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Between Beveridge and Bismarck: Preferences for redistribution through public pensions☆

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ABSTRACT

We examine preferences for redistribution in Germany's public pension system as well as notions of fairness of the system, using survey and experimental data from citizens and politicians. Our findings reveal a widespread rejection of strict proportionality between contributions and benefits, with strong support for greater redistribution to low earners. Information on inequalities in life expectancy reduces perceived fairness and increases support for redistribution among voters and politically moderate legislators. The study also reveals significant knowledge gaps about the basic features of the existing pension scheme among citizens. We demonstrate that policy-relevant information influences fairness perceptions.

Introduction

Across the world, there is wide international variation in the extent to which pension systems redistribute resources (OECD, 2021). In most OECD countries, there is at least some link between the contribution that workers pay into the public pension system and the monthly pension benefit that they receive during retirement. But this link can take different forms. At one extreme lies the so-called Bismarckian rule according to which individual contributions and benefits are strictly proportional to each other. The other extreme is the Beveridgean rule under which every retired worker receives the same pension no matter how much he or she has contributed to the system. The Bismarckian rule can be understood as the 'absence of redistribution from high to low earners' through the pension system, whereas the Beveridgean rule constitutes the maximum of such redistribution.

Societal notions about fairness (Alesina and Angeletos, 2005 Cavaillé, 2023; Miller, 1999) often align with preferences for redistribution and perceptions of what a society owes to its elderly citizens. Discussions of fairness surface particularly in times when pension reforms and their distributional consequences enter the political agenda. However, little is known about whether citizens and elected representatives perceive their country's pension system – and the level of redistribution it implements – as fair, or the criteria they use to form such judgments. A lack of relevant information about the redistributive implications of the pension system may bias both fairness perceptions and preferences for redistribution.

In this study, we provide the first survey-based evidence on how much redistribution citizens and elected politicians desire within the public pension system. In addition to these observational insights, we assess how the provision of factual information affects preferences for redistribution through public pensions among both groups. In particular, we study whether citizens as well as parliamentarians (1) perceive the Bismarckian public pension system as fair and, if not, (2) what extent of redistribution from the higher to the lower earners in the retirement phase they consider as just, and (3) how information about the implicit redistributive effects of the pension system – due to heterogeneity in life expectancy – changes those evaluations.

Our inquiry takes advantage of two countervailing features of the German system: its pension system is long established and strictly applies the Bismarckian rule of no redistribution. This is not to say that there are no redistributive elements in the German pension system, but these features, such as benefits for child raising or survivor benefits, are not targeted to redistributing income from high to low earners. At the same time, rather strong preferences for redistribution (e.g. Engelhardt and Wagener, 2018) persist within the German population.

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The combined survey contains a representative sample of the adult population in Germany and a sample of elected politicians. The citizen and the politician surveys include 3989 and 535 respondents, respectively. Within each survey, randomly selected subgroups were given different types of information before answering the same questions about their fairness perception and their preferred distribution of pensions in a stylized hypothetical scenario.

In both surveys, there are two main experimental groups. The first received only simple information about the strict proportionality of the German pension system. The second in addition receives information on the longevity gap between recipients of high versus low benefits and the effects on total pensions received. In the following analysis, we shall refer to the group with proportionality information as the Baseline and the group with the combined information as the Life expectancy group. We expect that respondents who receive the information that individuals with higher income have higher life expectancies should be less likely to consider the current pension distribution as fair compared to those respondents in the Baseline group.

For the citizens, we additionally ask for their estimates of the distribution of pension payments before they are assigned to the experimental groups to examine the extent of knowledge about this system in the general population. Moreover, the large size of the citizen sample allows us to randomly allocate one-third of all participants to an uninformed group who receives no information about the pension system to explore their judgment of the pension system as they assume it to be.

The paper provides rich evidence on the (mis-)perceptions of the existing pension system, preferences for redistribution through the pension system, and the effect of information provision. We find that across both the citizen and the politician survey, about half of the respondents think that the German pension system is (at least rather) fair. When asked for a fair division of pension claims, people ask for substantive redistribution from those with higher previous earnings and contributions to the lower earners. This is true of all segments of the population; only the extent of desired redistribution varies. The information that low earners have a shorter life expectancy leads to an even stronger demand for redistribution in their favor. Elected representatives share the citizens' view that monthly pension benefits should not be proportional to lifetime contributions, although their desired extent of redistribution from high to low earners is, on average, somewhat smaller than that of citizens. Only politicians who self-assess as being in the center of the political spectrum increase their demand for redistribution when learning about the longevity gap.

This paper makes three contributions. First, we study preferences for redistribution through public pensions in a representative sample of German citizens and show that they, on average, desire a more redistributive system than is currently in place. Second, we contribute to the recent experimental literature on the effects of information provision on policy preferences in large-scale surveys (e.g. Alesina et al., 2018; Barnes et al., 2018; Kuziemko et al., 2015; Lergetporer et al., 2020). We provide the first evidence of the significant effects of information provision on preferences for redistribution through public pensions. We show that these preferences are malleable by the provision of information on less salient redistributive implications. Third, we add the perspective of a representative sample of elected representatives of several German federal states. We show that also those closer to policy-making, and with arguably more information, desire a more redistributive system and, at least in the center, update their preferences when being exposed to policy-relevant information.

Our findings have direct policy implications and inform the current debate about reforms of pension systems. Given the imminent demographic change, many experts think that prevailing levels of public pensions will not be sustainable in the future. With declining average pensions, to circumvent old-age poverty, some amount of redistribution in favor of lower earners may be unavoidable. Because we obtained descriptive and experimental evidence from citizens and politicians, our results show that such a reform could, in fact, find broad support among citizens and politicians.

Conceptual background

Among the European OECD countries, Germany is the prototypical case of a Bismarckian system, which can be explained by historical reasons: the pension system was designed in the 1880s as a funded system, which from the perspective of an individual worker resembles a state-managed savings account, where the only additional feature is an insurance against the uncertainty of the length of life. If the state keeps strictly to this rule, there is no room for redistribution between members with different incomes. Two lost wars and inflation in the 1920s wiped out the capital of the pension fund so that, in the 1950s, the transition to a pay-as-you-go scheme was inevitable. In contrast to Germany's system, the United Kingdom and the Netherlands have tax-financed pension systems of the Beveridgean type. Other countries such as the USA, Japan, Switzerland and Norway have some linkage between contributions and benefits but are far away from proportionality.

Each of the two polar cases (or 'ideal type' pension systems) can be justified by a particular fairness norm or 'principle of social justice' (Miller, 1999): The Bismarckian rule is based on the 'equity' principle – also known as meritocratic principle – according to which the benefits to each member of society should correspond to the sacrifices made by this member to sustain the pension system, which can be measured by their total contributions. In contrast, the Beveridgean rule is based on the 'equality' principle, which 'postulates that every citizen is entitled to the same type and degree of welfare provision, irrespective of the level of need or the significance of a person's welfare state contributions' (Reeskens and van Oorschot, 2013, p. 1176). Besides these abstract fairness concepts, additional normative principles can be considered, in particular an efficiency argument: labor supply distortions are minimal in a Bismarckian system when every euro paid in contributions provides the same pension entitlement in return. In contrast, with the Beveridgean pension system, the contributions have the character of a pure tax because they do not provide any return.

It is questionable whether the arguments in favor of a strictly Bismarckian system remain normatively convincing in light of ageing populations with different life expectancies across income groups and hence, whether a more redistributive pension system might be desirable. Different life expectancies across income groups raise the question of the exact design of the proportionality principle. On the contribution side, it is the total amount of contributions (or, more precisely, earnings)[1] that defines the number of 'earnings points' that a worker is entitled to. This total amount reflects both the length of the working life and the contributions per year. On the benefit side, each earnings point translates into the same monthly benefit. This linkage would not be problematic if the length of the retirement period were purely random in the sense that life expectancy was uncorrelated with income. This is, however, not the case. It has been recognized for quite some time that life expectancy is positively correlated with income (for Germany see Breyer and Hupfeld, 2009; von Gaudecker and Scholz, 2007), and the gradient has even increased over the last decades (Haan et al., 2021).[2] Thus, in expectation terms, higher total earnings and contributions translate into more than proportionally higher total pension benefits over the life course, which violates even the meritocratic fairness norm described above. We will investigate the effect of this information on the perceived fairness of the pension system.

Another reason for a more redistributive system is that with a sharply rising old-age dependency ratio in the next two decades in

[1] The equation of earnings with contributions would be innocuous if the contribution rate did not change over time. The German pension contribution rate has fluctuated between 17.5 and 20.3 percent over the course of the last 40 years so that the fairness argument stated above is slightly flawed.

[2] Both the life expectancy gap by income and its widening over time are not a purely German phenomenon but have been documented to hold in other countries as well, notably the United States, Canada, France and Sweden (Bozio et al., 2024).

many European countries, the ratio between the average retirement benefit and the average earnings (i.e. the average replacement rate) will have to decline. Yet, a decreasing trend in the average replacement rate may push the benefit level of the low-earning workers near or even below the poverty line, at which they are entitled to claim social assistance. This trend is seen by many politicians and experts as undesirable, both because having to rely on social welfare after a long working life is considered as stigmatizing and because pension contributions are seen as a pure tax as soon as their amount does not determine the worker's retirement income. Thus, the efficiency argument in favor of the Bismarckian system is no longer valid.

While proposals to reform the pension benefit formula away from the strict proportionality rule to a somewhat 'flatter' relationship between contributions and benefits have been made (see e.g. Wissenschaftlicher Beirat beim BMWi, 2021), it is a largely unanswered question whether such reforms would be popular with citizens and their elected representatives as empirical research on the perceived fairness of the pension system and the desired level of redistribution within the system, in Germany and elsewhere, is scarce. Furthermore, we do not know how far people's attitudes change when they are confronted with information about the redistributive implications of the pension system, given the socio-demographic reality. Understanding the role of information in shaping policy preferences concerning alternative public pension schemes is of particular interest, as the redistributive implications of such a system are oftentimes less salient and not widely discussed.

Pension systems, preferences, fairness and the provision of information

Given this background, our study explores what people, i.e. citizens and politicians, perceive as a fair allocation of benefits in the public pension system in three ways. First, we establish what preferences for redistribution in the pension system are. Second, we investigate how these preferences for redistribution through the public pension system can be altered by policy-relevant information on the diverging life expectancies between high and low earners.[3] Third, we bring in the perspective of elected politicians, who are closer to policy-making and arguably have more information on the nature and the effects of the system.

To the best of our knowledge, asking people for the exact shape of a 'just' distribution of retirement benefits is a novel undertaking. The closest precursor to our approach is work by Reeskens and van Oorschot (2013), who use a question from the 2008 wave of the European Social Survey (ESS), in which participants were asked whether higher earners should get larger or smaller old-age pensions than lower earners. These purely qualitative answers are translated by the authors into preferences for 'equity' (when the answer was 'larger'), 'equality' (when it was 'the same') and 'need' (when it was 'smaller'). Their key findings are that higher income and education were correlated with a stronger preference for equity, whereas women and people with leftist political positions had the opposite preference. Importantly for us, the existing pension system of the country of residence seems to play a role as people living in countries with earnings-related pensions accept the 'equity' principle to a higher degree than others. Other authors (Jaime-Castillo, 2013; Lynch and Myrskylä, 2009; van Groezen et al., 2009) also recognized the importance of these system-level effects, often labeled as feedback effects, over individual-level attributes.

Yet, systemic features of the pension system change over time. Krieger and Traub (2008, 2011) examine the actual development of pension systems in 20 OECD countries and ask whether the 'Bismarckian factor' has changed systematically in the time period 1980 to 2004. According to the authors (2011, p.275), 'the Bismarckian factor can be interpreted as a descriptive measure of (re)distribution in the sense of revealed preferences on social policy.' They find that both the average Bismarckian factor and the average replacement rate have increased in the time period until 2000 and that this trend was caused by the corporatist welfare states, such as Germany, Italy and France. A possible conclusion from their study is that in times of low demographic pressure, the public seems to prefer raising pension generosity and lowering intragenerational redistribution. Conversely, the impending increase of the old-age dependency ratio might lead to a public demand for lowering pensions but compensating for this reduction by increasing the redistribution of pension claims in favor of low earners.

The variation and change in redistributive features of a pension system, as well as the impact of an existing pension system on individual perceptions of fairness and redistributive preferences, raises the question of how much people actually know about the prevailing system and what kind of evaluation comes with it. A common expectation in democratic politics is that both citizens and politicians are well-informed. Indeed, Carpini and Keeter (1996, p.8) called information 'the currency' of politics that serves as the basis for deliberation. Yet, good reasons for skepticism exist in the wider debate on political knowledge, which is typically described as fleeting and limited (Carpini and Keeter, 1996; Zaller, 1992). A plethora of mechanisms for why people might be uninformed, misinformed, disinterested, or simply unaware tap into distinct behavioral and cognitive predilections. For us, the important implication of this research is that to understand how fair citizens find the existing Bismarckian, i.e. proportional, pension system and whether they desire more redistribution within the system, we first need to ensure that citizens know about the basic allocation mechanism of the proportional pension system. Moreover, we aim to understand existing beliefs about the pension system. To what extent do citizens know that the German system is strictly proportional and does not redistribute systematically between income groups?

Our second line of argument investigates the effect of providing policy-relevant information on preferences for redistribution through the public pension system. While there is a growing interest in understanding the impact of information provision on redistributive preferences in many policy areas, little is known about the effect of information on preferences in this specific policy domain, despite the relevance for all countries where the pension system needs reform. Since the early 2000s, the literature on preference formation about pensions and related social benefits has typically been framed in terms of 'austerity politics' and 'policy trade-offs' in comparative politics and public policy (Barnes and Hicks, 2018; Blyth, 2013; Breunig and Busemeyer, 2012; Hübscher et al., 2021; Jensen, 2012; Pierson, 1996). By now, canonical designs rely on conjoint surveys to ascertain how citizens navigate various policy choices in times of supposedly shrinking public resources. However, respondents are seldom asked how much they know about a particular policy tool, such as pensions, and their beliefs about the redistributive effect of such a policy.

Research in public economics focuses quite broadly on how citizens adjust their preferences and policy demands in response to new information. Previous studies in this literature focused on preferences for redistribution (e.g. Cruces et al., 2013; Kuziemko et al., 2015), the demand for government spending (e.g. Roth et al., 2021), the demand for public spending on education (e.g. Lergetporer et al., 2018), the demand for government spending on health equity policies (Jessen et al., 2024), preferences for immigration policies (e.g. Haaland and Roth, 2020) and preferences for education policies (e.g. Lergetporer et al., 2020). A common finding in this literature is that information on the unequal distribution of resources increases concerns about inequality but does not necessarily increase support for specific redistributive policies.

[3] We do not explicitly confront them with information about the effect of the declining average earnings replacement rate. However, our elicitation of the preferred level of redistribution within the system can be indicative of whether citizens will be supportive of increasing pensions to low-earners (to prevent them from having to claim social assistance).

These general expectations are mirrored by the social policy literature on the influence of policy related information for pension policy preferences as well as survey evidence about redistributive preferences in Germany. Engelhardt and Wagener (2018) show that Germans struggle to identify their position on the income distribution, lack knowledge about economic inequality, but, nevertheless, demand more redistribution. For pensions, Fernández and collaborators (Fernández et al., 2023; Radl and Fernández, 2022) employ experimental designs and find that Germans (as well as subjects in Spain and the United States) are sensitive to some information, such as generosity and replacement rates, but not others, such as population ageing. Regardless of the details in design and findings, both fields agree that the provision of information is a pre-requisite for changes in political attitudes and subsequent government reform.

Our third contribution lies in integrating politicians and their views about the pension system in the analysis. A long line of research exists on political costs, benefits, and opportunities of pension reform (e.g. Breunig and Busemeyer, 2012; Busemeyer and Garritzmann, 2017; Häusermann et al., 2019; Jensen, 2012; Pierson, 1996) that speculates on politicians' calculus and preferences in this regard. A common thread is that pensions are universally popular and that retrenchment and consolidation lead to political pushback with high electoral costs. Given these circumstances, one should expect that politicians are well-informed of the workings of their pension system and possess rarely changing preferences. In his analysis of the German pension system, Jacobs (2009) provides some evidence for this. He advances the idea that politicians rely on mental models and attention to particular types of information when developing policy preferences. His qualitative study examines how attention to specific aspects, such as contribution levels, vulnerability to economic changes, and purchasing power of retirees, slowly changed since the inception of the system in the 1880s.

Contemporary, individual-level evidence on politicians' redistributive preferences and fairness perceptions is rare. Helfer et al. (2023) is an exception. Because political stakes are higher for politicians than for citizens and because they are more frequently exposed to information about pensions, we expect that, compared to citizens, politicians are more knowledgeable about the pension system, perceive the system as fairer, and therefore are also less susceptible to the provision of information. A comparison of citizens and politicians is also important for democratic politics. While recent evidence (Walgrave et al., 2023) has shown that politicians do not possess a good grasp of what the preferences of a majority of citizens are, citizens might still be represented in public policy, if politicians assess current policy choices and react to environmental changes, such as ageing populations similarly to them. If citizens and politicians judge the pension system similarly and react to our treatments in a similar fashion, one might argue that both groups hold congruent preferences on this issue. By comparing redistributive preferences and fairness perceptions among citizens and politicians, we are able to discern the congruence of opinions between both groups. Congruence is a common yardstick for political representation.

Experimental design

The aim of the study is to elicit how fair the German pension system is perceived, what constitutes the preferred allocation of benefits and how these two outcomes are affected by the information that high earners live longer. Moreover, we want to explore citizens' actual knowledge about the German pension system. To this end, citizens and politicians were presented with a vignette describing two fictitious pensioners and their contributions. We couple this vignette scenario with a survey experiment with randomized information provision. In the three experimental groups, we vary the amount of information respondents receive about the nature of the German pension system.

Survey experiment and main outcome variables

In this section, we describe the vignette scenario, the experimental groups, and the main outcomes.[4] For the vignette scenario, we strive for the utmost simplicity of the chosen example as well as for the most plausible scenario. We follow this approach as, according to Auspurg et al. (2009), the most important threat to the external validity of vignette studies is complexity. We designed the vignette such that the two retirees are equal in all characteristics but their total previous earnings, in particular in the length of their working lives.[5] To make such a scenario plausible and simple at the same time, the vignette scenario describes two men. As the majority of women who retire nowadays had some variation in their earnings career, an example using two women would have been less plausible, and one with one man and one woman would have introduced an additional degree of complexity. Moreover, data on the correlation of earnings and life expectancy of men are more easily available than the same for women (see Appendix 6 for the logic behind the exact question wording). The vignette presented to respondents reads as follows:

In the statutory pension insurance scheme, the amount of the monthly pension depends on the pension contributions paid during employment. Consider two 65-year-old people, Mr. Großmüller and Mr. Kleinschmidt. Both have worked and paid contributions for 40 years, but Mr. Großmüller has always earned twice as much as Mr. Kleinschmidt and therefore paid twice as much in contributions.

After reading the vignette, citizens were asked about their knowledge and fairness of the German pension system, assuming that the monthly pension entitlements of the two vignette characters amount to 3000 euro.[6]

Question 1 (*Knowledge*)**.** *Assume that the monthly pension entitlements of the two gentlemen total 3000 euro. What do you think Mr. Großmüller's monthly pension entitlements are and what are Mr. Kleinschmidt's? (Slider with range: Mr. Großmüller 3.000€, Mr. Kleinschmidt 0€ to Mr. Großmüller 0€, Mr. Kleinschmidt 3.000€, 100€-steps).*

Following a survey-experimental research design (e.g. Cruces et al., 2013; Kuziemko et al., 2015; Haaland and Roth, 2020), respondents were then randomly assigned to three groups (two groups for politicians), which differed in the information provided before being asked about the perceived fairness of the German system and their preferred allocation of benefits. Respondents in the Baseline group are informed about the strict proportionality of the German pension system. Respondents in the Life expectancy group are, in addition, informed that high earners, on average, live longer. The treatment allows us to disentangle the causal effect of the information about differential life expectancy (and, more implicitly, the normative content it carries) on perceived

[4] The full citizen and elite surveys as well as the main hypotheses for the experiments are registered in the Open Science Foundation registry. The registration for the citizen survey is available on: https://osf.io/zrycw. The registration for the elite survey is available on: https://osf.io/8dyw7.

[5] We designed the vignette with the comparison of two people instead of asking for the fair pension of the low earner for the following reasons: First, describing two people with different earnings is the most intuitive and simplest way to explain the functioning of the current proportional system. Second, our theoretical considerations do not include diverting more funding into the pension system from other state resources but see the total amount of money to be distributed as fixed. Research shows that people often answer survey questions not thinking about the potential trade-off that their indicated preference involves (see e.g. Busemeyer and Garritzmann, 2017; Cavaillé et al., 2022). We thus make it explicit that a higher pension of the low earner would mean a lower pension for the high earner.

[6] We refrained from asking this question in our elite survey as we did not want to give politicians the impression that we were quizzing them about actual policies as this would potentially have lowered their engagement with the rest of the survey.

fairness and the amount of desired redistribution within the German pension system.

In the citizen survey, the remaining participants receive no information on the benefit allocation in the German pension system (Uninformed group). In the politicians' survey, due to a smaller sample size and based on the assumption that politicians know the general properties of the pension system, there exists no Uninformed group.

The exact wording of the information provided to participants reads as follows:

Baseline: *In the German pension insurance scheme, the amount of the monthly pension is precisely tied to the pension contributions paid during employment. Mr. Großmüller therefore receives twice as much pension as Mr. Kleinschmidt. The actual breakdown is therefore: 2000 euro for Mr. Großmüller, 1000 euro for Mr. Kleinschmidt.*

Life expectancy treatment: *Under the German pension insurance scheme, the amount of the monthly pension is linked precisely to the pension contributions paid during the period of employment. Mr. Großmüller therefore receives twice as much pension as Mr. Kleinschmidt. The actual breakdown is therefore: 2000 euro for Mr. Großmüller, 1000 euro for Mr. Kleinschmidt. In Germany, people with higher incomes also have a higher life expectancy. This means that Mr. Großmüller not only receives a higher monthly pension but can also expect to draw his higher pension 4 years longer than Mr. Kleinschmidt.*

We then ask respondents about the perceived fairness of the current distribution of pension rights and about the distribution of pension rights they consider fair after the provision of information. As the pension benefit under the proportional system amounts to 1000 euro, whatever is allocated to the low earner beyond that amount constitutes a redistribution. The exact questions read as:

Question 2 (*Fairness*)**.** *Do you think the current distribution of pension rights in Germany is fair or unfair? (Answer categories: perfectly fair, rather fair, rather unfair, very unfair, don't know).*

Question 3 (*Desired Redistribution*)**.** *In your opinion, which distribution of pension rights is the fairest? (Slider with range: Mr. Großmüller 3.000€, Mr. Kleinschmidt 0€ to Mr. Großmüller 0€, Mr. Kleinschmidt 3.000€, 100€-steps[].*

For the effect of policy-relevant information, precisely captured by the difference in outcomes between the Baseline and the Life expectancy treatment, our expectations are guided by the following considerations: Differences in statistical life expectancy at retirement age between a high and a low earner represent a piece of information that most people are likely unaware of. Once people are made aware of these differences, they may incorporate them in their fairness considerations. Even for those people who agree with the Bismarckian system, it is unlikely that they would perceive the system as fairer when they learn that total benefits are not proportional to total contributions. For this piece of information, the only plausible change is therefore that people are less likely to consider the current pension system in line with a meritocratic fairness norm and demand more redistribution. In our experimental setting, we thus expect that respondents who receive information that individuals with higher income have higher statistical life expectancies (Life expectancy group) should be less likely to consider the current pension distribution as fair compared to those who receive information on the non-redistributive effect of pensions (Baseline group).

We also explore differences in fairness judgments and desired redistribution between the Baseline group and the Uninformed group. However, we do not have a clear hypothesis regarding this comparison. The information that the benefit allocation of the pension system is proportional could influence people's fairness judgments and desired redistribution in either direction, depending on their initial assumptions about the pension system and the level of redistribution they desire. Moreover, since we lack information on the allocation mechanism that people in the Uninformed group use as a reference for their judgment, this comparison remains inherently ambiguous. Given these uncertainties, it is also unclear how the Uninformed group compares to the Life expectancy group — that is, whether the effect of the proportionality information and the life expectancy information align and how they compare in effect size.

Data collection

The survey was programmed by the University of Konstanz Survey Research Center. Besides the questions on the fairness of the pension system, it included questions on the participants' views on university tuition fees, inheritance taxes and other topics related to inequality.

Citizen survey

We fielded our online survey from December 2020 to January 2021, using Infratest dimap as the sample provider.[7] The company has about 120,000 panelists, who were recruited from members of Payback, Germany's largest consumer reward program. Compared to other online access panels, the Payback Panel offers several advantages. Participation in the panel is by invitation only and there is no possibility of self-motivated registration to the panel. This minimizes the risk of panelists being professional survey takers. Moreover, the Payback Panel offers a robust image of the German household net income distribution and, as an advantage over other online access panels, does not suffer from structural problems in the coverage of gender and age.

Our sample was drawn from a population of 70,000 eligible voters with German residences who had been asked about their voting behavior in the spring of 2019. To ensure representativeness for the German population, official statistics were used by Infratest dimap to establish quotas for age, gender, region, and education.[8] A random draw was applied to these panelists while considering the cross-ratios for different demographic characteristics. Descriptive statistics of the survey participants are summarized in Table B.1 in the Appendix.

Participation in the survey was incentivized with reward points from Payback. In total, we received a comparatively high participation rate of 72.2% and collected responses from 4493 participants. Infratest dimap conducts careful checks for response quality and excludes speeders, straightliners and implausible answers.[9] Moreover, respondents with a large share of missing answers in the survey, i.e. more than 25%, are excluded. In total, 475 observations were excluded from the final data set for quality reasons.

Despite random assignment to the three experimental groups, there are some significant deviations between the groups with respect to the means of demographic characteristics: Respondents allocated to the Baseline group had slightly less tertiary education, and those in the Life expectancy group had somewhat higher mean income and were slightly more leaning to the political right, both compared to the Uninformed group. A possible explanation for these deviations is the exclusion of participants who did not answer the pension questions, which reduces the usable sample from 4493 to 3989 respondents.

[7] Before going online, a pretest was conducted with 79 responses to ensure that the survey was programmed correctly and to gain feedback about the survey's readability.

[8] See Grewenig et al. (2023) for a formal analysis of the representativeness of internet surveys based on the Payback Panel.

[9] Respondents are marked as speeders if their response time is below 50% of the median response time. Respondents are marked as straightliners if they have the same answer pattern in matrix questions. Responses are marked as implausible if the specified net household income is below 100€ or if the choice in an income distribution task exceeds 200% of the available income.

Elite survey

This study was conducted as part of a project in which politicians were extensively interviewed with the purpose of studying the determinants of their information processing and actions. We conducted online interviews with members of eight federal state legislatures[10] between February 2021 and March 2022. All politicians who were members of the respective parliament at the time of data collection were asked to participate.[11] With the invitation to participate, politicians were informed that the interview consisted of a mainly closed-ended questionnaire about how they perceive social changes and the perceptions of citizens thereof as well as subsequent open-ended questions.[12] Interviews were conducted by the core research team as well as by a team of student assistants, who received group as well as individual interview training.

Participation in the survey was not incentivized, and politicians were free to leave any question unanswered. Politicians were informed when asked to participate and reminded at the beginning of the survey that their responses would be used solely for scientific purposes and that no inferences on the individual level or on the party level would be made. While politicians completed the survey, the interviewers were available online to answer clarification questions. The study was granted IRB approval from the Ethics Commission of the University of Konstanz. Overall, we collected 535 independent observations.[13] This reflects a participation rate of 47.8 percent. Tables A.1, A.2, and A.3 in the Appendix show the response rates for each state, the anonymized response rates per party, and the characteristics of the legislators who were contacted and who participated, respectively. Descriptive statistics of the participating legislators are summarized in Table B.3.

We are aware that legislation on the pension system does not fall into the competence of the federal states. We believe the results to be informative nevertheless: while the knowledge and strength of opinion on the pension system are potentially watered down on the state level, discussions about reforms on the national level are likely to receive enough attention across party levels to situate politicians on the state level in a distinctive information and opinion environment compared to the average citizen.

Results

Results of the citizen survey

We will first present descriptive results on how well-acquainted citizens are with the German pension system before turning to their evaluation of fairness and redistributive preferences and how they are affected by information.

Knowledge about the pension system among citizens

Given the proportional nature of the German pension system, the benefits received by the two fictitious persons in our vignette and thus the correct answer to Question 1 is that Großmüller (henceforth: the "high earner") receives 2000 euro and Kleinschmidt (the "low earner") receives 1000 euro. The responses of the survey participants are summarized in Fig. 1. Almost a third of all respondents (31.6 percent) are able to identify the actual distribution of pensions according to the German pension regime. Overall, 69.4 percent of our sample (including the respondents who guess correctly) choose a 'realistic' allocation, which means that they give answers that apply at least to some real-world pension systems, i.e., that lie between a Bismarckian and a Beveridgean allocation. In our example, this means that they believe that the low earner receives between 1000 and 1500 euro.

The responses of the remaining respondents are less intuitive: 17.6 percent believe that the low earner receives 900 euro or less, implying redistribution from lower to higher earners, while 13.1 percent believe the low earner receives 1600 euro or more, indicating that those who contributed more receive less in return. These unintuitive responses might partly reflect a misunderstanding of the question or inattentive behavior, such as clicking through the survey without fully engaging with the task. Such patterns are common in survey research, particularly when questions involve complex hypothetical scenarios. Specifically, for the group who believe the low earner receives 1600 euro or more, closer inspection of their responses to the other two questions suggests that some, or even most, may have simply mistakenly used the slider, likely interchanging the names of the high earner (Großmüller) and the low earner (Kleinschmidt).[14]

In light of these considerations, we provide model specifications for three samples: (1) the full sample, (2) the sample with realistic allocations, likely representing participants who thought more carefully about their responses and/or have a better general understanding of the system, and (3) the sample excluding respondents who guessed that the low earner receives more than 1500 euro, as they are suspected of having made a mistake in using the slider. Crucially, the sample restrictions specified in points (2) and (3) depend solely on the respondents' initial pension guess, assessed before any information is provided or any interventions occur within the survey. Consequently, in these restricted samples, the treatment effects remain unbiased.

The effect of information on the perceived fairness of the system among citizens

We elicited the perceived fairness of the pension system on a 4-point scale from perfectly fair to very unfair. The left panel of Fig. 2 shows the results for the perceived fairness of the pension system for all three groups. In our analysis, the Baseline group serves as our main reference group. In this group, people learn about the proportional nature of the German pension system and thus rate the true allocation mechanism. They do not have any further information about less salient features of the pension system. Fig. 2 shows that in the Baseline group 49 percent of respondents find the system at least rather fair. Adding the information that the better earners live longer (Life expectancy group) decreases the share of people that judge the system as at least 'rather fair' slightly from 49 to 46 percent. Panel A in Table 1 shows the corresponding regression analysis. The coefficient for the Life Expectancy group indicates a statistically significant change compared to the Baseline group, which is robust to controls such as age, gender, and

[10] The participating eight (out of Germany's 16) federal states were Bavaria, Baden-Württemberg, Thuringia, Berlin, Schleswig-Holstein, Hesse, North Rhine-Westphalia and Saarland.

[11] The initial invitation to the interview was made via a formal email. In the email, we explained the goal of the project and the mode of the interview (online with a survey and an open question part). We indicated that the interview would take about 30 minutes in total. In the weeks after the email, we followed up several times via phone and mail until either an interview was arranged, a definite refusal was communicated, or a very low expectation of acceptance prevailed. In case of acceptance, the survey link was sent to the legislator one week before the interview. The link was protected by a passcode, which was only provided at the beginning of the interview, to ensure that the survey could only be completed by the legislator him- or herself.

[12] Similar to the citizen survey, the elite survey contained other inequality-relevant questions such as the fairness of tuition fees for university education or inheritance taxation.

[13] One data point had to be dropped as the respondent was contacted and had taken part in the survey twice. Only the first response was kept.

[14] For participants in this category who were informed about the proportional nature of the system, we observe the following: Even those who perceive the proportional system as fair, on average, allocate more to the low earner than to the high earner (a median of 1800 euro in the Baseline group and 1650 euro in the Life Expectancy group). Given their support for a proportional allocation of benefits, it seems more plausible that these participants intended to allocate the higher amount to the high earner.

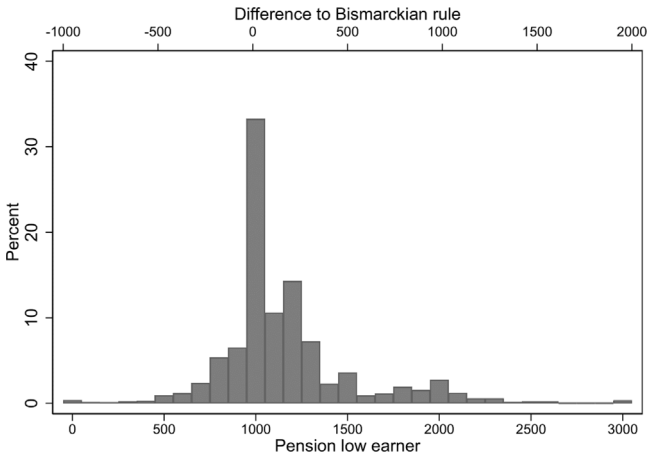

Fig. 1. Estimated allocation of pension claims (citizens).
Notes: Share of responses to the question: 'What do you think Mr. Großmüller's monthly pension entitlements are and what are Mr. Kleinschmidt's?'. Responses are based on a slider with steps of 100 euro over a range from 0 to 3000 euro for Kleinschmidt (3000 to 0 euro for Großmüller). A pension benefit of 1000 euro corresponds to the actual pension claim for the low earner (Mr. Kleinschmidt). Sample: Respondents with non-missing outcomes. Source: Own survey conducted by infratest dimap in 2020.

income in both the full sample and the subset with realistic estimates. In the sample excluding potentially inaccurate responses, the effect becomes statistically significant only after incorporating additional control variables.

Panel A in Table 1 also indicates that the perceived fairness of the system is 17 percentage points higher when participants rate the true system than if they rate what they believe the system to be. This effect is significant and robust to adding control variables for all sample specifications. The average fairness rating in the Uninformed group hides substantial variation in the perceived fairness of the system if we take into consideration the initial understanding citizens have of the system. Fig. B.1 in the Appendix shows that within the Uninformed group, the share of respondents who rate the system as at least 'rather fair' is highest (at 39 percent) among those who guessed that the low earner receives 1000 euro (the correct value). This suggests that the true pension system is viewed more positively than other imagined systems.

Our results suggest that citizens are divided regarding the fairness of a proportional pension system. Among respondents in the Uninformed group with a correct understanding of how the system allocates pension benefits and among respondents in the Baseline group, 39 and 49 percent, respectively, find the system fair.[15] In line with our hypothesis, we find that additionally informing citizens about diverging life expectancies between high and low earners makes them regard the system as slightly less fair. Thus, learning that sociodemographic facts, and not the rules of the pension system as such, prevent the proportionality of total contributions to total benefits, makes citizens judge the allocation mechanism of the benefits as less fair.

The effect of information on the extent of desired redistribution among citizens

While people's fairness perceptions provide an intuitive measure for how satisfied people are with the pension system (or with what they believe the system to be), they do not allow us to measure what their ideal allocation would look like and, thus, where the perceived deficits of the system lie. Our second main outcome variable, the allocation of benefits between the two pensioners that people find fairest, addresses this question and allows us to analyze the extent of desired redistribution in the system. The pension benefit under the proportional system amounts to 1000 euro such that whatever is allocated to the low earner beyond that amount constitutes a redistribution.

Fig. 3 shows the preferred pension allocation of the Baseline group. Around 24 percent of the citizens desire an allocation in line with the status quo, i.e., 1000 euro for the low earner. In contrast, most citizens, 72 percent, would prefer a system that redistributes to the low earner. This is true for all segments of the population; only the extent of desired redistribution varies.[16]

The right panel of Fig. 2 shows the average pension benefit allocated to the low earner in all three experimental groups. In the Baseline, the average pension benefit allocated to the low earner amounts to 1285 euro, which would decrease the difference between the two monthly pensions by more than one-half. Providing information about different life expectancies among "poor" and "rich" retirees has a negligible effect on the desired redistribution in favor of the lower earner (see also columns 1 and 2 in Table 1, Panel B). In the Uninformed group, in which citizens are not informed about the proportional nature of the current pension system, the desired redistribution is slightly higher (by 20 euro). This effect points to the "normative power of the facts" triggered in the Baseline group. Both differences do not reach statistical significance.

However, these averages in the whole sample appear to be influenced by the somewhat doubtful values found in the group that believes that the low earner receives a higher pension benefit than the high earner (see footnote 14 above). If this group is eliminated, the picture becomes much clearer (see columns 5 and 6): Within this sample, the desired redistribution in favor of the lower earner in the Baseline amounts to 233 euro. Providing information about different life expectancies among "poor" and "rich" retirees in addition to providing information about the proportional nature of the pension system increases the desired redistribution by 23 euro (28 euro with control variables included). In the Uninformed group, the pension allocated to the low earner is now 27 euro higher (30 euro with control variables included). Both differences are statistically significant and robust to adding control variables such as age, gender and income. In the sample that provided a realistic pension guess (see columns 3 and 4), the differences are even more pronounced. This could point to the fact that people with a basic understanding of the system or higher attentiveness in the survey are more likely to incorporate new information when forming their opinion on their preferred level of redistribution within the pension system.

How the fairness perception is related to the extent of desired redistribution

Finally, we want to gain insight into the relationship between the fairness perception and the extent of desired redistribution of the respondents. To this end, we calculate for each member of the Baseline group the absolute difference between the estimated and the preferred allocation for the lower earner, which is measured in Fig. 4 on the x-axis. On the y-axis, the average fairness rating for each decile of this distribution is measured. The binned scatterplot, along with the fitted line of a quadratic regression, shows a strong negative relationship: the more redistribution is desired, the lower the perceived fairness of the existing (or assumed) pension system. This association suggests that the level of redistribution in the system plays a role in how fair citizens perceive the system to be.

[15] The difference in the perceived fairness of the system across respondents in the Uninformed group with a correct understanding of how the system allocates pension benefits and respondents in the Baseline group is likely explained by observational differences between the two groups as we show in Table B.2 in Appendix. In particular, respondents in the former group are on average 4 years younger and about 6 percentage points more likely to be employed compared to the latter group.

[16] Table B.4 shows how perceived fairness and preferred pension allocations for low earners vary across respondent characteristics in our sample.

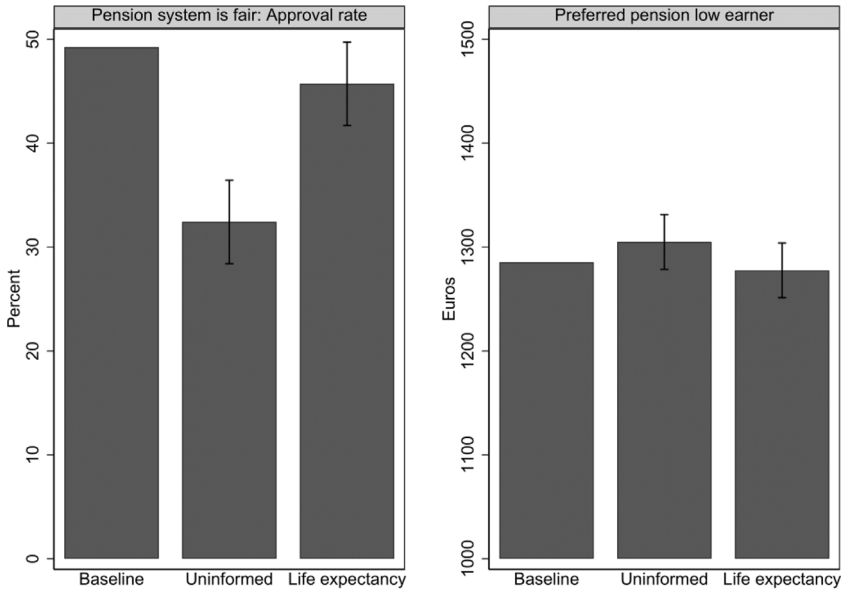

Fig. 2. Perceptions of fairness and preferred allocation of pension claims by experimental group (citizens).
Notes: Left panel: Share of respondents who think that the current distribution of pension claims in Germany is either 'perfectly fair' or 'rather fair'. Right panel: Mean preferred allocation of pension claims for the lower earner (between 0 and 3000 euro). Randomized experimental groups: Baseline = respondents informed about Bismarckian rule; Uninformed = respondents received no information; Life expectancy = respondents informed about Bismarckian rule and about higher life expectancy for individuals with higher income. 95% confidence bands are based on estimated standard errors in Table 1. Sample: Respondents with non-missing outcomes.
Source: Own survey conducted by infratest dimap in 2020.

Table 1
Information treatment effects (citizens).
Source: Own survey conducted by infratest dimap in 2020.

Panel A						
Outcome:	Fairness pension system (yes/no)					
Estimated allocation:	0-3000		1000-1500		≤1500	
	(1)	(2)	(3)	(4)	(5)	(6)
Uninformed	−.17***	−.18***	−.17***	−.18***	−.17***	−.18***
	(.02)	(.02)	(.03)	(.02)	(.02)	(.02)
Life expectancy	−.04*	−.05**	−.04*	−.05**	−.03	−.05**
	(.02)	(.02)	(.03)	(.02)	(.02)	(.02)
Controls		✓		✓		✓
Baseline mean	.49	.50	.54	.54	.51	.51
Observations	3,989	3,815	2,733	2,719	3,401	3,382
Panel B						
Outcome:	Preferred allocation for the low earner (0-3,000 EUR)					
Estimated allocation:	0-3000		1000-1500		≤1500	
	(1)	(2)	(3)	(4)	(5)	(6)
Uninformed	19.71	18.55	42.44***	44.42***	26.84**	29.53***
	(13.43)	(11.84)	(11.85)	(11.51)	(11.50)	(11.41)
Life expectancy	−7.56	−.67	30.82***	34.80***	22.74**	27.73***
	(12.77)	(11.38)	(11.49)	(10.80)	(11.25)	(10.76)
Controls		✓		✓		✓
Baseline mean (in EUR)	1,285.20	1,281.65	1,213.65	1,213.18	1,221.76	1,221.43
Observations	3,989	3,815	2,733	2,719	3,401	3,382

Notes: Linear model in panel B and linear probability models in panel A. Dependent variables: Panel A: binary outcome indicating that respondents consider the German pension system to be fair or very fair; Panel B: Preferred allocation of pension claims for the lower earner (between 0 and 3,000 euro). Randomized experimental groups: Uninformed = respondents received no information. Life expectancy = respondents informed about Bismarckian rule and about higher life expectancy for individuals with higher income. Baseline (omitted category) = respondents informed about Bismarckian rule. Controls include gender, age, marital status, children, education, employment status, income, household size, political orientation, urbanicity, and region dummies at the NUTS2-level, and the estimated allocation of pension claims for the lower earner (between 0 and 3,000 euro). See Table B.1 for more details on the controls. Regressions weighted by survey weights to ensure national representativeness. Sample: Respondents with non-missing outcomes. Robust standard errors are in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Results of the elite survey

We now turn to the perceived fairness and the desire for redistribution within the system among politicians. Due to sample size restrictions, we could only administer two conditions to politicians. We dropped the Uninformed group but kept the two other groups to cleanly identify the effect of the information on the diverging life expectancies. As a consequence, we do not know the initial understanding of the system that politicians possess. Keeping these caveats in mind, the analysis offers a better understanding of how politicians view the

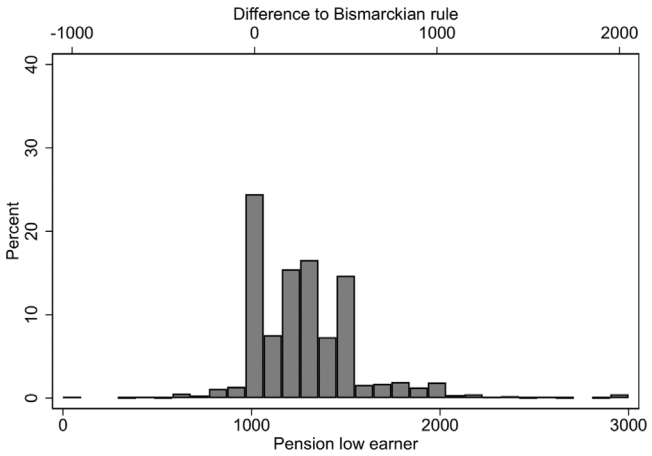

Fig. 3. Distribution of preferred allocation of pension claims (citizens).
Notes: Share of responses in the Baseline group to the question: 'In your opinion, which distribution of pension rights is the fairest?'. Responses are based on a slider with steps of 100 euro over a range from 0 to 3000 euro for the low earner (3000 to 0 euro for the high earner). Sample: Respondents with non-missing values. Own survey conducted by infratest dimap in 2020.

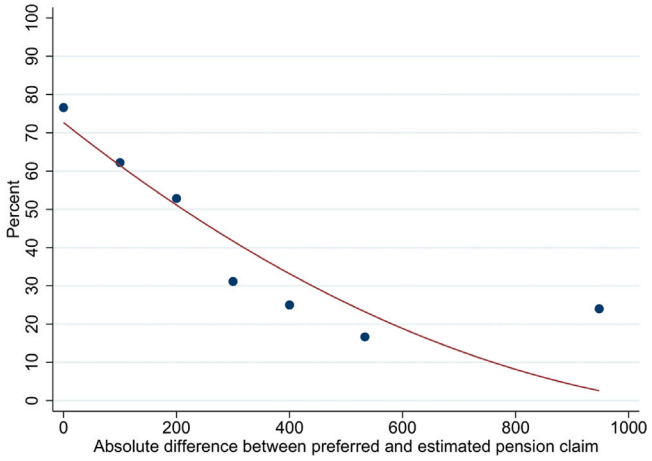

Fig. 4. Perceived fairness by gap b/w preferred and estimated allocation (citizens).
Notes: Binned scatter plot of the share of respondents in the Baseline group who think that the current distribution of pension rights in Germany is either "very fair" or "rather fair" by the absolute difference between preferred and estimated value of the pension claims for the low earner. Equal-sized bins correspond to deciles of this difference. The fitted line is based on a quadratic fit. Sample: Respondents with non-missing outcomes in the Baseline group. Own survey conducted by infratest dimap in 2020.

German pension system and how they are affected by policy-relevant information. In addition, as the Baseline and the Life expectancy groups are defined equally in both surveys, the results of the citizen and the elite surveys can be easily compared.

The effect of information on the perceived fairness of the system among politicians

Fig. 5 shows the responses of politicians in both experimental groups. The left panel shows the fairness perceptions. On average, politicians seem to have a somewhat more positive view of the German pension system than citizens: A majority of politicians in the Baseline group who answered the question, namely 54 percent, finds the system at least 'rather fair', in comparison to 49 percent for the citizens. Likewise, the share of respondents who judge the system as 'very fair' with eight percent is rather low.

Informing politicians about inequalities in life expectancy between beneficiary groups decreases their perceived fairness of the system. However, this effect is not statistically significant when taking control variables and state fixed effects into account.

The effect of information on the extent of desired redistribution among politicians

Fig. 6 displays the distribution of the preferred pension allocations for politicians in the Baseline group that receives information about proportionality only. The share of respondents who desire a redistribution in favor of the lower earner lies at 67 percent. The average response to the desired division in this group is 1218 to 1782. The extent of desired redistribution is thus, on average, somewhat lower than what we observed for citizens, and in particular, a higher share (30 percent) regards the actual allocation as the fairest (see Fig. 3 for the corresponding distribution among citizens).

The right panel of Fig. 5 shows the mean values of the politicians' desired redistribution via pensions in the two experimental groups. The information on differences in life expectancy increases the desired redistribution to the lower earner on average by 38 euro when no controls are included (23 and 26 euro respectively, with controls and state fixed effects included). While not significant for the whole sample (see panel A of Table 2, columns 4 to 6), the effect suggests that politicians also show a desire to compensate for a shorter duration of the payment to the lower earner.

The effect of information across ideological subgroups

Next we explore the effect of information on politicians depending on their political self-assessment (as right, center, or left) to gain a better understanding of the effect of information in a politicized context. Recent observational research (Breunig and Loewen, 2022; Helfer et al., 2023) confirms that ideology exerts a strong influence on politicians' redistributive preferences and notions of fairness.[17]

The results are presented in Panels B to D of Table 2. We find that the high approval rates for the system in the Baseline group are mainly driven by politicians of the center and of the right, while only 18 percent of politicians on the left regard the system as fair. With respect to the Life expectancy treatment, we observe that it mainly affects politicians of the center, and significantly so. The fairness judgments of politicians of the left and right on the other hand remain virtually unchanged and their additional demand for redistribution is substantially lower than that of politicians of the center. However, their desired extent of redistribution in the baseline differs substantially from the one in the center group: leftist politicians prefer much greater redistribution in favor of the lower earner, which almost completely closes the gap in the benefits of the two model persons, and the shorter life expectancy of the low earner appears to affect the corresponding desired benefit negatively even if this is not significant due to the limited sample size. Rightist politicians, in contrast, want to redistribute very little (only about 120 euro) and do not change this amount in response to the life expectancy information. We interpret this finding as evidence that only politicians with more moderate ideological positions adjust their preferences when the redistributive effects of the system, stemming from differences in life expectancies, are made salient to them.

Comparing the views of citizens and politicians

As reported above, politicians and citizens differ somewhat in their perceptions of fairness and in their preferred allocation of pension claims. However, these differences may not be statistically significant or otherwise may be fully explained by observable characteristics. To assess this, Table 3 presents a multivariate regression analysis based on a pooled sample from the baseline groups in both surveys.

[17] Table B.5 in the Appendix, which is analogous to Table B.4 for citizens, shows how the responses of politicians depend upon the other measured characteristics.

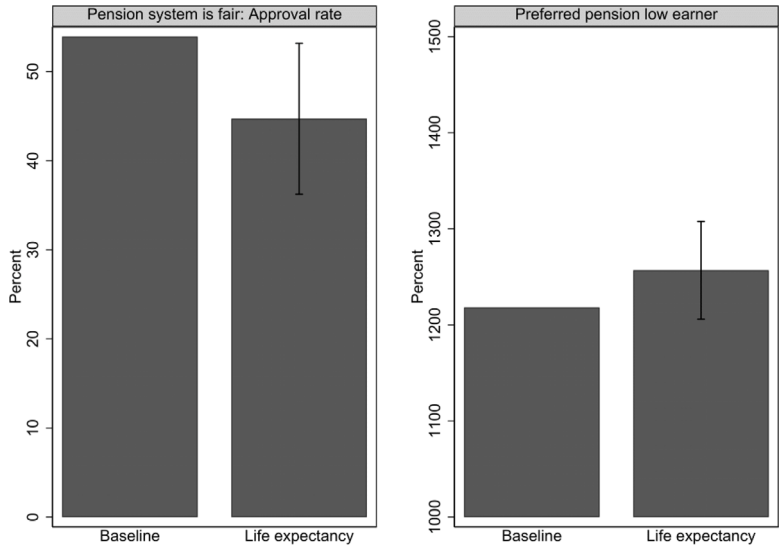

Fig. 5. Perceptions of fairness and preferred allocation of pension claims by experimental group (politicians).
Notes: Left panel: Share of respondents who think that the current distribution of pension claims in Germany is either 'perfectly fair' or 'rather fair'. Right panel: Mean preferred allocation of pension claims for the lower earner (between 0 and 3000 euro). Randomized experimental groups: Baseline = respondents informed about Bismarckian rule. Life expectancy = respondents informed about higher Bismarckian rule and about higher life expectancy for individuals with higher income. 95% confidence bands are based on estimated standard errors in Table 2. Sample: Respondents with non-missing outcomes.
Source: Own survey conducted in 2021–2022 with 535 members of state parliaments in 8 German states.

Table 2
Information treatment effects (politicians).
Source: Own survey conducted in 2021–2022 with 535 members of state parliaments in 8 German states.

Outcome:	Fairness pension system (yes/no)			Preferred allocation for the low earner (0-3,000 EUR)		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Political orientation: All					
Life expectancy	−.09**	−.06	−.06	38.63	22.64	26.16
	(.04)	(.04)	(.04)	(25.92)	(24.80)	(25.38)
Controls		✓	✓		✓	✓
State fixed effects			✓			✓
Baseline mean	.54	.54	.54	1,218.26	1,218.26	1,218.26
Observations	533	533	533	451	451	451
Panel B	Political orientation: Left					
Life expectancy	.01	−.01	−.00	−27.01	−37.37	−65.90
	(.07)	(.07)	(.07)	(53.90)	(57.36)	(47.55)
Controls		✓	✓		✓	✓
State fixed effects			✓			✓
Baseline mean	.18	.18	.18	1,388.68	1,388.68	1,388.68
Observations	133	133	133	113	113	113
Panel C	Political orientation: Center					
Life expectancy	−.14**	−.11**	−.12**	54.72*	49.58	61.33*
	(.05)	(.05)	(.05)	(31.88)	(30.42)	(31.88)
Controls		✓	✓		✓	✓
State fixed effects			✓			✓
Baseline mean	.66	.66	.66	1,177.17	1,177.17	1,177.17
Observations	318	318	318	265	265	265
Panel D	Political orientation: Right					
Life expectancy	−.00	.04	.05	6.76	13.60	13.65
	(.11)	(.11)	(.11)	(35.44)	(33.82)	(37.34)
Controls		✓	✓		✓	✓
State fixed effects			✓			✓
Baseline mean	.63	.63	.63	1,120.51	1,120.51	1,120.51
Observations	81	81	81	72	72	72

Notes: Linear regression models. Dependent variables: Columns (1) to (3): Binary outcome indicating that respondents consider the German pension system to be fair or very fair; Columns (4) to (6): Preferred allocation of pension claims for the lower earner (between 0 and 3,000 euro). Randomized experimental group: Life expectancy = respondents informed about Bismarckian rule and about higher life expectancy for individuals with higher income. Baseline (omitted category) = respondents informed about Bismarckian rule. Controls include gender, age, education, and experience as MPs in years. State fixed effects are included in columns (3) and (6). Sample: Respondents with non-missing outcomes. Robust standard errors in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

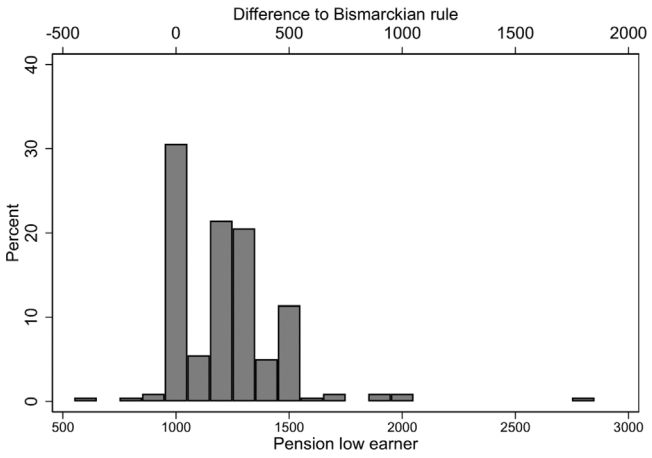

Fig. 6. Distribution of preferred allocations of pension claims (politicians).
Notes: Share of respondents in the Baseline group to the question: 'In your opinion, which distribution of pension rights is the fairest?'. Responses are based on a slider with steps of 100 euro over a range from 0 to 3000 euro for the low earner (3000 to 0 euro for the high earner). Sample: Respondents with non-missing outcomes.
Source: Own survey conducted in 2021–2022 with 535 members of state parliaments in 8 German states.

Table 3
Perceptions of fairness and redistributive preferences: Difference between citizens and politicians.

Outcome:	Fairness pension system (yes/no)		Preferred allocation for the low earner (0–3,000 EUR)	
	(1)	(2)	(3)	(4)
Citizen	−.05	.04	66.93***	16.87
	(.03)	(.04)	(18.58)	(20.99)
Female		.05*		−6.87
		(.03)		(17.54)
Age		.00		−.38
		(.00)		(.64)
Tertiary degree		.15***		−61.25***
		(.03)		(18.33)
Pol. orient.: left		.03		−43.42
		(.06)		(41.16)
Pol. orient.: center		.18***		−75.89**
		(.05)		(36.30)
Pol. orient.: right		.31***		−158.16***
		(.06)		(43.03)
Baseline mean	.54	.54	1,218.26	1,218.26
Observations	1,611	1,611	1,561	1,561

Notes: Linear model in columns 3 and 4 and linear probability models in columns 1 and 2. Sample: Participants informed about the Bismarckian rule (baseline) with non-missing outcomes. Dependent variables: Columns 1 and 2: Binary outcome indicating that respondents consider the German pension system to be fair or very fair; Columns 3 and 4: Preferred allocation of pension claims of 3,000 euro for lower earner minus 1,000 euro. Pooled sample of citizens and politicians. Control variables include gender, age, tertiary education degree, and political orientation. Omitted category: Political orientation missing. Own citizen survey conducted by infratest dimap in 2020 and own survey conducted in 2021–2022 with 535 members of state parliaments in 8 German states.

Column 1 shows that the difference in perceived fairness is not statistically significant. Column 3, however, indicates that the difference in the preferred allocation of pension claims between politicians and citizens is statistically significant among respondents in the baseline group. As shown in Column 4, this difference is largely explained by variations in key characteristics that are consistently measured across both surveys, in particular the share of academics. The difference in desired redistribution is thus likely not due to some fundamentally different view of politicians on what constitutes fair pension benefits. The division of pension benefits among politicians still clearly shows that also politicians, a non-representative group of people in terms of sociodemographic characteristics, reject the Bismarckian system and desire more equal pension outcomes.

Conclusion

Demographic change puts pension systems in Germany and elsewhere under high pressure, and potential reforms are vibrantly discussed (Ebbinghaus, 2021). Indeed, citizens believe that reforming the pension constitutes a high priority (Bremer and Bürgisser, 2022). For Bismarckian systems, one key question is whether the dogma of strict proportionality can and should be maintained. Put differently, how redistributive do citizens want the pension system to be? This study provides the first comprehensive description of citizens' and politicians' evaluation of the Bismarckian pension system in Germany in terms of the perceived fairness of the system and the extent of the desired redistribution within the system. To better understand what drives these evaluations and whether they can be changed by providing policy-relevant information, we confront people with information on the proportionality of the system and the redistributive effects of the system, given substantively different life expectancies between high and low earners.

The study reveals a number of striking results: First, knowledge of the proportional character of the German public pension system in the population is rather limited: only about 30 percent of the population are aware of this fact, and an equal share ascribe properties to it that are not shared by any pension system in the developed world. Simply put, many Germans believe that the pension system already redistributes from high to low earners, when it actually does not. This finding is worrying in light of the existing reform pressures and research that shows that less informed individuals are generally less in favor of reforms of the pension system (Boeri and Tabellini, 2012).

Second, we find that across both the citizen and the politician survey, about half of the respondents think that the German pension system is (at least rather) fair. Differences in the evaluation of the system exist among politicians depending on where they place themselves on the political spectrum. A majority of those on the left actually perceive the system as unfair. When asked for a fair division of pension claims, these politicians demand a massive redistribution from those with higher previous earnings and contributions to the lower earners. On average, elected representatives share the view that monthly pension benefits should not be proportional to lifetime contributions, although their desired extent of redistribution from high to low earners is, on average, somewhat smaller than that of ordinary citizens.

The information that lower earners have a shorter life expectancy decreases the perceived fairness among citizens and leads to more demand for redistribution in favor of the low-wage earner. Among legislators, only those who self-assess as being in the center of the political spectrum react to learning about longevity. They do so in the same way as citizens by judging the system as less fair and increasing their demand for redistribution. Tying lifetime contributions to monthly benefits thus might not be the type of proportionality that people deem fair.

Our findings highlight that providing information can change preferences on redistributive policies, even though these seem to be hard to change (Alesina et al., 2018; Kuziemko et al., 2015; Trump, 2018). One reason why, in our case, both fairness perceptions and the desire for redistribution change might be that our treatments provide a rationale or narrative along with the information and might thus be more persuasive (see e.g. Culpepper et al., 2024).

Due to, inter alia, survey time restrictions, our survey cannot discern different understandings of the question based on which participants answered the questions. With respect to the finding on the extent of the desired redistribution, one might ask whether the respondents took the role of income taxation into account, which by itself reduces the

Table A.1
Timeline and response rate of legislator survey.

	BW	BY	BE	TH	SH	H	SL	NRW
Interview timeline	01\21 - 06\21	03\21 - 08\21	06\21 - 11\21	06\21 - 11\21	08\21 - 12\21	10\21 - 03\22	12\21 - 03\22	11\21 - 02\22
MPs contacted	203	205	160	90	73	138	51	199
Response rate	64%	45%	33%	63%	53%	42%	35%	45%

Table A.2
Response rate per party (anonymized).

Party	Party 1	Party 2	Party 3	Party 4	Party 5	Party 6
Response rate	35%	56%	56%	44%	55%	68%

Notes: The table shows the response rate per party across states. Not shown are independent parliamentarians and members of small parties that only exist in the specific state.

gap in net income between the two retirees since the low earner's benefit of 1000 euro is only slightly above the tax exemption whereas the high earner has to pay a significant amount of taxes. One could, therefore, argue that the German tax system already meets the demand for redistribution, at least partly, and therefore, the gap in before-tax retirement benefits would not have to shrink as much as implied in the average response to our questions. In any case, interpretations should not be systematically different between the experimental groups such that the observed treatment effects still hold.

Overall, our study provides evidence for a clear refutation of the prevailing political dogma in Germany that monthly retirement benefits in the public system must be strictly proportional to total contributions paid over a person's working life ('Teilhabeäquivalenz') and that this 'actuarially fair' system is also fair in the ethical sense of the word. A large share of citizens, as well as their elected representatives, desire a system that is more redistributive in nature than the current system. Reforms of the pension system that are necessary due to demographic change should be informed by these expressions of public opinion.

Our comparison between politicians and citizens sheds light on the congruence of opinions between both groups and might foreshadow the political process of such a reform. In broad strokes, both groups assess the fairness of the Bismarckian system similarly. They also agree on a more redistributive role of the pension system and indicate a willingness to compensate lower earners with a shorter period of benefits. Despite these agreements, the underlying ideological differences that we also document will affect how public opinion is translated into pension reforms.

CRediT authorship contribution statement

Friedrich Breyer: Writing – review & editing, Writing – original draft, Methodology, Conceptualization. **Christian Breunig:** Writing – review & editing, Writing – original draft, Investigation. **Mark Kapteina:** Project administration, Investigation. **Guido Schwerdt:** Writing – review & editing, Writing – original draft, Formal analysis. **Maj-Britt Sterba:** Writing – review & editing, Writing – original draft, Project administration, Investigation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A.

See Tables A.1–A.3.

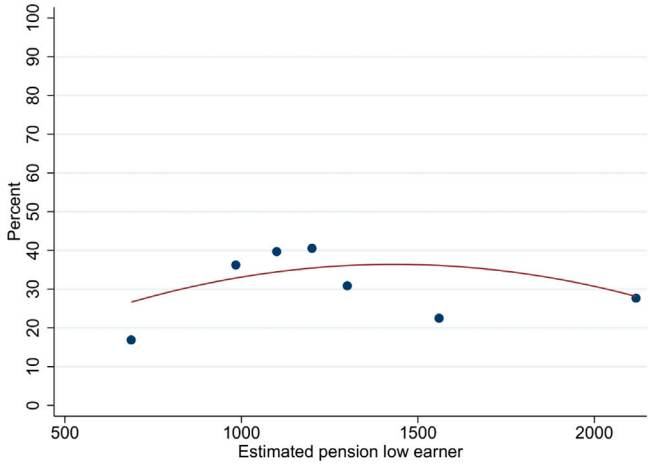

Fig. B.1. Perceived fairness by estimated allocation of pension claims (citizens).
Notes: Binned scatter plot of the share of respondents in the Uninformed group who think that the current distribution of pension rights in Germany is either "very fair" or "rather fair" by the predicted allocation of pension claims for the lower earner. Equal-sized bins correspond to deciles of predicted allocation of pension claims. Fitted line is based on a quadratic fit. Sample: Respondents with non-missing outcomes in the Uninformed group. Own survey conducted by infratest dimap in 2020.

Appendix B.

See Fig. B.1 and Tables B.1–B.5.

Appendix C.

Our question wording strived for a realistic comparison. As in the year 2020 in the German public pension system GRV one earnings point translated into approximately 33 euro of retirement benefits per month, the chosen example of 1000 vs. 2000 euro of monthly benefits for the two retirees implies that with a 40-year working life Mr. Kleinschmidt accumulated .75 earnings points per year and thus earned on average 25 percent less than the average worker, whereas Mr. Großmüller got 1.5 points per year and earned 50 percent more than the average. Thus they represent two typical earnings careers, for which the life expectancy gap of 4 years claimed in the example comes close to the value found in recent data: according to the GSOEP, a wage earner with 75 percent of average earnings is at the 37th percentile and one with 150 percent is at the 83rd percentile of the relevant distribution, and Fig. 2 in Haan et al. (2021) shows that remaining life expectancies in the respective deciles of the wage distribution are approximately equal to 17.5 and 21.1 years. The chosen values of 1000 and 2000 euro, respectively, also avoid the interference with the German social assistance scheme because both values are well above the welfare benefit for singles.

Table A.3
Legislator characteristics.

	Participated		Contacted	
Socio Demo.				
Female	174	(33%)	346	(31%)
Age < Median	273	(51%)	584	(52%)
Tertiary	451	(84%)	955	(85%)
Experience				
Newcomer	293	(55%)	545	(49%)
Total N	535		1119	

Notes: The table shows sample characteristics in comparison to the contacted population. Female equals 1 if the MP is a woman, and 0 otherwise. Age < Median equals 1 if the MP is younger than 54 and 0 otherwise. Tertiary equals 1 if the MP holds tertiary education, and 0 otherwise. Newcomer equals 1 if the MP is part of parliament for the first time, and 0 otherwise.

Table B.1
Descriptive statistics by treatment status (citizens).

Variable	Baseline group		Life expectancy group		Uninformed group	
	Mean	[SD]	Difference	(SE)	Difference	(SE)
	(1)	(2)	(3)	(4)	(5)	(6)
Controls						
Female	0.49	[0.50]	0.01	(0.02)	−0.02*	(0.02)
Age	51.24	[16.78]	0.19	(0.53)	−0.57	(0.53)
Born in Germany	0.97	[0.17]	−0.00	(0.01)	0.00	(0.01)
Married	0.51	[0.50]	0.04**	(0.02)	0.02	(0.02)
Children	0.64	[0.48]	−0.01	(0.02)	0.01	(0.02)
Household size	2.30	[1.12]	0.01	(0.03)	0.04	(0.03)
Educational attainment						
Other or missing	0.07	[0.26]	−0.00	(0.01)	−0.00	(0.01)
Upper or post-secondary	0.64	[0.48]	−0.06**	(0.02)	−0.07	(0.02)
Tertiary	0.29	[0.45]	0.06**	(0.02)	0.07	(0.02)
Employed	0.61	[0.49]	0.01	(0.02)	−0.00	(0.02)
Household gross monthly income	3,141.11	[2,385.10]	371.49***	(111.98)	85.25	(112.05)
Income missing	0.07	[0.26]	0.04***	(0.01)	0.01	(0.01)
Political orientation						
Left–right scale [0-10]	4.74	[1.78]	0.05*	(0.06)	−0.03*	(0.06)
Left–right missing	0.09	[0.28]	−0.02	(0.01)	−0.01	(0.01)
Left	0.11	[0.31]	−0.00	(0.01)	0.01	(0.01)
Center	0.69	[0.46]	0.01	(0.02)	−0.02	(0.02)
Right	0.12	[0.32]	0.02	(0.01)	0.02	(0.01)
Urbanicity						
Rural area	0.33	[0.47]	−0.01	(0.02)	−0.02	(0.02)
Town or small city	0.36	[0.48]	−0.02	(0.02)	0.01	(0.02)
Urban fringe	0.13	[0.34]	0.02	(0.01)	−0.01	(0.01)
Big city	0.13	[0.34]	0.02	(0.01)	−0.01	(0.01)
Survey duration (in min)	21.78	[14.72]	0.27	(0.50)	0.11	(0.50)
Prior beliefs						
Estimated pension low earner	1,158.27	[384.93]	5.52	(12.66)	9.17	(12.63)
Estimate missing	0.04	[0.20]	−0.00	(0.01)	−0.01	(0.01)
Observations (Total=3,989)	1,342		1,322		1,325	

Notes: Means and standard deviations in the Baseline group (columns 1 and 2). Difference in means (columns 3 and 5) and corresponding *p*-value (in parentheses) for a test of equality of means (columns 4 and 6) for the Life expectancy and Uninformed groups. Significance levels: * p<0.10, ** p<0.05, *** p<0.01. Sample: Respondents with non-missing outcomes. Own survey conducted by infratest dimap in 2020.

Table B.2
Descriptive statistics for baseline group and uninformed citizens, who know the correct allocation.

Variable	Baseline group		Uninformed, but correct guess	
	Mean	[SD]	Difference	(SE)
	(1)	(2)	(3)	(4)
Controls				
Female	0.49	[0.50]	0.01	(0.03)
Age	51.24	[16.78]	−4.13***	(0.81)
Born in Germany	0.97	[0.17]	−0.01	(0.01)
Married	0.51	[0.50]	−0.04**	(0.03)
Children	0.64	[0.48]	−0.03	(0.02)
Household size	2.30	[1.12]	0.09*	(0.05)
Educational attainment				
Other or missing	0.07	[0.26]	−0.02	(0.01)
Upper or post-secondary	0.64	[0.48]	−0.07	(0.03)
Tertiary	0.29	[0.45]	0.09	(0.02)
Employed	0.61	[0.49]	0.06***	(0.03)
Household gross monthly income	3141.11	[2385.10]	40.93	(171.06)
Income missing	0.07	[0.26]	0.00	(0.01)
Political orientation				
Left–right scale [0-10]	4.74	[1.78]	−0.02	(0.10)
Left–right missing	0.09	[0.28]	0.01*	(0.01)
Left	0.11	[0.31]	−0.01	(0.02)
Center	0.69	[0.46]	−0.02	(0.02)
Right	0.12	[0.32]	0.01	(0.02)
Urbanicity				
Rural area	0.33	[0.47]	−0.04	(0.02)
Town or small city	0.36	[0.48]	0.02	(0.02)
Urban fringe	0.13	[0.34]	−0.00	(0.02)
Big city	0.13	[0.34]	0.01	(0.02)
Survey duration (in min)	21.78	[14.72]	−0.81	(0.76)
Prior beliefs				
Estimated pension low earner	1158.27	[384.93]	−158.27***	(18.76)
Estimate missing	0.04	[0.20]	−0.04***	(0.01)
Observations	1,342		425	

Notes: Means and standard deviations in the uninformed group (columns 1 and 2). Difference in means (column 3) and corresponding *p*-value (in parentheses) for a test of equality of means (column 4) for uninformed citizens, who know the correct allocation. Significance levels: * p<0.10, ** p<0.05, *** p<0.01. Sample: Respondents with non-missing outcomes. Own survey conducted by infratest dimap in 2020.

Table B.3
Descriptive statistics by treatment status (politicians).

Experimental group	Baseline group		Life expectancy group	
	Mean	[SD]	Difference	(*p*-value)
Variable	(1)	(2)	(3)	(4)
Controls				
Female	0.33	[0.47]	−0.00	(0.92)
Age	52.35	[11.08]	−0.44	(0.66)
Years in parliament	7.03	[6.35]	−0.12	(0.83)
Educational attainment				
Upper or post-secondary	0.18	[0.38]	−0.02	(0.61)
Tertiary	0.82	[0.38]	0.02	(0.61)
Political orientation				
Left–right scale	11.33	[3.83]	−0.66**	(0.04)
Left	0.28	[0.45]	0.10**	(0.02)
Center	0.38	[0.49]	−0.04	(0.37)
Right	0.33	[0.47]	−0.06	(0.11)
Observations				
BW=130	58		72	
Bavaria=91	50		41	
Berlin=53	23		30	
Hesse=58	34		24	
NRW=89	50		39	
Saarland=18	6		12	
Schleswig-Holstein=39	19		20	
Thuringa=57	29		28	
Total=535	269		266	

Notes: Means and standard deviations in the Baseline group (columns 1 and 2). Difference in means (column 3) and corresponding *p*-value (in parentheses) for a test of equality of means (column 4) for the Life expectancy group. Significance levels: * p<0.10, ** p<0.05, *** p<0.01. Source: Own survey conducted in 2021–2022 with 535 members of state parliaments in 8 German states.

Table B.4
Correlates of outcomes and prior knowledge in multivariate models (citizens).
Source: Own survey conducted by infratest dimap in 2020.

Outcome:	Fairness pension system (yes/no) (1)	Preferred allocation for the low earner (0-3,000 EUR) (2)	Guess correct (yes/no) (3)	Guess realistic (yes/no) (4)
Female	.09***	−20.36	.01	.07***
	(.03)	(17.21)	(.02)	(.02)
Age/10	.00	−.14	−.00***	−.00
	(.00)	(.86)	(.00)	(.00)
Upper or post-secondary education	.07	−115.00**	.05	.06*
	(.06)	(49.22)	(.03)	(.03)
Tertiary education	.19***	−142.47***	.09***	.11***
	(.06)	(50.60)	(.03)	(.04)
Married	.01	−39.72*	−.03	.01
	(.04)	(20.75)	(.02)	(.02)
Children (y/n)	.00	−29.88	−.01	−.03
	(.04)	(22.03)	(.02)	(.02)
Household size	.01	12.45	.01	−.01
	(.02)	(9.95)	(.01)	(.01)
Income (in 100 euro)	.07	−38.10	−.01	.04***
	(.11)	(37.37)	(.02)	(.02)
Income missing	−.05	−3.54	.00	.01
	(.05)	(31.74)	(.03)	(.03)
Pol. orient.: left	.09	−62.02*	.01	−.01
	(.06)	(35.93)	(.04)	(.04)
Pol. orient.: center	.17***	−51.19*	.00	−.00
	(.05)	(29.85)	(.03)	(.03)
Pol. orient.: right	.22***	−93.63**	.01	.01
	(.06)	(39.45)	(.04)	(.04)
Employed	.03	−27.59	.02	.01
	(.04)	(23.33)	(.02)	(.02)
East Germany	−.11***	48.17**	.01	−.01
	(.04)	(20.60)	(.02)	(.02)
Pension guess low (<1000 euro)	−.15***	31.19		
	(.04)	(25.26)		
Pension guess high (> 1500 euro)	−.10**	484.33***		
	(.05)	(35.03)		
Pension guess missing	−.10	104.41*		
	(.07)	(59.49)		
Interview time (in 10 min)	.00	−10.88**	.01	.02***
	(.01)	(4.68)	(.01)	(.01)
Baseline mean	.49	1,284.76	.32	.68
Observations	1,337	1,337	3,963	3,963

Notes: Linear model in column 2 and linear probability models in columns 1, 3, and 4. Participants in Baseline group with non-missing outcomes in columns 1 and 2; All participants with non-missing outcomes in columns 3 and 4. Dependent variables: Column 1: Binary outcome indicating that respondents consider the German pension system to be fair or very fair; Column 2: Preferred allocation of pension claims for the lower earner (between 0 and 3,000 euro); Column 3: Binary outcome indicating that estimated pension entitlement for the lower earner is 'correct' (estimate of 1,000 euro); Column 4: Binary outcome indicating that estimated pension entitlement for lower earner is 'realistic' (estimates between 1,000 and 1,500 euro). Omitted categories of multi-valued discrete variables: Other or missing education, political orientation missing, estimated pension entitlement is 'realistic'. Regressions weighted by survey weights to ensure national representativeness. Robust standard errors in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

Table B.5
Correlates of outcomes in multivariate models (politicians).
Source: Own survey conducted in 2021–2022 with 535 members of state parliaments in 8 German states.

Outcome:	Fairness pension system (yes/no)		Preferred pension low earner (in EUR)	
	(1)	(2)	(3)	(4)
Female	−.21***	−.19**	22.51	18.76
	(.07)	(.07)	(34.85)	(37.33)
Age	−.00	−.01*	.87	1.29
	(.00)	(.00)	(1.70)	(1.87)
Years in parliament	.00	.00	−.89	−1.71
	(.01)	(.01)	(2.70)	(3.54)
Tertiary education	.17*	.12	−40.48	−16.64
	(.09)	(.09)	(34.30)	(40.91)
Pol. orient.: left	−.18**	−.21**	132.87***	126.48***
	(.08)	(.09)	(46.93)	(43.08)
Pol. orient.: right	.26***	.25***	−108.71***	−121.89***
	(.07)	(.07)	(29.38)	(32.60)
Bavaria		−.04		−29.48
		(.10)		(47.19)
Berlin		−.08		28.81
		(.15)		(73.76)
Hessia		−.16		20.69
		(.10)		(46.88)
NRW		−.02		43.62
		(.10)		(46.91)
SL		.12		94.29
		(.23)		(278.45)
SH		−.13		−106.41*
		(.14)		(55.34)
Thuringa		−.23*		31.62
		(.13)		(58.30)
Baseline mean	.55	.55	1,218.26	1,218.26
Observations	219	219	219	219

Notes: Linear model in columns 3 and 4 and linear probability models in columns 1 and 2. Sample: Participants in the Baseline group with non-missing outcomes. Dependent variables: Columns 1 and 2: Binary outcome indicating that respondents consider the German pension system to be fair or very fair; Columns 3 and 4: Preferred allocation of pension claims for the lower earner (between 0 and 3,000 euro). Omitted categories of multi-valued discrete variables: Upper or post-secondary education, political orientation center, Baden-Wuerttemberg. Robust standard errors in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01.

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