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Trust in Pension Funds, Or the Importance of Being Financially Sound

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Abstract

Is the trust that participants have in their pension fund affected by its funding ratio (i.e., asset/liabilities ratio)? Based on a survey carried out in October 2021 among Dutch pension fund participants, we link our survey data to the funding ratio of their pension fund as registered by the pension regulator. First, we show that the funding ratio of their pension fund is positively associated with the level of trust of participants. Pension funds with large buffers are associated with a high level of trust. Second, sub-group analyses show that the trust of younger participants is weakly related to the level of the funding ratio, while this association is strong and positive for older (55+) and retired participants. This suggests that an interest in or awareness of the financial health of one's pension fund is associated with a higher responsiveness of participants in terms of trust. And third, company-based pension funds enjoy a higher level of trust compared to sectoral pension funds.

Samenvatting

Wordt het vertrouwen dat pensioendeelnemers hebben in hun eigen pensioenfonds beïnvloed door de beleidsdekkingsgraad? Op basis van een in oktober 2021 uitgevoerde survey onder Nederlandse pensioendeelnemers, koppelen we de data over pensioenvertrouwen aan de beleidsdekkingsgraad zoals die door toezichthouder DNB wordt geregistreerd. Allereerst laten we zien dat het niveau van de dekkingsgraad positief samenhangt met het vertrouwen van deelnemers. Met andere woorden, pensioenfondsen die een hoge buffer aanhouden worden als zeer vertrouwenwekkend gezien. Ten tweede laat een subgroep-analyse zien dat de band tussen het vertrouwen van jonge deelnemers en de hoogte van de dekkingsgraad zwak is. Daarentegen is dit verband voor de groep van oudere werknemers (55+) en gepensioneerden sterk en positief. Deze bevindingen suggereren dat interesse in of bewustzijn van de financiële gezondheid van het eigen pensioenfonds samenhangt met een hogere mate van vertrouwen. Ten derde, ondernemingspensioenfondsen genieten een hoger vertrouwen dan bedrijfstakpensioenfondsen onder pensioenfondsdeelnemers.

1. Introduction

Pension funds offer services which come close to what are referred to as experience goods, as participants have to wait until retirement to ascertain whether the premiums paid during employment were well spent. Some might even say that the services offered by the pension industry are more like credence goods: it is virtually impossible to assess these services accurately, and participants have to *believe* that they made the right decision earlier in life (Dulleck & Kerschbamer, 2006). In short, uncertainty is a distinctive mark of pension provisions, and considering the fact that accumulated pension savings are the largest sum of money for most people, trust in their pension provider necessarily plays a large role in how they handle their pension nest egg. The prime function of trust was once aptly described by Gärling, Kirchler, Lewis, and Van Raaij (2009) as “the experience of certainty where no real certainty can exist”. Despite the large role of trust, most economic textbooks on pension finance take trust for granted or presume it to exist. However, among pension practitioners the role of trust seems to be the core of a pension fund’s concern (cf. Tamerus & Van Dedem, 2020). Once people sense that promises made earlier are no longer feasible, their trust in their pension fund is likely to falter, which in turn can undermine its credibility and financial stability. And in case of mandatory pension arrangements, this lack of trust may cause even more disruption as people lack the option to vote with their feet. Absence of an exit option may then lead to increasing lack of trust, which may in the end undermine the laws or rules on which a pension system is based.

The research field on trust in organizations tries to understand trust by focusing on the determinants of trustworthiness of pension organizations or trustees and on the characteristics of trustors such as pension participants or citizens at large (Van Dalen & Henkens, 2018; Van Raaij, 2016; Vickerstaff, Macvarish, Taylor–Gooby, Loretto, & Harrison, 2012). Perceptions of financial stability, competence or fairness play a large role in the trust of financial institutions and of pension funds in particular. However, the missing link in this literature is the connection between trust and objective data related to the services offered by pension funds. Policy makers and CEOs often *assume* that certain financial actions or regulatory measures will increase the level of trust. Whether this assumption is valid remains an open question. This paper tries to answer this question by examining how the trust of participants in their pension fund relates to the financial health of the fund.

We analyze this question for the case of The Netherlands, a country whose pension system is considered to be one the best in the world (cf. Mercer global pension index 2021) or one of the sophisticated systems in terms of design (Barr, 2012). It is also a

country where financial indicators play a large role in pension fund regulations and are regularly reported and discussed by pension funds in their reports and mailings to participants and in newspapers. The funding ratios of pension funds (defined as assets divided by liabilities, i.e., the current and future pension benefits to be paid out) are often headline news in the Dutch media, because these ratios signal to participants whether a pension fund is allowed to index its pensions or not. And in case of underfunding it will need to cut benefits or raise the pension premium. The key question is therefore: is trust in one's pension fund associated with the funding ratio and, if so, to what extent? To answer this question, we employ the survey data collected in October 2021 among pension fund participants. To make the connection between trust and the financial state of pension funds, we employed registered data on the funding ratios of individual pension funds as collected on a regular basis by the Dutch central bank (DNB), which serves as pension regulator. In other words, we did not inquire about the state of financial health directly from participants, but we took advantage of the fact that the participants in our sample are connected with no less than 85 different pension funds. Dutch newspapers regularly report on the state of pension funds by focusing on the funding ratio. This public information, as well as what participants may learn from their own pension fund, helps them to form their opinion.

By focusing on these groups of participants, we will be able to see how trust varies *between* participants by the funding ratio of their fund. An additional research question is whether this relation between trust and the funding ratio differs by broad age groups, which traditionally display distinct levels of pension awareness or interest. It is well established in the retirement planning literature that planning activities, awareness, and financial knowledge increase with age (Alessie, Van Rooij, & Lusardi, 2011; Hershey, Henkens, & Van Dalen, 2010; Van Raaij, Huiskes, Verhue, & Visser, 2011).

This study offers new evidence on the connection between trust in one's pension fund and an objective indicator of the financial health of their pension fund. We show first of all that a strong positive relationship exists between the trust of fund participants and the officially registered financial health of their pension fund at any given point in time. Second, we show that the marginal effects of belonging to a pension fund with a higher or a lower funding ratio in terms of trust are substantial among older participants, whereas this connection is weak or non-existent among the younger age group.

The setup of this paper as follows. First, in Section 2, we offer some context to this question, as each country has its own specificities in the design and regulation of its pension system, and the Netherlands is no exception. Next, in Section (3), we briefly

introduce how we see trust in a pension context. That is followed in Section 4 by a description of the data and methodology. Section 5 then discusses the research results that shed light on the central question. Section 6 states our conclusions.

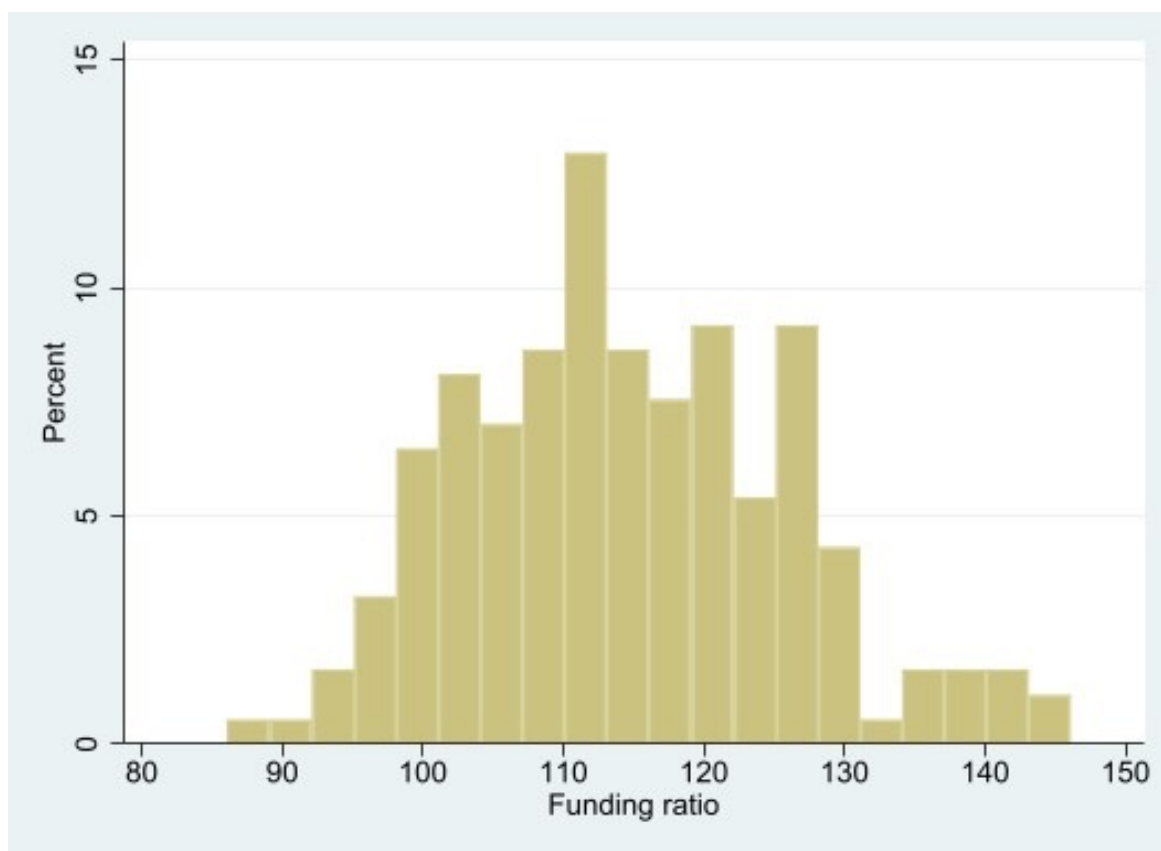
2. The Dutch pension context

To understand the issue of trust in the Dutch context, it is necessary to keep in mind the key players that figure prominently in the Dutch pension world. In the Netherlands, most employees save for their pension and accumulate pension rights within a three-tier (or pillar) system: (1) a basic public pension plan (the so-called 'AOW') provided by the government; (2) a mandatory supplementary pension plan provided by pension funds; and (3) voluntary individual pension savings. To this day the public pension – financed on a pay-as-you-go basis – in combination with the supplementary pension provisions are, for most Dutch citizens, the basic elements of what they consider 'their pension'. Both the public and the supplementary pension have been defined in terms of benefits, with premiums and taxes endogenously derived. However, it is expected that by July 1, 2023 (originally January 1, 2023) a new pension system will gradually replace the current defined benefit (DB) system. This revision is expected to give rise to a more volatile pension benefit than is currently the case (Rijksoverheid, 2022).

Two organizations are involved in the supervision and regulation of pension funds and insurers: the Dutch Central Bank (De Nederlandsche Bank, DNB) and the Dutch Authority for the Financial Markets (AFM). Under the Pensions Act and the Financial Supervision Act, DNB closely monitors the financial and management operations of pension providers. AFM's task in the new pension system is more limited but may gain increased prominence. By law, pension providers are obliged to provide certain information to their stakeholders. AFM checks that pension providers meet these requirements. An often-used financial indicator in regulating the pension funds is the funding ratio, i.e., the ratio of assets versus liabilities. The new century has turned to be a volatile period for pension funds, owing to the credit crisis and the subsequent stock market crash, as well as the fall of interest rates to historically low levels. In the past ten years pension funds as a group have reported funding ratios between 100 and 110, and in individual cases much lower. Figure 1 presents the distribution of funding ratios for all pension funds in the Netherlands in 2021.

Although the picture currently looks bright for many pension funds, one should bear in mind that the two largest pension funds (ABP and PZFW) were in the danger zone in 2021. Under the current pension law rules, pension funds with a funding ratio of 104 or lower must take corrective action, in agreement with the Dutch pension regulator, to bring the funding ratio to a safer level (between 104 and 110). Also, pension funds are allowed to index for inflation once the funding ratio has risen to 110 percent or higher. For example, pension fund ABP (with 3.1 million participants, including

Figure 1: Distribution of funding ratios of pension funds in the Netherlands, Q4 2021



Source: DNB pension statistics (2022). NB: this refers to the nationwide set of pension funds. To offer a balanced overview, we excluded in this histogram two outlier pension funds, namely Calpam and HAL (Holland Amerika Lijn), which have fewer than 50 active participants and funding ratios of 190 and 187, respectively. No participants in the current survey were connected with these two pension funds.

deferred members) had a funding ratio of 103 percent in 2021, although up from 88 in 2020. This necessitated a corrective plan of action as stipulated by DNB, which is still in force. It meant that *ABP* had to draw up a plan to restore the funding ratio in ten years' time, from 93 percent in 2021 to 130 percent in 2032.

3. Trust in pension settings

The credibility of a pension fund is assumed to be a key driving force of the trust that it generates among its participants. Especially, competent management of assets and liabilities can enhance that credibility. Pension fund practitioners and regulators believe that buffers for uncertain times offer grounds for trust. As the OECD (2021) recounts in its recent evaluation of financial indicators used within OECD pension systems, buffers are one of the elements of a pension system that can help build or restore trust in a system (cf. OECD (2021, p. 87)). However, it is generally acknowledged that bounded rationality, ignorance, and imperfect information are the rule when it comes to understanding the minds and behavior of people in how they handle their pension affairs (Benartzi & Thaler, 2007; Bodie & Prast, 2012; Kahneman, Odean, & Barber, 2005). An open question in this regard is whether actual financial indicators of pension funds have an impact on the trust level of the individual participant. A positive outcome – indicators do matter – would appear to contradict the empirical fact that most participants are ill-informed and not financially literate enough to understand the ins and outs of pension finance. However, when financial indicators have clear consequences, such as raising or lowering pension benefit levels, one might expect that financial indicators are closely linked with the trust of participants. In other words, although participants may not understand the precise calculations and content of such indicators, they may very well suspect or experience what the consequences are if certain financial thresholds are surpassed and hence decide whether their pension fund is 'fine' or 'in trouble'. The key research question is therefore whether and, if so, to what extent trust in a pension fund is connected with its objectively reported financial health. As shown in Van Dalen and Henkens (2018), perceived stability is one of the most important predictors of trust in pension funds. For a more solid test of the relationship between financial soundness and trust, we need to incorporate actual financial indicators that are specific to individual pension funds. Hence, the central hypothesis in this paper is:

Trust-financial health nexus hypothesis: The financial soundness of a pension fund as approximated by its funding ratio is a direct driver of the trust that participants have in their pension fund.

A second question refers to the issue whether the life cycle of participants matters in expressing trust. One of the aspects that pervades attitudes and behavior in pension issues is the element of engagement and interest in these issues across age categories. In general, among the young their interest in their personal pension rights and

savings, or in the economics behind pension finance, is generally low (Foster, 2017), whereas one generally sees that this interest becomes real and substantial once the retirement date comes in sight. Certainly, once people have retired, their interest and awareness are high since they depend for their income on their pension benefits (Prast & Van Soest, 2015; Van Raaij et al., 2011). An expression of trust or distrust is therefore expected to be related with the level of interest in pension issues (cf. Deetlefs et al. (2019)). Hence our second hypothesis focuses on the differential impact of funding ratios on trust among younger and older participants. Assuming that older participants have a stronger interest in and awareness of pension issues than younger age groups, we formulated the following hypothesis:

Pension awareness/interest hypothesis: Trust of young and middle-aged participants in pension providers is less responsive to the level of the funding ratio than among older/retired participants.

The financial planning literature (Hershey et al., 2010) shows that older age groups are generally more concerned as they notice directly whether their pension rights change, whereas young and middle-aged persons are expected not to take direct notice of whether their pension rights have changed. One obvious reason for this is that changes in pension rights are not made explicit or – given the limited financial literacy or awareness of participants (cf. Van Raaij, 2016) – are difficult to detect in pay checks or other notices. An alternative reason why the young tend to be lukewarm about financial information regarding their pension funds is that they think they have enough time on their hands to repair setbacks, such as a pension fund decreasing the pension rights or abstaining from indexation.

4. Data and methodology

We employed data that were collected by a survey held in October 2021 in the Netherlands. The fieldwork was carried out by the CentERdata of Tilburg University through the LISS panel. This panel consists of 5,000 households, comprising approximately 7,500 individuals, who complete online questionnaires every month. All individuals participating in the panel were selected on the basis of a true probability sample of households drawn by CentERdata from the population register maintained by Statistics Netherlands. For this particular study a sample of 2,118 individuals was selected, of which 83 percent responded and filled out a complete survey ($N = 1,761$). This was divided into two separate parts with different sample sizes: (1) a part focusing on pension issues for the population at large ($N = 1,761$), and (2) a subsample focusing on those connected to pension funds and insurance companies, ($N = 1,112$). Of this subsample, 114 (10.3%) did not remember or know which fund or insurer they were connected with. We removed these from the sample as this might have led to some selectivity of the sample. Within this sample we only used the data on employees who stated that they are connected to a pension fund ($N = 940$); the number of participants connected to insurance companies was too small to offer reliable insights for purposes of comparison. For all pension funds of the participants in this sample (85 in total), we could track the funding ratios as registered by DNB on a quarterly basis.

Our key measures of trust concern the question whether respondents trust their current pension fund. This is captured by the question: "Please indicate how much you trust your current pension fund/insurer in managing your pension money and rights?", with answer categories: (1) no trust; (2) little trust; (3) neutral; (4) some trust; and (5) a lot of trust. Lack of trust is defined as the state where respondents express either no trust or little trust (1–2), and trust is the state where they express some or a lot of trust (4–5). Pension funds were identified in the survey by a list of 212 pension funds/insurers as registered by DNB for that particular year. Respondents could choose their pension provider. In case they had more than one pension provider, they were instructed to choose the provider where they had accumulated most of their pension rights.

In our model we control for the following set of individual variables: (1) age; (2) gender; (3) partner status (with partner or not); (4) highest attained educational level, divided in three broad categories (low, middle, higher education); and (5) their estimated net household wealth (market value of personal home, savings, and stocks and bonds, minus private debts and mortgage loans) with answer categories covering seven intervals. To control for the fact that the type of pension fund may affect trust,

Table 1: Descriptive statistics pension fund participants

	Mean/percentage	s.e.
Funding ratio of own pension fund ^a	103.06	8.71
Funding ratio of own pension fund (lagged 1 year)	94.70	8.67
Trust in own pension fund (5-pts scale) ^b	3.43	0.97
Type of pension fund participants		
Firm-based pension fund	0.16	
Sector/profession-based pension fund	0.84	
Age group		
16-34 years	0.09	
35-44	0.10	
45-54	0.13	
55-66	0.23	
67-71	0.17	
72-79	0.21	
80 years and older	0.07	
Gender		
Male	0.57	
Female	0.43	
Education		
Low	0.22	
Middle	0.33	
Higher education	0.46	
Partner		
None	0.32	
Yes	0.68	
Private net wealth^c categories:		
25k or lower	0.16	
25-100k	0.18	
100-250k	0.17	
250-500k	0.20	
More than 500k	0.11	
Don't want to say	0.08	
Don't know	0.10	
N =	940	

(a) Notes: Funding ratio is the ratio of assets versus liabilities of pension funds as registered by the Dutch Central Bank (DNB); the lowest funding ratio of the 85 pension funds in this sample is 87.2% and the highest 138.6%. (b) Trust in one's own pension fund is based on the survey question: To what extent do you trust your current pension provider in managing your pension money and rights? (1) no trust; (2) little trust; (3) neutral; (4) some trust; (5) a lot of trust. (c) Net wealth is the estimated wealth reported by respondents of their assets (total value of house, savings, investments, etc.) minus the total of their mortgage and other debts.

we use a binary variable that registers whether the pension fund is firm-based (=1) or sector-based or professional group-based (=0). The latter category was too small to be covered separately, and because we expect that ties between a firm-based fund and its participants are more intimate or less anonymous than those belonging to sector-based or professional group-based funds, this dummy variable will capture some of the variability in trust among the participants in the sample (see Bikker and De Dreu (2009) for an overview of costs and benefits of these types of funds).

The key explanatory variable is the funding ratio as reported by pension regulator DNB for individual pension funds.¹ Table 1 provides an overview of the descriptive statistics of the variables used. The funding ratio ranges from 87.2 to 138.6. The mean funding ratio is 103 (standard error = 8.7).

The methodology used to analyze the key research questions is instrumental variables (IV) ordered probit regression analysis. The use of instrumental variables is correct for potential endogeneity of the funding ratio. For instance, it could be that the financial indicator used highly correlates with state of the economy; to correct for this we used as an instrument the funding ratio lagged by one year. To correct for differences in variance due to arbitrary correlation within the group of respondents belonging to the same pension fund, robust standard errors are presented.

1 Two versions of funding ratios are often reported in the press: a continuous registered funding ratio ('dekkingsgraad') and a twelve-month moving-average funding ratio ('beleidsdekkingsgraad'). The latter is used mainly for regulation purposes, to smoothen the outliers in capital market developments and to prevent erratic changes in regulatory policy.

5. Results

The results of the IV probit analyses as explanation of the level of trust in individual pension funds are presented in Table 2 in two steps. The first column contains the results for a model that contains relevant socio-economic variables excluding the funding ratio, while the second column contains the full model (including the funding ratio).

The most important results of model 2 are that trust in one's pension fund and its funding ratio are positively correlated, thus offering support for the first hypothesis.² Furthermore, inclusion of the funding ratio improves the explanatory power of the model considerably compared to model 1. The other explanatory variables in model 2 suggest that trust is also associated more with older age groups, the wealthy, and the higher educated. The coefficients for the various age groups show that, for persons aged 55 or higher, trust is more or less uniformly higher than among the younger age groups. This suggests that interest in pension affairs is associated with the second half of one's life. Although the coefficient for the group aged 45–54 displays a remarkably lower level of trust compared to the group aged 35–44, this difference is not statistically significant.

Wealth (€100k and higher) also correlates positively with trust in pension funds. Wealthy participants are possibly in a better position to cover fluctuations in the income provided by their pension fund. Finally, participants with higher education in particular trust their pension funds more than those with lower education. This may be connected to jobs with higher pay and higher pension incomes, but the higher education is also likely to generate some level of financial literacy that facilitates understanding the peculiarities of the Dutch pension system (cf. Van der Crujssen et al. 2021).

To see how different funding ratios affect the level of trust among the total group of respondents, we calculated the marginal effects based on the parameters of model 2 of Table 2. Figure 2 shows the positive association between the funding ratio and the level of trust that participants have in their pension funds. Even a slightly higher funding ratio associates with a considerably higher trust level: a participant of a fund with a funding ratio of 105 has a trust level of 51 percent, whereas a similar participant of a fund with a funding ratio of 110 (which approximates the sample average) has a considerably higher level of trust (55%). For pension funds with a funding ratio

² To check for non-linearities, we also included a quadratic term of the funding ratio aside from the funding ratio, but this did not yield any statistically significant results. Hence we only focus on the linear effects.

Table 2: Trust of pension participants in their pension fund, including sectoral or firm-based pension fund type

	Model 1		Model 2	
	Coefficient	s.e.	Coefficient	s.e.
Pension fund:				
Funding ratio (x10 ⁻²)	-	-	2.00***	0.71
Type of pension fund (sectoral =ref)				
Firm-based	-	-	0.22	0.17
Gender (male=ref)				
Female	-0.20***	0.05	-0.10	0.07
Education (low = ref)				
Middle	0.19*	0.11	0.25**	0.11
Higher education	0.31***	0.10	0.41***	0.10
Partner (none = ref)				
Yes	-0.20***	0.05	-0.18***	0.05
Age group (16-34 years = ref)				
35-44	0.43***	0.15	0.41***	0.14
45-54	0.31**	0.13	0.30**	0.14
55-66	0.62***	0.16	0.62***	0.15
67-71	0.61***	0.17	0.63***	0.16
72-79	0.61***	0.15	0.61***	0.14
80 years and older	0.69***	0.15	0.70***	0.17
Private wealth (25k or lower = ref)				
25-100k	0.19**	0.08	0.18**	0.09
100-250k	0.39***	0.10	0.37***	0.11
250-500k	0.33***	0.11	0.33***	0.11
More than 500k	0.45***	0.11	0.43***	0.11
Don't want to say	0.16**	0.08	0.16	0.08
Don't know	-0.09	0.11	-0.12	0.12
Pseudo R ²	0.034		0.049	
Log likelihood	-1242.9		-1223.6	
N =	940		940	

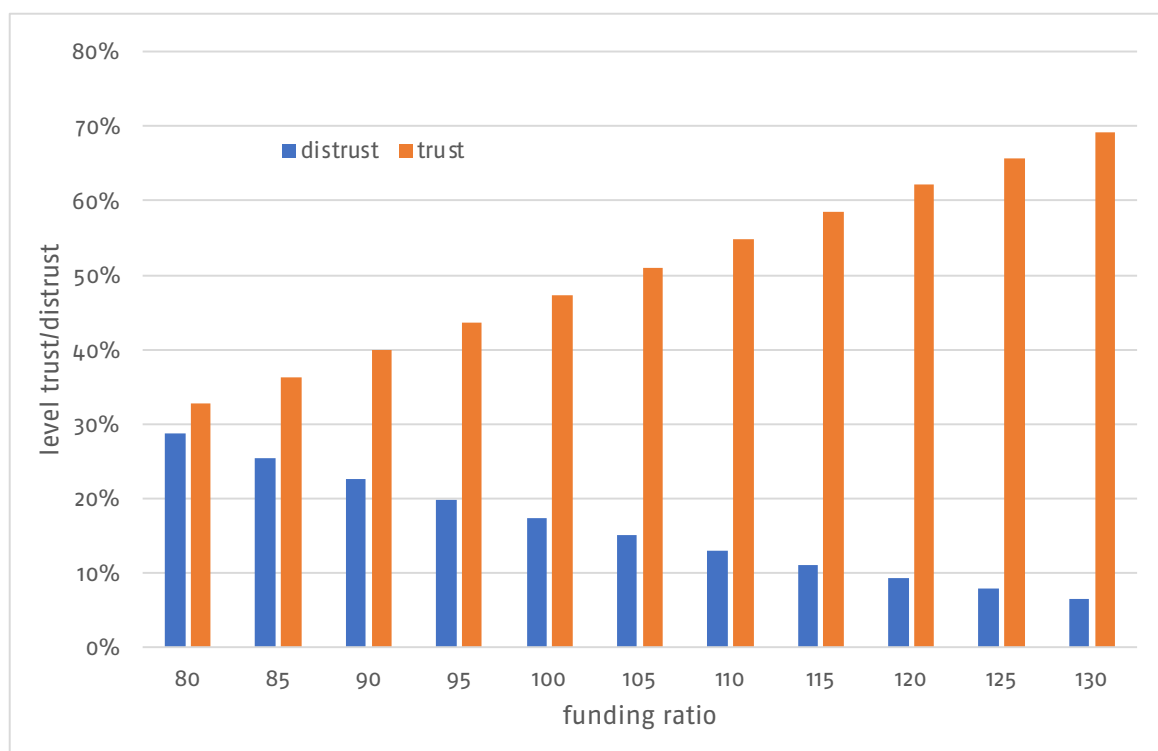
Note: IV ordered probit with instruments funding ratio lagged by one year, robust standard errors reported clustered at individual pension fund level. *** p < 0.01; ** p < 0.05; * p < 0.10

that reaches levels that were normal in the 1990s and early 2000s, such as 125 percent, a large majority (66%) of survey participants expresses trust in their pension fund (cf. Van Dalen and Henkens, 2022).

The second hypothesis – predicting that the trust level of young and middle-aged participants is less responsive to the level of the funding ratio than that of older workers and retired participants – is tested by subgroup analyses. We have split the sample of model 2 (of Table 2) into two age groups in Table 3: one that represents age groups that are aware (potentially or fully) aware of or interested in pension issues – namely the older workers (55+) and retirees – versus a group that is not aware or interested in pension issues – the young and middle-aged up to 54 years.

The results on the differences between these age groups show a clear divide: the older group has a higher trust coefficient (2.31) with respect to the funding ratio than the younger age group (0.98, a coefficient that is statistically insignificant). This result

Figure 2: Predicted probabilities of having trust or distrust in individual pension funds, by funding ratio of the pension fund.



Note: Distrust is the sum of the categories (1) no trust and (2) little trust; trust is the sum of the categories (1) some trust and (2) a lot of trust. Calculations based on model 2 in Table 2.

basically tells the story of the trust that pension funds receive from its participants: for younger age groups the link between the funding ratio of their fund and their level of trust is much weaker than for the older age group, which depends for its income on how their pension fund performs and hence can be assumed to have a clear interest in the financial state of their providers.

To make the above calculations with respect to the funding ratio more transparent, we also present, in Table 4, the marginal effects for specific outcomes with respect to variations in the funding ratio. The results reveal that a higher funding ratio is clearly associated with a higher likelihood of being in the outcome categories "some trust" and "a lot of trust" and a lower likelihood of being in the "neutral" and "little trust" or "no trust" categories. This holds for the entire sample as well as for the older sub-population, with the respective marginal effects all being statistically significant. For the younger sample the effects are not significant.

Other aspects worth noticing in Table 3 are the differences in coefficients between the two models for pension fund type and education. A novel finding in the literature on pension funds is that, among the older age group, firm-based funds can count

Table 3: Trust of pension participants in their pension fund, working age (16–54 years) versus older participants (55 years and older)

	Working age (16–54)		Older participants (55+)	
	Coefficient	s.e.	Coefficient	s.e.
Pension fund				
Funding ratio ($\times 10^{-2}$)	0.98	1.12	2.31***	0.71
Type of pension fund (sectoral = ref)				
Firm-based	0.05	0.26	0.34**	0.16
Gender (male = ref)				
Female	-0.02	0.17	-0.16***	0.06
Education (low = ref)				
Middle	0.25	0.21	0.20	0.13
Higher education	0.22	0.18	0.48***	0.11
Partner (none = ref)				
Yes	-0.07	0.10	-0.25***	0.06
Age group (16–34 years = ref)				
35–44	0.42**	0.17	-	-
45–54	0.28	0.16	-	-
55–66	-	-	= ref	-
67–71	-	-	0.04	0.06
72–79	-	-	-0.01	0.08
80 years and older	-	-	0.06	0.18
Private wealth (25k or lower = ref)				
25–100k	0.23	0.18	0.20*	0.11
100–250k	0.54***	0.16	0.32***	0.10
250–500k	0.60***	0.19	0.28*	0.17
More than 500k	0.64***	0.24	0.38*	0.19
Don't want to say	0.13	0.28	0.19	0.14
Don't know	0.27*	0.14	-0.33**	0.14
Pseudo R ²	0.035		0.054	
Log likelihood	-375.6		-831.7	
N =	304		636	

Note: IV ordered probit with instruments funding ratio, resp. funding gap lagged by one year, robust standard errors, clustered at individual pension fund level.

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$

Table 4: Average marginal effects of variations in funding ratios on trust in own pension fund (standard errors in brackets)

Funding ratio:	No trust dy/dx	Little trust dy/dx	Neutral dy/dx	Some trust dy/dx	A lot of trust dy/dx
<i>Total sample</i> ^a	-0.12*** (0.04)	-0.34*** (0.12)	-0.28*** (0.10)	0.35*** (0.12)	0.39*** (0.14)
<i>Subsample</i> ^b					
Old (55+)	-0.14*** (0.04)	-0.36*** (0.12)	-0.34*** (0.12)	0.33*** (0.10)	0.51*** (0.16)
Young (16–54)	-0.05 (0.06)	-0.20 (0.23)	-0.10 (0.12)	0.25 (0.28)	0.11 (0.12)

(a) Based on full model 2 in Table 2; (b) Based on sub-sample estimates Table 3;

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$

on a bit more trust than sector-based and professional group funds. Apparently this type of pension funds engenders some form of solidarity that the other types of funds cannot attain. But this effect may also result from the fact that firm-based funds can cater their facilities more to the needs of their participants than sector-based funds, which tend to rely on a one-size-fits-all approach (Bikker & De Dreu, 2009). For the older and presumably more interested group, the role of education plays a bigger role than it does among the younger group. This could very well reflect the fact that financial literacy or pension awareness is generally higher among the higher educated (Van der Crujssen, de Haan, and Roerink (2021), and Van Raaij et al. (2011), respectively), and this 'fact' may well explain the higher level of trust among participants with higher education.

As a robustness test we have examined alternative age groupings that could explain the divide that we present in Appendix A1: a split between working-age participants (16–66 years) and retirees (67+). The reason for this alternative split is the fact that employees as a group may have to base their trust on expectations: they have to wait and see how their savings transform into a stream of pension benefits. Pensioners on the other hand see how the promise by pension funds materializes: they see the living proof on their bank account. Of course, compared to the split in Table 3 the older workers group (55–66) is included among the 'employees', a group that has a clear interest in pension issues, thereby raising the average level of awareness. The results are slightly affected compared to Table 3: a higher funding ratio is associated with a slightly lower level of trust among the older participants (coefficient of 2.24 instead of 2.31) and a slightly higher association among the working age population (coefficient of 1.59 instead of 0.98). However, the latter coefficients are statistically insignificant.

6. Conclusion and discussion

The capacity of pension funds to smoothen income streams has been severely tested in the past ten to twenty years: stock markets crashed, capital markets showed unprecedented low interest rates, and steadily but forcefully the impact of population aging is becoming more visible in the age structure of firms and pension funds. Defined benefit promises of the past no longer seem to hold, and action needed to be taken as trust in pension funds and pension institutions in general dwindled and distrust grew. Most governments in OECD countries are trying to reform their pension system and to adapt it to changing labor markets and population aging. The Netherlands is no exception. The Dutch government is very concerned about the level of trust that the population at large has in the pension system, which is said to be "teetering". Only a fundamental pension reform can stop this decline, otherwise: "Without innovation, the chances are high that trust in our pension system will erode even further" (p. 4, Ministry of Social Affairs and Employment, 2020).

The insights from this study on Dutch pension participants suggest that an increase in trust is certainly within reach, provided that the funding ratios of pension funds go up. Thus, one can be tempted to conclude that, when it comes to trusting their own pension fund, participants seem to live by the rule "it's all about the money". In a way this is of course true as the core task of pension funds revolves around *consumption smoothing* over the life span and *insurance*, in particular of longevity risk (Barr, 2012; Blake, 2006). This is primarily an economic and financial issue. So it should not surprise us that differences in trust are based on differences in funding ratios, as the credibility of a pension fund depends on making good on its promises, and this element is embodied in the funding ratio.

Our conclusion about the importance of financial soundness should, of course, be qualified, on three grounds. First, economic psychology research shows that trust in financial institutions revolves around more than just money. Perceptions of competence, fairness, or honesty and of aligned interests matter too (Gärling et al., 2009; Van Dalen & Henkens, 2018; Van Esterik-Plasmeijer & Van Raaij, 2017). Second, this study is cross-sectional, so we are not able to analyze how specific individuals change their perception of trust over time when the changes in financial health are not transparent. Third, to show a close relationship between trust and a financial indicator comes with a strong *ceteris paribus* condition: everything else needs to be kept constant in terms of promises or, more formally, in terms of the prevailing pension contract. Because of this conditionality, there are limits to what financial indicators can measure. This will prove even more difficult now that the Dutch pension system

is in transition. For decades the system basically functioned on a defined benefit (DB) basis, but that is in the process of moving to a defined contribution (DC) system.³ The funding ratio as an instrument of pension regulation will therefore disappear in the new pension regime, because the funding ratio will essentially be 100 by definition for a pure DC contract. Also, risks are shifted more to employees in dealing with the ups and downs in financing a pension. The focus will probably shift towards the premium: how much pension can you expect and the portfolio choices by default or by one's own choice. Hence, the rate of return on investments will become more prominent. The importance of "looking under the hood" of pension funds and of the products they offer can become more important, because financial indicators, such as rates of return, can be deceptively simple and may not show the risks that are tied to certain investment strategies (cf. Admati and Hellwig (2014)).

The strong connection between trust and the funding ratio of pension funds can also be a dangerous trait for the near future, as the Dutch pension landscape is expected to alter drastically. Dutch participants seem almost 'conditioned' to look at funding ratios as the thermometer of their pension funds' health.⁴ One can imagine that, in case of a radical pension reform that moves from a DB to a DC type of contract (as in the Netherlands), such transition can cause discomfort among a clientele that expects their pension funds to carry buffers and to report regularly on their financial health, whereas they should primarily look at their personal investment or pension account or at their pension premium. In short, given that pension awareness and financial literacy tend to be in short supply among many citizens (Lusardi & Mitchell, 2011), radical pension reform bears the risk of becoming "an accident in the making" as people fail to see the new risks, of which they themselves have become the prime owner.

3 However, in the new system, employers and employees can also decide to set a specific share of the collective pension capital aside as a buffer for setbacks. The rules for this buffer must be laid down in advance by the organization that represents employers and employees.

4 This observation also seems to apply for the board members of pension funds as well, as Van Dalen, Henkens, Koedijk, and Slager (2012) show.

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Appendix

Table A1: Trust of pension participants in their pension fund, working age (16–66 years) versus old participants (67 years and older)

	Working age (16–66)		Retired (67+)	
	Coefficient	s.e.	Coefficient	s.e.
Pension fund				
Funding ratio ($\times 10^{-2}$)	1.59	1.06	2.24***	0.65
Type of pension fund (sectoral = ref)				
Firm-based	0.19	0.26	0.38***	0.15
Gender (male = ref)				
Female	-0.04	0.13	-0.21**	0.09
Education (low = ref)				
Middle	0.26*	0.16	0.21	0.15
Higher education	0.37**	0.16	0.44***	0.13
Partner (none = ref)				
Yes	-0.06	0.06	-0.31***	0.09
Age group (16–34 years = ref)				
35–44	0.41***	0.15	-	-
45–54	0.29*	0.16	-	-
55–66	0.63***	0.17	-	-
67–71	-	-	= ref	-
72–79	-	-	-0.07	0.08
80 years and older	-	-	-0.01	0.18
Private wealth (25k or lower = ref)				
25–100k	0.15	0.11	0.28**	0.13
100–250k	0.43***	0.13	0.36**	0.15
250–500k	0.54***	0.11	0.20	0.20
More than 500k	0.40**	0.16	0.51*	0.27
Don't want to say	0.10	0.16	0.26*	0.15
Don't know	-0.00	0.13	-0.23	0.17
Pseudo R ²	0.050		0.056	
Log likelihood	-656.7		-551.7	
N =	523		417	

Note: IV ordered probit with instruments funding ratio, resp. funding gap lagged by one-year, robust standard errors, clustered at individual pension fund level.

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$

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