slightly but across all questions) and self-employed workers (for which adherence to the pensions system is not compulsory) seem to be much less literate on the system than the rest.

Members' answers across all six questions reveal limited overall knowledge of the pension system. On average, members answer only 2.06 questions correctly and the median is two correct answers (out of six). Only 14% of members correctly answer more than half of the questions. In the next section where we attempt to identify the effect of knowledge on behavior in the pension system, we will use this score (percent of correct answers) as an indicator of pension finance knowledge. We will call this percentage of correct answers "pension literacy".

This low degree of overall knowledge could simply reflect its limited value to most members. With government mandates on employee contributions and on the management of pension funds, most members, who are far from retirement could feel that they face few relevant account decisions and may require minimal knowledge about the system. Yet, there are certain groups of members who have more discretion and could likely benefit from greater knowledge and actually have less. While the self-employed and those with intermittent work histories face more choices, we find them to be actually less informed about the system: the average number of correct answers for informal workers (self employed or working without a contract) is 1.78.

The cost of obtaining information about the system could also affect members' overall knowledge. The government has long recognized the need to inform members about their retirement accounts. AFPs are required to regularly send account statements to their members.[19] These statements include the members' current balance, contributions, fees, return on their account, and financial performance of their AFP. The statements also provide the return and commission structure for all AFPs. The statements did not, (during most of the period for which we have data) provide any projections of members' retirement benefits. According to the survey responses, two-thirds of members regularly receive an account statement. In addition to their account statements, members can visit their local AFP office or use their websites to obtain information on their accounts; however, access to these

[19] AFPs send a statement every four months to their members whose accounts have had some activity, for example, new contributions during the previous four months. All members receive at least one statement a year. Real time information is also available for any interested affiliate.

other methods may differ across members based on their region of residence, education level and income. On the other hand, Chile is a country with very low scores in internationally comparable tests measuring adult functional literacy and quantitative skills. Unfortunately there are no available internationally comparable measures of financial literacy such as those on functional literacy in math and reading comprehension but everybody's prior is that they are very low. It is, at the very least, plausible that a significant portion of the pension system members that receive this information do not actually understand it or even read it.

As we can see from Table 3 there are gender differences in pension literacy but they do not all go in the same direction. Women seem to be more knowledgeable on three of the questions, men know more on two of them and one is tied. Females know the retirement age more precisely (it is a public policy issue that is much discussed), they claim to know more about investment policies and know more about minimum guarantees (which would be expected since they are more likely to use them given high rotation in and out of the labor market). Men get the contribution rate right in a greater percentage and claim to know their account balance (we have no way of verifying this). From Table 4 we can see that pension literacy is not globally correlated with age, but within questions there are very striking age effects that actually make sense in intuitive terms. Older affiliates know more about their balance, about how pensions are calculated, about minimum pension requirements and about the retirement age. Younger affiliates, on the other hand, know more about the contribution percentage and how the funds are invested. From Table 5 we can see that pension literacy is clearly correlated with wages, even in the case of questions that are most relevant to lower income affiliates (such as eligibility for minimum pensions).

3. Pension Literacy and Savings Behavior

3.1. Voluntary Pension Savings

3.1.1. Correlations

Voluntary savings accounts provide another vehicle for retirement savings. Though separate from retirement accounts, members can use their voluntary accounts to increase their retirement account balance and thus their pension benefit.

Martinez and Sahm (2009) document that more knowledgeable members are also more active participants in the retirement account system. They investigate four choices facing members: basic contributions by the self-employed, additional contributions, having a voluntary savings account, and changing fund managers. Even after controlling for other attributes relevant to saving, such as planning horizons, expected retirement, and risk preferences, more pension literacy is strongly associated with action (contributions by the self-employed, additional contributions, having a voluntary savings account, and changing fund managers). However these correlations cannot establish a clear causal link between more knowledge and more participation. Members with a high desire for retirement savings may seek out more information on the account system. Past participation in the system may also generate greater knowledge and encourage future participation. In both cases, other attributes actually drive account behavior and seem to affect knowledge as well. The association between knowledge and account behavior mixes the direct effect of knowledge and the indirect effects of these other attributes. One of the main objectives of this paper is to disentangle this causality using an identification strategies.

In this paper we study the relationship between retirement saving and knowledge using as dependent variable the proportion of periods (out of two: 2004 and 2006) where the AFP member had some form of voluntary pension saving. We do not include 2002 data because the questionnaire changed after that year and variable construction required many assumptions.[20] It is important to notice that the dependent variable is not a dummy, because the AFP member could conceivably have voluntary pension savings only one year out of two. The mean of this variable is 0.11, and 16,04% have had voluntary pension savings at least one period. Regarding the level of knowledge we also use the two period average of the pension literacy index described in the previous section.[21]

Table 6 shows the positive relationship between pension literacy and voluntary pension savings found by Martinez and Sahm (2009). Individuals are divided in three groups according to their pension literacy index (lowest 33%, middle 33% and top 33%). Overall 16% members have voluntary pension savings, and this proportion monotonically increases from 8.7% to 24.9% as their level of knowledge increases. The Table also shows that financial savings outside the pension system also seems to increase with pension literacy.

As Martinez and Sahm (2009) we run a simple regression to refine this correlation:

[20] Regressions include one observation per household. If the 2006 data is available this is the data used for the covariates. A dummy for the year of the data is also included. We do not use the data panel structure because of the low correlation of the pension questions across waves.
[21] We chose to use the average because the report of knowledge question is noisy.

$$D_{VS}^{t} = c + \alpha I_{PL}^{t} + \varepsilon^{t} \quad (1)$$
$$D_{VS}^{t} = c + \alpha I_{PL}^{t} + \beta_1 V_{DEM}^{t} + \beta_2 V_{LAB}^{t} + \beta_3 V_{INC}^{t} + \beta_4 V_{EDU}^{t} + \beta_5 V_{HOR}^{t} + \varepsilon^{t}$$

Where D_{VS}^{t} is the proportion of periods (out of two) that the individual is involved in voluntary savings; and V_{x}^{t} are a series of control vectors summarizing different sorts of variables (demographics, $x = DEM$; labor, $x = LAB$; income, $x = INC$; education, $x = EDU$; horizon, $x = HOR$). The precise variables within each set can be seen in Table 8.

Martinez and Sahm (2009) found a positive association between the pension literacy index and the probability of having voluntary pension savings. For comparability we report these replicated results in columns 1 and 2 of Table 8. The first column shows the correlation without controls, whereas the second column documents the correlation when controls are included. Included controls are age dummies, gender, civil status, household size, dummies for informality and work status, wages, household income, education, household head and planning horizon.[22]

A one standard deviation increase in the pension literacy index (0.18) increases the probability of having voluntary pension saving in 5.7 percentage points. This magnitude decreases to 3.9 percentage points when controls are included. If we were to believe the non identified effects of column 2 of Table 8 we would say that young individuals (less than 30 years old), less educated individuals (without a high-school degree) and those at or above the normal contribution rates are less likely to use this financial instrument. Higher wages and being the household head increase the probability of having voluntary savings, whereas having no retirement plan or not planning to retire decreases this probability. This, of course, makes sense but is not identified in any statistical sense.

These correlations suggest that improved knowledge about the account system could have a sizeable impact on voluntary pension saving. Yet, these results are suggestive rather than definitive, given that they show a correlation and not a causal effect.

3.1.2. Causalities

In order to identify the causal effect of knowledge on voluntary pension saving we use an exogenous variation in knowledge that does not directly affect their saving behavior. Having an additional

[22] Household income is computed as the sum of labor, pension, monetary subsidies and rent and interest. Missing values of labor income, pensions and rent and interest were imputed from OLS regressions with age, gender and married as controls.

pensioner in the household exogenously increases knowledge of the pension system by generating an information spillover. Individuals will naturally be exposed to the consequences of pension behavior and understand better the pension system; information costs about the pension system will be reduced; and, moreover, having a pensioner in the household might increase member's interest and curiosity for the pension system which can lead to more knowledge.

We only include in our measure of pensioners those parents that live with their children and have a pension. Pensions are normally below wages and therefore including for example the household head and his/her spouse in the definition could mix up the information given by the pensioner with an income shock caused by a new pensioner that could directly affect the amount of voluntary saving. [23] A 5.5% of the sample (equivalent to 601 individuals) has a pensioner in one of the two years of the survey and 6.1% (equivalent to 668 individuals) in both years. We also run these regressions using an alternative instrument: parents living within the household (with or without pension). Results are almost identical to those with our preferred instrument with one exception, which we will discuss below and reinforces our results. A comparison of the estimations with the two alternative instruments can be found in Table A3. henceforth we will call this alternative instrument the "senior" instrument.

A very natural preoccupation is that the probability of having a pensioner in the household is correlated to income and hence not random. This could mean that it is not independent of the probability of voluntary savings which would bias our estimations. To discard this possibility we test for a uniform distribution of the probability of having a pensioner on characteristics of the household, in particular those indicating income earning capabilities. We do this in Tables A1 and A2 available in the appendix for income and education levels. We find that the distributions seem to be very close to uniformity.

We therefore run the following two stage regression:

$$D_{VS}^{t} = c + \alpha \hat{I}_{PL}^{t} + \varepsilon^{t} \tag{2}$$
$$D_{VS}^{t} = c + \alpha \hat{I}_{PL}^{t} + \beta_1 V_{DEM}^{t} + \beta_2 V_{LAB}^{t} + \beta_3 V_{INC}^{t} + \beta_4 V_{EDU}^{t} + \beta_5 V_{HOR}^{t} + \varepsilon^{t}$$

with first stages:

[23] We exclude other pensioners in the household (siblings, other relatives) becasue of their low prevalacence and concerns on its distribution across income.

$$I_{PL}^{t} = c + \gamma D_{PIH}^{t} + \varepsilon^{t} \tag{3}$$
$$I_{PL}^{t} = c + \alpha D_{PIH}^{t} + \beta_1 V_{DEM}^{t} + \beta_2 V_{LAB}^{t} + \beta_3 V_{INC}^{t} + \beta_4 V_{EDU}^{t} + \beta_5 V_{HOR}^{t} + \varepsilon^{t}$$

where D_{PIH}^{t} is a dummy indicating if there is a pensioner in the household. Table 7 shows the first stage regression. The dependent variable in this table is our measure of knowledge, and the independent variable is the presence of a parent pensioner in the household. Column 1 shows a strong relationship among these variables, with an associated F test of 29.7, and column 2 shows that the relationship is robust to our set of controls (with an associated F stat of 128.25).

Columns 3 and 4 of Table 8 show the results for the second stage regression where knowledge is instrumented by the presence of a parent pensioner in the household. Column 3 shows that when no controls are included there is a significant effect of knowledge, but the relationship disappears once we add controls (column 4). Putting together the results of Tables 7 and 8 we can see that having a parent pensioner in the household increases its members knowledge of the pension system, but the induced increase in knowledge does not increase (nor decreases) voluntary pension saving for those whose knowledge of the system increased due to having a pensioner in the household. When we use the "senior" instrument we do not get significance in either case (with or without controls).

Therefore the strong correlation between knowledge and voluntary pension savings found in the previous section is not a causal relationship from knowledge to savings. There are other unobservable affecting both variables at the same time.

An extreme interpretation of the previous result is that knowledge has no effect on pension savings. Two caveats must be considered: First, it is the induced variation in knowledge caused by the household composition (presence of a parent pensioner in the household) which appears having no effect on voluntary pension saving. In other words, variation in knowledge induced by other instruments (such as the pension reports studied by Miranda (2010) and Fjanzylber et al (2009)) might have an effect on voluntary pension savings. Secondly, individuals can save for retirement outside the pension system: they can have buy real state, have a small firm or save within the financial system but outside the pension system. Moreover, it could be that pension literate individuals actually decide to save less as we have argued in the introduction. Finally it could be that voluntary saving within the system is not really that attractive or that since the dissaving option is not available within the system,

the endogenous reaction occurs outside. Hence, people who get more information may decide to save or borrow outside in the financial market.

3.2. Voluntary Financial Savings

Hence, in this section we focus on the effect of pension knowledge on savings in the financial system at large,[24] but outside the voluntary options of the pension system. Clearly not every savings in the financial system is intended for pensions. However financial savings caused by the presence of a parent pensioner in the household can increase savings outside the pension system. As we discussed in the introduction the information provided by the pensioner is not necessarily a reducer of uncertainty or bias on the canonical savings decision that would induce the individual to save more as information is revealed to him. We also argued in that section that information could be as a sorter of investment options within the available savings systems. The induced increase in pension system knowledge might be a manifestation of knowledge of all the financial system options. Table 6 shows a monotonically increasing relationship between pension literacy and the percentage of members with financial savings.

Table 9, shows regressions where the dependent variable is the (average over two periods) existence of any financial saving. As in Table 8, columns (1) and (3) are the OLS results and show a strong correlation between pension knowledge and financial saving. Interestingly, columns (2) and (4) show that when the pension knowledge index is instrumented by the presence of a parent pensioner in the household, there is positive and significant effect of pension knowledge on financial savings, even when controls are included.

From the combined results of section 3.1 and this section it seems then that the additional information and elevated finance literacy that is being provided by the pensioner in the household is in fact inducing additional savings by individuals. However it is not inducing them to save more within the pension system but rather outside of it. The welfare effect of this analysis is not straightforward. On one hand, the private return to savings might be higher outside the pension system, but on the other, the marginal propensity to consume from savings might be higher on savings outside the pension system because of mental accounts (Thaler, 1994) or by characteristics of the pension system (voluntary pension savings can be withdrawed but with a cost).

[24] Savings in the financial system are defined as housing savings account, voluntary pension saving, savings account, CDs, mutual fund investment, stocks, bonds and other savings. Hence, our measure does not include loans and investments.

On the other hand the surviving effect of pension literacy on the probability of engaging in financial saving is quite considerable. Remember that the dependant variable has value 1 if the individual has saved in both the 2004 and 2006 surveys, value 0.5 if only in one period and 0 if never. Given this rationale the table shows that a 1% increase in the literacy index, increases in almost 1.5% the probability of financial savings in both periods. To mentally calibrate this remember that our pension literacy index is composed of six question, so getting one more answer right is an improvement of slightly less than 17%, so a literacy enhancing shock that induces an additional correct answer generates approximately a 25% percent additional chance that the individual will save in both periods. Moreover, it means that the probability of saving in at least one period increases in 50%. This is a large effect by any measure.

A particularly interesting result is that this is the case where using the "senior" instrument actually makes a difference (see appendix table A3). When we run the system with this alternative specification we do not get significance. This could be evidence of the intuitive phenomenon that it is pensioners and not just senior parents that have the useful information for their offspring. However, since this is the only result that changes with the instruments we do not want to force this interpretation.

3.3. Financial Behavior

The existence of more pension literacy can also increase financial behavior, that is, the frequency and sensitivity of pension saving choices. In practical terms the EPS provides us with four possible measures of financial choices within the system: voluntary affiliation, administrator switching, fund switching (risk-return type) and what we will call fund originality, that is, the propensity to deviate from the fund type that the law automatically gives you. In this section we will run the same regressions we have been running up to now (that is, the systems indicated in equations 1 to 3) but with four new dependent variables: a dummy indicating if the self-employed worker is voluntarily affiliated to the system (D^t_{VC}), a dummy indicating if the affiliate has ever switched fund administrator (D^t_{SFA}), a dummy indicating if the affiliate has ever switched fund type (D^t_{SFT}), a dummy indicating if the affiliate has ever had an "original" fund type (D^t_{OFT}), and dummy that summarizes the three later dummies (I^t_{GYM}) (the dummies that indicate pension activeness for dependant workers that are affiliates) by having value one if any of the component variables has a one and zero in the rest of the cases. What we attempt to do with this last measure is to capture as much activeness as we can.

The correlation of each of these measures and knowledge is reported in Table 10. All measures of pension activeness monotonically increase with pension knowledge, with the exception of pension fund originality which increases from the lowest third of pension literacy to the second but not to the third. In any case, we believe that this is a sufficiently robust correlation that we may test it with our identification strategy. Also this Table illustrates why we construct this aggregated activeness measure. It is possible that there is some non monotonic effect of pension literacy on the originality variable, but at the very lowest levels, that is not sufficient for it to be a global effect, but can contribute to the testing of the global hypothesis we are addressing in this section.

Tables 11 summarizes the results of these regressions by showing only the parameters and significance for the pension finance literacy parameter (full results in Appendix tables A4-A8). As we can see most of the correlation we reported in Table 10 survive controls in the regressions of the second columns of all of these tables. Pension Fund type originality does not appear as significantly correlated, in the same way it did not in the Table above. Looking down the second column of all of these tables we can see that individual income levels seem to have a a positive effect inducing gymnastics, it seems that being close to the retirement age also induces significantly less gymnastics, and that education induces more gymnastics.

The fourth column of each table shows us the effect of the identification strategy using the pensioner instrument. As in the previous section, in the third column of each table, we show the results of a regression with the identification strategy but no controls, so that the reader can see if it is the controls or the instrument that is driving the changes in results. A quick glance down the tables shows us that is is clearly the instrument.

Pension fund administrator switching does not survive the identification strategy, but pension fund type switching does. However, when aggregated in an overall measure, the significant effect survives. The measure is that an increase of 1% in the correct answers, increases the probability of behavior changes by 1.2%. To mentally calibrate this remember that our pension literacy index is composed of six question, so getting one more answer right is an improvement of slightly less than 17%, so a literacy enhancing shock that induces an additional correct answer generates almost a 20% increase in the probability of engaging in pension fund type switching and financial activeness.

Voluntary contributions by self employed workers also survive the identification strategy. Moreover, the marginal effect increases with the instrument which is a difference with the other surviving gymnastics measures that decrease slightly with the identification strategy. In this case, an increase of

one correct answer by the self employed individual increases his probability of voluntary affiliation to the system by almost 30% which is quite a big effect.

Interestingly, the instrumented regression also selects among the rest of the controls showing that different things seem to have an effect on different types of pension gymnastics (See Tables A4-A8). The distance of the retirement age continues to have a positive effect on gymnastics, some significance survives on the effect of education on the probability of pension fund administrator switching and employment status on fund switching (which makes sense), and individual income levels seem to increase the probability of having pension originality (which also makes sense). Finally it seems quite interesting that males seem less likely to involve themselves in pension finance activeness, although we do not have an intuition for it.

4. Conclusion

Chileans with more knowledge about the pension system are more likely to have additional financial savings, but not within the voluntary pension saving plans offered by the pension system. This positive association between pension finance literacy and financial savings survives controls and an identification strategy that relies on instrumenting pension knowledge with the presence of a parent pensioner in the household, which we show is strongly correlated with pension literacy, has the desired exogeneity properties and is very likely to indicate exogenous access to more information on the system. We find that getting one additional answer right in the pension literacy survey (out of six) generates approximately a 50% additional chance that the individual will save at least in one period, and a 25% percent additional chance that the individual will save in both periods surveyed. We also test for evidence that pension literacy affects worker choices regarding their pension savings (what we call financial gymnastics). We find that more literate workers are more likely to engage in pension fund type switching and that independent workers are more likely to voluntarily enter the pension system as affiliates if the have pension knowledge. Getting one additional answer right in the pension literacy survey (out of six) increases in 20% the probability of pension fund type switching and in 30% the probability of voluntary affiliation to the pension system of self- employed workers.

In our view these results show that information is having some potentially relevant effects on savings amounts as well as savings strategies. It is particularly important in increasing the probability of some types of pension finance gymnastics which we believe is associated with a noise reduction effect of the information provided that is increasing the sensitivity.

As we discussed in section 2 what we have in this database is a proxy of information and pension literacy. Even when we identify the effect by instrumenting with the pensioner in the household, we do not truly know what the transmission mechanism of information is nor what actual information is being transmitted. What we do know is that the information is correlated with our measure of pension literacy. Hence, the formulation of well designed "information policies" directed towards actual and potential affiliates of the pension system probably requires a more profound and directed inquiry into the actual content of the information that individuals actually consider as important in determining their savings strategy.

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Tables

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Pension Literacy Index	10,903	0.340	0.187	0.0	1.0
Less than age 30	10,903	0.160	0.366	0.0	1.0
Age 30-39	10,903	0.297	0.457	0.0	1.0
Within 10 years of NRA	10,903	0.143	0.350	0.0	1.0
At or above NRA	10,903	0.058	0.233	0.0	1.0
Male	10,903	0.569	0.495	0.0	1.0
Married	10,903	0.626	0.484	0.0	1.0
Household Size	10,903	4.134	1.710	1.0	13.0
Household Head	10,903	0.555	0.497	0.0	1.0
Informal	10,903	0.207	0.405	0.0	1.0
Currently Working	10,903	0.763	0.425	0.0	1.0
Monthly Earnings (Ln)	10,903	9.286	5.267	0.0	14.2
Household Income (Ln)	10,903	12.516	2.108	0.0	14.8
Less than High School	10,903	0.210	0.408	0.0	1.0
Technical Degree	10,903	0.147	0.354	0.0	1.0
College Degree	10,903	0.171	0.376	0.0	1.0
Long Planning Horizon	10,903	0.278	0.448	0.0	1.0
Plans to Never Retire	10,903	0.419	0.493	0.0	1.0
No Retirement Plan	10,903	0.198	0.399	0.0	1.0

Source: Authors' calculation based on EPS 2004 and 2006.

Note: NRA is Normal Retirement Age.

Table 2: Pension Literacy

	All Affiliates		Working		Dependant		Self Employed	
	Index	S.D	Index	S.D	Index	S.D	Index	S.D
Correct contribution percent	24.93	0.43	27.41	0.45	28.71	0.45	20.40	0.40
Claim to know account balance	51.72	0.50	54.05	0.50	55.04	0.50	48.72	0.50
Claim to know how funds are Invested	33.06	0.47	37.18	0.48	40.14	0.49	21.20	0.41
Know how pensions are calculated	11.78	0.32	12.58	0.33	12.66	0.33	12.14	0.33
Know retirement age	75.80	0.43	76.79	0.42	77.38	0.42	73.61	0.44
Know minimum pension guarantee requirement	8.63	0.28	8.64	0.28	8.79	0.28	7.83	0.27

Note: Tabulations include the 9,521 account members in the 2004 wave. Average percent of correct answers in 2004 and 2006 is 34%. The correlation between both years is 0.45.

The percent of correct answers between Dependant and Self employed are statistically different for all questions, except for know minimum pension guarantee requirement.

Source: Authors' calculation based on EPS 2004

Table 3: Pension Literacy by Gender

	Women		Men	
	Index	S.D	Index	S.D
Correct contribution percent	25.79	0.44	28.34	0.45
Claim to know account balance	50.83	0.50	55.91	0.50
Claim to know how funds are Invested	38.55	0.49	36.38	0.48
Know how pensions are calculated	12.16	0.33	12.81	0.33
Know retirement age	78.99	0.41	75.52	0.43
Know minimum pension guarantee requirement	9.26	0.29	8.28	0.28

Note: Tabulations include the 7,260 account members working in the 2004 wave.
The percent of correct answers for men and women are statistically different for all questions, except in know how pensions are calculated and know minimum pension guarantee requirement.

Source: Authors' calculation based on EPS 2004

Table 4: Pension Literacy by Age

	Less than age 30		Age 30 - 39		40 - 10 years before NRA		Within 10 years of NRA		At or above NRA	
	Index	S.D	Index	S.D	Index	S.D	Index	S.D	Index	S.D
Correct contribution percent	28.21	0.45	27.56	0.45	23.67	0.43	22.73	0.42	15.43	0.36
Claim to know account balance	42.63	0.49	51.75	0.50	55.23	0.50	56.91	0.50	44.10	0.50
Claim to know how funds are Invested	32.08	0.47	37.52	0.48	33.34	0.47	31.08	0.46	17.24	0.38
Know how pensions are calculated	8.68	0.28	12.61	0.33	12.31	0.33	13.31	0.34	9.80	0.30
Know retirement age	66.42	0.47	73.91	0.44	77.53	0.42	83.24	0.37	83.48	0.37
Know minimum pension guarantee requirement	7.30	0.26	8.53	0.28	8.63	0.28	9.78	0.30	10.16	0.30

Note: Tabulations include the 9,521 account members in the 2004 wave.

Source: Author's calculations based on EPS 2004

Table 5: Pension Finance Knowledge by Wages

	Lowest Third [0 - 148,400]		Middle Third [148,401 - 264,953]		Highest Third [More than 264,953]	
	Index	S.D	Index	S.D	Index	S.D
Correct contribution percent	21.04	0.41	26.23	0.44	26.44	0.44
Claim to know account balance	46.80	0.50	54.62	0.50	52.98	0.50
Claim to know how funds are Invested	19.95	0.40	37.40	0.48	38.14	0.49
Know how pensions are calculated	8.12	0.27	11.81	0.32	13.80	0.34
Know retirement age	70.26	0.46	75.65	0.43	78.94	0.41
Know minimum pension guarantee requirement	6.52	0.25	8.24	0.28	10.00	0.30

Note: Tabulations include the 9,521 account members in the 2004 wave.

Table 6: Pension Literacy and Savings

Pension Literacy	Voluntary Savings in Pension System	Financial Savings
Lowest Third	8.70%	33.60%
Midde Third	14.50%	37.70%
Highest Third	24.90%	50.60%
All	16.00%	40.90%
N	1,749	4,459
Pearson chi2(2)	435.2	274.9
P-value of H0 no relationship	<0.0	<0.0

Note: All tabulations with 10,903 respondants who are AFP members and responded to the 2004 or 2006 EPS waves. Individuals are sorted according to their pension literacy index in three categories: lowest (33%), middle(22-66%) and highest(66% and more).

Source: Author's calculation based on EPS 2004 and 2006.

Table 7: First Stage: pensioneer instrument

	Pension Literacy Index	
	[1]	[2]
Parent in Household Receives a Pension	0.038***	0.027***
	[0.007]	[0.007]
Less than age 30		-0.032***
		[0.005]
Age 30-39		-0.007*
		[0.004]
Within 10 years of NRA		0.010**
		[0.005]
At or above NRA		-0.027***
		[0.007]
Male		0.009**
		[0.004]
Married		0.013***
		[0.004]
Household Size		-0.003***
		[0.001]
Household Head		0.011***
		[0.004]
Informal		-0.060***
		[0.004]
Currently Working		-0.024
		[0.025]
Monthly Earnings		0.045***
		[0.004]
Household Income		0.014***
		[0.003]
Less than High School		-0.071***
		[0.004]
Technical Degree		0.052***
		[0.005]
College Degree		0.078***
		[0.005]
Long Planning Horizon		0.012***
		[0.004]
Plans to Never Retire		-0.013***
		[0.004]
No Retirement Plan		-0.043***
		[0.004]
Observations	10,903	10,903
F	29,70	128,25
R-squared	0.003	0.235

Standard errors in brackets
*** p<0.01, ** p<0.05, * p<0.1

Table 8: Voluntary Pension Saving

		Marginal Effect on Voulntary Pension Saving (D^*_{VS})			
		[1]	[2]	[3]	[4]
		No identification		Pensioner instrument	
T_{PL}:	Pension Literacy Index	0.317***	0.217***	0.533**	0.488
		[0.014]	[0.015]	[0.264]	[0.391]
V_{DEM}:	Less than age 30		-0.055***		-0.046***
			[0.008]		[0.016]
	Age 30-39		-0.006		-0.005
			[0.006]		[0.007]
	Within 10 years of NRA		-0.008		-0.011
			[0.008]		[0.009]
	At or above NRA		-0.028**		-0.02
			[0.012]		[0.016]
	Male		-0.005		-0.008
			[0.006]		[0.007]
	Married		0.001		-0.002
			[0.006]		[0.007]
	Household Size		0.002		0.002
			[0.002]		[0.002]
	Household Head		0.013**		0.011
			[0.007]		[0.007]
V_{LAB}:	Informal		-0.005		0.011
			[0.007]		[0.024]
	Currently Working		0.038		0.044
			[0.039]		[0.041]
V_{INC}:	Monthly Earnings		0.040***		0.028
			[0.006]		[0.018]
	Household Income		0.006		0.002
			[0.004]		[0.007]
V_{EDU}:	Less than High School		-0.027***		-0.007
			[0.007]		[0.029]
	Technical Degree		0.002		-0.012
			[0.008]		[0.022]
	College Degree		-0.009		-0.03
			[0.008]		[0.031]
V_{HOR}:	Long Planning Horizon		0.010*		0.007
			[0.006]		[0.007]
	Plans to Never Retire		-0.036***		-0.033***
			[0.006]		[0.008]
	No Retirement Plan		-0.037***		-0.025
			[0.007]		[0.018]
R-squared		0.048	0.077	0.026	0.05
F		544.18	34.86	4.08	26.46
Dependent Mean		0.11	0.11	0.11	0.11
Respondents		10903	10903	10903	10903

Note: All regressions with 10,903 respodents who are AFP members, respondent to the 2004 or 2006 EPS waves.
The instrument for pension literacy (parent pensioner in the household averaged in 2004 and 2006) is statistically significant at 5% level in all the first -stage regressions. Covariates are age, gender, married household members, work and informal dummies, ln(wage), ln(total household income), household income, year 2006 dummy, education dummies (dropout, technical, college), dummy if long horizon, no retirement plan, plans to never retire, household head, region density and region. * significant at 5%; *** significant at 1%.

Source: Author's calculation based on EPS 2004 and 2006

Table 9: Voluntary Financial Saving

		Marginal Effect on Voluntary Finanacial Saving (D^*_{VS})			
		[1]	[2]	[3]	[4]
		No identification		Pensioner instrument	
T_{PL}:	Pension Literacy Index	0.351***	0.210***	1.753***	1.487**
		[0.019]	[0.022]	[0.454]	[0.625]
V_{DEM}:	Less than age 30		0.125***		0.170***
			[0.012]		[0.026]
	Age 30-39		0.086***		0.094***
			[0.009]		[0.011]
	Within 10 years of NRA		-0.045***		-0.057***
			[0.011]		[0.014]
	At or above NRA		-0.054***		-0.018
			[0.017]		[0.026]
	Male		-0.036***		-0.049***
			[0.008]		[0.012]
	Married		0.014*		0.001
			[0.008]		[0.011]
	Household Size		-0.007***		-0.004
			[0.002]		[0.003]
	Household Head		0		-0.01
			[0.009]		[0.012]
V_{LAB}:	Informal		-0.007		0.070*
			[0.009]		[0.039]
	Currently Working		-0.022		0.008
			[0.056]		[0.066]
V_{INC}:	Monthly Earnings		0.036***		-0.021
			[0.008]		[0.029]
	Household Income		0.041***		0.022*
			[0.006]		[0.011]
V_{EDU}:	Less than High School		-0.015		0.076*
			[0.010]		[0.046]
	Technical Degree		0.014		-0.052
			[0.011]		[0.035]
	College Degree		0.021*		-0.078
			[0.011]		[0.050]
V_{HOR}:	Long Planning Horizon		0.008		-0.007
			[0.008]		[0.012]
	Plans to Never Retire		-0.026***		-0.009
			[0.008]		[0.013]
	No Retirement Plan		-0.038***		0.017
			[0.010]		[0.029]
R-squared		0.029	0.086	-0.432	-0.207
F		325.57	39.42	14.92	27.31
Dependent Mean		0.2920297	0.2920297	0.2920297	0.2920297
Respondents		10903	10903	10903	10903

Note: All regressions with 10,903 respondants who are AFP members, respondend to the 2004 or 2006 EPS waves.
The instrument for pension literacy (parent pensioner in the household averaged in 2004 and 2006) is statistically significant at 5% level in all the first -stage regressions. Covariates are age, gender, married household members, work and informal dummies, ln(wage), ln(total household income), household income, year 2006 dummy, education dummies (dropout, technical, college), dummy if long horizon, no retirement plan, plans to never retire, household head, region density and region. * significant at 5%; *** significant at 1%.

Table 10: Pension Literacy and Financial Behavior

Pension Literacy	Has switched fund administrator	Has switched fund type	Has originality	Financial Gymnastic	Voluntary Contributions
Lowest Third	5.30%	8.80%	59.30%	14.10%	37.60%
Middle Third	6.80%	22.30%	63.20%	31.20%	46.80%
Highest Third	13.90%	58.30%	62.70%	69.00%	65.90%
All	8.90%	30.40%	62.50%	38.50%	47.70%
N	967	3,319	1,982	4,197	655
Pearson chi2(2)	214	2600	1	2900	81.1
P-value of H0 no relationship	0	0	0.6	0	0

Note: All tabulations with 10,903 respondants who are AFP members and responded to the 2004 or 2006 EPS waves. Individuals are sorted according to their pension literacy index in three categories: lowest (33%), middle(22-66%) and highest(66% and more).

Table 11: Pension Literacy Index Estimators by model estimated

	Pension Literacy Index			
	[1]	[2]	[3]	[4]
	No identification		Pensioner instrument	
Marginal Effect on Fund Administrator Switching (D^i_{SFA})	0.215***	0.079***	0.108	-0.206
	[0.013]	[0.014]	[0.269]	[0.444]
Marginal Effect on Fund Type Switching (D^i_{SFT})	1.356***	1.099***	1.400***	1.214***
	[0.027]	[0.029]	[0.096]	[0.291]
Marginal Effect on Fund Type Originality (Doft)	0.091	0.009	-1.690**	-1.32
	[0.058]	[0.062]	0.841	[1.633]
Marginal Effect on Financial Gymnastic (I^i_{GYM})	1.596***	1.336***	1.492***	1.219***
	[0.031]	[0.033]	[0.079]	[0.338]
Marginal Effect on Voluntary Contributions (D^i_{vc})	0.783***	0.593***	1.629***	1.745***
	[0.080]	[0.089]	[0.017]	[0.034]

Table Appendix

Table A1: Parent pensioner in the Household and Wages quintiles

Years with a parent pensioner in the Household	Quintile 1 [$0 - $127,200]	Quintile 2 [$127,438.5 - $159,000]	Quintile 3 [$160,000 - $220,000]	Quintile 4 [$220,207.1 - $330,000]	Quintile 5 [$330,720 - $1,500,000]
None (0)	1.955	1.058	1.381	1.452	1.484
	26,7	14,4	18,8	19,8	20,3
Half (0.5)	124	60	100	104	74
	26,8	13,0	21,7	22,5	16,0
All years (1)	126	63	122	95	101
	24,9	12,4	24,1	18,7	19,9
All	2.205	1.181	1.603	1.651	1.659
	26,6	14,2	19,3	19,9	20,0
Pearson chi2(4)	16,40				
P-value of H0 no relationship	0,04				

Note: Authors' calculation based on EPS 2004 and 2006

Table A2: Parent pensioner in the Household and Education Level

Years with a parent pensioner in the Household	Dropout	Less than High School	Technical Degree	College Degree	All
None (0)	2,144	4,536	1,363	1,591	9,634
	22.3	47.1	14.2	16.5	100
Half (0.5)	80	298	104	119	601
	13.3	49.6	17.3	19.8	100
All years (1)	71	313	134	150	668
	10.6	46.9	20.1	22.5	100
All	2,295	5,147	1,601	1,860	10,903
	21.1	47.2	14.7	17.1	100
Pearson chi2(4)	92.5				
P-value of H0 no relationship	0				

Note: Authors' calculation based on EPS 2004 and 2006

Table A3: comparisson of Results with Pensioner and Senior Instrument

Model	Pensioner instrument		Senior instrument	
	No Controls	With Controls	No Controls	With Controls
Voluntary Pension Saving (ivreg)	0.533**	0.488	1.565	0.558
	[0.264]	[0.391]	[2.897]	[0.416]
Voluntary Financial Saving (ivreg)	1.753***	1.487**	10.374	0.566
	[0.454]	[0.625]	[15.675]	[0.581]
Pension Fund Administrator Switching (ivprobit)	0.1080673	-0.2062408	1.481***	-0.6495426
	[0.269]	[0.444]	[0.019]	[0.529]
Pension Fund Type Switching (ivprobit)	1.400***	1.214***	1.543***	1.156**
	[0.096]	[0.291]	[0.052]	[0.349]
Pension Fund Type Originality (ivprobit)	-1.690**	-1.31958	-1.904***	1.058703
	[0.841]	[1.633]	[0.080]	[2.757]
Financial Gymnastic (ivprobit)	1.492***	1.219***	1.550***	1.319***
	[0.079]	[0.338]	[0.071]	[0.301]
Voluntary contributions by selfemployed (ivprobit)	1.629***	1.745***	1.588***	1.740***
	[0.017]	[0.034]	[0.070]	[0.048]

Table A4: Pension Fund Administrator Switching

		Marginal Effect on Fund Administrator Switching (D^i_{SFA})			
		[1]	[2]	[3]	[4]
		No identification		Pensioner instrument	
I^i_{PL}:	Pension Literacy Index	0.215***	0.079***	0.108	-0.206
		[0.013]	[0.014]	[0.269]	[0.444]
V^i_{DEM}:	Less than age 30		0.005		-0.005
			[0.008]		[0.018]
	Age 30-39		0.004		0.002
			[0.006]		[0.007]
	Within 10 years of NRA		-0.012*		-0.012
			[0.007]		[0.009]
	At or above NRA		-0.041***		-0.069***
			[0.008]		[0.026]
	Male		-0.015**		-0.013*
			[0.006]		[0.007]
	Married		0.001		0.004
			[0.005]		[0.008]
	Household Size		0.001		0.001
			[0.002]		[0.002]
	Household Head		0.006		0.009
			[0.006]		[0.009]
V^i_{LAB}:	Informal		-0.046***		-0.081**
			[0.005]		[0.036]
	Currently Working		0.021		0.019
			[0.040]		[0.053]
V^i_{INC}:	Monthly Earnings		0.040***		0.058**
			[0.006]		[0.026]
	Household Income		0.001		0.006
			[0.004]		[0.008]
V^i_{EDU}:	Less than High School		0.003		-0.018
			[0.008]		[0.033]
	Technical Degree		0.037***		0.053*
			[0.009]		[0.029]
	College Degree		0.060***		0.080*
			[0.010]		[0.043]
V^i_{HOR}:	Long Planning Horizon		-0.009*		-0.006
			[0.005]		[0.008]
	Plans to Never Retire		-0.004		-0.009
			[0.005]		[0.009]
	No Retirement Plan		-0.012*		-0.027
			[0.006]		[0.023]
Pseudo R^2		0.04	0.10		
Wald test of exogeneity				0.17	0.53
P-value of H0 there is no endogeneity				0.68	0.47
Dependent Mean		0.09	0.09	0.09	0.09
Respondents		10,903	10,903	10,903	10,903

Note: All regressions with 10,903 respondants who are AFP members, respondend to the 2004 or 2006 EPS waves.

The instrument for pension literacy (parent pensioner in the household averaged in 2004 and 2006) is statistically significant at 5% level in all the first -stage regressions. Covariates are age, gender, married household members, work and informal dummies, ln(wage), ln(total household income), household income, year 2006 dummy, education dummies (dropout, technical, college), dummy if long horizon, no retirement plan, plans to never retire, household head, region density and region. * significant at 5%; *** significant at 1%.

Table A5: Pension Fund Type Switching

		Marginal Effect on Fund Type Switching (D^i_{SFT})			
		[1]	[2]	[3]	[4]
		No identification		Pensioner instrument	
I^i_{PL}:	Pension Literacy Index	1.356***	1.099***	1.400***	1.214***
		[0.027]	[0.029]	[0.096]	[0.291]
V^i_{DEM}:	Less than age 30		-0.007		0.01
			[0.015]		[0.019]
	Age 30-39		0.015		0.013
			[0.012]		[0.008]
	Within 10 years of NRA		-0.035**		-0.029**
			[0.014]		[0.011]
	At or above NRA		-0.060***		-0.032
			[0.021]		[0.026]
	Male		-0.002		-0.006
			[0.011]		[0.009]
	Married		0.008		0.002
			[0.010]		[0.009]
	Household Size		-0.004		-0.002
			[0.003]		[0.003]
	Household Head		0.012		0.005
			[0.012]		[0.010]
V^i_{LAB}:	Informal		-0.094***		-0.044
			[0.011]		[0.037]
	Currently Working		0.132**		0.112**
			[0.061]		[0.053]
V^i_{INC}:	Monthly Earnings		0.056***		0.019
			[0.011]		[0.026]
	Household Income		0.015*		0.004
			[0.008]		[0.010]
V^i_{EDU}:	Less than High School		-0.068***		-0.018
			[0.013]		[0.039]
	Technical Degree		0.065***		0.021
			[0.014]		[0.030]
	College Degree		0.114***		0.04
			[0.015]		[0.045]
V^i_{HOR}:	Long Planning Horizon		0.012		0.003
			[0.010]		[0.010]
	Plans to Never Retire		-0.025**		-0.012
			[0.010]		[0.011]
	No Retirement Plan		-0.001		0.019
			[0.013]		[0.020]
Pseudo R^2		0.22	0.27		
Wald test of exogeneity				3.20	0.89
P-value of H0 there is no endogeneity				0.07	0.35
Dependent Mean		0.3	0.3	0.3	0.3
Respondents		10,903	10,903	10,903	10,903

Note: All regressions with 10,903 respondants who are AFP members, respondend to the 2004 or 2006 EPS waves.
The instrument for pension literacy (parent pensioner in the household averaged in 2004 and 2006) is statistically significant at 5% level in all the first -stage regressions. Covariates are age, gender, married household members, work and informal dummies, ln(wage), ln(total household income), household income, year 2006 dummy, education dummies (dropout, technical, college), dummy if long horizon, no retirement plan, plans to never retire, household head, region density and region. * significant at 5%; *** significant at 1%.

Table A6: Pension Fund Type Originality

		Marginal Effect on Fund Type Originality (Doft)			
		[1]	[2]	[3]	[4]
		No identification		Pensioner instrument	
I^i_{PL}:	Pension Literacy Index	0.091	0.009	-1.690**	-1.32
		[0.058]	[0.062]	0.841	[1.633]
V^i_{DEM}:	Less than age 30		0.022		-0.029
			[0.029]		[0.074]
	Age 30-39		0.051**		0.025
			[0.021]		[0.054]
	Within 10 years of NRA		0.102***		0.09
			[0.026]		[0.064]
	At or above NRA		0.147***		0.067
			[0.051]		[0.183]
	Male		-0.043**		-0.022
			[0.021]		[0.045]
	Married		0.004		0.001
			[0.020]		[0.018]
	Household Size		0.001		0.001
			[0.006]		[0.005]
	Household Head		-0.003		0.003
			[0.023]		[0.021]
V^i_{LAB}:	Informal		0.041*		0.018
			[0.025]		[0.050]
	Currently Working		0.179		-0.057
			[0.207]		[0.383]
V^i_{INC}:	Monthly Earnings		0.044**		0.068***
			[0.021]		[0.022]
	Household Income		0.025		0.025
			[0.016]		[0.017]
V^i_{EDU}:	Less than High School		0		-0.071
			[0.036]		[0.092]
	Technical Degree		-0.005		0.026
			[0.024]		[0.045]
	College Degree		0.021		0.065
			[0.024]		[0.049]
V^i_{HOR}:	Long Planning Horizon		-0.024		0.007
			[0.019]		[0.049]
	Plans to Never Retire		-0.018		-0.026
			[0.020]		[0.017]
	No Retirement Plan		-0.028		-0.066
			[0.025]		[0.043]
Pseudo R^2		0	0.02		
Wald test of exogeneity				0.38	0.28
P-value of H0 there is no endogeneity				0.54	0.6
Dependant mean		0.63	0.63	0.63	0.63
Respondents		3,169	3,169	3,169	3,169

Note: All regressions with 10,903 respondants who are AFP members, respondend to the 2004 or 2006 EPS waves. The instrument for pension literacy (parent pensioner in the household averaged in 2004 and 2006) is statistically significant at 5% level in all the first -stage regressions. Covariates are age, gender, married household members, work and informal dummies, ln(wage), ln(total household income), household income, year 2006 dummy, education dummies (dropout, technical, college), dummy if long horizon, no retirement plan, plans to never retire, household head, region density and region. * significant at 5%; *** significant at 1%.

Table A7: Financial Activeness

		Marginal Effect on Financial Activeness (I^i_{GYM})			
		[1]	[2]	[3]	[4]
		No identification		Pensioner instrument	
I^i_{PL}:	Pension Literacy Index	1.596***	1.336***	1.492***	1.219
		[0.031]	[0.033]	[0.079]	[0.338]***
V^i_{DEM}:	Less than age 30		0.008		0.016
			[0.017]		[0.020]
	Age 30-39		0.044***		0.032
			[0.013]		[0.009]***
	Within 10 years of NRA		-0.017		-0.014
			[0.016]		[0.012]
	At or above NRA		-0.090***		-0.056
			[0.024]		[0.031]*
	Male		-0.021*		-0.018
			[0.012]		[0.009]**
	Married		0.006		0.001
			[0.012]		[0.010]
	Household Size		-0.002		-0.001
			[0.003]		[0.003]
	Household Head		-0.124***		0.009
			[0.013]		[0.011]
V^i_{LAB}:	Informal		0.016		-0.071
			[0.014]		[0.045]
	Currently Working		0.158**		0.122
			[0.071]		[0.056]**
V^i_{INC}:	Monthly Earnings		0.069***		0.034
			[0.012]		[0.031]
	Household Income		0.015*		0.006
			[0.009]		[0.011]
V^i_{EDU}:	Less than High School		-0.064***		-0.023
			[0.015]		[0.043]
	Technical Degree		0.066***		0.029
			[0.016]		[0.034]
	College Degree		0.111***		0.05
			[0.017]		[0.051]
V^i_{HOR}:	Long Planning Horizon		0		-0.004
			[0.012]		[0.010]
	Plans to Never Retire		-0.030**		-0.016
			[0.012]		[0.013]
	No Retirement Plan		-0.013		0.004
			[0.015]		[0.025]
Pseudo R^2		0.22	0.27		
Wald test of exogeneity				0.27	0.33
P-value of H0 there is no endogeneity				0.09	0.57
Dependant mean		0.38	0.38	0.38	0.38
Respondents		10,903	10,903	10,903	10,903

Note: All regressions with 10,903 respondants who are AFP members, respondend to the 2004 or 2006 EPS waves.

The instrument for pension literacy (parent pensioner in the household averaged in 2004 and 2006) is statistically significant at 5% level in all the first -stage regressions. Covariates are age, gender, married household members, work and informal dummies, ln(wage), ln(total household income), household income, year 2006 dummy, education dummies (dropout, technical, college), dummy if long horizon, no retirement plan, plans to never retire, household head, region density and region. * significant at 5%; *** significant at 1%.

Table A8: Voluntary contributions by selfemployed

		Marginal Effect on Voluntary Contributions (D^i_{vc})			
		[1]	[2]	[3]	[4]
		No identification		Pensioner instrument	
I^i_{PL}:	Pension Literacy Index	0.783***	0.593***	1.629***	1.745***
		[0.080]	[0.089]	[0.017]	[0.034]
V^i_{DEM}:	Less than age 30		0.011		0.023
			[0.061]		[0.033]
	Age 30-39		-0.083**		-0.004
			[0.036]		[0.029]
	Within 10 years of NRA		-0.059		0.008
			[0.041]		[0.028]
	At or above NRA		-0.085		-0.018
			[0.066]		[0.042]
	Male		-0.018		-0.018
			[0.041]		[0.022]
	Married		-0.037		-0.025
			[0.034]		[0.020]
	Household Size		0.005		0.001
			[0.009]		[0.005]
	Household Head		0.019		-0.004
			[0.042]		[0.023]
V^i_{INC}:	Monthly Earnings		0.163***		-0.01
			[0.027]		[0.045]
	Household Income		-0.022		-0.023
			[0.027]		[0.015]
V^i_{EDU}:	Less than High School		-0.002		0.096***
			[0.038]		[0.023]
	Technical Degree		0.052		-0.044
			[0.046]		[0.031]
	College Degree		0.086*		-0.128***
			[0.045]		[0.043]
V^i_{HOR}:	Long Planning Horizon		0.045		-0.009
			[0.032]		[0.021]
	Plans to Never Retire		-0.025		0.035*
			[0.032]		[0.020]
	No Retirement Plan		0.05		0.076***
			[0.045]		[0.025]
Pseudo R^2		0.05	0.11		
Wald test of exogeneity				3.10	2.32
P-value of H0 there is no endogeneity				0.08	0.13
Dependant mean		0.48	0.48	0.48	0.48
Respondents		1,374	1,374	1,374	1,374

Note: All regressions with 10,903 respondants who are AFP members, respondend to the 2004 or 2006 EPS waves.

The instrument for pension literacy (parent pensioner in the household averaged in 2004 and 2006) is statistically significant at 5% level in all the first -stage regressions. Covariates are age, gender, married household members, work and informal dummies, ln(wage), ln(total household income), household income, year 2006 dummy, education dummies (dropout, technical, college), dummy if long horizon, no retirement plan, plans to never retire, household head, region density and region. * significant at 5%; *** significant at 1%.