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ARTICLE

Relationship between pension knowledge, trust in the pension system, and sociodemographic factors

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Abstract

This study gauges Finnish people's knowledge about pensions and their trust in the pension system. A further aim is to see if knowledge and trust are related and to explore the role of sociodemographic factors in that relationship. We examine both self-assessed and objective knowledge of pension system details and look at how age, gender, education, income, and socioeconomic status are reflected in pension knowledge and trust. The results reveal that the relationship between pension knowledge and trust is driven by sociodemographic factors. However, for those with a primary education, there is a positive association between pension knowledge and trust.

Keywords: pension system; pension knowledge; trust; sociodemographic factors

Lack of trust in the pension system and poor knowledge about pensions present a major challenge for pension systems today. People are concerned about the security of their future pensions and often find pensions difficult to understand (e.g. Hershey, et al. 2010; MacLeod, et al. 2012; Webb, et al. 2014). Governments and public authorities have focused on raising awareness and providing information to improve people's trust in public institutions (see e.g. OECD 2022). Although it is reasonable to assume that knowledge and trust are interconnected (Vickerstaff, et al. 2012), there is limited empirical evidence on this relationship in the case of pension issues. The aim of this paper is to investigate whether knowledge about pensions is associated with higher levels of trust and to explore the role of sociodemographic factors in this relationship.

The topic of trust in pensions has received increasing attention in recent years. The first line of research focuses on general trust in institutions, governments, and their actions (Eurofound 2018; Brezzi, et al. 2021; OECD 2022). Trust in the pension system is usually integrated into this general trust and not considered separately from other government actions. The second line of research concentrates on trust in private pension providers, the financial sector, and their actors (van Dalen and Henkens 2018; Koh, et al. 2021; van der Cruijsen, et al. 2021). Neither of these lines of inquiry addresses the perceived trustworthiness of statutory public pension systems, nor does it investigate whether pension knowledge is related to that trust.

Trust is a crucial prerequisite for the purposeful existence of a public institution. In the absence of trust, the legitimacy of an institution and its effective governance and functioning are questioned (see e.g. Putnam 2000; Kumlin and Rothstein 2005.). Pensions require trust because they involve promises of returns far into the future. Trust is

important for any pension system, but particularly so for pay-as-you-go schemes where the continuity of the system depends on the support of current and future generations. Trust is a key indicator of how secure individuals feel about their income in old age and a critical aspect of sustainability, which has recently become an important criterion for pensions (see discussion on sustainability in Sorsa and van der Zwan 2022). For pension systems to be sustainable, they must also be perceived by people as trustworthy and economically and socially viable.

The OECD (2022) has recently outlined the importance of trust, highlighting the extent to which institutions are responsive and trustworthy in implementing policies and operating according to values of openness, integrity, and fairness as determinants of trust. Liukko (2016), who conducted the qualitative analyses of open-ended responses on factors that reduce and increase trust in pensions, found that the most frequently cited factors reducing trust in pension systems were experiences of inequality and injustice, suspicions of inadequate pension provision, instability in their own financial situation or in the economy as a whole, and ongoing changes to the pension system. Conversely, the most common factors that increase trust are the security and continuity of the pension system, the overall quality of the welfare state and the pension system, the transparency of the system, and open public debate and information.

Knowledge is essential to form an informed opinion and to decide whether something is trustworthy or not. While there is a wide literature on the positive effects of financial literacy and pension knowledge on savings decisions and retirement planning (e.g. Agnew and Szykman 2005; Lusardi and Mitchell 2011b, 2014, 2017; van Rooij, et al. 2012; Prast and van Soest 2016; Lusardi, et al. 2017; Ricci and Caratelli 2017; Debets, et al. 2022), there is less empirical research on the relationship between pension knowledge and trust. Kalmi and Ruuskanen (2018) assert that detailed knowledge, rather than general financial literacy, is crucial in pension planning. This suggests that pension knowledge may also have an important role in determining other pension-related views and actions. Cook et al. (2010) found that information increased not only knowledge about pensions but also trust in the security of pension payments at the time of retirement. On the other hand, Webb et al. (2014) argue that trust becomes even more critical when uncertainties in pension provision give rise to confusion about pension questions (which can be interpreted as lack of knowledge). Improving knowledge cannot do away with uncertainty, but it may lead many to believe that the best way to deal with this uncertainty is to trust the pension provider (see also Vickerstaff, et al. 2012). Several studies have also found that people with better knowledge of the pension system are more likely to support pension reforms (Finseraas and Jakobsson 2014a, 2014b; Gouveia 2017; Fornero and Lo Prete 2019; Kangas, et al. 2021).

Knowledge may affect trust either in a positive or a negative way, and the relationship can also be non-linear. It is likely that higher knowledge is associated with higher trust, and deep knowledge can instill confidence by providing a solid foundation of understanding. However, a higher level of knowledge can also be associated with a lower level of trust, as famously stated in Ecclesiastes (1:18): 'In much wisdom is much grief'. A detailed information and understanding of the complexity and multifold factors determining the functioning of a pension system may increase worries and lead to lower trust. The relationship may also well be reversed if people consider the pension system trustworthy because of insufficient knowledge. Trust reduces people's sense of complexity and insecurity because it allows them to transfer responsibility for activities they feel insecure about and incompetent to undertake (see Hyde, et al. 2007). Information overload may lead to situations where decision and opinion formation is not perfectly rational but hampered by informational challenges, calling for reliance on rules of thumb and heuristics (see e.g. Lusardi and Mitchell 2014; 2017). In such situations, trust may actually be a substitute for acquiring information (see e.g. Giddens 1990; Ring 2005). If the pension

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system enjoys high trust, people may feel there is no need to invest much effort in acquiring information.

There is a strong sociodemographic gradient in both pension knowledge and trust. Earlier studies have shown that persons in a weaker financial situation are more often less knowledgeable about pension issues (e.g. Barrett, et al. 2015; Elinder, et al. 2022; Bucher-Koehnen, et al. 2021; Debets, et al. 2022) and have a lower level of trust in institutions (Eurofound 2018; Brezzi, et al. 2021; OECD 2021). Financial literacy has also been found to be higher among men, the middle-aged, and those with higher education (see e.g. Lusardi and Mitchell 2011c; 2014; Kadoya et al. 2020; for Finland Kalmi and Ruuskanen 2018), but the relationship between education and trust is less clear. Brezzi et al. (2021) found that in half of the OECD countries, trust in government is lower for more highly educated people, and for the other half, the relation goes the opposite way. In some studies, higher education is found to relate to higher trust in national institutions (Eurofound 2018; OECD 2021), while in some other studies, the effect of education on trust has not turned out to be statistically significant (e.g. Naumann 2018; Koh, et al. 2021; van der Cruijsen, et al. 2021).

Sociodemographic factors might also reflect the relationship between knowledge and trust. For example, higher education may provide tools for more efficient search of information on pension preparedness and the risks in long-term financial decisions. However, education may also go hand in hand with a critical view on the sustainability of pension systems and needs for pension reform. People with lower education, then, may have high trust even though they know less about pensions if trust is a substitute for information. This paper aims to explore the role of sociodemographic factors in relation to pension knowledge and trust.

Our results are based on a survey conducted in Finland. Finland presents an interesting case in that its pension system is based on statutory pension schemes that are mainly pay-as-you-go financed. The Finnish public pension system is a mixture of a mandatory but privately organized earnings-related pension scheme and a tax-financed national pension for persons with no or low earnings-related pensions. We apply a broad concept of pension system in our study where the pension scheme is a key public institution that incorporates the financial sector, employers, and the government sector. Thus, it adds important information to top up the results with research on trust in pension funds and national institutions in general. Earlier studies in Finland have found that trust in public institutions in general, interpersonal trust (Eurofound 2018; OECD 2021), trust in pensions (Naumann 2018), and financial literacy are all at relatively high levels (Klapper, et al. 2015; Kalmi and Ruuskanen 2018). The relationship between knowledge and trust is unclear, but the relationship between the dimensions of trust has been established. Those who perceived public institutions as trustworthy and had trust in others were highly likely to perceive the pension system as trustworthy, as well (Tenhunen et al. 2020). A high level of trust in general can well suggest that knowledge may play a less significant role in establishing trust in Finland.

Knowledge of pensions can be measured both objectively by asking people about specific details of the pension system, and subjectively by inquiring about their self-assessed perceptions of knowledge. Earlier studies have found both objective pension knowledge (e.g. Boeri and Tabellini 2012; Landerretche and Martinez 2013; Abid and O'Donoghue 2014; Barrett, et al. 2015; Bucher-Koehnen, et al. 2021; Elinder, et al. 2022) and self-assessed knowledge on pensions to be modest (MacLeod, et al. 2012; Angrisani and Casanova 2021). Both these measures of knowledge have their own strengths and shortcomings. While the subjective measure may suffer from over- or underestimations (see also Angrisani and Casanova 2021), a question concerning a certain detail of the system reveals what respondents know about that detail, but that detail only. Therefore, a combination of both will provide a more solid basis for assessing the knowledge that informs people's perceptions of the trustworthiness of the pension system. Incorporating

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these two measures is also important since earlier studies show only a loose association between subjective perceptions and objective measures of knowledge in financial literacy (Lusardi and Mitchell 2017; van Rooij, et al. 2011; Allgood and Walstad 2016) and in knowledge of pensions (MacLeod, et al. 2012).

This study contributes to the existing literature by combining pension knowledge with trust in the pension system. Earlier studies have concentrated more on general financial literacy instead of domain-specific knowledge, dealing mainly with trust in the private financial sector in general rather than addressing trust in the public pension system. This study's novelty lies in its concentration of domain-specific knowledge and measurement of trust, specifically in relation to the pension system. The use of two measures of knowledge, which is relatively uncommon, enhances the empirical analyses. Further, the study explores the relationship between knowledge and trust, asserting how it varies across gender, age, educational background, socioeconomic status, and household income.

Our main findings suggest that, in general, the relation between pension knowledge and trust is weak. Differences in trust are related to sociodemographic factors, not to level of pension knowledge. However, there is one group – those with primary education – where we do find a positive association between pension knowledge and trust. Those with primary education and higher objective knowledge tend to trust the pension system more. Conversely, those with secondary education tend to trust the pension system less. However, for those with higher education, there is no clear relationship between knowledge and trust.

The article is structured as follows: Next, we discuss shortly about the Finnish pension system and then introduce our data and define the concepts. We then proceed to discuss the main independent variables, that is, subjective and objective pension knowledge. Thereafter, we consider the main dependent variable, trust in the pension system, and how knowledge is related to trust in pensions in general, and look at whether there are any differences in that relation between sociodemographic groups. Finally, we end with conclusions.

1. The Finnish pension system

In Finland, the pension system consists of the statutory earnings-related pension, the tax-financed national pension, and the guarantee pension. Voluntary pensions play a minor role in total pension provision because of the compulsory nature of pension insurance, which covers all work, the high level of coverage among Finns, and the fact that there is no upper limit either to pension contributions or benefits.[1]

The national pension and the guarantee pension are social security benefits that provide income to those pensioners with no or low earnings-related pension. The national pension gradually decreases as the earnings-related pension increases: each euro of the earning-related pension reduces the national pension by 50 cents. If the total of the monthly pension is below 976.59 euros (in 2024), the pension is topped up to that level by the guarantee pension. Approximately 65 percent of Finnish retirees receive only an earnings-related pension, 29 percent receive both earnings-related and national pensions, and 6 percent only national pension (Statistical database, Finnish Centre for Pensions 2022).

Earnings-related pension insurance is mandatory, and it covers all gainful earnings, even at relatively low-income levels, between the ages of 17 and 68 (for the self-employed, from age 18 to 68). It accrues at a rate of 1.5 percent of the annual earnings (the basis is defined differently for the self-employed and farmers), regardless of wage or salary level,

[1] For more details about the Finnish pension system, see Andersen 2021 and Ritola & Väänänen 2024.

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position, or employer, and with no ceiling. In 2024, the average contribution rate is around 24 percent of earnings. The employee's contribution rate is 7.15 percent (8.65 percent for employees aged 53–62). The rest is paid by the employer. The employer is responsible for taking the pension insurance and paying the contribution to the pension provider, and the employee cannot influence the contribution rate.

The Finnish earnings-related pension is partly funded. Most of the pension expenditure (about 70%) is covered by pension contributions on a pay-as-you-go basis. The remainder is financed through pension funds and their revenues or by the State. The national pension is fully tax-financed.

The average pension for all retirees is 1,845 euros per month (in 2022), with two-thirds receiving less than 2,000 euros per month. For new old-age pensioners, the monthly average is higher, around 2,000 euros. (Finnish Centre for Pensions 2023.) Replacement rates vary widely depending on, for example, whether the income levels are compared in gross or net terms, and on the working career of the retired person. On average, the ratio of net income before and after retirement was 87 percent. For persons retiring from unemployment or outside the labor force, the replacement rates can exceed 100 percent, while for those retiring from work, the net replacement rates are typically around 80 percent. (Rantala et al. 2021.)

The Finnish pension system has a decentralized administration. Earnings-related pension insurance companies, industry-wide and company pension funds, and special pension insurers for farmers and sailors handle private sector's pensions. They are all coordinated by the Finnish Centre for Pensions and supervised by the Ministry of Social Affairs and Health and the Finnish Financial Supervisory Authority. Public sector employees have their own pension provider.[2]

2. Data and methods

The data for our analysis come from a Views on Pensions postal survey that was conducted in 2019 by the Finnish Centre for Pensions. The sample was designed to represent the general population of Finland aged 25–67 years. A total of 1,757 Finns answered the survey at the end of 2019. The response rate was 35 percent. The data were adjusted to cover non-response rates so that the weighted sample matched the population in terms of age and gender.

The data provides information on opinions on various aspects of pensions and on knowledge regarding the pension system. Trust in pensions, the dependent variable, was measured with the statement: "In general, the Finnish pension system is trustworthy." The responses were on a 5-step Likert scale from total agreement to total disagreement.

Knowledge of pensions was measured in two distinct ways. Firstly, we were interested in the respondents' self-assessed, subjective knowledge. Level of subjective knowledge was measured with the question: 'How well would you say you know pension security?' The response options were well, rather well, moderately, rather poorly, poorly, and don't know. These responses were recoded into a dichotomous variable: those with good, rather good, or moderate self-assessed knowledge were given the value 1, and those with poor or quite poor the value 0.[3] Do not know-answers, 2 percent of all responses, were excluded from the analysis.

Secondly, to obtain a more objective measure of knowledge, we used five true/false statements describing key features of the Finnish pension system. Some of the statements were true and others were false. The statements concerned old-age pensionable age,

[2] For more information on the administration, see e.g. Andersen 2021.

[3] Using a dichotomized version of this variable instead of a five-step scale did not affect the results qualitatively. For the sensitivity analysis, see Appendix B.

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entitlement to partial old-age pension, effect of self-employed persons' insured earnings on some social allowances, the pay-as-you-go feature of the pension system, and pension accrual during periods of family leave and upon graduation from studies. In addition, pension knowledge was measured with a question where respondents were asked to estimate the pension contribution rate.

One way to measure overall knowledge about the pension system is to follow the same route taken by several studies on financial literacy and retirement planning and count the number of correct answers (e.g. Alessie, et al. 2011; Bucher-Koehnen and Lusardi 2011; Fornero and Monticone 2011; Boisclair, et al. 2017). As a count for objective knowledge, we add together the number of statements correctly specified as true or false and knowledge of the pension contribution rate (estimates were considered accurate if they were within +/− 5 percentage points of the correct level in 2019, which was 24.4%). In the models, we dichotomize the objective knowledge variable as 0 (sum 0–3) or 1 (sum 4–6).[4]

Finally, a set of sociodemographic factors served as our control variables: gender, age, level of education, household equivalent income, and socioeconomic status (see Appendix A). Age is divided into five categorical groups, education is divided into four groups, and socioeconomic status is divided into employment, self-employment, unemployment, and retirement. The questionnaire item for household income classified eight categorical groups, which were reduced to five income groups. We have chosen to use the upper bound to describe each group's income level. This income level is scaled by the square root of household size. The top two income groups are combined, and their income is set at the lower bound of the highest income group.[5]

We start our analysis with a brief description of the main independent variables, that is, measures of knowledge on pensions. The main research question concerning the association between pension knowledge and trust in the pension system is addressed with the help of several logistic regression models where trust is the dependent variable. Subjective and objective knowledge are considered explanatory variables both separately and simultaneously and both alone and alongside sociodemographic controls (gender, age, income, education, and socioeconomic status). This makes the effect and the possible difference in the relation of subjective and objective knowledge on trust more tractable. The effect of sociodemographic factors on the relation between pension knowledge and trust is considered by including interaction terms in the models.

3. Knowledge of pensions

Not many people in Finland rate their subjective pension knowledge very highly. The survey showed that more than half considered their knowledge to be poor (23 %) or quite poor (33 %) and only one in nine thought they had good (2 %) or reasonably good (9 %) knowledge of pension security. Thirty-one percent of the respondents evaluated their knowledge to be moderate, while 2 percent did not answer the question. Altogether 42 percent of respondents rated their pension knowledge as moderate or better; we call them "subjectively knowledgeable." These results on the level of self-assessed pension knowledge are consistent with previous findings from the UK (MacLeod, et al. 2012) and Finland (Takala 2015).

There seems to be quite a lot of variation in Finnish people's awareness of some principles of the pension system. Some details are well-known, others less well-known, and

[4] The sensitivity analysis in Appendix B shows that dichotomizing the variable did not affect the results qualitatively.

[5] This procedure creates some bias to household income: it underestimates the income of households in the highest income group and overestimates it for all other groups. However, as income is used in this study only in relative terms to compare households' income level, the bias in the estimates of income level is not essential.

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Table 1. Knowledge about specified details of the Finnish pension system, % of respondents. Source: Authors' calculations derived from survey Views on Pensions 2019

Claims	Correct answer	Wrong answer	Does not know
"Pension accrues for periods of family leave and upon graduation" (true)	24	53	23
"Old-age pensionable age is the same for everyone" (false)	72	20	8
"Unemployed persons are not eligible to receive partial old-age pension" (false)	41	16	44
"Self-employed persons' insured earnings affect not only their pension, but also the amount of parental allowance and sickness allowance" (true)	55	9	36
"The majority of pension contributions goes towards financing the pensions of today's retirees" (true)	54	20	25
Level of pension contributions (known if estimated within +/– 5 % points of the correct level of 24%)	13	34	53

there are even false notions (Table 1). The basic principles of pensionable age and the financing of pensions are well-known. Almost three-quarters of the respondents knew that old-age pensionable age varies, and more than half were aware that pensions are mainly financed with pay-as-you-go contributions.

More minute details concerning smaller groups were not known quite as well. While more than half knew about the effects of self-employed persons' pensionable income on social security, one-third were not aware of this. Two out of five knew that the unemployed were eligible to receive a partial old-age pension (introduced in the 2017 pension reform), but the same proportion did not know whether this statement was true or false. The least well-known statement concerned pension accrual during periods of family leave and upon graduation from studies. Although these have contributed to pension accrual since 2005, only one in four respondents were aware of this, and more than half were under the wrong impression.

Finally, many people did not know the rate of pension contributions. More than half gave no answer at all, and only 13 percent estimated the pension contribution rate correctly within the +/–5 percentage point range.

Knowledge about the details of the pension system only tells us about what people know about these particular details. The sum of correct responses to statements and to the question concerning the contribution rate provides a wider picture of objectively measured pension knowledge. One in four respondents correctly answered four or more of the statements, and they are described here as "objectively knowledgeable."

While self-assessed and objectively measured pension knowledge describes different sides of the same phenomenon, they are only partly related. Self-assessed pension knowledge showed a weak positive correlation with objective knowledge (0.2), as has been reported earlier (e.g. Lusardi and Mitchell 2011a; MacLeod, et al. 2012). A regression of subjective knowledge with respect to the objective knowledge measures shows that knowledge of the details, such as that pension accrues from periods of family leave and graduation and that self-employed persons' insured earnings affect amounts of certain allowances, together with knowledge of the pension contribution rate are positively related with subjective perception of pension knowledge (Table 2). On the contrary, knowledge of more general rules, such as pension age varying by age cohort or eligibility to the partial old-age pension, was not associated with subjective knowledge. A positive

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Table 2. The effect of objective pension knowledge details on subjective pension knowledge, logistic regression coefficients. Source: Authors' calculations derived from survey Views on Pensions 2019

	(1)	(2)
Knows that		
Pension accrues also from family leave periods and graduation	0.29** (0.130)	0.52*** (0.144)
Pensionable age is not the same for everyone	0.06 (0.122)	0.13 (0.135)
Unemployed are also eligible for the partial old-age pension	0.20 (0.113)	0.16 (0.124)
Self-employed' insured earning affect also the amounts of allowances from parental leave and sickness	0.34** (0.114)	0.42** (0.127)
Majority of pension contributions are used to finance current pensioners' pensions	0.10 (0.110)	0.27* (0.121)
The level of pension contribution rate within +/– 5 percentage points from the correct level	1.01*** (0.171)	0.95*** (0.184)
Constant	–0.88*** (0.127)	–2.56*** (0.356)
Observations	1,677	1,621
Demographics controlled	NO	YES

Standard errors in parentheses.
*** p<0.001, ** p<0.01, * p<0.05.

association between knowledge of the pay-as-you-go principle and subjective knowledge became significant only after controlling for the demographic background.

3.1. Who knows about pensions?

Subjective and objective pension knowledge gave a partly different picture of those who know about pensions (Table 3).[6] Younger respondents rated their knowledge of pensions as poor or rather poor more often than older respondents. However, the results for objectively measured pension knowledge were the exact opposite. The share of respondents who knew the correct answer to four or more pension system details was highest in the youngest age group and lowest among the oldest respondents. Our results are in agreement with Lusardi and Mitchell (2011a), who reported that older people were more likely to overrate their financial literacy. However, our results also suggest that younger people tend to underestimate their pension knowledge. Angrisani and Casanova (2021) present a similar result: they interpreted the inconsistency between subjective and objective knowledge as under- and overconfidence and found that overconfident persons are on average slightly older and underconfident slightly younger than those who rate their financial knowledge at the same level as objective assessed knowledge.

Our findings on the relation between income and subjective knowledge are consistent with earlier results for financial literacy and pension knowledge (e.g. Luchak and Gunderson 2000; Fornero and Monticone 2011; van Rooij, et al. 2011; Lusardi and Mitchell 2014; Boisclair, et al. 2017), which show that people with higher incomes have higher

[6] See Appendix A for a detailed table of subjective and objective knowledge by gender, age, education, income, and socioeconomic status.

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Table 3. Distribution of subjective and objective knowledge by population groups, percent. Source: Authors' calculations derived from survey Views on Pensions 2019

	Subjective knowledge:		Objective knowledge:	
	knows pensions poorly or fairly poorly	knows pensions at least moderately, %	knows correct answer to 0–3 statements	knows correct answer to 4–6 statements
All	57.6	42.4	74.4	25.6
Gender	**		n.s.	
Men	54.2	45.8	74.6	25.8
Women	61.0	39.0	74.4	25.4
Age	***		**	
25–34	71.7	28.3	69.9	30.1
35–44	65.5	34.5	71.0	29.0
45–54	56.5	43.5	73.8	26.2
55–64	45.3	54.7	79.1	20.9
65–67	35.4	64.6	85.1	14.9
Education	n.s.		**	
Primary	59.1	40.9	81.3	18.7
Secondary	53.9	43.1	78.9	21.1
Lower tertiary	58.4	41.6	71.8	28.2
Upper tertiary	56.1	43.9	69.4	30.6
Income	***		*	
–1 499	67.2	32.8	80.9	19.1
1 500–2 199	59.5	40.5	78.5	21.5
2 200–2 799	61.5	38.5	74.1	25.9
2 800–3 499	48.9	51.1	70.9	29.1
3 500–	51.6	48.4	69.5	30.5
Socioeconomic status	***		***	
Employed	61.2	38.8	74.0	26.0
Self-employed	47.4	52.6	57.5	42.5
Unemployed	62.9	37.1	76.6	23.4
Retiree	37.8	62.2	85.5	14.5
Other	70.7	29.3	74.3	25.7

Asterisks refer to the significance of F-tests for equality of means as follows: *** indicates significance at 0.1 percent level, ** at 1 percent level, and * at 5 percent level, and n.s. that means do not differ statistically significantly.

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Table 4. Agreement and disagreement with the statement "In general, Finnish Pension system is trustworthy," percent. Source: Authors' calculations derived from survey Views on Pensions 2019

"In general, Finnish Pension system is trustworthy"	%
Fully disagree	5.9
Partly disagree	11.9
Neither agree nor disagree	7.5
Partly agree	41.7
Fully agree	28.0
Do not know	5.0

self-assessed knowledge. Regarding education level, our results suggest that the subjective assessment of pension knowledge does not vary by education, but the number of correctly known details of the pension system increases with education level.

One interesting divergence from earlier results is the lack of gender differences in objective pension knowledge (Luchak and Gunderson 2000; Klapper and Panos 2011). Men did rate their pension knowledge as higher than female respondents, but the objective measures showed no differences in knowledge between genders. This result suggests that not only young people but also women may be underestimating their pension knowledge.

One possible explanation for our finding that there is no gender difference in objective pension knowledge may relate to women's high labor market participation, women's high education, and the pension system in general. In Finland, pension rights are accrued equally from all gainful employment, regardless of wage or salary level, position, or employer, and with no ceiling. Given women's extensive labor market participation, Finnish women are equally involved with pension issues as men.

4. Trust in the pension system

Our respondents were asked whether they agreed with the statement: "In general, the Finnish pension system is trustworthy." The majority agreed with this statement: 28 percent fully and 42 percent partly. Only 6 percent fully and 12 percent partly disagreed with the statement (Table 4).

In the models that controlled for demographic characteristics, we see that trust is explained by age and education, while gender, income, and socioeconomic status are insignificant (Table 5). The age profile of regression coefficients reveals that the older the respondent, the more likely it is they will trust the pension system. Trust increases also with education. Respondents with tertiary education trust the pension system more often than those with primary or secondary education. Trust is most common among respondents with higher tertiary education.

5. Are knowledge and trust interrelated?

To explore the possible association between knowledge and trust, we used subjective and objective knowledge and demographic characteristics as explanatory variables. The inclusion of both subjective and objective knowledge allows us to establish whether either one of the measures is or is not related to trust. Table 6 shows the results of logistic regression models separately for the effect of subjective knowledge, objective knowledge, and both subjective and objective knowledge simultaneously.

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Table 5. Sociodemographic background of trust in the pension system. Ordered logistic regression. Source: Authors' calculations derived from survey Views on Pensions 2019

	Ordered logit coefficients
Gender ref (men)	
Women	0.0328 (0.104)
Age (ref 25–34)	
35–44	0.241 (0.175)
45–54	0.724*** (0.165)
55–64	1.031*** (0.163)
65–67	1.337*** (0.248)
Education (ref: primary)	
Secondary	0.173 (0.169)
Lower tertiary	0.526** (0.168)
Higher tertiary	1.103*** (0.204)
Income (ref < 1500 €/mo)	
1 500–2 199 e/mo	–0.0734 (0.209)
2 200–2 799 e/mo	–0.00583 (0.185)
2 800–3 500 e/mo	0.170 (0.199)
> 3 500 e/mo	–0.0144 (0.209)
Socioeconomic status (ref employed)	
self-employed	–0.164 (0.197)
unemployed	–0.417 (0.236)
retired	0.0285 (0.184)
other	–0.255 (0.254)
Cutpoints	
/cut1	–1.760*** (0.270)
/cut2	–0.486 (0.252)

(*Continued*)

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Table 5. (*Continued*)

	Ordered logit coefficients
/cut3	–0.0183 (0.251)
/cut4	1.994*** (0.259)
Observations	1,614

Standard errors in parentheses.
*** p<0.001, ** p<0.01, * p<0.05.

Table 6. Effects of subjective and objective knowledge on trust in the pension system. Ordered logistic regression. Source: Authors' calculations derived from survey Views on Pensions 2019

Variables	(Model 1)	(Model 2)	(Model 3)	(Model 4)	(Model 5)	(Model 6)
Good subj. knowledge	0.22* (0.101)	0.01 (0.110)			0.23* (0.101)	0.01 (0.111)
Good obj. knowledge			–0.05 (0.115)	0.01 (0.119)	–0.09 (0.116)	–0.00 (0.120)
Observations	1,643	1,587	1,672	1,614	1,643	1,587
Demographics controlled	NO	YES	NO	YES	NO	YES
Cutpoints included	YES	YES	YES	YES	YES	YES

Standard errors in parentheses.
*** p<0.001, ** p<0.01, * p<0.05.

Subjective knowledge alone seems to be related to trust in pensions (Model 1). Those who rated their knowledge as good or quite good were more likely to agree with the statement measuring trust in pensions. However, when sociodemographic variables (gender, age, education, socioeconomic status, and income) are included, the significance of subjective knowledge disappears (Model 2). Objectively measured knowledge, by contrast, is not related to trust. The effect remains non-significant with (Model 3) and without (Model 4) sociodemographic control variables. The same pattern of significance continues to hold in richer models that include both objective and subjective knowledge simultaneously (Models 5 and 6).

To analyze more carefully the possible effects of subjective and objective pension knowledge, we have also considered possible interaction effects of knowledge and sociodemographic variables. The results show that there are no combined effects with pension knowledge with respect to gender, age, or income. However, when pension knowledge is considered in connection with education, a relation appears between trust and knowledge. Education has an interaction effect on trust in the pension system via both subjective and objective knowledge.

The results show that for primary-level education, there is a positive relation between subjective pension knowledge and trust in the pension system (Table 7). However, for other education groups, the interaction terms' regression coefficients are negative and close to the same level as direct positive effect. Therefore, for those with a higher than

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Table 7. Interaction effects of subjective knowledge and background variables on trust in the pension system. Ordered logistic regression. Source: Authors' calculations derived from survey Views on Pensions 2019

Variables	(1) No interactions	(2) Interaction with gender	(3) Interaction with age	(4) Interaction with education	(5) Interaction with socioeconomic status	(6) Interaction with income
Knowledge						
Good subj. knowledge	0.01 (0.111)	0.00 (0.160)	–0.18 (0.341)	0.53* (0.265)	0.10 (0.133)	0.30 (0.310)
Good obj. knowledge	–0.00 (0.120)	0.00 (0.160)	0.01 (0.120)	0.01 (0.121)	0.00 (0.120)	–0.02 (0.122)
Interactions with subjective knowledge						
Gender	–	n.s.				
Age	–		n.s.			
Education (ref. primary)	–					
Secondary				–0.61 (0.334)		
Lower tertiary				–0.63* (0.310)		
Higher tertiary				–0.51 (0.364)		
Socioeconomic status (ref employed)	–					
Self-employed					–0.32 (0.399)	
Unemployed					0.55 (0.500)	
Retired					–0.15 (0.271)	
Other					–1.29* (0.620)	
Income	–					n.s.
Observations	1,614	1,587	1,587	1,587	1,587	1,587
Interactions with subj.knowledge	None	Gender	Age	Education	Soc.ec.status	Income
Demographics controlled	YES	YES	YES	YES	YES	YES
Cutpoints included	YES	YES	YES	YES	YES	YES

Standard errors in parentheses.
*** $p<0.001$, ** $p<0.01$, * $p<0.05$.

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Table 8. Interaction effects of objective knowledge and background variables on trust in the pension system. Ordered logistic regression. Source: Authors' calculations derived from survey Views on Pensions 2019

Variables	(1) No interactions	(2) Interaction with gender	(3) Interaction with age	(4) Interaction with education	(5) Interaction with socioeconomic status	(6) Interaction with income
Knowledge						
Good subj. knowledge	0.01 (0.111)	0.01 (0.111)	0.01 (0.111)	0.02 (0.111)	0.01 (0.111)	0.01 (0.112)
Good obj. knowledge	–0.00 (0.120)	0.05 (0.182)	–0.22 (0.293)	0.69* (0.334)	–0.11 (0.149)	0.18 (0.330)
Interactions with objective knowledge						
Gender	–	n.s.				
Age	–		n.s.			
Education (ref. primary)	–					
Secondary				–1.02* (0.414)		
Lower tertiary				–0.80* (0.380)		
Higher tertiary				–0.51 (0.426)		
Socioeconomic status	–				n.s.	
Income	–					n.s.
Observations	1,643	1,587	1,587	1,587	1,587	1,587
Interactions with obj. knowledge	None	Gender	Age	Education	Soc.ec.status	Income
Demographics controlled	YES	YES	YES	YES	YES	YES
Cutpoints included	YES	YES	YES	YES	YES	YES

Standard errors in parentheses.
*** $p<0.001$, ** $p<0.01$, * $p<0.05$.

primary education, the subjective pension knowledge seems not to correlate with the level of trust in pensions.

For the interactions of education and objective pension knowledge, there appears a similar connection. For the lowest education group, there is a positive effect suggesting that, for them, higher objective knowledge is related to a higher level of trust in the pension system (Table 8). For other education groups, the interaction terms are negative. For those with secondary education, the negative effect from interaction terms more than cancels out the direct positive effect of objective pension knowledge. For them, the results suggest that those with a higher objective pension knowledge trust the pension system less. For those with a lower and upper tertiary level education, the negative impact of the interaction terms is only a little larger than the positive direct effect, so for them, the negative effect is low or close to zero.

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The relation between knowledge and trust also emerges in another population group when we consider the subjective measure of pension knowledge: those outside the labor force who rate their pension knowledge as stronger have less trust in the pension system. However, the effect of socioeconomic status is rather weak and only applies to a small group of respondents.

6. Conclusions

This study aimed to gauge Finnish people's knowledge about pensions and their trust in pensions. Another interest was to see whether and how knowledge and trust are related and whether there are differences in this relation between population groups. The study is based on survey data collected in Finland. The results show that while self-assessed knowledge is low, some of the key details of the pension system are well-known. Male gender, high age, high income, and self-employment are related to higher self-assessed knowledge of pensions. An objective measure of pension knowledge based on responses to five statements about the pension system and a question about the pension contribution rate yields a somewhat different picture. There are no gender differences in objective pension knowledge, but age, education, and income are related to pension knowledge. Younger respondents, those with higher education, and those with a higher income are more often aware of details of the pension system.

In countries where the pension system is financed by statutory contributions rather than private savings, trust in pensions depends on people's perceptions of the institutional pension system and its trustworthiness. In Finland, 70 percent said they had trust in the pension system. There were no significant differences between genders, income groups, or socioeconomic status groups. Age and education were related to trust, as older age groups and the higher educated more often expressed trust in the pension system.

Pension knowledge showed only a weak relation with trust in the pension system. When considered alone, only subjective pension knowledge is associated with trust. However, when sociodemographic variables are added to the analysis, this association disappears. Objectively measured pension knowledge does not seem to relate to pension trust.

A more detailed examination of the relation reveals that pension knowledge is associated with trust in the pension system differently in different educational groups. For those with a primary education, a higher pension knowledge relates to a higher trust in the pension system. This effect appears for both subjective and objective pension knowledge. For other educational groups, subjective pension knowledge is not related to trust in the pension system. In the case of objective pension knowledge, there are even more differences. While those with a primary education and a higher objective knowledge trust in the pension system more, those with a secondary education have an opposite relation, and those with a lower or upper higher education show no clear relation between knowledge and trust. This is an interesting result that may reflect different expectations of future work careers, wage development, and the resulting level of earnings-related pension.

Findings in the field of behavioral economics on bounded rationality and biases in decision-making highlight other relevant aspects. For example, the use of rules of thumb or heuristics to assess details of the pension system may lead to a situation where knowledge based on such simplifying tools relates differently to trust. More general financial literacy and knowledge of the principles of public finances might also play an important role in assessing the trustworthiness and future challenges of the pension system alongside individual retirement preparedness. Our results raise questions about how best to measure trust in pensions and about what information on pensions is relevant to developing an informed opinion about the trustworthiness of pension systems and its

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implications for security in old age or in the event of disability. It is important that both these aspects are taken into account in assessments as there is much heterogeneity in people's interests and ability to absorb and comprehend information. While some prefer to base their opinions and decision-making on trust, professionals' opinions, or even hearsay, others prefer to receive traditional knowledge on relevant themes.

Both pension knowledge and trust in the pension system are valuable goals in their own right. However, the relationship between knowledge and trust is surprisingly weak. While our study did not attempt to identify causal dependencies, the results suggest that pension knowledge does not, in general, have a strong relation with trust in the pension system. The groundings of trust in the pension system seem to lie elsewhere. Furthermore, the general level of different measures of trust might affect the relationship. The high level of trust in different areas of life, such as trust in government or interpersonal trust, might also be related to trust in the pension system and mean that knowledge of the pension system is less important in building trust in the pension system than elsewhere with lower level of trust in general. It is essential that we continue to work toward a better understanding of the building blocks of trust in the pension system and explore what information on pensions could contribute to building up that trust.

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Appendix A. Sociodemographic distribution of respondents

The survey data consists of 1,747 Finns aged between 25 and 67. The fractions of men and women are equal. Age is categorized into 10-year categories, except for the oldest age group, which consists of three cohorts.
Education is considered in four distinct groups. The lowest level, basic education consists of 9 years of comprehensive schooling or equivalent. Secondary education refers to high school graduate or vocational degree. Lower tertiary education is the most common group, referring to higher vocational degree or lower university degree. Higher tertiary education refers to master-level university degree. The majority of Finns between ages of 25 and 67 have tertiary education.
Income refers to equivalized household net income. Income is derived from the upper bound of the categories derived from the responses and scaled by the square root of household size. It is categorized into five groups and used as a relative measure of the household's financial situation.
Socioeconomic status is divided into employment, self-employment, unemployment, and retirement. The other group consists of persons outside the labor force, for example, students and persons on parental leave. Almost two-thirds of the respondents are employed.
Table A also shows the shares of missing values. Persons with missing values are excluded from the models and their shares are not reported in this article.

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Table A. Percentage of respondents by gender, age, education, income, and socioeconomic status. Source: Authors' calculations derived from Views on Pensions 2019 survey

	% of respondents
Gender	
Male	50.0%
Female	49.4%
Missing	0.7%
Age	
25–34	22.3%
35–44	22.5%
45–54	22.3%
55–64	25.6%
65–67	7.3%
Missing	–
Education	
Basic (= 9 years)	13.4%
Secondary	26.6%
Lower tertiary	37.4%
Higher tertiary	22.2%
Missing	0,4%
Income, (equivalent, €/month)	
< 1.500	13.8%
1,500–2,190	15.5%
2,200–2,790	31.8%
2,800–3,500	21.2%
> 3,500	15.9%
Missing	2.2%
Socioeconomic status	
Employed	64.4%
Self-employed	8.1%
Unemployed	6.0%
Retired	14.1%
Other	7.1%
Missing	0.3%

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Appendix B. Sensitivity of the results

Dichotomized variables

Our main independent variables, subjective and objective knowledge, were entered into the models as two-category variables. Responses to the question on subjective knowledge, however, were given on a 5-step Likert scale. Similarly, the measure of objective knowledge is the sum of correct answers to statements, and it ranges from 0 to 6.

To check whether the use of simplified dichotomous variables affected our results, we also ran the models so that they allowed for measures of pension knowledge with a larger number of categories. The measure of subjective knowledge was considered in four groups (poor, quite poor, moderate, and quite good + good as the highest category) and the measure of objective knowledge was considered as a continuous variable. The results were unchanged: objective knowledge remained an insignificant factor in trust, while subjective knowledge lost its significance as soon as demographic variables were included in the model.

More detailed effects by population groups could not be considered with these more detailed variables because the number of observations in some of the interaction groups with knowledge would have been too small.

Education level categories

Education was used as a four-category variable in the models, where tertiary education is divided between lower and higher tertiary education. As these two levels are often considered together, we have also run the models with three-category education, considering the tertiary educated as one group. The effect of this on trust reflects the broader results presented in the paper: tertiary education is related to higher trust in the pension system. Collapsing the measure of education from four to three categories does not affect the results on the relation between knowledge and trust.

Some differences can be seen in the interaction terms. The result that the individuals with lower tertiary education and higher self-assessed pension knowledge trust less in the pension system, compared to those with basic-level education and similar self-assessed pension knowledge, is no longer visible at the 5 percent risk level. However, the p-value for the significance of the difference is 0.055, so at a slightly higher risk level, the relation would be interpreted to hold for all tertiary educated respondents. A similar picture emerges for the interaction of education and objectively measured knowledge. The difference between tertiary educated and basic-level educated with higher objective knowledge disappears at the five percent risk level. The p-value for the coefficient to differ from that of the basic level educated is 0.0078.

Therefore, we conclude that in Finland, there is a difference between lower and higher tertiary education. As both groups represent a substantial part of the population aged 25–67 (37% and 22%, respectively), the use of a four-category education measure is justified.

Socioeconomic status

Age, education, and socioeconomic status are correlated. The inclusion of all these variables in the model might affect the results. To ensure that any possible differences in socioeconomic status do not dilute the effect of education, we have also run the models without socioeconomic status. The results remain roughly similar, although there is some variation in the interaction terms around the 5 percent significance level.

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If socioeconomic status is not included, the interaction term of subjectively knowledgeable secondary-level educated becomes significant with a 5 percent significance level (with socioeconomic status included, the p-value was 0.070).

The interaction with objectively knowledgeable secondary educated remains significant, but the interaction with objectively knowledgeable lower tertiary level educated gets a p-value of 0.052 and becomes insignificant at the 5 percent significance level.

The inclusion of socioeconomic status in the model thus captures some of the effects of education, but the main result remains the same: both subjective and objective pension knowledge are related to trust in pensions for those with intermediate-level education.

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