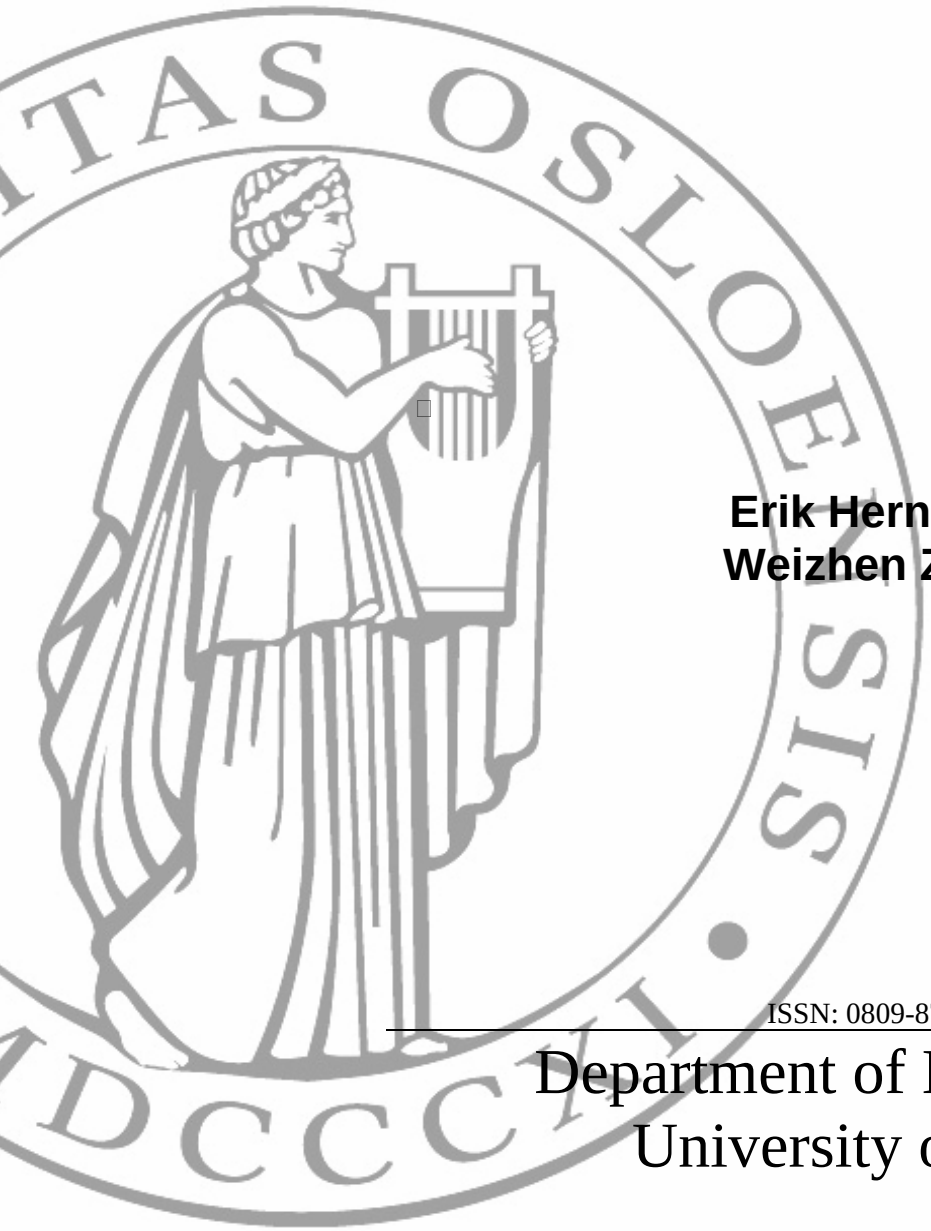
MEMORANDUM

No 12/2007

Pension Entitlements and Wealth Accumulation



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Pension Entitlements and Wealth Accumulation[1]

Erik Hernæs[2] and Weizhen Zhu[3]

Abstract

Variation in non-pension wealth accumulation with the level of expected pensions is investigated with a register based, linked employer-employee dataset. This includes wealth components, earnings history and demographic information, supplemented with detailed calculations of public and occupational pension entitlements, allowing construction of full life time income trajectories. Regressions are run on the half of the population with some wealth and therefore the option of consumption smoothing. The results imply substantial offsets of pension wealth against other private wealth, mostly financial. Although pension benefits are related to earnings, the regressive structure of the public pension and incomplete coverage of occupational pensions provide independent variation in pensions. Panel estimation provides support for the cross section results. Heterogeneity and selection bias are investigated with estimation on a variety of sub-samples.

JEL classification: D14; D91

Keywords: Wealth accumulation; Pensions

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1. Introduction

On the background of pension and tax reform in many countries, an important question is whether increased pension entitlements lead to decreases in other forms of household saving. This is of interest from a macroeconomic point of view, as well as from a research point of view, as part of the study of life-cycle consumption and saving behaviour.

The question has been addressed in a number of papers, with the majority of recent papers based on data for the US. The results differ widely, from almost complete offset of pension wealth against non-pension wealth to almost no effect. The earliest work on the effect of private pensions on other saving was done by Cagan (1965) and Katona (1965). Both of them obtained a positive effect of pension wealth on other saving. Based on aggregate data, Feldstein (1974 and 1982) found that social security wealth crowded out other wealth by 30-50 per cent. By using individual household observations, Feldstein and Pellechio (1979) also found that social security significantly depresses private wealth accumulation, as did Hubbard (1986) who found about one third offset of social security and about half of that for private pensions. In more recent studies, Gale and Scholz (1994) and Gale (1998) found that tax-induced retirement saving in the US is largely financed by tax reduction and shift from other types of savings, whereas Poterba *et al*. (2004) found that this is largely new saving. By using Canadian data, Boyle and Murray (1979) found that Canada's public pension plans had no visible effect on household savings behavior. Greene (1981) did two tests of the life cycle hypothesis based on two surveys from UK and concluded that pension saving does not substitute for other types of saving. Euwals (2000) found an ambiguous impact of the public part of the Dutch pension system on savings, but a negative impact of occupational pensions. For Italy, Attanasio and Brugiavini (2003) found evidence that saving rates increased as a result of a reduction in pension wealth by exploiting the Italian pension reform of 1992.

The divergence in conclusions in the studies may partly be due to differences in modelling approaches, but also quality problems in data sources and the handling of these problems are potential explanations. The studies are mostly based on surveys, and even if these have become larger and better, the limited number of observations makes the conclusions quite sensitive to sample definition and data revision.

In this paper we use as a point of departure the modelling approach of Gale (1998) for studying the impact of pension entitlements on other wealth accumulation. We assume exogenous income (earnings and pensions) and perfect consumption smoothing over the life cycle. We develop the model in discrete time to fit more closely to the data, and extend the model by allowing for a subsistence level that is a lower bound on total consumption. A closed form expression for wealth accumulation is obtained by assuming specific and identical discounting and interest rates.

The empirical basis is register based data sets with detailed information on income, wealth and a large number of labour market related and demographic variables, see Hernæs *et al.* (2006a), Hernæs and Zhang (2006) and Hernæs *et al.* (2000). Since the registers cover the whole Norwegian population, we have no sample bias problems. Furthermore, we are able to identify pension entitlements not only in the social security system, but also in the early retirement and in the public and private occupation based pension systems. We are therefore able to identify pension wealth of different types and link this to non-pension wealth as well as to earnings and demographic information, both at the individual and at the household level. We only lack information on private pension saving, which is of an order of magnitude of around one per cent of the total income of retirees.

As noted by Gale (1998) and others there is a potential correlation between pension entitlements and earnings, making it difficult to identify the impact of a change in pension entitlements on non-pension savings. In our setting, the variation in occupational pension coverage and the regressive structure of the earnings related public pension both serve to reduce this correlation.

The analysis is conducted for two sets of households. Both sets consist of married couples, husband and wife are both employees and the husband is aged between 35 and 64. One set ("absolute value limit sample") consists of households with a net total non-pension wealth of more than 50,000 NOK and less than 10 million NOK [4]. The second set ("percentile limit sample") consists of households between the 10^{th} and the 97.5^{th} percentiles in the net total non-pension wealth distribution. The underlying assumption is that households with little wealth do not have much flexibility of choosing how much to save, and that the most wealthy households do not rely on the pension entitlements after they retire. Since the

[4] The rate of exchange in May 2007 was 8.1 NOK to 1 EURO

composition of the two samples are different, due to the way they are drawn, the percentile sample contains more low income households than the absolute value limit sample. And therefore, comparison across samples may throw some light on the heterogeneity. To reduce the heterogeneity in the preferences of saving, we split samples by early retirement eligibility and age groups and estimated two versions of the model, one on cross-section data and another by using fixed effects based on the panel structure. Both total non-pension net wealth and financial wealth have been used. We have also estimated both with occupational pensions and pension from the National Insurance System as separate variables and added together. Finally, we controlled for a number of household characteristics which implicitly models the subsistence level of consumption.

The cross section results show a negative association between pension entitlements and financial wealth of households. Among households in which the husband is not eligible for early retirement, the coefficients associated with occupational pension is between -0.61 and -0.23 depending on age group and sample extraction. This means that between 23 and 61 per cent of an increase in the present value of occupational pension entitlements will be used to increase consumption during working life, by reducing financial savings. Among households in which the husband is eligible for early retirement, the association is weaker, probably because of the correlation between occupational pension and early retirement coverage, and the conditional nature of early retirement entitlements. The samples with households not eligible for early retirement therefore are viewed as cleaner samples in this respect. Panel estimation results are less precise, but confirm the cross section results.

Hence, we conclude that there is an offsetting effect of pension entitlements against financial savings, but also that many other factors appear to influence savings. In particular, it would be appropriate to conduct panel studies over a longer period, to investigate the robustness of the results. Even so, the results appear to support the notion that pension wealth to a certain degree reduces other household savings.

The rest of this paper is organized as follows: Chapter II gives a brief overview of the institutional setting in Norway; Chapter III presents the theoretical modelling approach and Chapter IV elicits the empirical specification. Data construction and description can be found in Chapter V. Chapter VI discusses the estimation results and Chapter VII concludes.

2. Institutional Setting in Norway

From age 67, all Norwegian residents are entitled to an old age pension from the National Insurance System (NIS), which is an unfunded pay-as-you-go public pension (see The Ministry of Labour and Social Inclusion, 2006 for details). In addition to a basic component, there is an earnings related component, based on the 20 best years of pension accruing income and requiring 40 years with annual earnings above a minimum level ("G") to be paid in full. Fully matured, the current rules and income distribution imply a NIS pension bounded between a minimum pension at 1.8 G (approximaetly 35 per cent of average full time earnings) and a maximum pension at 3.93 G (approximately 72 per cent for average full time earnings). The "marginal return" in the form of increase in the NIS pension on an increase in the earnings level over the 20 accruing years, is 42 per cent up to 6 G, around average full time earnings, and thereafter 14 percent up to maximum pension accruing income (12 G), which is around 2.2 times average full time earnings. In contrast, contributions are levied proportionally on employees, on employers and on self employed, up to maximum pension accruing income.

Because benefits are not linked to contributions, neither at the individual level nor in government budgets, we assume that people view their contribution just as a tax, and consider benefits as an exogenous income stream. Some support for this assumption was found by Kotlikoff (1979) who did not find clear evidence whether people in the US viewed contributions as savings or just another tax.

Occupation based pensions (OP), public and private, usually scheduled to start at age 67, supplement the NIS pension. The public sector OP is fully integrated with the NIS so that the total pension is the maximum of 66 % of final annual earnings and the NIS pension. In the private sector, the occupational pensions are company based and cover more than half the labour force in the observation period. During the observation period, most programmes were of the DB type, although there is a trend towards DC.[5] Contributions to occupational pensions, which are funded, are paid by the employers, and calculated to give an old age pension which together with the stipulated NIS pension is a certain percentage of final wage, often 66 %. To be tax-

[5] By the end of 2006, all private companies with at least two employees are required to have an OP, either defined benefit (DB) or defined contribution (DC), and the minimum level is the equivalent of a 2 % DC exclusive of administration cost.

preferred, programmes must cover all employees in the company, and most progammes include disability and survivor insurance. For more details, see Hernæs *et al.* (2006a) and Hernæs and Zhang (2006). We assume that employees do not view contributions as savings and view OP benefits as exogenous income.

There is also an early retirement scheme (AFP), company based and covering the whole public sector and participating private sector companies, presently comprising more than half of all private sector employees. The age of eligibility was gradually reduced from 66 at the start in 1989 to 62 from 1 July 1997. In addition to working in an AFP company, individual eligibility also depends on the income history. The amount of benefit in early retirement is identical to the NIS benefit up to age 67 for private sector retirees and up to age 65 for public sector retirees, when the latter start receiving their old age pension at 66 per cent of final salary. For early retirees, old age pension is calculated after prolonging normal earnings up to age 67, and taking up early retirement does not affect old age pension. The retirement decision is made by the employee, and there are indications that economic incentives as well as company characteristics are important for the decision (Hernæs *et al.*, 2006b).

The cost of the early retirement programme is split between the government, pooled contributions from participating employers and contributions from the company of the incumbents. We also assume that employees view the early retirement as exogenous income, but we will take the conditional nature of this entitlement into account.

In 1999, 66 per cent of average pre-tax income among old age pensioners came from the NIS (Andersen *et al.* 2002). Other pensions, mostly occupation based (including public sector pensions) made up 17 per cent of pre-tax income, capital income made up 11 and labour earnings 4 per cent. Hence the NIS plays a very important role as income source for the elderly, although also other pensions and capital income play a role.

3. Wealth Accumulation Under Perfect Consumption Smoothing

We use an approach similar to Gale (1998), assuming that households maximise the discounted life time utility from the age 30 when work starts[6], within a

[6] We assume that the husband and the wife are at the same age and start working at age 30.

discrete time framework with year as the time unit. The period utility function is of the form

$$U_t = \frac{(C_t - \gamma_t)^{1-\rho} - 1}{1-\rho}, \tag{1}$$

where C_t is consumption at age t, γ_t is "minimum" consumption at age t and $0 < \rho < 1$.

The term γ_t denotes a certain level of consumption that is considered necessary, in the sense that intertemporal decisions on consumption only determine consumption above this minimum. The minimum consumption is a term that has been proved to be useful in many applications, see Dagsvik and Strøm (2006). A higher level of minimum consumption increases the marginal utility of consumption. The minimum consumption is assumed to be exogenous, and will be modelled as a function of individual characteristics, which also gives us a way to introduce individual heterogeneity in the structural model. This was one of the problems in paper by Gale (1998). We also depart from his approach in using discrete time, which fits the structure of the data sources. In other respects, the modelling is quite similar.

Leisure is not included in the utility function, since we are primarily concerned with the allocation of earnings between consumption and saving, during the working years. For the same reason, we assume an exogenous retirement age, and exogenous income and pension streams, but take into account that early retirement is optional.

The functional form for the decision on "extra" consumption, $C_t - \gamma_t$, is quite flexible. When $\rho \to 0$, the period utility approaches a linear form, with constant marginal utility of income. When $\rho \to 1$, the period utility approaches $\ln(C_t - \gamma_t)$.

Over the life-time, we assume that households choose the sequence of C_t to solve the following optimization problem

$$\max_{\{C_t\}} V = \sum_{t=1}^{T} \frac{(C_t - \gamma_t)^{1-\rho} - 1}{1-\rho} (1+\delta)^{-t} \tag{2}$$

$$\text{Subject to:} \quad \sum_{t=1}^{T} C_t (1+r)^{-t} = \sum_{t=1}^{R-1} E_t (1+r)^{-t} + \sum_{t=R}^{T} P_t (1+r)^{-t} \tag{3}$$

T is the expected working life span, which starts from age 30, δ is the individual's time preference parameter and r is the real interest rate. E_t is the earnings

at age t until retirement age R when pension income P_t starts. Total income consists of earnings and old-age pension including any additional, occupational pensions and can be distributed over the life cycle.

Maximization of (2) given (3) yields :

$$C_t = \gamma_t + (E^T + P^T - \gamma^T)\left(\left(\frac{1+r}{1+\delta}\right)^{\frac{t}{\rho}} \Bigg/ \sum_{t=1}^{T} \frac{(1+r)^{\frac{t}{\rho}-t}}{(1+\delta)^{\frac{t}{\rho}}}\right) \tag{4}$$

where:

$$E^T = \sum_{t=1}^{R-1} E_t (1+r)^{-t},\ P^T = \sum_{t=R}^{T} P_t (1+r)^{-t}, \gamma^T = \sum_{t=1}^{T} \gamma_t (1+r)^{-t}.$$

Formula (4) determines consumption in each period as minimum consumption plus a fraction of life time earnings minus life time minimum consumption. This fraction increases over time if $r > \delta$, since the return on savings then outweighs discounting of future utility streams.

During working age, *i.e.* $\tau < R$, wealth is:

$$W_\tau = \sum_{t=1}^{\tau} (1+r)^{\tau-t} (E_t - C_t) \tag{5}$$

Inserting (4) into (5), we obtain the equation for non-pension wealth accumulation as follows:

$$\begin{aligned} W_\tau = & \sum_{t=1}^{\tau} (1+r)^{\tau-t} E_t - \sum_{t=1}^{\tau} (1+r)^{\tau-t} \gamma_t \\ & -(E^T + P^T - \gamma^T) \sum_{t=1}^{\tau} (1+r)^{\tau-t} \left(\frac{1+r}{1+\delta}\right)^{\frac{t}{\rho}} \Bigg/ \sum_{i=1}^{T} \left(\frac{1+r}{1+\delta}\right)^{\frac{i}{\rho}} (1+r)^{-i} \end{aligned} \tag{6}$$

Let:

$$E_\tau^* = \sum_{t=1}^{\tau} (1+r)^{\tau-t} E_t$$

$$\gamma_\tau^* = \sum_{t=1}^{\tau} (1+r)^{\tau-t} \gamma_t$$

$$R_\tau(r, \delta, \rho) = \sum_{t=1}^{\tau} (1+r)^{\tau-t} \left(\frac{1+r}{1+\delta}\right)^{\frac{t}{\rho}} \Bigg/ \sum_{i=1}^{T} \left(\frac{1+r}{1+\delta}\right)^{\frac{i}{\rho}} (1+r)^{-i}$$

We can then write wealth in period τ as

$$W_\tau = E_\tau^* - R_\tau\left(r,\delta,\rho\right)(E^T + P^T) + \left[\gamma^T R_\tau\left(r,\delta,\rho\right) - \gamma_\tau^*\right] \quad (7)$$

Pensions enter here as future income, and are therefore not included in the wealth term W_τ. Note also that E_τ^* and γ_τ^* are accumulated earnings and minimum consumption (exogenous) up to age τ and evaluated at that age, whereas E^T, P^T and γ^T are present values at the time when work starts of the life time sequences. The $R_\tau\left(r,\delta,\rho\right)$ gives evaluation at age τ and determines the amount of life time income consumed at that age. It varies with age and depends on returns on savings (r), discounting $\left(\delta\right)$ and intertemporal substitution $\left(\rho\right)$.

Summing up, all terms at the right hand of (7) are evaluated at age τ. The first term are accumulated earnings, from which is first deducted the accumulated consumption if all consumption were smoothed. Since minimum consumption is assumed not to be smoothed, but to be exogenously given, this component is added in the last, bracketed terms, before the exogenously given, accumulated minimum consumption is deducted. The bracketed terms can be then be interpreted as the difference between the smoothed and the exogeneous minimum consumption at age τ. These are not observable and will be modelled with demographic characteristics in the empirical analyses, introducing heterogeneity.

According to (7), a person who is covered by a company based pension programme will have higher consumption and lower non-pension wealth during working life than a person who is not, if they both have the same earnings.

4. Empirical Model

In order to obtain a closed form, tractable model for estimation, we assume that the rate of time preference and the real rate of return are equal. The rate of intertemporal substitution, ρ disappears in the discounting terms and the consumption share factor $R_\tau\left(r,\delta,\rho\right)$ simply becomes $R_\tau = \sum_{t=1}^{\tau}\left(1+r\right)^{\tau-t} \Big/ \sum_{i=1}^{T}\left(1+r\right)^{-i}$.

In the empirical specification we split pension entitlements to allow them to be perceived differently by households into the following components: $P_\tau = N_\tau + A_\tau + O_\tau$ (all evaluated at the start of work). N^T, which is the accumulated future NIS pension from age 67, depends both on the whole earnings history and future political decisions

on adjustments. A^T which is the accumulated future AFP (early retirement) pension from eligibility age to age 67, will only be received if it is taken out. O^T which is the accumulated future occupational pension from the retirement age 67, depends both on future job changes and on the final salary.

Therefore, based on (7), we use the following empirical specification:

$$W_\tau = \alpha + \beta_E E_\tau^* - \beta_R R_\tau E^T - \beta_N R_\tau N^T - \beta_A R_\tau A^T - \beta_O R_\tau O^T + \tilde{\gamma}' \tilde{H} - \varepsilon_\tau \qquad (8)$$

Furthermore, we assume that the interest rate $r = 0,04$. We can then calculate transformed variables which predict consumption and wealth at every age based only on total life cycle income, regardless of source and estimate the coefficients. in the regression equation (8). The wealth and earnings variables W_τ, E_τ^* and E^T are defined as above. Household characteristics are introduced, both to model minimum consumption and to allow for variation in behaviour across households more in general. We model $\gamma^T R_\tau (r, \delta, \rho) - \gamma_\tau^*$ with $\tilde{H}$ which is a vector including number of children, age of head of household and average education of husband and wife.

Even with these modifications, the model is quite restrictive. As Poterba, Venti and Wise (2004) point out, individual variation in savings behaviour is a major problem. They deal with this heterogeneity problem by constructing comparable cross-sections, following individuals or "similar" cohorts over time, and by using aggregate data. The focus of their analysis is on substitution between DB and DC pension, which they generally do not find. We focus on the relationship between various types of pension entitlements and other forms of savings and utilize also the panel structure of the data, by estimating the following model:

$$W_{it} - \bar{W}_i = \beta_0 + \beta_1 (E_{it} - \bar{E}_i) + \beta_2 (R(t) - \bar{R}) E_i^T + \beta_3 (R(t) - \bar{R}) P_i^T + \varepsilon_{it} - \bar{\varepsilon}_i \qquad (9)$$

where t is the time index and $\bar{W}_i$, $\bar{E}_i$, $\bar{R}_i$, $\bar{\varepsilon}_i$ are the average of corresponding terms for household *i* between year 1994-2003.

5. Data Sources and Variable Construction

Data sources

The empirical basis are register data files covering all residents in Norway. These data, which are received from Statistics Norway with permission from the Data Inspectorate in Norway, are collected for administrative purposes, but are also used for construction of statistics and research. A unique, permanent, personal

identification number for each resident in Norway allows linking over time and across registers. In the data sets received by the Frisch Centre, this number has been replaced by an encrypted number in order to preserve confidentiality. The data give information on gender, age, marital status, education, spells of work, employer, and spells of unemployment, spells of sickness, and spells of disability, retirement, income, wealth and social benefits. The data also link families. Currently the data cover the period 1992-2004. For the present study, we use the demographic file for the year 1997, the pension points file from 1967 onwards (the only file which starts before 1992), the income and employer files for the period from 1992 to 2003, the employee register files over the period from 1992 to 1997 and the wealth files for 1994 and 2003.[7]

Samples

We restrict our samples to married couples, and we also require that both husband and wife are employees. This is motivated by the assumption that self-employed are in a different setting with regard to pension. In particular, they are self-financing any pension apart from the mandatory inclusion in the NIS. The restriction to married couples reduces heterogeneity in the preferences of saving. For the same reason, we choose only the Norwegian born households[8]. Furthermore, we assume that households with little wealth do not have much flexibility of choosing how much to save and that the most wealthy households do not rely on the pension entitlements after they retire. Therefore, we make two alternative samples, one including households with total wealth between 50 000 and 10 mill NOK ("absolute value limit sample"), and one including households between the 10^{th} and the $97{,}5^{th}$ percentile of total non-pension wealth ("percentile limit sample"). Both samples are confined to households with the husband aged 35-63. In total around 44 % of all males between 35 to 63 are thus included in each of the samples, but this percentage is lower for younger, in particular in the absolute value limit sample. Although average wealth is lower among the younger, the smaller fraction included imply that the average life time income will be higher than in the older age groups.

[7] Detailed description of these register files can be provided on request, since the primary sources are in Norwegian.
[8] Households' characteristics are defined by those of the head of the household

Table 1: Summary Statistics of the samples

Sample and age groups	50'< Total wealth <10000' (Absolute value limit sample)			Total wealth 10-97,5 % (Percentile sample)		
	Full sample	Non-AFP	AFP	Full sample	Non-AFP	AFP
			Sample size			
35-44	111413	30239	81174	121348	32658	88690
45-54	151839	32536	119303	150289	31312	118977
55-63	94020	25224	68796	89080	23141	65939
			Share of male age group			
35-44	0.342	0.093	0.249	0.372	0.100	0.272
45-54	0.494	0.106	0.388	0.489	0.102	0.387
55-63	0.541	0.145	0.396	0.513	0.133	0.379
			Average total wealth			
35-44	1004.5	1084.8	974.6	808.5	810.9	807.6
45-54	1237.5	1408.6	1190.8	1126.1	1178.2	1112.4
55-63	1339.4	1447.4	1299.9	1276.7	1295.8	1270.0
			Average financial wealth			
35-44	348.5	467.8	304.0	278.0	342.2	254.3
45-54	436.2	652.8	377.1	365.7	492.8	332.3
55-63	507.1	682.9	442.6	445.0	552.2	407.4
			Average age of the husband			
35-44	40.0	39.2	40.3	39.9	39.1	40.2
45-54	49.6	49.6	49.5	49.6	49.6	49.5
55-63	58.7	59.0	58.6	58.7	59.0	58.6
			Average number of children			
35-44	2.003	2.014	2.000	1.990	2.000	1.986
45-54	0.778	0.732	0.790	0.775	0.724	0.788
55-63	0.116	0.103	0.121	0.115	0.102	0.120
			Average education in years			
35-44	12.2	11.6	12.4	12.1	11.6	12.3
45-54	11.5	10.7	11.8	11.5	10.6	11.7
55-63	10.7	9.9	11.0	10.7	9.8	11.0

Note: 1. All monetary units are in 1000 NOK. 2. AFP is the abbreviation of early retirement.

Non-pension Wealth W_τ

Annual tax files give debt and gross non-pension real and financial wealth. The tax value assessment differs between assets and the deviation from market values is probably largest for housing wealth. In 2001, three quarters of all Norwegian households were home owners[9] and the taxable value of all real estate, mostly housing, was about three quarters of the financial wealth[10]. According to Statistics

[9] http://www.ssb.no/emner/02/01/fobbolig/tab-2002-09-23-11.html
[10] http://www.ssb.no/ifhus/tab-2005-05-20-03.html

Norway[11] the national average tax assessment in 1999 was 20 % of market value. In comparison, *e.g.* bank deposits are set at full value. Since debt is set at full value, (young) persons who have recently bought a house will have a negative taxable wealth, which will be recorded as a zero value in the tax files. Positive taxable values of (net) wealth will often not appear until middle age, and even then it will be undervalued if housing is part of the assets.

Therefore we set the gross housing wealth at five times the tax value, which gives a more realistic picture of the wealth of the households. Specifically, we define non-pension total wealth as gross taxable wealth[12] plus four times housing taxable value and minus debt. The financial wealth is obtained by excluding both value of housing and debt, assuming that debt is mainly mortgage. After scaling up housing values, financial wealth is less than other non-pension wealth, which is mostly housing. As it can be seen from Figure 1, in both samples non-pension wealth rises more quickly by age than the financial wealth does.

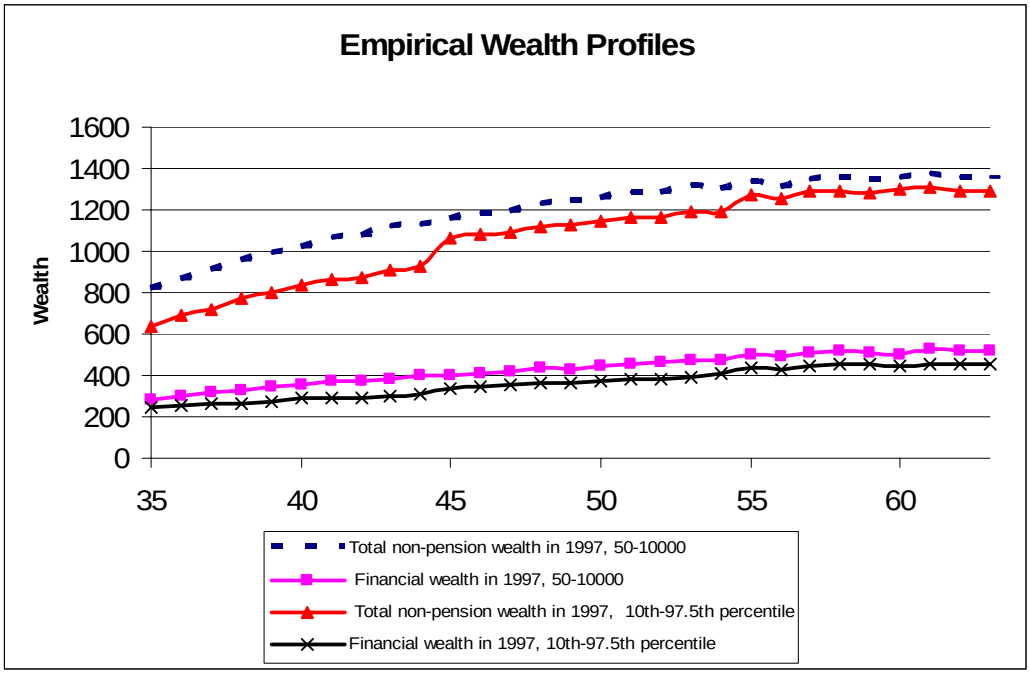

Figure 1: Average wealth by age in 1997 (in thousand NOK). Households with net wealth between 50 000 and 10 million NOK (absolute value limit sample) and households with wealth between the 10th and 97.5th percentile (percentile limit sample)

[11] http://www.ssb.no/emner/05/03/sbolig/tab-2001-08-21-01.html
[12] Gross wealth in the data includes bank deposit, stocks, real estates and tax value of the housing.

Housing wealth is here considered just as other types of wealth, but we realize that it differs in several respects. Firstly, it provides services, secondly it is difficult to adjust and thirdly, there may be substantial appreciation, anticipated or not. In order to partly take these problems into consideration, we estimate in addition models where we look at offset of pension entitlements only against financial wealth.

Earnings: E_τ and E^T

From the register files we have the sequence of annual pension points back to 1967, when the present earnings related pension system was introduced (NIS, described above). These pension points are constructed annually by dividing the individual's total pension accruing earnings with the "G" (the basic amount in the National Insurance Scheme, NIS)[13]. The data from 1967 onwards are used to estimate pension point profiles, which are then used to predict future earnings in terms of pension points for an individual up to age 67 (normal retirement age)[14].

This allows us to compute annual earnings from the corresponding sequence of observed or predicted pension points. These earnings are then converted to real 1997 values using an inflation rate of 2.25 %. This is close to the average over the period 1989-2005[15]. Based on these real terms, E_τ is then calculated as accumulated earnings at the age of observation τ, and E^T as the sum of life time earnings, evaluated at age 30. Accumulation and discounting are based on the assumed real interest rate of 4 %. Earnings outside the range 1-12 G is not identifiable, but this range covers a majority of the earnings distribution.

Since the tax rules have changed during the period, we have not attempted to deduct tax. That would have required taxation of each individual each year and we do

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[13] G is regulated by Parliament once a year, in accordance with changes in the general income level. We have observed G from year 1997 to 2002. To get G after year 2002, we assume that G will increase at the average increasing rate of the observed Gs. The increasing rate in the data is 0.072.

[14] In the estimation of a common trend of the pension points, we include only persons with a complete set of observed earnings from 1967 or from start of work if this is later. The regression is: $p_t^h - \overline{p}^h = \beta_0 + \beta_1 t + \beta_2 t^2$, in which t=1…51, h refers to household and t is defined as the period in the working history, ranging from 1 to 51 corresponding to age from 17 to 67. p_t^h is the number of pension points at time t, while $\overline{p}^h$ is the average of pension points between age 35 and 45 of the individual, $\beta_i, i = 0,1,2$ are unknown parameters and the number of observations is: 35,904,751. The estimation results are: $\beta_0 = -3.8256, \beta_1 = 0.2595, \beta_2 = -0.004253$, By using these estimates, we then predict the unobserved future pension points.

[15] The average of consumption price index is 2.247 over period 1989-2005. The data is from the official website of Statistics Norway, http://www.ssb.no/emner/08/02/10/kpi/tab-01.html.

not have all information necessary. In particular, tax deductibles are not available. Although the income tax is progressive in taxable income, high earners have more ways of reducing their tax as a proportion of gross income. The "effective" average tax rate on income may therefore not be increasing, and we have chosen to use gross income.

Household characteristics: $\tilde{H}_\tau$

We assume that family structure (number and age distribution of children) influences minimum consumption. Furthermore, we also believe that the education level will affect the propensity to plan further behaviour and therefore savings (Ameriks *et al*. 2003). Therefore we include the number of children below age 17, the age of the head of household and the average years of education of the husband and the wife as variables influencing the minimum consumption and then the wealth.

NIS pension wealth: N^T

The NIS (public) pensions are calculated on the basis of earnings profiles up to age 67, descibed above (projected if AFP is taken up before 67) and detailed institutional rules.

The measurement of DB pension wealth, in particular in systems such as the NIS, with complicated accrual rules, is an issue. Both the "objective" measurement and the modelling of individuals' perception and how to incorporate it in their work and consumption decisions pose problems. Up to the point when the earnings history gives a pension above the minimum, the NIS pension wealth is just the present value of the minimum pension, increasing over time only because retirement draws closer and discounting is reduced. However, the higher the accrued pension rights before this point, the less additional accrual is required to give a pension above a minimum. Disney (2001) proposed to model this in an option value framework. In our case, the most relevant exit route, disability, implies that current earnings are projected to age 67 to give the basis for disability benefit. We therefore assume that the option of withdrawing from the labour market is not considered and assume that people plan to continue contributing. Therefore we look at expected pension given a full earnings history, projected as described above and assume these to reflect individual expectations.

AFP pension wealth: A^T

We assume that those who are eligible, plan to take out AFP as early as possible and construct present values of AFP pension (A^T) from the eligibility age (65 before 1993 and 64 thereafter, during our observation period) for those working in AFP companies. The AFP data construction techniques are mainly based on the work done by Iskhakov and Kalvarskaia (2003) who utilized previous company affiliation of recipients of AFP to identify firms who have these programmes. Current employees of these companies are then assumed to be covered.

Occupation based pension wealth: O^T

Occupation based pensions also contain an element of uncertainty, since the majority of those existing at present are of DB type and related to (the unknown) final annual earnings level. In addition, there are portability problems if the individual changes job, see Disney (2001) for a study of the impact on labour market behaviour of various types of portability costs. We assume that persons who are currently working in an OP company (including the public sector) expect to continue to do so until retirement. This assumption is less restrictive if individuals take the OP benefit into account and tend to move from one OP company to another OP company when they change jobs.

The register files contain no direct information on OP coverage or entitlements. Fortunately, since there are strict requirements on the structure of the programmes if the companies want to get tax exemption (Pedersen, 2000), there are quite widespread similarities which facilitates imputation of entitlement. Hernæs and Zhang (2006) constructed a data set with all the OP companies imputed in register files by imposing rules which were developed on the basis of a survey dataset[16]. For those who work in an OP company, we project the final salary and calculate the OP as 66 per cent of the final salary minus the NIS.

6. Estimation Results

The way the estimations are conducted reflects several modifications of the simple initial model. In addition to allowing for different effects from different types

[16] This data set is from a survey, named ABU, which is conducted by Statistics Norway in 2003. Please refer to Hernæs and Zhang(2006) for a detailed description of the survey.

of pensions, we estimate all models both on a 1997 cross section data set and a 1994-2003 panel data set, using both the absolute wealth limit and the percentile samples. We also split into age groups 35-44, 45-54 and 55-63 and split further by AFP eligibility, and estimate separately for all groups.

We start with a discussion of the relationship between wealth and earnings, and derive implied savings rates. In this study earnings serve as controls when we study wealth and pension entitlements, we are therefore mainly concerned with how well earnings predict accumulation of wealth.

Next, we discuss what the results indicate about heterogeneity in wealth accumulation behaviour by comparing results for different groups. In the light of this we discuss the impact on non-pension saving of pension entitlements. We also compare the results we obtain when we use Old age pension in the regressions, to what we obtain when we split the Old age pension it into the components NIS and OP pension. Key results are given in Tables 3 and 4 and full estimation results are in the appendix.

Earnings and wealth

The estimates of coefficients attached to current accumulated and life time earnings (multiplied with the consumption share factor) are generally very small, sometimes with the "wrong" sign and sometimes not significant (see appendix), whereas the theoretical model predicts values of 1 and -1, respectively. We believe the reason for this is that there is too little independent variation in the two earnings concepts, due to too little variation in earnings profiles in the sample, to identify the structural earnings parameters, a problem which was noted also by Gale (1998).

Even so the model as a whole tracks average wealth across age groups very well, as shown in Figure 2. The wealth is predicted for the average household at each age by using the estimates of the corresponding age group.

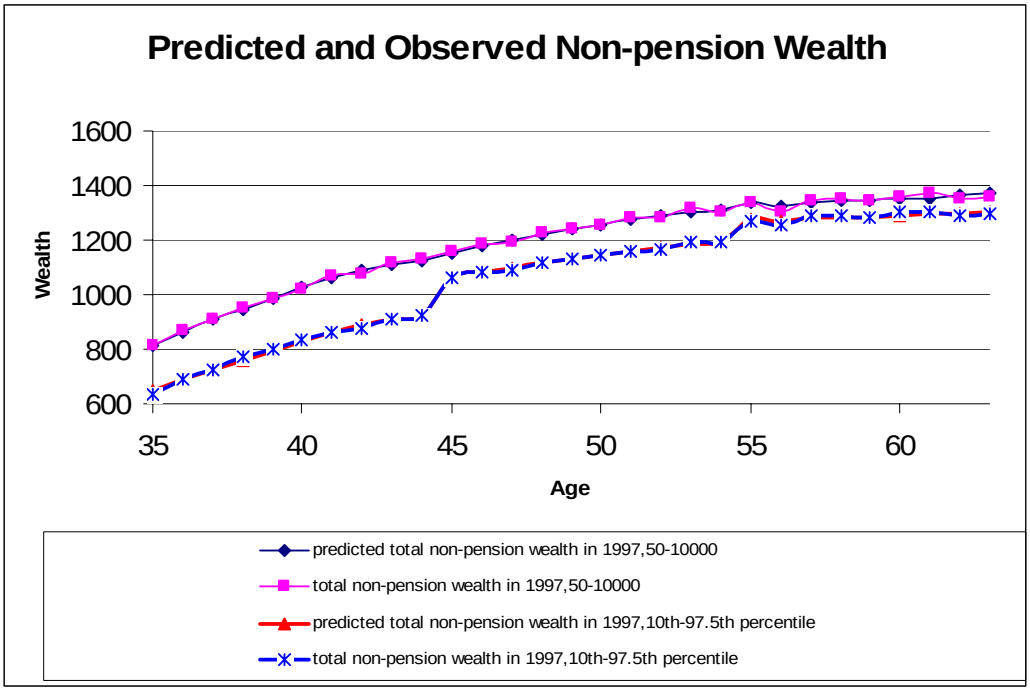

Figure 2: Predicted and observed non-pension wealth by age. (Predicted total wealth is obtained from the estimates of the full samples in each age group.)

Taken together and used to study the effect of simultaneous variation in the two earnings concepts, the coefficients generate reasonable results in simulations of average wealth. In Table 2, we illustrate the effect of a proportionally higher earnings path, specified as one standard deviation higher current accumulated earnings and the same relative increase in life time earnings, evaluated at mean values for each age group.

Table 2: Marginal savings rates and relative wealth increases from one standard deviation higher accumulated earnings and correspondingly higher life time earnings, for non-AFP eligible in the absolute wealth limit sample

Sample and age groups	50'< Total wealth <10000'			Total wealth 10-97,5 %		
	Marginal savings rates					
	35-44	*45-54*	*55-63*	*35-44*	*45-54*	*55-63*
Financial wealth	0.112	0.076	0.037	0.051	0.039	0.018
Total non-pension wealth	0.174	0.096	0.041	0.107	0.055	0.019
	Relative increases in wealth					
	35-44	*45-54*	*55-63*	*35-44*	*45-54*	*55-63*
Financial wealth	0.684	0.437	0.251	0.400	0.285	0.148
Total non-pension wealth	0.457	0.257	0.132	0.356	0.169	0.065

Based on estimates for the age group 35-45 (non-AFP eligbible) in the absolute value limit sample, an increase in accumulated current earnings of 2.85 million NOK (one standard deviation) and a corresponding increase in life time earnings of 4.69 million NOK, give an increase in total non-pension wealth of 0.716 million NOK. This implies a marginal "savings rate" defined as the share of the accumulated extra income which would have been saved, of 17.4 % for the age group 35-44. For the age group 45-54 the corresponding rate is 9.6 % and for the age group 55-63, the rate is 4.1 %. These results show a clear trend that these savings rates decrease by age, in line with accumulation and decumulation of wealth over the life cycle.

Also in the percentile sample the trend of decreasing savings rate across age groups is found, although the magnitude is smaller. This might be caused by the higher average wealth in the absolute value limit sample, in which case it indicates that consumption smoothing increases with the wealth level.

It is also clear that the changes are mostly in financial wealth. Since much of the other wealth is in housing, this means that any early consumption of a higher pension wealth is done by accumulating less financial wealth, and not by reducing the housing standard. This is reasonable and in line with other results (Venti and Wise, 2004).

Income variation therefore generates a lot of variation in wealth, although only a small part of the total variation is explained, as can be seen from the tables in the appendix. The implied savings rates appear reasonable and indicate some but not perfect consumption smoothing.

Heterogeneity in wealth accumulation

In this section, we look at the results when we use the Old age pension, which is the sum of OP and NIS (private and public). In the next section, we discuss the results when we separate OP and NIS in the regressions.

Heterogeneity with respect to (non-pension) wealth accumulation and deviation from the simple life-cycle model can arise from various sources and can be studied in different ways. Individual variation in the desired level of wealth, due to variation in the "pure" taste for savings, in addition to what is captured by earnings and demographic variables, may be captured by the panel estimates. As can be seen from Table 3 and Table 4, the panel estimates are generally larger in absolute values than the cross section estimates, but are much less precise, and sometimes not significantly different from zero. Some of the point estimates are below their theoretically predicted values of -1, but most of these are not significantly different from -1. Also, 95 % confidence intervals for panel estimates often include the cross section point estimates (the cross section estimates are very precise). We conclude that the panel estimates generally support the cross section estimates and that the pure taste variation does not seem to bias the cross section estimates. Therefore, we focus on the cross section results in the following.

Another cause of heterogeneity stems from AFP (early retirement) entitlements. Firstly, not all households are eligible and secondly, the value of the AFP entitlement among those eligible is conditional on taking early retirement, since this entitlement is otherwise lost. The first of these aspects, eligibility, is studied by splitting the sample by eligibility

The majority of the households are eligible for AFP and for these households the conditional nature of AFP entitlements causes the effect of entitlements to be ambiguous. Higher AFP entitlements mean that more people will plan to take out (retirement effect) and they need to save more to make up for the reduced income (see e.g. Feldstein, 1974). However, once they plan to take out AFP, they will save less (wealth effect) the higher the AFP is. This causes heterogeneity within the group of APP eligible, between those who plan to take up early retirement and those who do not. Correlation between Old age pension entitlements and AFP entitlement further complicates the interpretation of the coefficients for the AFP eligible group. Hence,we

believe that the clearest results are found for the non-AFP eligible and we focus in the following on the estimates for the non-AFP eligible.

Heterogeneity may also be caused by variation in the possibility of consumption smoothing due to lack of liquidity, credit rationing or income too close to the subsistence level. We assume that this variation is captured by the level of wealth, and attempt to shed light on this both by splitting into age groups and by comparing the two samples which are drawn differently.

Table 3: Pension entitlement offset against financial wealth in selected cross section and panel estimates

Age groups	Total wealth 50'<w <10000' (Absolute value limit sample)		Total wealth 10-97,5 % (Percentile limit sample)	
	Non-AFP	AFP (Early retirement)	Non-AFP	AFP (Early retirement)
Dependent variable: Financial wealth **Independent variables:** Old age pension (aggregated NIS and OP), AFP **Controls for**: Age of husband, number of children below 17, average years of education of husband and wife				
Cross section estimates				
	Old age pension offset			
35-44	-0.263 (0.025)	-0.107 (0.009)	-0.211 (0.014)	-0.051 (0.005)
45-54	-0.595 (0.037)	-0.142 (0.011)	-0.355 (0.023)	-0.047 (0.008)
55-63	-0.376 (0.082)	0.222 (0.027)	-0.274 (0.057)	0.188 (0.020)
	AFP offset			
35-44	NA	-1.041 (0.030)	NA	-0.637 (0.018)
45-54	NA	-0.725 (0.019)	NA	-0.486 (0.013)
55-63	NA	-0.558 (0.024)	NA	-0.388 (0.017)
Panel estimates				
	Old age pension offset			
35-44	-1.192 (0.195)	-1.050 (0.129)	-0.464 (0.097)	-0.780 (0.107)
45-54	-1.534 (0.222)	-0.560 (0.072)	-0.694 (0.120)	-0.325 (0.055)
55-63	-1.154 (0.125)	-0.070 (0.059)	-0.556 (0.090)	0.011 (0.046)
	AFP offset			
35-44	NA	-1.787 (0.290)	NA	-1.014 (0.237)
45-54	NA	-1.700 (0.139)	NA	-1.216 (0.104)
55-63	NA	-0.967 (0.117)	NA	-0.709 (0.090)
Dependent variable: Financial wealth **Independent variables:** NIS, OP and AFP **Controls for**: Age of husband, number of children below 17, average years of education of husband and wife				
Cross section estimates				
	OP offset			
35-44	-0.610 (0.038)	-0.316 (0.015)	-0.406 (0.022)	-0.175 (0.009)
45-54	-0.531 (0.027)	-0.123 (0.009)	-0.314 (0.017)	-0.044 (0.006)
55-63	-0.310 (0.037)	0.098 (0.011)	-0.229 (0.026)	0.074 (0.008)
	NIS offset			
35-44	-1.154 (0.100)	-0.605 (0.041)	-0.569 (0.055)	-0.343 (0.024)
45-54	-0.161 (0.091)	-0.171 (0.030)	-0.132 (0.054)	-0.042 (0.020)
55-63	0.403 (0.065)	0.219 (0.026)	0.180 (0.044)	0.154 (0.019)
		AFP offset		

35-44	NA	-0.814 (0.031)	NA	-0.502 (0.019)
45-54	NA	-0.717 (0.019)	NA	-0.481 (0.013)
55-63	NA	-0.551 (0.023)	NA	-0.374 (0.016)
		Panel estimates		
		OP offset		
35-44	-1.065 (0.256)	-1.084 (0.139)	-0.824 (0.130)	-0.862 (0.116)
45-54	-0.910 (0.260)	-0.493 (0.073)	-0.439 (0.142)	-0.302 (0.055)
55-63	-0.205 (0.250)	0.244 (0.073)	0.024 (0.181)	0.132 (0.057)
		NIS offset		
35-44	-1.310 (0.249)	-0.964 (0.186)	-0.168 (0.120)	-0.589 (0.150)
45-54	-2.509 (0.307)	-1.115 (0.108)	-1.072 (0.164)	-0.511 (0.081)
55-63	-1.324 (0.131)	-0.281 (0.066)	-0.651 (0.093)	-0.067 (0.051)
		AFP offset		
35-44	NA	-1.807 (0.291)	NA	-1.055 (0.238)
45-54	NA	-1.662 (0.139)	NA	-1.205 (0.104)
55-63	NA	-1.007 (0.117)	NA	-0.727 (0.091)

Note: Standard errors are reported in parentheses.

Table 4: Results for total non-pension wealth, selected cross section and panel estimates

Age groups	Total wealth 50'<w <10000'		Total wealth 10-97,5 %	
	Non-AFP	AFP (Early retirement)	Non-AFP	AFP (Early retirement)
Dependent variable: Non-pension total **wealth**				
Independent variables: Old age pension (aggregated NIS and OP), AFP				
Controls for: Age of husband, number of children below 17, average years of education of husband and wife				
Cross section estimates				
	Old age pension offset			
35-44	-0.090 (0.029)	-0.004 (0.013)	0.004 (0.020)	0.106 (0.010)
45-54	-0.475 (0.042)	-0.035 (0.016)	-0.182 (0.028)	0.078 (0.013)
55-63	0.218 (0.096)	0.698 (0.038)	0.378 (0.066)	0.638 (0.032)
	Old age pension offset			
35-44	NA	-1.375 (0.044)	NA	-0.895 (0.036)
45-54	NA	-0.758 (0.027)	NA	-0.455 (0.022)
55-63	NA	-0.612 (0.033)	NA	-0.410 (0.027)
Panel estimates				
	Old age pension offset			
35-44	-1.367 (0.211)	-1.082 (0.134)	-0.418 (0.122)	-0.825 (0.116)
45-54	-1.382 (0.231)	-0.517 (0.078)	-0.470 (0.133)	-0.228 (0.062)
55-63	-1.031 (0.134)	0.151 (0.064)	-0.376 (0.101)	0.227 (0.055)
	AFP offset			
35-44	NA	-1.515 (0.301)	NA	-0.671 (0.256)
45-54	NA	-1.582 (0.150)	NA	-1.112 (0.118)
55-63	NA	-0.935 (0.126)	NA	-0.618 (0.108)
Dependent variable: Non-pension total **wealth**				
Independent variables: NIS, OP and AFP				
Controls for: Age of husband, number of children below 17, average years of education of husband and wife				
Cross section estimates				
	OP offset			
35-44	-0.493 (0.045)	-0.292 (0.022)	-0.219 (0.031)	-0.078 (0.018)
45-54	-0.461 (0.031)	-0.027 (0.012)	-0.192 (0.021)	0.064 (0.010)
55-63	-0.100 (0.043)	0.304 (0.016)	0.027 (0.030)	0.263 (0.013)
	NIS offset			
35-44	-1.767 (0.118)	-1.358 (0.061)	-1.200 (0.079)	-1.170 (0.049)
45-54	-0.041 (0.103)	-0.218 (0.042)	-0.102 (0.068)	-0.065 (0.034)
55-63	0.815 (0.076)	0.480 (0.037)	0.502 (0.051)	0.370 (0.030)
	NIS offset			

35-44	NA	-0.918 (0.046)	NA	-0.511 (0.038)
45-54	NA	-0.755 (0.027)	NA	-0.453 (0.022)
55-63	NA	-0.580 (0.032)	NA	-0.366 (0.026)
Panel estimates				
		OP offset		
35-44	-1.396 (0.276)	-1.238 (0.145)	-1.013 (0.162)	-1.050 (0.125)
45-54	-1.002 (0.271)	-0.536 (0.079)	-0.491 (0.157)	-0.291 (0.063)
55-63	-0.661 (0.268)	0.276 (0.079)	-0.220 (0.204)	0.186 (0.068)
		NIS offset		
35-44	-1.340 (0.268)	-0.684 (0.193)	0.072 (0.150)	-0.299 (0.162)
45-54	-1.975 (0.320)	-0.360 (0.116)	-0.438 (0.181)	0.278 (0.091)
55-63	-1.098 (0.140)	0.067 (0.071)	-0.402 (0.105)	0.253 (0.061)
		AFP offset		
35-44	NA	-1.607 (0.303)	NA	-0.784 (0.257)
45-54	NA	-1.592 (0.150)	NA	-1.142 (0.118)
55-63	NA	-0.951 (0.127)	NA	-0.611 (0.108)

Note: Standard errors are reported in parentheses.

The estimates using total non-pension wealth vary a lot, probably due to the special role of housing, and this will be discussed below. Looking at the results for financial wealth, the coefficients vary somewhat across samples and age groups. Although different fractions are drawn in the age-sample groups, and average wealth varies (Table 1), there does not appear to be any systematic pattern in the coefficients (non-AFP, Old age pension). We conclude that there is no pronounced heterogeneity from credit rationing.

In general, it appears that AFP is the most important source of heterogeneity. We will therefore focus the following discussion on the non-AFP eligible. As discussed in the next section, we will also focus on financial wealth, which give the most clear-cut offsetting. Finally, we focus on the cross-section estimates, since the panel estimates generally support the cross section estimates, but are less precise.

Non-pension wealth offsetting effects of pension entitlements

Looking at non-AFP eligible and using financial wealth, the cross section coefficients for Old age pension entitlements range from -0.595 to -0.211. If we use total non-pension wealth, the coefficients are closer to zero and positive for the oldest group. Our interpretation is that net worth of housing (after scaling up to market value), which is the difference between total and financial wealth, is not directly linked to consumption smoothing. Rather, there may be a positive correlation between pension entitlements and housing among the oldest groups, perhaps because of better possibilities for financing previous investment in housing, which pays off with high

total wealth for those approaching retirement. Hence, the results indicate that pension entitlements are (partly) offset against financial wealth, which is substiantial in our samples (Table 1). This results contrast with Gale (1998) who found smaller offset against financial wealth. In his sample, average financial assets were 30 % of total net (non-pension) wealth, which is somewhat below the level in our sample. However, we have also restricted our sample to households with positive (non-pension) wealth, which broadly speaking leaves us with the most affluent half of the population, excluding only the richest. This result may indicate both a more even distribution of wealth in our sample and that consumption smoothing is mostly found among the more affluent. This interpretation highlights the importance of taking heterogeneity into account in these studies.

Apart from the question of wealth concept, the magnitude of the offset is somewhat lower than found by Gale (1998), but still substantial. Given the difference in samples and data construction, our results is broadly supportive.

We have also tried splitting the Old age pension into OP and NIS. This gives effects of the OP pension similar to the Old age pension, with cross section estimates of coefficients for financial wealth ranging from -0.61 to -0.23 for non-AFP eligible. The coefficient for NIS are more widely distributed, with positive coefficients for the oldest age group. This is at odds with Hubbard (1986), who found a stronger offset of Social Security than private pensions. We believe our results are caused by the flatness of the NIS pension in Norway, which causes most of the variation in the Old age pension to come from the OP pension. Also, it seems reasonable to assume that people think of their total pension, and interpret the results in terms of Old age pension, consisting of NIS and OP aggregated. Apart from this, the order of magnitude is not very different, as Hubbard (1986) found around one third for Social Security and half of the of private pensions.

One might hypothesize that due to job uncertainty, there is uncertainty about future benefits and less offsetting from an OP at the early stages of the working career, and that this would diminish as they grow older and still work in an OP company. In that case, they might find that they have saved too much, and reduce wealth, which would give a larger offset for the older age group. This does not seem to be the case, so that households seem just to prolong their (our) income projection.

The results from both samples point in the same direction, with somewhat stronger effects in the sample with wealth between 50 000 and 10 million NOK. Since

average wealth is higher, smoothing might be more common and it is reasonable that the estimated effect is stronger.

Summing up, the results show substantial if not complete consumption smoothing and offsetting against non-pension savings of Old age pension entitlements in the most affluent half of the population, among those who are not AFP eligible. The magnitude of the offset is in the upper end of the range of previous results cited above.

Given all the other factors which we know we have omitted (discussed previously), this result support the notion that pension wealth, even in the opaque form of a DB pension, serves to reduce other savings of the household. And the offsetting is against financial wealth.

7. Conclusion

Both cross section and panel estimation of a life cycle model with perfect consumption smoothing indicate an offsetting effect on financial savings of pension entitlements in the half of the population with positive wealth. The magnitude of the offset varies across age groups and with how the samples are drawn. In the sample of non-AFP eligible, using financial wealth, the cross section estimates for Old age pension entitlements, is in the range of - 0.595 – -0.211, which means that between 21 and 60 per cent of higher pension entitlements are offset by other wealth, instead of 100 percent as predicted by the model with perfect consumption smoothing.

Although the modelling approach is simple, the framework controls for income variation, and there is sufficient independent variation in pension entitlements to identify an offsetting effect. The offsetting effect is less than what is predicted with a simple life cycle model with perfect consumption smoothing. Hence, many other factors appear to influence savings, and further work is required. In particular, it would be interesting to investigate the robustness of the results with changes in pension wealth over a longer period. Also the absence of many factors discussed above, *e.g.* uncertainty and precautionary saving, may contribute towards this result.

Even so, both the cross section and panel estimation results appear to support the notion that pension wealth to a certain degree reduces financial savings. An interpretation of the results is that people have a long term view of their earnings and pensions, and that those with lower pension entitlements to a certain degree compensate with higher financial savings.

The empirical modelling of earnings and wealth accumulation is not successful, in that the earnings coefficients for current accumulated and life time earnings are far from their theoretical values. Thus, the structural earnings-savings coefficients remain unidentified. However, the implied savings rates on accumulated earnings are reasonable and the two coefficients in combination seem to control for earnings, which is most important in this paper.

Finally, it should be remembered that the results are obtained for about half of the population, namely those with some wealth. On the other hand, this is of course where the potential impact on total saving is.

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Appendix

This appendix reports all regression results.

Declaration of variables:

inco_curhh97= E_τ

r_inco_acc= $R_\tau E^T$

r_nis= $R_\tau N^T$

r_op= $R_\tau O^T$

r_pension= $R_\tau P^T$

r_afp= $R_\tau A^T$

ageh=age of the husband

edu_av=average education years of the couple

num_kid=number of kids below 17 years old

d_inco_cur = $E_\tau - \bar{E}$

d_r_incoacc = $R_\tau E^T - \bar{R}E^T$

d_r_nis = $R_\tau N^T - \bar{R}N^T$

d_r_op = $R_\tau O^T - \bar{R}O^T$

r_pension= $R_\tau P^T - \bar{R}P^T$

d_r_afp = $R_\tau A^T - \bar{R}A^T$

Where $\bar{E}$, $\bar{R}$ are respectively average E_τ and R_τ over year 1992-2003.

Note: Table 5-Table 28 contain the results for the model with separate NIS and OP. And Table 29-Table 52 report the results for the model with aggregated NIS and OP (Old age pension).

Table 5.

Age group [35,44], non-AFP eligible Dependent variable: financial wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	30239			No. of obs. :	32658	
R-square :	0.065			R-Square:	0.051	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	-909.780	110.335	-8.250	-638.061	59.961	-10.640
inco_curhh97	0.063	0.008	8.330	0.025	0.004	6.080
r_inco_acc	0.046	0.006	7.500	0.024	0.003	7.100
r_nis	-1.154	0.100	-11.510	-0.569	0.055	-10.260
r_op	-0.610	0.038	-15.880	-0.406	0.022	-18.470
ageh	20.483	3.060	6.690	16.860	1.672	10.090
edu_av	41.187	2.703	15.240	24.893	1.468	16.960
num_kid	25.083	4.507	5.570	20.811	2.385	8.720

Table 6.

Age group [35,44], AFP eligible Dependent variable: financial wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	81174			No. of obs. :	88690	
R-square :	0.064			R-square:	0.063	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	-404.743	41.826	-9.680	-250.542	24.228	-10.340
inco_curhh97	0.037	0.003	10.780	0.023	0.002	11.700
r_inco_acc	0.039	0.003	14.070	0.021	0.002	12.690
r_nis	-0.605	0.041	-14.780	-0.343	0.024	-14.420
r_op	-0.316	0.015	-21.610	-0.175	0.009	-19.710
r_afp	-0.814	0.031	-26.030	-0.502	0.019	-27.020
ageh	7.692	1.158	6.640	5.924	0.670	8.840
edu_av	30.497	0.852	35.810	20.889	0.495	42.240
num_kid	1.175	1.739	0.680	0.159	1.005	0.160

Table 7.

Age group [45,54], non-AFP eligible Dependent variable: financial wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	32536			No. of obs. :	31312	
R-square :	0.073			R-square :	0.050	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	-373.470	181.870	-2.050	-110.840	107.521	-1.030
inco_curhh97	0.019	0.012	1.610	0.037	0.007	5.140
r_inco_acc	0.054	0.010	5.230	0.002	0.006	0.260
r_nis	-0.161	0.091	-1.770	-0.132	0.054	-2.450
r_op	-0.531	0.027	-19.620	-0.314	0.017	-18.840
ageh	1.141	4.254	0.270	2.538	2.512	1.010
edu_av	38.492	3.228	11.930	23.393	1.944	12.030
num_kid	30.769	6.235	4.930	16.525	3.700	4.470

Table 8.

Age group [45,54], AFP eligible Dependent variable: financial wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	119303			No. of obs. :	118977	
R-square :	0.068			R-square:	0.061	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	-887.289	54.424	-16.300	-482.962	36.027	-13.410
inco_curhh97	-0.007	0.004	-1.810	-0.003	0.003	-1.050
r_inco_acc	0.058	0.004	16.270	0.030	0.002	12.480
r_nis	-0.171	0.030	-5.740	-0.042	0.020	-2.120
r_op	-0.123	0.009	-14.180	-0.044	0.006	-7.550
r_afp	-0.717	0.019	-38.120	-0.481	0.013	-38.170
ageh	14.591	1.281	11.390	9.049	0.848	10.670
edu_av	30.679	0.798	38.420	21.028	0.530	39.710
num_kid	5.709	1.889	3.020	2.504	1.246	2.010

Table 9.

Age group [55,63], non-AFP eligible Dependent variable: financial wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	25224			No. of obs. :	23141	
R-square :	0.100			R-square :	0.058	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	905.332	244.214	3.710	998.869	164.346	6.080
inco_curhh97	-0.022	0.017	-1.360	0.042	0.011	3.750
r_inco_acc	0.063	0.017	3.660	-0.026	0.012	-2.150
r_nis	0.403	0.065	6.160	0.180	0.044	4.110
r_op	-0.310	0.037	-8.480	-0.229	0.026	-8.970
ageh	-28.550	4.722	-6.050	-20.505	3.174	-6.460
edu_av	48.122	3.643	13.210	31.366	2.486	12.620
num_kid	-23.449	15.749	-1.490	-8.064	10.626	-0.760

Table 10.

Age group [55,63], AFP eligible Dependent variable: financial wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	68796			No. of obs. :	65939	
R-square :	0.069			R-square :	0.057	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	-525.767	94.790	-5.550	-189.001	68.304	-2.770
inco_curhh97	-0.046	0.007	-6.540	-0.015	0.005	-2.980
r_inco_acc	0.067	0.008	8.940	0.026	0.005	4.830
r_nis	0.219	0.026	8.320	0.154	0.019	8.140
r_op	0.098	0.011	8.580	0.074	0.008	8.850
r_afp	-0.551	0.023	-24.480	-0.374	0.016	-22.860
ageh	4.980	1.840	2.710	2.512	1.326	1.900
edu_av	29.830	1.092	27.310	20.046	0.788	25.440
num_kid	-35.594	5.458	-6.520	-28.543	3.924	-7.270

Table 11.

Age group [35,44], non-AFP eligible Dependent variable: total non-pension wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	30239			No. of obs. :	32658	
R-square :	0.098			R-Square :	0.073	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	-791.596	129.591	-6.110	-637.680	85.773	-7.430
inco_curhh97	0.124	0.009	14.080	0.088	0.006	15.060
r_inco_acc	0.046	0.007	6.420	0.018	0.005	3.700
r_nis	-1.767	0.118	-15.010	-1.200	0.079	-15.140
r_op	-0.493	0.045	-10.920	-0.219	0.031	-6.970
ageh	30.438	3.594	8.470	29.324	2.391	12.260
edu_av	44.745	3.175	14.090	18.723	2.100	8.920
num_kid	30.910	5.294	5.840	36.027	3.412	10.560

Table 12.

Age group [35,44], AFP eligible Dependent variable: total non-pension wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	81174			No. of obs. :	88690	
R-square :	0.069			R-square :	0.054	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	-505.932	62.093	-8.150	-594.201	49.514	-12.000
inco_curhh97	0.088	0.005	17.350	0.080	0.004	19.920
r_inco_acc	0.048	0.004	11.740	0.021	0.003	6.220
r_nis	-1.358	0.061	-22.340	-1.170	0.049	-24.100
r_op	-0.292	0.022	-13.420	-0.078	0.018	-4.290
r_afp	-0.918	0.046	-19.760	-0.511	0.038	-13.460
ageh	27.714	1.719	16.120	32.242	1.369	23.550
edu_av	23.620	1.264	18.680	4.815	1.011	4.760
num_kid	21.971	2.582	8.510	29.780	2.055	14.490

Table 13.

Age group [45,54], non-AFP eligible Dependent variable: total non-pension wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	32536			No. of obs. :	31312	
R-square :	0.124			R-square :	0.091	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	-457.812	207.020	-2.210	-44.476	134.416	-0.330
inco_curhh97	-0.033	0.014	-2.420	-0.006	0.009	-0.710
r_inco_acc	0.123	0.012	10.480	0.058	0.008	7.470
r_nis	-0.041	0.103	-0.400	-0.102	0.068	-1.510
r_op	-0.461	0.031	-14.970	-0.192	0.021	-9.190
ageh	3.382	4.842	0.700	6.118	3.140	1.950
edu_av	78.735	3.674	21.430	48.480	2.430	19.950
num_kid	18.489	7.097	2.610	0.318	4.626	0.070

Table 14.

Age group [45,54], AFP eligible Dependent variable: total non-pension wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	119303			No. of obs. :	118977	
R-square :	0.084			R-square :	0.062	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	-1012.212	77.232	-13.110	-470.820	62.444	-7.540
inco_curhh97	-0.030	0.006	-5.280	-0.022	0.005	-4.780
r_inco_acc	0.096	0.005	19.100	0.058	0.004	14.040
r_nis	-0.218	0.042	-5.150	-0.065	0.034	-1.890
r_op	-0.027	0.012	-2.210	0.064	0.010	6.260
r_afp	-0.755	0.027	-28.270	-0.453	0.022	-20.770
ageh	26.081	1.818	14.340	18.954	1.470	12.890
edu_av	50.282	1.133	44.380	35.826	0.918	39.040
num_kid	-0.232	2.680	-0.090	-5.220	2.160	-2.420

Table 15.

Age group [55,63], non-AFP eligible Dependent variable: total non-pension wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	25224			No. of obs. :	23141	
R-square :	0.181			R-square :	0.146	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	1075.091	284.021	3.790	1338.482	190.374	7.030
inco_curhh97	-0.079	0.019	-4.130	0.009	0.013	0.700
r_inco_acc	0.129	0.020	6.380	0.010	0.014	0.750
r_nis	0.815	0.076	10.720	0.502	0.051	9.890
r_op	-0.100	0.043	-2.350	0.027	0.030	0.920
ageh	-37.461	5.492	-6.820	-27.739	3.677	-7.540
edu_av	97.050	4.237	22.910	68.802	2.880	23.890
num_kid	-93.392	18.316	-5.100	-76.202	12.308	-6.190

Table 16.

Age group [55,63], AFP eligible Dependent variable: total non-pension wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	68796			No. of obs. :	65939	
R-square :	0.138			R-square :	0.123	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	-327.612	132.854	-2.470	176.466	108.365	1.630
inco_curhh97	-0.081	0.010	-8.140	-0.037	0.008	-4.510
r_inco_acc	0.101	0.011	9.610	0.045	0.009	5.220
r_nis	0.480	0.037	13.040	0.370	0.030	12.300
r_op	0.304	0.016	18.980	0.263	0.013	19.690
r_afp	-0.580	0.032	-18.380	-0.366	0.026	-14.100
ageh	2.236	2.579	0.870	-0.703	2.103	-0.330
edu_av	71.707	1.531	46.840	56.092	1.250	44.870
num_kid	-80.698	7.649	-10.550	-75.006	6.226	-12.050

Table 17.

Age group [35,44], non-AFP eligible Dependent variable: financial wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	24693			No. of obs. :	26000	
R-square :	0.041			R-Square :	0.056	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	-0.378	0.048	-7.850	-0.238	0.024	-10.070
d_r_incoacc	0.638	0.056	11.440	0.357	0.027	12.980
d_r_nis	-1.310	0.249	-5.260	-0.168	0.120	-1.400
d_r_op	-1.065	0.256	-4.160	-0.824	0.130	-6.340

Table 18.

Age group [35,44], AFP eligible Dependent variable: financial wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	69626			No. of obs. :	74792	
R-square :	0.013			R-Square :	0.010	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	-0.133	0.027	-5.010	-0.095	0.021	-4.430
d_r_incoacc	0.338	0.031	10.930	0.235	0.025	9.370
d_r_nis	-0.964	0.186	-5.190	-0.589	0.150	-3.930
d_r_op	-1.084	0.139	-7.780	-0.862	0.116	-7.420
d_r_afp	-1.807	0.291	-6.200	-1.055	0.238	-4.430

Table 19.

Age group [45,54], non-AFP eligible Dependent variable: financial wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	27299			No. of obs. :	25815	
R-square :	0.042			R-Square :	0.058	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	-0.297	0.086	-3.450	-0.121	0.046	-2.630
d_r_incoacc	0.723	0.094	7.670	0.337	0.051	6.660
d_r_nis	-2.509	0.307	-8.170	-1.072	0.164	-6.550
d_r_op	-0.910	0.260	-3.500	-0.439	0.142	-3.100

Table 20.

Age group [45,54], AFP eligible Dependent variable: financial wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	105291			No. of obs. :	103606	
R-square :	0.024			R-Square :	0.025	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	0.070	0.021	3.290	0.042	0.016	2.630
d_r_incoacc	0.107	0.023	4.580	0.067	0.017	3.820
d_r_nis	-1.115	0.108	-10.370	-0.511	0.081	-6.350
d_r_op	-0.493	0.073	-6.760	-0.302	0.055	-5.450
d_r_afp	-1.662	0.139	-11.930	-1.205	0.104	-11.590

Table 21.

Age group [55,63], non-AFP eligible Dependent variable: financial wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	20467			No. of obs. :	18498	
R-square :	0.050			R-Square :	0.050	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	-0.157	0.053	-2.980	-0.118	0.038	-3.120
d_r_incoacc	0.463	0.071	6.500	0.300	0.051	5.910
d_r_nis	-1.324	0.131	-10.110	-0.651	0.093	-6.990
d_r_op	-0.205	0.250	-0.820	0.024	0.181	0.130

Table 22.

Age group [55,63], AFP eligible Dependent variable: financial wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	59949			No. of obs. :	56820	
R-square :	0.033			R-Square :	0.041	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	-0.022	0.016	-1.380	0.010	0.012	0.800
d_r_incoacc	0.129	0.023	5.670	0.053	0.018	3.020
d_r_nis	-0.281	0.066	-4.280	-0.067	0.051	-1.320
d_r_op	0.244	0.073	3.350	0.132	0.057	2.310
d_r_afp	-1.007	0.117	-8.620	-0.727	0.091	-8.030

Table 23.

Age group [35,44], non-AFP eligible Dependent variable: total non-pension wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	24693			No. of obs. :	26000	
R-square :	0.036			R-Square :	0.043	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	-0.350	0.052	-6.740	-0.217	0.029	-7.350
d_r_incoacc	0.617	0.060	10.260	0.330	0.034	9.600
d_r_nis	-1.340	0.268	-4.990	0.072	0.150	0.480
d_r_op	-1.396	0.276	-5.060	-1.013	0.162	-6.250

Table 24.

Age group [35,44], AFP eligible Dependent variable: total non-pension wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	69626			No. of obs. :	74792	
R-square :	0.017			R-Square :	0.015	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	-0.092	0.028	-3.320	-0.076	0.023	-3.270
d_r_incoacc	0.293	0.032	9.120	0.217	0.027	8.000
d_r_nis	-0.684	0.193	-3.540	-0.299	0.162	-1.850
d_r_op	-1.238	0.145	-8.550	-1.050	0.125	-8.380
d_r_afp	-1.607	0.303	-5.310	-0.784	0.257	-3.050

Table 25.

Age group [45,54], non-AFP eligible Dependent variable: total non-pension wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	27299			No. of obs. :	25815	
R-square :	0.048			R-Square :	0.074	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	-0.244	0.090	-2.720	-0.132	0.051	-2.600
d_r_incoacc	0.643	0.098	6.540	0.328	0.056	5.860
d_r_nis	-1.975	0.320	-6.160	-0.438	0.181	-2.430
d_r_op	-1.002	0.271	-3.690	-0.491	0.157	-3.140

Table 26.

Age group [45,54], AFP eligible Dependent variable: total non-pension wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	105291			No. of obs. :	103606	
R-square :	0.044			R-Square :	0.054	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	0.067	0.023	2.900	0.028	0.018	1.560
d_r_incoacc	0.080	0.025	3.180	0.049	0.020	2.490
d_r_nis	-0.360	0.116	-3.100	0.278	0.091	3.050
d_r_op	-0.536	0.079	-6.810	-0.291	0.063	-4.650
d_r_afp	-1.592	0.150	-10.590	-1.142	0.118	-9.710

Table 27.

Age group [55,63], non-AFP eligible Dependent variable: total non-pension wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	20467			No. of obs. :	18498	
R-square :	0.079			R-Square :	0.091	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	-0.190	0.057	-3.350	-0.148	0.043	-3.470
d_r_incoacc	0.526	0.076	6.890	0.356	0.057	6.200
d_r_nis	-1.098	0.140	-7.820	-0.402	0.105	-3.830
d_r_op	-0.661	0.268	-2.470	-0.220	0.204	-1.080

Table 28.

Age group [55,63], AFP eligible Dependent variable: total non-pension wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	59949			No. of obs. :	56820	
R-square :	0.085			R-Square :	0.102	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	0.006	0.017	0.380	0.034	0.014	2.340
d_r_incoacc	0.093	0.025	3.760	0.022	0.021	1.060
d_r_nis	0.067	0.071	0.940	0.253	0.061	4.170
d_r_op	0.276	0.079	3.490	0.186	0.068	2.730
d_r_afp	-0.951	0.127	-7.510	-0.611	0.108	-5.660

Table 29.

Age group [35,44], non-AFP eligible Dependent variable: financial wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	30239			No. of obs. :	32658	
R-square :	0.057			R-Square :	0.046	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	-78.903	99.414	-0.790	-157.656	53.705	-2.940
inco_curhh97	0.016	0.007	2.250	-0.002	0.004	-0.390
r_inco_acc	0.046	0.007	6.860	0.030	0.004	8.110
r_pension	-0.263	0.025	-10.520	-0.211	0.014	-15.040
ageh	-5.202	2.313	-2.250	3.137	1.248	2.510
edu_av	49.943	2.644	18.890	29.614	1.439	20.580
num_kid	28.673	4.516	6.350	22.849	2.386	9.580

Table 30.

Age group [35,44], AFP eligible Dependent variable: financial wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	81174			No. of obs. :	88690	
R-square :	0.059			R-square :	0.059	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	-30.800	40.218	-0.770	-59.775	23.427	-2.550
inco_curhh97	0.004	0.003	1.140	0.006	0.002	3.130
r_inco_acc	0.041	0.003	12.940	0.020	0.002	10.600
r_pension	-0.107	0.009	-12.480	-0.051	0.005	-10.000
r_afp	-1.041	0.030	-35.190	-0.637	0.018	-36.340
ageh	-3.522	0.956	-3.690	0.032	0.557	0.060
edu_av	34.240	0.830	41.240	22.844	0.483	47.310
num_kid	2.404	1.742	1.380	1.013	1.006	1.010

Table 31.

Age group [45,54], non-AFP eligible Dependent variable: financial wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	32536			No. of obs. :	31312	
R-square :	0.069			R-square :	0.046	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	405.282	135.567	2.990	398.811	79.888	4.990
inco_curhh97	0.004	0.011	0.400	0.026	0.007	3.920
r_inco_acc	0.073	0.011	6.820	0.013	0.006	2.030
r_pension	-0.595	0.037	-16.000	-0.355	0.023	-15.570
ageh	-11.583	2.650	-4.370	-6.312	1.559	-4.050
edu_av	39.644	3.232	12.270	24.172	1.948	12.410
num_kid	34.225	6.213	5.510	18.174	3.684	4.930

Table 32.

Age group [45,54], AFP eligible Dependent variable: financial wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	119303			No. of obs. :	118977	
R-square :	0.068			R-square :	0.061	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	-501.568	43.585	-11.510	-375.006	28.875	-12.990
inco_curhh97	-0.023	0.004	-6.090	-0.007	0.002	-2.690
r_inco_acc	0.067	0.004	17.700	0.032	0.003	12.630
r_pension	-0.142	0.011	-12.560	-0.047	0.008	-6.180
r_afp	-0.725	0.019	-38.160	-0.486	0.013	-38.230
ageh	6.569	0.873	7.520	6.942	0.578	12.010
edu_av	31.343	0.799	39.220	21.219	0.530	40.040
num_kid	5.885	1.887	3.120	2.610	1.245	2.100

Table 33.

Age group [55,63], non-AFP eligible Dependent variable: financial wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	25224			No. of obs. :	23141	
R-square :	0.097			R-square :	0.054	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	210.000	183.946	1.140	777.841	123.547	6.300
inco_curhh97	-0.003	0.017	-0.180	0.052	0.011	4.590
r_inco_acc	0.071	0.018	3.910	-0.022	0.012	-1.790
r_pension	-0.376	0.082	-4.570	-0.274	0.057	-4.830
ageh	-9.385	3.020	-3.110	-12.800	2.026	-6.320
edu_av	50.119	3.647	13.740	32.139	2.490	12.910
num_kid	-10.492	15.741	-0.670	-0.638	10.619	-0.060

Table 34.

Age group [55,63], AFP eligible Dependent variable: financial wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	68796			No. of obs. :	65939	
R-square :	0.068			R-square :	0.057	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	-1259.548	70.716	-17.810	-728.093	50.886	-14.310
inco_curhh97	-0.026	0.007	-3.620	0.001	0.005	0.220
r_inco_acc	0.053	0.008	6.570	0.013	0.006	2.260
r_pension	0.222	0.027	8.170	0.188	0.020	9.430
r_afp	-0.558	0.024	-23.710	-0.388	0.017	-22.690
ageh	18.915	1.196	15.820	12.603	0.860	14.660
edu_av	30.466	1.090	27.960	20.361	0.786	25.890
num_kid	-35.724	5.457	-6.550	-28.799	3.923	-7.340

Table 35.

Age group [35,44], non-AFP eligible Dependent variable: total non-pension wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	30239			No. of obs. :	32658	
R-square :	0.089			R-Square :	0.065	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	210.338	116.889	1.800	-6.991	76.908	-0.090
inco_curhh97	0.072	0.009	8.520	0.059	0.006	10.430
r_inco_acc	0.020	0.008	2.560	-0.007	0.005	-1.300
r_pension	-0.090	0.029	-3.060	0.004	0.020	0.180
ageh	-5.008	2.720	-1.840	5.883	1.787	3.290
edu_av	55.908	3.109	17.980	25.493	2.060	12.370
num_kid	36.310	5.309	6.840	39.951	3.417	11.690

Table 36.

Age group [35,44], AFP eligible Dependent variable: total non-pension wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	81174			No. of obs. :	88690	
R-square :	0.062			R-square :	0.049	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	55.433	59.763	0.930	-255.101	47.895	-5.330
inco_curhh97	0.042	0.005	8.470	0.055	0.004	13.860
r_inco_acc	0.027	0.005	5.650	-0.012	0.004	-3.240
r_pension	-0.004	0.013	-0.280	0.106	0.010	10.200
r_afp	-1.375	0.044	-31.270	-0.895	0.036	-24.980
ageh	6.651	1.420	4.680	16.494	1.139	14.480
edu_av	30.365	1.234	24.610	9.682	0.987	9.810
num_kid	24.705	2.588	9.550	32.485	2.056	15.800

Table 37.

Age group [45,54], non-AFP eligible Dependent variable: total non-pension wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	32536			No. of obs. :	31312	
R-square :	0.122				0.089	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	50.103	154.242	0.320	269.398	99.763	2.700
inco_curhh97	-0.038	0.013	-3.020	-0.012	0.008	-1.420
r_inco_acc	0.136	0.012	11.110	0.062	0.008	7.670
r_pension	-0.475	0.042	-11.210	-0.182	0.028	-6.380
ageh	-3.552	3.015	-1.180	0.302	1.947	0.160
edu_av	79.283	3.678	21.560	48.803	2.432	20.060
num_kid	21.995	7.069	3.110	0.940	4.601	0.200

Table 38.

Age group [45,54], AFP eligible Dependent variable: total non-pension wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	119303			No. of obs. :	118977	
R-square :	0.084			R-square :	0.062	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	-696.622	61.842	-11.260	-486.138	50.046	-9.710
inco_curhh97	-0.045	0.005	-8.550	-0.023	0.004	-5.430
r_inco_acc	0.101	0.005	18.910	0.054	0.004	12.430
r_pension	-0.035	0.016	-2.180	0.078	0.013	5.920
r_afp	-0.758	0.027	-28.120	-0.455	0.022	-20.680
ageh	18.149	1.239	14.650	18.088	1.002	18.060
edu_av	50.706	1.134	44.720	35.675	0.919	38.840
num_kid	-0.816	2.678	-0.300	-5.884	2.158	-2.730

Table 39.

Age group [55,63], non-AFP eligible Dependent variable: total non-pension wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	25224			No. of obs. :	23141	
R-square :	0.177			R-square :	0.144	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	-1093.872	214.035	-5.110	-169.274	143.081	-1.180
inco_curhh97	-0.033	0.019	-1.720	0.041	0.013	3.140
r_inco_acc	0.118	0.021	5.630	-0.005	0.014	-0.370
r_pension	0.218	0.096	2.280	0.378	0.066	5.760
ageh	8.954	3.514	2.550	2.569	2.346	1.090
edu_av	99.673	4.243	23.490	69.714	2.883	24.180
num_kid	-79.195	18.316	-4.320	-69.993	12.298	-5.690

Table 40.

Age group [55,63], AFP eligible Dependent variable: total non-pension wealth, Cross-section estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	68796			No. of obs. :	65939	
R-square :	0.136			R-square :	0.122	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
Intercept	-2122.285	99.177	-21.400	-1282.039	80.762	-15.870
inco_curhh97	-0.030	0.010	-2.940	0.008	0.008	0.940
r_inco_acc	0.060	0.011	5.240	0.005	0.009	0.550
r_pension	0.698	0.038	18.310	0.638	0.032	20.180
r_afp	-0.612	0.033	-18.540	-0.410	0.027	-15.090
ageh	34.859	1.677	20.790	25.303	1.365	18.540
edu_av	72.677	1.528	47.550	56.489	1.248	45.260
num_kid	-82.814	7.653	-10.820	-77.321	6.226	-12.420

Table 41.

Age group [35,44], non-AFP eligible Dependent variable: financial wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	24693			No. of obs. :	26000	
R-square :	0.041			R-Square :	0.056	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	-0.373	0.048	-7.810	-0.251	0.023	-10.760
d_r_incoacc	0.627	0.054	11.640	0.386	0.027	14.510
d_r_pension	-1.192	0.195	-6.100	-0.464	0.097	-4.770

Table 42.

Age group [35,44], AFP eligible Dependent variable: financial wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	69626			No. of obs. :	74792	
R-square :	0.013			R-Square :	0.010	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	-0.134	0.027	-5.050	-0.097	0.021	-4.540
d_r_incoacc	0.343	0.030	11.450	0.247	0.024	10.130
d_r_pension	-1.050	0.129	-8.120	-0.780	0.107	-7.280
d_r_afp	-1.787	0.290	-6.170	-1.014	0.237	-4.270

Table 43.

Age group [45,54], non-AFP eligible Dependent variable: financial wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	27299			No. of obs. :	25815	
R-square :	0.041			R-Square :	0.057	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	-0.439	0.080	-5.470	-0.176	0.043	-4.070
d_r_incoacc	0.821	0.092	8.940	0.375	0.049	7.580
d_r_pension	-1.534	0.222	-6.920	-0.694	0.120	-5.760

Table 44.

Age group [45,54], AFP eligible Dependent variable: financial wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	105291			No. of obs. :	103606	
R-square :	0.023			R-Square :	0.025	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	0.020	0.020	1.010	0.025	0.015	1.680
d_r_incoacc	0.127	0.023	5.480	0.073	0.017	4.220
d_r_pension	-0.560	0.072	-7.740	-0.325	0.055	-5.920
d_r_afp	-1.700	0.139	-12.200	-1.216	0.104	-11.700

Table 45.

Age group [55,63], non-AFP eligible Dependent variable: financial wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	20467			No. of obs. :	18498	
R-square :	0.049			R-Square :	0.049	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	-0.104	0.051	-2.030	-0.085	0.037	-2.310
d_r_incoacc	0.382	0.069	5.550	0.251	0.049	5.120
d_r_pension	-1.154	0.125	-9.220	-0.556	0.090	-6.210

Table 46.

Age group [55,63], AFP eligible Dependent variable: financial wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	59949			No. of obs. :	56820	
R-square :	0.032			R-Square :	0.041	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	0.033	0.014	2.390	0.030	0.011	2.880
d_r_incoacc	0.041	0.019	2.110	0.020	0.015	1.320
d_r_pension	-0.070	0.059	-1.190	0.011	0.046	0.230
d_r_afp	-0.967	0.117	-8.280	-0.709	0.090	-7.840

Table 47.

Age group [35,44], non-AFP eligible Dependent variable: total non-pension wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	24693			No. of obs. :	26000	
R-square :	0.036			R-Square :	0.042	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	-0.351	0.051	-6.830	-0.239	0.029	-8.200
d_r_incoacc	0.619	0.058	10.670	0.378	0.033	11.380
d_r_pension	-1.367	0.211	-6.490	-0.418	0.122	-3.440

Table 48.

Age group [35,44], AFP eligible Dependent variable: total non-pension wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	69626			No. of obs. :	74792	
R-square :	0.017			R-Square :	0.015	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	-0.096	0.028	-3.460	-0.082	0.023	-3.530
d_r_incoacc	0.316	0.031	10.150	0.248	0.026	9.440
d_r_pension	-1.082	0.134	-8.060	-0.825	0.116	-7.130
d_r_afp	-1.515	0.301	-5.030	-0.671	0.256	-2.620

Table 49.

Age group [45,54], non-AFP eligible Dependent variable: total non-pension wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	27299			No. of obs. :	25815	
R-square :	0.048			R-Square :	0.074	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	-0.330	0.084	-3.940	-0.128	0.048	-2.670
d_r_incoacc	0.703	0.096	7.330	0.325	0.055	5.940
d_r_pension	-1.382	0.231	-5.980	-0.470	0.133	-3.530

Table 50.

Age group [45,54], AFP eligible Dependent variable: total non-pension wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	105291			No. of obs. :	103606	
R-square :	0.044			R-Square :	0.054	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	0.081	0.022	3.740	0.073	0.017	4.300
d_r_incoacc	0.074	0.025	2.980	0.032	0.020	1.610
d_r_pension	-0.517	0.078	-6.630	-0.228	0.062	-3.670
d_r_afp	-1.582	0.150	-10.530	-1.112	0.118	-9.460

Table 51.

Age group [55,63], non-AFP eligible Dependent variable: total non-pension wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	20467			No. of obs. :	18498	
R-square :	0.079			R-Square :	0.091	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	-0.169	0.055	-3.070	-0.139	0.041	-3.360
d_r_incoacc	0.494	0.074	6.710	0.342	0.055	6.190
d_r_pension	-1.031	0.134	-7.690	-0.376	0.101	-3.730

Table 52.

Age group [55,63], AFP eligible Dependent variable: total non-pension wealth, Panel estimates						
Sample 1: absolute value sample				Sample 2: percentile sample		
No. of obs.:	59949			No. of obs. :	56820	
R-square :	0.085			R-Square :	0.102	
Variables	Estimate	Std-error	T-value	Estimate	Std-error	T-value
d_inco_cur	0.028	0.015	1.890	0.027	0.013	2.130
d_r_incoacc	0.057	0.021	2.750	0.033	0.018	1.890
d_r_pension	0.151	0.064	2.360	0.227	0.055	4.150
d_r_afp	-0.935	0.126	-7.390	-0.618	0.108	-5.720