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Appreciated but complicated pension choices?

Insights from the Swedish Premium Pension System

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Abstract

We analyze experiences of members in a DC pension scheme from Sweden, one of the first countries that launched choice-based funded individual pension accounts. Based on a survey among 2,646 members, we study the effect of choice overload, risk tolerance, and subjective knowledge on self-reported choice behavior and perceptions of financial well-being. Regarding choice behavior, we find that members who are more risk-averse and report low levels of subjective knowledge tend to invest in the default fund – a fund that is, however, one of the riskiest on the choice menu.

On top of this mismatch between members' risk preferences and their investment choices, we also find that risk-averse members and members with low subjective knowledge are more likely to feel negative about their future financial well-being. We also see a strong and positive correlation between financial well-being and choice appreciation, whereas the act of choosing the fund has only minor impact. Based on our results, we derive suggestions for adjusting the choice architecture in choice-based pension schemes.

Samenvatting

We analyseren de ervaringen van leden in een DC-pensioenregeling uit Zweden – een land dat als een van de eersten op keuze gebaseerde individuele pensioenrekeningen lanceerde. Op basis van een enquête onder 2.646 leden bestuderen we het effect van keuze-overload, risicotolerantie en subjectieve kennis op zelfgerapporteerd keuzegedrag en percepties van financieel welzijn. Wat keuzegedrag betreft, vinden we dat meer risicomijdende deelnemers en deelnemers met een laag niveau van subjectieve kennis geneigd zijn te beleggen in het default fonds – een fonds dat in Zweden echter een van de meest riskante fondsen is op het keuzemenu.

Bovenop deze discrepantie tussen de risicovoorkeuren van deelnemers en beleggingskeuzes, merken we ook dat risicomijdende deelnemers en deelnemers met lage subjectieve kennis zich eerder negatief voelen over hun toekomstige financiële welzijn. Bovendien zien we een sterke en positieve correlatie tussen financieel welzijn en appreciatie van keuze, terwijl echter een keuze voor een fonds slechts een kleine impact heeft. Op basis van onze resultaten leiden wij suggesties af voor het aanpassen van de keuzearchitectuur in keuze gebaseerde pensioenregelingen.

1. Introduction

Population aging and low interest rates put pressure on public pension systems and pension funds (Chamie, 2015). As a result, both in the Netherlands and other countries around the world, individual choice-based defined contribution (DC) pension plans are gaining attention. A point of debate is how much choice should be given to pension plan members and how the choice architecture should be designed to facilitate members in their decision-making.

To support current discussions on pension system design and reform in the Netherlands, we surveyed Swedes who are enrolled in Premium Pension, a DC scheme that allows individual mutual fund selection. This scheme is part of the Swedish first pillar public pension, in which the entire working population invests 2.5% of their salary each year (see also Bovenberg & Lundbergh, 2015). Members can select up to five mutual funds from a choice set of 845 mutual funds. If members do not make a choice, their contributions are invested in the default fund.

Based on an extensive representative survey among 2,646 working age members, we contribute to the literature by generating knowledge on (1) factors that increase the likelihood of members to establish individual portfolios rather than stay invested in the default, and (2) factors that drive perceptions of financial well-being, a concept that has recently received attention from policymakers (Consumer Financial Protection Bureau, 2018) and researchers (Brüggen et al., 2017; Netemeyer et al., 2018). Financial well-being does not focus on the objective performance of a pension scheme but captures the perceptions of members as to how well they are off financially when it comes to retirement planning. Financial well-being, has also been shown to affect overall well-being (e.g. Dolan; Peasgood & White, 2008). To date there has been no comprehensive study of the Swedish Premium Pension that investigates the effects of choice overload, risk tolerance, and subjective knowledge on choice behavior and perceptions of financial well-being. By studying people's perceptions, we contribute to previous research, which has focused primarily on administrative data that show what members have invested in and how their investments performed over time (e.g., Cronqvist & Thaler, 2004; Dahlquist, Martinez & Söderlind, 2017). These data sources cannot, however, provide information about members' perceptions, such as the degree of choice overload, subjective knowledge, or financial well-being.

Our results point to problems in the choice environment in the Swedish Premium Pension scheme. We found, similar to the findings by Van Dalen and Henkens (2018), that new entrants to the system hardly establish their own portfolios even though most of them appreciate choice. Moreover, many members feel pessimistic about

their future financial situation. We found that most participants experience choice overload, which has a negative effect on expected financial well-being. In addition, the average member feels ignorant about the Premium Pension, which also has a negative effect on expected financial well-being and choice. Yet, what seems most problematic is that many members end up with a high-risk investment that is potentially not aligned with their risk tolerance. We found that members who are less risk-tolerant are more likely to invest in the default fund, which is in fact one of the most risky funds on the choice menu (as we will explain in more detail later). On top of individual welfare concerns, such mismatch can lead to a political backlash in the long run when members realize that the default set by the government does not provide a prudential risk-versus-return trade-off to secure their pension income.

Our results call for a change in the design of the Premium Pension choice environment, whereby the number of funds is reduced, the presentation of funds is improved to limit choice overload, and the default aligns with the risk tolerance of members. The evidence we gained from the Swedish context also provides important lessons for pension systems in the Netherlands and other countries. First, this study has generated more knowledge about the characteristics of people who make a choice, or instead not, within the Premium Pension system. Our results add insights that contribute to the discussion of how much choice should be given to members. We show that choice appreciation increases the perception of financial well-being, whereas the act of choosing itself has only small impact. Second, this study generates an understanding of how choice environments should or should not be designed. Third, identifying individual differences and drivers of heterogeneity in fund selection helps in the design of smart defaults that are targeted at specific segments.

We structure this paper as follows. In Section 2 we provide information on the institutional background of the Premium Pension scheme. In Section 3 we give an overview of the literature and derive hypotheses. In Section 4 we describe the survey design and our data. Section 5 presents the results of our analyses. In Section 6 we discuss our results and derive policy implications. In Section 7 we cover limitations and recommendations for future research.

2. Institutional background

Retirees in Sweden usually receive income from three sources: a state pension (a combination of Income Pension and Premium Pension), an occupational pension, and private savings. Moreover, there is a state-funded "Guaranteed Pension" for all retirees who do not have adequate self-funded retirement income to ensure protection against poverty.

Within the first pillar, the Income Pension is a pay-as-you-go scheme, while the Premium Pension is based on individual accounts and funded savings that individual members are in charge of. Members can select up to five mutual funds from a pre-defined set. Each year 18.5% of earnings is contributed to the state pension: 16% is credited to the Income Pension and 2.5% to the Premium Pension. In comparative terms, the latter percentage may seem small, but in the long run the Premium Pension will account for a larger share of the state pension than is reflected in the contributions, due to higher expected returns. Current predictions are that the Premium Pension will eventually account for 22% of the state pension, assuming a real annual return of 3.9% (Pensionsmyndigheten, 2017). In a more optimistic scenario, with a real annual return of 5.5%, the share of the Premium Pension could even slightly exceed 30% (Pensionsmyndigheten, 2017). These projections show that the Premium Pension is a substantial part of the first pillar pension and cannot be regarded as "gambling money". Members also consider the first pillar pensions important. Based on a question in our survey, members estimate the first pillar pensions (Income + Premium Pension) to generate on average 52% of their retirement income, followed by occupational pensions (26%), private savings (20%), and other sources (2%).

At year-end 2016, Swedish members had invested USD18,000 (SEK 142,400) per person on average (Pensionsmyndigheten, 2017), leading to roughly USD 125 billion (SEK 986 billion) in total that is currently invested in the Premium Pension (Pensionsmyndigheten, 2017a).

Mutual fund providers that wish to participate in the scheme and manage part of that money first need to sign a contract with the Premium Pension Agency (PPM), the administrative agency that sets reporting standards and regulates fee structures (Sundén, 2006). In the fall of 2000, members born after 1938 were allowed to select mutual funds for the first time. In principle, they can choose and change funds on a daily basis, without switching costs (Engström & Westerberg, 2003) and subscription fees, at relatively low fund costs (Fondbolagens förening, 2013). At that time they could choose from a set of 456 funds (Cronqvist & Thaler, 2004), one of which (AP7

Såfa, 2018) was defined by the government and declared to be the default fund (Sundén, 2006). With currently (as of January 2018) 845 funds on offer, the choice set has nearly doubled. Members who do not actively choose are automatically assigned to the default fund, which cannot be combined with other funds.

In general, nudging choices towards a well-designed default can be a desirable goal for policymakers (Thaler & Sunstein, 2009). In the Premium Pension setting, however, the default does not appear to be well-designed. Nobel Prize winner Richard Thaler recently called the default to be “unusually aggressive.”¹ In his opinion, the leverage of the fund, which was introduced in 2011, makes it particularly risky. Currently, investments in the default fund of the Premium Pension system are exposed to a multiplier effect of “1.35 times the increase or decrease in the market” (AP7 Såfa, 2018).²

Based on our desk research, it is difficult to understand the governance around the default and why the default fund would be one of the riskiest funds in the choice set. According to Stefan Lundbergh³, who led the Swedish Premium Pension review, the governance is part of the problem. He argued that since the Premium Pension belongs to the first pillar, the pension group should be responsible for setting the goals thereof and specifically for the default fund. In that process, the pension group should take all components of the social security system of the first pillar into account. However, the absence of a specific goal forced AP7, the provider of the default fund, to define what a good default should look like. In doing so, AP7 took a pure asset-only perspective rather than a social security perspective. According to Lundbergh, the motivation for leveraging in the default fund was that the Income Pension was considered as an inflation-linked bond. Since 16% of the salary goes into the Income Pension and only 2.5% into the Premium Pension, the argument for leveraging was that this would result in a better balanced portfolio. Lundbergh, however, regards this as an oversimplification and an example of bad governance practice, since the downside is ultimately borne by the taxpayers through other elements of the social security system.

Recently, several scandals concerning the Premium Pension have emerged. A prominent example of this is Allra, a Swedish financial services provider that invested

1 <https://www.youtube.com/watch?v=mG5xhzaic24>

2 At the age of 56 a stepwise risk reduction starts until the age of 75, when a medium risk level is reached (AP7 Såfa, 2018).

3 <https://www.ipe.com/news/regulation/cardanos-lundbergh-to-lead-swedish-premium-pension-system-review/10019327.article>

USD 2.5 billion (SEK 20 billion) of the savings of almost 118,000 Swedes.⁴ Allra was accused of dubious and non-transparent transactions, which is why the PPM decided to remove this fund from its eligible funds list.⁵ Other scandals, such as the Falcon Funds scandal, had preceded this. The provider was convicted of obscure trading operations and fraud, which harmed 22,000 members.⁶ In addition to problems with the low number of active choices and the choice architecture, these scandals further enhance the need to reform the Premium Pension.

⁴ <http://sverigesradio.se/sida/artikel.aspx?programid=2054&artikel=6663105>

⁵ <http://sverigesradio.se/sida/artikel.aspx?programid=2054&artikel=6663105>

⁶ <https://www.ipe.com/countries/sweden/maltese-falcon-funds-fraud-turns-into-swedish-noir/10017174.article>

3. Literature and hypotheses

Previous research already shed some light on problems in the Swedish Premium Pension scheme. The plan designer's initial idea was to motivate people to establish their own portfolios, and the Swedish government as well as fund providers invested heavily in marketing campaigns to stimulate choice (Cronqvist & Thaler, 2004). As a result, 66.9% of the participants composed their own portfolio, and only 33.1% invested in the default (Cronqvist & Thaler, 2004; Cronqvist, Thaler and Yu, 2018). However, eleven years later, already 42% owned the default fund (Johannisson, 2010), and to date this number is close to 50% (Pensionsmyndigheten, 2017a). Czech (2016) zoomed in on new participants and found that active fund choice of new members dropped from 67% in 2000, the year in which fund choice was heavily advertised, to 1.6% and even less after 2007. Thus, the majority of new members invested in the default fund, implying that the freedom of choice is presently used only by few participants.

Previous literature offers explanations for the increased use of the default fund. The complexity of the choice architecture supports the use of decision heuristics, of which a prominent element is the default bias (Hedesstrom, Svedsater & Garling, 2004). Evidence suggests that the default bias is driven by procrastination (O'Donoghue & Rabin, 1999; Brown, Farrell & Weisbenner, 2016), a status quo bias (Samuelson & Zeckhauser, 1988), and anticipated regret (Choi et al., 2003; Brown et al., 2016). Moreover, Madrian and Shea (2001) showed that members tend to perceive the default option as investment advice and are likely to follow the path of least resistance, which implies that choice architecture strongly influences the investment decisions of participants (Choi et al., 2002).

Contrary to these explanations that all rely on decision heuristics, Jacobsen and Lundgren (2009) propose that Swedes will rationally choose the default as it is superior for a majority of people. They argue that investors perceive searching for top performing funds and actively managing their portfolio as costly, which reduces their utility from making a choice. Moreover, considering the higher management fees and the relatively low fee for the default option, Jacobsen and Lundgren (2009) argue that only a few mutual funds actually provide a higher utility than the default. This finding conflicts, however, with Dahlquist, Martinez, and Söderlind (2017), who show that active investors earn higher risk-adjusted returns. Engström and Westerberg (2003) argue that it is not assessment of the utility of the default but lack of ability and limited financial experience that lead to choice deferral. They reason that the strong advertising campaign lowered the information costs of individual participants

and thus facilitated choice in the beginning. Their work builds upon the broad literature in psychology that links increasing complexity in decision-making with procrastination.

The literature is less developed when it comes to insights into the heterogeneity and into which factors correlate with whether people select their own funds or stay with the default, and which factors drive perceptions of financial well-being during retirement. This can be explained by the fact that most previous studies on the Swedish pension system are based on administrative datasets, which do not provide information on preferences and beliefs. An exception is Anderson & Robinson (2017), but their study is limited to information on the financial literacy of members. The purpose of this paper is twofold. First, we generate deeper insights into the previously studied decision to stay with the default or not, by analyzing preferences, beliefs, and socio-demographic factors. Second, we generate first evidence on whether and how these factors relate to perceptions of financial well-being during retirement.

Choice

We study three special independent variables regarding the decision-making process of members. First, given the experimental evidence of Iyengar and Lepper (2000), which challenges the ability of individual persons to manage large choice sets, we want to learn about the influence of perceived choice overload on the likelihood that members will form individual portfolios. Specifically, we propose that the number of funds that people can choose from is far from optimal and, given the results of Iyengar and Lepper (2000), that choice overload decreases the odds that new members will select their own funds. After all, while the number of funds on offer almost doubled, the selection of own funds went down to almost zero among new members of the Swedish working population. Hence:

Hypothesis 1: Members with high levels of perceived choice overload are less likely to establish an individual portfolio.

Given that the default fund is one of the riskiest funds on the investment menu, we expect that especially risk-averse members are triggered to make adjustments in order to reduce investment risks (Rabin & Thaler, 2001). Hence:

Hypothesis 2: Members who have a lower risk tolerance are more likely to establish an individual portfolio.

Following the findings of Brown, Farrell, and Weisbenner (2016) on heterogeneity in opting out of defaults with respect to knowledge, we expect that members with high subjective knowledge are better aware of their options and take more care to make investment decisions that are in line with their personal circumstances. Moreover,

members with little knowledge may be more likely to interpret the default as implicit investment advice (Madrian & Shea, 2001). Hence:

Hypothesis 3: Members with higher subjective knowledge are more likely to establish an individual portfolio.

In addition to choice overload, risk tolerance, and subjective knowledge, which form the core of our research, we include the following control variables into our research design, that have partly also been tested by previous research: time preferences; whether members have consulted a financial advisor; whether members generally appreciate being able to choose their own fund or instead prefer the state to handle their pension; and socio-demographics (age, gender, education, family status, children, income, private pension savings).

Financial well-being

In line with our analyses on fund selection, we study the effects of choice overload, risk tolerance, and subjective knowledge on expected financial well-being. According to Iyengar & Lepper (2000), subjects in their experiments involving smaller choice sets were more satisfied about their choices than their counterparts in the larger choice set setting. We expect that members with high perceived choice overload have to deal with the feeling of being unable to pick the most efficient option, which makes them feel more negative about their future financial situation. Hence:

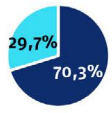
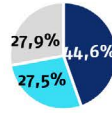
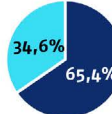
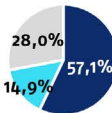
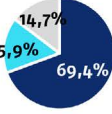
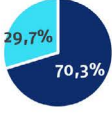
Hypothesis 4: Members with higher levels of perceived choice overload are less positive about their financial well-being at retirement.

In addition, we expect to find a positive relationship between risk tolerance and financial well-being. People with a high risk tolerance face the opportunity of higher returns than risk averse investors. We believe that the mere prospect of potentially higher returns makes members with a high risk tolerance feel more positive about their expected financial well-being. Furthermore, as shown by Dillenberger, Postlewaite & Rozen (2011), lower risk aversion is associated with a more optimistic attitude, meaning that members who are more willing to take risk are also more likely to be more positive about their financial well-being during retirement. Hence:

Hypothesis 5: Members who express a greater willingness to take risks are more positive about their financial well-being at retirement.

Lastly, we propose that members who have a good understanding of the pension system feel better off when it comes to expected financial well-being. As shown by Radcliffe and Klein (2002), individuals with more knowledge of a specific subject show increased comparative optimism, meaning that they believe to be more likely to experience positive results than others. In the case of retirement, members with more

Table 1: Hypotheses

	Descriptive statistics	Choice for individual portfolio	Financial well-being
Descriptive statistics		 <ul style="list-style-type: none"> ■ Individual portfolio ■ Default 	 <ul style="list-style-type: none"> ■ Negative (1-3) ■ Neither positive nor negative (4) ■ Positive (5-7)
CHOICE OVERLOAD	 <ul style="list-style-type: none"> ■ perceive choice overload (1-3) ■ struggle less with choice overload (4-6) 	<p>H1: (-) Members with higher levels of perceived choice overload are less likely to establish an individual portfolio.</p> <p style="text-align: center;">✗</p>	<p>H4: (-) Members with higher levels of perceived choice overload are less positive about their financial situation at retirement.</p> <p style="text-align: center;">✓</p>
RISK TOLERANCE	 <ul style="list-style-type: none"> ■ risk averse (1-5) ■ in between (6) ■ risk tolerant (7-11) 	<p>H2: (-) Members who have a lower risk tolerance are more likely to establish an individual portfolio.</p> <p style="text-align: center;">✗</p>	<p>H5: (+) Members who express a greater willingness to take risks are more positive about their financial situation at retirement.</p> <p style="text-align: center;">✓</p>
SUBJECTIVE KNOWLEDGE	 <ul style="list-style-type: none"> ■ feel unknowledgeable (1-3) ■ in between (4) ■ feel knowledgeable (5-7) 	<p>H3: (+) Members with higher subjective knowledge are more likely to establish an individual portfolio.</p> <p style="text-align: center;">✓</p>	<p>H6: (+) Members with higher subjective knowledge are more positive about their financial situation at retirement.</p> <p style="text-align: center;">✓</p>
CHOICE FOR INDIVIDUAL PORTFOLIO	 <ul style="list-style-type: none"> ■ Individual portfolio ■ Default 		<p>H7: (+) Members who choose their own funds are more likely to report higher levels of financial well-being.</p> <p style="text-align: center;">✗</p>

knowledge are therefore likely to think more positively about their financial well-being in the future than those who do not have the same level of knowledge. Hence:

Hypothesis 6: Members with higher subjective knowledge are more positive about their financial well-being at retirement.

We also test whether members who created individual portfolios are more positive about their expected financial well-being than those who invested in the default. We expect a positive relationship between choice and financial well-being since people who chose their own investments are able to make choices that better fit their preferences. Thus, the choices they make should improve their financial situation, which should also raise their perceptions of financial well-being. Hence:

Hypothesis 7: Members who choose their own funds are more positive about their financial well-being at retirement.

Table 1 gives an overview of the hypotheses and shows first descriptive statistics that we discuss in the following section.

Table 2: Scales

Measure	Variable	Question items (back-translated)	Scale	Cronbach's alpha
Choice overload	CHOICE_OVERLOAD	1. There are too many choices. 2. The decision demands a major effort. 3. It is a difficult decision. 4. I experience the decision as overwhelming. 5. It is difficult to understand all the information. 6. It is stressful to make a choice.	Scale from 1 to 6, 1 = strongly disagree 6 = strongly agree	0.870
Subjective knowledge	SUBJECTIVE_KNOWLEDGE	1. I know quite a lot about the Premium Pension. 2. I feel quite knowledgeable about the Premium Pension. 3. Among my closest friends, I am somewhat of an expert on the Premium Pension.	Scale from 1 to 7, 1 = strongly disagree 7 = strongly agree	0.906
Risk tolerance	RISK_TOLERANCE	When it comes to <u>financial decisions</u> , are you a person who likes to take <u>risks</u> , or are you a person who prefers not to take any risks?	Scale from 0 to 10, 0 = I prefer not to take any risks 10 = very willing to take risks	
Time preference	TIME_PREFERENCE	To what extent are you willing to forgo something today with the possibility of benefiting more in the future?	Scale from 0 to 10, 0 = not at all 10 = to a very large extent	
Expected financial well-being	EXP_FIN_WELL_BEING	What do you think your <u>financial situation</u> will be like when you <u>retire</u> ?	Scale from 1 to 7, 1 = very bad 7 = very good	

Notes: N=2,646

4. Survey design and data

To gain insights into what members think of the Premium Pension scheme as well as of their choices, we developed a questionnaire. We measured choice overload using the scale developed by Agnew and Szykman (2005) and subjective knowledge using the scale developed by Eastman, Goldsmith, and Flynn (1999) (see Table 2 for details).⁷

Other scales, such as for risk preferences (Dohmen et al., 2011) and expected financial well-being (Brüggen et al., 2017), were included as single-item questions.

⁷ Given that Barlett's Test of Sphericity was significant and the Kaiser-Meyer-Olkin measure (0.862) exceeded 0.6, a factor analysis was conducted. This showed that both constructs are unidimensional and that the relevant loadings are larger than 0.7. Furthermore, Cronbach's alpha is greater than 0.8 for both constructs, indicating that the two measures are reliable and valid. See Appendix A for the results of this analysis.

Table 3: Categorical Variables

Measure	Dummy	Coding	Question (back-translated)
Fund selection		<u>Base:</u> Invested in default (response b)	Have you at any time selected fund(s) for your premium pension? a) Yes b) No c) Don't know
	SELECTED_FUND	1 = response a	
	SELECTED_FUND_DK	1 = response c	
Choice appreciation		<u>Base:</u> State should handle pension (response b)	Do you prefer being able to choose your own funds for the premium pension, or would you prefer the state to handle all of your pension? (Today there are approximately 800 different funds to choose from. If you don't make a choice, your money will automatically be invested in a pre-selected fund, AP7 S�fa, which is provided by the state.) a) It is good to be able to choose your own fund(s). b) I would prefer the state to handle my premium pension. c) Don't know
	APPRECIATE_CHOICE	1 = response a	
	APPRECIATE_CHOICE_DK	1 = response c	
Past behavior		<u>Base:</u> Has not seen advisor for 12 months (response b)	Have you met with a financial advisor during the last 12 months? a) Yes b) No c) Don't remember / Don't know
	SEEN_ADVISOR	1 = response a	
	SEEN_ADVISOR_DK	1 = response c	
Education		<u>Base:</u> Less than college degree (responses a, b and some f)	What is your highest completed education? a) Lower than primary education b) Secondary education or equivalent c) A-level or equivalent d) College or university e) Doctorate f) Other, what? _____
	ACADEMICS	1 = responses d, e and some f	
Income		<u>Base:</u> USD 0 – 36,999 per annum (response a and b)	What is your annual income before tax? a) I have no income b) Up to USD 36,999 per annum (SEK 299,999) c) USD 37,000 – 55,999 per annum (SEK 300,000 – 459,999) d) USD 56,000 per annum or more (SEK 460,000 or more) e) Don't wish to say
	MEDIUM_INCOME	1 = response c	
	HIGH_INCOME	1 = response d	
	INCOME_UNKNOWN	response e	
Private Savings		<u>Base:</u> No private savings (response a)	Do you have any private savings earmarked for your pension (apart from what your employer sets aside for the state pension / occupational pension)? a) No, I have no private pension savings b) Yes, I save USD 1 – 59 per month (SEK 1 – 499) c) Yes, I save USD 60 – 119 per month (SEK 500 – 999) d) Yes, I save USD 120 – 359 per month (SEK 1,000 – 2,999) e) Yes, I save USD 360 or more per month (SEK 3,000 or more) f) Don't know g) Don't wish to say
	SAVINGS_�1_to_�119	1 = responses b and c	
	SAVINGS_�120+	1 = responses d and e	
	SAVINGS_UNKNOWN	1 = responses f and g	

Notes: N=2,646

According to Wanous, Reichers, and Hudy (1997), who study single-item measures for overall job satisfaction, a single-item question can be as effective as a multi-item scale. Choice appreciation is elicited by asking members whether they prefer the state to handle their pension or to handle it themselves (Table 3).

The questionnaire was first developed in English and then translated into Swedish. Afterwards, an external agency translated the Swedish questionnaire back into English. In this way, small alterations in the phrasing of some questions were detected and taken into consideration. Next, a Swedish research agency distributed the questionnaire in July 2017 to 14,093 email addresses of an online panel, using quota sampling. Of the total links sent out, 3,739 were opened (26.5%) and 3,001 returned valid responses (21.3%). The average age of the respondents was 45.5 years. The share of males in the sample was 53.6%, which is slightly higher than in the general population in the same age range (50.9%),⁸ reflecting the sole inclusion in the Premium Pension of people with taxable income and the higher labor force participation of men.

For purpose of our analyses we excluded responses from already retired members (71) and respondents who had never paid or could not remember to have paid taxes in Sweden (10). The former stopped saving for the Premium Pension, while the latter never paid into the Premium Pension. In addition, we excluded members with missing values on education (4) and members who could not remember whether they had selected own funds or stayed with the default (270). The reason to exclude the latter is that these respondents were screened out on important questions such as perceived choice overload. In the end, we obtained 2,646 responses for our analysis.

Overall, the dataset included a variety of characteristics including occupation, education, family status, children, income, and private pension savings (Table 4). Most respondents were working (80.2% employed, 6.5% self-employed) and had a college or university degree (58.4%). Of the respondents, 43.3% were married, one third had no children (35.4%) while another third had two children (33.8%), and 47.4% earned between USD 37,000 to USD 59,999 (SEK 300,000 to SEK 459,999) per year, before tax. A majority (57.0%) saved privately for their pension, next to the first and second pillar pensions. Yet, 37.0% did not save at all.

8 http://www.statistikdatabasen.scb.se/pxweb/en/ssd/START__BE__BE0101__BE0101A/Befolkning-Ny/?rxid=aa10e1a4-28f9-4fe6-b28d-38686a5c521e

Table 4: Members' Characteristics

Characteristics	Total
<i>Average age</i> (years)	45.3
<i>Gender</i>	
Male	54.8%
Female	45.2%
<i>Occupation</i>	
Employed	80.2%
Self-employed	6.5%
Unemployed	2.3%
Housewife / House husband	0.2%
Student	4.1%
On parental leave	2.2%
On sick pay / disability pension	3.4%
Others	1.1%
<i>Education</i>	
Lower than primary education	0.1%
Secondary education or equivalent	3.1%
A-level or equivalent	38.4%
College or university	56.9%
Doctorate	1.5%
<i>Family status</i>	
Single	28.4%
Cohabiting	27.5%
Married	43.3%
Widow / Widower	0.9%
<i>Children</i>	
No children	35.4%
One child	13.7%
Two children	33.8%
Three or more children	17.1%
<i>Income</i>	
No income	1.7%
Up to USD 36,999 per annum (SEK 299,999)	18.8%
USD 37,000 – 55,999 per annum (SEK 300,000 – 459,999)	47.4%
USD 56,000 per annum or more (SEK 460,000 or more)	25.6%
Unknown (respondents did not wish to say)	6.5%
<i>Private pension savings</i>	
No private savings	37.0%
USD 1 – 59 per month (SEK 1 – 499)	17.0%
USD 60 – 119 per month (SEK 500 – 999)	15.7%
USD 120 – 359 per month (SEK 1,000 – 2,999)	17.0%
USD 360 or more per month (SEK 3,000 or more)	7.3%
Unknown (respondents did not wish to say or did not know)	6.0%

Notes: N=2,646

5. Results

The descriptive statistics (Table 5) reveal that the average member feels to be lacking knowledge about the Premium Pension (mean = 2.84; SD = 1.49; on a scale from 1–7), experiences choice overload to some extent (mean = 3.90; SD = 1.23; on a scale from 1–6), and feels somewhat pessimistic about his or her general financial well-being at retirement (mean = 3.59; SD = 1.51; on a scale from 1–7). In financial matters, the average member is risk averse (mean = 3.99; SD = 2.32; on a scale from 0–10) and prefers foregoing something today in order to benefit more in the future (mean = 5.63; SD = 2.36; on a scale from 0–10).

When members were asked if they had ever selected funds on their own and thus deviated from the default in the Premium Pension, the time of selection could be anywhere between the fall of 2000 and July 2017. In our sample, 70.3% report having established their own portfolios (Table 6), while another 30% indicated having selected or changed their fund(s) within the past 12 months. However, also 29.7% report investing in the default, even though 40% of them do not trust the default being a good choice. Figure 1 shows that especially younger members do not trust the default fund. Instead, most of them prefer making their own choice, as we observe that most members aged 25 to 34 report being interested in making a choice.

Table 5: Descriptive Statistics

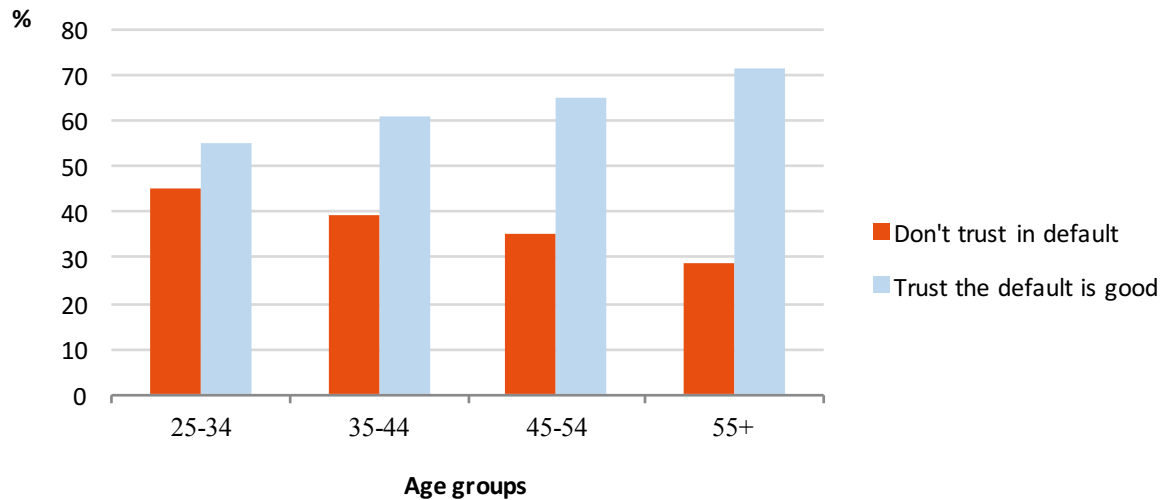
	Scale Minimum	Scale Maximum	Mean	(Std. Deviation)
Choice overload	1	6	3.90	(1.23)
Risk tolerance	0	10	3.99	(2.32)
Time preference	0	10	5.63	(2.36)
Subjective knowledge	1	7	2.84	(1.49)
Expected financial well-being	1	7	3.59	(1.51)

Notes: N=2,646

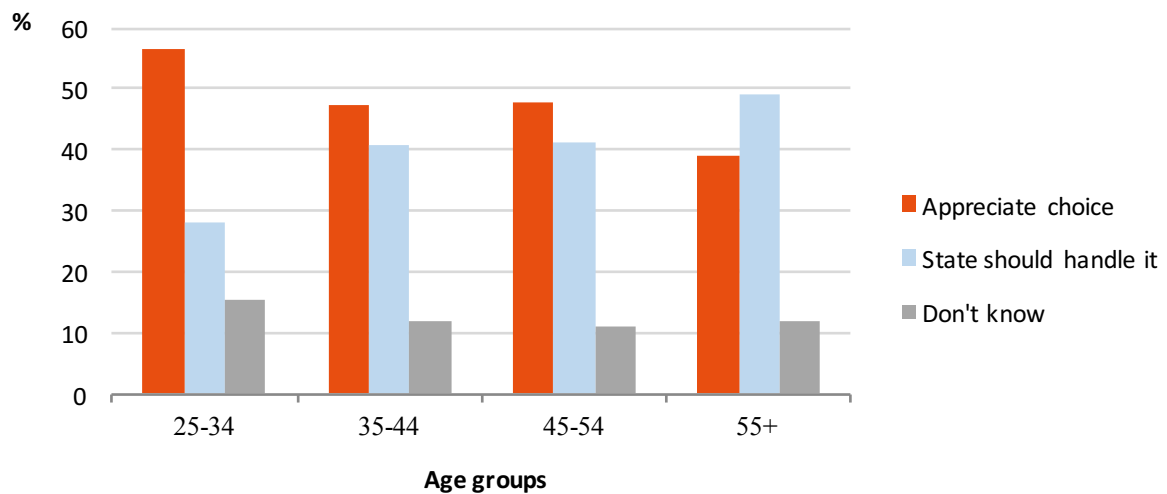
Table 6: Frequencies

Members...	N	Yes	No	Unknown
...selected own fund(s)	2,646	70.3% (1,860)	29.7% (786)	–
...appreciate choice	2,646	47.5% (1,256)	40.1% (1,060)	12.5% (330)
...met with an advisor in the past 12 months	2,646	18.9% (501)	80.0% (2,118)	0.1% (27)

Notes: N=2,646

Figure 1: Trust in the Default?

This figure shows whether members who selected the default actually trust that it is good or not (Total N=786; N for the age groups from young to old is: 370, 172, 137, 107).

Figure 2: Choice Appreciation

This figure shows the percentage of members within four different age groups who appreciate having a choice in the Premium Pension (Total N=2,646; N for the age groups from young to old is: 574, 639, 808, 625). Appreciation of choice by a majority is significant at the 1% level for the 25-34 age group and at the 10% level for the 35-44 and 45-54 age groups. Non-appreciation of choice by a majority is significant at the 1% level for the 55+ age group.

Table 6 reveals furthermore that 18.9% report having seen a bank advisor in the past 12 months (0.1% of members cannot remember). When asked whether they prefer being active and making their own decisions, the responses by members are divided. Half of respondents appreciate choice (47.5%), while another two out of five prefer the state to handle their pension (40.1%). The remaining 12.5% are indecisive as to

preferring choice or not. Dividing the sample into different age groups reveals that particularly young members (25 to 34 years) appreciate choice (see Figure 2).

To better understand what explains members' choices and whether choice contributes to financial well-being, we conducted two regression analyses. First, we studied what makes it more likely for members to deviate from the default and choose their own portfolio. Second, we studied which factors drive members' expectations of their future financial well-being.

Choice for Individual Portfolio versus Default

To analyze what makes members more likely to deviate from the default fund and select their own portfolios, we employed a logistic regression, in which the dependent variable (*SELECTED_FUND*) takes on a value of 1 if members selected their own fund and 0 if they stayed with the default. The logistic regression describes the probability of selecting one's own fund according to the following model:

$$P(\text{SELECTED_FUND} = 1 | x) = \frac{e^{\beta_0 + \beta_1 x_1 + \dots + \beta_k x_k}}{[1 + e^{\beta_0 + \beta_1 x_1 + \dots + \beta_k x_k}]},$$

with x representing the set of independent variables (x_1, x_2, \dots, x_k), which comprise choice overload, risk tolerance, and subjective knowledge, as well as control variables such as time preference, choice appreciation, whether participants have seen a financial advisor in the past 12 months, and socio-demographics (education, family status, children, gender, age, income, and private pension savings) (Table 7).

As to choice overload, our results do not confirm H1. Contrary to what we expected, the odds of a member establishing a personal portfolio are 1.4 times higher for someone with a high level of perceived choice overload than for someone with a low level of perceived choice overload. With respect to risk tolerance, we found a positive effect of risk tolerance on fund selection. More risk tolerant members have higher odds of selecting their own funds. Thus, H2 is not supported. As to subjective knowledge, we found that knowledgeable members are more likely to form their own portfolios, in line with H3.

For the control variables, we found that most of the independent variables are significant in explaining the likelihood of establishing a personal portfolio versus investing in the default. The strongest predictor of fund selection is choice appreciation. The odds of a person selecting his or her own fund are 3.6 times higher for someone who reports appreciating choice than for a member who prefers the state to handle the pension. Gender is insignificant and education only significant at the 10%

Table 7: Regressions

	SELECTED_FUND		EXP_FIN_WELL_BEING	
	Odds ratio	p-value	Coefficient estimate	p-value
(Constant)	0.064	0.000***	1.907	0.000***
SUBJECTIVE_KNOWLEDGE	1.632	0.000***	0.101	0.000***
RISK_TOLERANCE	1.098	0.000***	0.049	0.000***
TIME_PREFERENCE	0.996	0.851	0.057	0.000***
CHOICE_OVERLOAD	1.366	0.000***	-0.155	0.000***
<i>State should handle pension</i>				
APPRECIATE_CHOICE	3.564	0.000***	0.255	0.000***
APPRECIATE_CHOICE_DK	1.187	0.288	-0.018	0.823
<i>Invested in default</i>				
SELECTED_FUND			0.111	0.090*
<i>Has not seen advisor for 12 months</i>				
SEEN_ADVISOR	1.690	0.001***	0.276	0.000***
SEEN_ADVISOR_DK	1.037	0.945	-0.319	0.252
<i>Low income</i>				
MEDIUM_INCOME	1.397	0.012**	0.766	0.000***
HIGH_INCOME	1.550	0.013**	1.303	0.000***
INCOME_UNKNOWN	1.745	0.022**	0.422	0.001***
<i>No private savings</i>				
SAVINGS_\$1_to_\$119	1.450	0.002***	0.023	0.710
SAVINGS_\$120+	1.479	0.010**	0.233	0.001***
SAVINGS_UNKNOWN	1.548	0.053*	-0.049	0.701
<i>Single</i>				
MARRIED	1.102	0.506	0.261	0.000***
COHABITING	0.891	0.404	0.136	0.056*
WIDOWED	0.791	0.715	0.413	0.049**
<i>No children</i>				
ONE_CHILD	1.470	0.026**	-0.071	0.375
TWO_CHILDREN	1.392	0.024**	-0.065	0.359
THREE/+_CHILDREN	1.390	0.070*	-0.136	0.121
ACADEMICS	0.813	0.073*	0.150	0.007***
FEMALE	1.139	0.263	0.046	0.424
<i>AGE</i>				
25-34 years old	0.141	0.000***	0.549	0.000***
35-44 years old	0.665	0.010***	0.060	0.416
45-54 years old	1.053	0.743	0.033	0.633
N	2,646		2,646	
Pseudo R ²	0.274			
Hit rate	79.6%			
R ²			0.293	

Notes: This table shows the results of a logistic regression, with the SELECTED_FUND dummy as the dependent variable that is coded 1 for members who selected their own fund(s) within the Premium Pension and 0 otherwise, and the results of an OLS regression with EXP_FIN_WELL_BEING at retirement as the dependent variable. *** indicates significance at the 1% level, ** indicates significance at the 5% level, and * indicates significance at the 10% level (significance indicating a difference from an odds ratio of 1 in the first column and a coefficient value of 0 in the second column). Standard errors are robust (Huber/White). The independent variables tested are: subjective knowledge, risk tolerance, time preference, choice overload, choice appreciation (members who prefer the state to handle their pension are the reference group), fund selection (members who remain invested in the default are the reference group), past behavior (no contact with advisor in the past 12 months is the reference group), income (USD 0-36,999 is the reference group), private savings (no savings is the reference group), family status (single is the reference group), children (no children is the reference group), education (members with less than a college degree are the reference group), gender (male is the reference group), and age (55-65 years is the reference group in column 2).

level. Members with higher education (at least a college or university degree) are less likely to choose their own funds compared to less educated members.

Analyzing the remaining demographics, we found the odds of a person selecting his or her own fund to be greater for members who already have private pension savings or larger incomes than for members who have no savings or little income. Lastly, we observed that the odds of a participant selecting his or her own fund decrease by a factor of .141 for members aged 25 to 34 compared to members aged 55 to 65. A similar effect was found for members aged 35 to 44. Both age groups 25 to 34 and 35 to 44 contained cohorts of participants who entered the Premium Pension system in later stages, that is, after the initial marketing campaigns had phased out. Thus, a younger participant being less likely to choose can be due to an age or cohort effect, which in the cross-sectional data we cannot distinguish.

Financial Well-Being

To analyze which factors relate to members' expectations of their future financial well-being at retirement, we employed an OLS regression with expected financial well-being as the continuous dependent variable (y). This is a construct which does not focus on the objective performance of the Premium Pension but captures members' perceptions of how well they are financially off when it comes to retirement planning. Higher values mean that members have higher perceptions of financial well-being. The model looks as follows:

$$y = \alpha + X\beta + \varepsilon ,$$

where X is the set of independent variables and ε the error term. The independent variables comprise choice overload, risk preferences, subjective knowledge, and fund selection as well as control variables such as time preference, choice appreciation, whether participants have seen a financial advisor in the past 12 months, and socio-demographics (education, family status, children, gender, age, income, and private pension savings).

Our results (Table 7) showed that choice overload relates negatively with financial well-being, in line with H4. Although the effect of risk tolerance on expected financial well-being is small (.049), it is still significant at the 1% level and positive, as proposed in H5. As to subjective knowledge, we found support for H6. Those members who reported higher levels of subjective knowledge were more likely to feel positive about their future financial situation than members who reported lower levels of subjective knowledge. Surprisingly, fund selection is only significant at the 10% level, and the effect on financial well-being is rather low (.111). Thus, H7 is not supported.

Choice appreciation on the other hand is highly significant at the 1% significance level. A member's expected financial well-being increases on average by .255 points if the member appreciates choice. Thus, it is not the act of choosing as such that has a positive relationship with financial well-being, but whether people appreciate choice.

With regard to the demographic variables we found that financial well-being is positively related to higher income, somewhat larger private savings, higher education, being married, cohabiting or widowed, and being young.

6. Discussion and policy implications

This study has focused on the relationship between choice overload, risk tolerance, subjective knowledge on perceptions of financial well-being, and choice behavior within the Swedish pension system.

Choice

In the Premium Pension scheme, members can choose up to five funds from a choice set currently amounting to 845 investment funds. Many members perceive such a large choice set as overwhelming and consequently experience choice overload. However, we also observed heterogeneity in individual perceptions of choice overload. In total, 35.3% of members indicated that they perceive very high or high levels of choice overload, but 12.1% indicated very low or low levels (mean = 3.90 on a scale from 1–6). Looking strictly at the single-item question that asked members about the available number of options, a majority (53%) agreed or entirely agreed that there are too many choices. However, contrary to what we expected, the effect of choice overload on fund selection is positive. A possible explanation for this finding is that many members sought advice. In our survey, we asked everyone who established their own portfolio (N = 1,603) whether they were influenced by the opinions or direct advice of others: no less than 49% answered yes. The sources of influence include family members, friends, colleagues, financial advisors, teachers, professors, and others. In 55% of the cases, bank contacts and pension advisers were the biggest influencers, followed by family members (21%) and friends (5%). Thus, people who experienced choice overload could have involved others or asked for financial advice, which may have increased the chances of actively choosing. Another explanation could be reverse causality: only those members who made a choice might have been confronted with all the options available and therefore experienced choice overload.

One of our most striking findings is that members who are more risk-averse stick more often to the default fund, which is potentially problematic given that the default fund is one of the riskiest funds on the choice menu. It seems as if they blindly follow the “path of least resistance”, as Madrian and Shea (2001) would describe it, and do not seem to realize the obvious mismatch between their risk preferences and their actual investment. A possible explanation is that members assume that the default is a safe choice. Possibly, risk-averse members want to avoid the risk of taking a ‘wrong’ decision which would leave them worse off rather than stick to a default that the government has set. The situation at hand bears important policy implications. First, in case members realize that the default fund is much riskier

than they thought, they may not only be disappointed or angry at the government but potentially even take retaliatory measures. It is important to ensure that members have realistic perceptions of the risk level of the default fund.

We found that knowledgeable members are more likely to form their own portfolios. This is in line with evidence from the Netherlands: Van Rooij and Teppa (2014) found that financially knowledgeable individuals are more likely to take action and stay away from the default option in their economic decisions. Those who report high perceived knowledge seem to understand the rationale behind the system. However, this also implies that those less knowledgeable tend to stick with the default, which is in line with Agnew and Szykman (2005) and Brown et al. (2016). In total, 69% of members state that they lack knowledge about the Premium Pension scheme. Perceived knowledge is even lower among young members, as 80% of them indicate low knowledge of the scheme.

Financial well-being

Financial well-being has recently received attention in the literature (Brüggen et al., 2017; Netemeyer et al., 2018; Consumer Financial Protection Bureau, 2018). We found that 27% of members think that their financial well-being during retirement will be neither good nor bad, 45% are more pessimistic about their expected financial well-being, and only 28% report that they feel positive about their future financial well-being. Members who are positive about their future financial well-being are more likely to be younger, have higher incomes and savings, and at least a college or university education. It should be mentioned, however, that these are perceptions of financial well-being that may or may not align with the respondents' objective financial situation. Even though financial well-being should correlate highly with actual well-being (Brüggen et al., 2016), caution is warranted. An overly optimistic perception of financial well-being during retirement may prevent people from taking action, which could lead to a negative surprise at retirement. A pessimistic yet realistic perception of financial well-being may affect general well-being in the short run, but may induce higher saving for retirement and thereby improve future well-being.

We found that choice overload has a negative relationship with financial well-being, in line with H4. Given that 65.4% of members in our dataset experience at least some choice overload, this is a rather serious concern. Cronqvist and Thaler (2004) already suggested paying attention to the design of the overall choice set. According to them, a free-entry system of mutual funds does not generate the optimal number of funds within the Premium Pension. They suggest reducing the number of funds to a small selection with differing risk levels.

We also found that members with higher risk tolerance are more likely to feel more positive about their financial situation at retirement. This also implies, however, that risk-averse members feel less positive about their financial well-being. Moreover, members who report higher levels of subjective knowledge are more likely to feel positive about their future financial situation than members who report lower levels of subjective knowledge. Educating the Swedish working population about the Premium Pension might then be a simple measure to enhance overall expected financial well-being.

Interestingly, there is also a strong and positive relationship between choice appreciation and future financial well-being, whereas the act of choosing a fund has only small direct impact. Thus, members who appreciate that they can choose their own funds within the Premium Pension scheme indicate higher expected well-being during retirement.

Policy Implications

Based on these insights, policymakers should redesign the choice architecture of the scheme to reduce choice overload. A revision of the architecture can be achieved in multiple ways. First, the obvious recommendation is to reduce the number of alternatives within the choice set. Although the literature on this topic does not provide a clear guideline on the optimal number of alternatives within a choice set, most recommend between six (Iyengar and Lepper 2000) and 22 choices (Park & Jang, 2012). However, this number relates in no way to the 845 funds that are currently available. Hence, it would politically be very challenging to reduce the choice set that significantly. A second possibility for policymakers is to reconsider the choice architecture. Instead of a simultaneous choice architecture where all options are shown next to each other, policymakers could consider using a sequential tournament architecture, as this has been shown to improve the quality of decisions (Besedeš et al. 2015). Policymakers could also switch to an attribute-based choice architecture, where members indicate their preferences for different attributes, which then leads to a preferred alternative in the end. Third, the specific design of choice sets can reduce perceived choice overload. For example, aligning, sorting, and ordering attributes has been shown to increase satisfaction, decision speed, or perceived choice overload (e.g. Gourville & Soman, 2005; Herrmann et al., 2009; Hoch, Bradlow & Wansink, 1999; Levav et al., 2010). Finally, changing the choice architecture from choosing inputs (funds) to choosing outcomes (desired distributions of pension income) can help reduce choice complexity and overload (e.g., Goldstein, Johnson & Sharpe, 2008; Donkers et al., 2013).

What are the learnings for the Dutch pension system, which is still primarily based on defined benefit pensions, arranged and executed by employers and labor unions? It is often said that, given the system's characteristics, it is logical that people are not engaged as there is very little to choose at the individual level. So, if the system were to change towards allowing for more individual choice (e.g., as in defined contribution systems), the problem of low engagement would solve itself without further interventions. The evidence from this study among Swedish pension plan members challenges this view. We find that many members appreciate choice but then do not make use of the choice that is given. The act of choosing also does not strongly influence perceptions of financial well-being. Moreover, for DC schemes or pensions for the self-employed, where people do encounter choice, we show that the many options can also be overwhelming. It is very important to carefully consider the choice architecture.⁹ Moreover, the governance for determining the default as well as the other funds in the choice set is very important.

9 See also Brüggem and Post (2018).

7. Limitations and future research

In this paper we have looked at the Swedish pension environment to generate insights on investment choice design for pension savings. Many countries are currently debating whether and how choice might be introduced in pension schemes. Our results can help to guide the discussions. Contrary to previous research, which was mainly based on administrative data, we have explored members' perceptions and attitudes towards the Swedish Premium Pension. For example, in addition to knowing whether members selected the default fund, we also explored whether they trust the default. However, we were unable to verify their actual investment choices as it was not possible to match survey responses with administrative data within the scope of our study due to confidentiality concerns. Moreover, our data do not contain information on members' investment performance, their savings outside the Premium Pension scheme, or the background risk from labor income. Given the data that we have access to, the choice behavior of members does not appear to be entirely rational, but without information on their final investment outcomes and an integral view of their total portfolios (e.g., as in Palme, Sundén & Söderlind, 2007 or Dahlquist, Martinez & Söderlind, 2017) it is hard to draw a comprehensive conclusion.

Future research should try to match members' perceptions with administrative data. It would be worthwhile to see where perceptions and actual behavior diverge. Likewise, it would be worthwhile to identify whether perceptions of financial well-being match with actual financial well-being. Our sample population, in line with the Swedish population as a whole, is generally well-educated – more than half of respondents have a college or university degree. Moreover, people who are interested in the subject of pensions may have self-selected into the survey. However, our observation that members experience difficulty in making investment choices, even in such a well-educated and potentially more interested sample, indicates that our results represent a lower boundary of a potentially bigger problem. Future research should also identify whether members deliberately decide to invest in the default fund or not and whether they realize that the default is risky. Although we asked those who chose for the default fund to what extent they were interested in making a choice and trusted the default, this did not give us a clear understanding of whether a member actively decided for the default. Due to its positive returns in the aftermath of the financial crisis, its low costs, and the current scandals surrounding the Allra and Falcon funds, members may regard the default as superior. Finally, our study does not present causal evidence; instead we evaluate relations and correlations.

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Appendix A

Pattern Matrix^a

	Component	
	1	2
It is stressful to make a choice.	.829	
It is a difficult decision.	.811	
The decision demands a major effort.	.799	
I experience the decision as overwhelming.	.767	
There are too many choices.	.749	
It is difficult to understand all the information.	.704	
I know quite a lot about the Premium Pension.		.951
I feel quite knowledgeable about the Premium Pension.		.948
Among my closest friends, I am somewhat of an expert on the Premium Pension.		.855
Extraction Method: Principal Component Analysis.		
Rotation Method: Promax with Kaiser Normalization.		

a. *Rotation converged in 3 iterations.*

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