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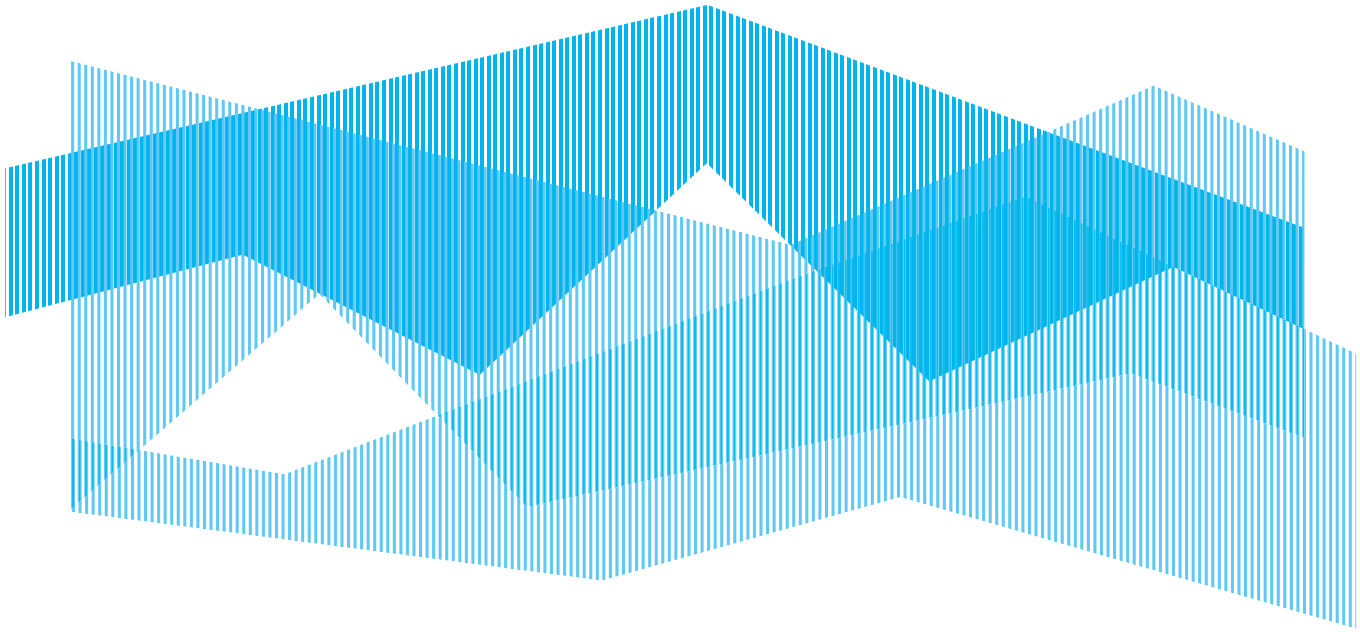

Between Beveridge and Bismarck: Preferences for Redistribution through Public Pensions

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Between Beveridge and Bismarck: Preferences for Redistribution through Public Pensions [*]

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Abstract

Citizens and politicians rely on their knowledge of a pension system, particularly its redistributive features, when forming their preferences and evaluating its fairness. Taking advantage of the Bismarckian rule of proportionality in Germany, we provide experimental and survey-based evidence indicating that voters and politicians adjust their preferences and perceptions of fairness when new information becomes available. Information on the proportional character of the pension system increases perceived fairness and decreases redistributive demands, whereas information about inequalities in life expectancy between beneficiary groups lowers perceived fairness and increases the demand for redistribution. Both citizens and politicians reject the Bismarckian principle of strict proportionality between lifetime contributions and pension benefits in favor of more redistribution from high to low earners in the retirement phase. Our design utilizes a representative survey of citizens and state politicians in 2020-22.

Keywords: public pensions, preferences, redistribution, Germany, elites

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1 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 '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 their elderly citizens. Discussions of fairness surface particularly in times when pension reforms and their distributional consequences enter the political agenda. Yet, little is known about whether citizens, or elected representatives, regard their country's pension system, and the level of redistribution it implements, as fair. And, on what basis do they make their judgement. If citizens and politicians lack relevant knowledge about the redistributive implications of the pension system, their fairness perception and preferences for redistribution may be biased.

In this study, we provide the first survey-based evidence on how citizens and parliamentarians perceive the redistributive effects of a pension system and how they judge its fairness. In addition to these observational insights, we assess how the provision of factual information affects preferences for redistribution through public pensions among voters and parliamentarians. In particular, we study whether citizens as well as elected politicians 1) perceive the 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 redistributive effects of the pension system 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.

The combined survey contains a representative sample of the adult population in Germany and a sample of elected politicians and implemented two randomized experiments. The citizen and the politician surveys include 3,989 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. Respondents in the citizen survey received either no information (Control), simple information about the strict proportionality of the German pension system (Proportionality) or, in addition, also information on the longevity gap between recipients of high versus low benefits and the effects on total pensions received (Proportionality + Life Expectancy). Respondents in the politician survey received either the simple proportionality information (Proportionality) or the combined information (Proportionality + Life Expectancy).

In the survey experiment, the first treatment provides potentially well-known information about the pension system with salient and direct distributional consequences, while the second treatment additionally provides information about less salient effects on the distribution of total pension payments. We expect that both information treatments affect the perceived fairness and desired redistribution of pension payments in the German pension system. Specifically, respondents who receive 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 other groups.

The paper provides rich evidence on the (mis-)perceptions of the existing pension system, the effect of information provision, and preferences for redistribution through the pension system. We find that less than half of the respondents in the citizen survey think that the German pension system is (at least rather) fair, while a majority of politicians finds the system 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 that 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 first evidence of significant effects of information provision on preferences for redistribution through public pensions. We show that these preferences are malleable by the provision of basic information on

how the system actually redistributes and on its 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, on average 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. Our results show that such a reform could in fact find broad support among citizens and politicians.

2 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 extreme (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 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 amount 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, however, 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 instead 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; Gaudecker and Scholz 2007), and the gradient has even increased over the last decades (Haan et al. 2021). 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 many European countries, the ratio between the average retirement benefit and the average earnings (i.e. the average earnings 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. 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

1. The equation of earnings with contributions would be innocuous if the contribution rate did not change over time. In fact, 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.

know in how far people's attitudes change when they are confronted with information about the proportional nature of the pension system and its redistributive implication given the sociodemographic reality. Understanding the role of information in shaping policy preferences with respect to alternative public pension schemes is of particular interest, as the redistributive implications of a public pension system are oftentimes less salient and not widely discussed.

3 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; that is, the preferences that people have when relying only on their own previous knowledge. Second, we investigate how these preferences for redistribution through the public pension system can be altered by policy-relevant information, in particular on the proportional nature of the system and on the diverging life expectancies between high and low earners.[2] 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 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; Groezen et al. 2009) also recognized the importance of these system level effect, often labelled as feedback effect, 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

2. 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 for whether citizens will be supportive of increasing pensions to low-earners (to prevent them from having to claim social assistance).

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 about 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 skeptics exist in the wider debate on political knowledge, which is typical described as fleeting and limited (Carpini and Keeter 1996; Zaller 1992). A plethora of mechanisms for why people might be uniformed, misinformed, disinterested, or simply unaware tap into distinct behavioral and cognitive predilections. For us, the important implication of this research is that we first need to ask citizens about their existing beliefs of a pension system. To what extent do they know that the German system is strictly proportional and does not redistribute? The conclusions to be drawn from citizens' fairness perceptions arguably depends on whether they rate a system that comes close to or instead bears little resemblance to reality.

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, seldom respondents are 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 demand 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 polices (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.

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 aging. Regardless of the details in design and findings, both fields agree that 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 threat is that pensions are universally popular and that retrenchment and consolidation leads to political pushback with high electoral costs. Given these circumstances, one should expect that politicians are well-informed of the working 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 modes 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, purchasing power of retirees, slowly changed since the inception of the system in the 1880s. Contemporary, individual-level evidence on politicians' preferences regarding 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 pen-

sion system, perceive the system as fairer, and therefore are also less susceptible to the provision of information.

4 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 the existing pension system is strictly proportional and that high earners live longer. 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 information treatment conditions, we vary the amount of additional information respondents receive about the nature of the German pension system.

4.1 Survey experiment and main outcome variables

In this section, we describe the vignette scenario, the information treatment conditions, and the main outcome.[3] With respect to the vignette scenario, we strived 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.[4] 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 B for the logic behind the exact question wording). The vignette presented to respondents reads as follows:

3. 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.

4. 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.

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 euros.[5]

Question 1 (Knowledge): *Assume that the monthly pension entitlements of the two gentlemen total 3000 euros. 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, which differed in the additional information provided before being asked about the perceived fairness of the German system and their preferred allocation of benefits. Respondents in Treatment 1 are informed about the strict proportionality of the German pension system. Respondents in Treatment 2 are in addition informed that high earners, on average, live longer. The control group receives no additional information. These three treatments allow us to disentangle the causal effect of the different pieces of information (and, more implicitly, the normative content they carry) on perceived fairness and the amount of desired redistribution within the German pension system. In the politicians' survey, due to a smaller sample size, only the two treatment conditions, the Proportionality and the Proportionality + Life Expectancy, are employed while the condition where participants receive no additional information is dropped. We chose the two treatments because we prioritized to cleanly identify the effect of the life-expectancy information.

The exact wording of the treatments reads as follows:

Treatment 1 (Proportionality): *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: 2,000 euros for Mr. Großmüller, 1,000 euros for Mr. Kleinschmidt.*

5. 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.

Treatment 2 (Proportionality + Life expectancy): *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: 2,000 euros for Mr. Großmüller, 1,000 euros 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. 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].

We expect that the provision of information about the proportionality of the system and differences in life expectancies affect people's preferences and fairness perceptions.

The information that the system is proportional and redistributes very little (Proportionality Group) could make people perceive the system as more but also as less fair, depending on their initial assumptions about the level of redistribution within the system, the level of redistribution they desire and their level of insight into potential problems with a Bismarckian system. For those who hold a realistic view of the current system (i.e. possess knowledge), the provision of information about proportionality will have little effect.

Differences in statistical life expectancy between a rich and a poor pensioner represent an additional piece of information that most people are likely unaware of. Once people are made aware of differences in life expectancy, they will 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 more fair 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 Expectancies Group) should be less likely to consider the current pension distribution as fair compared to those that receive information on the non-redistributive effect of pensions (Proportionality Group).

4.2 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.

4.2.1 Citizen survey

We fielded our online survey from December 2020 to January 2021, using Infratest dimap as the sample provider.[6] 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 residence who had been asked about their voting behavior in spring 2019. To ensure representativeness for the German population, official statistics were used by Infratest dimap to establish quotas for age, gender, region, and education.[7] A random draw was applied to these panelists while considering the cross-ratios for different demographic characteristic. Descriptive statistics of the survey participants are summarized in Table A1 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 4,493 participants. Infratest dimap conducts careful checks for response quality and excludes speeders, straightliners and implausible answers.[8] Moreover, respondents with a

6. 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.

7. See Grewenig et al. 2023 for a formal analysis of the representativeness of internet surveys based on the Payback Panel.

8. 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

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 treatment groups, there are some significant deviations from the control group with respect to the means of demographic characteristics: Respondents allocated to treatment 1 had slightly less tertiary education, and those in treatment 2 had somewhat higher mean income and were slightly more leaning to the political right, both compared to the control 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 4,493 to 3,989 respondents.

4.2.2 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[9] 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.[10] 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 a subsequent open-ended questions part.[11] Interviews were conducted by the core research team as well as by a team of student assistants that 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.[12]

in an income distribution task exceeds 200% of the available income.

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

10. 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, there was a definite refusal or very low expectation of acceptance. In case of acceptance, the survey link was sent to the legislator one week before the interview. The link was protected by a passcode to ensure that it can only be completed by the legislator themselves during the interview. The passcode was only provided at the beginning of the interview.

11. 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.

12. 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.

This reflects a participation rate of 47.8 percent. Descriptive statistics of the politicians are summarized in Table A2.

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 is 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.

5 Results

5.1 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.

5.1.1 Knowledge about the Pension system among Citizens

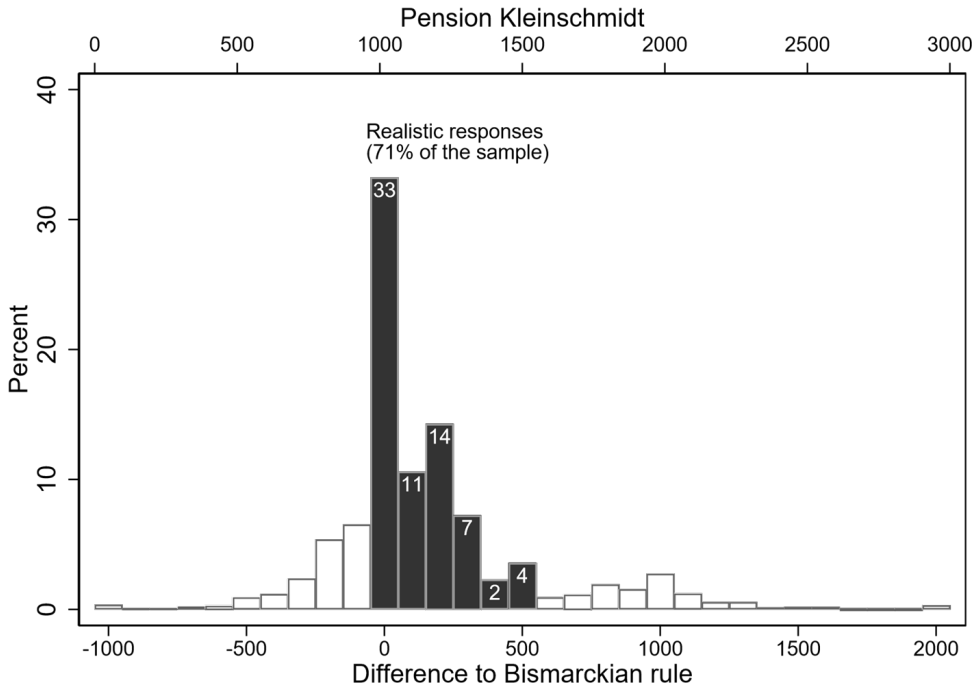
Given the proportional nature of the German pension system, the benefits received by the two fictitious persons in our vignette and thus the correct answer to Question 1 is that Großmüller receives 2,000 Euros and Kleinschmidt receives 1,000 euros. The responses of the survey participants are summarized in Figure 1. Almost a third of all respondents (31.6 percent) were able to identify the actual distribution of pensions according to the German pension regime. In the following, we label this group "guess correct". 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 Kleinschmidt receives between 1,000 and 1,500 euros (label "guess realistic").

The responses of the remaining respondents are harder to explain: 17.6 percent believed that Kleinschmidt gets 900 Euros or less (redistribution from the lower to higher earners), which we label "guess low", and 13.1 percent believe that Kleinschmidt gets 1,600 Euros or more, i.e. the one who has contributed more gets less in return. For the latter group ("guess high"), the answers they provided to the other two questions suggest that some or even most of them might have made a mistake in the use of the slider, interchanging Großmüller and Kleinschmidt.[13] In our analysis, we will thus also provide

13. For participants who fall into the "guess high" category and who were informed about the proportional character of the system we observed the following: Even those who regard the proportional system as fair on average allocate more to Kleinschmidt than to Großmüller (median of 1800 euro in Treatment

model specifications in which we exclude this group from the sample.

Figure 1: Estimated allocation of pension claims (citizens)



Notes: Share of respondents 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). Sample: Respondents with non-missing outcomes. Source: Own survey conducted by infratest dimap in 2020.

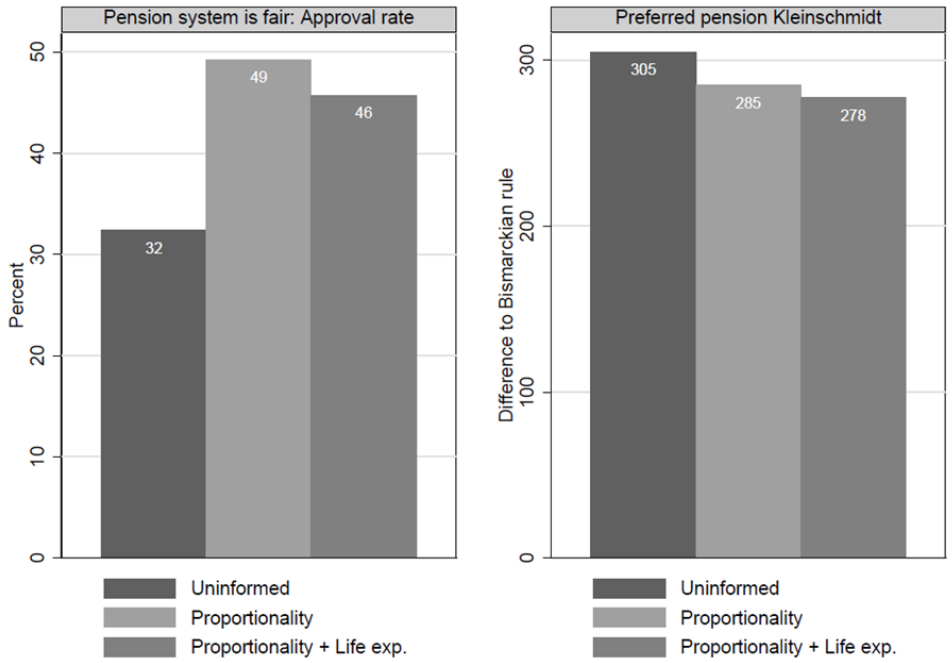
The political significance of the fairness perceptions of citizens arguably depends on their knowledge of the system: Do they rate the true German pension system as fair or unfair, which is the case if they are in the "guess correct" group or if they have been informed about the Bismarckian nature of the system in one of the treatment groups? Or, alternatively, do they rate something which they mistakenly believe to be the German pension system although it is (perhaps wildly) different from the true one? This distinction will play an important role in the following.

5.1.2 The Effect of Information on the Perceived Fairness of the System among Citizens

We elicited perceived fairness of the pension system on a 4-point scale from perfectly fair to very unfair. The left panel of Figure 2 shows the results for the perceived fairness of the pension system for all three treatment groups. In the control group, we find that less than one-third of the citizens (32 percent) find the system at least 'rather fair', and only 3 percent find the system 'very fair'.

1 and 1650 euro in Treatment 2). Given their support of a proportional allocation of benefits, it seems more plausible that these participants meant to allocate the higher amount to Großmüller.

Figure 2: Perceptions of fairness and redistributive preferences for citizens, by treatment group.



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 distribution of pension rights expressed as deviation from the actual proportional pension claim of 1000 Euro for Kleinschmidt (Bismarckian rule). Randomized experimental groups: Proportionality = respondents informed about Bismarckian rule, i.e., 1000 Euro for Kleinschmidt and 2000 Euro for Großmüller (treatment 1); Proportionality + Life exp. = respondents informed about Bismarckian rule and about higher life expectancy for individuals with higher income (treatment 2). Control group receives no information. Sample: Respondents with non-missing outcomes. Source: Own survey conducted by infratest dimap in 2020.

How do these fairness perceptions change by providing citizens with policy-relevant information? Figure 2 shows that informing citizens about the proportional nature of the German pension system (Proportionality) increases the share of citizens who find the system at least rather fair sizably from 32 percent to 49 percent, and thus to a majority of those citizens who did not choose the "don't know" option. Adding the information that the better earners live longer (Proportionality + Life Expectancy) 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 Proportionality × Life exp. here indicates the change in comparison to respondents in the Proportionality treatment. The results show that both differences are significant and robust to adding control variables such as age, gender and income.

The general finding that the fairness rating of the true German pension system is somewhat better than of what people mistakenly believe to be the system is supported by taking a closer look at the control group (see Figure A1 in the Appendix). Within this uninformed group, the share of respondents who rate the system as at least rather fair

is highest (at around 40 percent) among those who guessed that Kleinschmidt receives 1,000 (the correct value), 1,100 or 1,200 Euros.

Our results suggest that the proportional nature of the system resonates with what citizens regard as a fair benefit allocation such that being provided with this information makes them understand the pension system in a more positive way. Given the size of the treatment effect, it seems that the proportionality of the German pension system is not widely known or salient to people and thus initially not fully integrated into their fairness judgment. 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 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 see the allocation mechanism of the benefits as less fair.

5.1.3 The Effect of Information on the Extent of Desired Redistribution among Citizens

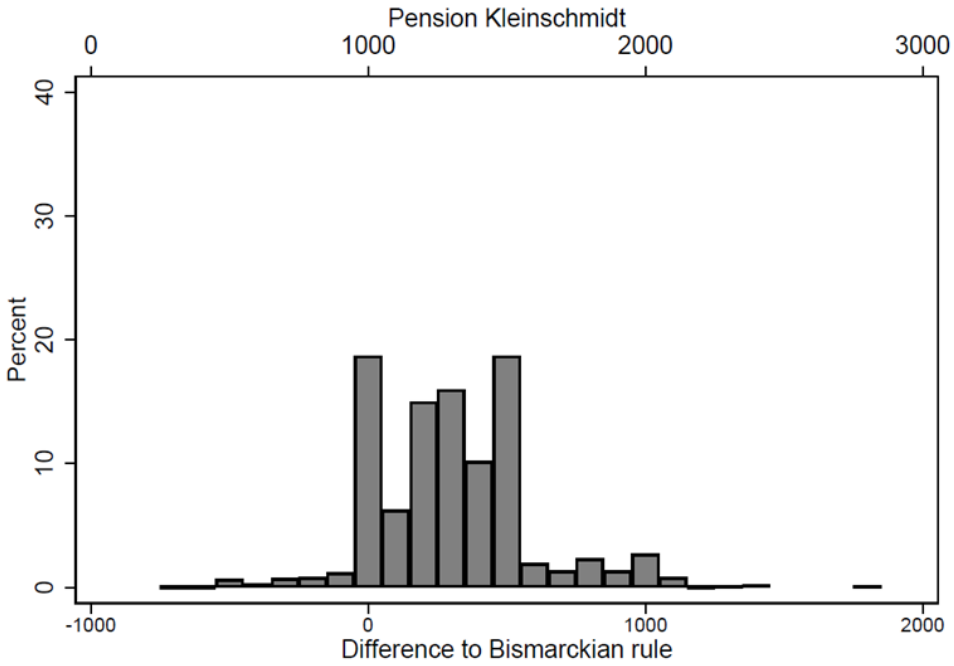
While people's fairness perceptions provide an intuitive measure for how satisfied people are with the pension system (or with what they believe the system to be), they do not allow us to measure what their ideal allocation would look like and thus where the perceived deficits of the system lie. Our 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.

Figure 3 shows the preferred pension allocation of the uninformed control group. The values on the x-axis show the difference to the Bismarckian rule, such that a value of 0 indicates agreement with the status quo. Around 19 percent of the citizens desire such an allocation in line with the status quo. Most citizens, 75 percent, would prefer a system that redistributes to Kleinschmidt. This is true for all segments of the population; only the extent of desired redistribution varies (see Table A4). The average response to the desired division in the control group is 1,305 to 1,695, which would reduce the gap between the two model pensioners by around 60 percent.

The right panel of Figure 2 shows the extent of desired redistribution in the three treatment groups. The Proportionality treatment, i.e. informing citizens about the actual state of the current pension system, decreases the desired redistribution slightly by 20 euros. 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).

However, these averages in the whole group appear to be influenced by the somewhat doubtful values found in the "guess high" group (see footnote 13 above). If this group is eliminated, the picture becomes much clearer (see columns 5 and 6): The average amount

Figure 3: Preferred allocation of pension claims for citizens.



Notes: Share of respondents in the (uninformed) control 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 Kleinschmidt (3000 to 0 Euro for Großmüller). Sample: Respondents with non-missing. Own survey conducted by infratest dimap in 2020.

of redistribution in favor of Kleinschmidt in the control group is reduced to 248 Euros. It shrinks by almost 30 Euros in the proportionality treatment, and it is increased by more than 20 Euros when the information about different life expectancies is added. Both differences are statistically significant and robust to adding control variables such as age, gender and income.

5.1.4 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 control group the absolute difference between the estimated and the preferred allocation for Kleinschmidt, which is measured in Figure A2 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 is 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.

Taken together, providing information about the pension system increases the per-

Table 1: Perceptions of fairness and redistributive preferences for citizens. Multivariate results.

Panel A						
Outcome:	Fairness pension system (yes/no)					
Sample:	All		Guess realistic		Guess low or realistic	
Guess range:	0-3000		1000-1500		≤1500	
	(1)	(2)	(3)	(4)	(5)	(6)
Proportionality	0.17***	0.18***	0.17***	0.18***	0.17***	0.18***
	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)
Proportionality	-0.04*	-0.05**	-0.04*	-0.05**	-0.03	-0.05**
× Life exp.	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)
Pension Guess		✓		✓		✓
Controls		✓		✓		✓
Baseline mean	0.32	0.33	0.38	0.37	0.34	0.34
Observations	3,989	3,815	2,733	2,719	3,401	3,382
Panel B						
Outcome:	Difference to Bismarckian rule (Desired pension Kleinschmidt - 1000 EUR)					
Sample:	All		Guess realistic		Guess low or realistic	
Guess range:	0-3000		1000-1500		≤1500	
	(1)	(2)	(3)	(4)	(5)	(6)
Proportionality	-19.71	-18.55	-42.44***	-44.42***	-26.84**	-29.53***
	(13.43)	(11.84)	(11.85)	(11.51)	(11.50)	(11.41)
Proportionality	-7.56	-0.67	30.82***	34.80***	22.74**	27.73***
× Life exp.	(12.77)	(11.38)	(11.49)	(10.80)	(11.25)	(10.76)
Pension Guess		✓		✓		✓
Controls		✓		✓		✓
Baseline mean (in EUR)	304.91	299.35	256.09	256.13	248.60	248.84
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 of 3000 EUR for Kleinschmidt minus 1000 EUR. Randomized experimental groups: Proportionality (treatment groups 1 and 2) = respondents informed about Bismarckian rule, i.e., 1000 EUR for Kleinschmidt and 2000 EUR for Großmüller; Proportionality × Life exp. (treatment group 2) = respondents informed about Bismarckian rule and about higher life expectancy for individuals with higher income in comparison to respondents in the Proportionality treatment. Control group receives no information. Controls include gender, age, marital status, children, education, employment status, income, household size, political orientation, urbanicity, and region dummies at the NUTS2-level. See Table A1 for more details on the controls. Regressions weighted by survey weights to ensure national representativeness. Sample: Respondents with non-missing outcomes. Robust standard errors in parentheses. Significance levels: * p<0.10, ** p<0.05, *** p<0.01. Source: Own survey conducted by infratest dimap in 2020.

ceived fairness of the system and decreases the desire for redistribution within the system. The desire for redistribution is still sizeable in all treatment conditions. Information about diverging life expectancies between low and high earners has the expected effect of

decreasing the perceived fairness and increasing the demand for redistribution.

5.2 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 used the two treatment conditions and dropped the control group in which there is no additional information to cleanly identify the effect of the diverging life-expectancy information. We also do not know the initial understanding of the system that politicians have. Keeping these caveats in mind, the analysis offers a better understanding of how politicians view the German pension system and how they are affected by policy-relevant information.

5.2.1 The Effect of Information on the Perceived Fairness of the System among Politicians

Figure 4 shows the responses of politicians in both treatment conditions. The left panel shows the fairness perceptions. On average, politicians seem to have a more positive view of the German pension system than citizens: A majority of politicians in the uninformed control group who answered the question, namely 55 percent finds the system at least 'rather fair', in comparison to 32 percent for the citizens (in the similar group). Likewise, the share of respondents who judge the system as 'very fair' with eight percent is rather low.

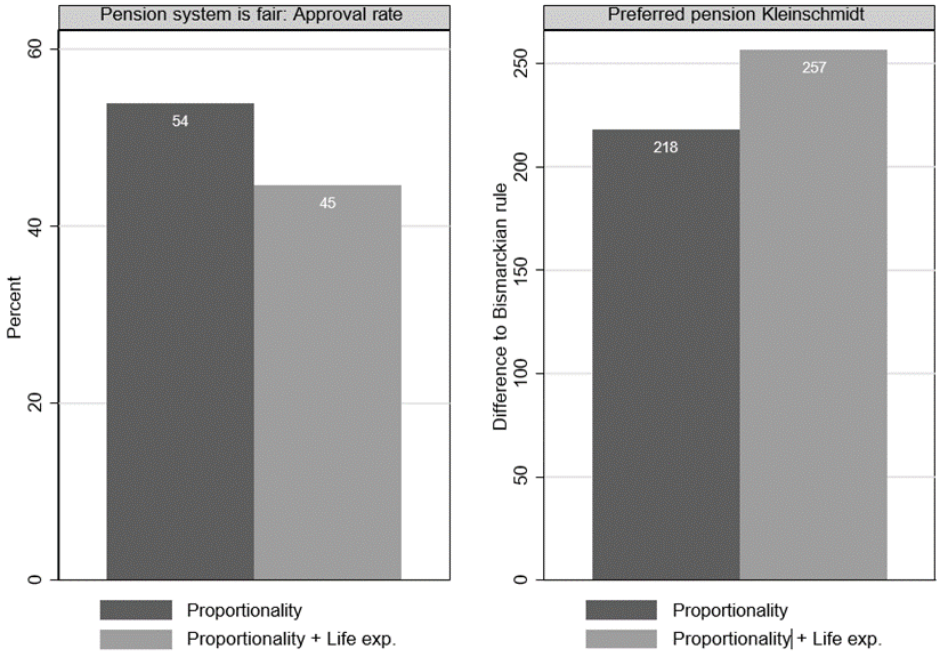
Letting politicians know that the German pension system distributes pensions proportionally and that inequalities in life expectancy between beneficiary groups exist decreases their perceived fairness of the system. However, this effect is not significant when taking control variables and state fixed effects into account.

5.2.2 The Effect of Information on the Extent of Desired Redistribution among Politicians

Figure 5 shows the preferred pension allocation for politicians in the treatment group that receives information about proportionality only. The share of respondents who answered the question and desire a redistribution in favor of Kleinschmidt lies at 67 percent. The average response to the desired division in the control group is 1,218 to 1,782. While the extent of desired redistribution is thus on average somewhat lower than what we observed for citizens, the division still clearly shows that politicians also reject the Bismarckian system and desire more equal pension outcomes.

The right panel of Figure 4 shows the politicians' desired redistribution via pensions in the two treatment conditions. The treatment, being informed about proportionality and life expectancy, increases the desired redistribution to Kleinschmidt by 38 Euro when

Figure 4: Perceptions of fairness and redistributive preferences for politicians, by treatment group.



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 distribution of pension rights expressed as deviation from the actual proportional pension claim of 1000 Euro for Kleinschmidt (Bismarckian rule). Randomized experimental groups: Proportionality = respondents informed about Bismarckian rule, i.e., 1000 Euro for Kleinschmidt and 2000 Euro for Großmüller (treatment 1). Proportionality + Life exp. = respondents informed about Bismarckian rule and about higher life expectancy for individuals with higher income (treatment 2). Sample: Respondents with non-missing outcomes. Source: Own survey conducted in 2021-2022 with 535 members of state parliaments in 8 German states.

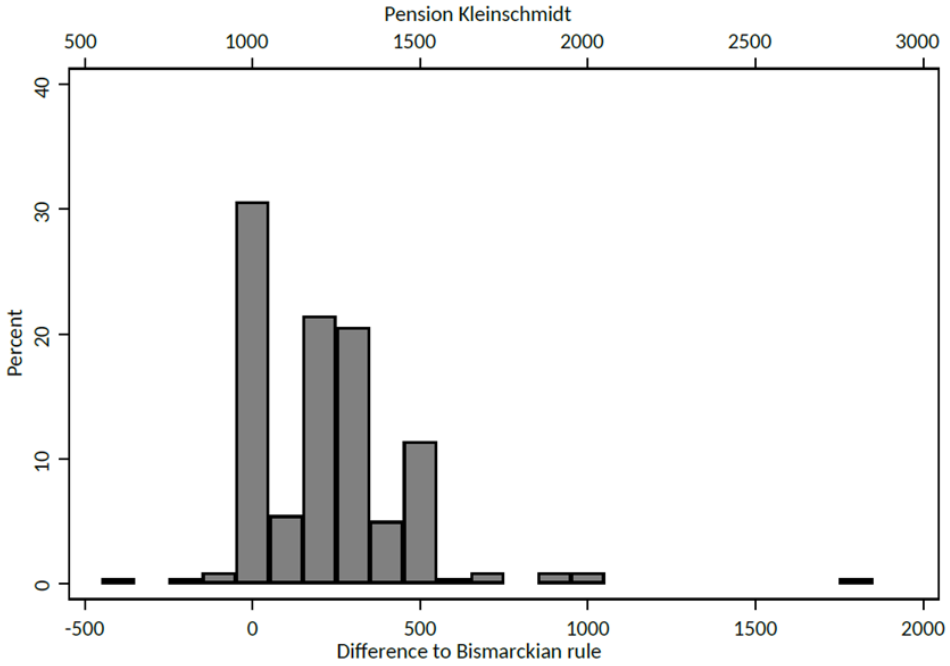
no controls are included (23 and 26 euros respectively with controls and state fixed effects included). While not significant for the whole sample (see panel A of Table 2, columns 4 to 6), the effect suggests that also politicians show a desire to compensate for a shorter duration of the payment to Kleinschmidt.

5.2.3 The Effect of Information across Ideological Subgroups

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.

The results are presented in Panels B to D of Table 2. We find that the high approval rates for the system in the control 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

Figure 5: Preferred allocation of pension claims for politicians.



Notes: Share of respondents in the Proportionality treatment 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 Kleinschmidt (3000 to 0 Euro for Großmüller). Sample: Respondents with non-missing outcomes. Source: Own survey conducted in 2021-2022 with 535 members of state parliaments in 8 German states.

respect to the information 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 Kleinschmidt, 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 Euros) and do not change this amount in response to the life expectancy information. We interpret this finding as an indication that only politicians who are less ideologically entrenched can be moved in their preferences if redistributive effects of the system due to diverging life expectancies are made salient to them.

Table 2: Perceptions of fairness and redistributive preferences for politicians. Multivariate results.

Outcome:	Fairness pension system (yes/no)			Difference to Bismarckian rule (Pension Kleinschmidt - 1000 EUR)		
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A	Political orientation: All					
Proportionality +	-0.09**	-0.06	-0.06	38.63	22.64	26.16
Life exp.	(0.04)	(0.04)	(0.04)	(25.92)	(24.80)	(25.38)
Controls		✓	✓		✓	✓
State fixed effects			✓			✓
Baseline mean	0.54	0.54	0.54	218.26	218.26	218.26
Observations	533	533	533	451	451	451
Panel B	Political orientation: Left					
Proportionality +	0.01	-0.01	-0.00	-27.01	-37.37	-65.90
Life exp.	(0.07)	(0.07)	(0.07)	(53.90)	(57.36)	(47.55)
Controls		✓	✓		✓	✓
State fixed effects			✓			✓
Baseline mean	0.18	0.18	0.18	388.68	388.68	388.68
Observations	133	133	133	113	113	113
Panel C	Political orientation: Center					
Proportionality +	-0.14**	-0.11**	-0.12**	54.72*	49.58	61.33*
Life exp.	(0.05)	(0.05)	(0.05)	(31.88)	(30.42)	(31.88)
Controls		✓	✓		✓	✓
State fixed effects			✓			✓
Baseline mean	0.66	0.66	0.66	177.17	177.17	177.17
Observations	318	318	318	265	265	265
Panel D	Political orientation: Right					
Proportionality +	-0.00	0.04	0.05	6.76	13.60	13.65
Life exp.	(0.11)	(0.11)	(0.11)	(35.44)	(33.82)	(37.34)
Controls		✓	✓		✓	✓
State fixed effects			✓			✓
Baseline mean	0.63	0.63	0.63	120.51	120.51	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 of 3000 EUR for Kleinschmidt minus 1000 EUR. Randomized experimental group: Proportionality + Life exp. = respondents informed about Bismarckian rule and about higher life expectancy for individuals with higher income (treatment 2). Reference group: Proportionality = 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. Source: Own survey conducted in 2021-2022 with 535 members of state parliaments in 8 German states.

6 Conclusion

Demographic change puts a pension system, 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 either with information on the proportionality of the system or with information on the proportionality and the redistributive effects of the system, given statistically 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 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, less than one-third of the surveyed citizens (32 percent) think that the system is (at least rather) fair when not being given additional information about the pension system. Politicians in the control group on average view the system more positively, a majority judges the system as at least rather fair (55 percent). 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 ask for 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.

Providing citizens with the information that the German pension system is strictly proportional increases the perceived fairness of the system but lowers the redistributive demand only slightly. This evidence suggests that the notion of proportionality still holds high normative appeal to people and triggers positive evaluations even when in fact more

redistribution is desired. The information that low earners have a shorter life expectancy decreases the perceived fairness again and leads to again more demand for redistribution in favor of the low wage earner. While not statistically significant, the results for politicians point in a similar direction to those of well-informed citizens: being informed about the diverging life expectancies (and the proportionality of the system) decreases the perceived fairness of the system and increases redistributive demands. 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 gap in net income between the two retirees since Mr. Kleinschmidt's benefit is only slightly above the tax exemption whereas Mr. Großmüller 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 treatment 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.

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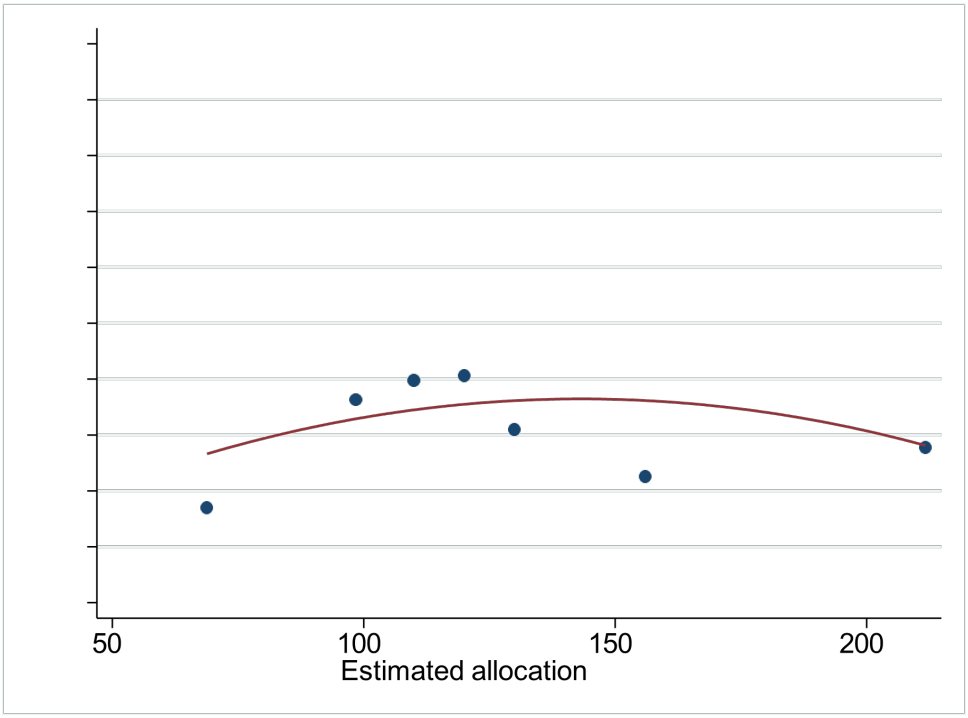
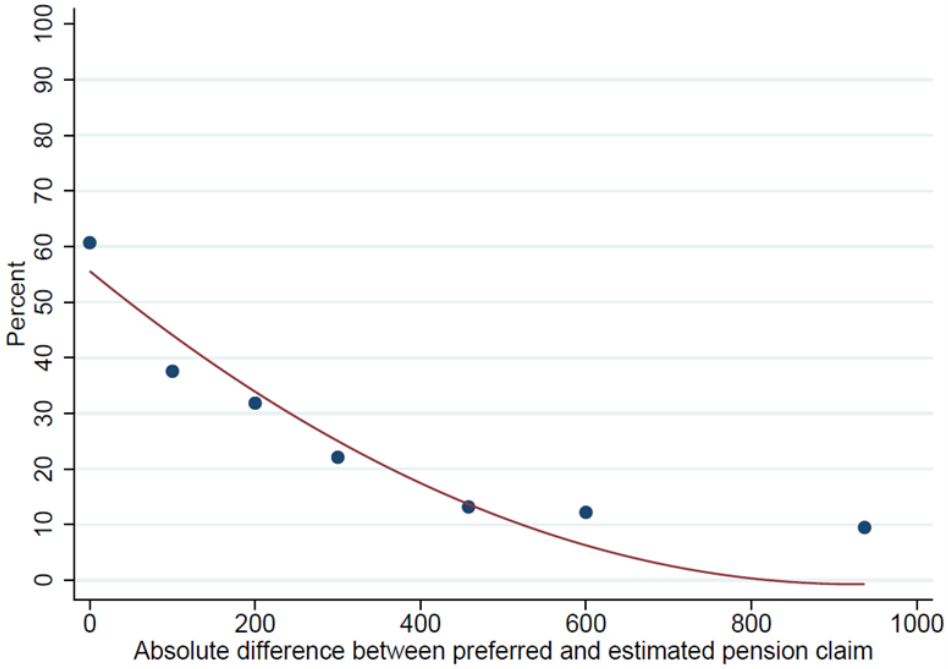
Appendix A

Figure A1: Perceived fairness by estimated allocation of pension claims (citizens).



Notes: Binned scatter plot of the share of respondents in the (uninformed) control 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 Kleinschmidt. 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 control group. Own survey conducted by infratest dimap in 2020.

Figure A2: Perceived fairness by gap b/w preferred and estimated allocation



Notes: Binned scatter plot of the share of respondents in the (uninformed) control 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 Kleinschmidt. 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 control group. Own survey conducted by infratest dimap in 2020.

Table A1: Descriptive statistics by treatment status (citizens).

	Control		Treatment 1		Treatment 2	
	Mean	[SD]	Difference	(SE)	Difference	(SE)
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Controls						
Female	0.47	[0.50]	0.02	(0.02)	0.03	(0.02)
Age	50.67	[16.62]	0.57	(0.62)	0.76	(0.61)
Born in Germany	0.97	[0.17]	-0.00	(0.01)	-0.00	(0.01)
Married	0.52	[0.50]	-0.02	(0.02)	0.02	(0.02)
Children	0.65	[0.48]	-0.01	(0.02)	-0.01	(0.02)
Household size	2.34	[1.16]	-0.04	(0.04)	-0.02	(0.04)
Educational attainment						
Other or missing	0.07	[0.26]	-0.00	(0.01)	0.00	(0.01)
Upper or post-secondary	0.57	[0.49]	0.07***	(0.02)	0.00	(0.02)
Tertiary	0.36	[0.48]	-0.07***	(0.02)	-0.00	(0.02)
Employed	0.61	[0.49]	0.00	(0.02)	0.01	(0.02)
HH gross monthly income	3,226.36	[2,617.33]	-85.25	(102.99)	286.24**	(139.61)
Income missing	0.08	[0.27]	-0.01	(0.01)	0.03**	(0.01)
Political orientation						
Left-right scale [0-10]	4.71	[1.86]	0.03	(0.07)	0.08**	(0.07)
Left-right missing	0.08	[0.28]	0.01	(0.01)	-0.02	(0.01)
Left	0.11	[0.32]	-0.01	(0.01)	-0.01	(0.01)
Center	0.67	[0.47]	0.02	(0.02)	0.02	(0.02)
Right	0.13	[0.34]	-0.02	(0.01)	0.00	(0.01)
Urbanicity						
Rural area	0.32	[0.47]	0.02	(0.02)	0.01	(0.02)
Town or small city	0.37	[0.48]	-0.01	(0.02)	-0.03*	(0.02)
Urban fringe	0.13	[0.34]	0.01	(0.01)	0.02	(0.01)
Big city	0.13	[0.34]	0.01	(0.01)	0.02	(0.01)
Survey duration (in min)	21.88	[14.51]	-0.11	(0.57)	0.16	(0.57)
Prior knowledge						
Guessed diff. to Bismarckian rule	167.44	[386.02]	-9.17	(14.96)	-3.65	(14.43)
Guess missing	0.03	[0.18]	0.01	(0.01)	0.01	(0.01)
Outcomes						
Pension system perceived as fair	0.32	[0.47]	0.17***	(0.02)	0.13***	(0.02)
Desired diff. to Bismarckian rule	304.91	[300.20]	-19.71**	(11.75)	-27.27***	(10.98)
Support for Bismarckian rule	0.18	[0.39]	0.06***	(0.02)	0.03*	(0.02)
Observations (Total=3,989)	1,325		1,342		1,322	

Notes: Means and standard deviations in the control 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 both experimental 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 A2: Descriptive statistics by treatment status (politicians).

Experimental group	Treatment 1		Treatment 2	
	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)
Outcomes				
Pension system perceived as fair	0.54	[0.50]	-0.09**	(0.03)
Difference to Bismarckian rule	218.26	[235.08]	38.63	(0.14)
Observations				
BW=130	58		72	
Bayern=91	50		41	
Berlin=53	23		30	
Hessen=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 Treatment 1 (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 experimental 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 A3: Correlates of outcomes and prior knowledge in multivariate models (citizens).

Outcome	Fairness pension system (yes/no) (1)	Difference to Bismarck. rule (in EUR) (2)	Guess correct (yes/no) (3)	Guess realistic (yes/no) (4)
Female	0.09***	-22.30	0.01	0.07***
	(0.03)	(17.09)	(0.02)	(0.02)
Age/10	0.01	3.60	-0.03***	-0.00
	(0.01)	(7.40)	(0.01)	(0.01)
Upper or post-secondary education	0.08*	-23.19	0.05	0.06*
	(0.05)	(33.86)	(0.03)	(0.03)
Tertiary education	0.19***	-89.52**	0.08**	0.10***
	(0.05)	(35.90)	(0.03)	(0.04)
Married	0.08**	-44.96**	-0.03	0.01
	(0.03)	(19.94)	(0.02)	(0.02)
Children (y/n)	-0.04	23.90	-0.00	-0.03
	(0.04)	(21.29)	(0.02)	(0.02)
Household size	-0.01	10.62	0.01	-0.01
	(0.02)	(10.20)	(0.01)	(0.01)
Income (in 100 EUR)	0.04	-26.36	-0.01	0.04***
	(0.08)	(50.35)	(0.02)	(0.02)
Income missing	0.05	-67.16**	0.01	0.01
	(0.05)	(32.57)	(0.03)	(0.03)
Pol. orient.: left	0.07	-77.43**	0.02	0.01
	(0.05)	(32.45)	(0.03)	(0.03)
Pol. orient.: center	0.11**	-81.79***	-0.01	-0.02
	(0.05)	(31.05)	(0.03)	(0.03)
Pol. orient.: right	0.08	-138.98***	0.01	0.01
	(0.05)	(34.16)	(0.03)	(0.03)
Employed	-0.05	26.49	0.02	0.01
	(0.03)	(19.33)	(0.02)	(0.02)
East Germany	-0.05	16.41	0.02	-0.01
	(0.03)	(20.31)	(0.02)	(0.02)
Pension guess low (< 1000 EUR)	-0.16***	-43.59**		
	(0.03)	(21.53)		
Pension guess high (> 1500 EUR)	-0.10**	395.61***		
	(0.04)	(34.97)		
Pension guess missing	-0.11	195.66***		
	(0.07)	(63.61)		
Interview time (in 10 min)	0.01	4.04	0.01	0.02***
	(0.01)	(5.63)	(0.01)	(0.01)
Baseline mean	0.32	304.97	0.32	0.68
Observations	1,313	1,313	3,963	3,963

Notes: Linear model in column 2 and linear probability models in columns 1, 3, and 4. Samples: Uninformed participants (control 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 of 3000 EUR for Kleinschmidt minus 1000 EUR; Column 3: Binary outcome indicating that estimated pension entitlement for Kleinschmidt is 'correct' (estimate of 1000 Euro); Column 3: Binary outcome indicating that estimated pension entitlement for Kleinschmidt is 'realistic' (estimates between 1000 and 1500 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. Source: Own survey conducted by infratest dimap in 2020.

Table A4: Effect heterogeneity across population groups (citizens).

Outcome:	Fairness pension system (yes/no)		Diff. to Bismarckian rule	
Effect:	Proportionality	Proportionality × Life expectancy	Proportionality	Proportionality × Life expectancy
	(1)	(2)	(3)	(4)
Baseline	0.18***	-0.06**	-45.48***	40.99***
	(0.02)	(0.02)	(11.84)	(11.16)
Women	0.18***	-0.04	-27.95*	25.99*
	(0.04)	(0.03)	(16.22)	(15.05)
Men	0.18***	-0.08**	-58.44***	54.79***
	(0.04)	(0.04)	(17.11)	(17.03)
Age: 18 - 45	0.17***	-0.04	-20.95	35.08*
	(0.04)	(0.04)	(23.79)	(21.06)
Age: 45 - 64	0.28***	-0.06	-63.90***	32.72*
	(0.04)	(0.04)	(17.48)	(17.18)
Age: 65+	0.06	-0.08*	-44.20**	51.52***
	(0.05)	(0.05)	(19.08)	(18.32)
Upper or post-secondary	0.15***	-0.05	-69.63***	47.72***
	(0.03)	(0.03)	(16.02)	(14.02)
Tertiary	0.21***	-0.05	-15.50	20.92
	(0.04)	(0.04)	(18.41)	(19.03)
Pol. orient.: Left	0.21***	-0.14*	-64.85*	91.55***
	(0.08)	(0.08)	(33.79)	(31.24)
Pol. orient.: Center	0.17***	-0.05*	-34.87**	39.28***
	(0.03)	(0.03)	(14.32)	(13.42)
Pol. orient.: Right	0.26***	-0.05	-66.08*	44.38
	(0.07)	(0.07)	(36.04)	(34.54)
Inc.: < 2500 EUR	0.12***	-0.06	-9.64	19.37
	(0.04)	(0.04)	(19.71)	(20.64)
Inc.: 2500 - 3500 EUR	0.21***	-0.05	-85.54***	45.69***
	(0.04)	(0.04)	(22.96)	(17.30)
Inc.: > 3500 EUR	0.19***	-0.04	-26.57	36.11*
	(0.04)	(0.04)	(19.87)	(19.26)
Employed	0.22***	-0.07**	-57.39***	40.04***
	(0.03)	(0.03)	(15.86)	(13.94)
Non-employed	0.11***	-0.03	-24.44	44.68**
	(0.04)	(0.04)	(17.59)	(17.98)

Notes: Each cell reports the coefficient from a separate regression using sampling weights. Linear models in columns 3 and 4 and linear probability models in columns 1 and 2. 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 3000 EUR for Kleinschmidt minus 1000 EUR. Randomized experimental groups: Proportionality (treatment groups 1 and 2) = respondents informed about Bismarckian rule , i.e., 1000 EUR for Kleinschmidt and 2000 EUR for Großmüller; Proportionality × Life exp. (treatment group 2) = respondents informed about Bismarckian rule and about higher life expectancy for individuals with higher income. Control group receives no information. Model specifications in are equivalent to the model in column (4) of Table 1. Robust standard errors in parentheses. 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 A5: Correlates of outcomes in multivariate models (politicians).

Outcome:	Fairness pension system (yes/no)		Difference to Bismarckian rule (in EUR)	
	(1)	(2)	(3)	(4)
Female	-0.21***	-0.19**	22.51	18.76
	(0.07)	(0.07)	(34.85)	(37.33)
Age	-0.00	-0.01*	0.87	1.29
	(0.00)	(0.00)	(1.70)	(1.87)
Years in parliament	0.00	0.00	-0.89	-1.71
	(0.01)	(0.01)	(2.70)	(3.54)
Tertiary education	0.17*	0.12	-40.48	-16.64
	(0.09)	(0.09)	(34.30)	(40.91)
Pol. orient.: left	-0.18**	-0.21**	132.87***	126.48***
	(0.08)	(0.09)	(46.93)	(43.08)
Pol. orient.: right	0.26***	0.25***	-108.71***	-121.89***
	(0.07)	(0.07)	(29.38)	(32.60)
Bavaria		-0.04		-29.48
		(0.10)		(47.19)
Berlin		-0.08		28.81
		(0.15)		(73.76)
Hessia		-0.16		20.69
		(0.10)		(46.88)
NRW		-0.02		43.62
		(0.10)		(46.91)
SL		0.12		94.29
		(0.23)		(278.45)
SH		-0.13		-106.41*
		(0.14)		(55.34)
Thuringa		-0.23*		31.62
		(0.13)		(58.30)
Baseline mean	0.55	0.55	218.26	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 informed about the Bismarckian rule (Treatment 1) 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 3000 EUR for Kleinschmidt minus 1000 EUR. 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. Source: Own survey conducted in 2021-2022 with 535 members of state parliaments in 8 German states.

Appendix B

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 euros of retirement benefits per month, the chosen example of 1000 vs. 2000 euros 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 Figure 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 euros, respectively, also avoid the interference with the German social assistance scheme because both values are well above the welfare benefit for singles.