Investor Competence, Information and Investment Activity

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Abstract

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Key words: Investor competence; Information; Individual behavior; Investment activity

JEL classification: D80, E21, G11, G23

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Abstract

According to Heath and Tversky (1991), people are more willing to bet on their own judgments in areas where they consider themselves more knowledgeable or competent. We analyze the competence effect in the context of individuals' choices in their own pension accounts. We find that individuals with a high own perceived competence regarding the new Swedish pension system are more likely to actively choose mutual funds in their own accounts, whereas individuals with a low perceived competence are less likely to make an active choice. We also find a significantly positive relationship between an individual's information processing and perceived competence, consistent with the notion that competence is enhanced information processing, and diminished by calling to attention information that is not available to the individual.

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1. Introduction

In financial markets, investors make decisions based on their subjective probabilities. Heath and Tversky (1991) put forward the competence effect as the hypothesis that people's willingness to act on their own judgments within a certain area will depend on their subjective competence, i.e. whether they feel skillful or knowledgeable within that area.[2] In the financial markets' context, individual investors' perceived competence in understanding financial information and recognizing investment opportunities would affect their willingness to make active investment decisions, rather than settling for inactive, default options, or indeed no investments at all.

We directly investigate the link between individual investors' perceived competence and their decisions to make active investment choices within the new Swedish retirement scheme based on private accounts. Using data from a survey of 1,083 retirement savers between the ages 20 and 62 (selected to be representative of the entire Swedish population), during the days immediately following the same individuals' investment choices, we directly measure investors' perceived competence using survey responses.[3] Following Heath and Tversky (1991), we hypothesize that individuals who feel more competent are more likely to make an active investment choice than individuals who feel less competent. The hypothesis is founded on the notion that individuals who think they are more knowledgeable about the new premium pension system would also be more willing to act on their own judgments in this setting. Our empirical results support the hypothesis, and are consistent with that individuals with a high perceived competence regarding the new pension system are more likely to actively choose mutual funds in their own accounts, whereas individuals with a low perceived competence are less likely to make an active choice.

[2] Heath and Tversky (1991) use the term competence in a broad sense, including skill, knowledge or understanding.
[3] Sifo Research & Consulting AB, a leading phone survey company, commissioned by the Swedish Premium Pension Authority (PPM), conducted the survey in 2000.

This study contributes to the literature on active participation in individual pension schemes, by considering individuals' own perceived competence as a determinant of investment activity for the first time.[4] Moreover, previous studies are only able to distinguish between individuals who choose mutual funds for their own accounts, and those who end up in the default alternative (see e.g. Choi et al., 2002, 2003, 2004a, 2004b, 2005a, 2005b, Engström and Westerberg, 2003, Huberman et al., 2007, Madrian and Shea, 2001a). Using survey responses, we separate the default group of individuals into those who make an active choice of the default alternative, and those who simply ignore the process. This separation is of significant importance, as our results show that the higher an individual's perceived competence, the higher is the likelihood of actively choosing the default alternative rather than being passively allocated therein, and the higher is the likelihood of actively choosing own mutual funds rather than actively choosing the default.

When analyzing whether individuals' perceived competence affect their activity choices within their pension accounts, we carefully consider alternative explanations. Huberman (2001) claims that familiarity breeds investment. Accordingly, we control for individuals' general investment experience (common stock and mutual fund holdings), their private pension savings (insurance schemes and individual savings), and whether they have experienced a similar investment choice within a private pension fund. The results support the notion that familiarity influences individuals' activity choices. Individuals with previous investment experience and/or private pension holdings, and who previously have made similar activity choices within private pension

[4] In a related study, Graham et al. (2005) argue that the competence effect is responsible for both individuals' home bias and their tendencies to trade too much. Using survey data on separate groups of individuals, Graham et al. (2005) first measure individuals' perceived competence regarding investment products, alternatives and opportunities, and relate the competence measure to individual characteristics. Then, in a second step, they indirectly estimate the effects of predicted competence on home bias and trading frequency for another group of individuals. The results indicate that male investors, and investors with larger portfolios or higher education, are more likely to perceive themselves as competent than are female investors, and investors with smaller portfolios and lower education. They also find that investors with a high predicted competence level trade more frequently, and are less likely to be home biased, than investors with a low predicted competence level. See Lewis (1999) and Karolyi and Stulz (2002) for overviews and summaries of the home bias literature, and Barber and Odean (2000) for evidence of individual investors' excessive trading in the stock market.

schemes, have a significantly higher likelihood of making an active choice of mutual funds rather than ending up in the default alternative. However, experience-related variables are not important for the likelihood of an active choice of the default relative a corresponding passive choice.

Upon initiation of the new Swedish pension scheme, individuals must choose how to allocate a fraction of their yearly income among no more than five mutual funds out of 464 possibilities. To guide individuals through the process of choosing mutual funds, they all received a booklet containing a standardized description of all the available funds. In addition, the booklet also contained some basic instructions of educational nature on how to proceed with an active choice of mutual funds. The instructions included strong encouragement to make an active choice (see Cronqvist and Thaler, 2004). Hence, we control for individuals' survey responses as to whether they have used the information in the booklet, in association with their choices. Our results suggest that usage of the booklet is important, and increases the likelihood for an active choice of own mutual funds, without subsuming the competence effect.[5] Hence, the booklet appears to be a powerful educational mechanism for encouraging active pension plan participation, unlike e.g. educational seminar attendance, which is found to barely affect plan participation by Madrian and Shea (1991b) and Choi et al. (2005a).

We also extend previous research by explicitly studying the relation between information processing and individuals' perceived competence. Heath and Tversky (1991) assume that competence is determined by what an individual knows relative to what can be known in a given context. Accordingly, competence is enhanced by knowledge achieved by information processing and diminished by calling attention to information that is not available to the individual, in

[5] Karlsson et al. (2006) show evidence consistent with individuals choosing mutual funds according to their representation in the booklet. However, the authors have no data on whether individuals actually use the booklet information in association with their investment choices. Moreover, they only consider individuals making an active choice of own mutual funds in their retirement accounts, disregarding the default individuals altogether.

particular if it is available to others.[6] We measure individuals' degree of information processing by survey responses to how carefully they have read the information in the booklet. Hence, we can empirically model individuals' perceived competence as a function of the degree of information processing, and a set of individual characteristics; e.g. gender, education level, and income level. Consistent with the assumption in Heath and Tversky (1991), the results show a significantly positive relationship between individuals' information processing and perceived competence, i.e. the more carefully people read the information booklet, the more competent they feel regarding the new premium pension system. In line with the results from Graham et al. (2005), we also find that highly educated men, in the highest income brackets, are more likely to believe they are competent than women with less education and lower income.

The rest of the study is organized into four sections. In section 2 we discuss our measures of investor competence, information processing and information usage. We also review the related literature and motivate our hypotheses regarding investor competence and investment activity in detail. Moreover, we briefly present the Swedish pension system, with emphasis on individuals' choices in their own accounts. Section 3 presents the data and some descriptive statistics, whereas section 4 contains an analysis of the empirical results. Finally, the study ends in section 5 with some concluding remarks.

2. Theory and hypotheses

2.1 Institutional details

The new Swedish pension system was introduced in 2000 and consists of three parts. The first part is the income pension, which is based on 16 percent of the annual income and is used to finance

[6] Graham et al. (2005) also express a concern that self-perceived competence might be correlated with the amount of individuals' information. However, their data do not allow an analysis of the relationship between competence and information processing.

current retirees. The amount paid in also serves as a base in calculating future pension payments. The second part, the premium pension, is based on 2.5 percent of the annual income. In the first round in 2000, 2.5 percent of the previous four years of income was invested. This amount was allocated at each individual's discretion.

Each individual was presented with an investment opportunity set of 464 funds and invited to choose between 1 and 5 funds.[7] If no active choice was made, the allotted money was invested in the default alternative, the Seventh Swedish Pension Fund, which is an equity fund run by the government. The accrued amount from the premium pension part will be paid out on a monthly basis to the individual during retirement. The third part of the system is a guaranteed pension level designed to ensure that no retiree will be completely without pension payments at the time of retirement, regardless of the previous income. In total, 18.5 percent of each individual's annual income is invested to finance the system. However, people earning more than 7.5 income base amounts per year will only be accredited an upper limit of 7.5 income base amounts, although they will still pay 18.5 percent of their income to the system.[8]

All participating individuals were provided with a booklet containing information on risk, historical returns, fees, and a few words briefly describing each of the 464 mutual funds.[9] In addition, the booklet also contains some basic instructions of educational nature on how to proceed with an active choice of mutual funds. The instructions included strong encouragement to make an active choice (see Cronqvist and Thaler, 2004).

[7] The Swedish pension system is described in further detail in Sundén (2006).
[8] For the year 2000, one income base amount equals SEK 38,800.
[9] The brochure contains fund-specific information on percentage return for the last five years, which equals the compounded annual growth rate of return for the years 1995 through 1999. The information on risk corresponds to an annualized percentage standard deviation of three-year monthly historical fund returns. The brochure also presents a categorized risk measure, where the risk is categorized into five different classes, and colors, with respect to standard deviation; Class 1: very low risk, dark green, percentage standard deviation in the range 0-2; Class 2: low risk, light green, 3-7; Class 3: average risk, yellow, 8-17; Class 4: high risk, orange, 18-24; Class 5: very high risk, red, 25-.

2.2 Individuals' investment activity, information usage and perceived competence

Several authors attempt to identify the factors that determine individuals' participation in defined contribution pension plans. Most previous studies concentrate on US 401(k) plans. To this date, Huberman et al. (2007) offer the most comprehensive study of the variables associated with individual participation in and contribution to different 401(k) plans.[10] They find that plan participation is related to individual characteristics as compensation (salary), wealth, gender, and age, where older, female, wealthier individuals with relative higher salaries are more likely to participate than younger, male, less wealthy individuals with relatively lower salaries. Moreover, participation probabilities are similar for individuals covered and not covered by individual defined benefit plans, which the authors consider a surprising deviation from the expected positive relationship between previous coverage by a defined benefit plan and participation in the defined contribution plan.

According to Samuelson and Zeckhauser (1988), an individual suffers from "status quo bias" if he or she prefers the current state or a choice alternative that is made salient as a default option that applies if no active choice is made. Using experimental questionnaires in a variety of portfolio choice situations, Samuelson and Zeckhauser (1988) find that a choice option is significantly more popular when it is presented as the default alternative. Cao et al. (2007) develop a theoretical model for choice under uncertainty, which integrates the tendency for individuals to choose default options (status quo), and the inclination to evaluate skeptically alternatives that deviates from status quo. They argue that when people consider alternative, non-default choices in general they fear change and the unfamiliar. In the context of individual pension accounts, Madrian and Shea (2001a) find that people hold on to their default choices in their 401(k) plans, and seldom make changes in their retirement portfolios.

[10] Note that contribution levels are not discretionary in the Swedish defined contribution pension system.

Choi et al. (2005a) claim that individuals tend to follow what the authors call the "path of least resistance", i.e. they are likely to do what requires the least current efforts, in association with their choices within 401(k) plans. To support their claim, the authors show that automatic enrollment in a 401(k) plan increases the likelihood to participate, but that most people still accept a passive allocation to a default alternative. Moreover, using data from one US firm only, Choi et al. (2005a) find that financial education in the form of attending educational seminars appear not to be a powerful mechanism for encouraging participation in a 401(k) plan. Madrian and Shea (2001b) use the same data and reach similar conclusions, though their final assessment is that financial education increases plan participation, but with a small estimated magnitude.

All previous studies of participation in defined contribution plans in general, and 401(k) plans in particular, define non-participation in a plan as a completely passive decision. However, an individual might very well consider the default alternative as the preferred choice, and thus make an active decision to allocate funds accordingly. Using survey responses we differentiate between individuals who make an active choice of the default fund and those who are passively assigned to the default. With the fine separation of individuals into three groups; active choice of own funds, active choice of the default fund, and choice of passive allocation, we perform a more detailed analysis of individuals' pension plan participation than previous studies. Hence, we refine individuals' passive decision-making relative Choi et al. (2005a), and can thus be more precise in the analysis of who follow the "path of least resistance", or to use the phrasing from Samuelson and Zeckhauser (1988); suffer from the "status quo bias", and why.

In addition, using survey responses we relate individuals' participation decisions to their perceived knowledge of the pension system. The notion of perceived knowledge is similar to individuals' perceived competence as defined in Heath and Tversky (1991). Thus, for the first time, we analyze the importance of the competence effect for individuals' investment activity decisions and pension

plan participation. Our hypothesis is that individuals' perceived competence is positively related to their participation activity levels. Hence, we expect individuals with a high perceived competence to be more likely to make an active choice of own mutual funds, rather than either actively choosing the default or making a passive choice in the pension system, than individuals with a low perceived competence. Likewise, we hypothesize that a high competence level would increase the likelihood of an individual to make an active default choice rather than a passive one. Following Heath and Tversky (1991), the hypothesis is founded on the notion that people who think they are more knowledgeable about the new premium pension system would also be more willing to act on their own judgments in this setting.

Before deciding on the choice of actively selecting mutual funds, the default fund, or refraining from an active selection, each individual had the opportunity to study the information booklet provided by PPM to guide individuals through the process of choosing mutual funds. The booklet can be seen as financial education with a direct relevance for the choice at hand. Cronqvist and Thaler (2004) conclude that the information in the booklet was clearly encouraging individuals to make an active choice. This suggests that the booklet could be a powerful mechanism for encouraging an active participation in the pension plan; more powerful than e.g. the educational seminars analyzed by Choi et al. (2005a) and Madrian and Shea (2001b). Hence, we hypothesize that individuals who use the booklet in association with their choice have a higher likelihood of making an active choice of either own funds or the default fund, rather than a passive choice, than individuals who do not use the booklet.

Huberman (2001) puts forward the idea that familiarity breeds investment in general. Moreover, Huberman et al. (2007) expect to find a positive relationship between coverage of a defined benefit plan and individuals' active participation in a defined contribution plan. Likewise, we expect individuals' previous investment experience to influence the likelihood of making an active choice

in the pension plan, i.e. more experienced individuals would have a higher likelihood of making an active choice. Hence, we relate individuals' activity choice to their previous investment experience in mutual funds, common stocks, private pension savings (insurance schemes and individual savings), and whether they have made a similar investment choice within a private pension fund.

2.3 Perceived competence and information processing

The introduction of the new Swedish pension system provides a unique opportunity to investigate the competence hypothesis in relation to information processing. Heath and Tversky (1991) assume that individuals' perceived competence is enhanced by information, and reduced by calling to attention to relevant information that is not available to them, but to others. We explicitly study the relation between information processing and individuals' perceived competence of the new Swedish pension system, measuring individuals' degree of information processing by their survey responses to how carefully they have read the information in the booklet. We model individuals' perceived competence as a function of the degree of information processing, and a set of individual characteristics; gender, education level, and income level. Hence, we hypothesize a positive correlation between information processing and perceived competence, i.e. the more carefully an individual reads the information in the booklet, the higher the individual's perceived competence regarding the new pension system would be.

In a related study, Graham et al. (2005) use the concept of individuals' perceived competence with respect to investment products, alternatives and opportunities and introduce the idea that the competence effect can (at least partly) account for the two well-known biases home bias and excessive trading. Although they are not able to measure perceived competence, home bias, and trading activity for the same individuals, and hence have to use a rather crude estimate of perceived competence, they find evidence supporting the notion that the competence effect is

responsible for some of both biases. Graham et al. (2005) also model individuals' perceived competence as a function of their gender, education level, income level, and the corresponding investment portfolio size. They find that highly educated male individuals, with a high income and a large investment portfolio, are more likely to believe they are competent than female individuals with less education, lower income, and a relatively small portfolio. At the same time, Graham et al. (2005) express a concern that self-perceived competence might be correlated with the amount of individuals' information, and thus indirectly motivating this study.

3. Data and descriptive statistics

We use data from a phone survey of 1,083 randomly selected individuals between 20 and 62 years old. The interviews are conducted in 2000 by Sifo Research & Consulting AB, a leading national phone survey company, commissioned by the Swedish Premium Pension Authority (PPM).[11] All individuals included in the survey are retirement savers who, a few days before participating in the survey, have made an investment choice in the first round of the new Swedish pension system. The survey data represent a sample of a nation's entire work force, where all individuals make an investment choice at the same time, with a well-defined investment set, and where everyone are provided with the same information booklet regarding the available mutual funds. In addition, the booklet contains some investment advice on how to choose among the mutual funds. Hence, the set up is rather close to a laboratory experiment in terms of choice under uncertainty.

Table 1 contains a list of the survey questions that are of particular importance for this study. The four questions are listed in the order they are asked in the phone survey. We measure individuals' information processing by their answers to the survey question "How carefully have you read the

[11] See Appendix A for a more detailed description of the selection process.

information in the booklet?"[12] Moreover, our measure of individuals' perceived competence relates to their corresponding answer to "How do you think your knowledge about the new pension system is?" The third survey question listed in Table 1 concerns individuals' sources of information in association with their activity choice, where we only record whether each individual has used the PPM booklet or not. Finally, we record individuals' investment activity within the premium pension system as their answer to "Which position have you taken with respect to your own premium pension?"

Table 2 focuses on individuals' perceived competence regarding the new pension system, and the individual characteristics hypothesized to influence the competence level. The table reports the proportion of individuals in each response category, corresponding to the level of knowledge, ranging from 1 (very low) to 5 (very high). Among all 1,009 individuals in the sample, 14 (24) percent believe they have very low (rather low) competence level, 27 percent think their competence level is neither low or high, whereas 32 (4) percent report a rather high (very high) competence level. For all individuals, the average self-reported competence level is 2.88.

The proportion figures in Table 2 clearly indicate a positive correlation between individuals' perceived competence and information processing, i.e. how carefully they have read the information in the booklet. Among individuals with a very low (rather low) perceived competence, a 58-percent (57-percent) majority have none (not particularly careful) information processing. Moreover, those who consider their competence as neither low or high, have in most cases read the information in the booklet not particularly careful or rather carefully, while a majority of people with a rather high (very high) perceived competence, tend to process the information rather carefully (very carefully). Although not yet considering the simultaneous impacts of all

[12] In the original phone survey, all questions and answer alternatives are in Swedish. The translation to English is our own.

determinants of individual perceived competence, including the individual characteristics, these results lend support to the hypothesis in Heath and Tversky (1991) that self-perceived competence and level of information indeed are positively correlated.

The results in Table 2 also indicate a positive correlation between individuals' perceived competence and education. The proportion of people with less (more) than high school education is decreasing (increasing), from 29 to 15 percent (23 to 43 percent), as the level of self-perceived competence is increasing, from very low to very high, whereas the proportion of high-school educated individuals is almost the same (just above 40 percent) in all competence categories. Similarly, the proportion figures indicate a positive correlation between competence and income, where people in the two lower income brackets more often are represented in the lower perceived competence categories, whereas the top earners appear relatively more likely to perceive themselves as more competent. Finally, on average, men appear to have a higher perceived knowledge of the new pension system than women, as women are over-represented in the three lowest competence-categories, while men are in majority in the two highest categories, with a rather high or very high level of competence.

Table 3 reports figures for the proportion of individuals categorized with respect to their investment activity choices; Active choice of own funds, Active choice of default, and Passive allocation to default. Among all 1,009 individuals in the sample, almost 73 percent made an active choice of own funds. This figure is slightly higher than the population proportion of retirement savers who actively chose own funds, which equals 67 percent.[13] Moreover, 19 percent of the sample individuals made an active choice of the default fund, whereas the remaining eight percent

[13] See PPM's website www.ppm.nu.

did not make an active choice.[14] Hence, a clear majority of individuals make an active choice, whereas only a minority of individuals appears to follow the "path of least resistance" (Choi et al., 2005b), or to suffer from "status quo bias" (Samuelson and Zeckhauser, 1988).

Individuals' perceived competence level varies considerably across the different activity categories in Table 3. Among the individuals who made an active choice of own funds, 36.46 (4.63) percent think they have rather high (very high) knowledge of the new premium pension system, whereas 21.50 (8.98) percent believe they have rather low (very low) knowledge. The corresponding proportions of the individuals with an active choice of the default alternative are 21.43 (2.55) percent with a rather high (very high), and 29.08 (21.94) percent with rather low (very low) perceived knowledge. In addition, the majority of the individuals with a passive allocation to the default have either very low or rather low perceived knowledge, 41.03 and 29.49 percent respectively, whereas very few have rather high or very high perceived knowledge, 14.10 and zero percent respectively. On average, the perceived competence level is 2.88 for all individuals, and 3.06, 2.54, and 2.03 for individuals with an active choice of own funds, an active choice of the default, and a passive allocation to the default respectively. Hence, we observe a clear positive relation between individuals' level of perceived competence and their pension choice activity.

Table 3 reports that almost 64 percent of all individuals in the sample have used the information in the booklet in association with their premium pension investment choice. Moreover, more than 72 percent of those who made an active choice of own funds have used the information in the booklet, whereas only less than 43 (35) percent of those who made an active choice of (passively ended up in) the default fund used the booklet. The figures suggest a positive correlation between information usage and active participation in the pension plan, consistent with our expectations.

[14] Note that a distinction between active choice of and passive allocation to the default is unique for the individuals in the survey sample underlying this study. Hence, comparative figures do not exist for the entire population.

Regarding previous general investment experience, almost 29 percent of all individuals had previous experience with mutual funds alone, 7 percent of common stocks alone, 34 percent of both mutual funds and common stocks, whereas the remaining 30 percent had no such investment experience. The descriptive statistics suggest no clear relationship between choice activity and previous holdings of either mutual funds or common stocks. However, some evidence of a positive relationship between activity and individuals' experience of joint mutual fund and common stock holdings is found, and consequently a corresponding negative relation between activity and no experience. Accordingly, the proportion of individuals with experience of both mutual funds and common stock (no experience) is approximately 38 (25) percent for those who made an active choice of own funds, 25 (42) percent for those with an active choice of the default fund, and 19 (43) percent for the passive individuals.

Table 3 also contains information of the proportion of individuals with previous experience of different types of private pension savings. Approximately 29 percent of all individuals had private pension insurance schemes only, 17 percent had individual pension savings only, and 7 percent had both insurance schemes and individual savings, whereas 47 percent had no private pension savings before making their PPM pension plan choice. The descriptive statistics suggest a positive relationship between choice activity and previous experience with private pension savings. The proportion of individuals with each of the three types of private pension savings' experience is larger among those who made an active choice of own funds, than those who actively chose the default, which in turn is larger than the corresponding proportion among the passive individuals. Consequently, people with no previous private savings are to a lesser degree found in the active categories than in the passive.

Table 3 also records individuals' previous experience with a similar activity choice within a private pension fund. Almost 30 percent of all individuals have previous experience of a similar

choice, whereas 70 percent have no such experience. From Table 3 we can see some evidence of a higher proportion of people familiar with a private pension choice among those who actively chose own funds within the PPM pension plan, than among those who for any reason, actively or passively, ended up in the default alternative.

Finally, Table 3 relates individuals' activity choices to their age, gender, education and income. These individual characteristics are used as control variables in the following multivariable analysis, and are not linked to any a priori hypotheses regarding the activity choices. Nevertheless, the descriptive statistics show some evidence of a positive correlation between age and active plan participation. To some extent, individuals younger than 40 years are on average over-represented in the passive choice category, whereas people above 40 years of age (except the small group of people above 60) seem to be slightly over-represented in the two active choice categories. For the remaining variables, men seem to be somewhat more inclined to make active choices than women. Also, a positive relationship can be detected between activity choice and income, where people with higher salaries on average tend to make active choices to a higher extent than people with lower salaries. However, the descriptive statistics show no evidence of a relation between individuals' activity choice and education level.

4. Empirical results

4.1 Individuals' perceived competence and information processing

We start by modeling individuals' perceived competence regarding the new pension system as a function of the degree of information processing (i.e. how carefully the information booklet is read), and a set of individual characteristics as control variables; gender, education level, and income level. Following Graham et al. (2005), we use an ordered logit regression model, capturing

the ordering of individuals' perceived competence level in the range 1 – 5. All explanatory variables are dummy variables, reflecting the categories as described in Table 2, except for the information processing proxy READ, which is included as a numerical score, in the range 1 – 4, as reported in Table 1.[15] The model including all explanatory variables is labeled (1), and is presented in Table 4. The model estimation results in a pseudo R-squared, according to Estrella (1998), equal to 0.3477, and a correlation coefficient between observed perceived competence and corresponding estimated perceived competence from model (1) equal to 0.57.

Table 4 reports the estimated coefficients for model (1). According to expectations, model (1) results indicate a significantly positive relationship between perceived competence and information processing (variable READ), even after taking individuals' gender, education level, and income level into account. In order to more carefully interpret the economic impact of the significant relationship between perceived competence and information processing, we define a "typical" individual as a woman (MALE = 0), with high school education (EDU_1 = EDU_3 = 0), with an annual income between SEK 175,000 and 250,000 (INDINC_1 = INDINC_3 = 0), and who has read the information in the booklet "not particularly carefully" (READ = 2). According to model (1), this "typical" female individual has a predicted level of perceived competence equal to 2.49. If she would, ceteris paribus, increase her information processing from "not particularly carefully" (READ = 2) to "rather carefully" (READ = 3), model (1) predicts an increase in her perceived competence with 1.24, from 2.49 to 3.73.

As shown in Table 4, the results from model (1) indicate that individuals' perceived competence significantly increases in education. Comparing our "typical" high school educated individual with an otherwise similar individual with less (more) than high school education, we observe an

[15] An alternative specification with a set of dummy variables representing the information-processing variable was also tried. The results are similar, but it is easier to interpret the results when the numerical score READ is used.

estimated decrease (increase) in competence with 0.50 (0.48), from 2.49 to 1.99 (2.97). Competence is also significantly higher for individuals in the highest income brackets than for individuals in the two lower brackets. Hence, if income for the "typical" individual were to increase above the SEK 250,000 level, the estimated increase in perceived competence equals 0.76, from 2.49 to 3.25. In addition, the results in Table 4 show that men are significantly more likely to perceive themselves as competent relative women. Using predictions from model (1), we conclude that the gender difference accounts for an increase of 0.65 in the "typical" perceived competence level from 2.49 (female) to 3.14 (male).

Table 4 also contains the results from a restricted model specification (2), where the information-processing variable READ is omitted. The reason for omitting the effect of information processing is to isolate the impact of this variable on perceived competence, and facilitate a direct comparison with Graham et al. (2005), who do not have knowledge of individuals' information usage. The model specification (2) results in a pseudo R-squared measure of 0.1275, whereas the correlation between the observed perceived competence and corresponding estimated perceived competence from model (2) only equals 0.35. Hence, we can attribute the difference in pseudo R-squared between models (1) and (2), 0.3477 less 0.1275 equals 0.2202, and the corresponding difference in correlations, 0.57 less 0.35 equals 0.22, to the presence of the information processing variable in model (1). Also, note that the inclusion of READ in model (1) does not dramatically alter the magnitudes and significance levels of the coefficients of the other explanatory variables relative model (2). Thus, we find no evidence to suggest that the variable READ should be related to the variables reflecting individual characteristics gender, education or income. In other words, the regression according to model (1) appears not to suffer from multicolinearity. In Table B1, we confirm the notion that perceived competence is highly correlated with information processing, whereas the information processing variable in turn is showing only moderate, and mostly not

significantly larger than zero, pair-wise correlation coefficients with the other explanatory variables in model (1).

Evidently, there is a strongly positive correlation between information processing and perceived competence, i.e. the more carefully an individual reads the information in the booklet, the higher the individual's perceived competence regarding the new pension system is. Hence, the results of this study support the idea in Heath and Tversky (1991), and suggest the importance of including information processing as an explanatory variable for individuals' perceived competence.

4.2 Individuals' investment activity, information usage and perceived competence

Next, we model individuals' investment activity choice in the premium pension plan as a function of perceived competence of the new pension system, information usage (of the PPM booklet), previous experience with investments in general and with private pension savings, and individual characteristics age, gender, education and income. We use a multinomial logit regression model distinguishing between the three choices available; "active choice of own funds", active choice of default", and "passive allocation to default", with the second choice as the base case. The multinomial logit model estimates the likelihood of making an active choice of own funds, and the likelihood of passively ending up in the default alternative, rather than actively choosing the default. Our preferred model is labeled (1), and is presented in Table 5a. The model estimation results in a pseudo R-squared, according to Estrella (1998), equal to 0.1729. Alongside with estimated coefficients, and associated *p*-values, Table 5a presents "typical" effects of a ceteris paribus change in each explanatory variable for a benchmark individual with an average age (42.20 years), a competence level of 2, and with zeros on all dummy variables. For a benchmark individual, model (1) estimates the likelihood of making an active choice of own funds (the

default) to 0.3676 (0.4405), and the likelihood of making a passive allocation to the default to 0.1920.

The multinomial logit regression results suggest that the effect of perceived competence is positive and highly significant, indicating that the level of activity increases with individual competence. The coefficient for competence is significantly positive in the equation for active choice of own funds, whereas the corresponding coefficient in the equation for passive allocation to the default is significantly negative. Hence, we find support for our hypothesis that individuals with a high perceived competence are more likely to make an active choice of own funds, and less likely to be passive, relative making an active choice of the default, than individuals with a low perceived competence. For our benchmark or "typical" individual, a ceteris paribus increase in perceived competence from 2 (rather low) to 3 (neither low or high) increases the individual's likelihood of actively choosing own funds with 0.0888, from the benchmark level 0.3676 to 0.4564, and decreases the corresponding likelihood of making a passive allocation to the default with 0.0706, from 0.1920 to 0.1214, whereas the probability of making an active choice of the default is virtually unaffected. Hence, perceived competence is an important factor determining individuals' participation activity in the pension plan. Moreover, relating to Choi et al. (2005a), a lack of perceived competence appears to be an important reason for why individuals choose to follow the "path of least resistance" with an entirely passive decision.

Individual usage of the PPM information booklet is important for the activity choice. Individuals who use the booklet in association with their choices have a significantly higher likelihood of actively choosing own mutual funds, rather than actively choosing the default. However, information usage is not a significant determinant of the likelihood of making a passive allocation to the default rather than an active one. For the benchmark individual, considering a ceteris paribus change from not using to using the information in the booklet, the likelihood of actively choosing

own funds increases with 0.2723, from 0.3676 to 0.6399, at the expense of the likelihood of making an active choice and a passive allocation to the default. This result is consistent with the conclusion in Cronqvist and Thaler (2004) and suggests that the information booklet is a powerful mechanism for successfully encouraging an active participation in the pension plan.

Table 5a also presents coefficients for the explanatory variables, capturing individuals' different kinds of investment experience. The experience-related variables significantly affect the likelihood of making an active choice of own funds, but not the likelihood of making a passive allocation to the default. In line with our expectations, and following Huberman (2001) and Huberman et al. (2007), the likelihood of making an active choice of own funds is higher for individuals with previous experience of mutual fund holdings, private pension insurance schemes, and individual pension savings. Moreover, individuals who previously have made a similar activity choice within a private pension fund are significantly more likely (at least on the ten percent significance level) to make an active choice of own funds within the new pension plan. These results suggest that individuals' investment activity within the pension plan is positively related to their previous experience with both financial assets in general, and private pension investments and associated choices in particular. Following Huberman (2001), familiarity breeds investment activity in individuals' pension accounts, without crowding out the competence effect.

Among the individual characteristics that are used as control variables in the multinomial logit regression model, only individuals' age is associated with significant coefficients. In Table 5a, the likelihood of making an active choice of own funds (passive allocation to the default) is significantly negatively related to age at the one (ten) percent significance level. The other individual characteristics gender, education, and income are not included in the multinomial logit specification according to model (1), since they are found to be significant determinants of individuals' perceived competence according to the results in Table 4. Instead, we estimate an

alternative specification of the multinomial logit model, labeled model (2), where we omit the competence variable, and include gender, education, and income variables. The results from model (2) are presented in Table 5b, and lend us to conclude that the latter individual characteristics are not significant determinants of the activity choices. Moreover, the other explanatory variables, common for models (1) and (2), show similar coefficient estimates and significance levels as in model (1). Hence, the perceived competence variable is an important determinant of the investment activity choice, and adds a significant explanatory dimension that cannot be captured by simple individual characteristics.

5. Concluding remarks

The competence effect hypothesizes that people's willingness to act on their own judgments within a certain area depends on their subjective perceived competence, i.e. to what degree they feel skillful or knowledgeable within the area in question. Using survey responses, we directly measure individuals' perceived competence about the new Swedish pension system, which is based on individual private accounts, and investigate the link between perceived competence and individuals' decisions to make active investment choices within the new Swedish retirement scheme. In accordance with the competence effect, we hypothesize that people who feel more knowledgeable about the new pension system will be more willing to act on their judgments in this setting, and are thus more likely to make an active investment choice in their individual pension accounts. In our empirical analysis, we find evidence consistent with that individuals with a high perceived competence are more likely to actively choose mutual funds in their own accounts, whereas individuals with a low perceived competence are less likely to make an active choice.

This is the first study to relate perceived competence to investment activity in individual pension schemes. Our finding of a positive relation between perceived competence and investment activity

is robust to alternative explanations of active participation in individual pension schemes suggested in the literature. We control for individuals' experience or familiarity with common stock and mutual fund holdings, private pension savings and insurance schemes, as well as previous exposure to a similar activity choice within a private pension fund. Moreover, we control for individuals' usage of information contained in a booklet, provided by the pension authorities in order to guide individuals through the process of making an active choice. The booklet also contained basic instructions of educational nature with a strong encouragement to make an active choice. Finally, we control for individual characteristics as gender, age, wealth and income. The results support the notion that familiarity, previous investment experience, information usage, and age increase individuals' likelihood of making an active choice in their pension accounts, without eroding the competence effect.

For the first time in the literature, we also study the relation between individuals' information processing and perceived competence, where we measure information processing by how carefully individuals have read the information in the booklet. Controlling for a set of individual characteristics, suggested by previous evidence, our results show a positive relation between information processing and perceived competence. The more carefully people read the information booklet, the more competent they feel about the new pension system. Moreover, highly educated men with high salaries are more likely to perceive themselves as competent relative women with less education and lower salaries.

Appendix A: Phone survey methodology and selection issues

The phone survey was carried out by a step-wise random selection of adult Swedish individuals between 20 and 62 years of age. The phone interviews were conducted in 2000 by Sifo Research & Consulting AB, a leading national phone survey company, commissioned by the Swedish Premium Pension Authority (PPM). For the first step in the selection of individuals, Sifo Research & Consulting AB used its own computerized program for phone survey sample selection, from a collection of one million phone numbers called KATURV, where the program is designed to randomly select a household. In the second step, an individual was randomly selected among the household members. If the individual in question is not available for an interview, the first choice is to interview another (randomly selected) person in the same household, and the second choice to randomly select another household. According to the manager for this project at Sifo Research & Consulting AB, 15 attempts were made to reach each randomly selected individual before randomly selecting a new household.

The selection process resulted in a sample of 1,083 individuals who were interviewed. For the 1,083 individuals, an interview commenced with the following question (our translation into English): “Recently, a new pension system was initiated in Sweden. Among other things, this means that you can decide yourself how a part of your pension holdings is to be invested. This part is called the premium pension. Lately, information material, and order forms for the new premium pension have been sent out. This information material is called the choice-package. Did you receive this choice-package?” 1,009 individuals (93.2 percent) answered “yes” to this question, whereas 74 individuals (6.8 percent) either responded “no”, or were hesitant. For the latter 74 individuals, the interview was terminated at this stage. Thus, the final sample consists of the 1,009 individuals who answered all of the interview questions of the phone survey. The answer “no”, or

indeed a hesitation, could reflect either that they did not receive the choice-package, and are correctly discarded from this study, or that they are reluctant to take part in the interview, with a possible selection bias problem for this study.

The average (median) age among the 1,009 individuals for who the interview was completed is 42.2 (42), whereas the 74 no-answering or hesitant individuals' average (median) age is only 30.2 (25). The fact that the average, and in particular median, age is lower among the no-answering or hesitant individuals is consistent with that young 25-year-old individuals are more likely not to be eligible for premium pension payments, and are thus more likely not to have received the choice package. In addition, the 92.2 percent "response rate" among the actual interview subjects indicates that a selection bias probably is a minor issue.

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Table 1: Survey questions, from the PPM/SIFO premium pension choice survey

	Variable	Survey question	Answer alternatives
Information processing	READ	How carefully have you read the information in the booklet?	1. Have not read it at all 2. Not particularly carefully 3. Rather carefully 4. Very carefully
Perceived competence	COMP	How do you think your knowledge about the new premium pension system is?	1. Very low 2. Rather low 3. Neither low or high 4. Rather high 5. Very high
Information usage (of the booklet)	USAGE	Which sources of information have you used in association with the premium pension investment choice?	The respondents were free to name any sources of information used. The most frequent answer was the PPM booklet (64% of the respondents)
Investment activity	ACTIVE	Which position have you taken with respect to your own premium pension? Which of the following three alternatives applies for you?	1. I have sent in the choice form, and thereby chosen my own mutual funds 2. I have not sent in the choice form; want the seventh AP-fund to manage my money 3. I have not sent in because I do not care, or I do not know

Table 2: Individuals' perceived competence and characteristics

	Very low	Rather low	Neither low or high	Rather high	Very high	Number of obs.
All individuals	0.1397	0.2359	0.2676	0.3181	0.0387	1,009
Information processing (1 = none, 4 = very careful)						
None	0.5816	0.1765	0.0963	0.0685	0.1282	177
Not particularly careful	0.3333	0.5672	0.3889	0.2586	0.1795	377
Rather careful	0.0638	0.2395	0.4815	0.5327	0.3077	379
Very careful	0.0213	0.0168	0.0333	0.1402	0.3846	76
Education						
Less than high school	0.2908	0.2941	0.2185	0.1277	0.1538	217
High school	0.4752	0.4538	0.4667	0.4393	0.4103	458
More than high school	0.2340	0.2521	0.3148	0.4330	0.4359	334
Income						
Less than SEK 175,000	0.3475	0.3325	0.2741	0.1402	0.1538	251
SEK 175,000 – SEK 250,000	0.5461	0.5042	0.4889	0.4424	0.2821	482
More than SEK 250,000	0.1064	0.1723	0.2370	0.4174	0.5641	276
Gender						
Male	0.3830	0.3655	0.4407	0.5857	0.7436	477
Female	0.6170	0.6345	0.5593	0.4143	0.2564	532

Table 3: Individuals' investment choices and characteristics

	Active choice of own funds	Active choice of default	Passive allocation to default	All	Number of obs.
All individuals	0.7284	0.1943	0.0773	1.0000	1,009
Competence (1 = very low, 5 = very high)					
Very low	0.0898	0.2194	0.4103	0.1397	141
Rather low	0.2150	0.2908	0.2949	0.2359	238
Neither low or high	0.2844	0.2500	0.1538	0.2676	270
Rather high	0.3646	0.2143	0.1410	0.3181	321
Very high	0.0463	0.0255	0.0000	0.0387	39
Information usage (of the booklet)					
Use	0.7238	0.4286	0.3462	0.6373	643
Not use	0.2762	0.5714	0.6538	0.3627	366
Previous general investment experience					
Mutual funds	0.2939	0.2602	0.2821	0.2864	289
Common stock	0.0721	0.0663	0.0897	0.0723	73
Mutual funds and common stocks	0.3850	0.2551	0.1923	0.3449	348
No experience	0.2490	0.4184	0.4359	0.2963	299
Previous tax-exempt private pension savings					
Pension insurance	0.3129	0.2449	0.1795	0.2894	292
Individual pension savings	0.1905	0.1429	0.1154	0.1754	177
Pension insurance and individual savings	0.0803	0.0408	0.0128	0.0674	68
No savings	0.4163	0.5714	0.6923	0.4678	472
Previous experience with a choice within private pension fund					
Yes	0.3197	0.2194	0.2564	0.2953	298
No	0.6803	0.7806	0.7436	0.7047	711
Age					
< 30	0.1592	0.1786	0.2051	0.1665	168
30 – 40	0.2748	0.1990	0.3462	0.2665	268
40 – 50	0.2639	0.2602	0.1795	0.2567	259
50 – 60	0.2653	0.2704	0.1923	0.2607	263
>= 60	0.0367	0.0918	0.0769	0.0505	51

Table 3: Individuals' investment choices and characteristics (cont.)

	Active choice of own funds	Active choice of default	Passive allocation to default	All	Number of obs.
Gender					
Male	0.4803	0.4745	0.3974	0.4727	477
Female	0.5197	0.5255	0.6026	0.5273	532
Education					
Less than high school	0.2027	0.2653	0.2051	21.51	217
High school	0.4667	0.4082	0.4487	45.19	458
More than high school	0.3306	0.3265	0.3462	33.30	334
Income					
Less than SEK 175,000	0.2218	0.2806	0.4231	0.2488	251
SEK 175,000 – SEK 250,000	0.4871	0.4592	0.4359	0.4777	482
More than SEK 250,000	0.2912	0.2602	0.1410	0.2735	276

Table 4: Results from the ordered logit model of individuals' perceived competence

	(1)	(2)
READ	1.2470	
	(0.0001)	
MALE	0.6534	0.5353
	(0.0025)	(0.0029)
EDU_1	-0.4909	-0.4294
	(0.0095)	(0.0204)
EDU_3	0.4879	0.4649
	(0.0453)	(0.0153)
INDINC_1	-0.1136	-0.2730
	(0.5924)	(0.1585)
INDINC_3	0.7668	0.8169
	(0.0001)	(0.0001)
CONSTANT 2	1.1499	-1.5119
	(0.0001)	(0.0001)
CONSTANT 3	2.8254	-0.1171
	(0.0001)	(0.3266)
CONSTANT 4	4.2908	1.1051
	(0.0001)	(0.0001)
CONSTANT 5	7.4307	3.9088
	(0.0001)	(0.0001)
Pseudo R-squared	0.3477	0.1275

Investor competence is measured as the response to the survey question: "How do you think your knowledge about the new premium pension system is?" Responses range from 1 ("very low") to 5 ("very high"). Explanatory variables in the ordered logit model estimations are: MALE (dummy variable equal to 1 if the individual is male), EDU_1 (dummy variable equal to 1 if the education level of the individual is below high school), EDU_3 (dummy variable equal to 1 if the education level is above high school), INDINC_1 (dummy variable equal to 1 if the individual's annual income is less than 175,000), INDINC_3 (dummy variable equal to 1 if the individual's annual income is more than 250,000), and READ (the response to the survey question: "How carefully have you read the information in the brochure?", with responses ranging from 1, "have not read it at all", to 4, "very carefully"). Each model uses the Huber-White quasi-maximum likelihood standard errors (see White, 1980). The estimated coefficients are presented for each explanatory variable, with *p*-values in parentheses. Pseudo R-squared corresponds to the measure of fit from Estrella (1998).

Table 5a: Results from the multinomial logit model of activity choice, model (1)

	Coefficients		Typical effects		
	Active choice of own funds	Passive allocation to default	Active choice of own funds	Active choice of default	Passive allocation to default
CONSTANT	0.1056 (0.7383)	0.8390 (0.1201)	0.3676	0.4405	0.1920
COMP	0.2586 (0.0001)	-0.4163 (0.0026)	0.0888	-0.0182	-0.0706
USAGE	1.0822 (0.0001)	-0.1211 (0.6852)	0.2723	-0.1807	-0.0916
EXP_1	0.4360 (0.0051)	0.1945 (0.5798)	0.0901	-0.0858	-0.0042
EXP_2	0.4052 (0.1534)	0.3784 (0.4632)	0.0658	-0.0942	0.0284
EXP_3	0.6294 (0.0002)	0.0675 (0.8618)	0.1489	-0.1107	-0.0382
PENSAVE_1	0.4486 (0.0019)	-0.3732 (0.3182)	0.1337	-0.0569	-0.0769
PENSAVE_2	0.5004 (0.0036)	-0.3689 (0.3922)	0.1464	-0.0670	-0.0794
PENSAVE_3	0.6351 (0.0031)	-1.3264 (0.2558)	0.2178	-0.0688	-0.1490
PENCHOICE	0.2919 (0.0601)	0.5197 (0.1342)	0.0244	-0.0896	0.0652
AGE	-0.0190 (0.0011)	-0.0198 (0.0990)	-0.0306	0.0480	-0.0174
Pseudo R-squared					0.1729

Explanatory variables in the multinomial logit model estimation are: COMP (measured as the response to the survey question: “How do you think your knowledge about the new premium pension system is?”, responses range from 1, “very low”, to 5, “very high”), USAGE (dummy variable equal to 1 if the response to the survey question: “Which sources of information have you used in association with the premium pension investment choice?”, indicates usage of the booklet, EXP_1, EXP_2, EXP_3 (dummy variables, each equal to 1 if the individual has previous experience with mutual funds, common stocks, or both mutual funds and common stocks respectively), PENSAVE_1, PENSAVE_2, PENSAVE_3 (dummy variables, each equal to 1 if the individual has previous experience with private pension insurance schemes, individual pension savings, or both insurance schemes and individual savings respectively), PENCHOICE (dummy variable equal to 1 if the individual has previous experience with a similar activity choice within a private pension fund), AGE (individual age in years). The model is estimated with the heteroskedasticity-consistent covariance matrix according to White (1980). The estimated coefficients are presented for each explanatory variable, with *p*-values in parentheses. Typical effects correspond to ceteris paribus changes in each explanatory variable, for a benchmark individual with average age (42.20 years), competence level of 2, and with zeros on all dummy variables. Benchmark probabilities are displayed in the constant row, whereas each row for each explanatory variable displays the change in probability from the benchmark level. For each dummy variable, a change from 0 to 1 is considered, whereas competence changes from 2 to 3, and age from 42.20 to 52.20 years. Pseudo R-squared corresponds to the measure of fit from Estrella (1998).

Table 5b: Results from the multinomial logit model of activity choice, model (2)

	Coefficients		Typical effects		
	Active choice of own funds	Passive allocation to default	Active choice of own funds	Active choice of default	Passive allocation to default
CONSTANT	0.7042 (0.0144)	-0.1177 (0.8564)	0.4249	0.3922	0.1830
USAGE	1.2031 (0.0001)	-0.3323 (0.2646)	0.3051	-0.1899	-0.1153
EXP_1	0.4782 (0.0027)	0.1210 (0.7318)	0.1089	-0.0868	-0.0221
EXP_2	0.4811 (0.0799)	0.3219 (0.5219)	0.0912	-0.0977	0.0066
EXP_3	0.7750 (0.0001)	-0.0514 (0.8983)	0.1948	-0.1286	-0.0662
PENSAVE_1	0.4487 (0.0020)	-0.4054 (0.2867)	0.1393	-0.0597	-0.0796
PENSAVE_2	0.4647 (0.0104)	-0.3787 (0.3879)	0.1416	-0.0636	-0.0780
PENSAVE_3	0.6528 (0.0028)	-1.2456 (0.3041)	0.2224	-0.0812	-0.1412
PENCHOICE	0.3744 (0.0155)	0.5198 (0.0949)	0.0352	-0.1002	0.0649
AGE	-0.0148 (0.0191)	-0.0153 (0.2316)	-0.0247	0.0361	-0.0115
MALE	-0.0384 (0.7834)	-0.2177 (0.4807)	-0.0063	0.0214	-0.0278
EDU_1	-0.2262 (0.1705)	-0.2421 (0.5381)	-0.0374	0.0562	-0.0188
EDU_3	-0.2059 (0.1968)	0.1332 (0.6963)	-0.0597	0.0220	0.0378
INDINC_1	-0.1371 (0.4315)	0.4457 (0.1885)	-0.0715	0.0181	0.0896
INDINC_3	-0.1207 (0.3765)	-0.5547 (0.1979)	0.0061	0.0566	-0.0627
Pseudo R-squared					0.1512

Investor competence is measured as the response to the survey question: “How do you think your knowledge about the new premium pension system is?” Responses range from 1 (“very low”) to 5 (“very high”). Explanatory variables in the ordered logit model estimations are: MALE (dummy variable equal to 1 if the individual is male), EDU_1 (dummy variable equal to 1 if the education level of the individual is below high school), EDU_3 (dummy variable equal to 1 if the education level is above high school), INDINC_1 (dummy variable equal to 1 if the individual’s annual income is less than 175,000), INDINC_3 (dummy variable equal to 1 if the individual’s annual income is more than 250,000), and READ (the response to the survey question: “How carefully have you read the information in the brochure?”, with responses ranging from 1, “have not read it at all”, to 4, “very carefully”). The model is estimated with the heteroskedasticity-consistent covariance matrix according to White (1980). The estimated coefficients are presented for each explanatory variable, with *p*-values in parentheses. Pseudo R-squared corresponds to the measure of fit from Estrella (1998).

Appendix B: Correlation matrices

Table B1: Correlation matrix between the variables in the ordered logit model (Table 4)

	COMP	READ	MALE	EDU_1	EDU_3	INDINC_1	INDINC_3
COMP	1.000	0.483	0.192	-0.157	0.164	-0.180	0.278
		(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
READ		1.000	0.028	-0.022	0.020	-0.104	0.095
			(0.3725)	(0.4790)	(0.5247)	(0.0009)	(0.0026)
MALE			1.000	0.026	-0.109	-0.233	0.301
				(0.4065)	(0.0005)	(0.0001)	(0.0001)
EDU_1				1.000	-0.368	0.095	-0.105
					(0.0001)	(0.0025)	(0.0009)
EDU_3					1.000	-0.098	0.164
						(0.0019)	(0.0001)
INDINC_1						1.000	-0.353
							(0.0001)
INDINC_3							1.000

Table B1 contains pair-wise correlation coefficients between all variables used in the ordered logit regression of individuals' perceived competence, with p-values in parentheses. The p-values are obtained from ordinary least squares regressions of each row-wise listed variable on each column-wise listed variable. Perceived competence COMP is measured as the response to the survey question: "How do you think your knowledge about the new premium pension system is?" Responses range from 1 ("very low") to 5 ("very high"). MALE is a dummy variable equal to 1 if the individual is male, EDU_1 is a dummy variable equal to 1 if the education level of the individual is below high school, EDU_3 is a dummy variable equal to 1 if the education level is above high school, INDINC_1 is a dummy variable equal to 1 if the individual's annual income is less than 175,000, INDINC_3 is a dummy variable equal to 1 if the individual's annual income is more than 250,000, and READ is the response to the survey question: "How carefully have you read the information in the brochure?", with responses ranging from 1, "have not read it at all", to 4, "very carefully".

Table B2: Correlation matrix between the variables in the multinomial logit model (Table 5)

	CHOICE	COMP	USAGE	EXP_1	EXP_2	EXP_3	PENSAVE_1	PENSAVE_2	PENSAVE_3	PENCHOICE	AGE
CHOICE	1,000	0,001	0,074	0,021	0,019	0,023	0,001	0,009	0,007	0,051	-0,071
		(0.9625)	(0.0189)	(0.5111)	(0.5442)	(0.4579)	(0.9838)	(0.7820)	(0.8140)	(0.1075)	(0.0249)
COMP		1,000	0,260	-0,034	0,016	0,212	0,061	0,010	0,114	0,168	0,096
			(0.0001)	(0.2811)	(0.6062)	(0.0001)	(0.0545)	(0.7550)	(0.0003)	(0.0001)	(0.0024)
USAGE			1,000	0,045	-0,004	0,040	0,068	-0,004	0,038	0,055	-0,019
				(0.1548)	(0.8955)	(0.2039)	(0.0312)	(0.8912)	(0.2234)	(0.0827)	(0.5490)
EXP_1				1,000	-0,177	-0,460	0,021	0,002	-0,013	0,018	-0,032
					(0.0001)	(0.0001)	(0.5032)	(0.9558)	(0.6820)	(0.5783)	(0.3115)
EXP_2					1,000	-0,203	0,007	0,012	-0,075	0,046	-0,036
						(0.0001)	(0.8150)	(0.7031)	(0.0171)	(0.1476)	(0.2572)
EXP_3						1,000	0,029	0,109	0,179	0,060	0,106
							(0.3587)	(0.0005)	(0.0001)	(0.0550)	(0.0008)
PENSAVE_1							1,000	-0,294	-0,172	0,066	0,162
								(0.0001)	(0.0001)	(0.0361)	(0.0001)
PENSAVE_2								1,000	-0,124	-0,042	-0,038
									(0.0001)	(0.1872)	(0.2323)
PENSAVE_3									1,000	0,121	0,041
										(0.0001)	(0.1928)
PENCHOICE										1,000	0,048
											(0.1300)
AGE											1,000

Table B2 contains pair-wise correlation coefficients between all variables used in the multinomial logit regression of individuals' pension plan choice, with *p*-values in parentheses. The *p*-values are obtained from ordinary least squares regressions of each row-wise listed variable on each column-wise listed variable. CHOICE refers to individuals' activity choices; "Active choice of own funds", Active choice of default", and "Passive allocation to default". Perceived competence COMP is measured as the response to the survey question: "How do you think your knowledge about the new premium pension system is?" Responses range from 1 ("very low") to 5 ("very high"). USAGE is measured as the response to the survey question: "Which sources of information have you used in association with the premium pension investment choice?", where only the usage of the booklet is registered. EXP_1, EXP_2, and EXP_3 are dummy variables, each equal to 1 if the individual has previous experience with mutual funds, common stocks, or both mutual funds and common stocks respectively. PENSAVE_1, PENSAVE_2, and PENSAVE_3 are dummy variables, each equal to 1 if the individual has previous experience with private pension insurance schemes, individual pension savings, or both insurance schemes and individual savings respectively. PENCHOICE is a dummy variable equal to 1 if the individual has previous experience with a similar activity choice within a private pension fund. AGE is individual age in years.