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Conference Paper

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Beiträge zur Jahrestagung des Vereins für Socialpolitik 2022: Big Data in Economics

Provided in Cooperation with:
Verein für Socialpolitik / German Economic Association

Suggested Citation: Breunig, Christian; Breyer, Friedrich; Kapteina, Mark; Schwerdt, Guido; Sterba, Maj-Britt (2022) : Between Beveridge and Bismarck: Preferences for Redistribution through Public Pensions, Beiträge zur Jahrestagung des Vereins für Socialpolitik 2022: Big Data in Economics, ZBW - Leibniz Information Centre for Economics, Kiel, Hamburg

This Version is available at:
https://hdl.handle.net/10419/264111

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

Christian Breunig, Friedrich Breyer, Mark Kapteina, Guido Schwerdt† and Maj-Britt Sterba

Abstract

Do citizens know how much a pension system redistributes? Do they find the system fair? And are their fairness views shared by elected politicians? In this paper, we show that information about the redistributive impact of a pension system affects citizens' preferences and perceptions of fairness. In a survey experiment on a representative sample of the German population, we provide two pieces of information: (1) the basic relation between contribution and benefit and (2) differences in benefits by income due to divergent life expectancies. We find that only a minority of citizens hold accurate views on the pension system. Information about the system increases perceived fairness and decreases redistributive demands, whereas information about inequalities between beneficiary groups lowers perceived fairness and increases the demand for redistribution. Moreover, both citizens and elected representatives reject the Bismarckian principle of strict proportionality between lifetime contributions and monthly pension benefits in favour of more redistribution from high to low earners in the retirement phase.

Keywords: Public pension system, preferences for redistribution, Germany, Randomized experiment, information, survey experiments

JEL classification: H55, D72, D83

This version: August 28, 2021

*We gratefully acknowledge the financial support given by the Excellence Cluster "The Politics of Inequality" at the University of Konstanz.

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1. Introduction

A country's pension system reflects a society's fairness notion about what is owed to their elderly citizens. In most OECD countries, there is some link between the contribution that workers pay into the public pension system and the monthly pension benefit that they receive during retirement. This link can take different forms. At one extreme lies the so-called Bismarckian rule, describing pretty much the pension system in Germany[1], according to which individual contributions and benefits are strictly proportional to each other. The other extreme is the Beveridgean rule, typical for many tax-financed basic pension systems as the one in the United Kingdom or in the Netherlands, according to 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" through the pension system, whereas the Beveridgean rule constitutes the maximum of such redistribution.

There are basically two main arguments for such a strict tax-benefit linkage. The first one is an efficiency argument: it claims that labor supply distortions are minimal 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. The second argument is a fairness argument: it states that contributions measure the sacrifice of the worker and thus should be rewarded accordingly.

It is questionable, however, whether the arguments in favour of a strictly Bismarckian system remain normatively convincing in light of an ageing population with different life expectancies across income groups. With a sharply rising old-age dependency ratio in the next two decades the ratio between the average retirement benefit and the average earnings (i.e. the *average earnings replacement rate*) will have to decline. The "sustainability factor" in the German pension adjustment formula, which reflects the change in the old-age dependency ratio, already takes that into account. However, 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 is seen by many politicians and observers 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.

Furthermore, one can question the exact concept the proportionality principle should be linked to. On the contribution side, it is the *total* amount of contributions (or, more precisely, earnings)[2] 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 would not be problematic if the length of the retirement period were purely random in the sense that life

[1] There are only few deviations from this principle such as the pension supplement "earned" by having a child.

[2] 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 per cent over the course of the last 40 years so that the fairness argument stated above is slightly flawed.

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 (e.g. von Gaudecker and Scholz 2007, Breyer and Hupfeld 2009), and the gradient has even increased over the last decades in Germany (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.

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 German pension system is scarce. Specifically, we do not know in how far confronting people with the information about the nature of the pension system and its redistributive implication given the sociodemographic reality changes people's perception. Understanding the role of information in shaping policy preferences with respect to alternative public pension schemes is, however, of particular interest, as the redistributive implications of a public pension system are oftentimes less salient and not widely discussed.

In this study we examine whether German voters 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 German pension system changes those evaluations. We run a survey experiment with a representative German sample (N=3,989) as well as with a sample of elected politicians on the federal state level (N=535), representative of their respective parliament. In our two treatment conditions, we present the respondents information about 1) the strict proportionality of the German pension system and 2) in addition, the longevity gap between recipients of high versus low benefits and the effects on total pensions received. We thus provide causal evidence on the effect of such information on perceived fairness and desired redistribution of and in the German pension system.

We find that less than half the respondents in our citizen survey think that the German pension system is (at least rather) fair, while a majority of finds the system at least "rather fair. When asked for a fair division of pension claims, people ask for a massive 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. 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 low earners have a shorter life expectancy leads to an even stronger demand for redistribution in their favor, at least by those respondents that have a "realistic" notion of the existing pension system.

This paper makes two main contributions. First, we provide novel evidence on preferences for redistribution through public pensions. We do so for a representative large-scale German sample as well as for a representative sample of elected representatives of several German federal states. This allows us to not only give a comprehensive overview of attitudes towards a Bismarckian pension system but also to speak to the debate on whether elected politicians are in their attitudes representative of citizens.

Second, we provide a first comprehensive analysis of the effects of information provision on preferences for redistribution through public pensions in a large-scale representative survey. We show that these preferences are easily malleable by the provision of basic information on how the public pension system actually redistributes and on less salient redistributive implications of the current system arising because of differences in life expectancy across income groups. We thus contribute to the recent experimental literature that studies the effects of information provision on policy preferences in large-scale surveys. While studies in this literature investigate preferences in many different policy areas (e.g., Kuziemko et al., 2015, Alesina et al., 2018, Lergetporer et al., 2020, Barnes et al. 2018), effects of information on preferences for public pensions have so far not been studied.

The paper unfolds as follows. In Section 2 we give an overview of the previous literature on the subject. In Section 3 we describe the organization of the survey and the details of the questions about the German pension system. In Section 4 we present the results, and in Section 5 we conclude.

2. Related Literature

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 a paper 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. Thus the answer categories are purely qualitative and 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"). The authors use responses of 39,000 persons from 24 countries to relate distributive preferences to characteristics of the respondents and of their countries of residence. It turns out that higher income and education was correlated with a stronger preference for equity, whereas women and people with leftist political positions had the opposite preference. But also the existing pension system of the country of residence seems to play a role as people living in countries with earnings-related pensions and those from Central and Eastern Europe accept the "equity" principle to a higher degree than others.

On an even more general level, Busemeyer and Garritzmann (2017) survey people in eight Western European countries with respect to their preferences in the tradeoff between "social investment" (in particular, expenditures for education) and spending on pensions, but the questions did not refer to the distribution of possible cutbacks in pensions.

Finally, Krieger and Traub (2008, 2011) look at the real development of pension systems in 20 OECD countries and ask in particular whether the "Bismarckian factor" has changed systematically in the time period 1980 to 2004, where this factor is calculated from the pension replacement rates of the lowest and highest income quintiles and varies between 0 for purely Beveridgean and 1 for purely Bismarckian pensions. The relation to our research question is described by the authors in the statement "therefore, the Bismarckian factor can be interpreted as a descriptive measure of (re)distribution in the sense of revealed preferences on social policy" (2011, p.275, translation by us). Using data from the Luxembourg Income Study, the authors 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 corporatistic welfare states in the sense of Esping-Andersen (1990) such as Germany, Italy and France, which are characterized by relatively high replacement rates. Thus 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 (at least the increase in) pensions but compensating for this by increasing the redistribution of pension claims in favor of low earners.

Other studies in this literature investigate preferences for redistribution (e.g., Cruces, Perez-Truglia and Tetaz (2013) or Kuziemko et al. (2015)), the demand for government spending (e.g., Roth, Settele, and Wohlfart (2019)), the demand for public spending on education (e.g., Lergetporer, Schwerdt, West, Werner, Woessmann (2018)), preferences for immigration policies (e.g., Haaland and Roth (2017)) and preferences for education policies (e.g., Lergetporer, Werner, and Woessmann (2020)).

In the recent literature there is a growing interest in understanding the impact of information provision on redistributive preferences in many policy areas (e.g., Kuziemko et al., 2015, Alesina et al., 2018, Lergetporer et al., 2020, Barnes et al. 2018). 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. While this pattern is documented for many areas of public policy, little is known about preferences for redistribution through public pensions.

3. 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 information that the existing pension system is strictly proportional and that high earners live longer, statistically. To this end, citizens and politicians were presented with a vignette describing two fictitious pensioners and their contributions. In the three treatment conditions, we vary the amount of additional information respondents receive about the nature of the German pension system. The following section describes the vignette scenario, the treatment conditions and the main outcomes in more detail.

3.1 Vignette scenario and main outcome variables

The vignette presented to the 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.

According to Auspurg et al. (2009), the most important threat to the external validity of vignette studies is complexity; Therefore, we strived for the utmost simplicity of the chosen example, in which the two retirees should be equal in all characteristics but their total previous earnings, in particular in the length of their working lives. 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.

After reading the vignette, citizens were asked about their knowledge of the German pension system with the following question:

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?*[3] (Slider with range: Mr. Großmüller 3.000€, Mr. Kleinschmidt 0€ to Mr. Großmüller 0€, Mr. Kleinschmidt 3.000€, 100€-steps)

Question 1 was asked to citizens only. We refrained from asking political elites Question 1 as we did not want to give them the impression that we were quizzing them as this would potentially have lowered their engagement with the rest of the survey.

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

[3] As in the year 2000 in the German public pension system GRV one earnings point translated in 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 per cent less than the average worker, whereas Mr. Großmüller got 1.5 points per year and earned 50 per cent 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 per cent of average earnings is at the 37th percentile and one with 150 per cent 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.

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 live longer, statistically. 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 of and within the German pension system.

The exact wording of the treatments and questions read 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.*

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.*

After that, we asked two additional questions that serve as our two main outcome variables:

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]

Note that in the politicians' survey, due to a smaller sample size there are only two treatment conditions, namely the control treatment and the Proportionality + Life Expectancy treatment. Figure x gives an overview of the design for citizens and politicians.

Our main hypothesis is that respondents in the Life Expectancies Group (those 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 in the control group (for politicians) or those in the Proportionality Group (for citizens).

3.2 Data collection

3.2.1 Citizen survey

We fielded our online survey from December 2020 to January 2021, using Infratest dimap as the sample provider.[4] 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. A random draw was applied to these panelists while considering the cross-ratios for different demographic characteristic (i.e. gender, age, education and federal state). Descriptive statistics of the survey participants are summarized in **Table 1a** 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.[5] 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. The median response time amounted to 18.3 minutes.[6]

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

[4] 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. We also submitted a pre-registration of the survey to the OSF website, which was formally approved and added to the OSF repository on Tuesday, 22 December 2020.

[5] 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.

[6] Besides vignettes on the perceptions of fairness of the pension system the citizen survey contained other inequality-relevant questions such as the fairness of tuition fees for university education and a general belief in a just world.

participants who did not answer the pension questions, which reduces the usable sample from 4,493 to 3,989 respondents.

3.2.2 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[7] with members of eight federal states[8] between February 2021and March 2022. All politicians who were members of the respective federal state parliament at the time of data collection were asked to participate.[9] Participating politicians answered open-ended questions and completed a survey that contained closed questions and several experimental protocols.[10] The survey was programmed by the University of Konstanz's Survey Research Center. 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-trainings. 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.

The survey did not rely on any deception and did not affect political processes in any way. Participation in the survey was not incentivized and politicians were free to leave any question unanswered. Politicians where informed when asked to participate and reminded at the beginning of the survey that their responses will be used solely for scientific purposes and that no inferences on the individual level will 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 (IRB statement 45/2021). Overall, we collected 535 independent observations.[11] This reflects a participation rate of 47.8 per cent. Descriptive statistics of the politicians are summarized in **Table 1b** in the Appendix.

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[7] Zoom was the default platform used to conduct the interviews. In case the politicians preferred another option, Cisco WebEx was offered as an alternative. Few politicians also provided their own platform.

[8] The participating federal states encompassed Bavaria, Baden-Württemberg, Thuringia, Berlin, Schleswig-Holstein, Hesse, North Rhine-Westphalia and Saarland.

[9] 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 decisive 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.

[10] Besides vignettes on the perceptions of fairness of the pension system the citizen survey contained other inequality-relevant questions such as the fairness of tuition fees for university education or inheritance taxation.

[11] 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.

4. Results

In the following, we will first present descriptive results on how well-acquainted citizens are with the German pension system, how fair the system is perceived by citizens and elected politicians and what is the size of their desired redistribution within the system. Having established these facts, we will show in how far information about the German pension system and its redistributive effects shifts the perceived fairness and desired amount of redistribution.

4.1 Knowledge of the German 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 **Table 2a**. Almost one-third, more precisely 31.6 per cent of the 3,870 respondents provide the correct answer, which is quite remarkable. On the other hand, 37.8 per cent believe that Großmüller receives between 1,500 and 1,900 Euros, i.e. that the German pension system is a redistributive one, which may be the result of wishful thinking (see below). While these almost 70 per cent give answers that apply at least to some real-world pension systems and are henceforth referred to as "realistic" guesses, the responses of the remaining participants are harder to explain: 17.6 per cent believed that Großmüller gets 2,100 Euros or more (redistribution from the lower to higher earners), and 13.1 per cent believe that Großmüller gets 1,400 Euros or less, i.e. the one who has contributes more gets less in return.

When analyzing the correctness of the guesses by subgroups, we find very few differences (see **Table 3a**, column 3). As expected, college education helps, but surprisingly, older persons (including those who are already retired) are less often correct than their younger peers. When including wrong, but "realistic" guesses (column 4), women and higher-income people perform better than the rest.

4.2 Perceived Fairness of the German Pension System

Figure 1a and **Figure 1b** show the results for the answers to question 2 for citizens and politicians respectively. This analysis is confined to the control group as in the other groups, revealed judgments may have been affected by the received information.

For citizens, we find that very few (6.9 per cent) find the present pension system in Germany "perfectly fair", and less than half (42.9 per cent) find it at least "rather fair". Interestingly, those citizens who have a clearly wrong notion of the pension system ("guess low" or "guess high") reject it at significantly higher rates than others.

Politicians seem to have a more positive view of the German pension system: While the share of politicians who deem the present pension system "perfectly fair" lies at only 8 per cent, a majority of politicians who answered the question, namely 55 per cent finds the system at least "rather fair".

Figure 3a shows the approval rate for different demographic subgroups for citizens. We see that among women, married persons and the better educated the approval of the pension system is significantly larger, where approval means judging the system at least as "rather fair" (see **Table 3a**, column 1). The effect of age, in contrast, is non-monotonous. While, unsurprisingly, the approval rate is highest in pension age (above 65 years) at 43 per cent, those under 44 years have a slightly higher approval rate than those in the middle age category. Finally, the political orientation on a left-right scale does not play a role.

For politicians the pattern when distinguishing demographic subgroups looks rather different (see **Figure 3b**). Female politicians reject the fairness of the pension system substantially more often than their male colleagues. Politicians above 65 years find the pension system less fair than their younger colleagues, among whom there are no substantial differences. The biggest difference is obtained when considering politicians that self-assess as left vs right on the political spectrum: while the approval rate of politicians on the right lies at 74 per cent, that of politicians on the left lies at only around 32 per cent. Only for education the pattern is congruent with the fairness perceptions of citizens.

4.3 The Extent of Desired Redistribution

A problem with the interpretation of the responses to Question 2 is that we do not know whether perceived "unfairness" means that low earners get too high or too low pensions. This defect is eliminated in Question 3, where we asked directly for the most preferred division among the two "model pensioners".

Again, we first describe the results for the control group. **Figure 2a** shows the extent of desired redistribution for citizens. Around 19 per cent of the citizens desire an allocation that is in line with the status quo, such that Kleinschmidt receives 1000 Euro. The vast majority of citizens, however, namely 77 per cent, would prefer a system that redistributes to Kleinschmidt. 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 more than 60 per cent! These results are consistent with the above finding that citizens' approval rate of the German pension system is rather low. The answers to question 3 thus suggest that the low fairness evaluation is due to the absence of redistribution in the system.

Figure 2b shows the extent of desired redistribution for politicians. Here, the share of respondents who answered the question and desire an allocation in line with the status quo is higher, lying at 30 percent, 67 percent desire a redistribution to Kleinschmidt. 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 somewhat lower than what we observed for citizens, the division still clearly shows that also politicians reject the Bismarckian system and desire more equal pension outcomes. In fact, the main difference between politicians and citizens refers to the shares of respondents who agree to the Bismarckian rule (approximately 30 per cent of politicians versus 20 per cent of citizens) and those who are in favor of equal pension payments (10 per cent versus 20 per cent).

What personal characteristics are associated with a stronger desire to redistribute in the pension system in favor of the low earner? For citizens (see **Figure 3a**), some of the observed

differences are consistent with the fairness perceptions discussed above: married persons and the better educated desire *less* redistribution in favor of Kleinschmidt. The coefficient of income is negative but insignificant, but this may be due to the positive correlation of income with education. Those who tend to the political right want to redistribute significantly less.

For politicians (see **Figure 3b**), the results are also mostly consistent with the idea that judging the system as unfair means that it is not redistributing enough. Female politicians, those who identify as left and those with less education desire more redistribution than their respective counterparts.

4.4 The Effect of Information on Perceived Fairness of the Pension System and Desired Redistribution

Until now we have analyzed perceptions of citizens and politicians "as they are", that is without giving them any additional information about the system. In this section we answer the question how fairness evaluations and the extent of the desired redistribution are affected by the two pieces of information: that the existing pension system is strictly proportional and that high earners live longer, statistically.

Treatment 1 – Proportionality information

We first analyze the effect of the Proportionality Treatment (Treatment 1) which was only administered to citizens. Column 1 in **Table 5a**, panel A, shows that informing citizens about the proportional nature of the German pension system increases the share of citizens who find the system at least rather fair sizably from 32 per cent to 49 per cent, which is a majority of those who give a definite answer. Lumping together the groups of people who have somewhat realistic notions of the real nature of the German pension system (i.e. those that either think it is Bismarckian or Beveridgean or something in-between) leads to qualitatively similar results (see columns 3 to 6). Surprisingly, even people who guessed correctly shift their fairness notion by 21 PP.

Table 5a, panel B, and **Figure 4a** report the effects of the two information treatments on the desired redistribution in favor of Mr. Kleinschmidt. Giving people the information that pensions are proportional to contributions lowers the extent of this distribution somewhat but the difference is on the order of 20 Euros and significant only when adding controls. However, when focusing on those respondents who have guessed the true division correctly or at least realistically – columns 4 and 6 – this difference is slightly bigger (minus 33 and minus 45 respectively) and significantly different from zero. The shift in fairness perceptions for this group thus goes hand in hand with less desire for redistribution.

Treatment 2 – Proportionality + Life expectancy information

We hypothesized that giving people the information that Großmüller not only receives a higher pension but also statistically does so longer, would lead to lower perceived fairness of the system and higher desire for redistribution.

For citizens, in line with this hypothesis, adding the information that the better earners live longer lowers the share of people that judge the system as at least rather fair significantly, from the 49 per cent in Treatment 1 to 45 percent. Column 2 of **Table 5a** shows that these findings are robust to adding control variables such as age, gender and income. The treatment effect is qualitatively similar but of different size for the subgroup analysis by prior knowledge (see column 3 to 6). With respect to the preferred allocation of benefits, our prediction is confirmed only for people that have a correct or realistic understanding of the German pension system. For this group, adding the life expectancy information almost exactly reverses the effect of Treatment 1 and thus *increases* the desired redistribution in favor of the lower earner. Surprisingly, those with the strongest demand for redistribution in favor of the low earner (i.e. those in the group "guess high") reduce this demand by a large amount (around 200 Euros) when they learn that the low earner has a shorter life expectancy.

For politicians (see **Table 2b**), the treatment decreases the perceived fairness of the system. While this effect is not significant when taking control variables and state fixed effects into account, it is the same size as the difference between Treatment 1 and Treatment 2 for citizens with controls included, namely 6 PP. A similar picture is obtained for the preferred allocation of benefits: The treatment increases the desired redistribution to Kleinschmidt by 38 Euro when no controls are included (23 and 26 Euros respectively with controls and state fixed effects included), which mirrors the result for citizens with a correct or realistic understanding of the German pension system. While not significant with this sample size, the effect still provided evidence for a desire of politicians to compensate for a shorter duration of the payment to Kleinschmidt.

Heterogeneous treatment effects

Table 7a analyzes how various population groups react to the two information treatments by either lowering or increasing their demand for redistribution: column 3 measures the effect of the information that the system is proportional and column 4 the effect of the life expectancy information. The groups were formed in such a way that they are approximately equal in size.

Both those leaning to the left and those leaning to the center reduce their desired redistribution to the low earner equally strongly (minus 48 Euros) when learning about the proportionality of the system but it is only the latter group that increases the desired redistribution significantly and strongly (plus 61 Euros) upon the life expectancy information.

When people are divided by income, it stands out that in the middle category the decrease in the desired redistribution in treatment 1 is the strongest (minus 85 Euros) and is not compensated for when the life expectancy information is added (plus 44 Euros).

We see first that men react more strongly than women on both information treatments so that both the decrease in response to learning the proportionality of the system and the increase in response to the life expectancy information are higher (minus 58 vs. minus 26 Euros and plus 55 vs. plus 24 Euros, respectively) and significantly different from zero. The effect of age is more diverse: while the young do not change their demand for redistribution at all significantly, the middle-aged reduce their demand for redistribution in treatment 1 more

strongly (minus 62 Euros) and increase it in treatment 2 less strongly (plus 31 Euros), each time compared to people in pension age (minus 44 and plus 50 Euros, respectively).

5. Conclusion

The study reveals a number of striking results:

1. The knowledge of the proportionality character of the German public pension system in the population is rather limited: only about 30 per cent of the population are aware of this fact, and more than 20 per cent ascribe properties to it that not only the German system does not possess, but that are not shared by any pension system in the developed world.

2. Less than half the respondents in our citizen survey think that the German pension system is (at least rather) fair, while a majority of finds the system at least "rather fair.

3. When asked for a fair division of pension claims, people ask for a massive 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. 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.

4. The information that low earners have a shorter life expectancy leads to an even stronger demand for redistribution in their favor, at least by those respondents that have a "realistic" notion of the existing pension system.

With respect to the third finding one might ask whether the respondents took the role of income taxation into account, which by itself reduced 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 question 3. A possible counterargument against this objection is that during their working lives Mr Großmüller has benefitted more than Mr. Kleinschmidt from the deductibility of pension contributions from his income tax base.

The most important policy conclusion from our study is a clear refutation of the prevailing political dogma in Germany that 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.[12] On the contrary, less than 50 per cent of the population considers this system as ethically fair, and the extent of redistribution from high earners (and contributors) to low earners desired by a representative sample of the population is considerable. This extent is even slightly increased

[12] Similarly, when recently a "basic pension" ("Grundrente") was introduced in Germany, which tops up small retirement benefits that are close to the poverty line, this deviation from the proportionality principle met with great popularity.

when people consider that low earners have a shorter life expectancy than their better earning peers.

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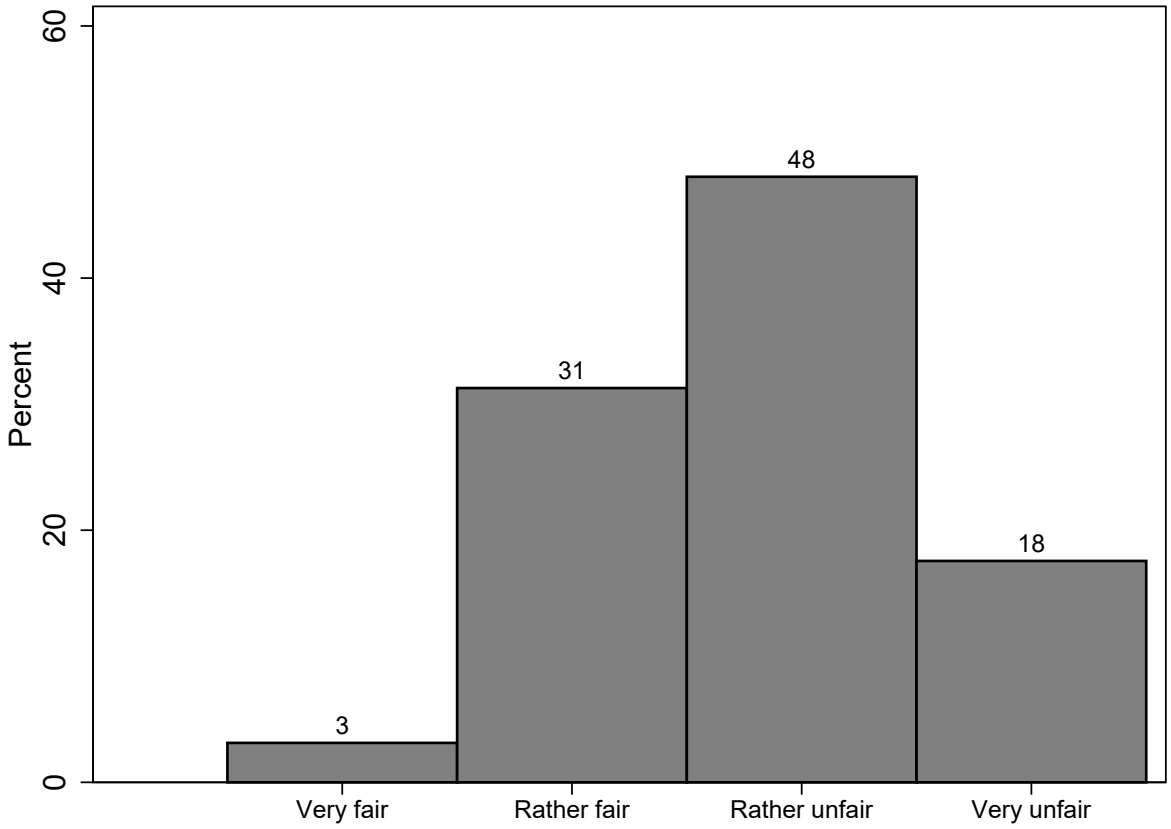
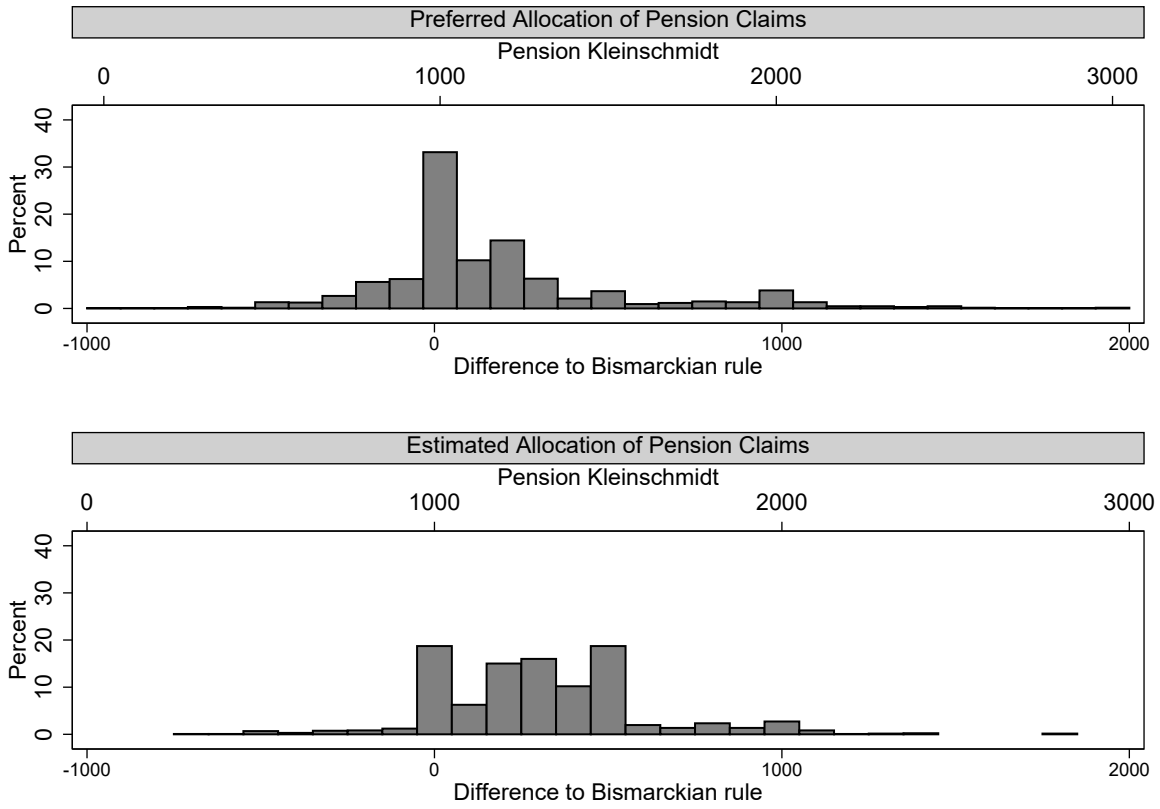
Appendix A: Figures and Tables Citizens

Figure 1a: Is the German public pension system considered to be fair?



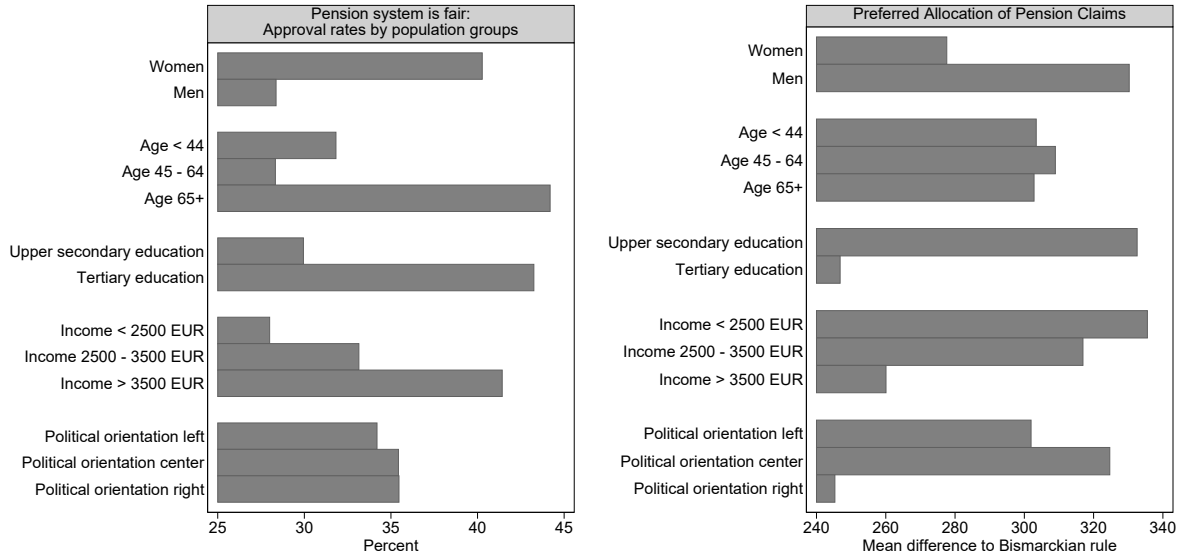
Notes: Share of respondents in the (uninformed) control group who think that the current distribution of pension rights in Germany is either "very fair", "rather fair", "rather unfair", or "very unfair". Own survey conducted by infratest dimap in 2020.

Figure 2a: Preferred and estimated allocation of pension claims



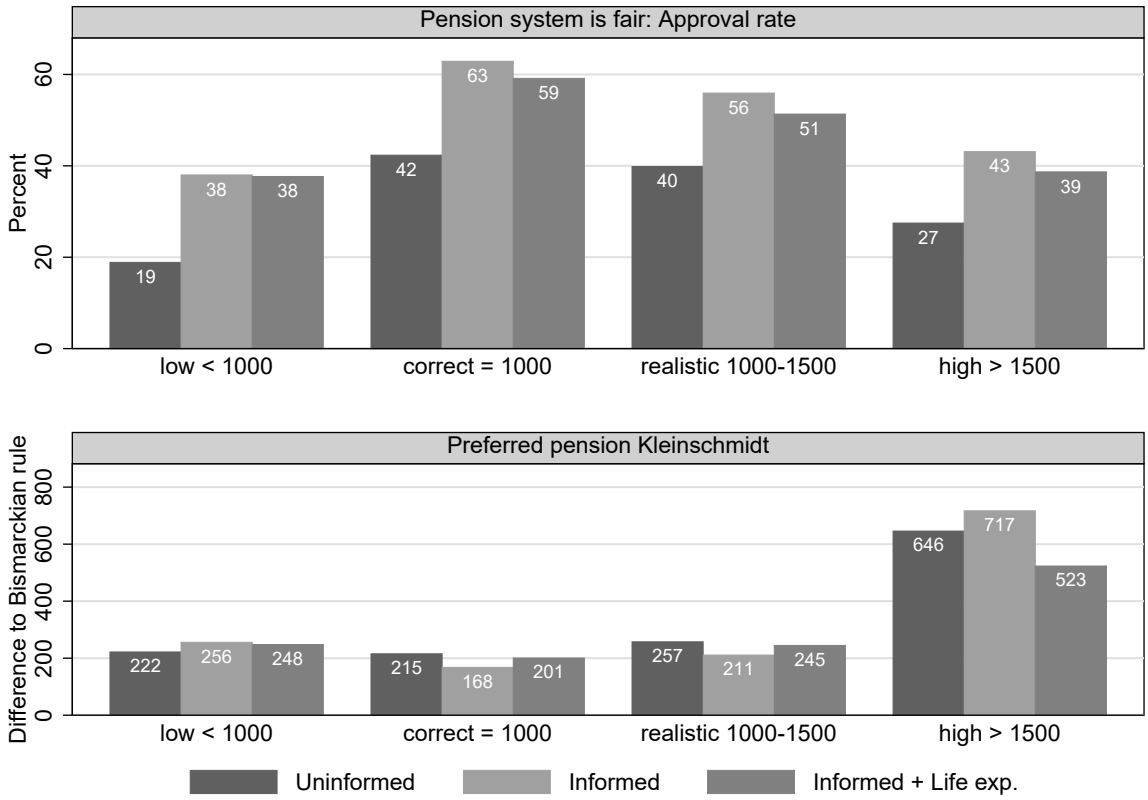
Notes: Top panel: Share of respondents in the (uninformed) control group to the question: "In your opinion, which distribution of pension rights is the fairest?". Responses are based on a slider with steps of 100 Euro over a range from 0 to 3000 Euro for Kleinschmidt (3000 to 0 Euro for Großmüller]. Bottom panel: Share of respondents in the (uninformed)control group 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]. Source: Own survey conducted by infratest dimap in 2020.

Figure 3a: Views on the German pension system across population groups



Notes: Left panel: Share of respondents in the (uninformed) control group by population group 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 claims expressed as deviation from the actual proportional pension claim of 1000 Euro for Kleinschmidt (Bismarckian rule) in the (uninformed) control group by population group. Source: Own survey conducted by infratest dimap in 2020.

Figure 4a: Outcomes by treatment status and prior knowledge



Notes: Top panel: Share of respondents who think that the current distribution of pension claims in Germany is either "perfectly fair" or "rather fair". Bottom panel: Mean preferred distribution of pension rights expressed as deviation from the actual proportional pension claim of 1000 Euro for Kleinschmidt (Bismarckian rule). Shares are reported for each experimental group separately by prior knowledge categories. Randomized experimental groups: Informed = respondents informed about Bismarckian rule, i.e., 1000 Euro for Kleinschmidt and 2000 Euro for Großmüller; Informed + Life exp. = respondents informed about Bismarckian rule and about higher life expectancy for individuals with higher income. Control group receives no information. Prior knowledge categories are defined by the estimated pension entitlement for Kleinschmidt: "low" for estimates below 1000 Euro, "correct" for estimates of 1000 Euro, "high" for estimates above 1500 Euro, and "realistic" for estimates between 1000 and 1500 Euro. Source: Own survey conducted by infratest dimap in 2020.

Table 1a: Descriptive statistics by treatment status

Experimental group	A Control		B Informed		C Informed + Life exp.	
	Mean	[SD]	Difference	(p-value)	Difference	(p-value)
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Controls						
Female	0.47	[0.50]	0.02	(0.17)	0.03	(0.11)
Age	50.67	[16.62]	0.57	(0.15)	0.76	(0.20)
Born in Germany	0.97	[0.17]	-0.00	(0.78)	-0.00	(0.65)
Living in East Germany	0.22	[0.41]	-0.03 *	(0.08)	-0.03	(0.31)
Married	0.52	[0.50]	-0.02	(0.53)	0.02	(0.16)
Children	0.65	[0.48]	-0.01	(0.84)	-0.01	(0.90)
Household size	2.34	[1.16]	-0.04	(0.24)	-0.02	(0.56)
Educational attainment						
Other or missing	0.07	[0.26]	0.00	(0.87)	0.00	(0.83)
Upper or post-secondary	0.57	[0.49]	0.07 ***	(0.00)	0.00	(0.63)
Tertiary	0.36	[0.48]	-0.07 ***	(0.00)	-0.00	(0.54)
Employed	0.61	[0.49]	0.00	(0.48)	0.01	(0.96)
Household gross monthly income	3,226.36	[2,617.33]	-85.25	(0.37)	286.24 **	(0.02)
Income missing	0.08	[0.27]	-0.01	(0.59)	0.03 **	(0.02)
Political orientation						
Left-right scale [0-10]	4.71	[1.86]	0.03	(0.36)	0.08 **	(0.04)
Left-right missing	0.08	[0.28]	0.01	(0.98)	-0.02	(0.17)
Left	0.35	[0.48]	-0.04 **	(0.04)	-0.04 ***	(0.00)
Center	0.33	[0.47]	0.05 **	(0.02)	0.06 ***	(0.00)
Right	0.24	[0.43]	-0.02	(0.75)	-0.00	(0.53)
Urbanicity						
Rural area	0.32	[0.47]	0.02	(0.23)	0.01	(0.29)
Town or small city	0.37	[0.48]	-0.01	(0.37)	-0.03 *	(0.07)
Urban fringe	0.13	[0.34]	0.01	(0.81)	0.02	(0.21)
Big city	0.13	[0.34]	0.01	(0.81)	0.02	(0.21)
Survey duration (in min)	21.88	[14.51]	-0.11	(0.65)	0.16	(0.73)
Prior knowledge						
Difference to Bismarckian rule	167.44	[386.02]	-9.17	(0.35)	-3.65	(0.49)
Guess missing	0.03	[0.18]	0.01	(0.33)	0.01	(0.29)
Outcomes						
Pension system perceived as fair	0.32	[0.47]	0.17 ***	(0.00)	0.13 ***	(0.00)
Difference to Bismarckian rule	304.91	[300.20]	-19.71 **	(0.02)	-27.27 ***	(0.00)
Support for Bismarckian rule	0.18	[0.39]	0.06 ***	(0.00)	0.03 *	(0.08)
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. Source: Own survey conducted by infratest dimap in 2020.

Table 2a: Answers to question 1: Estimated allocation of pension claims

Großmüller	Kleinschmidt	Frequency	Percent	Cumulative
3000	0	12	0.31	0.31
2900	100	7	0.18	0.49
2800	200	3	0.08	0.57
2700	300	10	0.26	0.83
2600	400	13	0.34	1.16
2500	500	35	0.90	2.07
2400	600	46	1.19	3.26
2300	700	93	2.40	5.66
2200	800	217	5.61	11.27
2100	900	243	6.28	17.55
2000	1000	1223	31.60	49.15
1900	1100	393	10.16	59.30
1800	1200	520	13.44	72.74
1700	1300	269	6.95	79.69
1600	1400	102	2.64	82.33
1500	1500	178	4.60	86.93
1400	1600	46	1.19	88.11
1300	1700	54	1.40	89.51
1200	1800	81	2.09	91.60
1100	1900	67	1.73	93.33
1000	2000	102	2.64	95.97
900	2100	57	1.47	97.44
800	2200	27	0.70	98.14
700	2300	22	0.57	98.71
600	2400	7	0.18	98.89
500	2500	11	0.28	99.17
400	2600	8	0.21	99.38
300	2700	2	0.05	99.43
200	2800	1	0.03	99.46
100	2900	4	0.10	99.56
0	3000	17	0.44	100.00

Notes: Source: Own survey conducted by infratest dimap in 2020.

Table 3a: Correlates of outcomes and prior knowledge in multivariate models

Outcome:	Fairness pension system (yes/no) (1)	Difference to Bismarckian rule (in EUR) (2)	Guess correct (yes/no) (3)	Guess realistic (yes/no) (4)
Female	.09***	−22.30	.01	.07***
	(.03)	(17.09)	(.02)	(.02)
Age/10	.01	3.60	−.03***	−.00
	(.01)	(7.40)	(.01)	(.01)
Upper or post-	.08*	−23.19	.05	.06*
secondary education	(.05)	(33.86)	(.03)	(.03)
Tertiary education	.19***	−89.52**	.08**	.10***
	(.05)	(35.90)	(.03)	(.04)
Married	.08**	−44.96**	−.03	.01
	(.03)	(19.94)	(.02)	(.02)
Children (y/n)	−.04	23.90	−.00	−.03
	(.04)	(21.29)	(.02)	(.02)
Household size	−.01	10.62	.01	−.01
	(.02)	(10.20)	(.01)	(.01)
Income (in 100 EUR)	.04	−26.36	−.01	.04***
	(.08)	(50.35)	(.02)	(.02)
Income missing	.05	−67.16**	.01	.01
	(.05)	(32.57)	(.03)	(.03)
Pol. orient.: left	.07	−77.43**	.02	.01
	(.05)	(32.45)	(.03)	(.03)
Pol. orient.: center	.11**	−81.79***	−.01	−.02
	(.05)	(31.05)	(.03)	(.03)
Pol. orient.: right	.08	−138.98***	.01	.01
	(.05)	(34.16)	(.03)	(.03)
Employed	−.05	26.49	.02	.01
	(.03)	(19.33)	(.02)	(.02)
East Germany	−.05	16.41	.02	−.01
	(.03)	(20.31)	(.02)	(.02)
Pension guess low	−.16***	−43.59**		
(< 1000 EUR)	(.03)	(21.53)		
Pension guess high	−.10**	395.61***		
(> 1500 EUR)	(.04)	(34.97)		
Pension guess missing	−.11	195.66***		
	(.07)	(63.61)		
Interviewtime	.01	4.04	.01	.02***
(in 10 min)	(.01)	(5.63)	(.01)	(.01)
Baseline mean	.32	304.97	.32	.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) in columns 1 and 2; All participants 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 4a: Answers to question 2: Perceived fairness of the German pension system

	frequency	Percent	Percent adjusted
Don't know	160	3.59	
perfectly fair	297	6.67	6.92
rather fair	1,543	34.67	35.96
rather unfair	1,792	40.26	41.76
very unfair	659	14.81	15.36

Notes: Source: Own survey conducted by infratest dimap in 2020.

Table 5a: Information treatment effects

Panel A						
Outcome:	Fairness pension system (yes/no)					
Sample:	All		Guess low	Guess correct	Guess high	Guess realistic
Guess range:	0-3000		<1000	1000	>1500	1000-1500
	(1)	(2)	(3)	(4)	(5)	(6)
Informed	.17***	.18***	.19***	.21***	.16***	.18***
	(.02)	(.02)	(.04)	(.04)	(.06)	(.02)
Informed × Life exp.	–.04*	–.06***	–.03	–.05	–.03	–.06**
	(.02)	(.02)	(.05)	(.04)	(.07)	(.02)
Pension Guess		✓				
Controls		✓	✓	✓	✓	✓
Baseline mean	.32	.32	.19	.40	.26	.37
Observations	3,989	3,963	663	1,272	433	2,719
Panel B						
Outcome:	Difference to Bismarckian rule (Desired pension Kleinschmidt - 1000 EUR)					
Sample:	All		Guess low	Guess correct	Guess high	Guess realistic
Guess range:	0-3000		<1000	1000	>1500	1000-1500
	(1)	(2)	(3)	(4)	(5)	(6)
Informed	–19.71	–24.28**	23.90	–32.60*	71.39	–44.85***
	(13.43)	(11.73)	(31.26)	(17.07)	(47.55)	(11.74)
Informed × Life exp.	–7.56	7.40	–14.23	38.65**	–213.31***	39.86***
	(12.77)	(11.37)	(33.15)	(16.21)	(54.55)	(11.13)
Pension Guess		✓				
Controls		✓	✓	✓	✓	✓
Baseline mean (in EUR)	304.91	304.97	221.03	212.70	653.28	256.13
Observations	3,989	3,963	663	1,272	433	2,719

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: Informed (groups B and C) = respondents informed about Bismarckian rule, i.e., 1000 EUR for Kleinschmidt and 2000 EUR for Großmüller; Informed × Life exp. (group C) = respondents informed about Bismarckian rule and about higher life expectancy for individuals with higher income. 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 1 for more details on the controls. 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 6a: Answers to question 3: Desired pension payments

Großmüller	Kleinschmidt	Frequency	Percent	Cumulative
3000	0	7	0.18	0.18
2900	100	0	0.00	0.18
2800	200	0	0.00	0.18
2700	300	3	0.08	0.25
2600	400	4	0.10	0.35
2500	500	14	0.35	0.70
2400	600	14	0.35	1.05
2300	700	16	0.40	1.45
2200	800	35	0.88	2.33
2100	900	54	1.35	3.69
2000	1000	859	21.53	25.22
1900	1100	274	6.87	32.09
1800	1200	637	15.97	48.06
1700	1300	651	16.32	64.38
1600	1400	336	8.42	72.80
1500	1500	686	17.20	90.00
1400	1600	71	1.78	91.78
1300	1700	63	1.58	93.36
1200	1800	77	1.93	95.29
1100	1900	45	1.13	96.42
1000	2000	85	2.13	98.55
900	2100	19	0.48	99.02
800	2200	12	0.30	99.32
700	2300	6	0.15	99.47
600	2400	7	0.18	99.65
500	2500	1	0.03	99.67
400	2600	2	0.05	99.72
300	2700	2	0.05	99.77
200	2800	2	0.05	99.82
100	2900	1	0.03	99.85
0	3000	6	0.15	100.00
missing		504		

Notes: Source: Own survey conducted by infratest dimap in 2020.

Table 7a: Effect heterogeneity across population groups

Outcome:	Fairness pension system (yes/no)		Difference to Bismarckian rule	
Effect:	Informed	Informed × Life expectancy	Informed	Informed × Life expectancy
	(1)	(2)	(3)	(4)
Baseline	.18***	–.06**	–44.85***	39.86***
	(.02)	(.02)	(11.74)	(11.13)
Gender				
Women	.18***	–.04	–26.31	23.53
	(.04)	(.03)	(16.03)	(14.89)
Men	.18***	–.09**	–58.21***	54.65***
	(.04)	(.04)	(17.10)	(17.01)
Age				
18 - 45	.17***	–.05	–21.05	36.18*
	(.04)	(.04)	(23.49)	(20.84)
45 - 64	.27***	–.05	–62.23***	30.75*
	(.04)	(.04)	(17.40)	(17.16)
65+	.06	–.08	–43.60**	50.40***
	(.05)	(.05)	(19.17)	(18.38)
Educational attainment				
Upper or post-secondary	.15***	–.04	–68.37***	45.59***
	(.03)	(.03)	(15.92)	(13.95)
Tertiary	.22***	–.06	–13.35	21.73
	(.04)	(.04)	(18.11)	(18.81)
Political orientation				
Left	.20***	–.04	–47.91**	24.88
	(.04)	(.04)	(21.00)	(19.06)
Center	.13***	–.08*	–48.86***	61.32***
	(.04)	(.04)	(18.77)	(18.54)
Right	.26***	–.08	–27.15	29.93
	(.05)	(.05)	(25.53)	(25.05)
Income				
< 2500 EUR	.11**	–.06	–7.85	18.52
	(.04)	(.04)	(19.86)	(20.68)
2500 - 3500 EUR	.21***	–.04	–84.78***	44.18**
	(.04)	(.04)	(22.72)	(17.21)
> 3500 EUR	.19***	–.04	–27.55	35.05*
	(.04)	(.04)	(19.74)	(19.09)
Employment status				
Employed	.22***	–.07**	–57.26***	38.88***
	(.03)	(.03)	(15.69)	(13.77)
Non-employed	.10***	–.03	–24.18	43.58**
	(.04)	(.04)	(17.58)	(18.06)

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: 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: Informed (groups B and C) = respondents informed about Bismarckian rule, i.e., 1000 EUR for Kleinschmidt and 2000 EUR for Großmüller; Informed × Life exp. (group C) = respondents informed about Bismarckian rule and about higher life expectancy for individuals with higher income. Control group receives no information. Regressions models are estimated based separately for each respective subgroup. Model specifications in are equivalent to the model in column (6) of Table 5. 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 A1: Descriptive statistics by treatment status (Sample with realistic guesses)

	Control		Treatment 1		Treatment 2	
	Mean	[SD]	Difference	(SE)	Difference	(SE)
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Controls						
Female	0.50	[0.50]	0.01	(0.02)	0.03	(0.02)
Age	50.61	[16.77]	0.22	(0.76)	0.43	(0.74)
Born in Germany	0.97	[0.17]	-0.00	(0.01)	-0.01	(0.01)
Married	0.51	[0.50]	-0.00	(0.02)	0.03	(0.02)
Children	0.63	[0.48]	-0.00	(0.02)	-0.00	(0.02)
Household size	2.31	[1.16]	-0.00	(0.05)	-0.01	(0.05)
Educational attainment						
Other or missing	0.06	[0.24]	-0.01	(0.01)	0.01	(0.01)
Upper or post-secondary	0.56	[0.50]	0.07 **	(0.02)	-0.01	(0.02)
Tertiary	0.38	[0.48]	-0.06 **	(0.02)	0.00	(0.02)
Employed	0.61	[0.49]	0.02	(0.02)	0.03	(0.02)
Household gross monthly income	3,289.90	[2,871.42]	-48.38	(141.16)	357.04 **	(189.32)
Income missing	0.08	[0.27]	-0.01	(0.01)	0.03 *	(0.01)
Political orientation						
Left-right scale [0-10]	4.75	[1.77]	0.02	(0.09)	-0.00	(0.09)
Left-right missing	0.09	[0.28]	0.00	(0.01)	-0.03 **	(0.01)
Left	0.34	[0.47]	-0.02	(0.02)	0.00	(0.02)
Center	0.32	[0.47]	0.03	(0.02)	0.04	(0.02)
Right	0.25	[0.43]	-0.01	(0.02)	-0.01	(0.02)
Urbanicity						
Rural area	0.30	[0.46]	0.04 **	(0.02)	0.04 **	(0.02)
Town or small city	0.36	[0.48]	-0.01	(0.02)	-0.02	(0.02)
Urban fringe	0.14	[0.34]	-0.00	(0.02)	0.00	(0.02)
Big city	0.14	[0.34]	-0.00	(0.02)	0.00	(0.02)
Survey duration (in min)	21.98	[14.20]	0.28	(0.67)	0.80	(0.72)
Prior knowledge						
Guessed difference to Bismarckian rule	120.03	[145.51]	-2.41	(6.80)	11.49	(6.84)
Guess missing	0.00	[0.00]	0.00	(0.00)	0.00	(0.00)
Outcomes						
Pension system perceived as fair	0.38	[0.48]	0.17 ***	(0.02)	0.12 ***	(0.02)
Desired difference to Bismarckian rule	256.09	[241.24]	-42.44 ***	(10.39)	-11.62 **	(10.54)
Support for Bismarckian rule	0.22	[0.42]	0.07 ***	(0.02)	0.03	(0.02)
Observations (Total=2,733)	896		899		938	

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. Source: Own survey conducted by infratest dimap in 2020.

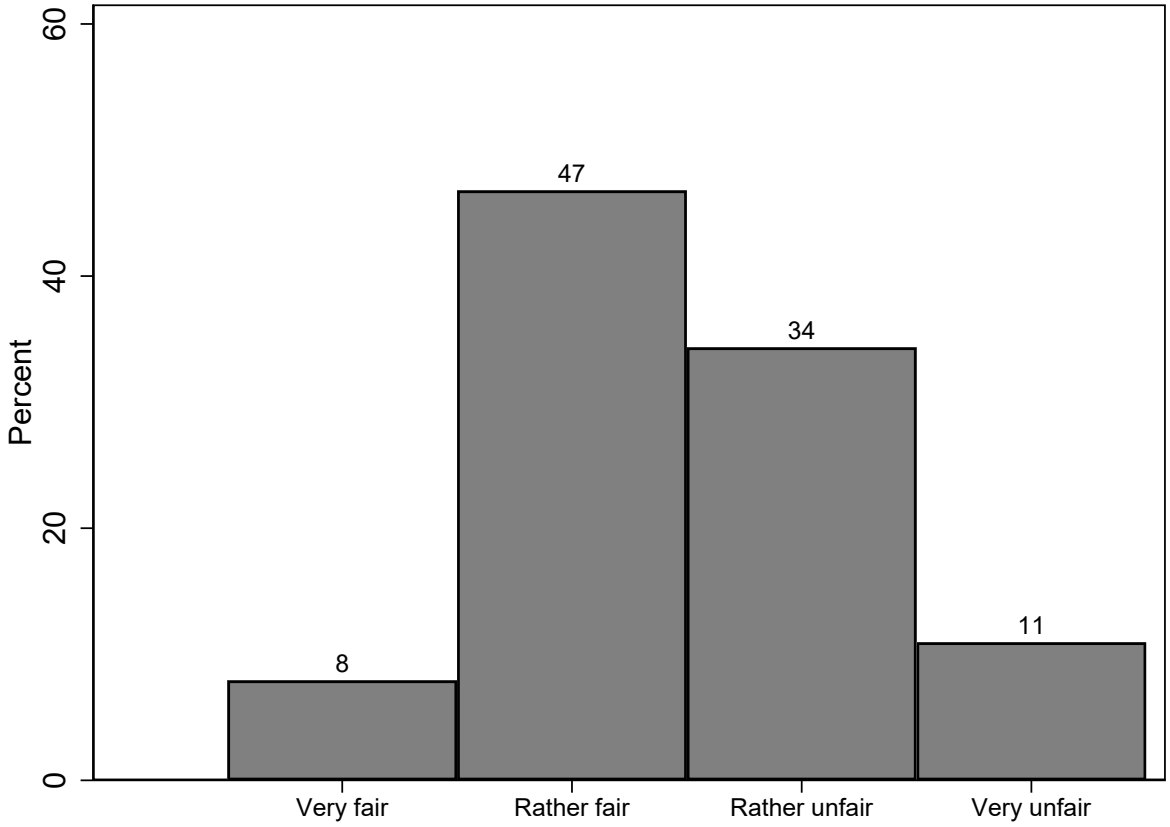
Table A2: Information treatment effects (very fair/ very unfair)

Panel A						
Outcome:	Pension system: Absolutely fair (yes/no)					
Sample:	All		Guess low	Guess correct	Guess high	Guess realistic
Guess range:	0-3000		<1000	1000	>1500	1000-1500
	(1)	(2)	(3)	(4)	(5)	(6)
Informed	.07***	.07***	.05**	.12***	.02	.09***
	(.01)	(.01)	(.02)	(.02)	(.02)	(.01)
Informed × Life exp.	−.03**	−.03***	−.02	−.07***	.05	−.05***
	(.01)	(.01)	(.03)	(.02)	(.04)	(.01)
Pension Guess		✓				
Controls		✓	✓	✓	✓	✓
Baseline mean	.03	.03	.02	.05	.02	.04
Observations	3,989	3,963	663	1,272	433	2,719
Panel B						
Outcome:	Pension system: Absolutely unfair (yes/no)					
Sample:	All		Guess low	Guess correct	Guess high	Guess realistic
Guess range:	0-3000		<1000	1000	>1500	1000-1500
	(1)	(2)	(3)	(4)	(5)	(6)
Informed	−.06***	−.06***	−.06	−.06**	−.06	−.06***
	(.01)	(.01)	(.04)	(.02)	(.05)	(.02)
Informed × Life exp.	.03*	.03**	−.01	.02	.00	.04***
	(.01)	(.01)	(.04)	(.02)	(.05)	(.02)
Pension Guess		✓				
Controls		✓	✓	✓	✓	✓
Baseline mean	.32	.32	.19	.40	.26	.37
Observations	3,989	3,963	663	1,272	433	2,719

Notes: Linear probability models. Dependent variable: Panel A: binary outcome indicating that respondents consider the German pension system to be very fair; Panel B: binary outcome indicating that respondents consider the German pension system to be very unfair. Randomized experimental groups: Informed = respondents informed about Bismarckian rule, i.e., 1000 EUR for Kleinschmidt and 2000 EUR for Großmüller; Informed + Life exp. = respondents informed about Bismarckian rule and about higher life expectancy for individuals with higher income. 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 1 for more details on the controls. 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.

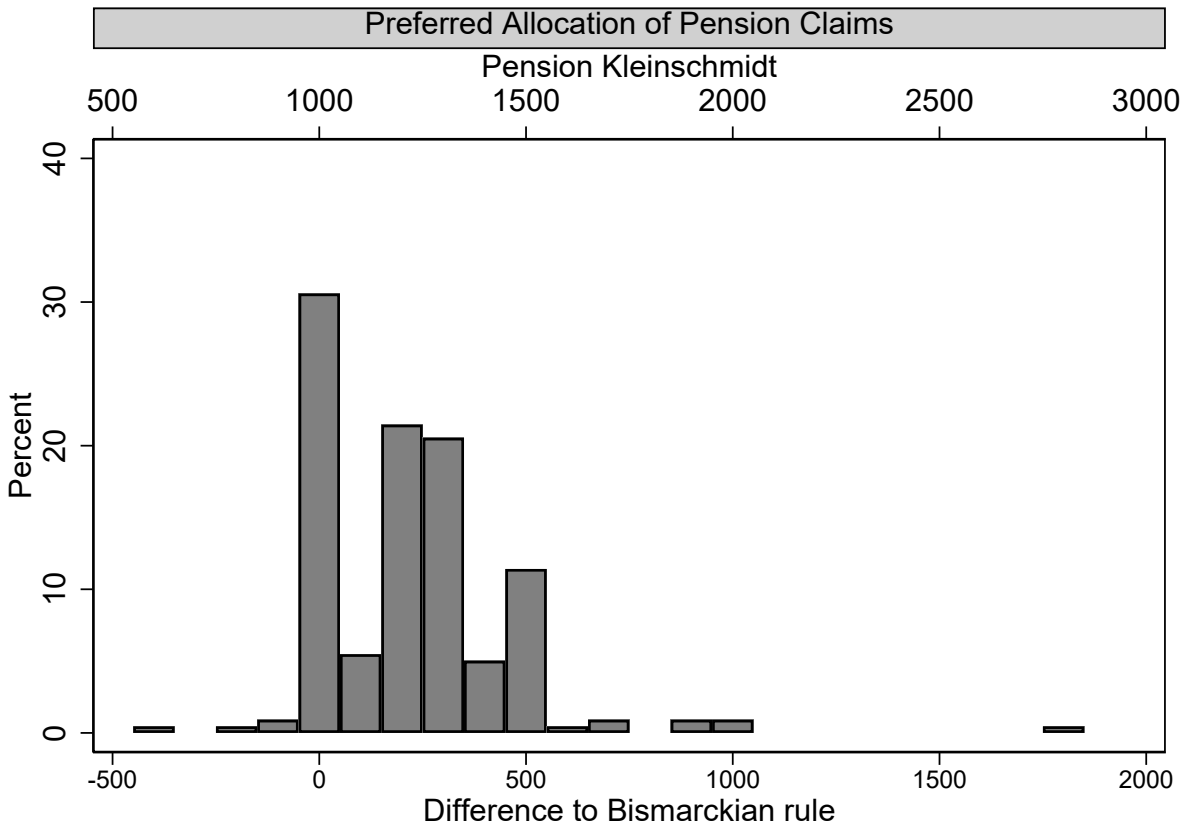
Appendix B: Figures and Tables MPs

Figure 1b: Is the German public pension system considered to be fair?



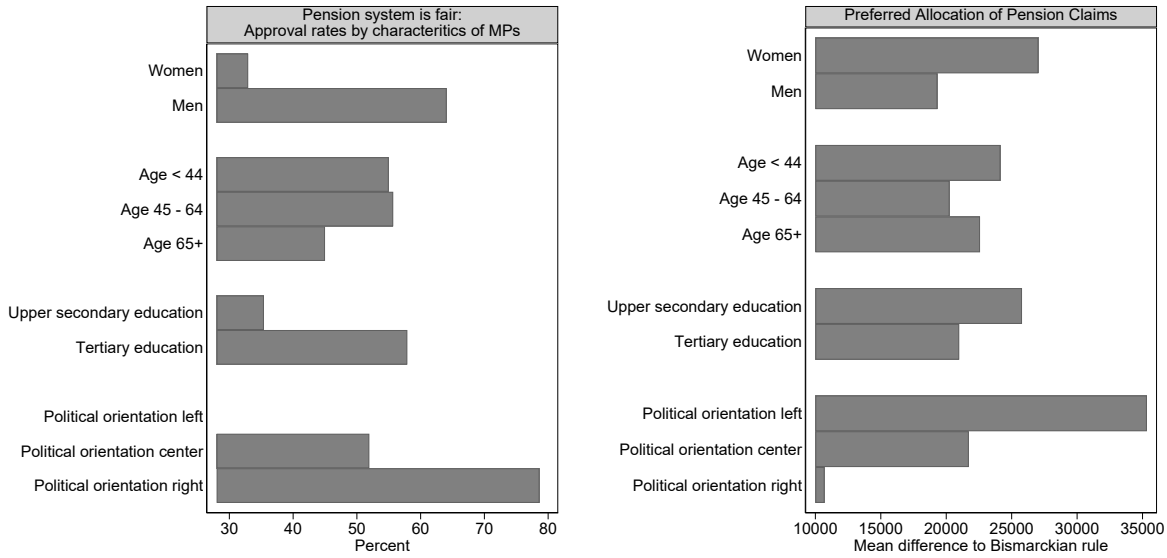
Notes: Share of respondents in the (uninformed) control group who think that the current distribution of pension rights in Germany is either "very fair", "rather fair", "rather unfair", or "very unfair". Source: Own survey conducted with 535 members of state parliaments in 7 German states.

Figure 2b: Preferred allocation of pension claims



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). Source: Own survey conducted with 535 members of state parliaments in 7 German states.

Figure 3b: Views on the German pension system across population groups



Notes: Left panel: Share of respondents in the (uninformed) control group by groups of MPs 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 claims expressed as deviation from the actual proportional pension claim of 1000 Euro for Kleinschmidt (Bismarckian rule) in the (uninformed) control group by groups of MPs. Source: Own survey conducted with 535 members of state parliaments in 7 German states.

Table 1b: Descriptive statistics by treatment status

Experimental group	Control		Informed	
	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	
Thuringa=39	19		20	
Total=535	269		266	

Notes: Means and standard deviations in the control 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 experimental groups. 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 7 German states.

Table 2b: Information treatment effects

Outcome:	Fairness pension system (yes/no)			Difference to Bismarckian rule (Pension Kleinschmidt - 1000 EUR)		
	(1)	(2)	(3)	(4)	(5)	(6)
Informed	–.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	218.26	218.26	218.26
Observations	533	533	533	451	451	451

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 groups: Informed = respondents informed about Bismarckian rule and about higher life expectancy for individuals with higher income. Control group receives no information. Controls include gender, age, education, and experience as MPs in years. State fixed effects are included in columns (3) and (6). 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 7 German states.