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Working Paper

Income misperception and populism

W.E.P. - Würzburg Economic Papers, No. 104

Provided in Cooperation with:

University of Würzburg, Department of Economics

Suggested Citation: Albers, Thilo N. H.; Kersting, Felix; Kosse, Fabian (2023) : Income misperception and populism, W.E.P. - Würzburg Economic Papers, No. 104, University of Würzburg, Department of Economics, Würzburg,
<https://doi.org/10.25972/OPUS-32169>

This Version is available at:

<https://hdl.handle.net/10419/274532>

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Income misperception and populism

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June 2023



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Würzburg 2023.

Titelblattgestaltung & Grafik

Holger Schilling, Dipl.-Des.

ISSN: 2941-7651

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Universitätsbibliothek Würzburg

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<https://opus.bibliothek.uni-wuerzburg.de>

Zitiervorschlag:

Albers, Thilo N. H. / Kersting, Felix / Kosse, Fabian: Income misperception and populism,
Würzburg Economic Papers, Nr. 104 (2023). DOI 10.25972/OPUS-32169

Income misperception and populism*

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June 12, 2023

Abstract

We propose that false beliefs about own current economic status are an important factor for explaining populist attitudes. Eliciting subjects' receptiveness to right-wing populism and their perceived relative income positions in a representative survey of German households, we find that people with pessimistic beliefs about their income position are more attuned to populist statements. Key to understanding the misperception-populism relationship are strong gender differences in the mechanism: men are much more likely to channel their discontent into affection for populist ideas. A simple information provision does neither sustainably reduce misperception nor curb populism.

Keywords: Perception, Income, Populism.

JEL classification: D63, D72, D91, P16.

*In particular, we thank Stefan Etgeton, who was involved in the project at its earlier stages. We are also grateful to David Richter (DIW Berlin) for his support in implementing this project and the survey in particular. This paper has greatly benefited from discussions with Peter Andre, Mathias Bühler, Chris Roth, Annekatrin Schrenker, Timo Stieglitz, and Nikolaus Wolf. We thank Can Aycan for excellent research assistance. We also wish to thank participants at the *in_equality* conference (Konstanz) and the CRC workshop (Schwanenwerder) for valuable comments. Financial support by Deutsche Forschungsgemeinschaft through CRC TRR 190 (project number 280092119) is gratefully acknowledged.

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1 Introduction

Many countries have experienced a rapid increase in the support for populist parties in the past two decades. Once populist leaders take over, the costs are high for both the democratic institutions (Cole and Schofer, 2023) and the macroeconomy (Funke et al., 2021). To design policies that curb the rise of populism, we require more knowledge on the precise mechanisms through which economic and cultural factors fuel populism (Guriev and Papaioannou, 2022). In particular, the role of income is not well-understood. While studies often find strong evidence for a negative income-populism relationship on the macro level, the evidence at the household level is inconclusive at best. Attempting to resolve this paradox, studies have shifted the focus from the current economic status to beliefs about the future status (Berman, 2021). Yet, what if individuals find it even difficult to form accurate beliefs about their current socioeconomic status?

We tackle this question by leveraging the methods and insights from a fast-growing literature that connects the perception of one's status, rather than the actual status, with political preferences concerning migration and the demand for redistribution.¹ We document a strong link between pessimism about the own position in the income distribution and right-wing populist attitudes based on a representative survey of German households. Our additional evidence mitigates endogeneity concerns through a novel instrument and, exploring the heterogeneity in our sample, uncovers a strong gender bias: The male part of our sample drives much of the observed relationship. Leveraging a previous information treatment for parts of our sample, we show that information provision—as a potential simple policy tool—is not sufficient to curb populism.

The analysis rests on a questionnaire that elicits the respondents' perceived relative income position as well as their receptiveness to populist ideas. We embed our survey in the Innovation Sample of the German Socio-Economic Panel (SOEP) for about 1500 individuals. In operationalising misperception we follow the literature in calculating the difference between the subjective and objective percentile in the national income distribution. To measure populism, we depart from many studies in economics, which typically rely on questions about affection for political parties or election outcomes. Instead, we incorporate recent advances in opinion research and political science by implementing a multidimensional measure based on 12 survey items (Akkerman et al., 2014; Schulz et al., 2018). In practice, we capture right-wing populist attitudes and use the phrases 'populism' and 'right-wing populism' interchangeably henceforth.² Sure enough, our composite populism measure captures far-right voters, but it also captures those whose attitudes have not yet translated

¹See, for example, Cruces et al. (2013), Karadja et al. (2017), Fehr et al. (2022), and Alesina et al. (2023).

²The measure by Akkerman et al. (2014) and Schulz et al. (2018) has been applied in other European countries and aims to capture populist attitudes at both ends of the political spectrum. It does not do so in the German case, possibly because the motifs and language that right- and left-wing populist politicians employ are more distinct than elsewhere.

into voting for a populist party.

The correlational evidence suggests that, conditional on their actual income position, individuals that underestimate their relative income position hold more right-wing populist views relative to those that form more accurate beliefs about their economic status. This correlation is robust to a large set of controls, including local economic conditions, and economically meaningful: A decrease of two percentiles in the underestimation of one's relative income position or moving up the actual income distribution by one percentile are associated with the same decrease in populist attitudes.

Our instrumental variable (IV) approach rests on the insight that the local income distribution provides a reference frame. Some individuals live in counties in which the local distribution resembles the national one in the parts relevant to their position. Hence, they have better information about the national distribution. Empirically, we place each individual into a) the local income distribution in her county of residence and b) the national income distribution. The *absolute* difference between the respective percentile ranks in these distributions constitutes the individual's information set—our instrumental variable. The IV approach reaffirms the positive link between misperception and populism. We address concerns about the instrument's excludability—i.e., the instrument simply reflects local economic conditions that may affect populism through channels other than misperception—in two ways. First, we condition the instrument on the local (median) income and its distribution. Second, we provide a placebo instrument: The *non-absolute* rather than *absolute* percentile difference. If our instrument's power originates in the reflection of local economic conditions rather than in its ability to shift misperception, the *non-absolute* percentile difference should be an even better instrument than the *absolute* one. However, the placebo instrument has no predictive power. This provides evidence against a potential violation of the exclusion restriction related to local economic conditions.

We also speak to the question of how misperception translates into support for populism in two steps. Individuals' incorrect beliefs lead to discontent with their incomes. This discontent then makes them more receptive to populist ideas. However, strong gender differences emerge in this second step. Even though men and women hardly differ in their ability to predict their own income position and the subsequent translation of misperception into income dissatisfaction, men's misperception is much more strongly associated with populist attitudes. In light of the common finding of a stronger 'self-serving bias' among men (Campbell and Sedikides, 1999), i.e., taking credit for personal success but blaming external factors for personal failure, we interpret these results as evidence for gender differences in coping with dissatisfaction resulting from income misperception.

As final step of our analysis, we analyse information provision as a potential way to reduce misperception and, thereby, curb populism. For this purpose, we leverage previous waves of the SOEP-IS, which include an information treatment about the objective income

position for parts of our sample. Our results cast doubt that simple information provision is a useful tool to correct misperception of the income position sustainably, let alone curb populist attitudes in the long term.

Our study is related to three strands of literature. First, we add to research on the economic and cultural origins of populism (see the recent overviews by [Berman, 2021](#); [Rodrik, 2021](#); [Colantone et al., 2022](#); [Gurieff and Papaioannou, 2022](#)). In terms of methodology, we apply and validate a refined measure of populist attitudes from outside the economics literature. Economists' studies of populism typically rely on voting results or intentions, both of which come with particular methodological challenges. While the regional analysis of actual voting outcomes bears the danger of ecological fallacy, capturing voting intentions through surveys often leads to an underestimation of the support for extreme parties ([Breen, 2000](#); [Durand et al., 2004](#)). In contrast, the indirect elicitation of populist beliefs such as in this paper allows for a representative individual analysis of extreme political preferences. In terms of novel explanations, we introduce how a false belief about current status—rather than a belief/anxiety about the future status—affects attitudes towards right-wing populism, especially for individuals in the top half of the income distribution.³ Acknowledging the important role of perception of income relative to actual income also helps to rationalise the inconclusive household level evidence on the income-populism relationship: Households' distorted beliefs about their income position dilute the statistical relationship between actual income and populism.

Second, the results of this study relate to a growing literature on the effect of misperception on political preferences ([Cruces et al., 2013](#); [Karadja et al., 2017](#); [Alesina et al., 2018](#); [Fehr et al., 2022](#); [Haaland and Roth, 2023](#); [Hvidberg et al., 2023](#)). The existing literature documents the importance of income misperception for demand for redistribution. Our results indicate that income misperception also matters for wider political preferences, especially for the male part of the population. Moreover, we also complement this literature from a methodological point of view. While most previous studies use short-run survey experiments, we employ natural occurring variation. Survey experiments allow for controlled shifts in beliefs and their causal interpretation is straightforward, but these shifts may be short-term depending on the depth of the information set (as [Grigorieff et al. 2020](#) show for beliefs about immigration). While the causal interpretation of our IV results relies on stricter assumptions, these allow for a more long-term perspective above and beyond the experimental situation.

Finally, our study speaks to the literature on gender differences in political preferences. Women tend to vote less for extreme parties ([Harteveld et al., 2019](#)) and are more pro-redistribution ([Alesina and Giuliano, 2011](#)). Recent experimental studies suggest that these

³Relatedly, [Burgoon et al. \(2019\)](#) study the role of relative income development by analyzing the correlation between positional deprivation, i.e., the growth of individual income relative to the national average, and support for radical parties.

differences are due to male overconfidence and different expectations regarding economic circumstances (Buser et al., 2020; Ranehill and Weber, 2022). However, when it comes to populism in particular, gender is an often understudied aspect (Abi-Hassan, 2017), with some notable exceptions (Harteveld et al., 2015; Harteveld and Ivarsflaten, 2018). Relative to the existing literature, we document that income misperception contributes to gender differences in political preferences.

The remainder of this paper is structured as follows. Section 2 describes the empirical operationalisation of our key concepts: Income perception and populism. Section 3 contains the quantitative analysis including correlational evidence and the instrumental variable approach. Section 4 explores the mechanism. Section 5 analyses the potential of information provision to reduce misperceptions and populism. Section 6 concludes.

2 Measuring perception and populism

Our survey was part of the SOEP’s Innovation Sample, a representative longitudinal survey of German households.⁴ The SOEP-IS is conducted using computer-assisted personal interviewing. For our analysis, we designed two tailor-made survey modules, one on income misperception, one on populism. The survey took place in 2019.

Among the 1990 respondents, 1502 end up in our final sample. This attrition is due to three main reasons, all of which carry roughly equal quantitative importance. First, some respondents did not answer the question on income perception. Second, we restrict our sample to households consisting of one or two adults. Third, we lose some observations due to the IV strategy, which we describe later.

2.1 Measuring perception

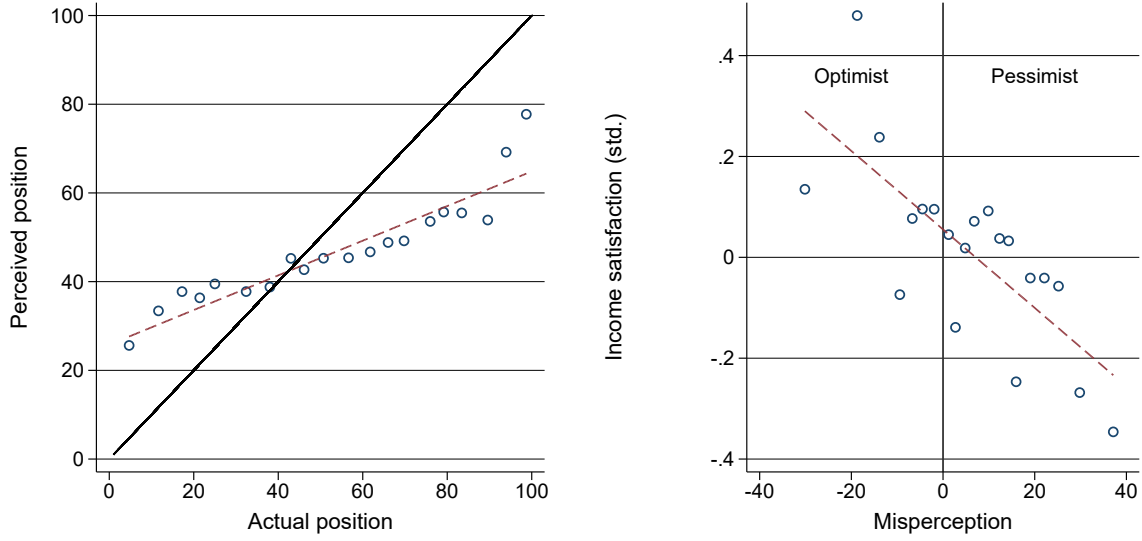
To measure income misperception, we follow previous studies (Cruces et al., 2013, Karadja et al., 2017, Hvidberg et al., 2023, and notably Fehr et al., 2022, who also embed their survey in the SOEP-IS). In the SOEP-IS, households are regularly asked for their net household income. The concept is clearly and explicitly defined. Based on this information, we calculate the household’s objective position (P_i^O). We choose net over gross income as the income concept as i) individuals typically have better knowledge about the former and ii) net income is the concept that the respondents of the SOEP-IS are most familiar with.⁵

⁴For more information on the SOEP, see Goebel et al. (2019) and on the SOEP-IS see Richter et al. (2015).

⁵The non-response rates for gross income are substantially higher than those for net income in past surveys (Schräpler, 2004, p. 131). Germans are more familiar with net income since employers withhold social security contributions, health insurance, and taxes. We validate this claim by comparing the average misperception we find with a previous sample of individuals surveyed by Fehr et al. (2022) who were asked about gross income. Individuals not surveyed previously by Fehr et al. (2022) in our sample have an average misperception of 9.1 (SD: 24.4). We find a mean of 9.7 (SD: 28.5) for individuals asked about gross income in the sample by Fehr et al. (2022). Thus, we are confident that our question about net income should not bias our results.

Figure 1: Perception, actual income position, and income satisfaction

a) Perception by actual income position b) Misperception & income satisfaction



Notes: Own calculation based on SOEP-IS. Figures 1a and 1b are based on binned scatter plots. Each dot represents 75 observations. The variable “income satisfaction” in Figure 1b is standardised.

We focus on households rather than individuals, because the German tax system strongly favours couples. This makes it difficult to interpret ‘individual’ income after taxes and even harder for the interviewees to conceptualise a distribution of such income. Since our question on the subjective position in the income distribution comes much later in the survey, we reiterate the definition of net household income when asking the following question: “What do you estimate: What percentage of households in Germany in 2018 had a lower net household income than your household?” The respondent’s answer to this question provides us with her subjective percentile (P_i^S). We define the difference between P_i^O and P_i^S as misperception. A positive value indicates pessimism, i.e., the individual underestimates her position in the income distribution, a negative value optimism, i.e., an individual overestimates her position in the income distribution.

Overall, the positive and negative misperception almost balance each other out: The average bias is 5 percentiles and its standard deviation 25 percentiles.⁶ Figure 1a—a binned scatter plot, in which one dot represents 75 observations—documents that individuals in the bottom half of the income distribution tend to overestimate their income position while individuals in the top half underestimate their position.⁷ This pattern confirms the middle-

⁶These values lie within the range of other studies. For instance, Fehr et al. (2022) find an average misperception of 1 (SD= 29) using the same question in the same survey for the years before.

⁷This is not primarily driven by mean reversion. In this case mean reversion means that individuals at the very top can only weakly overestimate their position, while the opposite is true for individuals at the very bottom. Following Hvidberg et al. (2023), Appendix Figure A.1 reports an alternative version of the Figure 1a

class bias identified in previous studies (Evans and Kelley, 2004; Cruces et al., 2013; Fehr et al., 2022).

Validating the chosen measure, Figure 1b suggests that income misperception has real consequences. The bin scatter reports the relationship between misperception and income satisfaction. Income satisfaction is measured on a 11-point Likert scale. Conditional on their objective position in the income distribution, people who underestimate their income position (pessimists) are less satisfied with their income than people who overestimate their position (optimists). The correlation is substantial: the coefficient for the regression line in Figure 1b is about 40% of the size of the one for the objective income position. Misperception strongly matters for income satisfaction.

2.2 Measuring populism

Typically, existing research in economics employs electoral support for populist parties to measure populism.⁸ While this approach follows the revealed preference paradigm, it fails to fully capture populism as a concept and, in particular, its multi-dimensionality. We depart from this approach by designing a survey to elicit populist attitudes based on the conceptual and empirical work by political scientists and opinion researchers.

Populism is perhaps best described by being a “thin ideology”, a substrate that accommodates or even requires other ideologies to build on (Mudde, 2004; Stanley, 2008). What is the essence of this substrate on which left-wing and right-wing populism breeds? Mudde (2004, p.543) defines populism as “an ideology that considers society to be ultimately separated into two homogeneous and antagonistic groups, the pure people versus the corrupt elite, and which argues that politics should be an expression of the *volonté générale* (general will) of the people.”

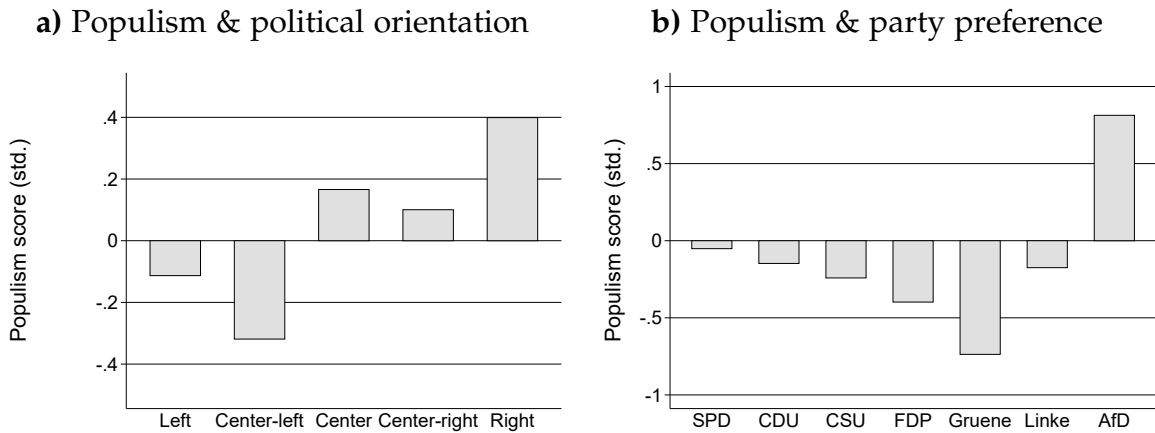
From this set of definitions, Schulz et al. (2018) extract three operationalisable dimensions of populism: The people, perceived as superior on moral grounds, is thought to be a homogeneous group opposing the elites (*anti-elitism attitudes*). Typically, this view spurs the demand that this group should have a larger and more direct stake in the political process (*preference for popular sovereignty*). Because the people is seen as homogeneous, the level of tolerance is low and compromises are considered as selling out on one’s principles (*belief in the homogeneity and virtuousness of the people*). For each of these three dimensions of populism, Schulz et al. (2018) construct four statements to which respondents can agree or disagree on a five-point Likert-scale.⁹ We follow their widely-used approach. Appendix B.2 reports the exact statements. Based on the twelve answers, we generate the final populism score via a

accounting for the mean-reversion type logic.

⁸For an overview on the definition of populism from an economist’s point of view see Guriev and Papaioannou (2022, section 2).

⁹Their approach builds upon Akkerman et al. (2014) and Hawkins et al. (2012).

Figure 2: Populism, political orientation, and party preference



Notes: Own calculation based on SOEP-IS. The populism score in Figures 2a and 2b is standardized. The measure of political orientation in Figure 2a is based on a 11-point-Likert scale. We define individuals as “Left” with a score of 0 or 1, “Center-left” with a score from 2 to 4, center with a score of 5, “Center-right” with a score from 6 to 8, “Right” with a score of 9 and 10. The party preferences in Figure 2b are based on a limited sample of 800 observations as only half of our sample did answer this question.

principal component analysis and standardise it ($\mu = 0$; $\sigma = 1$).¹⁰

When plotting the populism score based on its three sub-dimensions and the political preferences in Figure 2a, we clearly see that the populism score is highest for individuals at the political right and lowest for individuals at the political centre-left. In contrast to studies with the same statements/questionnaire in other countries (e.g. Akkerman et al., 2014, for the Netherlands), we seem to only elicit right-wing populist attitudes (rather than such attitudes at both ends of the political spectrum). The underlying reason may be that some of the 12 statements in the Schulz et al.-catalogue contain the word ‘Volk’ and references to the homogeneity of the population. Since these ideas were of paramount importance to the core ideological foundations of Nazi Germany (Gschntzer et al., 1992) and are still crucial for the rhetoric of the right-wing *Alternative für Deutschland* (AfD) (Wildt, 2017), they antagonise left-leaning individuals.¹¹ Shifting the focus to ‘revealed’ populist attitudes for a subset of the data, Figure 2b plots the populism score by party preference.¹² The figure reaffirms our ability to capture right-wing populism: By far, the AfD exhibits the highest score.

Eliciting populist attitudes through a composite measure rather than a single question on party preferences has two distinct advantages. First, while expressing sympathy with a populist party reveals populist attitudes, not expressing it does not preclude populist

¹⁰Some individuals do not answer all questions. We employ the missMDA R-package to extrapolate their non-responses based on answered questions and the response patterns of all other individuals (Josse and Husson, 2016). We report the PCA loadings in Appendix Table B.1.

¹¹We provide evidence for this reasoning by plotting political orientation for each sub-dimension of populism in Appendix Figure A.2. We find the sharpest differences between left and right for the sub-dimension *belief in the homogeneity and virtuousness of the people*.

¹²Here, we rely on a sub-sample of individuals who lean towards a political party. The SOEP does not include an election poll but asks participants if they generally lean towards a party and if yes, which one.

attitudes. An outcome variable measuring affection for populism should also encapsulate individuals with populist attitudes that report alignment with parties that are not classified as populist or no party at all, the latter of which are 47% in our sample. Second, surveys and polls tend to under-report extremist positions (Durand et al., 2004). Indeed, selective non-response patterns on party-leaning appear to be also present in the SOEP-IS: The populism score of those who do not answer the party-leaning question or do not align with a particular party is a third of a standard deviation higher than the score for those that do answer it. Hence, relying on party-leaning would severely misrepresent the incidence of populist attitudes among respondents. In contrast, our elicitation of populist beliefs allows for a representative individual analysis of extreme political preferences.

3 Misperception and populism

Does the misperception of the own position in the income distribution foster populist attitudes? To answer this question, we proceed in two steps. First, our correlational evidence highlights the important optimist-pessimist distinction and provides a yardstick for the importance of income misperception relative to other factors (Section 3.1). Second, we lay out an instrumental variable strategy that exploits the insight that some individuals form more correct beliefs about their position in the national income distribution than others because their local distribution provides a better reference point (Section 3.2).

3.1 Correlational patterns

We begin by analysing the relationship between income misperception and populism by estimating the following equation:

$$\text{Populism}_i = \alpha + \beta_M \text{Misperception}_i + \beta'_X X_i + \epsilon_i \quad (1)$$

where ‘Populism_{*i*}’ provides populism score for individual *i*. ‘Misperception’ denotes $P_i^O - P_i^S$, the difference between the objective and subjective percentile of *i*. X_i is a vector of individual-level and regional controls. We include the household’s relative income, i.e., the household’s objective percentile: P_i^O , age (age, age²), and education (college degree or more (dummy, upper secondary(dummy))). In addition to individual-specific controls, we also account for local economic conditions. Previous work suggests a strong positive link between regional inequality and populism (e.g., Rodríguez-Pose, 2018). Indeed, Germany still exhibits considerable regional income differences, both between the former East and West and within these two areas. Moreover, there appears to be some correlation of voting patterns along these lines (Dorn et al., 2020). Hence, we estimate median household gross income for each county *c* from the German tax statistics.¹³ To account for the experience of

¹³In the German tax statistics, these are called the *Gesamtbetrag der Einkünfte* (see Appendix C).

local inequality, we also generate the local P90-P50 ratio, i.e. the ratio of thresholds to enter the respective percentile. To comply with data protection requirements by the data provider, i.e., making it impossible to identify the county of residence of a household, we bin these variables into deciles.

Previous research on misperception ([Cruces et al., 2013](#); [Karadja et al., 2017](#)) has highlighted the importance of differentiating between positive and negative biases for different outcomes.¹⁴ Following this reasoning, let us call individuals with $\text{Misperception}_i > 0$ pessimists and all others optimists. Given the middle-class bias in misperception, pessimists tend to be part of the top half of the income distribution, while optimists belong to the lower half. To account for this differentiation in our analysis, we present the OLS results for the complete sample and for the sample split into pessimists and optimists.

Table 1: Misperception and populism, OLS

	Dep. var.: Populism score (std.)			
	All	Pessimists	Optimists	
	(1)	(2)	(3)	(4)
Misperception (in pp)	0.006*** (0.002)	0.005*** (0.002)	0.006** (0.002)	-0.002 (0.003)
Actual percentile in distribution	-0.011*** (0.001)	-0.010*** (0.001)	-0.013*** (0.002)	-0.007*** (0.002)
College degree or more (dummy)	-0.624*** (0.094)	-0.629*** (0.091)	-0.676*** (0.128)	-0.593*** (0.131)
Upper secondary (dummy)	-0.112 (0.080)	-0.138* (0.079)	-0.224* (0.115)	-0.061 (0.107)
Age	0.030*** (0.010)	0.030*** (0.010)	0.032** (0.014)	0.026* (0.015)
Age squared	-0.000** (0.000)	-0.000** (0.000)	-0.000* (0.000)	-0.000 (0.000)
Local median income (deciles)		-0.052*** (0.010)	-0.048*** (0.012)	-0.057*** (0.016)
P90/P50 ratio (deciles)		-0.022** (0.010)	-0.018 (0.013)	-0.026* (0.016)
Mean dep. var.	0.00	0.00	-0.08	0.11
SD dep. var.	1.00	1.00	0.99	1.00
Observations	1502	1502	877	625
R-squared adjusted	0.15	0.18	0.20	0.13

Notes: Standard errors, clustered at the household level, are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The dependent variable “populism score” is standardised.

Table 1 provides the results for the three different samples: including all individuals (1-2), pessimists (3), and optimists (4). Comparing the coefficient on misperception across the three

¹⁴For instance, [Karadja et al. \(2017\)](#) find that individuals who had pessimistic beliefs about their own income position demand less redistribution after receiving an information treatment. [Cruces et al. \(2013\)](#) provide evidence that individuals who had optimistic beliefs demand more redistribution after a similar treatment. See [Ciani et al. \(2021\)](#) for an overview about other studies.

samples reaffirms the asymmetric effects of misperception found in earlier studies (Cruces et al., 2013; Karadja et al., 2017). The effect for optimists—that is people overestimating their actual position in the income distribution—is close to zero and far from significant at any conventional level. The reverse bias, however, is associated with a strong positive and significant slope. Hence, the effect observed in the full sample is driven by the pessimists, which make up close to 60% of the sample.

To gauge the magnitudes implied by the range of coefficients (0.005 – 0.006), consider the following empirically meaningful illustration: A person is actually solid-upper middle class (percentile 75) but thinks of herself to be at the lower end of the middle class (percentile 50). In this case, the person’s misperception resembles one standard deviation of the misperception measure. The implied effect of being such a person rather than one with perfect information, i.e., zero misperception, amounts to an additional 0.15-0.18 in the standardized populism score.¹⁵ This corresponds to almost a fifth of the average populism score of voters for Germany’s right-wing populist party *Alternative für Deutschland* of 0.81.

Our control variables provide another yardstick for the relevance of these magnitudes. First, the local median income (in deciles) provides a good comparison. Moving from a county at the median of the regional income distribution to the top 80 (3 deciles) is associated with a decrease of populist attitudes similar to those outlined above. Second, the coefficient on the actual percentile in the distribution is strongly negative, suggesting that better-off individuals are less likely to exhibit populist attitudes. Since the standard deviations of misperception and the actual percentile are very similar in the full sample, we can simply compare the coefficients: Having ‘a percentile’ better information about the own position in the income distribution is associated with a decrease in populist attitudes that corresponds to 50% of the effect of moving up one actual percentile in the income distribution.

One other concern could be that part of our sample was asked about their perception already in the previous two waves by Fehr et al. (2022). A first worry is that these individuals are more accurate in their current perceptions because they repeatedly answered similar questions the two years before. Another worry is that they are more accurate due to the information provision experiment by Fehr et al. (2022) directly impacting their beliefs about relative income and, according to our hypothesis, their populism affinity. To mitigate these concerns, we add two dummy variables—one for those individuals who were asked about their perception before being and one for those who were informed about their “true” position. Appendix Table A.1 clearly shows that our results are not driven by individuals being part of previous waves of the survey. Our coefficient of interest remains the same. The dummy variables reveal no clear pattern and are far from significant at conventional levels. We discuss this apparent long-term inefficacy of the information treatment in section 5.

Notwithstanding the caveats discussed above, party preferences can provide a final check

¹⁵For this, we multiply 25×0.005 (column (2)) or 25×0.006 (column(3)) of Table 1.

for the relevance of the correlation between misperception and populism. In an alternative specification, we therefore employ AfD-leaning instead of the refined populism measure as the dependent variable. The results are consistent with the evidence presented thus far (Appendix Table A.2): A 10 percentiles increase in misperception is associated with a 1 pp increase in the sympathy for AfD, relative to the sample mean of 8.9. All in all, the correlational evidence suggests that there is a statistically strong and economically meaningful association between misperception and populism.

While this insight is robust to the inclusion of a set of age and income controls and holds when using AfD attachment as the dependent variable, omitted variables and reverse causality may bias the reported coefficients. In terms of omitted variables, a concern is that the control variable “actual percentile in distribution” captures socio-economic status (SES) imperfectly. If further aspects of SES are negatively correlated with the populism score but positively related to misperception, the coefficient of misperception would be downward biased.

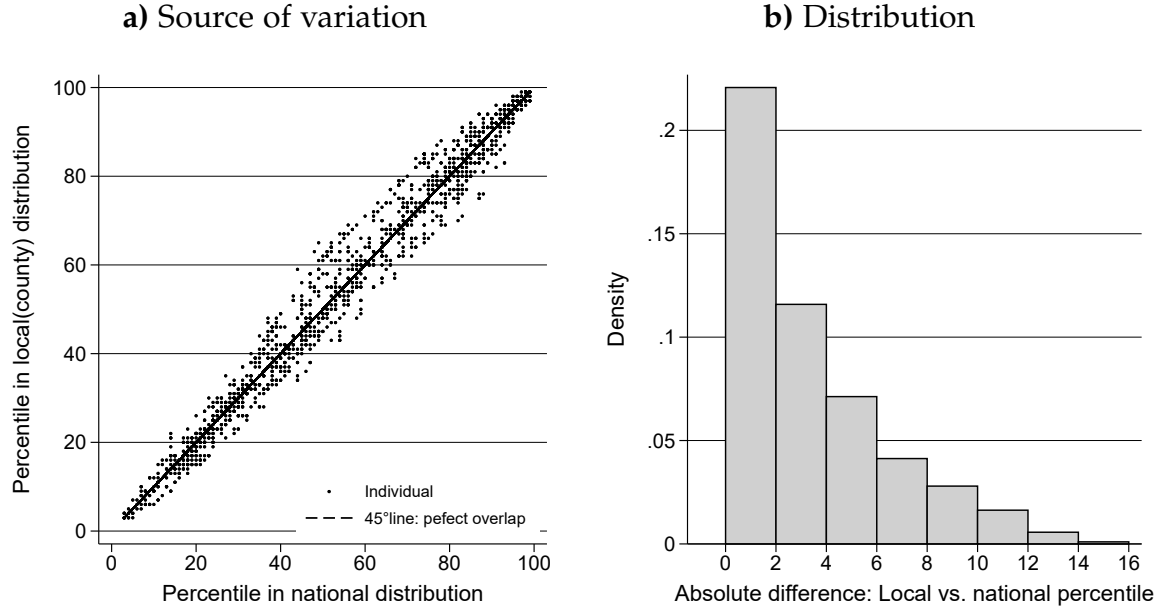
Regarding the direction of the bias emanating from reverse causality, on the one hand, supporters might gain utility from adhering to right-wing populism and the status of the nation (Shayo, 2009; Bonomi et al., 2021). If such processes translate to feelings of having a higher status (i.e., lower misperception for pessimists), this would, too, bias the OLS estimates downwards. On the other hand, populist ideas may exacerbate or create a feeling of ‘not getting the fair share’, leading to more misperception for pessimists and, hence, an upward bias in OLS estimates. As a complement to the now-common survey-experiment approach (Cruces et al., 2013; Karadja et al., 2017; Fehr et al., 2022), we field an IV approach to mitigate these endogeneity problems.

3.2 IV approach and results

Individuals in our sample experience *local* income distributions, which are likely to affect their ability to form an estimate of their position in the *national* income distribution as individuals tend to rely on their local environment to form perceptions (Hauser and Norton, 2017). We model their experience by placing them in the local distribution and in the national distribution. Some individuals live in areas which exhibit a distribution similar to that of Germany as a whole, making them, by coincidence, relatively well informed about the national distribution. Others live in areas which exhibit a skewed income distribution relative to the national one, making it harder for them to form a correct estimate about their own position in the national income distribution.

To define the instrument formally, recall that our measure of individual i ’s income misperception is defined as the difference between the objective (O) and subjective (S) percentile P in the *national* (N) income distribution: $(P_i^{O,N} - P_i^{S,N})$. Individual i lives in county c and, correspondingly, her position in the *local* (L) income distribution is P_i^{O,L_c} . Hence, a parsi-

Figure 3: Instrumental variable - variation



Notes: The dots in Figure 3a represent individuals. The 45° line implies the equality of the position in the local and national distribution. Figure 3b shows the distribution of the instrument: The absolute distance from the 45° line. The sample only includes pessimists. For further details on the calculation of the instrument, see Section 3.2 and Appendix C.

monious measure for the information content of the local distribution with respect to the national income distribution is the *absolute* difference in the position in the local versus national income distribution: $|P_i^{O,L_c} - P_i^{O,N}|$. Taking the absolute difference ensures that our instrument does not capture living in poor vs. rich counties or more equitable vs. less equitable counties. It also provides an indirect path for validating the instrument: If the *non-absolute* percentile difference predicted misperception equally well or better as compared to the *absolute* difference, it would indicate that our instrument's power originates indeed in living in more vs. less equitable areas. This, in turn, would imply a likely violation of the exclusion restriction.

As discussed above, local tax statistics only provide households' gross (rather than net) incomes. Hence, we generate gross household incomes for our SOEP-IS sample and place the respective individuals in the corresponding local distributions.¹⁶ Figure 3a graphically draws out the variation that we exploit, with each dot representing an individual. The closer the individual is to the 45° degree line, the richer is her information set about her household's position in the national distribution. Taking the absolute distance to the 45° degree line, Figure 3b summarises the distribution of the instrumental variable. Again, taking the absolute distance ensures that our instruments picks up the information content. It precludes the possibility that the instrument derives its power from potential differences

¹⁶Appendix C provides the respective technical details on the construction of the instrumental variable.

of more vs. less equitable counties. In addition, we condition our instrument on the local median income and a general distributional measure—the P90/P50 ratio discussed above—to ensure its excludability with respect to populism.

We estimate the following first stage equation:

$$\text{Misperception}_i = \alpha + \beta_z \text{Local distr. information}_i + \beta_X' X_i + \epsilon_i \quad (2)$$

where ‘Local distr. information’ is our instrument ($|P_i^{O,Lc} - P_i^{O,N}|$). X is a vector of controls pertaining to local income and its distribution, age, and the own actual income position. The second stage regression corresponds to equation 1, with the only difference that we employ the predicted values for misperception from the 1st stage ($\widehat{\text{Misperception}}$) rather than the variable (Misperception) itself. In line with our previous discussion of the differences between optimists and pessimists, this part of the analysis focuses on the pessimists. In a placebo specification, we replace our instrument, the *absolute* percentile difference of an individual’s place in the local versus national distribution, with the *non-absolute* one ($P_i^{O,Lc} - P_i^{O,N}$).

Table 2 reports the first (columns 4-6) and second stage (columns 1-3) regressions for our actual and placebo instruments. For the actual instrument, we report two specifications, which either ex- or include the local income level and income distribution as control variables. For both of these, the F -stat is clearly above 10, which shows that our instrument has power. Likewise, the p-value of the Anderson-Rubin (AR) tests give no indication that the instrument is weak.¹⁷ At the same time, the inclusion of the local income and distributional control does not have profound effects on either the coefficients or F -stat. This is reassuring: the power of the instrument does not appear to originate in local conditions themselves, i.e., whether the local distribution is more or less equitable or a given county rich or poor.

Turning to the first stage regression of the placebo instrument (column 6), we find that it does not predict misperception at all. In consequence, the F -stat and the Anderson-Rubin test clearly reject its validity as an instrument. While the exclusion restriction of our original instrument cannot be tested, these results provide evidence against a potential violation. If our instrument derived its power from living in less vs. more equitable counties, then, clearly, the placebo instrument should be an equally strong or stronger predictor of misperception. And if so, it would be likely that our instrument affects populism through other channels than misperception. We find, however, no evidence for this.

The second stage regressions for our actual instrument (columns 1 & 2) suggest that misperception has sizeable effects. Indeed, comparing column (2) of Table 2 and column (3) of Table 1 indicates that the IV-coefficient is larger than the corresponding OLS-coefficient. This suggests that the OLS estimate is indeed downward biased either because we insufficiently

¹⁷The Anderson-Rubin statistic is efficient in just-identified models with a single instrument. For details see Andrews et al. (2019).

Table 2: Misperception and populism, 2SLS

Dep. var.:	Second stage			First stage		
	Populism score (std.)			Misperception (in %)		
	<i>Actual</i>	<i>Placebo</i>		<i>Actual</i>	<i>Placebo</i>	
	(1)	(2)	(3)	(4)	(5)	(6)
Misperception (in pp)	0.046** (0.022)	0.036* (0.020)	-0.008 (0.128)			
Local distr. information (absolute)				0.575*** (0.159)	0.605*** (0.165)	
Local distr. information (non-absolute)						-0.108 (0.193)
Mean dep. var.	-0.08	-0.08	-0.08	22.37	22.37	22.37
SD dep. var.	0.99	0.99	0.99	14.84	14.84	14.84
F-stat excluded instrument	13.09	13.50	0.28			
P-value Anderson-Rubin Wald test	0.027	0.062	0.947			
Income control	✓	✓	✓	✓	✓	✓
Age controls	✓	✓	✓	✓	✓	✓
Education controls	✓	✓	✓	✓	✓	✓
Regional controls		✓	✓		✓	✓
Observations	877	877	877	877	877	877
R-squared adjusted				0.20	0.20	0.19

Notes: Standard errors, clustered at the household level, are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Income control: Actual percentile in distribution. Age controls: Age and age squared. Education controls: College degree or more (dummy), upper secondary (dummy). Regional controls: Local median income (in deciles) and P90/P50 ratio (in deciles). The sample is restricted to the “pessimists”. See Appendix Table A.3 for the reduced form.

control for socio-economic status or because populists evoke positive feelings to their followers’ achievements (see the discussion at the end of Section 3.1). There are two additional potential explanations for the differences between the OLS and the IV coefficients. First, our identification might capture a local average treatment, which might be different from the average effect for the general population (Imbens and Angrist, 1994). Second, our independent variable is measured with noise as respondents find it difficult to conceptualize the income distribution (i.e., attenuation bias in OLS estimates). Nonetheless, our instrumental variable estimates suggest that the effect of income misperception on populist attitudes is indeed causal and possibly substantially larger than the correlational evidence suggests.

4 Channeling a false belief: The role of gender

How do individuals channel misperception into populism? Recent research highlights the role of feelings of deprivation and marginalization for populist attitudes (e.g. Spruyt et al., 2016; Gidron and Hall, 2020). Hence, a plausible transmission sequence is that i) misperception results in dissatisfaction and ii) that individuals channel this dissatisfaction into populist attitudes. Since other studies have found that women are less likely to channel general

discontent into votes for populist parties (Harteveld et al., 2015), we expect gender differences in step ii). In our context, two factors may lead to them. Women internalise rather than externalise failure (Campbell and Sedikides, 1999)—the mirror image of the overconfidence bias in behavioral economics¹⁸—and are better able to control prejudice (Harteveld and Ivarsflaten, 2018). Hence, we expect that our male subjects channel their discontent associated with misperception into populist attitudes to a larger degree than their female counterparts.

Step i) of our proposed channel posits that misperception matters for dissatisfaction. To elucidate the association of these two variables, we estimate the following OLS regression:

$$\begin{aligned} \text{IncomeSatisfaction}_i = & \alpha + \beta_{MP}\text{Misperception}_i + \beta_{male}\text{Male}_i \\ & + \beta_{int}(\text{Misperception}_i \cdot \text{Male}_i) + \beta'_X X_i + \gamma_{HH} + \epsilon_i, \end{aligned} \quad (3)$$

in which β_{MP} captures the effect of ‘Misperception’ on ‘IncomeSatisfaction’ for female individuals, whereas the sum of β_{MP} and β_{int} , the latter being the coefficient for the interaction between the ‘Male’ dummy and ‘Misperception’, measures the effect of misperception for men. In one specification, we add the household fixed effect γ_{HH} . Hence, we focus on gender differences within households keeping all household characteristics constant, including the household’s actual position in the income distribution.

Columns (1) to (3) of Table 3 report the results on the misperception-dissatisfaction transmission.¹⁹ All specifications suggest that increases in misperception are associated with lower income satisfaction. In particular, an increase of 1 SD in misperception corresponds to a decline of about 0.2 of a SD in income satisfaction (column 1). Adding regional controls (column 2) or very restrictive household fixed effects (column 3) decreases the coefficient slightly, but it remains highly statistically significant and economically meaningful. However, the results provide no indication that gender matters for the link between misperception and income dissatisfaction. Irrespective of the individual’s gender, having incorrect beliefs about the own position in the income distribution translates to dissatisfaction with the own income.

While we do not observe any gender differences in the translation of misperception to income dissatisfaction, the results in columns (4) to (5) of Table 3 document that gender differences are present in the link between misperception and populism. Conditional on household income, age, education, and local income and distributional control variables, the marginal effect for males is almost twice as large as the one for females. The male dummy itself is small and positive, but in most specifications from statistical significance at

¹⁸As a result of overconfidence, men more often relate own success to skill rather than luck. See Buser et al. (2020) for an application on the preference for redistribution.

¹⁹In this section, we use the full sample as it did not appear plausible to classify households rather than individuals into optimists and pessimists.

Table 3: Misperception, income satisfaction, and populism by gender

Dep. var.:	Income satisfaction (std.)			Populism score (std.)		
	(1)	(2)	(3)	(4)	(5)	(6)
Misperception (in pp)	-0.008*** (0.002)	-0.007*** (0.002)	-0.006** (0.003)	0.004** (0.002)	0.003* (0.002)	-0.002 (0.003)
Male (dummy)	-0.057 (0.046)	-0.054 (0.046)	-0.032 (0.061)	0.073* (0.042)	0.065 (0.042)	-0.043 (0.052)
Male (dummy) \times Misperception (in pp)	-0.001 (0.002)	-0.001 (0.002)	0.001 (0.002)	0.005*** (0.002)	0.005** (0.002)	0.004* (0.002)
Mean dep. var.	0.01	0.01	0.08	0.00	0.00	-0.02
SD dep. var.	1.00	1.00	0.91	1.00	1.00	1.03
Income control	✓	✓		✓	✓	
Age controls	✓	✓	✓	✓	✓	✓
Education controls	✓	✓	✓	✓	✓	✓
Regional controls		✓			✓	
Household FE			✓			✓
Observations	1502	1502	892	1502	1502	892
R-squared adjusted	0.25	0.25	0.50	0.11	0.14	0.65

Notes: Standard errors, clustered at the household level, are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Income control: Actual percentile in distribution. Age controls: Age and age squared. Education controls: College degree or more (dummy), upper secondary (dummy). Regional controls: Local median income (in deciles) and P90/P50 ratio (in deciles). The dependent variables “populism score” and “income satisfaction” are standardised. We use the complete sample in columns (1), (2), (4), and (5). We restrict the sample to households with two adults in columns (3) and (6) in order to employ household FE.

any conventional level. Conditional on our controls, men do not hold more populist beliefs per se, but they do so when underestimating their status.

One might be worried that these gender differences originate in either unobserved household characteristics or in the varying abilities to provide a correct estimate of the own position in the income distribution. Column (6) in Table 3 aims to rule out the first of these concerns by adding household fixed effects. This leads to dropping a considerable amount of observations as not all households contain at least two adult members of different gender. Of the remaining 446 couples, not all exhibit a considerable difference and include pessimists, limiting the statistical power of the exercise. While the effect of misperception for females vanishes altogether, the interaction coefficient remains positive.²⁰ The second concern—different abilities to estimate the household’s position correctly—can be ruled out by consulting summary statistics. The misperception by women is about 5.6 percentiles on average (sd: 25.4) and almost identical to the misperceptions by men (mean: 5.7 percentiles; sd: 24.7). Hence, the belief formation about the own position in the distribution cannot be at the heart of the observed gender differences.

Taken together the results in Table 3 suggest that misperception is associated with higher

²⁰Indeed, likely caused by the small sample size, the difference is only significant at high levels of misperception. See Appendix Figure A.3 for the corresponding margin plots.

income dissatisfaction irrespective of gender, but that only the male half of our sample translates misperception to right-wing populism. The externalisation of failure by men and lacking ability to control prejudice provide plausible explanations for this pattern. Even if the source of their dissatisfaction is an incorrect belief, it would result in blaming others. Women, on the other hand, feel the same dissatisfaction, but they do not channel it into populist attitudes to the same degree.

5 Can information provision mitigate misperception?

The empirical analysis suggests that misperception affects populism, especially so for men. This implies that correcting an individual's wrong beliefs about the own position in the income distribution could reduce populist attitudes and ultimately the rise of populist leaders. A potentially cheap solution for the government would be to simply provide information to all its citizens. What are the odds of success for such a policy?

Survey experiments provide a first approximation to answer this question. A subset of our sample (58 %) participated in an information experiment on their income position in 2017 in a study by [Fehr et al. \(2022\)](#).²¹ We leverage this treatment to explore two related questions. First, we explore how sustainable the correction of misperception is. While they asked this question in the following year, we do so two years after the initial information treatment. Second, we then explore if the correction has any effect on the affection for populist ideas. In particular, following the estimation approach of [Fehr et al. \(2022\)](#), we estimate the following equation:

$$\begin{aligned} \text{Outcome}_{i,t} = & \alpha + \beta_M \text{Initial Misperception}_{i,t=2017} + \beta_T \text{Treatment}_{i,t=2017} \\ & + \beta_I \text{Initial Misperception}_{i,t=2017} \times \text{Treatment}_{i,t=2017} + \beta'_X X_{i,t} + \epsilon_i, \end{aligned} \quad (4)$$

where we are interested in the interaction effect (captured by β_I) between being informed about the income position ($\text{Treatment}_{i,t=2017}$) and the intensity of the information treatment, i.e., the initial level of misperception. We estimate the effects of the treatment on misperception for both 2018 and for 2019 and the populism score 2019.²² For compatibility reasons with the rest of our study and the reader's convenience, we re-scale the dependent variable to represent misperception rather than the actual income position as in the study by [Fehr et al. \(2022\)](#). As control variables, we include the actual percentile in the distribution, age controls (age and age squared), and educational controls (college degree and upper secondary).

²¹[Fehr et al. \(2022\)](#) employed gross rather than net income. Yet, knowing the correct position in the distribution of gross incomes should have predictive power for the position in the net income distribution.

²²This setup basically reproduces the one by [Fehr et al. \(2022\)](#) with one minor difference. They do not add the treatment indicator variable to the regression. Implicitly, this imposes the assumption that the effect of receiving the information that one's estimate was correct has no effect. However, we consider it likely that confirmed guesses would have an effect on future misperception.

In line with our previous empirical exercises, we restrict the sample to pessimists in all but one specification (which replicates the results by [Fehr et al. \(2022\)](#) for comparison).²³ Arguably, this is a necessary restriction in the context of our ultimate outcome of interest. For pessimists, the reduction of misperception by the information treatment should *decrease* the affection for populism since they are faced with the fact that they are better off than previously thought. By contrast, the information treatment could *increase* the affection for populism among optimists by making the feeling of ‘not getting the fair share’ more salient. A similar concern applies to the measurement of the efficiency of the information treatment, i.e., later misperception as a dependent variable: Whether individuals previously over- or underestimated their relative income positions may affect their willingness or ability to remember the information treatment.

Table 4: Misperception, populism, and information provision

Dep. var.:	Misperception 2018		Misperception 2019	Populism 2019
	(1)	(2)	(3)	(4)
Treatment × misperception	-0.175*** (0.060)	-0.130 (0.128)	-0.037 (0.116)	0.003 (0.004)
Treatment (dummy)	-1.884 (1.603)	-3.167 (3.362)	-3.194 (3.434)	0.059 (0.142)
Misperception in 2017	0.233*** (0.052)	0.208*** (0.077)	-0.056 (0.082)	0.002 (0.003)
Controls	✓	✓	✓	✓
Sample: All	✓			
Sample: Pessimists		✓	✓	✓
Mean dep. var.	5.12	9.86	4.11	-0.07
SD dep. var.	24.89	23.73	24.23	0.98
Observations	1031	687	583	583
R-squared adjusted	0.09	0.09	0.03	0.13

Notes: Standard errors, clustered at the household level, are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Income control: Actual percentile in distribution. Education controls: College degree or more (dummy), upper secondary (dummy). Age controls: Age and age squared. Sample: All (column 1), pessimists (columns 2-4).

Table 4 reports the results. The first column reproduces the results of [Fehr et al. \(2022, Table 3\)](#), including both optimists and pessimists. The interaction effect is highly statistically significant. However, the economic significance, the information pass-through, is rather small compared to the standard deviation of misperception of around 24 in our baseline sample. For each ‘corrected’ percentage point of misperception, respondents adjust their belief about the own position by a mere 0.175 percentage points.

The second column reports the results only for pessimists. While the coefficient is of similar size, it is marginally insignificant (p-value: .31). Column (3) reports the results

²³Naturally, we define pessimists as those that underestimated their income position before the information treatment in the 2017 survey by [Fehr et al. \(2022\)](#).

for our sample, i.e., misperception in 2019—2 years after the treatment. The sample size is smaller since we are to run the analysis only for the parts of the sample that overlap between the different waves of the SOEP-IS. In this case, the coefficient becomes very small and far from significant at conventional levels. This suggests that the information treatment was not sustainable. In line with these weak effects on misperception, we also do not observe any significant effect of the information treatment on the affection for populism (column 4).

A potential worry is that the strong linearity assumptions for the effect of the treatment on the outcome in the setup by [Fehr et al. \(2022\)](#) are not met. Indeed, a common test for linearity of interaction effects by [Hainmueller et al. \(2019\)](#) rejects the linearity of the interaction effect.²⁴ As an alternative, Table 5 allows for non-linear effects by interacting the treatment dummy with below and above median levels of misperception for pessimists and optimists separately. The table adds nuance to the previous results. First, it suggests that the efficacy of the information provision varies depending on the initial state of misperception. Column (1) suggests that the information provision works better for the pessimists. Relative to an average misperception of about 38 for pessimists with above median level of misperception, the information treatment reduces the misperception by almost 20% (column 1). Second, it appears that there is indeed potential to correct severe income misperception. Column 2 suggests that pessimists with above median levels of misperception whose misperception has been corrected indeed have a more correct estimate of their own position two years after the treatment. However, this correction does not lead to lower levels of populist affection. If anything, the effect for pessimists with above median level of misperception points towards the opposite direction.

Table 5: Marginal effects

Dep. var.:	Misperception 2018 (1)	Misperception 2019 (2)	Populism 2019 (3)
Optimists: Treated \times below median	7.253* (4.009)	1.170 (3.545)	-0.205 (0.172)
Optimists: Treated \times above median	-2.068 (3.256)	0.556 (3.997)	0.027 (0.158)
Pessimists: Treated \times below median	-5.332** (2.552)	-2.039 (2.689)	0.095 (0.115)
Pessimists: Treated \times above median	-7.215*** (2.565)	-5.794** (2.885)	0.190* (0.104)
Controls	✓	✓	✓
Observations	1031	869	869

Notes: Standard errors, clustered at the household level, are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Income control: Actual percentile in distribution. Education controls: College degree or more (dummy), upper secondary (dummy). Age controls: Age and age squared.

²⁴[Hainmueller et al. 2019](#)'s Wald test statistic rejects the null hypothesis that the linear interaction model and a three-bin model are statistically equivalent.

Overall, these results cast doubt that simple information provision is a useful tool to correct misperception of the income position sustainably, let alone populist attitudes in the long term. They also mesh with a recent literature documenting that while information treatments may be able to affect beliefs, they often fail to alter preferences.²⁵

6 Conclusion

This paper sheds new light on the income-populism nexus by exploring the role of income misperception. Based on a representative sample of German households, we find that individuals with pessimistic beliefs about their own income position have more right-wing populist attitudes. We mitigate endogeneity concerns by exploiting an IV strategy. We provide evidence on income dissatisfaction as a plausible channel. While both genders predict their relative income position equally well and both are similarly dissatisfied when misperceiving it, they appear to differ in the way they channel this dissatisfaction: Men are more likely to translate dissatisfaction resulting from income misperception into populist attitudes than women.

Our findings show that misperception strongly matters for populist attitudes, also in comparison to the objective income position. This result makes the correction of misperception an important field for political attempts that seek to curb the rise of populism. Given our finding that a one-time simple information provision does not seem to sustainably change the information set of individuals, what could be possible policies to increase the information efficacy?

The initial information treatment by [Fehr et al. \(2022\)](#) was exceptionally well visualised by using a graph with 100 people and marking the subject's percentile among these. Except for a potential repeated treatment, it is not clear how to improve the information provision specifically targeted to income misperception. In the context of attitudes towards immigration, [Grigorieff et al. \(2020\)](#) suggest that richer information sets rather than a single piece of information can have more persistent effects. Since it is unclear how such an information set would look with respect to the misperception of the relative income position, future research should aim to improve our knowledge on why subjects form misperceptions even in the presence of information treatment. Given the gender differences discussed in section 4, overconfidence biases may play a role. Additionally, experienced status loss or fear thereof—a common explanation also for the rise of populism ([Gidron and Hall, 2017](#); [Mutz, 2018](#))—may make subjects ignorant to information contradicting their priors and prone to the feeling of not getting their fair share.

²⁵See, e.g., [Haaland and Roth \(2023\)](#) in the context of racial discrimination, and [Ciani et al. \(2021\)](#) for an overview article.

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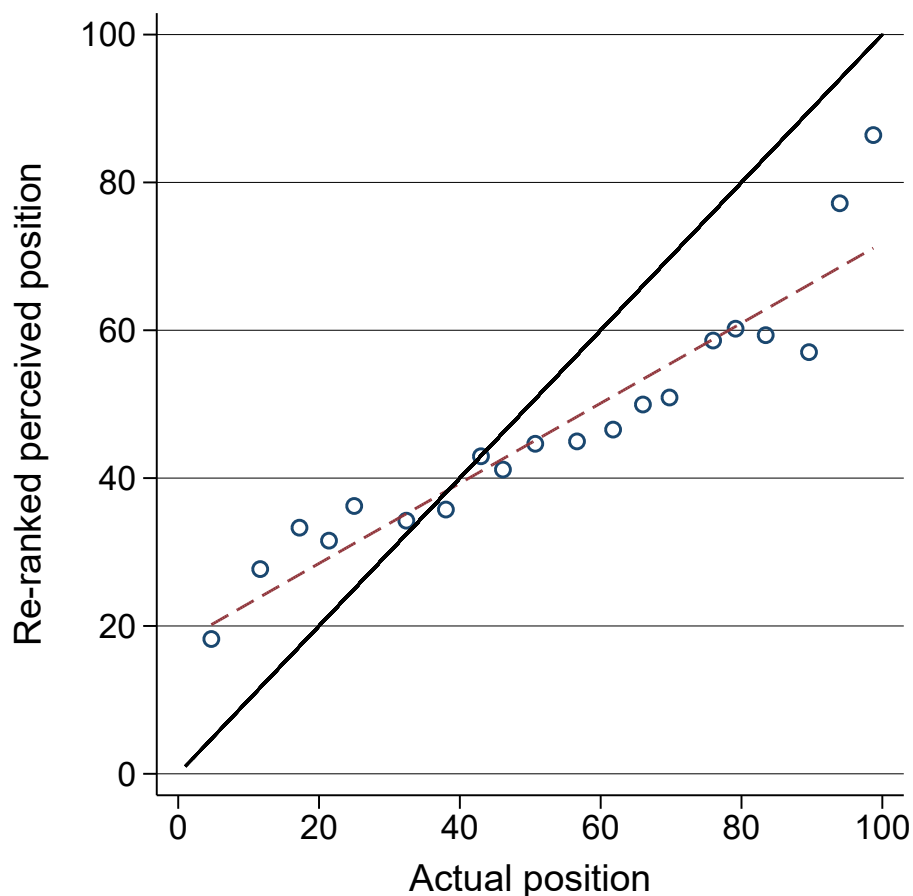
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Appendix

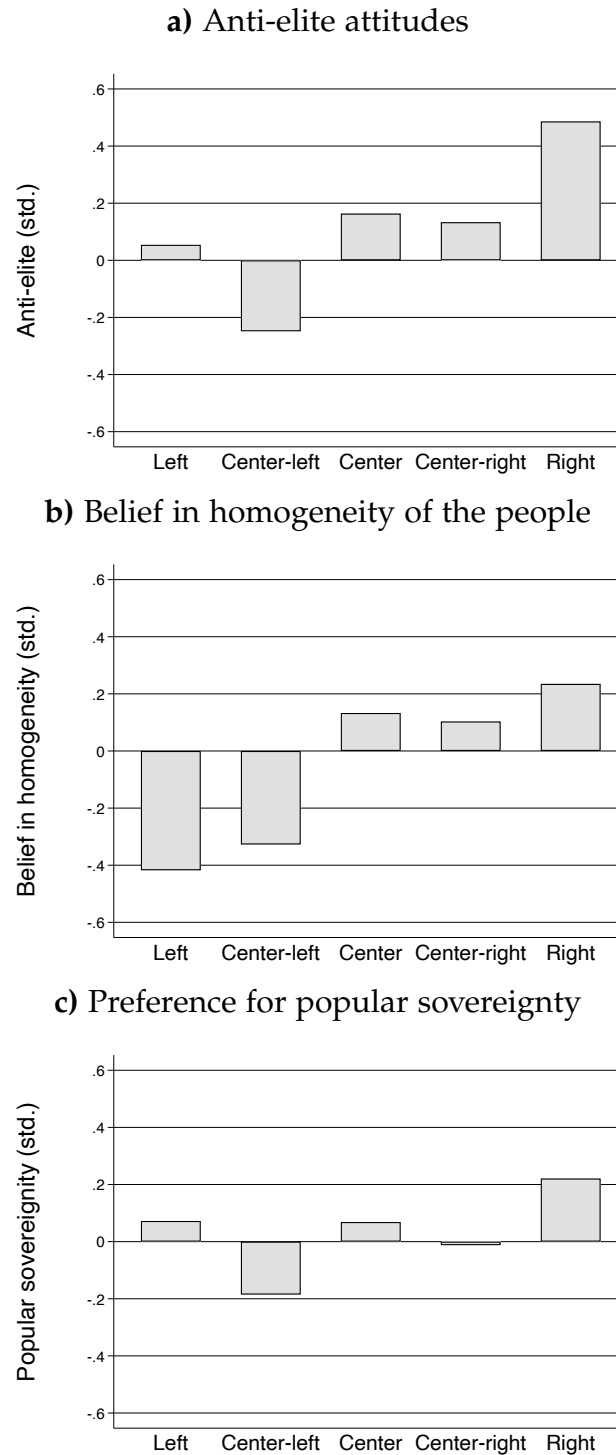
A Additional Tables and Figures

Figure A.1: Actual position and re-ranking of perception



Notes: Own calculation based on SOEP-IS. We re-rank both actual and reported position, such that they are uniformly distributed from 1 to 100 in our sample, and plot the average and median perceived position by actual position following [Hvidberg et al. \(2023\)](#). The figure is based on binned scatterplots. Each dot represents 75 observations.

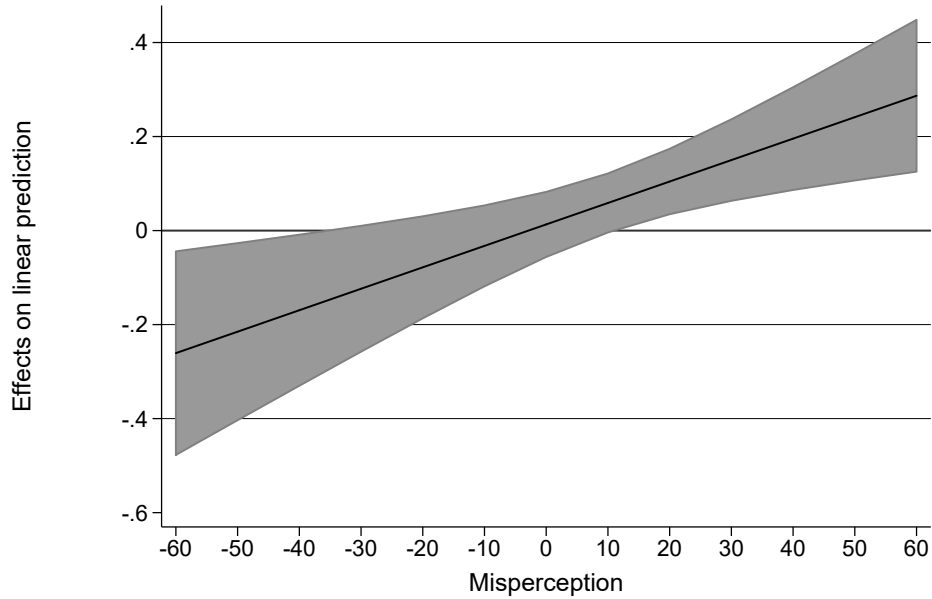
Figure A.2: Political orientation and sub-dimensions of populism



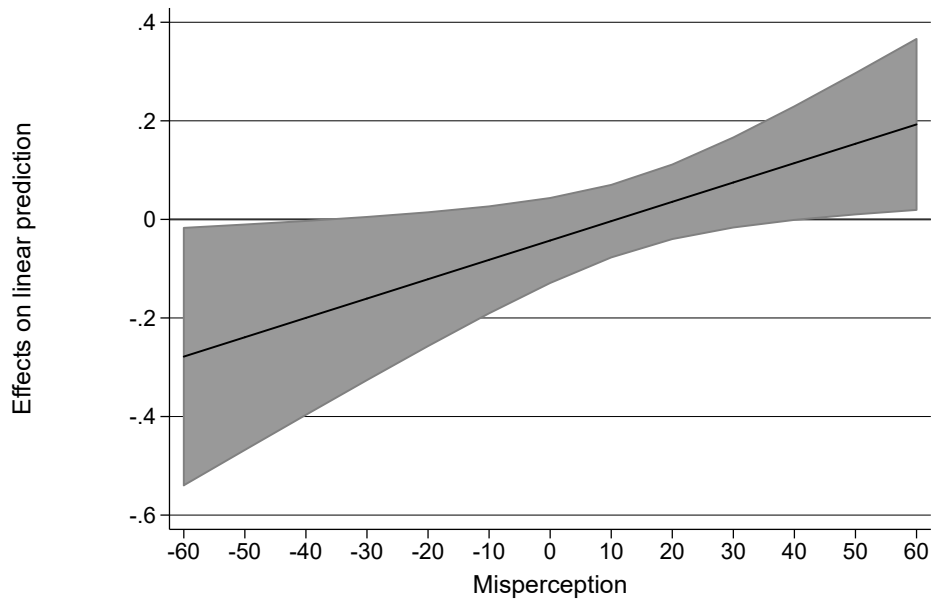
Notes: Own calculation based on the SOEP-IS. The measure of political orientation is based on a 11-point-Likert scale. We define individuals as “Left” with a score of 0 or 1, “Center-left” with a score from 2 to 4, center with a score of 5, “Center-right” with a score from 6 to 8, “Right” with a score of 9 and 10. Each sub-dimension of populism is standardized.

Figure A.3: Gender differences for varying levels of misperception

a) Excluding household FE



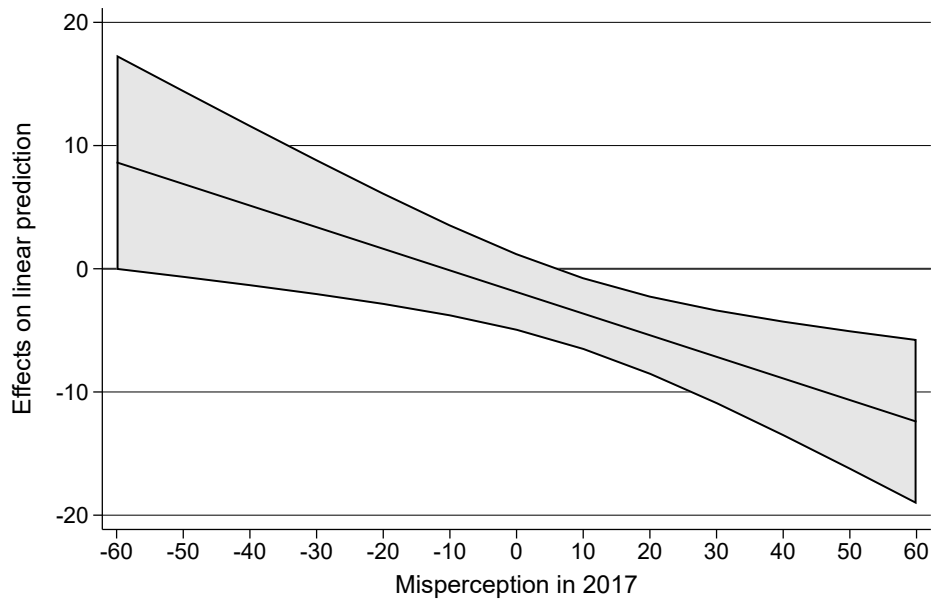
b) Including household FE



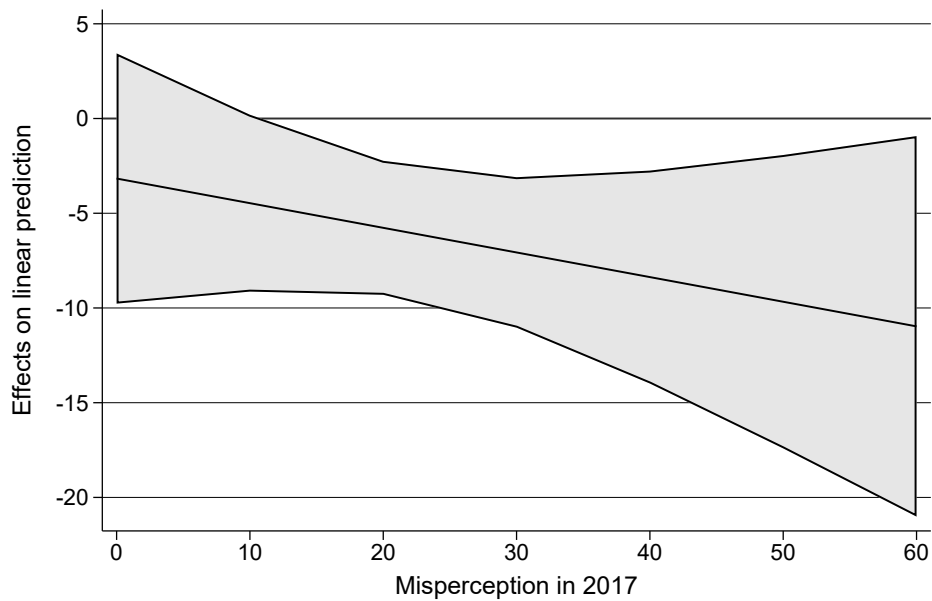
Notes: Own calculation based on SOEP-IS. The graphs show the marginal effect for the gender difference for different levels of misperception and its significance indicated by the confidence intervals shown in grey (at the 90% level). The specification for Figure A.3a corresponds to column (5) in Table 3. The specification for Figure A.3b corresponds to column (6) in Table 3. We test whether linear marginal effects apply following Hainmueller et al. (2019). The p-value of the Wald statistic are 0.38 (without FE) and 0.73 (with FE), i.e., not rejecting the null hypothesis that the linear interaction model and a three-bin model are statistically equivalent.

Figure A.4: Marginal effect, information provision

a) Complete sample



b) Pessimists



Notes: Own calculation based on SOEP-IS. The graphs show the marginal effect for the information provision for different levels of misperception and its significance indicated by the confidence intervals shown in grey (at the 95% level). The specification for figure A.4a corresponds to column (1) in Table 4. The specification for Figure A.4b corresponds to column (2) in Table 4.

Table A.1: Misperception and populism, control for previous question

Dep. var.: Sample:	Populism score (std.)		
	All (1)	Pessimists (2)	Optimists (3)
Misperception	0.005*** (0.002)	0.006*** (0.002)	-0.002 (0.003)
College degree or more (dummy)	-0.626*** (0.091)	-0.668*** (0.128)	-0.594*** (0.131)
Upper secondary (dummy)	-0.136* (0.079)	-0.216* (0.115)	-0.065 (0.107)
Actual percentile in distribution	-0.010*** (0.001)	-0.013*** (0.002)	-0.007*** (0.002)
Age	0.030*** (0.010)	0.031** (0.014)	0.026* (0.015)
Age squared	-0.000** (0.000)	-0.000* (0.000)	-0.000 (0.000)
Local median income (deciles)	-0.052*** (0.010)	-0.048*** (0.012)	-0.057*** (0.016)
P90/P50 ratio (deciles)	-0.021** (0.010)	-0.018 (0.014)	-0.025 (0.016)
Sample in Fehr et al. 2022 (dummy)	-0.057 (0.063)	-0.039 (0.081)	-0.066 (0.098)
Treatment in Fehr et al. 2022 (dummy)	0.068 (0.061)	0.122 (0.083)	-0.010 (0.095)
Mean dep. var.	-0.00	-0.08	0.11
SD dep. var.	1.00	0.99	1.00
Observations	1502	877	625
R-squared adjusted	0.17	0.20	0.13

Notes: Standard errors, clustered at the household level, are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The dependent variable "populism score" is standardised.

Table A.2: Misperception and AfD attachment, OLS

	Dep. var.: AfD preference (Dummy)	
	(1)	(2)
Misperception	0.001** (0.001)	0.001* (0.001)
Actual percentile in distribution	-0.003*** (0.001)	-0.002*** (0.001)
Age	0.008** (0.004)	0.008** (0.004)
Age squared	-0.000*** (0.000)	-0.000*** (0.000)
Local median income (deciles)		-0.010** (0.004)
P90/P50 ratio (deciles)		-0.005 (0.004)
Mean dep. var.	0.09	0.09
SD dep. var.	0.28	0.28
Observations	800	800
R-squared adjusted	0.04	0.05

Notes: Naturally, the sample is restricted to those that lean towards a political party. This is the case for 800 (out 1502) individuals. The SOEP does not include an election poll for everybody but asks participants if they generally lean towards a party and if yes, which one. Standard errors, clustered at the household level, are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.3: Misperception and populism, reduced form

Dep. var.:	Populism score (std.)		
	<i>Actual</i>		Placebo
	(1)	(2)	(3)
Local distr. information (absolute)	0.026** (0.012)	0.022* (0.012)	
Local distr. information (non-absolute)			0.001 (0.014)
Income control	✓	✓	✓
Age controls	✓	✓	✓
Education controls	✓	✓	✓
Regional controls	✓	✓	✓
Observations	877	877	877

Notes: Income control: Actual percentile in distribution. Age controls: Age and age squared. Education controls: College degree or more (dummy), upper secondary (dummy). Regional controls: Local median income (in deciles) and P90/P50 ratio (in deciles). The dependent variable “populism score” is standardised. Standard errors, clustered at the household level, are in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

B Survey

B.1 Measuring Perception

Households had reported the actual net income earlier in the survey. They were given the exact definition of household net income then. To ensure consistency, we reiterated the definition of net household income before the subjects answered our question on their position in the distribution.

- Zum Haushaltsnettoeinkommen, das der Haushaltsvorstand bereits früher angegeben hat, gehören die Lohneinkommen aller Haushaltsmitglieder nach Abzug von Steuern und Sozialabgaben. Darüber hinaus zählen zum Haushaltsnettoeinkommen ebenfalls regelmäßige Zahlungen wie Renten, Wohngeld, Kindergeld, BAföG, Unterhaltszahlungen.

(The household head has reported net household income earlier. It encapsulates the wage incomes of all household members after paying taxes and social security and all regular payments, including rents and pensions, rental assistance payments, child benefits, education stipends, and alimony.)

We asked all participants the following question:

- Was schätzen Sie: Wie hoch war der Anteil der Haushalte in Deutschland in 2018, die ein niedrigeres Haushaltsnettoeinkommen als Ihr Haushalt hatten? _____ Prozent
(What do you estimate: What percentage of households in Germany in 2018 had a lower net household income than your household? _____ percent)

B.2 Measuring Populism

We asked all participants to respond to the following statements on a five-point Lickert scale, ranging from strongly disagree to fully agree. The English translation from [Schulz et al. \(2018\)](#) is in parentheses.

1. “anti-elitism attitudes”

- Die Abgeordneten im Parlament verlieren ziemlich schnell den Kontakt mit dem Volk.
(*MPs in Parliament very quickly lose touch with ordinary people.*)
- Die Unterschiede zwischen dem Volk und der sogenannten Elite sind viel grösser als die Unterschiede innerhalb des Volkes.
(*The differences between ordinary people and the ruling elite are much greater than the differences between ordinary people.*)
- Leute wie ich haben keinen Einfluss darauf, was die Regierung macht.
(*People like me have no influence on what the government does.*)
- Politiker reden zu viel und handeln zu wenig.
(*Politicians talk too much and take too little action.*)

2. “preference for popular sovereignty”

- Das Volk sollte bei den wichtigsten politischen Sachfragen mittels Volksabstimmungen das letzte Wort haben.
(*The people should have the final say on the most important political issues by voting on them directly in referendums.*)
- Das Volk sollte bei allen wichtigen Entscheidungen gefragt werden.
(*The people should be asked whenever important decisions are taken.*)
- Das Volk und nicht die Politiker sollten die wichtigsten politischen Entscheidungen treffen.
(*The people, not the politicians, should make our most important policy decisions.*)
- Die Politiker im Parlament müssen dem Willen des Volkes folgen.
(*The politicians in Parliament need to follow the will of the people.*)

3. “belief in the homogeneity and virtuousness of the people”

- Die einfachen Leute ziehen alle an einem Strang.
(*Ordinary people all pull together.*)
- Einfache Leute verbindet ein guter und ehrlicher Charakter.
(*Ordinary people are of good and honest character.*)
- Die einfachen Leute teilen gemeinsame Werte und Interessen.
(*Ordinary people share the same values and interests.*)
- Auch wenn die Deutschen sehr verschieden sind, denken alle ähnlich, wenn es darauf ankommt.
(*Although the Germans are very different from each other, when it comes down to it they all think the same.*)

Table B.1: PCA loadings

Item	PCA loading
MPs in Parliament very quickly lose touch with ordinary people.	.2445
The differences between ordinary people and the ruling elite are much greater than the differences between ordinary people.	.2456
People like me have no influence on what the government does.	.2864
Politicians talk too much and take too little action.	.2914
The people should have the final say on the most important political issues by voting on them directly in referendums.	.3407
The people should be asked whenever important decisions are taken.	.3221
The people, not the politicians, should make our most important policy decisions.	.3325
The politicians in Parliament need to follow the will of the people.	.2114
Ordinary people all pull together.	.2950
Ordinary people are of good and honest character.	.2951
Ordinary people share the same values and interests.	.3004
Although the Germans are very different from each other, when it comes down to it they all think the same.	.2712

Sources: Own calculation based on SOEP-IS.

C Instrumental Variable

For the construction of our instrumental variable, we have to estimate an income concept that is in line with the regional tax data. Thereby, we are able to calculate for each household their position in the local and national income distribution. We do so by calculating the *Gesamtbetrag der Einkünfte* (the income concept in German tax statistics). This income concept is based on different income sources and three deductions. We document the different parts below.

1. Sum of income

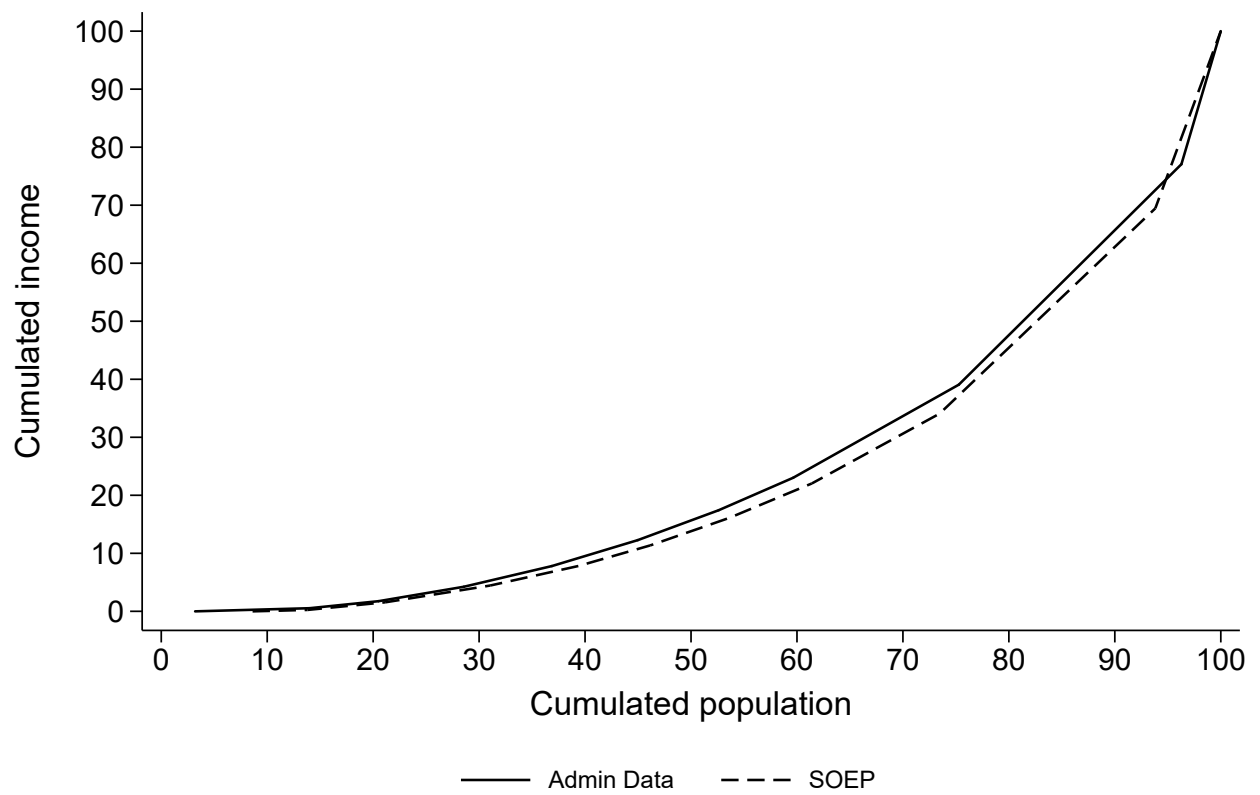
- Einkünfte aus Land- und Forstwirtschaft: part of gross income
- Einkünfte aus Gewerbebetrieb: part of gross income
- Einkünfte aus selbständiger Arbeit: part of gross income
- Einkünfte aus nichtselbständiger Arbeit: part of gross income
- Einkünfte aus Kapitalvermögen: part of income from assets (except housing)
- Einkünfte aus Vermietung und Verpachtung: gross income from housing (minus repair costs)
- Einkünfte aus wiederkehrenden Bezügen: gross income from pensions
- Einkünfte aus steuerpflichtigen privaten Veräußerungsgeschäften (Spekulationsgeschäften): part of income from assets (except housing)

2. Deductions

- Deduction for single parents
- Deduction for elderly people (older than 64, depending on start of pension)
- Deduction for farmers and foresters (depending on income thresholds and marital status)

Based on the rich data in the SOEP-IS, the calculation of this income is straightforward. We are confident that our calculation is reliable as our results from the SOEP-IS closely mirror the distribution from the administrative tax data in Figure [C.1](#)

Figure C.1: Comparison tax income, SOEP-IS and tax data



Notes: Own calculation based on the SOEP-IS and administrative tax data.