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Pay-as-they-get-in: attitudes toward migrants and pension systems

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Abstract

We study whether a better knowledge of the functioning of pay-as-you-go (PAYG) pension systems and recent demographic trends affects natives' attitudes toward immigration. In two online experiments conducted in Italy and Spain, we randomly treated participants with a video explaining how, in PAYG systems, the payment of current pensions depends on the contributions paid by current workers. The video also informs participants about population aging trends in their countries. The treatment increases knowledge of PAYG systems and future demographic trends for all participants. However, it improves attitudes toward migrants only for treated participants who do not support populist and anti-immigrant parties.

Keywords: information provision; experiment; immigration; pay-as-you-go pension systems; population aging; populism

JEL classifications: C90, D83, H55, J15, F22

1. Introduction

Progress in medicine and reduced fertility rates are leading to unprecedented population aging in most OECD countries and many emerging economies. For many of these countries, this will translate into a significant increase in the old-age dependency ratios (the ratio between the number of individuals older than 65 years and those between 20 and 64 years) in the near future. The average EU-27 average dependency ratio, for instance, is estimated to double over the next 30 years, jumping from about 30 per cent to almost 60 per cent by 2050 (OECD). While these demographic trends are a potential concern for many countries (e.g. because of their implication for healthcare and long-term care costs), they pose particular challenges to those relying almost entirely on pay-as-you-go (PAYG) public pension systems in providing retirement income. Under PAYG systems, current retirement benefits are financed by contributions paid by current workers (as opposed to fully funded systems, where the contributions paid by workers will be used to finance future benefits). Hence, these systems can be sustained if the size of the retired population is not too large compared to the current working population. In some countries, however, the imbalance between contributors and receivers is expected to grow significantly. For example, the number of retired individuals for every 100 workers is expected to increase from 68.6 in 2018 to 105.7 by 2050 in Italy, and from 51.7 to 88.6 in Spain (OECD 2019).

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Immigration can help alleviate the pressure on PAYG systems. Immigrants tend to be young (the median age within the population of migrants in Europe was 30.3 years in 2020, Eurostat) and have lower reservation wages than natives, and as such are likely to join the working population of the hosting country. Estimates by the Italian National Institute for Social Security (INPS) indicate that the net social security contributions of migrants in Italy amounted to around 7 billion euros in 2017. In addition, INPS estimates that a full closure of borders in Italy would lead to 38 billion euros deficit in the social security system by 2040. In Spain, the government has openly recognized that the pension system will not be sustainable without the contribution of foreign workers (and might actually collapse anyway).[1]

Yet, anti-immigrant sentiments have been growing in many countries. Far-right and anti-immigrant parties or movements have widened their electoral support (think, e.g. of the League and Brothers of Italy in Italy, Vox in Spain, Rassemblement National in France, Freedom Party in Austria, or the "leave" campaign in Brexit referendum), and national surveys show increased support for tighter restrictions to immigration. In the Spring 2018 Global Attitudes Survey (Pew Research Center), the median share of Europeans replying "Fewer" or "None" to the question "In your opinion, should we allow more immigrants to move to our country, fewer immigrants, or about the same as we do now?" was 51 per cent. This share was 71 per cent in Italy. Both in Italy and Spain, the share has increased since 2014. Existing literature identified both economic reasons (Scheve and Slaughter 2001; Mayda 2006; Facchini and Mayda 2009; Malhotra, Margalit, and Mo 2013) and cultural reasons (Citrin et al. 1997; Sides and Citrin 2007) for these negative attitudes. Most importantly, the evidence seems to indicate that they stem from sociotropic concerns rather than individualistic interests (Hainmueller and Hiscox 2010; Hainmueller and Hopkins 2014, 2015; Bansak Hainmueller, and Hangartner 2016).[2]

Drawing on all these observations, this article studies whether a better knowledge of the functioning of PAYG pension systems and current demographic trends can make natives more willing to accept migrants. If individuals have limited knowledge of the challenges faced by PAYG systems, they might underestimate migrants' positive contribution to the welfare of their country. Hence, correcting this lack of information may change attitudes toward immigration and lead to a higher willingness to accept migrants. We test this hypothesis through an online experiment on a representative sample of the Italian and Spanish populations between 40 and 85 years old.[3] The experiment was conducted separately in Italy and Spain in September 2021.[4] We first asked a set of questions related to socio-economic characteristics, political attitudes, beliefs about immigration, and knowledge of PAYG systems and demographic trends. Our treatment then consisted of a short video explaining how the payment of current pensions in PAYG pension systems depends on the contributions paid by current workers. The treatment also provided information about the future demographic trends of the country where the experiment was run, explaining how the ratio between the number of pensioners and the number of workers will grow substantially. Most importantly, the treatment did not include any mention of immigration and its positive contribution to the sustainability of pension systems.[5] Finally, after the treatment, we asked a second set of questions about the functioning of PAYG systems and opinions about immigration.

Our study is relevant well beyond the specific case of Italy and Spain. All OECD countries are experiencing increasing old-age dependency ratios putting under severe pressure PAYG pension systems that are predominant (offer more than 75 per cent of retirement income) in twenty-four OECD countries out of thirty-eight (OECD, Pensions at a Glance 2022). With the exception of Mexico, the OECD is an area of net immigration. Not only Italy and Spain, but also Cyprus, Greece, Iceland, Ireland,

[1] See, for example, El Mundo, 18/01/2020 (in Spanish): "Se buscan 270.000 inmigrantes al año para salvar las pensiones" (270.000 migrants wanted to save pensions) and the official report "España 2050: Fundamentos y propuestas para una Estrategia Nacional de Largo Plazo" (Spain 2050: Foundations and proposals for a long-term National Strategy), by the Oficina Nacional de Prospectiva y Estrategia of the Spanish Government.

[2] Population aging is another important driver of attitudes toward immigration. Lower birth rates were shown to be associated with more pro-immigration attitudes (Ivlevs 2012), while the general negative attitude found in older people seems to be mostly due to cohort effects, rather than aging effects (Calahorrano 2013; Sørensen 2013; Schotte and Winkler 2018).

[3] Italy and Spain are countries with high youth unemployment rates. The decision to exclude those aged less than 40 years from the survey was aimed at capturing individuals who likely had already contributed to the pension system and presumably have some expectations about their retirement savings.

[4] A smaller second round was run in Italy in December 2021. We provide more details in Section 2.

[5] In information provision experiments, such as the one by Adida et al. (2020), where receivers are required to make decisions like voting, information becomes effective not just when it heightens the salience of the issue or introduces new information, but also when it is perceived as widely observed. This broad observation fosters an expectation of coordination on the resultant voting outcome. In our context, where the information receiver is merely expressing preferences, only the effects of salience or the introduction of new information matter.

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Malta, and Portugal are recent immigration countries having experienced large inflows of immigrants at the turn of the Century (UN World Population Prospects, 2022). The rise of votes to populist parties is a global phenomenon (https://fsi.stanford.edu/global-populisms).

Our results show that the treatment increased individuals' knowledge of their country's pension systems and demographic trends. On the other hand, among the four post-treatment questions related to migration, the treatment increased respondents' willingness to accept migrants (by around 2.6 per cent) relative to the average response in the control group, but on the other three questions on attitudes, there has been no effect on average: respondents' opinion on benefits of immigration on the pension system, the economy, and their country's culture in general, was not affected. To explain this lack of significant results, we study whether the effect is heterogeneous among supporters of different political parties. The reason for this heterogeneity analysis comes from the literature (Andre et al. 2022; Galasso et al. 2022), which shows the importance of political stances in affecting the results of information provision experiments.

More in detail, we split the sample into three groups. The first group comprises respondents voting for parties with clear anti-immigrant stances (Lega, Brothers of Italy, Vox) or with ambiguous and populist positions toward immigration (Five Stars Movement). The second group consists of the voters of all other parties who do not support anti-immigrant stances. Finally, the third group is composed of undecided voters, who did not indicate any favorite party in their answers to our questions. Our results show that the treatment increases the knowledge of pension systems and demographic trends for all three groups, with a stronger effect on supporters of anti-immigrant and populist parties and undecided voters. Regarding opinions about migrants and their willingness to accept them, however, the treatment only affects individuals not supporting anti-immigrant and populist parties. The effect is not statistically significant for the other two groups, and, in some cases, the coefficients are negative.

Our article contributes to the literature on information provision experiments in the context of attitudes toward migration (see Haaland et al. 2021 for a review of the literature on information provision experiments). Within this literature, a number of papers have attempted to mitigate anti-immigrant sentiments by correcting respondents' misperceptions of the size and characteristics of the migrant population (Hopkins et al. 2019; Grigorieff et al. 2020; Lergetporer et al. 2021; Alesina et al. 2023). In general, these interventions have generated muted responses. Other work has shown that the provision of positive narratives about migrants can be more successful at improving individuals' attitudes toward immigration (Haaland and Roth 2020; Cattaneo and Grieco 2021; Facchini et al. 2022). Our article constitutes the first attempt to test the effectiveness of a more objective, indirect message. As already described above, our treatment does not mention immigration, but only provides information that is helpful in evaluating its positive contributions. We believe this design has two main advantages. First, while anti-immigration parties can find alternative narratives to counteract positive messages about immigration, contradicting objective information like the one in our treatment should be more challenging. In addition, this type of information is less likely to be associated with specific pro-immigration parties, making the message less political and therefore more likely to be accepted by a wider set of individuals. Second, by not mentioning immigration at all, this type of treatment reduces concerns of experimenter demand effects (de Quidt et al. 2018; Mummolo and Peterson 2019). At the same time, changes in attitudes toward migration induced by our treatment can only come by connecting the dots, that is, actively processing the different pieces of information provided in the experiment. This allows us to test whether the experiment is effective not only in providing information but also in inducing logical connections between facts among different groups of individuals.

The results of our heterogeneity analysis are in line with the recent literature on the importance of political views in the determination of individual beliefs and their reaction to information provision. For example, this literature shows that Republicans are more likely than Democrats to blame the government for inflation (Andre et al. 2022). A common result in this literature is that information provision might be effective only on non-ideologically biased individuals. In an online experiment conducted in France during the 2017 presidential elections, Barrera et al. (2020) assessed the effectiveness of fact-checking against misleading political statements by the French extreme-right candidate, Marine Le Pen. They found that despite improving voters' factual knowledge, fact-checking did not influence their policy conclusions or support for the candidate. Galasso et al. (2022) reached similar conclusions in an experiment conducted during the campaign for a referendum on the number of Italian MPs. Their information treatment deconstructing the populist narrative on the benefits of reducing

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the number of MPs did not affect populist voters. In the context of preferences over trade policies, Alfaro, Chen, and Chor (2023) find that narratives about trade-related job losses and price benefits can both lead to more protectionist policy choices. These preferences are shaped by political identity and pre-existing beliefs, with Republicans becoming more protectionist and Democrats less so when presented with trade narratives. Their study reveals that information congruent with political identity reinforces existing views, while contradictory information intensifies initial beliefs and does not lead individuals to change them. Finally, closer to the topic of our work, Cattaneo and Grieco (2021) show that providing positive messages on the effect of immigration affects only those with mild and positive initial beliefs, while it can backfire on those with initial negative beliefs. This is consistent with the analysis of the link between immigration and redistribution preferences conducted by Alesina et al. (2021) in 140 regions of sixteen Western European countries. The authors find that natives' support for redistribution decreases with a higher immigrant population, especially in regions with large welfare states and among politically centrist or right-leaning individuals.

Even though our experiment does not provide direct evidence on all the main factors driving the behavior of populist and undecided voters, in Section 3.3, we discuss how distrust toward mainstream parties and institutions may represent the more likely explanation. We also describe how the political ideology of populist and undecided voters and their cognitive skills, compared to those of nonpopulist voters, should play a limited role.

Our data also allow to assess the relevance of priming effects among voters revising their attitudes towards migrants based on the new information provided to them (see Section 3.4). We find that revisions of attitudes are stronger among individuals who had, before the treatment, a wrong perception of the contribution of migrants to the sustainability of PAYG pension systems and welfare systems in general. This evidence is consistent with an updating of beliefs driven by rational processing of new information, rather than the byproduct of unaware and unconscious responses to the treatment.

Finally, in Section 3.5, we present an interesting side result of our experiment. The analysis of the post-treatment knowledge of the pension system reveals that treated respondents are less likely to believe that the system is in deficit. This is likely due to the way information was presented in the treatment and constitutes an example of cross-learning in information provision experiments (Haaland et al. 2021).

The remainder of this article is organized as follows. Section 2 describes the experiment, the data, and the empirical strategy. Section 3 contains the results of our analysis and Section 4 concludes.

2. Experiment, data, and empirical model

We conducted two separate experiments in Italy and Spain. In both countries, the experiments were carried out by professional marketing research companies (Ce&Co in Italy and Netquest in Spain). Both experiments were run in September 2021.[6] In Italy, we conducted a smaller second round (collecting only 100 observations) in January 2022.[7] In total, we recruited 2,053 Italian and 1,434 Spanish respondents, randomly sampled from research panels representative of the population of individuals between 40 and 85 years old in the respective countries.[8] Respondents were not informed about the experiment either before or after the interviews. Research panels are not communities and do not allow for interactions between panelists. The questionnaire and treatment were fully administered in the country's language.

Supplementary Appendix A2 contains the questionnaire used in the survey, translated from Italian and Spanish into English. We began the questionnaire by collecting respondents' socio-economic characteristics and political attitudes. Next, the questionnaire contained a set of questions about immigration, the functioning of PAYG pension systems, and demographic trends in their countries. The first question about immigration asked participants to estimate the number of migrants legally living in the country as a share of its total population. Data from the Italian National Institute of Statistics place this value at 8.8 per cent (8.7 per cent) at the beginning of 2022 (2021). The next two questions required participants to state whether the majority of migrants arrived legally or illegally and whether the taxes

[6] Both started on the 1st September and ended on the 8th.

[7] Due to a bug in the sampling system, 22 survey responses of the Italian survey in September were duplicated, and one was triplicated. To correct the mistake, Ce&Co offered to replace these observations with 100 new interviews from a random sampling of the panel, excluding respondents from the first round. These responses were collected between the 3rd and the 10th of January 2022. All regressions include date fixed effects to control for daily shocks, but also for these observations collected in January 2022.

[8] The sample was stratified by gender, age, and geographical area.

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and social contributions they pay are higher, lower, or equal to the subsidies they receive. The correct answers for these questions were legal and higher, respectively. The question about the functioning of the PAYG pension system asked whether, in the respondent's opinion, contributions paid by current workers are used to finance current pensions (the correct answer), future ones, or both. Finally, the question about demographic trends asked whether the respondent thought that the number of pensioners in their country will increase more, less, or the same as the number of workers. The correct answer to this question was more. Except for the question about the share of immigrants, all questions were multiple-choice. All questions testing respondents' knowledge included the option "I don't know".

After this initial set of questions, half of our sample was randomly selected to be treated with a 1-min video.[9] The control group saw no video and proceeded directly to the second part of the questionnaire. The video showed five slides, which we report in Supplementary Appendix A3, translated from Italian and Spanish into English. The first three slides explained, with words and pictures, that the pension system used in the country is a PAYG one and that current pensions are financed by the contributions paid by current workers. Then, the last two slides presented the issue of population aging. More precisely, the last slide reported OECD estimates predicting that the number of retired individuals for every 100 workers in Italy (Spain) will increase from 68.6 (51.7) in 2018 to 105.7 (88.6) in 2050. The statistics were reported both in words and with a graph and were followed by a sentence clarifying that, in the future, there will be a lower number of workers to finance a higher number of pensions. Participants could not skip the video.

The most important feature of our treatment, which distinguishes our work from existing literature, is that we introduced no mention of immigration in the video. This allowed us to test the indirect effect of providing useful information for the evaluation of immigrants' contribution to the hosting country, without explicitly stating such contribution. We believe this type of message has the advantage of being more immune to politics. Indeed, for such a sensitive topic as immigration, it can be easy for anti-immigration parties to portray positive narratives (Haaland and Roth 2020; Cattaneo and Grieco 2021; Facchini et al. 2022) as just one version of the facts, and counteract them with alternative stories. Furthermore, even when the narratives refer to the positive effect of immigration on the pension system, as in Facchini et al. (2022), a direct mention of immigration might induce respondents to associate the treatment with leftists (or, more generally, pro-immigrants) parties, biasing the effectiveness of the treatment. The information we provide in our video is more "neutral," and therefore less subject to this type of issue. Furthermore, providing a treatment that does not mention the main topic of our analysis reduces the concerns of experimenter demand effects (i.e. respondents' tendency to interpret the treatment as a cue for the experimenter's objective and adapt their responses accordingly, de Quidt et al., 2018; Mummolo and Peterson, 2019).

The post-treatment part of the questionnaire consisted of seven questions. The first two were true/false questions, directly relating to the content of the treatment. They asked whether it is true that current pensions are financed by current workers and whether it is true that, by 2050, the number of pensioners will increase more than the number of workers. For both questions, "True" was the correct answer. In the third question, respondents were asked whether they thought the pension system was in surplus, in deficit (the correct answer), or in budget balance. For all these first questions, we still included "I don't know" as a possible answer. The last four questions referred to immigration. In particular, respondents were asked to state the extent to which they agreed with the following statements: their country should accept fewer migrants, migrants are bad for the pension system, migrants are bad for the economy, and migrants are a threat to Italian/Spanish culture. The possible answers ranged from 1 (strongly agree) to 4 (strongly disagree).[10]

[9] Before starting with the treatment, all participants were asked a question completely unrelated to the survey, which we introduced to check their level of attention.

[10] With respect to the main (September) experiment, the second round conducted in Italy in January 2022 contained slightly different questions. First, we added a pre-treatment question that asked whether the Italian pension system is *currently* in deficit, in surplus, or in budget balance. Second, we rephrased some of the post-treatment questions to induce respondents to think about future trends, rather than the present. More precisely, in this second version, the questions about the financial situation of the pension system and about the effect of migrants on the pension system, economy, and culture were written in future tense, and they explicitly stated that they referred to the future. The change was implemented in response to a result that emerged during the analysis of first-round data, namely that the treatment reduces the probability that respondents think that the pension system is currently in deficit. We discuss this result more in detail in Section 3.

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To estimate the effect of our treatment on respondents' knowledge and opinions, we run the following model:

$$y_i = \beta_0 + \beta_1 Treatment_i + \beta_2 X_i + \varepsilon_i \quad (1)$$

In Equation (1), y_i is the participant i's response to the survey question of interest (i.e. knowledge of the functioning of the PAYG pension system and demographic trends, willingness to accept more migrants, or beliefs about the effects of migration on the pension system, the economy and the culture of their country), $Treatment_i$ is a dummy variable equal to 1 if individual i was treated and X_i is the set of controls. The next section reports the results of our estimations.

3. Results

3.1 Descriptive statistics and balance tests

We report in this section the descriptive statistics relative to our sample of Italian and Spanish respondents. We also show that the randomization worked properly, such that the observable characteristics of the respondents are balanced across the treatment and control groups. Supplementary Table A1 contains the descriptive statistics for our sample, distinguishing between treatment and control groups. As we can see, the average age is around 56 in a sample where the minimum age is 40 years, and the maximum is 85. An interesting feature that emerges from Supplementary Appendix Table A1 is the share of populist and undecided voters, which are categories that we use in the heterogeneity analysis below. Around 26 per cent of the respondents in our sample declared to be supporters of populist and anti-immigrant parties, while approximately 35 per cent are undecided and do not declare which party is their favorite.[11] As for the knowledge about pension systems and demographic trends, Fig. 1 reports respondents' pre-treatment knowledge about PAYG pension systems and trends

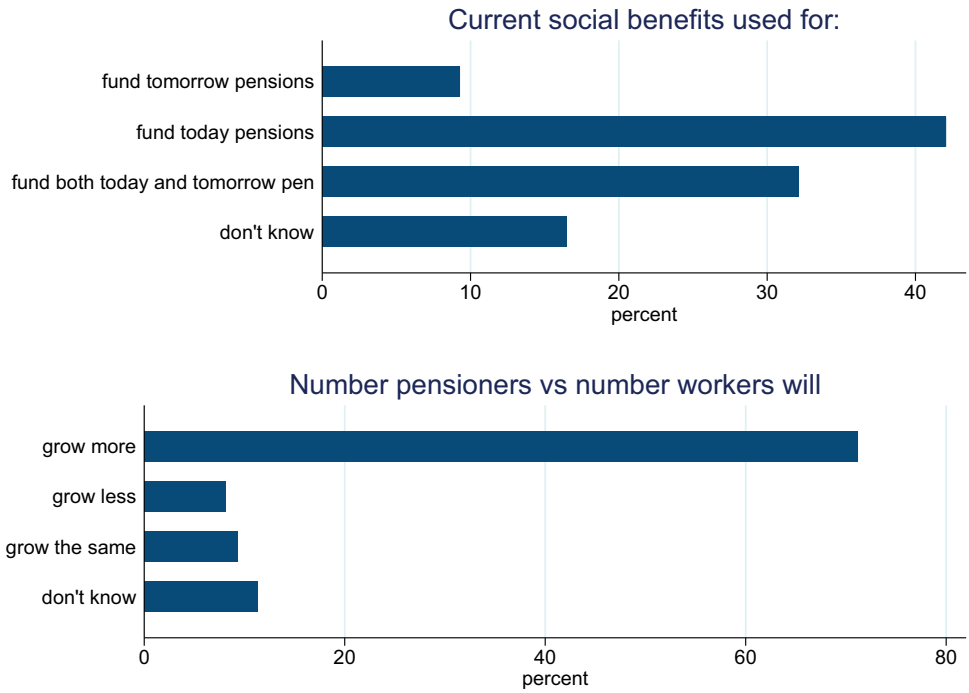

Figure 1. Pre-treatment knowledge demographic trends and pension systems

The top graph shows the answers to the question "How are social contributions paid by today's workers used?". The bottom graph reports the answer to the question "In your opinion, will the number of retired people grow more, less or the same relative to the number of workers?".

[11] Comparisons with other public opinion surveys, such as the European Social Survey and Itanes, indicate that a large share of undecided voters is a common feature of surveys eliciting political preferences.

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in the ratio between pensioners and workers. As the figure highlights, participants appear to be better informed about demographic developments than the functioning of PAYG pension systems. Specifically, 43 per cent of them correctly believe that current contributions are used to finance current pensions, against a 72 per cent of correct answers to the question about trends in the dependency ratio.

We report the balance tests from the randomization in Supplementary Appendix Tables A2–A4. More precisely, Supplementary Appendix Table A2 looks at pre-treatment knowledge of PAYG pension systems and demographic trends, and Supplementary Appendix Table A3 at the knowledge about immigration. Supplementary Appendix Table A4 focuses on personal characteristics. No significant difference emerges between the treatment and control groups. Therefore, all these variables appear to be balanced across treatment and control groups, which suggests that the randomization worked properly in the online experiment.

3.2 Main results

We begin by analyzing the effect of our treatment on respondents' knowledge of PAYG pension systems and demographic trends. Table 1 reports the results of our estimations. In the first column, the dependent variable is a dummy variable equal to 1 if the respondent correctly answered the question "Current pensions are financed by contributions paid by current workers. In your opinion, is this statement true or false?" (correct answer = true). In column 2, the dependent variable is a dummy variable equal to 1 if the participant correctly responded to the question "By 2050, the number of pensioners in Italy/Spain could increase more than the number of workers. In your opinion, is this statement true or false?" (correct answer = true). Finally, in the last column, we study the effect of our treatment on the probability of answering *both* questions correctly. The results indicate that the treatment increases the probability of a correct response to the first question by almost 6 percentage points, to the second by 4.6 percentage points, and to both by about 10 percentage points. All results are significant at the 1 per cent level.

Next, we turn to the effect of our treatment on individuals' attitudes and beliefs about immigration. We report these results in Table 2. The dependent variables in the four columns of the table correspond to participants' responses to our four post-treatment questions on immigration. The possible values range from 1 to 4, where 1 means that the participant strongly agrees with the statement (the country should accept fewer migrants, migrants are bad for the pension system, migrants are bad for the economy, and migrants are a threat to culture), 4 that they strongly disagree. Results in column 1 show that the treatment increases respondents' willingness to accept migrants. More specifically, treated individuals responded more positively to the question "the country should accept fewer migrants" (column 1), suggesting that the treatment pushed them to be more willing to accept more migrants into their country. In terms of magnitude, the treatment increases respondents' willingness to accept migrants into their country by approximately 2.6 per cent relative to the average response in

Table 1. Effect of treatment on knowledge pension system and demographic trends.

Dep. var.	**(1)** **=1 Post-treatment Correct answer Pension system**	**(2)** **=1 Post-treatment Correct answer Demographic trends**	**(3)** **=1 Correct Both answers**
Treatment	0.058***	0.046***	0.102***
	(0.014)	(0.012)	(0.015)
Observations	3,487	3,487	3,487
R^2	0.161	0.353	0.275
Outcome mean	0.743	0.743	0.595
Controls	Yes	Yes	Yes
Province FE	Yes	Yes	Yes
Date FE	Yes	Yes	Yes

OLS regressions. Standard errors robust to heteroscedasticity in parentheses.
*** $P < .01$, ** $P < .05$, * $P < .1$.

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Table 2. Effect of treatment on migration policies and attitudes.

Dep. var.	(1) Country should accept less migrants?	(2) Migrants bad for pension system	(3) Migrants bad for economy	(4) Migrants bad for culture
Answers	1 = strongly agree, 2 = agree, 3 = disagree, 4 = strongly disagree			
Treatment	0.058**	0.006	0.011	0.026
	(0.027)	(0.027)	(0.027)	(0.028)
Observations	3,487	3,387	3,387	3,387
R^2	0.377	0.336	0.346	0.313
Outcome mean	2.226	2.560	2.526	2.666
Controls	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes
Date FE	Yes	Yes	Yes	Yes

OLS regressions. Standard errors robust to heteroscedasticity in parentheses.
*** P < .01, ** P < .05, * P < 0.1.

the control group. In contrast, we do not find statistically significant effects on the other three questions about migration (columns 2–4).

To explain this lack of significant results in columns 2–4 of Table 2, we analyze whether the effect is heterogeneous for voters of anti-immigrant and populist parties versus individuals supporting other parties. The motivation for this heterogeneity analysis comes from the literature (Barrera et al. 2020; Alesina et al.2021; Andre et al. 2022; Galasso et al. 2022; Alfaro, Chen, and Chor 2023), which shows how political narratives can affect the results of information provision experiments. Using the pre-treatment question on respondents' vote intentions, we split our sample into three groups. In the first group, we include voters of parties with clear anti-immigrant stances (Lega and Brothers of Italy in Italy, Vox in Spain) or ambiguous and populist positions towards migrants (Five Stars Movement in Italy). The second group contains voters of all other parties, who do not defend anti-immigrant stances. Finally, in the third group (undecided), we include individuals that did not express a clear political support.[12] We then repeat the same analysis as in Tables 1 and 2, separately for each group.[13] Figure 2 shows that the treatment increases the knowledge of pension systems and demographic trends for all three groups, and the effect is even stronger for supporters of anti-immigrant and populist parties. At the same time, Fig. 3 shows that the treatment improves opinions about migrants and willingness to accept them only for individuals in the second group (i.e., those supporting parties without clear anti-immigrant positions). For individuals supporting anti-immigrant and populist parties and undecided voters, the treatment appears not to have a statistically significant effect. In some cases, the coefficients are negative, signaling a potential backlash in line with the confirmation bias literature (Cattaneo and Grieco 2021). As mentioned above, this result is in line with the evidence on the role of political views in shaping individual beliefs and their reaction to information provision (Barrera et al. 2020; Alesina et al.2021; Andre et al. 2022; Galasso et al. 2022; Alfaro, Chen, and Chor 2023). In the following two sections, we discuss which factors may drive the behavior of populist and undecided voters and whether the main results are due to the provision of new information or the priming of pre-existing information.

3.3 What explains the behavior of populists and undecided voters?

In this section, we discuss which factors may explain the behavior of populist and undecided voters compared to the behavior of the voters of non-populist parties. The finding that the three groups (i.e. non-populists, populists, undecided) respond similarly in terms of updating beliefs to the direct message about the knowledge of pension systems and demographic trends (Fig. 2), while the populist supporters and undecided voters are unwilling to make the connection with immigration and to change their view on that dimension (Fig. 3), could be interpreted as consistent with (1) the ideology channel (see, e.g. papers on the strength of anti-immigration stances in the radical right such as Barone et al.

[12] This group contains individuals who are undecided, who would not vote, or who would cast a blank ballot.
[13] For the full set of estimates, see Supplementary Appendix Tables A5 and A6.

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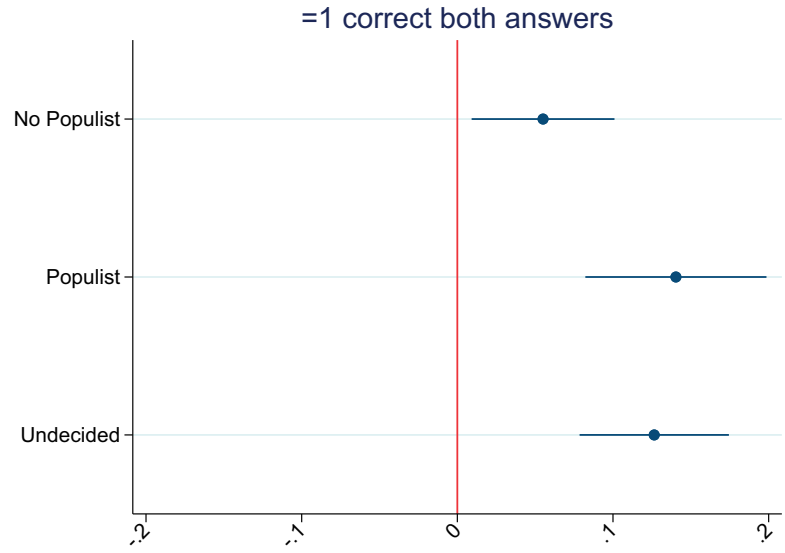

Figure 2. Heterogeneity: knowledge pension system and demographic trends.

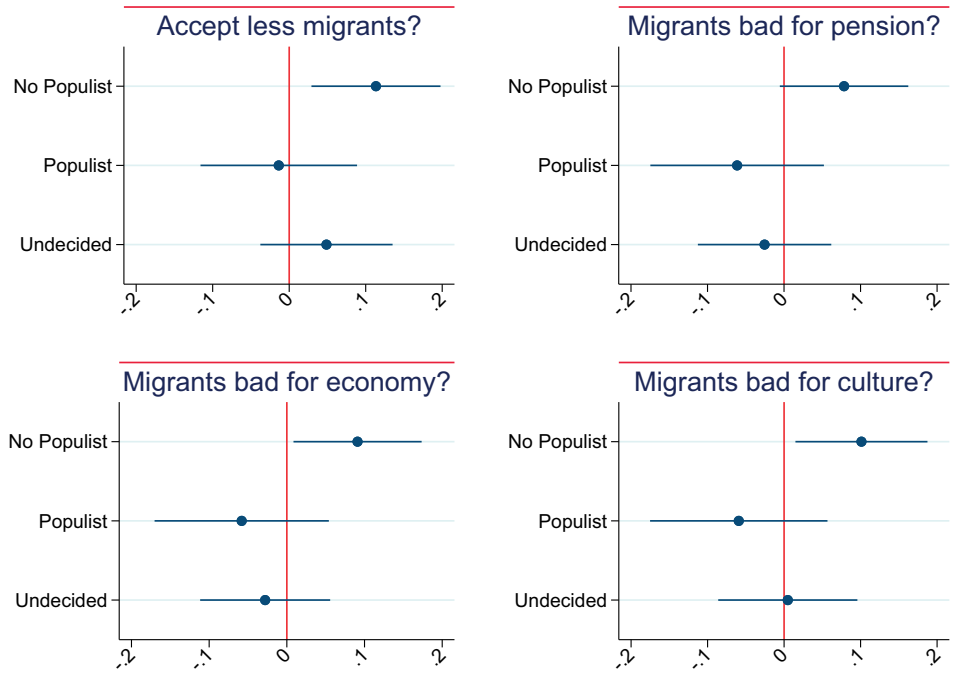

Figure 3. Heterogeneity: migration policies and attitudes.

2016; Dinas et al. 2018; Hangartner et al. 2019; Dustmann et al. 2019; Tabellini 2020; Gamalerio and Negri 2023); (2) the lower cognitive skills or unsophisticated reasoning assumption (see, e.g. Levy et al. 2022); or (3) the distrust and commitment channel (see Bellodi et al. 2023 and references therein).

Starting from the first potential channel (i.e. ideology), among the populist parties identified, three (i.e. Lega, Brothers of Italy, Vox) are far-right parties, and one (i.e. the Five Stars Movement) is a catch-all populist party more difficult to place on the left–right axis. Therefore, to study the role of ideology,

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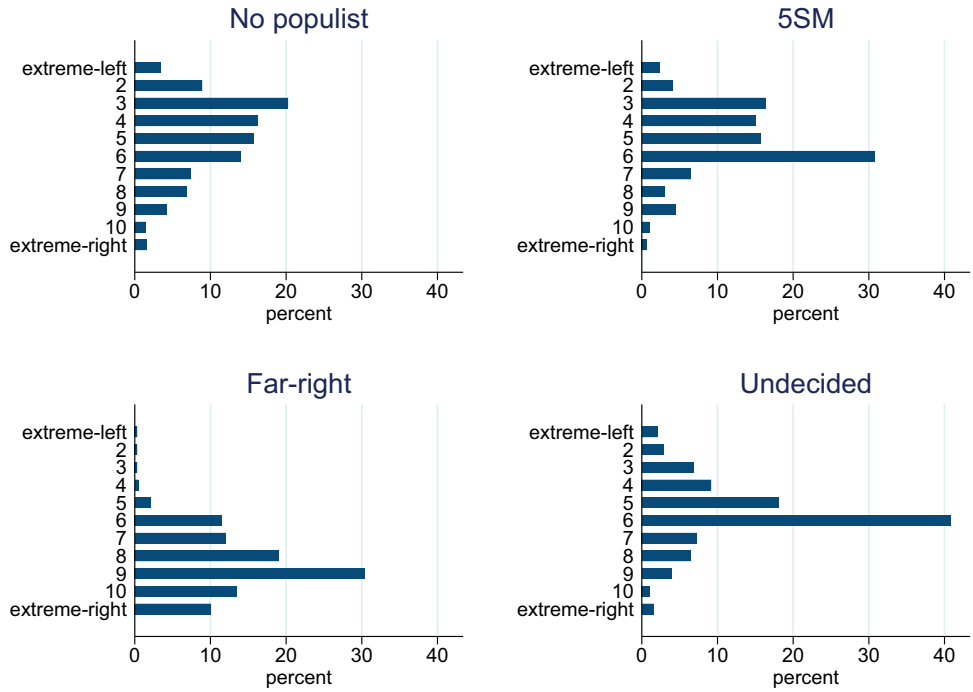

Figure 4. Ideology of respondents based on political parties.

we create a separate dummy variable for the supporters of the Five Stars Movement and another dummy variable for the supporters of the three far-right parties (i.e. Lega, Brothers of Italy, Vox). In Fig. 4, we provide evidence of the self-reported political orientation of the respondents to the survey, distinguishing them between supporters of non-populist parties, the Five Stars Movement, far-right parties, and undecided voters. To produce this evidence, we exploit a survey question that asks participants to locate their political orientation on a scale from 1 (extreme-left) to 11 (extreme-right). As we can see from Fig. 4, the supporters of the Five Stars Movement tend to be more centrist and more similar to those of non-populist parties. More in detail, the supporters of non-populist parties report an average political orientation score equal to 4.86 with a median of 5 and a standard deviation of 2.23. The supporters of the Five Stars Movement report an average of 5.10, a median equal to 5, and a standard deviation of 1.90. Interestingly, the undecided voters appear to be relatively centrist, with an average political orientation score of 5.65, a median of 6, and a standard deviation of 1.80. Conversely, the voters of far-right parties report an average political orientation score equal to 8.39 with a median equal to 9 and a standard deviation of 1.67. Therefore, Fig. 4 confirms that the supporters of the Five Stars Movement and undecided voters appear to be ideologically different from the voters of far-right parties, and, if anything, they seem to be closer to the voters of non-populist parties.

Based on the evidence in Fig. 4, we repeat the heterogeneity analysis reported in Fig. 3 by separating the supporters of the Five Stars Movement from the voters of far-right parties. If ideology plays a role, we should expect the behavior of the supporters of the Five Stars Movement and those of the far-right parties to differ. We should also expect the behavior of the supporters of the Five Stars Movement voters to be more similar to the reaction of the non-populist voters. However, the results reported in Fig. 5 and Supplementary Appendix Table A7 show that this is not the case, given that the voters of the Five Stars Movement behave more similarly to the voters of far-right parties. Based on this evidence, ideological orientation does not appear to explain the behavior of the populist supporters and undecided voters.

The effectiveness of our treatment in increasing knowledge about pension systems and demographic trends among all groups (Fig. 2) suggests that the second possible channel, that is, lower cognitive skills of populist and undecided voters compared to non-populist ones, should play a smaller role in explaining our findings. Specifically, as described above, Fig. 2 shows that the supporters of populist

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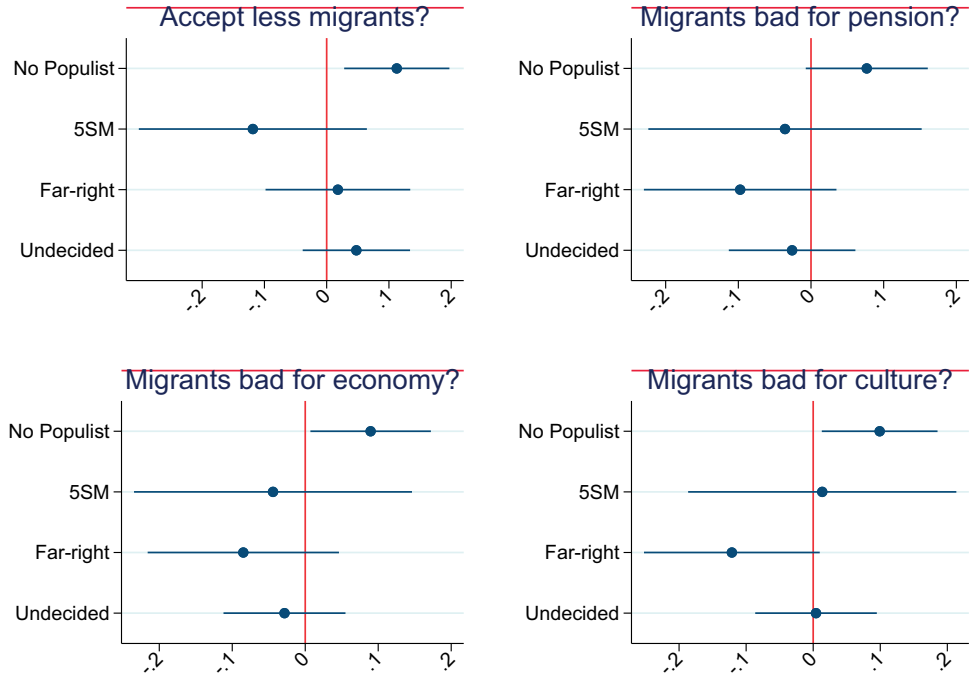

Figure 5. The role of ideology.

parties and undecided voters update their beliefs about the knowledge of the pension systems and demographic trends after receiving the treatment, with an effect that is even stronger compared to non-populist voters. Therefore, even though we cannot entirely exclude that the lack of connection between the treatment and attitudes toward migrants among populist and undecided voters is due to lower cognitive skills (Fig. 3), we think that the fact that populist and undecided voters could understand the direct message of the treatment suggests that this second channel should play a relatively minor role in explaining the behavior of populist and undecided voters.

Thus, even though different individuals may be affected by different combinations of the three channels, we expect the distrust channel to play the most significant role. As explained in Algan et al. (2017), Guiso et al. (2017), Guiso et al. (2022), Bellodi et al. (2023) and references therein, the sequence of crises of the last two decades has reduced trust in institutions significantly. The strategic response of populist parties who entered political competition has been to offer simple policy commitments (including walls and closure of harbors) to capture the vote of the disillusioned voters with the lowest levels of trust in representative democracy. Hence, the populist voters in our representative group are likely to show low trust and a high focus on the existing commitments. The same argument is likely to apply to the undecided voters, who are also likely disillusioned with mainstream institutions and parties. In fact, in Supplementary Appendix Table A8, using data from the European Social Survey (Round 9, 2018), we provide descriptive evidence that, both in Italy and Spain, populist and undecided voters have lower levels of trust in their country's Parliament, politicians, political parties, and the EU Parliament compared to non-populist voters (the default category in the regressions).[14] Therefore, they prefer to remain mute about their political preferences. For these voters, any message aimed at

[14] More in detail, in Supplementary Appendix Table A8, we use data from Round 9 (2018) of the European Social Survey, because this is the most recent round with questions on politics for both Italy and Spain. To identify non-populist, populist, and undecided voters, we use the question asking about to which political party the respondent felt closer. As done above, we identify as populist voters those who felt closer to Lega, Brothers of Italy, Five Stars Movement, and Vox. We classify as undecided those who did not express being close to one specific political party and the remaining individuals as non-populist voters. To ensure that the findings in Supplementary Appendix Table A8 are not skewed by the 2015 Refugee Crisis, we present analogous evidence in Supplementary Appendix Table A9 using data from Rounds 6 and 7 (2012 and 2014) of the ESS. A limitation of this supplementary evidence is that Vox had not yet entered the electoral scene during these years, so we can only identify undecided voters in Spain. Furthermore, the ESS was conducted for Italy in Round 6 but not in Round 7. Despite these limitations, the results in Supplementary Appendix Table A9 align with those in Supplementary Appendix Table A8.

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increasing the knowledge of a "potential" benefit from immigration goes astray because (1) the potential benefit may not arrive to them given the distrust in elites and policies proposed by mainstream parties and (2) they are subscribing politically exactly to parties that make commitments of anti-immigration policies unconditional on any information they may receive.

3.4 New information vs. priming

In this section, we investigate whether the baseline and heterogeneity results reported in Section 3.2 are due to new information or priming of pre-existing information. To do so, we exploit the pre-treatment question in which we asked the respondents whether they think migrants contribute more or less compared to what they receive from the welfare system. The possible answers are: (1) contribute more; (2) contribute less; (3) contribute the same; and (4) do not know. Given that the hidden message behind our indirect treatment is that migrants contribute to the sustainability of the pension system and to the welfare system in general, we can classify the respondents that answered that migrants contribute more or the same as those who are already aware of the contribution of migrants. Conversely, we can classify those who answered that migrants contribute less or do not know as those unaware of this contribution. If the latter group drives the results, we can think that the treatment effects are due to new information. On the opposite, if it is the first group to drive the results, we can think of them as due to the priming of pre-existing information.

To develop this analysis, we separate the respondents into six groups using two criteria. First, whether they declared to be supporters of non-populist and populist parties or whether they did not declare their favorite party. Second, we distinguish between those that said that migrants contribute more or the same to the welfare system and those that answered that migrants contribute less or do not know. This analysis's results are reported in Fig. 6, and all the estimated coefficients are in Supplementary Table A10.[15] As we can see, non-populist voters with poor pre-existing information on the contribution of migrants to the welfare system appear to be driving the results. Hence, we conclude that the results are due to new information rather than the priming of pre-existing information.[16]

3.5 Cross-learning effect

An interesting side result that emerges from our analysis is that the treatment reduces the likelihood that respondents think that the pension system is in deficit. In Table 3, we report the results of four regressions where the dependent variables are dummy variables equal to 1 if the respondent thinks that the pension system is in equilibrium (column 1), surplus (column 2), deficit (column 3), or whether she does not know (column 4). As we can see, the treatment increases the probability that the respondents answer that the pension system is either in equilibrium or in surplus. At the same time, the treatment reduces the probability that the respondents answer that the pension system is in deficit or do not know. We believe this might be an example of cross-learning (when information changes beliefs about variables that were not the object of interest in the analysis), which is a common effect in

[15] In Supplementary Appendix Tables A11 and A12 and Supplementary Appendix Figs A1 and A2, we present evidence of an additional mechanism. Specifically, we investigate whether the effects detailed in Section 3.2 are predominantly driven by younger individuals in our sample, who are potentially more vulnerable to the repercussions of demographic trends. It's plausible to think that the pensions of these younger individuals (i.e. future pensioners) might be more jeopardized due to future changes in the ratio of pensioners to workers, compared to the pensions of those already retired. Consequently, we replicate the analysis from Fig. 3, distinguishing between individuals below and above the median age (56 years old in our sample) in Supplementary Appendix Table A11 and Supplementary Appendix Fig. A1. We also differentiate between those already retired and those not yet retired in Supplementary Appendix Table Supplementary Appendix A12 and Supplementary Appendix Fig. A2. Consistent with the notion that future pensions face greater risks, and in line with the analysis in Fig. 3, our results indicate that the primary effects are driven by younger individuals who express support for non-populist political parties. Additionally, in a related heterogeneity analysis presented in Supplementary Appendix Table A13 and Supplementary Appendix Fig. A3, we demonstrate that the outcomes are primarily influenced by individuals who support non-populist political parties and have dependent children. This finding aligns with the results shown in Supplementary Appendix Tables A11 and A12 and Supplementary Appendix Figs A1 and A2. It implies that individuals concerned about their children's future pensions, as well as their own, are the ones most responsive to the treatment.

[16] One could interpret the variable capturing pre-treatment knowledge about migrants' contributions to the welfare system as an indicator that individuals less informed about migrants also hold more negative views toward them. This aligns with predictions from racial and group threat theories (Blumer 1958; Blalock 1967; Alesina and Tabellini 2022). Such negative perceptions could influence their political preferences regarding migration policies. However, as highlighted in the literature (Barrera et al. 2020; Alesina et al. 2023), heightened salience of migration often exacerbates natives' negative perceptions of migrants, particularly among those with pre-existing misperceptions or negative biases. If our variable truly reflected pre-treatment policy preferences rather than genuine knowledge about migrants' contributions, we would expect those with limited pre-treatment knowledge (and presumably more negative pre-existing views) to react more adversely to the treatment's indirect increase in migration salience. Yet, the observed positive reaction from those with lesser pre-treatment knowledge suggests that the introduction of new information outweighs the effects of priming or increased salience.

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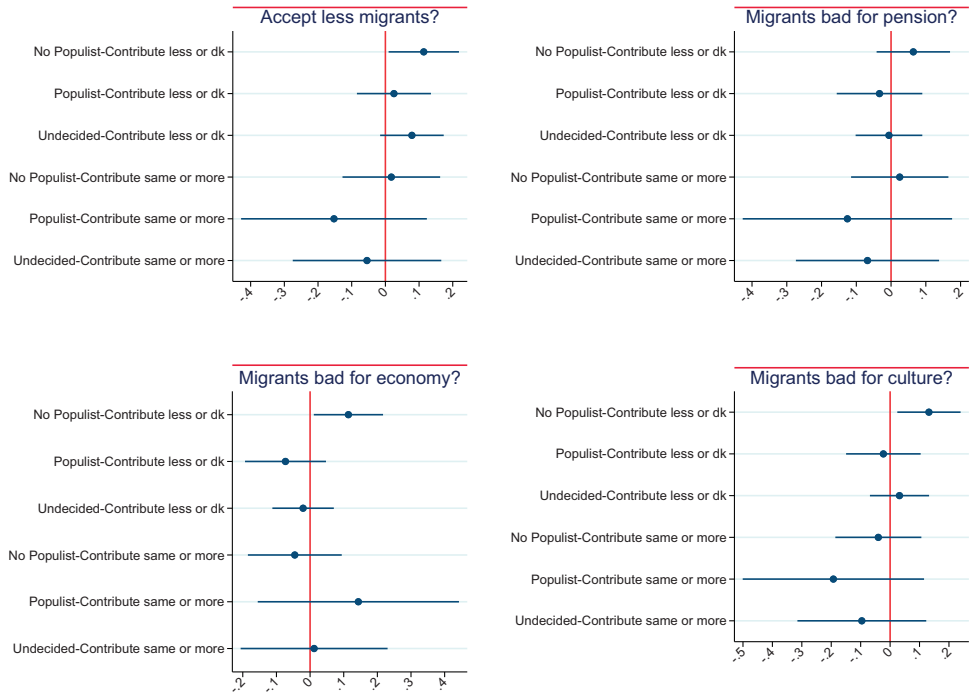

Figure 6. New information vs. priming.

information provision experiments (Haaland et al. 2021). More precisely, the result might be due to the way we presented the information in the video and framed the questions in the post-treatment part of the survey. Since the treatment focused on the number of pensioners and workers rather than the total funds needed versus the total funds available to finance pensions, participants might have been induced to think in terms of "one worker equals one pensioner" when evaluating the sustainability of the pension system. Hence, when told that in 2018 the ratio between pensioners and workers was still below one, they may have thought that the financing of current pensions was not an issue.[17]

To understand why the results in Table 3 are interesting, it is useful to report some information about the current status of pension systems in Italy and Spain. Italy's pension system is currently running a deficit of about 3 per cent of the GDP per year. It absorbs the largest share of domestic product among the OECD countries, and this share (currently 14 per cent) is bound to increase by another two basis points in the next 25 years. Pensions are already taxing labor at a rate of roughly 45 per cent, which crowds out complementary pensions and prevents financing other types of welfare payments (Italy is the EU country spending the least on unemployment insurance and social assistance, in spite of its relatively high jobless rate). The main reasons for the large budget are an early average effective retirement age (62 years) and a highly effective replacement rate (above 80 per cent). About 85 per cent of the average retiree's income is provided through the public pension systems and only 15 per cent from other sources such as occupational pensions or private savings. The Spanish pension system runs an annual deficit of more than 2 per cent of the GDP. The average effective retirement age is lower than in Italy (about 61), while the net replacement rate is about 80 per cent for an average income worker. All this explains why about 40 per cent of labor incomes are taxed to fund the pension system.

In light of these entitlements and wage tenure profiles, the equilibrium number of workers per pensioner in the two countries is between 2 and 3. However, these details are difficult to communicate to the layperson in large-scale information campaigns. In addition to these information difficulties due

[17] As explained above, this result prompted us to apply small changes to the questionnaire in the second round of the Italian experiment. Due to the limited number of observations (100), we cannot perform any meaningful analysis on this sample.

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Table 3. Cross-learning effect.

Dep. var.	(1) =1 if think pension system in equilibrium	(2) =1 if think pension system in surplus	(3) =1 if think pension system in deficit	(4) =1 if do not know
Treatment	0.033***	0.048***	−0.054***	−0.027**
	(0.011)	(0.011)	(0.016)	(0.012)
Observations	3,387	3,387	3,387	3,387
R^2	0.106	0.084	0.180	0.202
Outcome mean	0.0935	0.0829	0.636	0.187
Controls	Yes	Yes	Yes	Yes
Province FE	Yes	Yes	Yes	Yes
Date FE	Yes	Yes	Yes	Yes

OLS regressions. Standard errors robust to heteroscedasticity in parentheses.
*** $P < .01$, ** $P < .05$, * $P < .1$.

to the complexity of the topic, the results in Table 3 suggest that information campaigns should be careful in selecting the wording used to convey information about the current status of the pension systems in order to avoid side effects as the one detected in the Table.

4. Conclusions

We investigate the extent to which improving individuals' knowledge about the functioning of PAYG pension systems and demographic trends can change natives' attitudes toward migrants. Our analysis indicates that, on average, the answer is positive, as treated individuals in our experiment show a higher willingness to accept migrants. We believe this is a promising result for the identification of an effective communication strategy in the context of immigration. The effectiveness of alternative interventions explicitly highlighting migrants' positive contributions (as in Haaland and Roth 2020; Cattaneo and Grieco 2021; Facchini et al. 2022) can be hindered by the high political salience of the topic. Indeed, outside the protected environment of an academic experiment, these interventions could be easily counteracted by alternative narratives offered by anti-immigration parties, or they might be perceived as too "leftist" by respondents with a more center-right political leaning. The absence of any mention of immigration in our treatment makes our message more "neutral" and therefore less likely to be affected by these considerations. At the same time, our results reassure us that such an indirect message still has a positive effect on people's attitudes.

Unfortunately, however, our results also show the limitations of our intervention. More precisely, our indirect and less politicized message is still unable to improve the attitudes toward migration of individuals supporting populists and anti-immigrant parties. Treated individuals within this group do show an improved knowledge of the functioning of PAYG pension systems and demographic trends, which is a sign that the treatment was effective for them (as a matter of fact, it was even more effective for them than for other individuals). However, this improved knowledge does not seem to translate into an increased willingness to accept migrants or a more favorable opinion about them. Our results suggest that this might be mostly due to a lack of trust by these voters, even though we are unable to exclude other possible channels like lower cognitive skills.

Finally, our analysis highlights the importance of a correct framing of information in the design of policy interventions. Because of the way information was presented in the video, our treatment reduced the probability that individuals believe that the pension system in their country is currently in deficit. In a real policy intervention, such cross-learning behavior can have unintended consequences that might affect its overall effectiveness.

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SIEP Conference, the 4th Workshop on the Economics and Politics of Migration, the Royal Economic Society 2023 Annual Conference, the CReAM 20th Anniversary Workshop on Topics in Labour Economics, the 3rd CReAM/RWI Workshop on the Economics of Migration, the IEB-UB seminar, the Petralia Workshop, and the St Andrews Workshop on the Political Economy of Immigration for useful comments and discussions.

Supplementary data

Supplementary data is available at *Journal of Economic Geography* online.

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