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Immigration and welfare state sustainability: whose perception is affected by fiscal cost cues?

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ABSTRACT
Who reacts politically to fiscally costly immigration? A political economy tradition holds that reactions depend on economic self-interest, whereas a social psychology tradition emphasizes generalized political orientations and trust. Past work largely leans in favor of the latter tradition. We make three contributions. First, our dependent variable is a concrete perception of welfare state sustainability, arguably better suited to capture self-interest. Second, both the political economy- and social psychology traditions have been studied narrowly; we separate between multiple interests (including economic local context), and compare several types of trust orientations. Third, we use machine learning methods well-suited to analyze treatment heterogeneity in a randomized survey experiment. We find support for both interest-based and social psychological explanations. As for the latter, what matters is not only, or even mainly, orientations/trust related to immigration. Rather, generalized political distrust strongly regulates when costly immigration cues trigger welfare sustainability worries.

Introduction

Exposure to greater volumes of, and negative information about, immigration can affect citizens' politically. Such findings are reported in a diverse set of studies where dependent variables involve both attitudes towards immigration itself as well as broader support for redistribution and social spending. Building on this literature, our aim is to carefully analyze multiple sources

of *variability* in such effects. Specifically, we use a randomized survey experiment to investigate heterogeneity in how information suggesting that immigration imposes fiscal pressure on the welfare state impacts on welfare state sustainability perceptions. What characterizes individuals that become worried about the future sustainability of the welfare state when exposed to such information?

There is considerable uncertainty about the extent and nature of variability in political reactions to immigration. Some studies report 'effect homogeneity' across economic and political groupings. An experiment implemented in 15 European countries randomized asylum seeker attributes and concluded that negative reactions to more costly immigrant attributes 'are broadly similar across the different subgroups […] among left- and right-wing, young and old, less and more highly educated, and richer and poorer voters' (Bansak *et al.*, 2016, p. 218). Yet other studies find effect heterogeneity, typically depending on anti- or pro- immigrant predispositions before exposure (Eger & Breznau, 2017; Goerres *et al.*, 2020).

Analyzing effect variability helps illuminate what has become the two dominant perspectives on political reactions towards immigration (Hainmueller & Hopkins, 2014). One is a *political economy* tradition emphasizing 'egotropic' factors and economic self-interest. From this perspective, reactions to immigration depend on whether people stand to lose personally from it (in our case adverse fiscal consequences). This calculus may be based on both individual level characteristics (e.g., labor market position) as well as peoples' contextual surroundings (e.g., immigration density). By contrast, according to a more loosely held together *social psychological* tradition, reactions are similar across economic groups as people are not driven by self-interest. They are instead concerned with broader 'sociotropic' implications for society as a whole. Some of these implications are economic whereas others concern how 'cultural' aspects of society are affected by immigration. Crucially, reactions to immigration are seen as structured by generalized political predispositions and orientations that regulate various aspects of the sociotropic thought process.

Despite uncertainty it is fair to say that the literature currently leans in favor of the social psychological tradition (Hainmueller & Hopkins, 2014). Reactions to immigration are seen as broadly sociotropic and thus regulated by general political predispositions. Economic interests are seen as a less important source of variability. According to an influential overview, the weakness of economic interests is especially apparent for labor market related factors, i.e., whether immigration creates job- and wage competition in the individual's labor market segment. This variant of the political economy tradition has even been described as something of a 'zombie theory' (Hainmueller & Hopkins, 2014, p. 241; see also Norris & Inglehart, 2019).

We make three contributions to the literature. One concerns the dependent variable. Most research studies effects on general political attitudes,

either towards immigration itself or towards redistribution. By contrast, our dependent variable is a concrete perception of the fiscal sustainability of the welfare state. This concrete focus helps us specify a process through which immigration can have a politically important impact, without citizens having to adjust very basic preferences (Kustov *et al.*, 2019). In particular, our dependent variable is likely better suited to capture the impact of the narrow personal and economic self-interest emphasized in the political economy tradition. Research shows that while such self-interested calculation is often of limited consequence for opinion formation, it matters more when economic stakes are salient, large, and easy to comprehend (e.g., Sears & Funk, 1990, 1991). Such conditions are better met when we ask people if society can afford tangible benefits and services, compared to less precise and normatively charged questions about support for immigration and redistribution in general.

A second set of contributions is theoretical. We argue that the political economy- and social psychology traditions have been conceptualized too narrowly. By contrast, we separate between labor market interests, taxpayer interests, as well as interests that arise as some citizens receive services and transfers. Moreover, we consider the role of local economic context. Drawing on the 'threat hypothesis' (Blalock, 1967) we examine how negative responses to costly immigration might be stronger where such immigration is more present, and where taxable resources are more scarce.

As for social psychological factors, we broaden the analysis beyond predispositions immediately related to support for immigration and outgroups. Specifically, we compare the moderating role of specific trust in immigrants with that of generalized social trust, as well as generalized political trust. As we shall see, arguments about all these three trust variants have been made, but they have rarely been compared empirically.

The third contribution is methodological. In order to test all of these perspectives simultaneously, we rely on recently developed machine learning methods developed to detect treatment heterogeneity (Chernozhukov *et al.*, 2019). This method allows us to simultaneously test a large number of hypotheses on treatment effect heterogenity, while existing research tends to study a small number of hypotheses separately. We use the method on two different identical survey experiments conducted in Norway. These experiments have previously been analyzed by Goerres *et al.* (2020), but without our primary focus on treatment heterogeneity.

Our empirical analysis demonstrates the relevance of both the social psychological explanations as well as the interest-based political economy perspective. As for the latter, individual-level variables related to labor market, taxpaying, and benefit recipiency matter, as do local economic contextual factors. Finally, also social psychological sources of variability are more varied than has been captured by most past research. What matters may not

be only, or even mainly, predispositions related to immigration. In particular, our results suggest that generalized political distrust is a key factor regulating when costly immigration cues trigger worries about welfare state sustainability.

Political economy perspectives: competitors, contributors, and recipients

The political economy tradition in political behavior is concerned with inter-ested-based explanations of public policy preferences (see Hainmueller & Hopkins, 2014). This has key implications for when and among whom immigration affects welfare sustainability perceptions. These implications are derived from formal models with utility maximizing voters. In practice, past research has often studied the subject matter narrowly by focusing solely on the impact of increased labor market competition. By contrast, we synthesize the literature into expectations about citizens' role as 'competitors,' 'contributors,' and 'recipients' in modern welfare states. This gives a more multi-faceted view of how economic self-interest structures political reactions to immigration.

'Competitors' refers to how voters compete with immigrants on the labor market. Standard economic theory predicts that immigration will (in the short run) reduce the relative earnings, and possibly the employment prospects, of workers with similar skills as the immigrants, and have the opposite effect on workers with complementary skills (Borjas, 2003). There is much disagreement in the empirical literature on how to estimate the labor market effects of immigration, and if there is a negative effect it seems small in most contexts (see Dustmann et al., 2016). According to an oft-cited overview, the labor market competition perspective does not explain political reactions to immigration (Hainmueller & Hopkins, 2014). For example, high-skilled voters tend to support all types of immigration, while low-skilled voters tend to oppose all types. This is not consistent with a model where voters carefully assess their own economic benefit of immigration based on the skill-level of immigrants, as they do in the standard theory. However, research has found that voters with similar skills as immigrants are more likely to support welfare chauvinism (Mewes & Mau, 2012), suggesting that such considerations are important for views on welfare state sustainability.

A second, and more rarely researched, category of self-interest factors concerns people's roles as contributors to the public coffers, particularly through taxes (Rehm, 2016). The so-called 'fiscal burden' tradition predicts that net contributors react especially negatively to costly immigration (Hainmueller & Hiscox, 2010). If such calculations are present, one would expect this negative reaction to be especially pronounced among more well-to-do high-income citizens who will foot a larger portion of the bill. Again however,

this prediction has not received much support in empirical tests, casting additional doubt on the political economy tradition for understanding the problem at hand (Hainmueller & Hopkins, 2014). That said, there has clearly been less research on the fiscal burden variant of the political economy tradition, which seems particularly important when we study welfare state sustainability.

The third type of self-interest is found on the output side of the welfare state and concerns citizens' role as benefit receivers and service consumers. Theoretically, it is straight-forward to argue that current recipients of welfare benefits may be particularly sensitive to information concerning the sustainability of the welfare state (Rehm, 2016). These voters might also be concerned about immigration of people that are unable to find employment, since these immigrants might be competitors for certain types of welfare benefits, such as means-tested social assistance and housing subsidies (Cavaille & Ferwerda, 2017; Fetzer, 2019). Empirically however, less is known about how recipient interests structure how welfare state preferences respond to immigration compared to labor market competition and taxpayer interests. A reason, we believe, is that such tests require detailed information about service and benefit reliance that is typically absent in standard political surveys. By contrast, we analyze a randomized fiscal burden experiment implemented in a survey containing a longer menu of variables capturing benefit and service reception. We are thus well-suited to address this perspective.

Local demographics and 'cues in context'

Economic calculations are not necessarily determined only by individual level factors. They might also vary with demographics in the local context, even taking the individual's personal economic characteristics into account. This has long been recognized in the field, as manifested in the well-known 'threat hypothesis' (e.g., Blalock, 1967). It predicts that the size of the 'out group' affects economic considerations of the in-group majority. As Hainmueller and Hopkins (2014) explain: 'The threat hypothesis […] could be grounded within theories emphasizing material self-interest: As the size of an out-group grows, the out-group becomes a more credible contender for scarce resources.' From this vantage point, one would expect stronger reactions to (costly) immigration in local contexts where such immigration is widespread, as well as in contexts where taxable resources are less plentiful.

In the last decade a number of studies have examined how local demographics related to immigration impact on welfare state attitudes. More often than not, American studies report that local racial and ethnic diversity reduces support for redistribution (Alesina & Glaeser, 2004; Luttmer, 2001). The European evidence, however, is more multifaceted and contested at

this point; negative, null and even positive effects of increasing proportions of out-groups members are reported in the literature. Mixed European evidence is perhaps not all that surprising (see also Cools *et al.*, 2021). As argued by Schmidt-Catran and Spies (2019), studies differ greatly in their geographical scope, the contextual level analyzed, the time period, as well as the measurement of dependent variables.

Another typical feature of this line of research is that contextual and experimental modes of research are kept separate. On the one hand, there is much experimental research analyzing subtle informational variations in immigration 'cues,' without attention being paid to the contextual settings in which cues are interpreted. On the other hand, 'contextual' studies typically use non-experimental data with little regard for the elite-level cues and frames that may affect people's attention to and understanding of context. We combine these approaches to investigate how interest-based responses to fiscally costly immigration varies with local demographics. Specifically, we analyze how responses to immigration cues are structured by levels and changes in both the ethnic composition and the income level of local communities.

In doing so, we follow recent strands in the literature suggesting that context and cues may operate together. The most obvious one is a series of studies by Hopkins (2010, 2011) arguing that context – in order to be consequential – needs to be made salient by public sphere information such as that mimicked by our experiment. Said differently, 'local demographics do not have a fixed influence on immigration attitudes and that the broader political context may be influential in politicizing local demographics.' (Hainmueller & Hopkins, 2014, p. 236). Recent case study work supports this notion. In a historical comparative study of three large cities – Miami, Marseille and Dublin – that at some point experienced roughly 100,000 people immigrating almost overnight, Fetzer (2016) shows that the political reactions were highly dependent on the national media coverage.

Similar cue-context interactions are often theoretically implied also in more purely contextual work. This literature generally bases predictions about contextual effects on the assumption that context regulates the salience of outgroup categorization. As Eger and Breznau (2017, p. 444) explain:

> The salience of subjective group boundaries is central to any discussion of race and ethnic relations or reactions to diversity more generally […] Individuals may identify with more than one social group (e.g., age, ethnicity, gender, and nationality), and in-group/out-group boundaries become salient depending on the context and personal motivations.

Thus, the combination of contextual outgroup presence *and* the salience of group boundaries jointly impact on citizens. This in turn implies that outgroup-related features of the context affect sensitivity to subsequent

informational in-group/out-group cues. Following the threat-hypothesis, we expect stronger reactions to immigration cues in local communities where the proportion of (costly) immigration is high, as well as in communities with lower income levels where taxable resources are less abundant.

The social psychological tradition and types of trust as moderators

In this section, we discuss the predispositions and orientations which, according to the social psychological tradition, should structure reactions to costly immigration. This body of research is more heterogeneous than the political economy tradition. Yet, it consistently emphasizes how immigration shapes opinion through views of effects on the country as a whole rather than through self-interest. Studies within this tradition have been most concerned with the cultural consequences of immigration, but have also studied economic ones. The key argument is that immigration induces general ('sociotropic') worries that unite groups with different economic interests (Bansak *et al.*, 2016; Hainmueller & Hopkins, 2015). Crucially however, this process is moderated by broad pre-existing orientations and values of different kinds (predispositions).

Overall, this broad perspective has gained much empirical support (Hainmueller & Hopkins, 2014). For instance, ethnically based conceptions of who belongs in a national community (rather than civic conceptions) tend to be closely aligned with immigration skepticism. Also, prejudices, racism and ethnocentrism substantiate a firm stand against inclusive immigration policies (e.g., Heath *et al.*, 2020). Based on this research, we can expect people who distrust outgroups to react more strongly to our immigration cue treatment and become particularly worried about the future sustainability of the welfare state, regardless of their economic self-interests.

The social psychological tradition is theoretically broad, potentially involving any generalized political orientation or predisposition that might structure information processing. Past research, however, has mostly focused on orientations relatively closely related to immigration, such as trust in outgroups. We contribute by investigating also the role of generalized social and political trust orientations, both of which are more conceptually distant from immigration related orientations.

Social trust is often regarded as an inherently stable and 'cultural' phenomenon. Social trust is 'cultural' in that it is deeply entangled with norms for everyday behavior and lifestyle. Crepaz (2008) argues that 'cultures of trust' cushion societies against potentially disruptive effects of migration. Because social trust per definition extends beyond in-groups and even beyond borders to nonnatives, minorities and outgroups are more easily included into a redistributive community. In short, high levels of social

trust might bolster confidence in the future sustainability of the welfare state because trustful individuals generally believe out-groups are motivated and competent to support the redistributive community.

As for political trust, a growing literature informed by the influential work of Hetherington (2005), argues that opinion formation is often rooted in citizens' fundamental orientations towards the political system. The key assumption is that people are normally unmotivated or unable to process large amounts of issue-specific information. Instead, people rely on their trust in the political system to form political opinions (Rudolph, 2017). This psychological process has been demonstrated to affect Americans' support for redistribution (Hetherington, 2005) as well as attitudes towards immigration (Macdonald, 2021). Distrustful people tend to transfer their resentment towards the political system to the immigrants themselves, perhaps because they are worried that politicians are unable to cope with the consequences of immigration (but see Peyton, 2020). Thus, we suspect that people with low levels of political trust become more worried about the future sustainability of the welfare state when reminded about the economic burden of immigration.

Research design

Data and variables

We rely on pooled data from two identical survey experiments in Norway (Kumlin *et al.*, 2020) to examine heterogeneity in responses to immigration cues. The survey experiments were embedded in national surveys of respondents from TNS Gallup's pre-recruited panel and carried out in the spring and summer of 2014 and in the spring of 2015. Respondents were sampled in 61 pre-defined and strategically selected communities (27 municipalities plus 34 urban districts in the four biggest cities) according to population size and proportion of immigrants residing in the community. The target population is the adult Norwegian population, aged 18–75 years. A total of 4744 respondents completed interviews in wave 1. Sixty per cent of these, 2847 respondents, completed wave 2.

The survey experiments included seven treatments where respondents were primed with different types of concerns related to the future financing of the welfare state, and a control group that received unspecific concern about future financing. We first restrict the analysis to those randomized to the two immigration treatments (one on EU labour immigration and one on non-western immigration) and the control group (see Goerres *et al.* (2020) for an analysis of all treatments). However, we find no significant treatment heterogeneity on the EU labour immigration treatment (see footnote 3) and therefore focus on the non-western immigration treatment in the rest of the paper.

The experiment cues were embedded in the following survey question: 'There is some debate about *how non-western immigration* affects the costs associated with social security systems and public services in Norway. *Many people believe that non-western immigration generates costs that will eventually make it difficult to maintain the current levels of social security and public services.* Thinking ahead 10 years from now, for each of the following social security and public services, where would you place yourself on a scale from 1–7, where 1 means that Norway will not be able to afford the present level of social security and public services, and 7 means that Norway will be able to afford to increase the level?' The text in italics refers to the refugee/asylum seeker treatment cue.

The respondents were asked to give their answer for seven policy areas: public health care, old age pensions, sickness benefits, unemployment benefits, social welfare benefits, elder care, and childcare. We use the answers to construct an additive 'sustainability index' that is the dependent variable in the analysis. The average interitem covariance is .75 and Chronbach's alpha .95. To ease interpretation, we standardize all variables.

Analysis

Our key interest is to understand what groups of citizens are responsive to the immigration cue treatment, i.e., we want to go beyond estimating the average treatment effect. The traditional approach to study treatment effect heterogeneity across groups is to include interaction terms between the treatment indicator and characteristics of respondents, or to subset the sample based on the characteristics. This approach allows for the examination of only a limited number of background characteristics. Moreover, this approach has a somewhat ad-hoc nature, which is problematic unless the treatment heterogeneity analyses are described in detail in a pre-analysis plan submitted prior to data collection.

Instead we follow the approach of Chernozhukov *et al.* (2019) to discover treatment heterogeneity in randomized experiments (see Welz *et al.*, 2022 for the accompanying R package and Ratkovic (2021) for a general introduction to new methods to study treatment effect heterogeneity). Their approach involves randomly splitting the data into a training and test data set in many iterations, predict the treatment effect heterogeneity in the training data set using several machine learning (ML) algorithms, and then apply the predicted relationships from the training data on the test data. The estimates from the test data are used for inference to reduce the problem of overfitting from including a high number of variables in the model. They propose to summarize the results of the estimated treatment effects by (i) exploring the average treatment effect for the various background characteristics, and (ii) divide the data into five groups from the least to the most

affected observations (based on the predicted treatment effect), and then compare the background characteristics of the least and the most affected observations.[1]

We study heterogeneity across the following variables. The demographic variables are share of and changes in immigrants from Eastern Europe (labor immigrants), share of non-western immigrants, and the median income of the community ('median income' in the graphs below). At the individual level we include gender, age (old or young), high level of education, income, whether s/he is employed, employment in the private sector, self-reported risk of unemployment, social trust, political trust, self-placement on the economic left-right dimension, whether s/he or a family member has received social benefits during the last 12 months, no trust in refugees and no trust in Eastern-Europeans. We explain the variables and how they are operationalized in the appendix. We follow the recommendations of Miratrix et al. (2018) and do not use survey weights.

Empirical results

Table 1 presents the first results. The table presents the estimated average treatment effect and the tests of whether we detect important treatment heterogeneity. The estimates are derived using the ML algorithm that has the best performance, which in our case is Neural Nets.[2] Keep in mind that the dependent variable is standardized so that effects are measured in standard deviations of the dependent variable.

We find a significant average treatment effect of $-.270$ (Table 1), which means that respondents that received the non-western treatment express more concern over the future sustainability of the welfare state. The effect size is politically important as it implies that treated respondents are .27 standard deviations more worried than those in the control group. Moreover, the heterogeneity test produces a significant *p*-value of .05, which means that there is statistically significant heterogeneity in the average treatment effect across the background characteristics that we study.[3]

Figure 1 illustrates the degree of treatment heterogeneity for the non-western treatment. The figure shows the average treatment effect (and the confidence interval) as we move from the most affected (i.e., those with

Table 1. Estimates from the best machine learning predictor (Neural Nets).

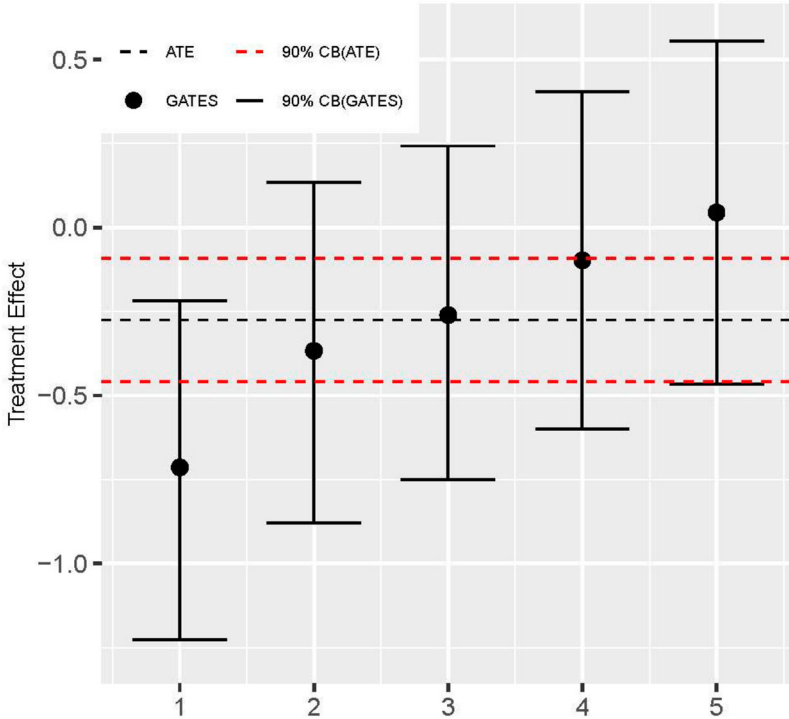|	Average Treatment Effect	Heterogeneity
Non-western cue		
Estimate	−0.27	0.48
Confidence interval	(−0.45, −0.09)	(0.08, 0.91)
p-value	.01	.05

Note: $N = 1330$.

Figure 1. ATE by groups.

Note: Respondents are divided into five equally-sized groups based on the size of the estimated treatment effect. The dots refer to the average treatment effect in that group (Group ATEs, GATES). The full lines refer to the 95% confidence intervals around the group ATEs. The stippled black line is the ATE and the stippled red lines the 95% confidence interval around the ATE.

the most negative treatment effect) to the least affected group of respondents (i.e., those with the treatment effect closest to zero). The figure illustrates that the treatment effect is very different in the most and least affected group, which means that there is important treatment effect heterogeneity. In the most affected group, the ATE is about −.70 (group 1), while in the least effected group the ATE is close to zero (group 5). The mean of the dependent variable is .14 in the control group, compared to about −.56 in the most affected group (and about .14 in the least affected group). Thus, while some are very sensitive to the treatment, others are not moved at all.

Next we examine the characteristics of those who are most affected ('group 1') versus the least affected ('group 5'). Figure 2 shows the estimated difference in the mean for covariates for the least affected and the most affected group, restricted to the covariates where this difference is statistically significant (see Appendix Figure 1 for all estimates). A positive number implies that the mean is higher in the *least* affected group, while a
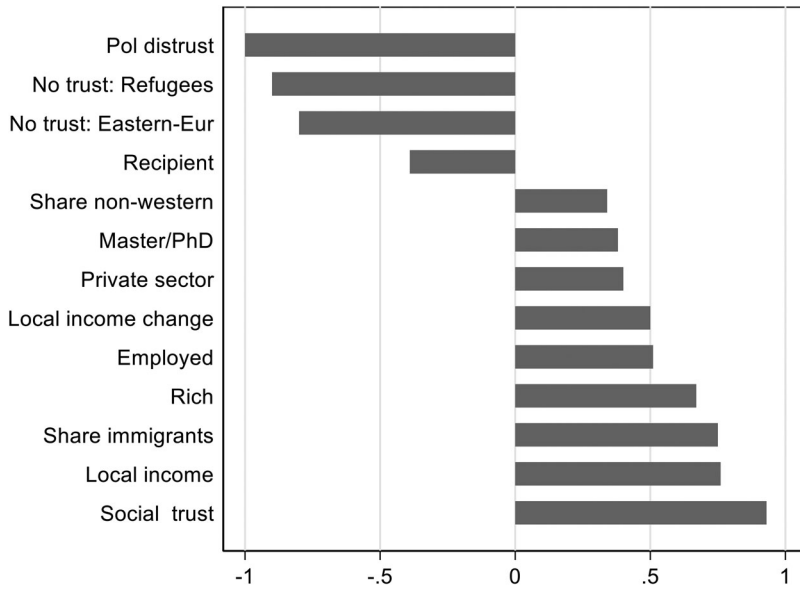
Figure 2. Difference in covariate means for the least and most affected groups.

Note: The figure shows the estimated difference in mean for the least affected group versus the most affected group. A positive number means that the mean is higher for the least affected group. The graph is restricted to the significant estimates.

negative score means that the mean is higher in the *most* affected group. All variables are standardized to mean zero and standard deviation of 1 to make the bars in the figure as comparable as possible. A difference of 1 in the figure, close to what we observe for social trust, thus means that the mean social trust in the least affected group is one standard deviation higher than the mean in the most affected group.

Several differences stand out. In particular, the trust variables are all statistically and substantively significant regulators of the treatment effect. Low trust in immigrants, both refugees and Eastern-Europeans, and political distrust are all associated with stronger treatment effects, while being high in social trust is associated with weak response to treatment. We furthermore find expected results for a number of socio-economic variables; high income, employment, an advanced university degree, non-recipiency of welfare transfers, and employment in the private sector, are all associated with weaker treatment effects. The educational differences, although they are in the expected direction, are surprisingly small in light of the previous empirical literature. The absence of the left-right ideology variable is also notable.

The contextual level immigration variables are less important, and high share of non-western immigrants are associated with smaller treatment

effects, reflecting either selection to neighborhoods or positive contact effects. The economic status of the area is more important, as rich areas are less responsive to treatment. Moreover, areas that have experienced a positive change in median income also have weaker treatment effects than other areas.

It is important to realize that many of the moderating variables are correlated, implying that the trust variables might simply reflect the impact of the socio-economic or contextual variables.[4] One way to reduce this worry is to residualize the variables before we run the treatment heterogeneity, which serves the same purpose as including controls in a standard regression model. To residualize, we run a series of regressions where we use the independent variables as dependent variables and other variables as independent variables. Next we estimate the residuals from these regressions, which represents the independent variation in the variables when we adjust for all the other variables. Finally we use these residualized variables as the input variables in the treatment heterogeneity analysis. If the heterogeneity across the trust variables only reflects the effects of the other variables, we will see that the heterogeneity disappears.

The light gray bars in Figure 3 shows the treatment heterogeneity when we adjust for the other variables. We see a decrease in the effect of all but one of
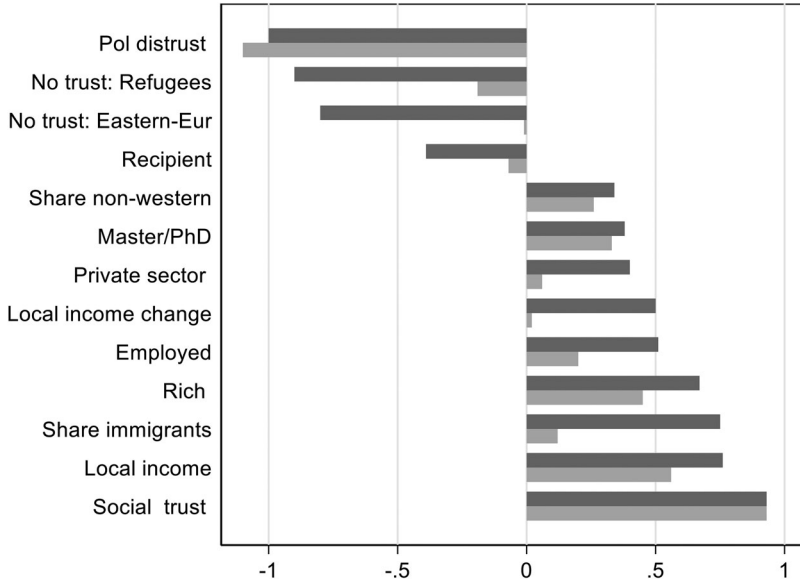

Figure 3. Difference in covariate means for the least and most affected groups.

Note: The figure shows the estimated difference in mean for the least affected group versus the most affected group. A positive number means that the mean is higher for the least affected group. The dark gray bars refer to the effects in the main analysis, while the light gray bars refer to the results when we adjust the variables for the other input variables.

the variables when we account for the other variables, and most of the effect sizes decrease. The most striking result is that political trust now appears unrivaled as the most important variable. Clearly, voters with low political trust become much more worried about the future of the welfare state when receiving the immigration treatment. A second conclusion is that the material factors become relatively more important. Treatment effects are much smaller in high income areas and among the rich. When we residualize, we also find that the education divides are more important relative to the other variables.

Conclusion

The idea that costly immigration and ethnic diversity may strain the fiscal sustainability of mature welfare states is widely debated. Against this backdrop, we presented a study of variability in public reactions to information claiming that non-western immigration imposes fiscal pressure on the welfare state. Using recently developed machine learning methods, and pooling two identical survey experiments in Norway, we examined a large number of factors and expectations generated in earlier research.

Extant research, we noted, seems to have settled for a particular set of stylized facts at this point. Reactions to immigration are seen as a mainly 'sociotropic' phenomenon, one that is not contingent on economic interests but on general social psychological values and predispositions. By contrast, political-economic self-interest based explanations are viewed as less important, in particular interests related to labor market positions (Hainmueller & Hopkins, 2014, p. 241).

The results presented expand our understanding of these contingencies in several ways. For example, we tested an expanded set of interest-based sources of variability. These were related to citizens' roles as labor market 'competitors', but also as taxpaying 'contributors', and as 'recipients' of social services and transfers. We find (some) support for all these perspectives. Reactions to immigration cues is stronger among the unemployed than the employed (competitors), stronger among the poor than the rich (contributors), and stronger among welfare receivers than non-receivers (recipients). Several but not all of these interest variables remain important when conservatively controlled for all other analyzed factors.

Moreover, we find that local economic and demographic conditions seem to structure public reactions in ways mostly consistent with a political-economic interpretation of the classic 'threat hypothesis.' Specifically, treatment effects were considerably smaller in high income areas suggesting that living in an affluent area cushions against the (perceived) impact of non-western immigration.

Other findings are relevant for the 'social-psychological' view that attitudinal predispositions account for variability in peoples' reaction to immigration.

Interestingly, we find that what matters may not be only, or even mainly, pre-dispositions immediately related to immigration. Orientations more concep-tually distant to the dependent variable such as social and political trust appear to matter. In fact, the analyses show that political trust is even more important for understanding variability to immigration cues than trust in immigrant out-groups. This suggests that work on political reactions to immigration could draw more inspiration from recent work on the role of political trust as a cognitive heuristic shaping perceptions and preferences concerning policy (Hetherington, 2005; see Rudolph, 2017 for an overview). Overall, our findings add to recent research showing that the material and nonmaterial causes of immigration scepticism and opposition to globaliza-tion should not be viewed as mutually exclusive, but rather as explanatory perspectives that can coexist and interact in politically consequential ways (see Walter, 2021, pp. 430–431 for a discussion).

A final contribution concerned the dependent variable, tapping whether people think current welfare state standards will be affordable. This is a con-trast to much past research analyzing how immigration affects broader pre-ferences related to redistribution and immigration in general. We argued that particularly the discovery of self-interest patterns becomes easier with a focus on costs of tangible benefits and services, compared to less precise questions about generalized support for immigration and redistribution. That said, a possible objection is that effects on more specific perceptions are inherently more limited and less politically consequential compared to those broader orientations. This issue certainly deserves more attention, but recent findings suggest that economic welfare perceptions do have politically important effects. Importantly, they seem to regulate whether governments are held to account for unpopular welfare state change (Giger & Nelson, 2013). More than this, longitudinal analyses suggest that welfare state reform pressures, and perceptions of these, may undercut welfare state support itself over time (Jensen & Naumann, 2016; Kumlin & Goerres, 2022; Naumann, 2014; Naumann, 2017). It thus seems important to analyze, as we have done in this paper, the multifaceted contingencies of how immigra-tion cues affect concrete welfare state sustainability perceptions.

Notes

1. The decision to split the data into five groups is somewhat arbitrary. If you split in many groups, the comparisons across groups will become very noisy, while if you split in few groups there might be important heterogeneity within the groups that you miss.
2. We use the default ML algorithms in Chernozhukov et al.'s (2019) R code, which are Elastic Net, Boosting, and Neural Nets and Random Forest.
3. The heterogeneity parameter is 0 if the machine learning algorithm cannot predict any heterogeneity in the treatment effect and 1 if the algorithm can

perfectly predict heterogeneity. If the parameter is significantly different from 0 it means that the algorithm is able to predict heterogeneity. The survey also included an EU labor immigration treatment cue. The average treatment effect for this cue is −.418, but the treatment heterogeneity is not statistically significant (see appendix).

4. Clearly, the trust variables are also correlated. It is less clear that we should residualize also the impact of the other trust variables, since the causal relationships between these variables are not easy to disentangle theoretically. However, for completeness we adjust the trust variables for all the other independent variables, including the other trust variables.

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