Portfolio choice in pension funds: evidence from Italy

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Abstract

We study portfolio choices made by participants to an Italian DC pension fund during the period 2002-08. We find that the willingness to hold risky assets decreases with age, and that previous performance tends to influence portfolio allocation. We also document that inertial behaviour has been quite widespread, and is sometimes very costly.

JEL: G21, G23

Keywords: Pension funds, Portfolio choice.

Contents

*Bank of Italy, Research Department. The views expressed in this paper are those of the authors and do not necessarily reflect the position of the Bank of Italy.

1 Introduction

In recent years, many countries reformed their public pension system, tightening the eligibility rules and reducing the generosity of benefits (Feldstein and Siebert, 2002 [11]). Partly as a result, there has been an increase in the importance of private pension plans, both in terms of assets under management and in terms of number of participants (OECD, 2009 [16]). They are increasingly relevant as a means to provide adequate retirement income for elderly people.

Contrary to traditional public social security schemes, private pension investment requires the worker to make several choices. He or she has to decide whether and how much to contribute, choosing the most appropriate investment line and the timing of the eventual withdrawal. These choices are even more difficult in a time of financial turmoil, when both the probability and the cost of errors is magnified.[1]

In order to design rules and policies which help workers to get the most out of their pension investments, it is important to answer such questions as: is investors' behaviour systematically affected by individual characteristics, such as age and/or time to retirement, sex, financial education, income? How do participants respond to lagged fund performance?

While there is an extensive body of research about pension plan participation decisions, far less attention has been devoted to portfolio allocation of fund participants. We aim to shed light on this issue looking at a new panel dataset collecting information on participants to a DC pension fund for employees of an Italian middle-sized bank. Workers choices are followed for a 7 year timespan.

Our work is similar to Agnew et al. (2003) [1], which studies a large US investment fund of the 401(k) type, and Ameriks and Zeldes (2004) [2], which also uses a panel data set from the TIAA-CREF (a large US pension fund, for public sector teachers and university professors).

We believe that our data are of interest for several reasons. First, this is, to our knowledge, the first attempt to investigate pension fund participants' choices looking at a panel of investors outside the US. This is potentially relevant because the degree of development of the pension fund industry is lower in Europe than in the US, and the equity culture is less widespread (Guiso et al., 2003 [12]). Second, our sample is made up of a relatively homogeneous group of agents, characterized by a high degree of financial education, as they are mostly clerical and managerial workers in the banking sector. Third, the observed period spans up to december 2008, one year after the beginning of a sharp and disorderly drop in share prices; so it is possible to see, at least to a certain extent, how investors reacted to such event. Finally, the choice confronting fund participants is quite clean and simple:

[1] Benartzi and Thaler, 2002 [4], among others, argue that investors do not exploit the freedom of choice granted by their pension plans in the best possible way.

an annual decision to allocate their accumulated wealth in one out of five investment lines, which are unambiguously ranked in terms of their risk profile.[2] Contrary to other papers, no investment options are added or deleted during the sample period.[3]

Our empirical analysis shows that age induces investors to reduce their exposure to equities, as recent theories predict (see, e.g., Campbell and Viceira, 2002 [7]). In the same chapter, we also show that investors tend to react to lagged portfolio performance. However, we also document that many of them are quite inertial in their asset allocation (as remarked, among others, by Madrian and Shea, 2001 [13], Agnew et al., 2003, Americks and Zeldes, 2004, Mitchell et al., 2006 [14], Bilias et al., 2009 [5]). This can prove to be costly, expecially for elderly workers, which might find themselves over-exposed to stock market risk.

The rest of the paper is organized as follows. In the second and third chapter, we describe the structure of the pension fund under examination and the characteristics of our data set. In the fourth chapter, we describe the portfolio choices of the workers, in order to assess the importance of some of the most accepted determinants of individual investment choices. In the fifth chapter, we study the determinants of the decision to switch from one investment line to another, conditional on gender, age, marital status, and job position. We also compute the portfolio performance of switchers, comparing it with that of non-switchers. This can give a first assessment on whether switching has been detrimental for portfolio performance. In the last chapter, we draw some tentative conclusions and policy implications.

2 Fund structure

We draw our data from an Italian DC pension plan. The data include information on all 3,820 retirement accounts - outstanding for at least 1 year - from December 2001 (when the plan was launched) to December 2008, for a total of 20,123 year-individual data points. The plan is sponsored by a medium size Italian bank operating mainly in northern Italy and is open to the bank's employees. At the end of 2008, the plan covered about 97% of the workforce. Upon enrolment, participants choose one of the 5 investment lines offered by the plan, where all their retirement wealth will be invested. Once a year, usually at the end of November, participants can change the investment line and the level of their monthly contributions into the fund; if they choose to switch, the change is effective from

[2] This set up, which is typical in Italian employer-sponsored pension plans, is also common in other countries. For example, mandatory individual accounts systems in Chile and other Latin American countries allow workers to choose among a limited number of "lifestyle" funds. The same is true for the mandatory systems of Central and Eastern European countries. Other countries (for example Sweden or Australia) allow for a much wider variety of choices (Tapia and Yermo, 2007 [17]).

[3] It has been shown that the behaviour of participants might be impaired/distorted by a high degree of complexity (Choi et al. 2006 [10]) or by changes in the menu of investment options (Benartzi and Thaler, 2001, 2002 [3][4]).

January 1 of the following year. Participants can choose only one investment line among those offered by the plan; that is, they cannot split their accumulated wealth among more investment lines. When a participant chooses to switch, her entire wealth is disinvested from the previous investment line and moved into the new one. Our dataset includes information on yearly individual choices (investment line and contribution) and on demographic and employment characteristics, such as gender, age, marital status, position and tenure on the job.

The plan offers five investment lines: guaranteed returns, money-market, bond, balanced bond and balanced equity. Each investment line has a target asset allocation, which the portfolio manager maintains during the year, rebalancing the portfolio when necessary. The money-market investment line is invested in euro-denominated money market instruments (at least 80%) and other debt securities (up to 20%); the bond investment line is invested in euro-denominated money market instruments (up to 20%) and other debt securities (at least 80%); the balanced investment line is invested in money market instruments (up to 20%), other debt securities (up to 80%), and equities (up to 40%); the equity investment line is invested in money market instruments (up to 20%), other debt securities (up to 50%), and equities (up to 70%). The actual asset allocation of each investment line in a given year is communicated to participants in the annual report, published the following year. Each investment line's return and that of its benchmark are published on a monthly basis. The guaranteed returns investment line has been introduced at the end of 2002. At the end of 2004, there was a change in the target asset allocation of the balanced bond and balanced equity investment lines, whose maximum equity shares have been increased respectively from 30 to 40 and from 50 to 70%.

Once a year participants are asked whether they want to switch the investment line their retirement wealth is invested in. They receive a letter which reminds them of the deadline to do so; moreover, an advisory service (internet and telephone based) is active throughout the year, helping participants to self-assess their risk preferences and to choose the appropriate investment line.

3 Participants' characteristics

In Table 1 we present some statistics on the demographic characteristics of plan participants (information on salary, marital status, and job position, as of December 2008) and compare them with those of Italian private sector workers at large, taken from the latest wave (2006) of the Bank of Italy survey of households income and wealth (SHIW).[4] Our sample of fund participants differs from the Italian population in several respects.

[4]The survey provides a representative sample of the Italian population. More information is available in Bank of Italy (2008).

Unsurprisingly, workers in our sample have, on average, a higher salary than private sector workers at large and a higher education (94% holds a high school or a bachelor degree, versus 42% of Italian private sector employees). They are almost all clerical and managerial workers (98% of the total); mostly male (68%); relatively young (almost 40% is less than 35 years old) and with relatively low tenure (65% has less than five years of tenure).

About 40% of sample individuals have been in the sample for all the 7 years; about 50% entered after december 2001 and stay until the end, about 12% enter from the start but exit erlier than 2008.

At the end of 2007 the total wealth accumulated by investors amounted to 97 milion of euros, of which more than 60% was held by participants over 45 year old. In that year the composition across investment lines was such that 45% of total retirement wealth was invested in the balanced bond investment line, 26% in the balanced equity investment line, 21% in the monetary/guaranteed investment line and the remaining 8% in the bond investment line.

A limitation of our data set (which is shared with almost all the other studies) is the absence of information on non-retirement wealth.

4 Investment choices

4.1 Summary statistics

While male and female workers do not differ much in their porfolio choices, there is a sizable difference across age groups. In particular, while the share who chooses the two investment lines exposed to stock market risk is 76% in all the age groups below 55, it drops to 43% for those above 55 (Table 2). The same picture emerges if one looks at the tenure status: the quota of investors exposed to stock market risk reaches 76% for employees with less than 25 years of tenure, while it decreases to 63% for the rest).

More educated people are more likely to choose the riskiest investment line and are less likely to choose the monetary and the bond lines. The share of workers holding a bachelor degree and choosing the riskiest investment line is 36%, it drops to 33% for those with a high school degree, and to 22% for those with a lesser educational attainment. The monetary and bond lines are chosen by around 16% of those with an elementary or a middle school degree, but by less than 10% of those with a higher education. There are no clear patterns instead with regard to salary and job position.

As of december 2008, 30% of fund participants had their wealth invested in the riskiest porfolio; 36% in the balanced one, 34% in the three remaining and less risky portfolios. Through time, there has been a sizable shift in the relative importance of the two riskiest

portfolios, which are the only ones which also invest in shares with respect to the less risky investment lines: in 2001 they were chosen by 48 and 40% of participants respectively.

This reduction in the relative amount of people choosing to invest in shares can be broken down into two components. First, one that accounts for people who enter the fund (and therefore our sample) after 2001 and for those who leave it (and thus leave our sample) before 2009. Most of the new entrants in our sample (68%) signed in the two riskiest investment lines. Also, most people who exit our sample belonged to the same two investment lines (63%). Therefore, these movements in and out the fund explain a limited part (8 percentage points) of the 22 percentage point reduction in the share of participants investing in share. The rest (14 percentage points) is due to people switching across investment lines within the pension fund. Indeed, most (72%) switche toward less risky investment lines. In particular, this was relatively more frequent at the beginning (about 85% of all switches occurred in december 2002 and december 2003) and at the end of our sample (87% of all switches were realized in december 2008) (Table 3). This shifts might have be determined by years of very disappointing performance: the yearly return of the most aggressive investment line was -13% during 2002, -2% during 2003, and -27% during 2008.

Switches only acocunt for about 10% of all the investor-year observations: most participants do confirm their previous portfolio choices most of the time. Of course, this can be due, at least partly, to the fact that the intention to shift has to be notified to the fund while the choice to remain in the same line is done tacitly.[5] However, during our 7-years period, 30% of the 3,820 individuals observed switched at least once. The percentage rises to 54% among those that joined the plan from the start.

In our sample, females switch relatively less than males (8,6% vs 10.0%). The propensity to switch increases markedly with age; moreover older and more tenured switchers are much more likely to switch toward less risky lines than younger ones. The contrary is true for more educated switchers.

In the next section we check whether these stylized facts hold in a multivariate framework. We assess the impact of each variable keeping all the other choice determinants constant.

4.2 Multivariate analysis

Let us consider a very standard mean-variance investor with utility fuction:

$$U(\alpha_{it}, \rho_{it}) = \alpha_{it} E r^s + (1 - \alpha_{it}) r^b - \frac{1}{2\rho_{it}} Var(\alpha_{it} r^s + (1 - \alpha_{it}) r^b),$$

[5] However, there are years in which we observe an higher fraction of switches (e.g., they are 18% in December 2002, one year after the start of the fund, and they are 14% in december 2004, where there has been a change in the asset allocation of some of the investment lines).

where we assume that there is a risky asset (with mean return Er^s and variance of the returns equal to σ^2) and a riskless asset (with returns equal to r^b) and that the worker can choose among 3 investment lines (labeled 0,1 and 2), which differ with respect to the fraction α of the risky asset in their portfolios (without loss of generality, let α be increasing: $0 = \alpha_0 < \alpha_1 < \alpha_2$). An important parameter is ρ which we allow to vary sistematically according to a set of individual specific variables X_{it} and an idiosyncratic preference shift ε_{it} :

$$\rho_{it} = \beta X_{it} + \varepsilon_{it}.$$

This parameter measures the propensity to invest in the risky asset and it is thus linked to the degree of risk aversion: the higher ρ the more the investor is willing to accept risk in exchange for higher expected returns. In our simple set-up, it turns out that:

$$\begin{aligned}
\alpha_{it} &= \alpha_0 \text{ if } \rho_{it} < \frac{1}{2}\frac{\sigma^2}{E(r^s) - r^b}(\alpha_0 + \alpha_1) \\
\alpha_{it} &= \alpha_1 \text{ if } \frac{1}{2}\frac{\sigma^2}{E(r^s) - r^b}(\alpha_0 + \alpha_1) < \rho_{it} < \frac{1}{2}\frac{\sigma^2}{E(r^s) - r^b}(\alpha_1 + \alpha_2) \\
\alpha_{it} &= \alpha_2 \text{ if } \rho_{it} > \frac{1}{2}\frac{\sigma^2}{E(r^s) - r^b}(\alpha_1 + \alpha_2)
\end{aligned}$$

Under the standard normality assumption for ε_{it} it is straightforward to derive the conditional distribution of α_{it} given X_{it}:

$$\begin{aligned}
P(\alpha_{it} &= \alpha_0|X_{it}) = P(\beta X_{it} + \varepsilon_{it} < \frac{1}{2}\frac{\sigma^2}{E(r^s) - r^b}(\alpha_0 + \alpha_1)) \\
&= \Phi(\frac{1}{2}\frac{\sigma^2}{E(r^s) - r^b}(\alpha_0 + \alpha_1) - \beta X_{it}) \\
P(\alpha_{it} &= \alpha_1|X_{it}) = \\
&\quad \Phi(\frac{1}{2}\frac{\sigma^2}{E(r^s) - r^b}(\alpha_1 + \alpha_2) - \beta X_{it}) - \Phi(\frac{1}{2}\frac{\sigma^2}{E(r^s) - r^b}(\alpha_0 + \alpha_1) - \beta X_{it}) \\
P(\alpha_{it} &= \alpha_2|X_{it}) = 1 - \Phi(\frac{1}{2}\frac{\sigma^2}{E(r^s) - r^b}(\alpha_1 + \alpha_2) - \beta X_{it})
\end{aligned}$$

where Φ is the cumulative density function of the normal distribution. Note that in this simple specification the thresholds do not vary across individuals.

This is an ordered probit model, which can be estimated using standard maximum likelihood tecniques.[6] We estimate the model on the pooled set of workers' choices for the 2002-2008 period.

We consider as proxies for the risk propensity parameter: gender, marital status, ed-

[6] Where ρ plays the role of the latent variable and α_{it} is the observable choice variable.

ucation, job position, age, and a full set of time dummies (to capture, at least in part, unobserved time-specific effects, among which (perceived) changes in the process driving share prices).

Tables 4 and 5 give our baseline estimation results and basically confirm the findings of the univariate analysis. In Table 4 we report the estimated β coefficients, and in Table 5 we report the marginal effects of a change in the independent variables on the probability to choose each investment line.

Being male, with a higher level of education, with a better job position decreases the probability of choosing a zero-share portfolio and increases the probability of choosing the riskiest portfolio in a statistically significant way. Moreover, the probability of being in a zero-share portfolio increases with age, while the reverse is true for the probability to be in the riskiest investment line (Table 1 and Figure 1).

In order to assess the economic significance of the effects we compute the expected α_{it}:

$$E(\alpha_{it}|X_{it}) = \alpha_0 P(\alpha_{it} = a_0|X_{it}) + \alpha_1 P(\alpha_{it} = a_1|X_{it}) + \alpha_2 P(\alpha_{it} = a_2|X_{it})$$

The estimated share of stocks decreases monotonically with age at all dates, and tends to decrease with time (Table 6 and Figure 1). On average, in 2001 a 20-year-old clerk with a high school degree can be expected to hold in shares a fraction of his portfolio equal to 56%, which drops to 30% for age 30. In 2008, these two proportions decrease to 48 and 20, respectively.

Moreover, a clearer pattern emerges in the multivariate framework with respect to job position. Table 6 shows that the estimated share of stocks increases monotonically with job position. On average, in 2008 a 35-years-old blue collar or clerk with a high school degree can be expected to hold in shares a fraction of his portfolio equal to 40%; while the share of a manager with the same characteristics rises to about 46%

No clear impact on the switch pattern is instead attributable to education (Table 6). In particular, participants with a high school degree tend to choose a slightly riskier allocation with respect to those with a bachelor degree, even if both are more willing to invest in shares than those with a lower education levels.

5 Switches

5.1 Determinants

In this section, we focus specifically on shifts from one investment line to another. As we saw above, workers usually remain in their previously chosen investment line; however, 30% of them switch line at least once, and the direction of the shift explains most of the aggregate change in allocation observed over time. To it is worthwile to have a better understanding

of the determinants of these changes of heart.

Moreover, focusing on switches allows us to exploit the panel dimension of our data set, controlling for unobservable time-invariant characteristics.[7]

Our first step is to run our baseline regression on different sub-samples, grouping people according to the investment line that they chose in period t-1. Table 7 shows the parameter estimates of such three ordered probits (as in the previous section, for exposition's sake, we merge together the guaranteed return, the monetary and the bond investment lines[8]).

As before, dependent variables include dummies for gender, education, job position, marital status, years, and age. Reference point is the choice in november 2002 of a less-than-30 y.o. female, blue collar, lower education, unmarried participant. The only significant effects are those of participant's age and year dummy variables. Gender, education, and job position do not affect the probability to switch.[9]

Our second step is to use the estimated parameters to compute the conditional probability to switch from one investment line to another. The probabilities are summarized in conditional transition matrices (Tables 8, 9, 10 and 11).[10] Each cell of these matrices gives, for a particular participant (e.g., a male, middle manager, higher educated, unmarried participant choosing his retirement account asset allocation in 2008) the probability of switching from the investment line on the row to the one on the column. We compute such probabilities for two alternative settings of the X variables in order to assess the impact one particular variable; on the right-hand half of the table we report the t-statistics for the difference of the two probabilities.

The age effect highlighed in the previous sections is again quite strong (Table 8). The probability to remain in the riskiest investment line is 96% for a less-than-30 y.o. worker, falling to 85% for a 50+ y.o. worker. Moreover, the probability to switch towards less risky lines starting from the balanced line is much lower for the young than for the old participant (6% versus 18%). Age, instead, does not influence the probability of switching for those who chose the least risky line.

The likelihood to switch towards less risky portfolios is slightly higher at the beginning and at the end of the sample, when the returns from the stock market were particularly disappointing. In 2005 (a year of relatively bullish market), the probability to stay in the sectors with shares was 98% for those starting in the riskiest line and 97 for those starting

[7] We assume that from time t to $t+1$ cohort effects are null (and they are not correlated with time). Such effects might be in principle present, for example due to the social security reforms legislated in the early nineties, which had a lengthy phase-in period. So different cohorts of workers, were affected differently by the reforms. One way to partially control for these effects would be to use tenure as a proxy for the exposure to the new rules.

[8] Results do not vary if we consider each of the five lines separately.

[9] In the lower part of Table 7, we report the cut-off points of the latent variable, i.e. the degree of risk tolerance ρ.

[10] A similar approach, applied to a different issue, is adopted by Nickell et al (2000) [15].

in the balanced line. These probabilities were down to 97% and 91% in 2008, and 94% and 86% in 2002 (Table 9). Most importantly, the probability to switch upward for those in the no-stocks portfolios was much lower during the end-of-period and the beginning-of-period stock market crashes: indeed, for those starting from the no-shares lines, the probability to go up was 18% in 2005, waning to 4% and 2% respectively in 2002 and 2008.

The effect of job position on the probability to switch is not statistically significant (Table 10).This is different from what we found in the previous section, in which we studied the probability of being in a particular investment line. Education has an impact only on the switching probability of those being in the zero-shares investment lines (Table 11).

5.2 Effects on performance

Looking at monthly annualized returns from 2002 to 2008, we can notice that our sample is characterized by two periods of low return and high volatility in stock markets. The first started at end-2001 and lasted until mid-2003 and the second started in the summer of 2007, with the recent financial turmoil (Figures 2, 3 and 4). In particular, in 2008 the annual return of the balanced equity line was equal to -28% while that of the balanced investment line was -7%. Investing in one of these portfolios would have implied a severe loss in investors' retirement wealth, most harmful for older workers which have a shorter investment horizon. Given the possibility of huge swings in stock prices, the option to switch is crucial. In this section we try to evaluate the effects of the decision to change investment line on realized returns.

First, we look at returns in the year following a switch. In the short term, changing investment line has been profitable, allowing the investor to gain more than 1% with respect to a passive conduct (Table 12). Investors who left the riskier investment lines at the end of 2007 matured an average net gain of 10.8% with respect to those who stayed in those lines.

As one-period gains or losses are more relevant for workers approximating retirement, which do not have the option to wait for market values to recover, we also provide separate computations concerning older investors' performance (Table 13). Workers 45+ y.o. who switched earned on average a return 2.9% higher than those who did not. Moreover, in 2008 old workers who switched avoided considerable losses that amounted on average to 25%, i.e. more than 22,000 euros.[11]

While looking at one-period-ahead returns might be a sensible approximation for older workers, this is of course not true for younger ones, who have a longer investment horizon. So we also compute gains and losses for the whole sample period. We consider the individuals that were present from the start to the end of the sample who decided to change once, and compare their returns at the end of 2008 to what they would have earned if they had not

[11] As we remarked above, if they switch, older participants tend to switch to safer investment lines.

changed their investment line (Table 14). On average, the cumulative gains from switching amount to more than 18%, and they are mainly explained by switches to safer investment lines before the recent crisis.

6 Conclusions

We studied investors' portfolio choices in a very simple real-world setup. Some results prove quite robust across all the empirical exercises we performed. First, there is a pronounced tendency to choose safer investment lines as people age. This effect is still there after controlling for several demographic factors, for time effects, and for the investment line chosen in the previous period. This result is broadly in line with other micro-evidence from the US market, and is consistent with models of life-cycle rational portfolio allocation.

Still, not all elderly people in our sample changed their asset allocation. Looking at the ones present in the sample from the start, it turns out that more than 30% of the elderly workers which were exposed to stock market risk in 2001 were still exposed to it in 2008. Our computations show that an elderly worker taking risk on the stock market might pay a high price if stocks fall. This evidence suggests that life-cycle funds might be a valuable instrument, given that they automatically bring all the participants toward less risky allocations as they age (Viceira, 2007 [18]). In the Chilean system, for example, a lifecycle fund is the default option for all the workers. Moreover, the riskiest investment lines are forbidden for members older than a certain age.

Second, there is a pronounced shift away from shares. This can be largely explained by the disappointing stock market performance during our sample period. In our sample this behaviour has granted higher short-run returns. However, for younger workers, who have a longer time-horizon, stocks might represent a valuable investment even in bearish periods.

It might be advisable to design the fund structure so that younger investors are encouraged to invest at least part of their pension wealth in the stock market.

Third, we also find that job position has an impact of potfolio choice: people with a higher position tend to take more risks. This matches with previous empirical analyses and can be consistent with optimal portfolio allocation (Brunnermeier and Nagel, 2008 [6], Chiappori and Paiella, 2008 [9] and Cappelletti, 2009 [8]).

We also find that education has no clear impact on initial choices, even if it slightly increases the likelihood of swithching for those in the zero-shares investment lines. The weakness of this effect could be due to the easy set up provided by the fund, and/or to strong social interaction effects, in which the financial skills of the educated clerks and managers, that make up most of our sample, benefit also the few uneducated and blue-collar participants.

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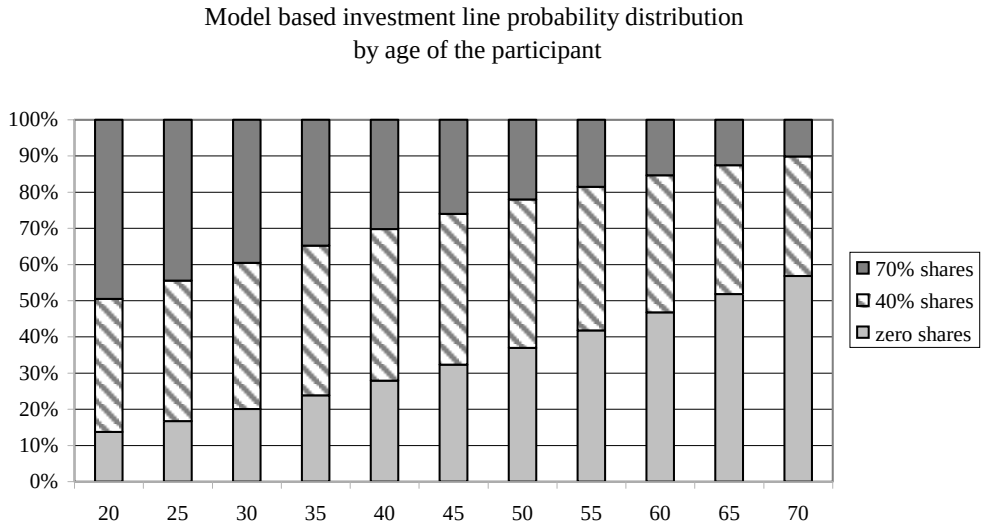
Figure 1:



Note: Probabilities implied by the ordered probit model for the participants' choice of investment line; they refer to a participant in 2008 with the following characteristics: male, unmarried, senior manager, with a bachelor degree.

Figure 2: Cumulative performance of investment lines net of management fees

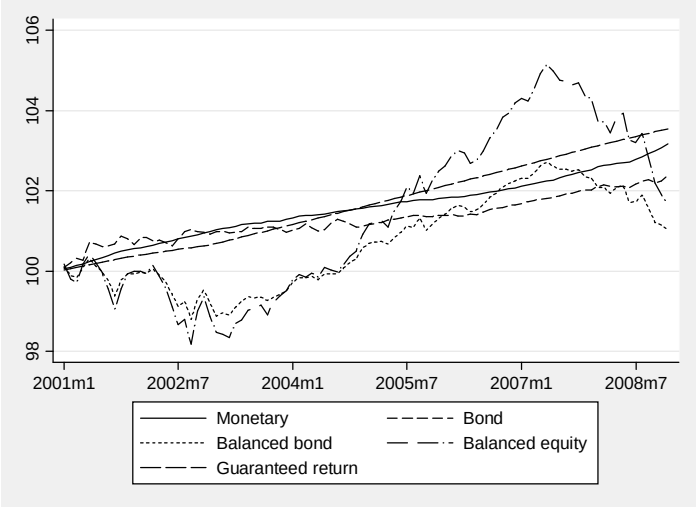


Table 1: Statistics on plan participants

	Statistics on plan participants		Survey statistics on private sector employees	
	Participants	Percent	Private sector	Financial sector
Gender				
Female	1,216	31.8%	45.8%	42.9%
Male	2,604	68.2%	54.2%	57.2%
Age				
less than 35	1,466	38.4%	19.1%	25.2%
35-44	1,055	27.6%	22.0%	37.7%
45-54	852	22.3%	17.2%	27.5%
55 or more	447	11.7%	41.7%	9.6%
Marital status				
Unmarried	1,517	39.7%	21.2%	27.8%
Married	1,881	49.2%	62.6%	62.6%
No longer married	148	3.9%	16.2%	9.6%
Unknown	274	7.2%	-	-
Education				
Elementary school	12	0.3%	29.5%	0.4%
Middle school	176	4.6%	28.3%	8.5%
High school	2,008	52.6%	33.1%	69.8%
Bachelor degree	1,572	41.2%	9.2%	21.4%
Unknown	52	1.4%	-	-
Job position				
Blue collar workers	76	2.0%	47.5%	0.8%
White collar workers	2,450	64.1%	44.7%	74.2%
Middle management	1,221	32.0%	5.5%	20.5%
Senior management	73	1.9%	2.3%	4.4%
Salary (thousands)				
25 or less	188	4.9%	83.6%	55.6%
25-35	1,793	46.9%	9.6%	20.2%
35-45	774	20.3%	3.4%	11.4%
45-55	434	11.4%	1.3%	6.1%
55 or more	631	16.5%	2.0%	6.7%
Tenure				
less than 5	2,474	64.8%	-	-
5-14	495	13.0%	-	-
15-24	563	14.7%	-	-
25-34	247	6.5%	-	-
35 or more	41	1.1%	-	-
Entry-exit				
Enrolled for 8 years (panel)	1,536	40.2%	-	-
Enter late	1,936	50.7%	-	-
Exit before December 2008	456	11.9%	-	-
Enter late and exit early	126	3.3%	-	-
Unknown	18	0.5%	-	-
Total	3,820	100%	-	-

Table 2: Statistics on fund choices

	Composition of observations by fund (percent)					Observations
	Guaranteed return	Monetary	Bond	Balanced bond	Balanced equity	
Total	1,354	1,779	2,155	8,059	6,776	20,123
Year						
2002	0.0	6.2	5.3	48.4	40.1	1,866
2003	2.0	7.8	14.9	39.7	35.5	1,959
2004	3.8	8.6	16.0	37.4	34.2	2,038
2005	6.5	7.9	12.5	40.2	32.8	2,221
2006	7.8	6.3	9.7	40.4	35.8	2,385
2007	9.3	6.1	8.1	41.7	34.9	2,893
2008	9.2	10.5	10.0	39.6	30.7	3,415
2009	9.7	14.2	10.6	35.9	29.6	3,346
Gender						
Female	4.3	8.0	12.4	44.5	30.7	6,236
Male	7.8	9.2	9.9	38.0	35.0	13,887
Age						
less than 35	4.5	6.7	10.4	39.2	39.3	7,653
35-44	6.5	7.5	9.3	39.7	37.1	6,055
45-54	7.1	9.0	10.9	44.4	28.7	4,732
55 or more	16.6	23.4	17.0	33.3	9.7	1,683
Marital status						
Unmarried	4.8	6.9	11.1	39.6	37.5	6,931
Married	8.0	9.4	9.8	40.6	32.1	11,570
No longer married	5.6	4.3	11.1	43.0	36.0	964
Education						
Elementary school	11.3	13.2	18.9	56.6	0.0	53
Middle school	5.5	16.0	16.5	39.7	22.3	1,080
High school	6.9	8.2	11.3	40.5	33.0	11,156
Bachelor degree	6.7	8.7	9.0	39.2	36.3	7,747
Job position						
Blue collar workers	1.4	12.9	14.4	53.2	18.0	278
White collar workers	5.6	7.9	11.0	41.2	34.3	12,401
Middle management	8.6	10.3	10.1	37.8	33.3	6,963
Senior management	12.9	10.4	8.9	35.3	32.4	481
Salary (thousands)						
25 or less	5.8	9.0	13.8	39.9	31.5	985
25-35	4.9	7.3	10.2	41.6	36.0	8,511
35-45	7.2	8.8	12.7	39.3	32.1	4,813
45-55	7.4	11.0	10.6	38.2	32.8	2,594
55 or more	10.6	11.1	8.3	38.7	31.3	3,220
Tenure						
less than 5	5.6	9.4	11.1	36.8	37.1	7,377
5-14	6.9	7.0	9.2	40.8	36.1	5,694
15-24	4.9	6.7	10.6	42.8	35.0	3,769
25-34	10.2	12.2	12.4	43.8	21.3	2,958
35 or more	20.3	23.1	13.8	32.9	9.8	325

Table 3: Statistics on switches

	Total decisions	Sticking to the old line	Switching to a new line	Switches over total decisions (%)	Switch down over total switches (%)	Switch up over total switches (%)
Year						
2003	1,839	1,512	327	*17.8*	*86.9*	*13.1*
2004	1,884	1,782	102	*5.4*	*84.3*	*15.7*
2005	1,979	1,700	279	*14.1*	*64.2*	*35.8*
2006	2,150	1,959	191	*8.9*	*44.0*	*56.0*
2007	2,336	2,090	246	*10.5*	*64.2*	*35.8*
2008	2,814	2,639	175	*6.2*	*72.0*	*28.0*
2009	3,319	3,079	240	*7.2*	*87.1*	*12.9*
Total	16,321	14,761	1,560	*9.6*	*72.2*	*27.8*
Gender						
Female	5,024	4,594	430	*8.6*	*67.0*	*33.0*
Male	11,297	10,167	1,130	*10.0*	*74.2*	*25.8*
Age						
less than 35	5,710	5,230	480	*8.4*	*57.1*	*42.9*
35-44	5,051	4,553	498	*9.9*	*71.7*	*28.3*
45-54	4,041	3,652	389	*9.6*	*81.5*	*18.5*
55 or more	1,519	1,326	193	*12.7*	*92.2*	*7.8*
Marital status						
Unmarried	5,423	4,951	472	*8.7*	*61.2*	*38.8*
Married	9,691	8,704	987	*10.2*	*77.0*	*23.0*
No longer married	816	751	65	*8.0*	*80.0*	*20.0*
Education						
Elementary school	41	35	6	*14.6*	*100.0*	-
Middle school	906	817	89	*9.8*	*86.5*	*13.5*
High school	9,153	8,287	866	*9.5*	*77.1*	*22.9*
Bachelor degree	6,183	5,589	594	*9.6*	*62.5*	*37.5*
Job position						
Blue collar workers	203	185	18	*8.9*	*83.3*	*16.7*
White collar workers	9,963	9,052	911	*9.1*	*65.6*	*34.4*
Middle management	5,747	5,163	584	*10.2*	*81.7*	*18.3*
Senior management	408	361	47	*11.5*	*76.6*	*23.4*
Salary (thousands)						
25 or less	801	733	68	*8.5*	*60.3*	*39.7*
25-35	6,724	6,151	573	*8.5*	*59.9*	*40.1*
35-45	4,043	3,612	431	*10.7*	*77.3*	*22.7*
45-55	2,161	1,943	218	*10.1*	*84.9*	*15.1*
55 or more	2,592	2,322	270	*10.4*	*83.0*	*17.0*
Tenure						
less than 5	4,951	4,578	373	*7.5*	*57.1*	*42.9*
5-14	5,196	4,681	515	*9.9*	*68.0*	*32.0*
15-24	3,191	2,863	328	*10.3*	*76.8*	*23.2*
25-34	2,699	2,384	315	*11.7*	*90.5*	*9.5*
35 or more	284	255	29	*10.2*	*89.7*	*10.3*

Table 4: Ordered probit model: parameter estimates

Male	0.0917***	Year dummies	
	(0.0181)		
		2001	-
Primary and middle school	-		-
	-	2002	-0.252***
High school	0.117***		(0.0353)
	(0.0384)	2003	-0.327***
Bachelor degree	0.0751*		(0.0354)
	(0.0403)	2004	-0.332***
			(0.0340)
Blue collar workers	-	2005	-0.240***
	-		(0.0333)
White collar workers	0.161**	2006	-0.254***
	(0.0666)		(0.0316)
Middle management	0.262***	2007	-0.360***
	(0.0684)		(0.0312)
Senior management	0.318***	2008	-0.431***
	(0.0864)		(0.0320)
		cut 1	-1.559***
Married	0.000138		(0.0854)
	(0.0183)	cut 2	-0.456***
			(0.0850)
Age (years)	-.0240***	Observations	19446
	(.00106)	pseudo R-squared	0.0222

Note: Ordered probit model estimated on the whole pooled sample. The dependent variable takes values 0, 40, and 70, conditional on the participant investing in a zero-shares, 40%-shares, or 70%-shares fund.
All explanatory variables are dummies except "age". The reference dummies are female, primary and middle school, blue collar workers, unmarried, 2001.

Table 5: Ordered probit model: marginal effects (37-years old participant)

variable	Value of the explanatory variables	Probability of the zero-share allocation			Probability of the 40% equity allocation			Probability of the 70% equity allocation		
		coeff.	Std.	prob.	coeff.	Std.	prob.	coeff.	Std.	prob.
Male	0	**-0.028**	*0.006*	*0.000*	**-0.006**	*0.002*	*0.023*	**0.034**	*0.007*	*0.000*
High school	0	**-0.036**	*0.012*	*0.003*	**-0.008**	*0.004*	*0.045*	**0.043**	*0.014*	*0.002*
Bachelor degree	0	-0.023	*0.013*	*0.063*	-0.004	*0.003*	*0.148*	0.028	*0.015*	*0.063*
White collar workers	0	**-0.048**	*0.021*	*0.021*	**-0.012**	*0.004*	*0.007*	**0.060**	*0.024*	*0.014*
Middle management	0	**-0.076**	*0.021*	*0.000*	**-0.024**	*0.006*	*0.000*	**0.100**	*0.025*	*0.000*
Senior management	0	**-0.090**	*0.025*	*0.000*	**-0.032**	*0.011*	*0.003*	**0.122**	*0.033*	*0.000*
Married	0	0.000	*0.006*	*0.994*	0.000	*0.001*	*0.994*	0.000	*0.007*	*0.994*
Age (years)	37	**0.008**	*0.000*	*0.000*	**0.001**	*0.000*	*0.000*	**-0.009**	*0.000*	*0.000*
2002	0	**0.087**	*0.013*	*0.000*	-0.001	*0.007*	*0.916*	**-0.086**	*0.012*	*0.000*
2003	0	**0.114**	*0.013*	*0.000*	-0.005	*0.009*	*0.527*	**-0.109**	*0.012*	*0.000*
2004	0	**0.116**	*0.013*	*0.000*	-0.006	*0.009*	*0.502*	**-0.110**	*0.012*	*0.000*
2005	0	**0.082**	*0.012*	*0.000*	0.000	*0.006*	*0.983*	**-0.082**	*0.012*	*0.000*
2006	0	**0.087**	*0.011*	*0.000*	-0.001	*0.007*	*0.905*	**-0.087**	*0.011*	*0.000*
2007	0	**0.127**	*0.012*	*0.000*	-0.008	*0.009*	*0.382*	**-0.119**	*0.011*	*0.000*
2008	0	**0.154**	*0.012*	*0.000*	-0.015	*0.011*	*0.168*	**-0.139**	*0.012*	*0.000*

Note: The table reports the marginal effects of the explanatory variables on the probability of choosing one of the three asset allocations. The explanatory variables are all dummy variables except Age.

For the dummy variables the effects refer to a change from 0 to 1. The reference dummies are female, primary and middle school, blue collar workers, unmarried, 2001. Statistically significant coefficients ($p<0.05$) are in bold.

Table 6: Expected asset allocation

	2001	2002	2003	2004	2005	2006	2007	2008
				Age				
				(male, white collar, high school, married; percentage points)				
25	54.0	47.5	47.3	49.3	49.0	46.7	45.2	47.8
35	49.3	42.1	41.9	44.0	43.7	41.3	39.6	45.2
45	44.0	36.4	36.2	38.4	38.1	35.6	33.8	42.4
55	38.4	30.6	30.4	32.6	32.3	29.8	28.1	39.6
65	32.6	25.0	24.8	26.9	26.6	24.2	22.6	20.0
				Job position				
				(male, 35 years old, high school, married; percentage points)				
blue collar workers	45.8	38.3	38.1	40.3	40.0	37.5	35.8	39.6
white collar workers	49.3	42.1	41.9	44.0	43.7	41.3	39.6	39.6
middle management	51.3	44.4	44.3	46.3	46.0	43.6	42.0	45.6
senior management	52.4	45.6	45.5	47.5	47.2	44.9	43.3	46.9
				Education				
				(male, 35 years old, white collar, married; percentage points)				
lower than high school	46.8	39.3	39.2	41.3	41.0	38.5	36.8	31.2
high school	49.3	42.1	41.9	44.0	43.7	41.3	39.6	33.9
bachelor degree	48.4	41.1	41.0	43.1	42.8	40.3	38.6	32.9

Note: Estimated shares of stocks implied by the ordered probit model.

Table 7: Ordered probit model: parameters estimates

	Zero-shares lines	40%-shares line	70%-shares line
Male	0.0910	0.108**	-0.0614
	(0.0760)	(0.0449)	(0.0587)
Primary and middle school	-	-	-
	-	-	-
High school	0.534***	0.0482	-0.0198
	(0.206)	(0.0889)	(0.125)
Bachelor degree	0.660***	0.132	-0.0261
	(0.211)	(0.0956)	(0.132)
Blue collar workers	-	-	-
	-	-	-
White collar workers	0.433	-0.111	0.376
	(0.411)	(0.143)	(0.256)
Middle management	0.230	-0.143	0.304
	(0.418)	(0.148)	(0.257)
Senior management	0.476	-0.0696	0.535*
	(0.462)	(0.205)	(0.290)
Married	-0.101	0.0124	-0.138**
	(0.0776)	(0.0464)	(0.0559)
less than 30 years old	-	-	-
	-	-	-
from 30 to 40 years old	0.212**	-0.192***	-0.225***
	(0.0972)	(0.0637)	(0.0787)
from 40 to 50 years old	0.148	-0.204***	-0.317***
	(0.121)	(0.0703)	(0.0875)
50 years old or more	-0.378***	-0.618***	-0.706***
	(0.142)	(0.0775)	(0.105)
2002	-	-	-
	-	-	-
2003	-0.0964	0.504***	0.590***
	(0.253)	(0.0815)	(0.106)
2004	0.847***	0.531***	0.0902
	(0.225)	(0.0883)	(0.0806)
2005	0.855***	0.827***	0.499***
	(0.226)	(0.0845)	(0.0957)
2006	0.686***	0.806***	0.0203
	(0.229)	(0.0826)	(0.0792)
2007	0.124	0.674***	0.229***
	(0.238)	(0.0772)	(0.0865)
2008	-0.239	0.266***	0.361***
	(0.249)	(0.0746)	(0.0919)
cut 1	2.942***	-1.215***	-1.616***
	(0.474)	(0.165)	(0.288)
cut 2	3.612***	2.439***	-1.206***
	(0.476)	(0.170)	(0.286)
Observations	3761	6565	5592
pseudo R-squared	0.1183	0.0605	0.0454

Note: The table shows parameter estimates of ordered probit models run separately for participants starting from a zero, 40%, and 70% shares funds.

Table 8: Model based conditional transition matrix (male, white collar, high school, married, end 2008)

Initial investment line	Chosen investment line			Chosen investment line		
	Zero-shares	40%-shares	70%-shares	Zero-shares	40%-shares	70%-shares
			less than 30 years old			
Zero-shares	98.7%	1.1%	0.2%	-	-	-
40%-shares	6.2%	92.1%	1.7%	-	-	-
70%-shares	1.6%	2.6%	95.8%	-	-	-
			from 30 to 40 years old			
Zero-shares	97.8%	1.8%	0.4%	-1.93	1.98	1.66
40%-shares	**8.9%**	**90.0%**	**1.1%**	3.02	-2.85	-2.57
70%-shares	**2.8%**	**3.9%**	**93.3%**	2.76	2.93	-2.89
			from 40 to 50 years old			
Zero-shares	98.1%	1.6%	0.3%	-1.19	1.20	1.13
40%-shares	**9.1%**	**89.9%**	**1.0%**	2.90	-2.76	-2.50
70%-shares	**3.5%**	**4.5%**	**92.0%**	3.35	3.63	-3.56
			more than 50 years old			
Zero-shares	99.5%	0.4%	0.1%	1.84	-1.92	-1.49
40%-shares	**17.9%**	**81.8%**	**0.3%**	7.14	-6.43	-4.34
70%-shares	**7.7%**	**7.8%**	**84.6%**	4.54	6.02	-5.34

Note: The left-hand panel shows model-based probabilities to switch form the initial line (rows) to the chosen line (columns); the right-hand panel shows the t-statistics of the differences between the corresponding left-hand panel and the reference panel (the top left-hand panel).

Table 9: Model based conditional transition matrix (male, 30 to 40 years old, white collar, high school, married)

Initial investment line	Chosen investment line			Chosen investment line		
	Zero-shares	40%-shares	70%-shares	Zero-shares	40%-shares	70%-shares
			switching behavior as of end 2002			
Zero-shares	96.2%	3.1%	0.7%	-	-	-
40%-shares	14.0%	85.5%	0.5%	-	-	-
70%-shares	6.1%	6.7%	87.2%	-	-	-
			switching behavior as of end 2005			
Zero-shares	**82.1%**	**12.3%**	**5.6%**	-4.73	4.73	3.95
40%-shares	**2.8%**	**93.1%**	**4.0%**	-7.19	4.51	5.80
70%-shares	**2.0%**	**3.1%**	**94.9%**	-4.48	-5.14	4.92
			switching behavior as of end 2008			
Zero-shares	97.8%	1.8%	0.4%	0.85	-0.86	-0.80
40%-shares	**8.9%**	**90.0%**	**1.1%**	-3.35	3.23	3.17
70%-shares	**2.8%**	**3.9%**	**93.3%**	-3.64	-3.79	3.79

Note: The left-hand panel shows model-based probabilities to switch form the initial line (rows) to the chosen line (columns); the right-hand panel shows the t-statistics of the differences between the corresponding left-hand panel and the reference panel (the top left-hand panel).

Table 10: Model based conditional transition matrix (male, 30 to 40 years old, high school, married, end 2008)

Initial investment line	Chosen investment line			Chosen investment line		
	Zero-shares	40%-shares	70%-shares	Zero-shares	40%-shares	70%-shares
			blue collar workers			
Zero-shares	99.3%	0.6%	0.1%	-	-	-
40%-shares	7.3%	91.3%	1.4%	-	-	-
70%-shares	6.3%	6.8%	86.9%	-	-	-
			white collar workers			
Zero-shares	97.8%	1.8%	0.4%	-1.55	1.55	1.49
40%-shares	8.9%	90.0%	1.1%	0.84	-0.88	-0.69
70%-shares	2.8%	3.9%	93.3%	-1.09	-1.28	1.17
			middle management			
Zero-shares	98.7%	1.1%	0.2%	-0.70	0.69	0.72
40%-shares	9.4%	89.6%	1.0%	1.05	-1.11	-0.84
70%-shares	3.3%	4.4%	92.3%	-0.93	-1.07	0.99
			senior management			
Zero-shares	97.5%	2.0%	0.4%	-1.10	1.12	1.00
40%-shares	8.3%	90.6%	1.2%	0.34	-0.34	-0.34
70%-shares	1.9%	2.9%	95.1%	-1.33	-1.62	1.46

Note: The left-hand panel shows model-based probabilities to switch form the initial line (rows) to the chosen line (columns); the right-hand panel shows the t-statistics of the differences between the corresponding left-hand panel and the reference panel (the top left-hand panel).

Table 11: Model based conditional transition matrix (male, 30 to 40 years old, white collar, married, end 2008)

Initial investment line	Chosen investment line			Chosen investment line		
	Zero-shares	40%-shares	70%-shares	Zero-shares	40%-shares	70%-shares
			lower than high school			
Zero-shares	99.5%	0.5%	0.1%	-	-	-
40%-shares	9.7%	89.4%	0.9%	-	-	-
70%-shares	2.7%	3.8%	93.5%	-	-	-
			high school			
Zero-shares	**97.8%**	**1.8%**	0.4%	-2.43	2.53	1.91
40%-shares	8.9%	90.0%	1.1%	-0.53	0.52	0.56
70%-shares	2.8%	3.9%	93.3%	0.16	0.16	-0.16
			bachelor degree			
Zero-shares	**97.0%**	**2.4%**	**0.5%**	-2.86	3.02	2.16
40%-shares	7.6%	91.1%	1.3%	-1.29	1.23	1.48
70%-shares	2.9%	3.9%	93.2%	0.20	0.20	-0.20

Note: The left-hand panel shows model-based probabilities to switch form the initial line (rows) to the chosen line (columns); the right-hand panel shows the t-statistics of the differences between the corresponding left-hand panel and the reference panel (the top left-hand panel).

Figure 3: Annualized monthly net returns

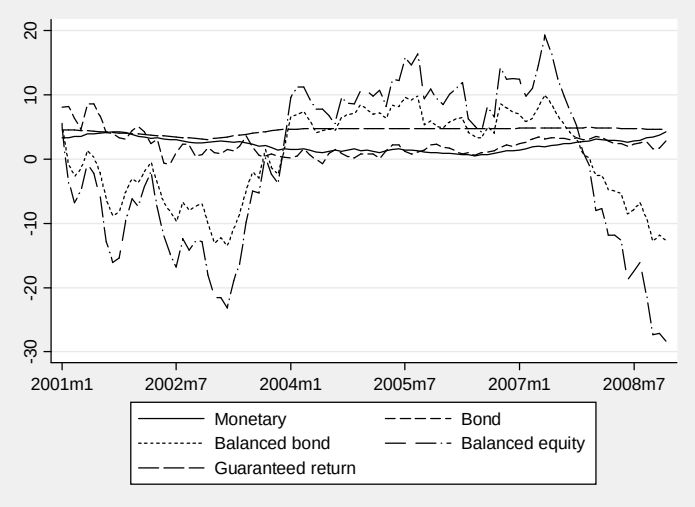


Figure 4: Standard deviation of annualized monthly net returns

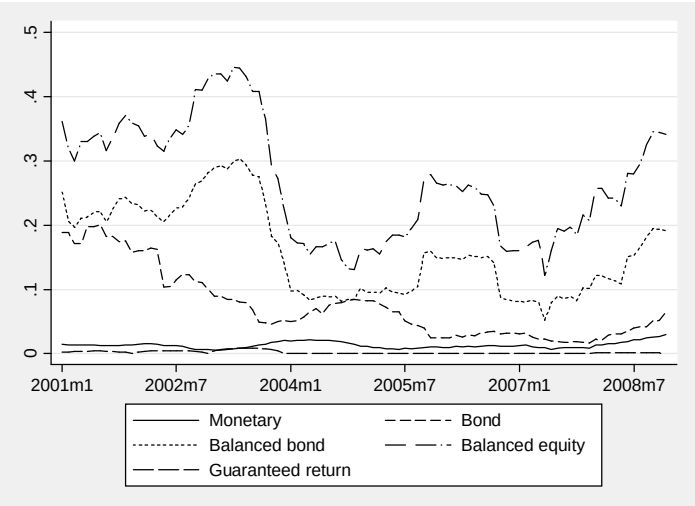


Table 12: Performance analysis of switching: one period average gains, all switching participants

Year of switch		Fund chosen				
		Guaranteed	Cash	Bond	Balanced Bond	Balanced Equity
2003	Avg gains/losses (Euro)	781	-11	-444	-217	172
	Avg gains/losses (%)	2.7%	0.0%	-1.6%	-1.0%	1.1%
	Actual return	4.7%	1.6%	0.3%	1.7%	2.9%
	Number of switchers	*35*	*43*	*175*	*49*	25
2004	Avg gains/losses (Euro)	-1,723	-2,869	-2,333	308	152
	Avg gains/losses (%)	-4.7%	-6.5%	-8.1%	0.4%	1.7%
	Actual return	4.8%	1.4%	0.8%	8.5%	10.7%
	Number of switchers	*27*	*25*	*25*	*17*	8
2005	Avg gains/losses (Euro)	-371	-1,910	-776	-1,000	721
	Avg gains/losses (%)	-1.1%	-4.1%	-2.5%	-2.1%	3.8%
	Actual return	4.8%	1.0%	2.3%	5.1%	9.5%
	Number of switchers	*49*	*28*	*28*	*144*	30
2006	Avg gains/losses (Euro)	-1,344	-3,555	-1,601	-540	1,125
	Avg gains/losses (%)	-2.4%	-7.6%	-5.1%	-0.2%	5.8%
	Actual return	4.8%	1.3%	2.0%	7.3%	12.6%
	Number of switchers	*32*	*19*	*9*	*82*	49
2007	Avg gains/losses (Euro)	3,592	1,360	1,890	197	-233
	Avg gains/losses (%)	5.0%	2.4%	3.3%	0.1%	-1.9%
	Actual return	4.9%	2.8%	3.1%	0.2%	-1.0%
	Number of switchers	40	22	19	121	44
2008	Avg gains/losses (Euro)	10,461	24,863	22,192	2,257	-4,671
	Avg gains/losses (%)	22.1%	41.5%	34.0%	5.1%	-24.7%
	Actual return	-16.2%	4.2%	2.8%	-33.3%	-49.1%
	Number of switchers	20	64	31	28	32

Note: Gains and losses are computed as difference between actual return and potential return in case of not switching.

Table 13: Performance analysis of switching: one period average gains, switching participants older than 45

Year of switch		Fund chosen				
		Guaranteed	Cash	Bond	Balanced Bond	Balanced Equity
2003	Avg gains/losses (Euro)	3,906	94	-813	-893	-
	Avg gains/losses (%)	3.0%	0.1%	-1.4%	-1.2%	-
	Actual return	4.7%	1.6%	0.3%	1.7%	-
	Number of switchers	*3*	*10*	*20*	*3*	-
2004	Avg gains/losses (Euro)	-3,359	-5,610	-5,936	0	-
	Avg gains/losses (%)	-5.6%	-7.4%	-8.8%	0.0%	-
	Actual return	4.8%	1.4%	0.8%	8.5%	-
	Number of switchers	*6*	*7*	*2*	*1*	-
2005	Avg gains/losses (Euro)	-525	-2,463	-811	-3,052	-
	Avg gains/losses (%)	-1.2%	-3.6%	-1.8%	-2.8%	-
	Actual return	4.8%	1.0%	2.3%	5.1%	-
	Number of switchers	*13*	*9*	*4*	*10*	-
2006	Avg gains/losses (Euro)	-2,596	-6,869	483	-3,196	-
	Avg gains/losses (%)	-3.2%	-7.3%	0.7%	-2.6%	-
	Actual return	4.8%	1.3%	2.0%	7.3%	-
	Number of switchers	*11*	*4*	*1*	*2*	-
2007	Avg gains/losses (Euro)	5,482	1,874	2,391	1,243	-
	Avg gains/losses (%)	4.6%	2.2%	3.0%	1.1%	-
	Actual return	4.9%	2.8%	3.1%	0.2%	-
	Number of switchers	11	10	4	4	-
2008	Avg gains/losses (Euro)	7,945	32,832	44,359	5,761	-
	Avg gains/losses (%)	10.4%	39.2%	48.8%	2.4%	-
	Actual return	-16.2%	4.2%	2.8%	-33.3%	-
	Number of switchers	3	13	5	4	-

Note: Gains and losses are computed as difference between actual return and potential return in case of not switching.

Table 14: Performance analysis of switching: cumulative average gains over the sample period, all switching participants

		Chosen fund at the end of 2008				
Year of switch		Guaranteed	Cash	Bond	Balanced Bond	Balanced Equity
2003	Avg gains/losses	22.7%	31.0%	36.9%	14.9%	-15.7%
	Actual return	33.6%	19.4%	12.5%	10.1%	0.1%
	Number of switchers	24	17	44	26	7
2004	Avg gains/losses	31.2%	36.4%	39.9%	11.8%	-21.7%
	Actual return	30.7%	18.8%	14.3%	11.2%	-0.2%
	Number of switchers	18	6	8	8	1
2005	Avg gains/losses	14.1%	41.4%	40.9%	9.7%	-30.0%
	Actual return	32.2%	25.6%	22.8%	11.0%	-5.7%
	Number of switchers	31	10	12	66	15
2006	Avg gains/losses	21.9%	52.7%	36.5%	3.8%	-24.0%
	Actual return	33.4%	33.8%	24.8%	7.2%	-12.1%
	Number of switchers	13	7	6	33	24
2007	Avg gains/losses	29.4%	76.9%	61.6%	18.8%	-31.4%
	Actual return	42.2%	45.7%	43.0%	18.1%	-21.4%
	Number of switchers	18	8	13	64	21
2008	Avg gains/losses	35.6%	66.1%	57.4%	21.9%	-28.9%
	Actual return	35.6%	42.6%	32.8%	13.6%	-22.2%
	Number of switchers	14	42	13	11	16

Note: Gains and losses are computed as difference between actual return and potential return in case of not switching. We consider workers who has changed fund only once and we compute the cumulative gains/losses and the total return after normalizing the initial retirement wealth to 100.