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# I'm fine with Immigrants, but . . . : Attitudes, Ethnic Diversity, and Redistribution Preference

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## **Abstract**

Combining the link between ethnic heterogeneity, attitudes towards immigrants, and the support of redistribution, predictions are made about natives' preference for redistribution depending on interethnic contact, perceived outgroup threats, and natives' social distance from immigrants. The econometric specification explicitly considers the simultaneous effects of ethnic heterogeneity on attitudes towards immigrants and those attitudes on the redistribution preference. Applying bivariate recursive probit estimations enables the decomposition of marginal effects into a direct and an indirect effect. The empirical assessment, based on a cross-section of 18 European countries from 2014, shows that natives' perceived outgroup threats directly decrease their preference for redistribution, whereas interethnic contact indirectly increases their redistribution preference through less anti-immigrant attitudes. If immigrants are perceived as a threat to the culture or social life in a country, a native's probability of supporting more governmental redistribution decreases by 6.4 percent or 8.2 percent, respectively. However, if ethnic heterogeneity rises, this probability increases by 0.8 percent. In contrast, there is no significant association between natives' social distance from immigrants and their preference for redistribution. These results are robust to IV estimation strategies which control for the possibility of natives' selective out-migration and reverse causality. Taking the natives' and immigrants' average incomes into account, the ethnic income gap between natives and immigrants strengthens the negative impact of perceived outgroup threats if immigrants earn much less than natives in a country.

Keywords: preference for redistribution, immigration, ethnic diversity,  
attitudes towards immigrants, bivariate recursive probit

JEL-No.: C30, D31, D63, D72, F22, H20

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# 1 Introduction

The outbreak of the Syrian civil war in 2011 and the subsequent migration of Syrian, Iraqi, and Afghan refugees via Turkey and the Balkans to Europe has put immigration policy back onto the agenda of policy makers and economists. The *European refugee crisis* reached its peak in 2015 with almost 1.26 million first-time asylum applications, which is the highest amount since the fall of the Iron Curtain. Germany (441900), Hungary (174435), Sweden (156195), Austria (85520), and Italy (83245) had the most first-time asylum applicants in Europe. The majority of first-time asylum seekers came from Syria (28.84 percent), Afghanistan (14.18 percent), Iraq (9.67 percent), Kosovo (5.32 percent), and Albania (5.30 percent) in 2015 ([European Commission, 2017](#)). This sudden surge in the extent of foreign-born people in the European host countries brought back hidden anxieties. In particular, voters in Western and Central Europe are concerned about the economic and societal consequences of immigration. In consequence of the refugee crisis, far-right parties were able to mobilize voters in many countries by stigmatizing immigrants as a threat to the economy, cultural values, and national safety.

Thus, immigration or ethnic heterogeneity has an influence on natives' concern about the consequences of a change in the composition of the population. Societal fear of changes in everyday life as well as in symbolic values, such as cultural identity or national security, may generate negative attitudes towards immigrants and increase the demand for a more restrictive immigration policy. On the other hand, more interethnic contact due to a higher ethnic diversity could enhance tolerance and solidarity towards immigrants among natives. Tolerance, solidarity, and trust, in turn, are important components of the individual social capital, which affects an individual's attitudes towards the national welfare state and social policy. The empirical literature generally focuses on either the association between ethnic heterogeneity and attitudes towards immigrants or the link between interethnic contact and the demand for redistribution. However, the latter neglects the mediating effect of social capital between ethnic diversity and natives' preference for redistribution. Furthermore, natives' attitudes towards immigrants are part of their social capital and therefore directly influence natives' trust and solidarity towards fellow residents. This study overcomes these shortcomings and brings these two strands of literature together by applying a joint estimation model. Using a bivariate recursive framework, the mediation of natives' solidarity is explicitly taken into account in order to investigate and quantify the underlying mechanism between ethnic diversity and the preference for redistribution. Therefore, the econometric specification proposes that interethnic contact or ethnic heterogeneity influences natives' attitudes towards immigrants, which, in turn, influence natives' preference for redistribution. Furthermore, applying bivariate recursive probit estimations enables the decomposition of the average marginal effects the employed covariates have on the preference for redistribution into a direct and an indirect effect. The direct effect has an immediate impact on the redistribution preference, whereas the indirect effect influences the natives' preference by changing their attitudes towards immigrants. This decomposition is largely unknown in the

empirical literature and has so far only been applied to the bivariate recursive binary probit case. Thus, the contribution to the econometric method literature is twofold. To the best of my knowledge, this is the first study that derives and applies the decomposition of marginal effects for a bivariate recursive mixed probit estimation consisting of an ordinal and a binary dependent variable. Second, this study provides a suitable solution for calculating adequate standard errors of the average marginal direct and indirect effects by applying a bootstrap resampling approach.

Using the European Social Survey 2014/2015 allows the inclusion of a wide range of views that natives have about immigrants' influence on the social fabric. The individual data provide adequate information on the socio-economic and demographic characteristics of respondents, as well as plenty of questions concerning immigrants' influence on certain social constructs and their personal relationship with immigrants. Moreover, attitudes towards immigrants are divided into two dimensions, each consisting of three variables. The variables of the first dimension measure a native's real and desired social distance from immigrants in his or her private life and in the workplace. Thus, they map natives' individual apprehension of more social contact with immigrants. In turn, the variables of the second dimension measure natives' perceived threat to symbolic societal values (culture and social life) and tangible goods (national security) of the majority society presented by immigrants. Taking a closer look at the link between ethnic heterogeneity and the two dimensions, the theoretical framework offers two diametrically opposed hypotheses. On the one hand, the intergroup contact theory predicts a positive link, since more interethnic contact may reduce natives' information gaps, prejudices, and stereotypes. On the other hand, the conflict theory predicts that ethnic heterogeneity intensifies the competition between the majority society and other ethnic groups for non-tangible goods, such as the national culture, social life, and social participation. The estimation results show that there is a significantly positive association between the frequency of interethnic contact during everyday life and the variables of the two dimensions. Using the share of immigrants at a higher aggregate level as an instrument for the frequency of interethnic contact in order to control for natives' selective out-migration and reverse causality, the previous results are reproduced. Whereas these findings are valid for all variables of the two dimensions, the effects of natives' attitudes towards immigrants on their preference for redistribution differ. The social distance measures have no significant impact on a native's redistribution preference. However, the perceived threat to the national culture and social life has a significantly negative effect. Thus, natives' concern about the preservation of symbolic norms and values affects the solidarity channel of their redistribution preference. If immigrants are perceived as a threat to the national culture or social life, a native's probability of supporting more redistribution decreases by 6.4 percent or 8.2 percent, respectively. In contrast, if ethnic heterogeneity rises, this probability increases by 0.8 percent. According to the constrict theory, a negative attitude towards immigrants lowers natives' solidarity towards immigrants as well as their same-ethnic peers, too. In order to test this hypothesis, the difference between natives' and immigrants' average incomes

(ethnic income gap) at the country level is interacted with natives' perceived outgroup threat in the estimations. In compliance with the constrict theory, the effect of perceived outgroup threat on a native's preference for redistribution should not depend on the national ethnic income gap, whereas the conflict theory predicts that the preference for redistribution of a native who has negative attitudes towards immigrants should diminish more strongly if the ethnic income gap is larger, since immigrants would benefit disproportionately from more governmental redistribution. The empirical results confirm the latter and show that the preference for redistribution of natives with negative attitudes towards immigrants is lower in countries where immigrants earn much less than natives than in countries where the ethnic income gap is smaller.

The rest of the paper is organized as follows: Section 2 provides a literature review and Section 3 describes the link between ethnic diversity, attitudes towards immigrants, and a native's preference for redistribution based on the predictions of the intergroup contact theory, conflict theory, constrict theory, and a theoretical model which includes the ethnic income gap. Section 4 presents the data sources of the employed variables and Section 5 describes the econometric specification. Section 6 shows the basic results and empirical extensions using the regional share of immigrants as an instrument to control for selective out-migration and reverse causality. Furthermore, the ethnic income gap is added to the estimations in order to test the predictions of the constrict theory. Finally, Section 7 concludes.

## 2 Related Literature

On the one hand, there is a vast body of literature on the impact of immigration or ethnic diversity on the generosity of the welfare state or natives' preference for redistribution. On the other hand, there is also extensive research on the effect of immigration or ethnic diversity on natives' attitudes towards immigrants or immigration. The first strand of literature examines whether there is a direct association between ethnic heterogeneity and governmental redistribution or individuals' support of redistribution.<sup>1</sup> In turn, ethnic heterogeneity is often measured as the share of immigrants or as a fractionalization index. The latter expresses the probability that two persons drawn from a random sample belong to two different ethnic groups. In a cross-country analysis, [Alesina et al. \(2001\)](#) show that an ethnic fractionalization increase of one percentage point lowers government social spending by 7.5 percentage points. However, they found that ethnolinguistic fractionalization had no significant effects. A negative link between the ethnolinguistic fractionalization and government spending on health and education is presented in [Kuijs \(2000\)](#). Furthermore, [Soroka et al. \(2006\)](#) show that there is a negative correlation between the change in the immigrant population ratio and the change in social spending in a country. There is also some empirical evidence at the sub-national level. Thus, [Alesina et al. \(1999, 2000\)](#) show

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<sup>1</sup>[Stichnoth and Van der Straeten \(2013\)](#) and [Alesina and La Ferrara \(2005\)](#), among others, provide an extensive summary of the empirical literature.

that greater ethnic fractionalization at the regional level is associated with lower spending on public goods in the United States. On the one hand, they attribute this result to the predictions of the conflict theory. On the other hand, a greater ethnic diversity could make the decision-making process for financing public goods more difficult, thus reducing overall provision due to disagreement between ethnic groups. However, [Hopkins \(2009\)](#) shows, using data from communities in Massachusetts and Texas, that it is not the level of ethnic heterogeneity, but rather the change thereof that has a negative impact on the provision of public goods. In Indian regions, [Banerjee et al. \(2005\)](#) determine that a stronger fractionalization in castes and religious heterogeneity lower regional supply of public goods. In contrast, using refugee inflows from non-OECD countries and Turkey as an exogenous shock to Danish administrative regions, [Gerdes \(2011\)](#) finds no significant link between immigrant population share and the size of the public sector.

Regarding individual preference for redistribution, survey respondents in the United States support more redistribution if there is a higher proportion of their same-ethnic peers among social benefit recipients in the neighborhood ([Luttmer, 2001](#)). This is true even if the respondent is a high-income earner. Focusing on the black-white gap in the support of redistribution in the United States, [Alesina et al. \(2001\)](#) show that whites who assess blacks as “lazy” prefer less redistribution, whereas whites who have had social contact with blacks at least once support more redistribution. However, the authors find no association between blacks’ population ratio in the neighborhood and whites’ preference for redistribution. Moreover, [Lind \(2007\)](#) finds similar results and shows that a stronger identification of blacks with whites lowers their redistribution preference. For whites, however, a stronger identification with their peers has no significant effect on their support of redistribution. In a cross-country analysis of European countries, [Senik et al. \(2009\)](#) ascertain only a weak association between the perceived share of immigrants and natives’ preference for redistribution. A similar result is obtained by [Stichnoth \(2012\)](#) regarding the demand for a more generous unemployment system. As pointed out by [Burgoon \(2014\)](#), the effect of the perceived immigration population ratio may be upwardly biased, since natives who have anti-immigrant attitudes regularly overpredict the ratio in surveys. In contrast to [Lee et al. \(2006\)](#), [Gerdes and Wadensjö \(2008\)](#) find no significant link between the immigrant population share and Danish votes for pro-redistribution parties. For Sweden, [Eger \(2010\)](#) confirms a negative link between immigrant population share and the preference for redistribution. Furthermore, [van Oorschot \(2008, 2006\)](#) shows that the native population in Europe generally sees immigrants as substantially less deserving of social benefits and protections than other vulnerable groups, such as the elderly, disabled, or unemployed.

The second strand of the literature deals with the impact of the immigrant population share or ethnic diversity on natives’ attitudes towards immigrants or, more generally, their social capital. However, the empirical literature is divided. [Alesina and La Ferrara \(2000\)](#) show that survey respondents’ voluntary commitment is lower in US-American regions with a higher ethnic heterogeneity. Furthermore, [Alesina and La Ferrara \(2002\)](#) ascertain that,

generally, trust in fellow citizens is lower in more ethnically diverse US-American cities. This result is also reinforced for ethnically and linguistically diverse communities in Australia (Leigh, 2006b), the population share of persons with a migration background in Sweden (Gustavsson and Jordahl, 2008), and in a cross-country empirical analysis (Leigh, 2006a). Savelkoul et al. (2011) point out that the link between ethnic diversity and natives' social capital is mediated through interethnic social contact. Since a higher ethnic heterogeneity produces the possibility to experience more frequent and profound interethnic social contact, natives' social capital may depend on bad or good experiences and the chance to reduce information gaps about other groups. In a cross-country analysis of European countries, the authors show that greater regional ethnic diversity is associated with natives having more interethnic social contact. The latter, in turn, increases natives' social capital, measured as the frequency of social encounters and aid given, and lowers natives' perceived threat of immigrants (outgroup threats). Moreover, perceived outgroup threats lower natives' informal social capital. In total, a more heterogeneous neighborhood raises natives' social capital through more interethnic social contact. However, the empirical literature regarding the impact of ethnic diversity on natives' social capital or anti-immigrant attitudes is divided. On the one hand, there is evidence for the predictions of the *intergroup contact theory*, i.e. a more ethnically diverse neighborhood lowers anti-immigrant attitudes and increases solidarity towards immigrants. On the other hand, there is also evidence for the predictions of the *conflict theory*, which assumes the opposite, i.e. a greater ethnic heterogeneity leads to a rise in anti-immigrant attitudes and a decline in solidarity towards immigrants due to more intense competition between natives and immigrants for tangible and intangible goods. Empirical evidence for a positive triptych between ethnic diversity, interethnic social contact, and natives' pro-immigrant attitudes is affirmed, among others, for Denmark (Schlueter and Scheepers, 2010) and in an earlier cross-country analysis of European countries (Schlueter and Wagner, 2008). In the United States, Dixon (2006) finds similar results regarding the effect of whites' social contact with Hispanics and Asians. Furthermore, more interethnic social contact raises whites' general trust in fellow citizens in Canada (Stolle et al., 2008). Moreover, Laurence (2014) shows that in the United Kingdom, more ethnic diversity only has a negative impact on natives' interethnic attitudes and respect for ethnic minorities if natives have no interethnic social contact at all. In addition, van Oorschot and Uunk (2007) ascertain that, for a selection of European countries, a greater foreign-born population share increases natives' solidarity towards immigrants.

In contrast, there is also some empirical evidence for the conflict theory, i.e. for a positive link between ethnic heterogeneity and anti-immigrant attitudes. Thus, in a cross-country analysis of European countries, Scheepers et al. (2002) determine a positive correlation between a country's share of non-EU citizens and ethnic exclusionism, whereby the latter is measured as an additive index of natives' attitudes towards a more restrictive immigration policy. Despite of that, natives living in urban areas with a much higher concentration of immigrants have more favorable attitudes towards immigrants than natives living in rural

areas. [Semyonov et al. \(2006\)](#) convey similar results based on an anti-immigrant index, which measures and totals natives' economic, individual, and societal concerns as well as their anti-immigration policy opinions. In contrast, [Davidov et al. \(2008\)](#) do not detect any significant effect of the foreign-born population share or the immigrant influx on natives' preference for a more restrictive immigration policy, once controlled for natives' self-transcendence and self-conservation. In turn, [Schneider \(2008\)](#) investigates a hump-shaped relationship between the non-EU share of population and an ethnic threat index, which measures and totals natives' economic, individual, and societal concerns with respect to immigrants. In Germany, [Semyonov et al. \(2004\)](#) evince that there is no significant association between the actual share of foreigners at the regional level and natives' perceived outgroup threats, though natives' perception of the share of foreigners in Germany has a weakly significant impact on perceived outgroup threats. [Scheepers et al. \(2013\)](#) show, using Dutch data, that a greater ethnic diversity in the neighborhood reduces a native's interethnic social contact as well as his or her contact with same-ethnic peers. This, in turn, leads to a decline in natives' overall solidarity towards fellow residents.

### 3 Solidarity and Redistribution Preferences

A governmental redistribution mechanism as well as the welfare state in general follows the distributive logic of closure and the distributive logic of openness ([Freeman, 1986](#)). The former describes some kind of aid given by the members of a community according to socially defined concepts of need. The latter reports that the treatment of a person within the welfare state depends on his or her performance in the labor market. Thus, the community or the economy is "a group of people committed to dividing, exchanging, and sharing social goods, first of all among themselves" ([Walzer, 1983](#), p.31). However, this sharing and distributing of social goods depends on some kind of feeling of fellowship. There is a need for solidarity, trust, and fairness between the members of a community or the economy as a whole. A large volume of empirical literature has shown that trust and solidarity are significantly positively related to the support of social policy and redistribution (see [Alesina and Glaeser, 2004](#)).

Peoples' solidarity and trust in other residents of their country depend on their socio-economic and demographic characteristics (age, gender, cultural background, etc.), their personal life experiences (discrimination, stroke of fate, etc.), the peculiarities of their immediate environment (income inequality, ethnic heterogeneity, etc.), the intensity and quality of their social contact, and the political institutions ([Alesina and La Ferrara, 2002](#)). In general, solidarity and trust can be seen as components of an individual's social capital. Social capital, in turn, can be decomposed into *bonding social capital* and *bridging social capital*. The first summarizes an individual's social contact with persons who resemble him or her in any form. The latter describes social contact with persons who are in some way different from him- or herself ([Putnam, 2007](#)). However, the question of whether the majority group's sense of solidarity with outgroup members increases or decreases due to immigration and

a rise in diversity cannot be a priori answered. The impact depends on majority group members' perceptions of ethnic, linguistic, or cultural outgroups in terms of solidarity and trust. The debate about the effect of heterogeneity on majority group members' attitudes towards subordinate groups polarizes around the *intergroup contact theory* and the *conflict theory*. Whereas the first assumes that more diversity positively influences the intergroup attitudes, the latter predicts that heterogeneity increases the possibility of intergroup conflict and subsequently negative outgroup attitudes. Hereinafter, natives are defined as members of the in-group and immigrants are defined as members of the outgroup, since the analysis is based on the link between natives' attitudes towards immigrants and their redistribution preference.

### 3.1 Intergroup Contact Theory and Conflict Theory

Intergroup contact is defined as 'face-to-face' contact between persons of different groups, whether they be ethnic, cultural, linguistic, or social (Pettigrew and Tropp, 2006).<sup>2</sup> There is no social contact in the case of geographical and non-verbal contact, because there is no information exchanged between members of different groups (Holland et al., 2007; Valentine, 2008). The **intergroup contact theory** assumes that negative attitudes towards members of other groups and towards a group as a whole can be explained by a lack of social contact between the members of both groups. Thus, information gaps about members of other ethnicities can be filled and existing prejudices and stereotypes can be reduced by more contact. However, this requires social contact in the way of social connections, which enables a communicative exchange between the members of different ethnicities (Hewstone, 2009). In the classical explanation of the intergroup contact theory, the positive effect of intergroup contact is tied to four optimal conditions: (i) common goals, (ii) intergroup cooperation, (iii) equal status, and (iv) authority support or sanctions (Allport, 1954; Pettigrew, 1998a). The current literature assumes that positive effects of intergroup contact can also occur under non-optimal conditions (Stein et al., 2000; Pettigrew and Tropp, 2008). By implication, negative experiences of intergroup contact can create negative outgroup attitudes or amplify existing attitudes (Stephan and Stephan, 1985). Furthermore, everyday intergroup contact in schools, at work, and in the neighborhood can lead to a reduction in anti-outgroup attitudes (Dixon and Rosenbaum, 2004; Pettigrew and Tropp, 2006). Aberson and Haag (2007) show that contact can reduce the implicit association between one's own in-group and the concept 'good' as well as the association between outgroups and the concept 'bad'.

Finally, several channels determine how contact with outgroup members lowers prejudices and stereotypes as well as outgroup threats. Here, four processes that change majority group members' attitudes can be emphasized: (i) learning about the outgroup, (ii) changing behavior, (iii) generating affective ties, and (iv) in-group reevaluation (Pettigrew, 1998a). Thus, contact affects personal attitudes towards outgroup members through the cognitive channel

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<sup>2</sup>For a literature review of the intergroup contact theory, see Hewstone and Swart (2011), among others.

(learning, experiencing, and understanding the outgroup as well as reevaluating the attitude towards one's own group), the behavioral channel (a greater openness to foreign groups and future intergroup contact), and affective channel (generating affective ties and friendships). As a result of the reduction of prejudices and stereotypes, empathy and solidarity towards outgroup members is created and increased (Tausch and Hewstone, 2010). However, to what extent the positive effect of social contact with outgroup members can be generalized remains open. Although the contact triggers a change in attitudes towards certain outgroup members, with whom more or less intense contact is maintained, this does not imply that attitudes are also transferred to outgroup members who are not personally known and with whom no contact is present. Overall, intergroup contact theory predicts that intergroup contact reduces negative anti-outgroup attitudes and may lead to less perceived outgroup threats. Thus, a higher ethnic or cultural heterogeneity in a region or community increases the possibility of social contact between members of different ethnic or cultural groups (Rocha and Espino, 2009). This, in turn, strengthens tolerance, trust, and solidarity between the members of different groups by mitigating the isolation of individual's own group from the others. Thus, the hypothesis is implicitly based on expanding an individual's bridging social capital by a rise in ethnic heterogeneity which, in turn, reduces individual ethnocentrism.

Diametrically opposed to intergroup contact theory, the **conflict theory** or **group threat theory** predicts that the existence of different ethnic, linguistic, and cultural groups leads to a more intense competition between these groups for scarce resources (Blalock, 1967). This competition spurs the perceived fear of shortage for one's own group and the perceived threat to the interests of one's own group. Generally speaking, group members expect negative consequences in some way due to the presence of individuals from dissimilar groups (Stephan and Renfro, 2002; Stephan et al., 2009). Furthermore, the competition for resources can be split into a competition for tangible and non-tangible resources (Stephan and Stephan, 2000). Whereas the participation of different ethnic groups in the labor and housing market is regarded as a tangible resource, the influence on the cultural and religious landscape of a country is considered an intangible resource. Moreover, conflict theory implies that the perceived outgroup threat creates and strengthens in-group members' negative attitudes towards outgroup members, resulting in discrimination and physical conflicts between members of different groups (Pettigrew, 1998b; Scheepers et al., 2002). Therefore, in-group members try to protect or restore the status of their own group by taking negative attitudes towards outsiders (Quillian, 1995). In principle, both components of the conflict theory, perceived threat from outgroups and negative attitudes towards particular outsiders, do not have to be related to each other and can be viewed as stand-alone concepts (Schlueter et al., 2008). Considering ethnic diversity, conflict theory implies that more interethnic contact increases the conflict potential between ethnic groups. Finally, individuals place a stronger distinction between members of their own ethnic group and members of other ethnic groups. There is no reduction of prejudices and stereotypes towards ethnic outgroup members with repeated contact, though these can even be confirmed and strengthened due to personal

experiences. In contrast to intergroup contact theory, conflict theory predicts that individuals continue to expand their 'bonding' social capital and are more ethnocentrically engaged (Putnam, 2007).

Both approaches, the intergroup contact theory and the conflict theory, differ in terms of the association between heterogeneity and perceived outgroup threat or anti-immigrant attitudes, but not regarding the link between these attitudes and the solidarity or trust in immigrants. Actually, natives' heightened perception of threat or anti-immigrant attitudes lower their solidarity with immigrants. Less solidarity, in turn, decreases the natives' preference for redistribution, since a part of governmental redistribution also benefits immigrants. The opposite holds for natives who feel more solidarity with immigrants. In general, if there is the possibility to transform the tax and transfer system solely to the benefit of a single ethnic group, natives exhibiting anti-immigrant attitudes could enforce that governmental redistribution takes place merely in favor of their own ethnic group. The implementation of such a selective redistribution scheme, however, is not possible in the European countries, since the income tax rate and most types of social benefits cannot be discriminatory based on ethnicity. Thus, natives who have a stronger perception of outgroup threat and anti-immigrant attitudes will have a lower preference for redistribution.

### 3.2 Constrict Theory

In principle, conflict theory and contact theory are opposed to one another, but both approaches implicitly assume that individual in-group trust or solidarity and outgroup trust or solidarity are negatively correlated. Conflict theory predicts that a raising heterogeneity enhances in-group members' isolation from outgroup members, but encourages commitment to the interest of the in-group at the same time. In contrast, intergroup contact theory presumes that more intergroup social contact due to higher heterogeneity lowers exclusive self-identification with the in-group and triggers stronger solidarity with outgroup members. Therefore, both theories suppose that there is a negative correlation between an individual's bridging social capital and his or her bonding social capital, i.e. if you have many friends from your in-group, you should only have few friends from the outgroup and vice versa (Putnam, 2007). This logical relationship, however, excludes the possibility that individuals may use both more bonding and more bridging social capital at once. The **constrict theory** takes this possibility into account and assumes that more diversity not only reduces trust and solidarity towards outgroup members, but also lowers trust and solidarity towards in-group members. There are some potential mechanisms which may explain such a corollary.

First, the *divergent social networks mechanism* posits that heterogeneity divides society members' networks along group boundaries, making the intra-civic sharing of information, common norms and rules more difficult (Habyarimana et al., 2007). Furthermore, penalizing violations of informal rules, norms, and values is more difficult within a piecemeal society. This, in turn, reduces the willingness of both in-group and outgroup members to follow

common civic norms. As a result, in-group members' trust and solidarity towards both their own group as well as outgroup members decline, since mutual dependence within groups has shrunk due to smaller networks.

Second, the *divergent norm mechanism* states that a higher heterogeneity is accompanied by a higher diversity of norms, values, and traditions. This, in turn, impedes communication between members of different groups, especially in the case of linguistic heterogeneity (Leigh, 2006b; Desmet et al., 2009). Misunderstandings, misinterpretations, and conflicts between groups are more frequent; hence individuals gradually withdraw from social life. In this case, a lack of contact with in-group members as well as outgroup members may lower trust and solidarity towards both groups.

Third, the *divergent preferences mechanism* takes into account the preference of groups to stand out from other groups. Here, a person's self-esteem is partly obtained from group identity and depends on how much the in-group can differentiate itself from other groups (Brown, 2000). This identity-creating feature can, however, differ greatly across a society's groups. A stronger identification could encourage in-group members to participate more intensively in social activities and civic projects. Since such engagement could also benefit outgroup members as heterogeneity increases, in-group members may reduce their social activities and as a result weaken social alliance with in-group peers and outgroup members (Alesina and La Ferrara, 2002).

Fourth, the *divergent in-group preferences mechanism* assumes that more diversity reveals or even amplifies the variance of norms, values, and traditions within a group (Wong, 2010; Williamson, 2015). In this case, the presence of heterogeneity already prompts the in-group members to redefine former commonalities of their own group and delineations from other groups. During this process, divergent perceptions and attitudes of in-group members regarding group- and self-definition could occur or could be strengthened. In turn, a rise in divergent positions within groups could lower in-group members' attachment to their peers. Thus, an increasing heterogeneity acts as an exogenous shock to the definition and self-image of the in-group, without the need for interaction between in-group members and outgroup members. The question of dealing with a higher heterogeneity and its impact on the in-group identity is sufficient to divide in-group members among themselves and, in the end, reduce in-group members' trust and solidarity towards their peers.

The constrict theory predicts that higher heterogeneity and more social contact with members of other ethnic, linguistic, or cultural groups can increase outgroup threats and reduce solidarity with outgroup members. Moreover, in-group members' solidarity with their peers also diminishes as a result of the above-mentioned mechanisms. Thus, in general, diversity reduces the average solidarity of in-group members, which implies less overall support of redistribution among in-group members. Comparing these three theories with respect to their effects on natives' redistribution preferences, it becomes clear that only the intergroup contact theory predicts a higher support of redistribution due to a rise in heterogeneity or more social contact with immigrants (see Table 1). In contrast, the other

**Table 1:** Theoretical effects of natives' attitudes towards immigrants on redistribution preferences

Intergroup Contact Theory	Conflict Theory	Constrict Theory
<i>Higher ethnic heterogeneity or more social contact leads to ...</i>		
lower outgroup threats	higher outgroup threats	higher outgroup threats
↓	↓	↓
higher solidarity with outgroup	lower solidarity with outgroup	lower solidarity with outgroup
lower solidarity with in-group	higher solidarity with in-group	lower solidarity with in-group
↓	↓	↓
higher support of redistribution	lower support of redistribution	lower support of redistribution

approaches predict a decrease in natives' redistribution preference. Apart from that, however, they differ in the change of natives' solidarity towards in-group members.

### 3.3 Ethnic Income Gap, Solidarity and Preference for Redistribution

Based on the theories presented so far, a native's solidarity negatively correlates with his or her support of redistribution. However, if the predictions of the constrict theory are confirmed in reality, it is no longer possible to distinguish whether this lower preference is solely driven by a lower solidarity with immigrants or can be attributed to natives' overall lower feeling of solidarity, induced by a simultaneous decline in natives' solidarity towards their ethnic peers. Hereinafter, same-ethnic solidarity is combined with the average income gap between natives and immigrants in order to draw some conclusions regarding all three theories. Assume a unit mass infinite population of consumers. The pre-tax income of a native  $i$  is defined by  $w_i$ . The population has the size  $n$  and can be divided into two subpopulations, the natives with size  $n_b$  and the immigrants with size  $n_f$ . The average pre-tax income of the population is expressed by

$$\bar{w} = (1 - \gamma)\bar{w}_f + \gamma\bar{w}_b, \quad (1)$$

where  $\gamma = \frac{n_b}{n}$  yields the proportion of natives in the population and  $\bar{w}_b$  and  $\bar{w}_f$  are the average pre-tax income of natives and immigrants, respectively. The governmental redistribution works through a linear tax and transfer system with a uniform tax rate  $\tau \in (0, 1)$  and a lump-sum social benefit  $b$ . The tax rate is assumed to be exogenous and does not affect the labor supply decisions of an individual. The post-tax income of native  $i$  is expressed by

$$I_i = (1 - \tau)w_i + \tau\bar{w}, \quad (2)$$

In addition to the financial self-interest aspect of governmental redistribution, natives have individual views about the minimum or an optimal level of social justice. In particular, these are expressed in terms of a desired or justifiable level of income inequality or an average resident's standard of living. Therefore, a native's overall utility is the combination

of private utility, expressed through his or her net income, and utility from the well-being of an average resident. The extent to which the social interest drives a native's preference for redistribution depends on his or her general solidarity with fellow residents. This is captured by the 'altruism' parameter  $\phi_i \in (0, 1)$ . Notwithstanding, the natives' benevolence towards their same-ethnic peers and the immigrants could differ. Thus, the total utility of a native is a convex combination of private utility and the weighted sum of fairness perceptions regarding both subpopulations.

$$u_i = (1 - \phi_i)I_i + \phi_i [\alpha_i \bar{I}_b + (1 - \alpha_i) \bar{I}_f], \quad (3)$$

where  $\alpha_i \in (0, 1)$  is a relative weighting parameter of the natives',  $\bar{I}_b$ , and immigrants',  $\bar{I}_f$ , average post-tax income. Thus, the parameter measures the relative importance between the natives' average well-being and immigrants' average well-being for a native. Higher values for  $\alpha_i$  indicate that a native's solidarity is more pronounced for his or her own ethnic group than for the immigrant group. This formulation is in line with intergroup contact and conflict theories. Combining the former equations results in the indirect utility  $V_i(\alpha_i, \tau)$ , expressed by

$$V_i = (1 - \phi_i) [(1 - \tau)w_i + \tau\bar{w}] + \phi_i \left\{ \alpha_i [(1 - \tau)\bar{w}_b + \tau\bar{w}] + (1 - \alpha_i) [(1 - \tau)\bar{w}_f + \tau\bar{w}] \right\} \quad (4)$$

Differentiating the indirect utility by the tax rate yields

$$\frac{dV_i}{d\tau} = (1 - \phi_i)(\bar{w} - w_i) + \phi_i [\alpha_i(\bar{w} - \bar{w}_b) + (1 - \alpha_i)(\bar{w} - \bar{w}_f)] \quad (5)$$

The effect of same-ethnic solidarity on a native's redistribution preference can be computed by

$$\frac{d}{d\alpha_i} \left( \frac{dV_i}{d\tau} \right) = \phi_i (\bar{w}_f - \bar{w}_b) \quad (6)$$

Since  $\phi_i$  can only take positive values, the sign of the differential depends on the difference between natives' and immigrants' average income. Based on the term in Equation (2.6), two additional conclusions regarding the link between natives' same-ethnic solidarity and their preference for redistribution can be drawn. First, a native's higher in-group solidarity changes his or her preference for redistribution depending on the average income gap between natives and immigrants. If immigrants' pre-tax income is, on average, lower than natives', the term in (2.6) becomes negative. Natives who are more supportive to their same-ethnic peers will consequently support less redistribution, since immigrants are, on average, recipients of the tax and transfer system and benefit from it disproportionately. In contrast, the term in (2.6) becomes negative if the opposite occurs. In this case, natives prefer more redistribution, since natives are, on average, recipients of the tax and transfer system and benefit from it disproportionately. These effects should be smaller in magnitude, the less solidarity

natives feel with their own ethnic group. Second, if the constrict theory applies, instead of the intergroup contact or conflict theories, a greater heterogeneity should reduce both the solidarity towards immigrants and towards natives. In total, solidarity towards the average resident declines and natives will support less redistribution. Therefore, the effect of natives' solidarity on their redistribution preference should no longer depend on the average income gap between natives and immigrants. Since natives' solidarity towards same-ethnic peers and immigrants diminishes, there is no ethnic group which is favored by natives.

## 4 Data and Variables

The analyses of the association between natives' attitudes towards immigrants and their redistribution preference is twofold. First, the effect of more social contact with immigrants - due to higher ethnic heterogeneity - on natives' attitudes towards immigrants is examined. Second, the effect of these attitudes on natives' preference for redistribution is assessed. Since individual data are required for investigation, the seventh wave of the European Social Survey is used. This cross-country survey covers 21 countries (20 European countries and Israel) as the ultimate sampling unit and contains persons aged 15 and above residing within private households (European Social Survey, 2015). It provides detailed information on respondents' socio-economic and demographic background, their attitudes towards immigrants, both on a personal as well as on a general level, and their attitudes towards several sociopolitical issues. The respondents are also asked to what extent they agree or disagree with the following statement: *"The government should take measures to reduce differences in income levels"*. Respondents can choose between five ordered categories: "strongly agree", "agree", "neither agree nor disagree", "disagree", and "strongly disagree". In the following empirical examination, the answers to this question are defined as the measure of a respondent's preference for redistribution.<sup>3</sup> Overall, there is a high demand for redistribution in the European countries. Almost 71 percent of the respondents chose the top categories "agree" and "strongly agree" (see Table 2). However, the European countries differ relatively strongly in the distribution

**Table 2:** Preference for redistribution based on the responses to the question:  
*"The government should take measures to reduce differences in income levels"*  
(in percent)

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
3.07	11.60	14.08	41.37	29.88

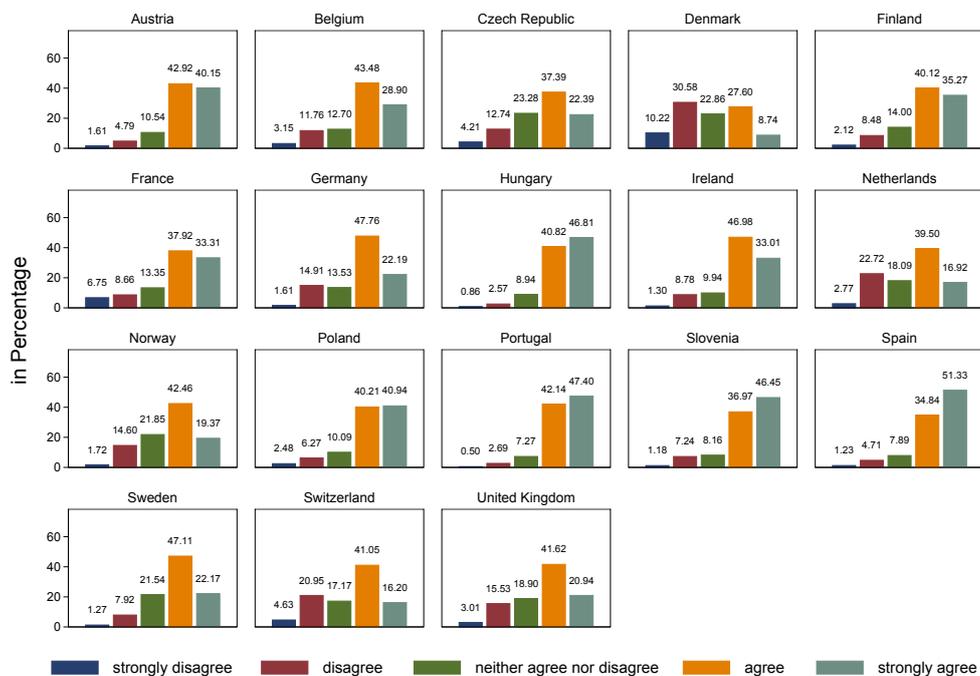
Notes: Calculation based on responses of the final born sample, weighted with design and population weights.

of redistribution preferences (see Figure 1). While in Spain, the population share with the

<sup>3</sup>In the empirical literature, this question has emerged as an appropriate measure for the individual preference for redistribution (see among others Burgoon, 2014; Corneo and Grüner, 2000, 2002; Finseraas, 2008; Senik et al., 2009).

highest demand for redistribution is 51.33 percent, the Netherlands and Switzerland show values of around 16 percent. In particular, the post-communist countries have a very high preference for redistribution as well as two Mediterranean countries, Portugal and Spain. Both Spain and Portugal have experienced a sharp rise in the unemployment rate and income inequality in the aftermath of the financial crisis and during the ensuing euro crisis. The unemployment rate almost tripled in Spain between 2007 and 2013, whereby it almost doubled in Portugal during the same period (European Commission, 2017). Furthermore, between 2007 and 2014, the market income inequality, measured by the Gini coefficient, increased in Spain from about 50 to 55 and in Portugal from 46 to almost 52 (Solt, 2016). In line with Meltzer and Richard (1981), a rise in market income inequality favors the demand for redistribution among citizens, because a larger proportion of the population would benefit from a higher governmental redistribution due to a larger income gap between the median voter and the mean voter. In addition, the European Social Survey 2014/2015 has a

**Figure 1:** Distribution of preferences for redistribution across European countries



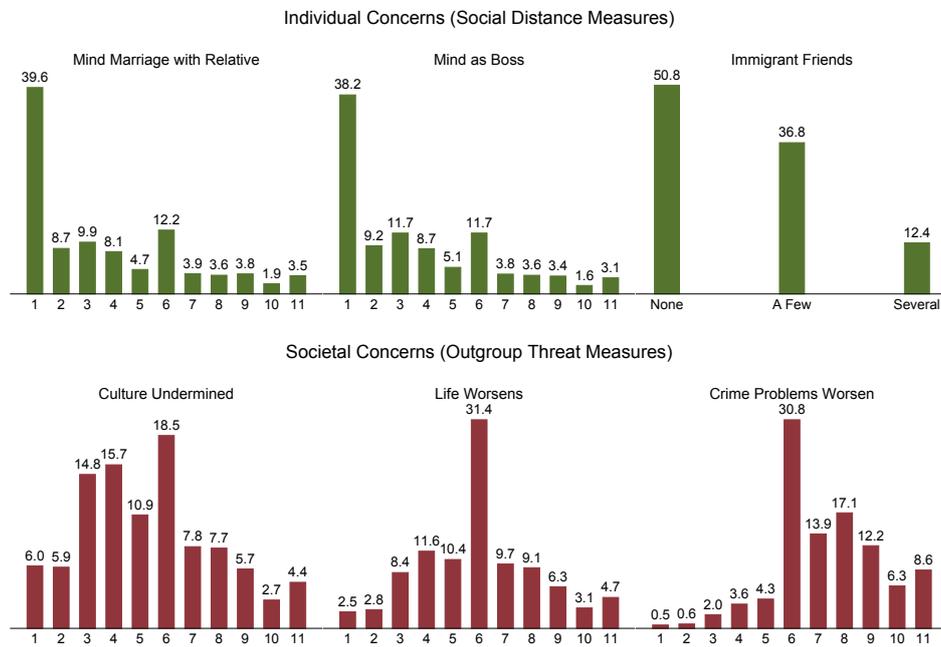
Notes: Responses of the final born sample weighted with country-specific design weights.

battery of questions about attitudes towards immigrants and immigration. From this pool, six questions are selected to map two dimensions of attitudes towards immigrants.<sup>4</sup> The first dimension defines the individual relationship of respondents to immigrants. Three questions were picked that cover respondents' individual concern about and social distance from immigrants. The variables *Mind Marriage with Relative* and *Mind as Boss* express the personal dislike or affection of respondents for potential social contact with immigrants

<sup>4</sup>The wording of these questions is given in Table 10 in the Appendix.

in their private or professional life. Thus, both variables cover specific parts of everyday life, which are associated with different types of social contact. Whereas the design and the intensity of social contact during working time may be strongly determined by exogenous factors, respondents determine the nature and frequency of their social contact in their free time independently. Therefore, individuals may evaluate changes in their social contact during working time and changes during free time differently. Undesirable social contact during working time would be accepted before unwanted social contact in respondents' free time, i.e. if a respondent does not want to establish social contact with immigrants, he or she would rather accept more social contact in the workplace than during his or her free time. Interestingly, however, the assessment of potential changes in social contact with immigrants during working time and during free time differs only slightly (see Figure 2). Almost 40

**Figure 2:** Overall distribution of social distance and outgroup threats



*Notes:* Responses of the final born sample, weighted with design and population weights. 11-point-scale variables are coded from (1) “absolute positive attitude” to (11) “absolute negative attitude”. Therefore, rising values represent stronger anti-immigrant or negative outgroup attitudes.

percent of respondents do not mind the marriage of a close relative to an immigrant and also do not mind an immigrant as a supervisor or boss. Furthermore, there are no severe deviations in the other values of both variables. Apparently, respondents treat changes in social contact in their professional life and their private life equally. A similar picture emerges for the third variable of the first dimension. Just over half of the respondents do not have a friend who is an immigrant. In contrast to previous questions, this variable measures the present social distance of a respondent to immigrants. For the empirical analysis, all three questions are recoded to binary variables. Based on the empirical distribution of the original questions, *Mind Marriage with Relative* and *Mind as Boss* are encoded with 1 if the original values are between 2 and 11 and otherwise encoded with 0. The variable *Immigrant*

*Friends* is expressed by the value 0 if “a few” or “several” are present and otherwise by the value 1.

The second questionnaire covers natives’ anxiety that immigrants endanger the provision of public goods and social constructs, such as national identity and national traditions. The selected questions measure the expected or perceived affect of immigrants’ presence on tangible (crime or security) and intangible (culture and social life) goods. The empirical distribution of respondents’ societal concern and outgroup threats is in sharp contrast to the social distance measures. For all three questions, the variation of values is very pronounced. The variable *Crime Problems Worsen* has a relatively small proportion of respondents in the first five values and about 58.1 percent of respondents assume a worsening of the security situation in the country due to immigrants. In turn, 55.7 percent assess immigrants’ impact on social life positively, whereby 31.5 percent of respondents do not expect or perceive a strong change in social life from the presence of immigrants. Furthermore, only 28.3 percent of respondents believe that immigrants undermine the culture or the cultural life of the country. For empirical evaluation, all three questions are recoded to binary variables. The focus here is to pool those respondents who have a strongly positive attitude towards immigrants regarding the aforementioned societal concepts within a group. Thus, the three binary variables take the value 0 if the original questions have values between 1 and 3 and the value 1 for remaining values of the original questions, respectively.

There are two reasons for abstaining from a division of ordered variables at the center of the scale. First, the assignment of an individual with an indifferent value, i.e. who chose the middle answer to the question, to one of the two groups of a binary variable is arbitrary, but may change the empirical results to a great extent. Second, focusing on a few values on the positive margin of the variables allows for contrasting respondents who have strongly positive attitudes with respondents who have latent negative or strongly negative attitudes. Therefore, the results of the empirical evaluation are to be interpreted in light of this coding scheme. A significant effect of one of these variables means that the effect may certainly be driven by strongly negative attitudes, but at the same time it is not compensated by latent negative values and it could even be strengthened.

Additionally, attitudes towards immigrants depend on the experience of social contact in everyday life. This can either strengthen or moderate individual and societal threats. In order to measure the frequency of social contact which is not due to friendships with immigrants, the following question of the European Social Survey is suitable: “*How often do you have any contact with people of a different race or ethnic group [...], when your are out and about?*” Since the question relates to contact in everyday life, i.e. interactions in public transport, in public places, and in the neighborhood, higher values point to a higher immigrant density in the immediate neighborhood of the respondent and thus to a higher ethnic heterogeneity. The proportion of respondents with no contact to immigrants during their everyday lives is very low, at 12.96 percent (see Table 3). Over half of the respondents have contact with immigrants at least once a week. Comparing the number of immigrant friends and the frequency of

**Table 3:** Social contact with immigrants based on the question:  
 “How often do you have any contact with people of a different race or ethnic group...?”  
 (in percent)

Never	Less than once a month	Once a month	Several times a month	Once a week	Several times a week	Everyday
12.96	11.37	7.38	14.71	8.17	20.01	25.40

Notes: Calculation based on responses of the final born sample, weighted with design and population weights.

social contact with immigrants, there is an early indication that social contact does not per se convert to bridging social capital among respondents.

Since socio-economic and demographic characteristics are important determinants of the redistribution preference, social distance from immigrants, and natives’ perceived outgroup threats, a basic set of exogenous variables is prepared. This includes the respondent’s age, gender, education years, marital status, labor force status, household size, household income, political orientation, size of the place of residence, presence of kids, and current or previous type of employment. A respondent’s labor force status is summarized by the categories “employed”, “unemployed”, and “not in labor force”, whereby the latter includes “sick”, “disabled”, “stay-at-home”, and “retired”.<sup>5</sup> The size of the place of residence is expressed by the binary variable *urban*, where “big city” and “suburb of big city” have the value 1 and “town/small city”, “country/village” and “farm/home in countryside” have the value 0. The marital status is summarized in the binary variable *married*, where married respondents and respondents in a civil union take the value 1 and separated, divorced, widowed, and never-married respondents take the value 0. *Political orientation* is a measure of ideological self-assessment on an 11-point-scale, where 1 is “extreme right” and 11 is “extreme left”. In addition, the type of employment indicates whether the respondent works or worked in the “public sector”, “private sector”, was “self-employed” or “other”. Individual data on Estonia are excluded from the analysis, because there is no information on respondents’ household income. Since the share of immigrants at the NUTS level 2 is used to instrument social contact in the upcoming empirical examination, Israel and Lithuania are excluded from the analysis, respectively due to missing regional data and due to a lack of variation at the regional level. In order to prevent distortions of the estimations by an insufficient number of observations within NUTS level 2 regions, regions with less than 30 valid observations are not taken into account. In total, the final sample includes 18 European countries and the immigrant population share for 154 regions.<sup>6</sup> As the purpose of the study is to measure the effect of attitudes towards immigrants and ethnic heterogeneity on a native’s preference for redistribution, all respondents with a place of birth outside the country of data collection were dropped from the original sample.

<sup>5</sup> Respondents who are currently in education are not taken into account, as most of them are not entitled to vote.

<sup>6</sup> The summary statistics of the basic covariates are presented in Table 9 in the Appendix.

## 5 Econometric Specification

Based on the introduced theories about the formation of attitudes towards immigrants, there is a link between these attitudes and a native's preference for redistribution through the solidarity channel. On the other hand, there is an association between social contact with immigrants or ethnic heterogeneity and natives' social distance from immigrants or their perceived outgroup threat. Thus, the logical chain goes from social distance over attitudes towards immigrants to natives' support of redistribution. In such a framework, there are two dependent variables, the attitudes and redistribution preference, whereby the first is at the same time an endogenous covariate of the latter. In total, this calls for a recursive bivariate model. Since both outcome variables are of categorical nature, the following recursive bivariate probit model is applied

$$\begin{aligned} y_1^* &= \mathbf{x}'_1 \boldsymbol{\beta}_1 + \gamma \cdot y_2 + \epsilon_1, & y_1 &= m \quad \text{if } \kappa_{m-1} \leq y_1^* < \kappa_m \quad \text{for } m = 1, \dots, 4, \\ y_2^* &= \mathbf{x}'_2 \boldsymbol{\beta}_2 + \delta \cdot \psi + \epsilon_2, & y_2 &= 1 \quad \text{if } y_2^* > 0, 0 \quad \text{otherwise,} \end{aligned} \quad (7)$$

where the errors  $\epsilon_1$  and  $\epsilon_2$  are jointly normally distributed and may correlate, which is mirrored in the significance of the coefficient of correlation  $\rho$ . Furthermore,  $y_1^*$  and  $y_2^*$  are the latent endogenous variables of the model, which are observed only as their categorical realizations  $y_1$  and  $y_2$ . The first outcome variable  $y_1$  measures a native's preference for redistribution and is ordinal. Since only 3.07 percent of the final sample "strongly disagree" and ordered probit regressions are based on the proportional odds assumption, following the recommendations of [Hamilton \(1992\)](#) the last two categories, "strongly disagree" and "disagree", are collapsed (see [Table 2](#)). Thus, a native's preference for redistribution has four categories and the underlying latent  $y_1^*$  can be divided using the thresholds (or cutoff points)  $\kappa_1$  to  $\kappa_3$ , which were estimated together with the coefficients of the model.

The second outcome variable  $y_2$  represents a native's attitude towards immigrants and is binary. Since attitudes towards immigrants are covered by two dimensions, each with three variables, a total of six different outcome variables is used. Interestingly, the dependent variable  $y_2^*$  can be carried as observed explanatory variable  $y_2$  into the equation for  $y_1$  with no special attention to its endogeneity (see [Maddala, 1983](#), for derivation). In contrast to the linear recursive model, the recursive probit model does not require an exclusion restriction for identification, i.e. all exogenous covariates may appear in both equations if there is sufficient variation in the data ([Wilde, 2000](#)).<sup>7</sup> This condition is secured by adding the frequency of interethnic contact, denoted as  $\psi$ , to the right-hand side of the second outcome equation, since aforementioned sociological theories predict an association between interethnic contact during everyday life and a native's attitudes towards immigrants (see [Table 3](#)). Additionally,  $\mathbf{x}_1$  and  $\mathbf{x}_2$  are matrices of individual socio-economic and demographic control variables, including the basic set of covariates described above, whereby  $\mathbf{x}_1 = \mathbf{x}_2$  holds.

<sup>7</sup>[Greene \(1998, p. 292\)](#) mentions that this property "seem[s] not to be widely known" in the discussion of two-step probit models.

Furthermore, the model includes a full set of country dummies to capture country-specific effects, whereby the intercept in  $\mathbf{x}_1$  (or  $\mathbf{x}_2$ ) varies across countries. These are required, since both unobservable and observable measures, e.g. the current level of income inequality and governmental redistribution, may have an effect on both outcome variables. Through these intercepts, it is possible to net out the impact of country-level variables which are assumed to be homogenous across fellow natives. The fixed effect estimation of an ordered response model may give rise to the incidental parameter problem (Chamberlain, 1984). The maximum likelihood estimator of the incidental parameters (fixed effects) is consistent as long as  $T \rightarrow \infty$ , for given  $N$  (assuming that there are  $T$  observations for each individual unit  $i = 1, \dots, N$ ). However, the estimator is inconsistent for given  $T$ , as  $N \rightarrow \infty$ . Since country fixed effects are included, the parsed panel is very long.  $N$  is small and  $T$  is high, as there are many observations within each country. Given these properties of the data, the incidental parameter problem is not an issue for estimation results. Finally, design and population weights are applied, since observations are pooled and all parameters are constrained to be constant across countries.

## 5.1 Direct and Indirect Effects

Although the raw estimation results of a probit model can be interpreted with regard to the parameters' sign and significance, they do not have a direct economic interpretation. Thus, marginal effects of the covariates have to be calculated in order to assess the importance and magnitude of the effects on the respective outcome variable. Since the first outcome variable  $y_1$  is ordinal, in principle, the marginal effects can be calculated for each category separately. For a better and more catchy interpretation of the estimation results, however, the marginal effects on a high preference for redistribution are calculated. In turn, a high preference for redistribution is defined as the probability of selecting one of the two top categories, "agree" and "strongly agree", of the ordered dependent variable. Thus, the bivariate recursive model can be expressed in probabilities as follows:

$$\begin{aligned} \Pr(y_2 = 1 | \mathbf{x}_2) &= \Phi(\mathbf{x}'_2 \boldsymbol{\beta}_2), \\ \Pr(y_1 \geq 3, y_2 | \mathbf{x}_1, \mathbf{x}_2) &= \Phi_2(-\kappa_2 + \mathbf{x}'_1 \boldsymbol{\beta}_1 + \gamma y_2, q_{i2}(\mathbf{x}'_2 \boldsymbol{\beta}_2 + \delta \psi), q_{i2} \rho), \end{aligned} \quad (8)$$

where  $q_{i2} = 2y_{i2} - 1$  takes the value +1 if a native has a negative attitude towards immigrants and otherwise the value -1. Hereinafter,  $\phi(\cdot)$  and  $\Phi(\cdot)$  respectively indicate the univariate standard normal density and the cumulative density function, whereas  $\phi_2(\cdot)$  and  $\Phi_2(\cdot)$  respectively specify the bivariate normal density and cumulative density function. The primary interest, as in the present study, is the extent of the marginal effects of  $\mathbf{x}_1$  (or  $\mathbf{x}_2$ ) and  $y_2$  on  $y_1$ . Since some exogenous variables,  $\mathbf{x}_1$  (or  $\mathbf{x}_2$ ), occur in both outcome equations and interethnic contact,  $\psi$ , occurs only in the second outcome equation, the channels through which these exogenous variables affect  $y_1$  differ. Whereas a change in  $\mathbf{x}_1$  directly affects  $y_1$  (direct effect), a change in  $\mathbf{x}_2$  indirectly influences  $y_1$  via a change in the endogenous

variable  $y_2$  (indirect effect). Natives' years of education, for example, appear in both outcome equations. Thus, years of education have an effect on the probability of a high preference for redistribution directly through the first outcome equation. Concurrently, they affect natives' attitudes towards immigrants, whereby this effect is, in turn, transmitted back to the preference for redistribution. Therefore, it is possible to quantify the indirect effect of an exogenous variable, which appears only in the second outcome equation, on a native's support for redistribution. In particular, this is of interest regarding the indirect marginal effect of interethnic contact on a native's support of redistribution. Finally, the probability of a high preference for redistribution can be expressed by<sup>8</sup>

$$\begin{aligned}
& \Pr(y_1 \geq 3, y_2 | \mathbf{x}_1, \mathbf{x}_2, \psi) \\
&= \Pr(y_2 = 1 | \mathbf{x}_2, \psi) \cdot \Pr(y_1 \geq 3, y_2 = 1 | \mathbf{x}_1, \mathbf{x}_2, \psi) \\
&\quad + \Pr(y_2 = 0 | \mathbf{x}_2, \psi) \cdot \Pr(y_1 \geq 3, y_2 = 0 | \mathbf{x}_1, \mathbf{x}_2, \psi) \\
&= \Phi(x'_2 \beta_2 + \delta \psi) \cdot \frac{\Phi_2(-\kappa_2 + \mathbf{x}'_1 \beta_1 + \gamma, x'_2 \beta_2 + \delta \psi, \rho)}{\Phi(x'_2 \beta_2 + \delta \psi)} \\
&\quad + \Phi(-x'_2 \beta_2 - \delta \psi) \cdot \frac{\Phi_2(-\kappa_2 + \mathbf{x}'_1 \beta_1, -x'_2 \beta_2 - \delta \psi, -\rho)}{\Phi(-x'_2 \beta_2 - \delta \psi)} \\
&= \Phi_2(-\kappa_2 + \mathbf{x}'_1 \beta_1 + \gamma, x'_2 \beta_2 + \delta \psi, \rho) + \Phi_2(-\kappa_2 + \mathbf{x}'_1 \beta_1, -x'_2 \beta_2 - \delta \psi, -\rho). \tag{9}
\end{aligned}$$

The first and second term in (9) represent the direct and the indirect effect, respectively. Thus, the first indicates which part of the proportion of natives who have a high preference for redistribution in the data is due to the direct effects and the latter correspondingly shows the part which is attributable to indirect effects.

## 5.2 Marginal Effects

The marginal effects are obtained by taking the derivatives of (9) with respect to  $\mathbf{x}_1$ ,  $\mathbf{x}_2$ ,  $\psi$ , and  $y_2$ .<sup>9</sup> In the calculation of the marginal effects on a high preference for redistribution, a distinction is made between three cases: (i) the marginal effect of a continuous exogenous variable, (ii) the marginal effect of a categorical or binary exogenous variable, and (iii) the marginal effect of the endogenous explanatory variable  $y_2$ . The direct marginal effect of a

<sup>8</sup>Greene and Hensher (2010) show this for the recursive bivariate binary case, where both endogenous variables are binary. Due to the proportional odds assumption, their implementation can easily be transferred to the ordinal or mixed case.

<sup>9</sup>More precisely, the average marginal effects are estimated by computing the respective derivatives for each observation, totaling these values and taking the mean. For notational simplicity, the summation is suppressed.

continuous variable  $x_{1k}$  is its derivative with respect to  $x_1$ :<sup>10</sup>

$$\begin{aligned} \frac{\partial \Pr(y_1 \geq 3, y_2 | x_1, x_2, \psi)}{\partial x_{1k}} = & \left[ \phi(-\kappa_2 + x'_1 \beta_1 + \gamma) \cdot \Phi \left( \frac{x'_2 \beta_2 + \delta \psi - \rho(-\kappa_2 + x'_1 \beta_1 + \gamma)}{\sqrt{1 - \rho^2}} \right) \right. \\ & \left. + \phi(-\kappa_2 + x'_1 \beta_1) \cdot \Phi \left( \frac{-x'_2 \beta_2 - \delta \psi + \rho(-\kappa_2 + x'_1 \beta_1)}{\sqrt{1 - \rho^2}} \right) \right] \cdot \beta_{1k} \end{aligned} \quad (10)$$

The sign of the direct marginal effect is equal to the sign of the coefficient  $\beta_{1k}$ , since the term in the square brackets is positive. In turn, the indirect effect of a continuous variable  $x_{2k}$  and  $\psi$  is its derivative with respect to  $x_1$  and  $\psi$ , respectively:

$$\begin{aligned} \frac{\partial \Pr(y_1 \geq 3, y_2 | x_1, x_2, \psi)}{\partial x_{1k}} = & \phi(x'_2 \beta_2 + \delta \psi) \cdot \left[ \Phi \left( \frac{-\kappa_2 + x'_1 \beta_1 + \gamma - \rho(x'_2 \beta_2 + \delta \psi)}{\sqrt{1 - \rho^2}} \right) \right. \\ & \left. - \Phi \left( \frac{-\kappa_2 + x'_1 \beta_1 - \rho(x'_2 \beta_2 + \delta \psi)}{\sqrt{1 - \rho^2}} \right) \right] \cdot \beta_{2k} \end{aligned} \quad (11)$$

The sign of the indirect marginal effect depends on the sign of  $\beta_{2k}$  and  $\gamma$ . If  $\gamma > 0$  holds, the term in the square brackets is positive and the marginal effect takes the same sign as  $\beta_{2k}$ . However, if  $\gamma < 0$  applies, the term in the square brackets is negative and the marginal effect takes the opposite of the sign of  $\beta_{2k}$ . Since the  $\psi$  appears only in the second outcome equation, the frequency of interethnic contact only has an indirect marginal effect on natives' preference for redistribution. Thus, in Equation (11), the  $\beta_{2k}$  for  $\psi$  has to be replaced with the respective coefficient  $\delta$  from the second outcome equation.

For a discrete exogenous variable  $x_l$ , the direct marginal effect can be obtained by taking the difference in the probabilities of a high preference for redistribution:

$$\begin{aligned} & \Pr(y_1 \geq 3, y_2 | x_1, x_2, \psi, x_{1l} = 1) - \Pr(y_1 \geq 3, y_2 | x_1, x_2, \psi, x_{1l} = 0) \\ & = \left[ \Phi_2(-\kappa_2 + x'_1 \beta_1 + \gamma, x'_2 \beta_2 + \delta \psi, \rho) + \Phi_2(-\kappa_2 + x'_1 \beta_1, -x'_2 \beta_2 - \delta \psi, -\rho) \right] \Big|_{x_{1l}=1} \\ & - \left[ \Phi_2(-\kappa_2 + x'_1 \beta_1 + \gamma, x'_2 \beta_2 + \delta \psi, \rho) + \Phi_2(-\kappa_2 + x'_1 \beta_1, -x'_2 \beta_2 - \delta \psi, -\rho) \right] \Big|_{x_{1l}=0} \end{aligned} \quad (12)$$

<sup>10</sup>The derivations of the bivariate normal cumulative distribution function are based on the implications of the recursive bivariate binary case in [Greene \(1998\)](#) and [Greene and Hensher \(2010\)](#) and were transferred to the ordinal or mixed case.

The indirect marginal effect is calculated in a similar manner:

$$\begin{aligned}
& \Pr(y_1 \geq 3, y_2 | \mathbf{x}_1, \mathbf{x}_2, \psi, x_{2l} = 1) - \Pr(y_1 \geq 3, y_2 | \mathbf{x}_1, \mathbf{x}_2, \psi, x_{2l} = 0) \\
&= \left[ \Phi_2(-\kappa_2 + \mathbf{x}'_1 \boldsymbol{\beta}_1 + \gamma, \mathbf{x}'_2 \boldsymbol{\beta}_2 + \delta\psi, \rho) + \Phi_2(-\kappa_2 + \mathbf{x}'_1 \boldsymbol{\beta}_1, -\mathbf{x}'_2 \boldsymbol{\beta}_2 - \delta\psi, -\rho) \right] \Big|_{x_{2l}=1} \\
&- \left[ \Phi_2(-\kappa_2 + \mathbf{x}'_1 \boldsymbol{\beta}_1 + \gamma, \mathbf{x}'_2 \boldsymbol{\beta}_2 + \delta\psi, \rho) + \Phi_2(-\kappa_2 + \mathbf{x}'_1 \boldsymbol{\beta}_1, -\mathbf{x}'_2 \boldsymbol{\beta}_2 - \delta\psi, -\rho) \right] \Big|_{x_{2l}=0} \quad (13)
\end{aligned}$$

Since the endogenous explanatory variable  $y_2$  is binary, the direct marginal effect on  $y_1$  is calculated as follows:

$$\begin{aligned}
& \Pr(y_1 \geq 3, y_2 = 1 | \mathbf{x}_1, \mathbf{x}_2, \psi) - \Pr(y_1 \geq 3, y_2 = 0 | \mathbf{x}_1, \mathbf{x}_2, \psi) \\
&= \frac{\Phi_2(-\kappa_2 + \mathbf{x}'_1 \boldsymbol{\beta}_1 + \gamma, \mathbf{x}'_2 \boldsymbol{\beta}_2 + \delta\psi, \rho)}{\Phi(\mathbf{x}'_2 \boldsymbol{\beta}_2 + \delta\psi)} - \frac{\Phi_2(-\kappa_2 + \mathbf{x}'_1 \boldsymbol{\beta}_1, -\mathbf{x}'_2 \boldsymbol{\beta}_2 - \delta\psi, -\rho)}{\Phi(-\mathbf{x}'_2 \boldsymbol{\beta}_2 - \delta\psi)} \quad (14)
\end{aligned}$$

## 6 Empirical Results

The theoretical considerations predict that there is a link between interethnic contact and natives' attitudes towards immigrants as well as an association between natives' sociotropic concern due to the presence of immigrants and their preference for redistribution. In turn, natives' attitudes can be divided into two dimensions: social distance measures and perceived outgroup threat measures. Thus, a bivariate recursive probit model can be applied and estimated by full information maximum likelihood, whereby a native's perceptions are carried as observed in the right-hand side of the first outcome equation (Roodman, 2011). The estimation results show that more interethnic contact during everyday life leads to more positive attitudes towards immigrants among natives (see Table 4). This holds for all employed social distance measures. More years of education as well as a stronger leftist political conviction reduce the probability of social distance to immigrants. On the one hand, education generates a liberalization effect through the reduction of prejudices and stereotypes (Hainmueller and Hiscox, 2007; Hello et al., 2002). On the other hand, more highly educated people are usually better informed about foreign cultures, countries, and traditions. Therefore, they may develop sympathy for immigrants more quickly. Furthermore, living in a suburban or urban area decreases a native's probability of anti-immigrant attitudes. The effects of the remaining covariates are mixed. Married natives oppose a relative's marriage to an immigrant more strongly and show a higher probability of having no immigrant friends than unmarried natives. However, married and unmarried natives do not significantly differ in their rejection of an immigrant as a supervisor. Taking a closer look at the determinants of a native's preference for redistribution, the common effects can be confirmed. Earning a higher income diminishes the support of redistribution, as higher income lowers a native's social benefits and increases his or her taxes (Meltzer and Richard, 1981). According to

**Table 4:** Bivariate probit estimations of natives' preference for redistribution and social distance measures

	(1)		(2)		(3)	
	<i>preference for redistribution</i>	<i>mind marriage with relative</i>	<i>preference for redistribution</i>	<i>mind immigrant as boss</i>	<i>preference for redistribution</i>	<i>immigrant friends</i>
age	0.019 (0.005)***	0.015 (0.006)***	0.019 (0.005)***	0.015 (0.006)***	0.018 (0.005)***	0.005 (0.006)
age <sup>2</sup>	-0.000 (0.000)***	-0.000 (0.000)	-0.000 (0.000)***	-0.000 (0.000)	-0.000 (0.000)***	0.000 (0.000)
female	0.042 (0.025)*	-0.003 (0.029)	0.043 (0.025)*	0.048 (0.029)	0.041 (0.025)*	0.102 (0.030)***
married	-0.023 (0.031)	0.081 (0.035)**	-0.027 (0.030)	0.022 (0.035)	-0.029 (0.031)	0.120 (0.035)***
kids at home	-0.022 (0.035)	0.027 (0.043)	-0.023 (0.035)	0.008 (0.043)	-0.022 (0.036)	-0.033 (0.044)
household member	0.019 (0.015)	0.001 (0.020)	0.019 (0.015)	0.005 (0.019)	0.019 (0.015)	0.013 (0.020)
(sub-)urban	-0.014 (0.028)	-0.072 (0.032)**	-0.011 (0.027)	-0.096 (0.031)***	-0.006 (0.029)	-0.185 (0.032)***
political orientation	0.109 (0.009)***	-0.092 (0.007)***	0.112 (0.007)***	-0.071 (0.007)***	0.114 (0.006)***	-0.023 (0.007)***
education years	-0.018 (0.004)***	-0.026 (0.004)***	-0.017 (0.004)***	-0.023 (0.004)***	-0.016 (0.004)***	-0.032 (0.004)***
public sector				<i>reference</i>		
private sector	-0.072 (0.029)**	0.074 (0.033)**	-0.074 (0.029)***	0.085 (0.033)**	-0.077 (0.028)***	0.051 (0.034)
self-employed	-0.157 (0.045)***	-0.012 (0.053)	-0.158 (0.046)***	-0.004 (0.054)	-0.158 (0.046)***	-0.106 (0.052)**
other	-0.095 (0.074)	0.004 (0.094)	-0.096 (0.074)	-0.020 (0.094)	-0.096 (0.075)	0.086 (0.097)
employed				<i>reference</i>		
unemployed	0.070 (0.064)	0.023 (0.070)	0.068 (0.064)	-0.015 (0.070)	0.069 (0.065)	-0.250 (0.071)***
not in labor force	-0.006 (0.035)	0.007 (0.043)	-0.007 (0.035)	0.019 (0.042)	-0.008 (0.035)	-0.054 (0.043)
household income	-0.072 (0.006)***	-0.005 (0.007)	-0.072 (0.006)***	-0.008 (0.007)	-0.071 (0.006)***	-0.016 (0.007)**
<b>mind marriage with relative</b>	<b>-0.129</b> <b>(0.191)</b>					
<b>mind immigrant as boss</b>			<b>-0.051</b> <b>(0.141)</b>			
<b>immigrant friends</b>					<b>0.025</b> <b>(0.109)</b>	
<i>interethnic contact</i>		-0.083 (0.008)***		-0.090 (0.008)***		-0.181 (0.008)***
atanh $\hat{\rho}$		0.0685 (0.1175)		0.0384 (0.0854)		0.0031 (0.0688)
Obs.		18915		18915		18915
AIC		71,851.28		71,817.33		70,790.65
BIC		72,392.77		72,358.82		71,332.14
Log Likelihood		-35856.64		-35839.66		-35326.32

Notes: The born sample is employed and raw coefficients of the estimations are reported. In maximum likelihood estimation,  $\rho$  is not directly estimated, but  $\text{atanh } \rho = 0.5 \cdot \ln((1 + \rho)/(1 - \rho))$  applies. *Political orientation* is a measure of ideological self-assessment on an 11-point-scale, where 1 is "extreme right" and 11 is "extreme left". Country fixed effects are included, but not reported. Standard errors are in parentheses. \*\*\*significant at 1 percent, \*\*significant at 5 percent, \*significant at 10 percent.

the *prospects of upward mobility hypothesis*, more highly educated individuals prefer less redistribution, since they expect future increases in their income (Benabou and Ok, 2001). Moreover, private sector employees and self-employed persons prefer less redistribution than public sector employees, since public employment directly benefits from a large government. The elderly who benefit from health and pension spending are also more supportive of redistribution. Interestingly, none of the social distance measures have a significant impact on a native's redistribution preference. Thus, natives' social distance or desire to avoid social relationships with immigrants has no influence on their support of redistribution, neither through the solidarity nor through the conflict channel.

However, this picture changes once the perceived outgroup threat dimension is considered (see Table 5). The basic set of covariates takes the same signs as above and the frequency of interethnic contact is again negatively associated with natives' anti-immigrant attitudes. Apart from the variable *crime problems worsen*, the remaining outgroup threat measures, *culture undermined* and *social life worsens*, have a significantly negative impact on a native's redistribution preference. This result emphasizes that natives' support of redistribution is rather driven by symbolic concern about the nation or the society as a whole than by social distance to immigrants. On the one hand, the estimations confirm the predictions of intergroup contact theory, since more interethnic contact diminishes natives' negative attitudes towards immigrants, prejudices, and stereotypes. Furthermore, this implies that a rise in ethnic diversity in a native's immediate neighborhood has a positive influence on his or her attitudes towards immigrants. In order to examine a curvilinear link between interethnic contact and outgroup threats perceived by natives, a squared interethnic contact term is added to all estimations. However, the results strongly reject a curvilinear relationship.<sup>11</sup> On the other hand, the predictions of the conflict theory are also confirmed, since natives' concern of intensified competition for intangible goods and resources, such as national culture and social life, decrease their solidarity and simultaneously their preference for redistribution. Therefore, it is not natives' social distance from immigrants or their desire to avoid social contact with immigrants in their private life and in the workplace that resonate with their sociopolitical claims. However, natives' perceived threat to their in-group norms and values by the presence of immigrants has a significantly negative impact on their support of redistribution.

## 6.1 Indirect and Direct Effects

The bivariate recursive probit estimation allows for the division of a predictor's marginal effect into a direct and an indirect effect. The direct effect measures the impact of a covariate on a native's preference for redistribution via a direct association, whereby the indirect effect

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<sup>11</sup>Since the frequency of interethnic contact is ordinal scaled, the estimations are repeated, taking the ordinal structure of the predictor into account. However, the results do not differ from a treatment as a continuous predictor. A native's probability of expressing negative attitudes towards immigrants diminishes ascending in the categories of the predictor. Results are presented for social distance and outgroup threat measures in Table 11 in the Appendix.

**Table 5:** Bivariate probit estimations of natives' preference for redistribution and outgroup threat measures

	(1)		(2)		(3)	
	<i>preference for redistribution</i>	<i>culture undermined</i>	<i>preference for redistribution</i>	<i>social life worsens</i>	<i>preference for redistribution</i>	<i>crime problems worsen</i>
age	0.014 (0.005)***	-0.009 (0.006)	0.014 (0.005)***	-0.012 (0.007)*	0.016 (0.005)***	-0.029 (0.011)***
age <sup>2</sup>	-0.000 (0.000)**	0.000 (0.000)	-0.000 (0.000)**	0.000 (0.000)	-0.000 (0.000)***	0.000 (0.000)***
female	0.053 (0.024)**	0.036 (0.031)	0.063 (0.024)**	0.113 (0.036)***	0.046 (0.024)*	0.112 (0.054)**
married	-0.017 (0.030)	0.002 (0.037)	-0.017 (0.030)	0.009 (0.042)	-0.020 (0.030)	-0.041 (0.068)
kids at home	-0.009 (0.036)	0.066 (0.046)	-0.014 (0.035)	0.049 (0.051)	-0.019 (0.036)	0.186 (0.089)**
household member	0.015 (0.016)	-0.007 (0.020)	0.019 (0.015)	0.009 (0.022)	0.016 (0.015)	0.001 (0.035)
(sub-)urban	-0.048 (0.027)*	-0.106 (0.033)***	-0.048 (0.026)*	-0.135 (0.037)***	-0.018 (0.026)	-0.050 (0.062)
political orientation	0.090 (0.010)***	-0.110 (0.008)***	0.094 (0.007)***	-0.112 (0.009)***	0.115 (0.006)***	0.012 (0.013)
education years	-0.029 (0.005)***	-0.062 (0.005)***	-0.023 (0.004)***	-0.039 (0.005)***	-0.017 (0.004)***	0.017 (0.010)
public sector				<i>reference</i>		
private sector	-0.035 (0.030)	0.146 (0.035)***	-0.038 (0.028)	0.161 (0.040)***	-0.068 (0.028)**	0.095 (0.060)
self-employed	-0.166 (0.045)***	-0.015 (0.056)	-0.174 (0.045)***	-0.052 (0.063)	-0.173 (0.046)***	-0.039 (0.095)
other	-0.089 (0.076)	-0.056 (0.094)	-0.080 (0.075)	-0.041 (0.107)	-0.082 (0.076)	0.203 (0.159)
employed				<i>reference</i>		
unemployed	0.077 (0.064)	-0.005 (0.072)	0.077 (0.064)	0.018 (0.089)	0.077 (0.064)	0.061 (0.144)
not in labor force	0.009 (0.035)	0.050 (0.048)	0.005 (0.035)	0.052 (0.053)	-0.007 (0.035)	-0.226 (0.085)***
household income	-0.075 (0.006)***	-0.036 (0.007)***	-0.074 (0.005)***	-0.033 (0.009)***	-0.070 (0.005)***	0.006 (0.012)
<b>culture undermined</b>	<b>-0.646</b> <b>(0.160)***</b>					
<b>social life worsens</b>			<b>-0.775</b> <b>(0.115)***</b>			
<b>crime problems worsen</b>					<b>-0.056</b> <b>(0.208)</b>	
<i>interethnic contact</i>		-0.068 (0.009)***		-0.050 (0.010)***		-0.031 (0.016)**
atanh $\rho$		0.3765 (0.1083)***		0.4416 (0.0734)***		0.0435 (0.0777)
Obs.		19405		19405		19405
AIC		67,142.48		61,255.76		52,244.65
BIC		67,701.48		61,814.76		52,803.65
Log Likelihood		-33500.24		-30556.88		-26051.32

Notes: The born sample is employed and raw coefficients of the estimations are reported. In maximum likelihood estimation,  $\rho$  is not directly estimated, but  $\text{atanh } \rho = 0.5 \cdot \ln((1 + \rho)/(1 - \rho))$  applies. *Political orientation* is a measure of ideological self-assessment on an 11-point-scale, where 1 is "extreme right" and 11 is "extreme left". Country fixed effects are included, but not reported. Standard errors are in parentheses. \*\*\*significant at 1 percent, \*\*significant at 5 percent, \*significant at 10 percent.

specifies the influence of a covariate on a native’s support of redistribution through a change in his or her attitudes towards immigrants. In turn, the sum of both effects yields the overall effect of any predictor. Thus, such a decomposition enables the assessment of the indirect impact of interethnic contact on natives’ redistribution preference. The estimates show that a rise in interethnic contact increases the probability of a high redistribution preference by 0.8 percent (see Table 6). At first glance, this effect may challenge the previous results of

**Table 6:** Decomposition of the average marginal effects on natives’ preference for redistribution

	Culture undermined			Social Life Worsens		
	<i>direct effect</i>	<i>indirect effect</i>	<i>total effect</i>	<i>direct effect</i>	<i>indirect effect</i>	<i>total effect</i>
age	0.004 (0.002)***	0.001 (0.000)	0.005 (0.002)***	0.004 (0.002)***	0.001 (0.000)	0.005 (0.002)***
female	0.016 (0.008)**	-0.002 (0.002)	0.014 (0.007)*	0.019 (0.008)**	-0.006 (0.002)***	0.014 (0.007)*
married	-0.005 (0.010)	-0.000 (0.002)	-0.006 (0.009)	-0.006 (0.010)	-0.000 (0.002)	-0.006 (0.009)
kids at home	-0.002 (0.010)	-0.004 (0.003)	-0.006 (0.010)	-0.004 (0.010)	-0.002 (0.003)	-0.007 (0.010)
household member	0.005 (0.005)	0.000 (0.001)	0.005 (0.005)	0.006 (0.005)	-0.000 (0.001)	0.005 (0.005)
(sub-)urban	-0.015 (0.009)*	0.006 (0.002)***	-0.009 (0.008)	-0.015 (0.009)*	0.007 (0.002)***	-0.008 (0.008)
political orientation	0.028 (0.003)***	0.006 (0.002)***	0.035 (0.002)***	0.029 (0.002)***	0.005 (0.001)***	0.035 (0.002)***
education years	-0.009 (0.001)***	0.004 (0.001)***	-0.006 (0.001)***	-0.007 (0.001)***	0.002 (0.000)***	-0.005 (0.001)***
public sector				<i>reference</i>		
private sector	-0.011 (0.009)	-0.009 (0.003)***	-0.020 (0.008)**	-0.012 (0.009)	-0.008 (0.002)***	-0.020 (0.008)**
self-employed	-0.054 (0.015)***	0.001 (0.003)	-0.053 (0.015)***	-0.056 (0.015)***	0.003 (0.004)	-0.053 (0.015)***
other	-0.029 (0.021)	0.004 (0.007)	-0.025 (0.021)	-0.026 (0.021)	0.002 (0.006)	-0.023 (0.021)
employed				<i>reference</i>		
unemployed	0.024 (0.020)	0.000 (0.004)	0.024 (0.019)	0.024 (0.019)	-0.001 (0.004)	0.023 (0.019)
not in labor force	0.003 (0.012)	-0.003 (0.003)	0.000 (0.012)	0.002 (0.012)	-0.003 (0.003)	-0.001 (0.011)
household income	-0.024 (0.002)***	0.002 (0.001)***	-0.022 (0.002)***	-0.023 (0.002)***	0.002 (0.000)***	-0.022 (0.002)***
<b>culture undermined</b>	<b>-0.064</b> <b>(0.038)*</b>					
<b>social life worsens</b>				<b>-0.082</b> <b>(0.030)***</b>		
<i>interethnic contact</i>		<i>0.004</i> <i>(0.001)***</i>			<i>0.002</i> <i>(0.001)***</i>	
Obs.		19385			19385	
Prob. (direct)		0.499 (0.009)***			0.589 (0.006)***	
Prob. (indirect)		0.200 (0.006)***			0.110 (0.004)***	
Prob. (total)		0.699 (0.004)***			0.699 (0.004)***	

Notes: The born sample is employed. *Political orientation* is a measure of ideological self-assessment on an 11-point-scale, where 1 is “extreme right” and 11 is “extreme left”. Country fixed effects are included, but not reported. Bootstrapped standard errors with 100 replications are in parentheses. \*\*\*significant at 1 percent, \*\*significant at 5 percent, \*significant at 10 percent.

the empirical literature, but it does not exclude a negative effect of ethnic heterogeneity at the country level. Whereas the association between ethnic diversity and the redistribution

preference implies an unambiguous channel at the country level, the indirect effect of interethnic contact is merely transmitted through a change in a native's attitudes towards immigrants. In turn, the frequency of interethnic contact in everyday life depends on the share of immigrants in the immediate neighborhood. If immigrants are geographically unequally distributed across the country and the immigrant population is concentrated in a few agglomerations, most natives do not experience any interethnic contact. Thus, a country with less ethnic diversity may show, *ceteris paribus*, a higher average redistribution preference among natives than a country with more ethnic diversity if the immigrant population is geographically more unevenly distributed across the latter than the former.

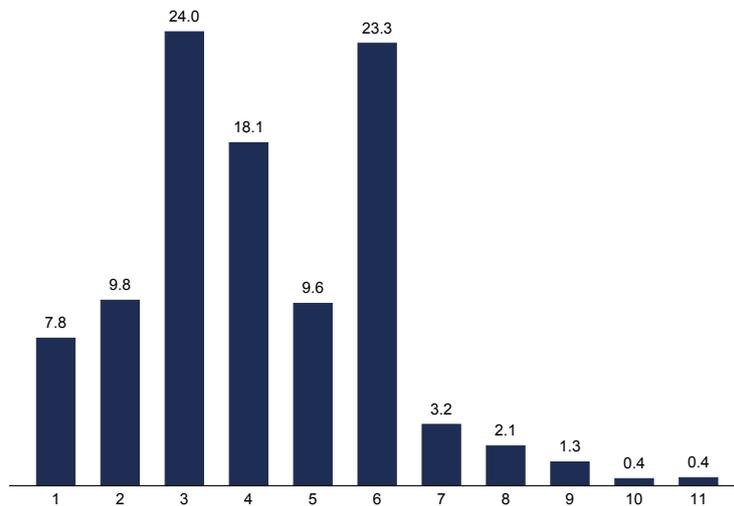
Another special feature of the decomposition is that the separation of the overall effect uncovers whether the direct and indirect effects compensate for one another for some covariates. With regards to the cultural threat measure, another year of education reduces natives' probability of a high redistribution preference by 0.9 percent (direct effect), though at the same time, the probability increases by 0.4 percent due to a lower probability of perceived cultural threat (indirect effect). In all, the total average marginal effect is -0.6. In regard to the household income, the negative direct effect overcompensates for the positive indirect effect as well. In turn, employees or former employees of the private sector show a lower probability, both indirectly and directly, of a high support for redistribution than their counterparts in the public sector. However, the negative association is driven much more by the indirect effect, i.e. through the change of perceived outgroup threats. In contrast, both effects of political orientation operate in the same direction and strengthen each other. Examining perceived cultural threat (threat to social life), a stronger leftist political conviction along the ideological scale directly increases a native's preference for redistribution by 2.8 (2.9) percent and additionally by 0.6 (0.5) percent through its negative impact on a native's perceived cultural threat (threat to social life). Ultimately, the average marginal effects of both outgroup threat measures on a native's support of redistribution are significant. Natives' concern about the national cultural landscape reduces their support by 6.4 percent and natives' anxiety of a deterioration of social life due to immigrants lowers their support by 8.2 percent. Overall, almost 70 percent of the surveyed natives show a high preference for redistribution. According to the decompositions, 71.5 to 84.1 percent of this proportion can be explained by direct effects, whereby 15.9 to 28.5 percent results from the indirect effect of the perceived outgroup threat channel.

## **6.2 Interethnic Contact and Bad Experience with Interethnic Contact**

Additionally, the investigated association so far implies that the experience of interethnic contact in everyday life is mainly positive. However, if a native has a lot of interethnic contact in his or her neighborhood and the majority of this contact is assessed as a bad experience, he or she is more likely to take negative attitudes towards immigrants. The European Social Survey 2014/2015 offers a possibility to examine the association between the frequency of interethnic contact and the natives' evaluation of the quality of contact. For

this purpose, the following question is used as a measure of bad contact experience: “Thinking about this contact, in general how bad or good is it?”. Respondents can choose between eleven ordered categories, where the lowest category represents an extremely good experience and the highest category expresses an extremely bad experience. Only few natives have bad experiences in everyday interethnic contact (see Figure 3). The top five categories total just

**Figure 3:** Overall distribution of bad experiences with interethnic contact



Notes: Responses of the final born sample, weighted with design and population weights. 11-point-scale variables are coded from (1) “extremely good experience” to (11) “extremely bad experience”. Therefore, decreasing values represent better experience with interethnic contact.

7.4 percent. Thus, most natives who have interethnic contact no less than once a month assess their contact as predominantly positive. Since bad experience with interethnic contact is the dependent variable, it is recoded to a binary variable for two reasons. First, employing the original dependent variable calls for an ordered probit estimation which is based on the proportional odds assumption and can be compared to a series of binary probit regressions. However, estimating binary regressions where less than 4 percent of the observations have the value one, such as the top five categories, is not recommended (Hamilton, 1992). Second, the focus of the analysis is to pool the respondents who have very positive experiences with interethnic contact. Thus, the quality of contact is recoded as a binary variable which takes the value zero if the original values are between 1 and 3, and otherwise the value 1. Therefore, using the basic set of covariates and the frequency of interethnic contact as predictors, a binary probit estimation is applied. The average marginal effects show that more interethnic contact significantly lowers the probability of bad experiences by 3.12 percent.<sup>12</sup> Thus, more interethnic contact or more ethnic heterogeneity leads, on average, to more positive experiences with interethnic contact. Hence, the predictions of the intergroup contact theory are valid.

<sup>12</sup>Average marginal effects of all covariates are in Table 12 in the Appendix. Furthermore, instrumenting interethnic contact with the log of the immigrant population share in order to control for a bias due to selective out-migration or reverse causality (see next subsection) yields similar results.

### 6.3 Selective Out-Migration

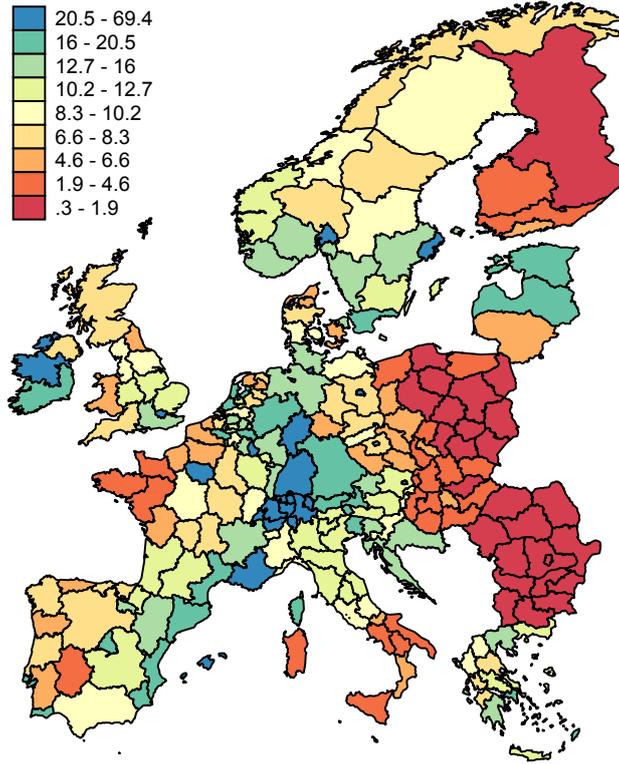
Previous results show that interethnic contact is positively related to all attitudinal measures of both dimensions. Although natives' social distance from immigrants does not affect their preference for redistribution, two out of the three perceived outgroup threat measures have a significant impact. However, in order to detect the effect of interethnic contact on anti-immigrant attitudes of natives who are randomly assigned across regions with different immigrant population shares, the effect of interethnic contact must be measured before natives have sorted themselves into an area according to their attitudes towards immigrants. Since immigrants' choice of residence is not random and mostly based on the location decision of previous generations of immigrants from the same country and on the labor market condition in a region, the estimated effects of interethnic contact could be biased by selective out-migration of natives (Card and DiNardo, 2000). The main issue is that the effect of interethnic contact on outgroup threats might be biased by natives' self-selection. Natives who have negative outgroup attitudes actively avoid interaction and contact with immigrants during everyday life and may leave their neighborhoods due to an inflow of immigrants in order to escape interethnic contact. In contrast, natives who have positive outgroup attitudes actively seek contact with immigrants and may stay in their neighborhood. In conclusion, there is reverse causality if the frequency of interethnic contact is determined by natives' attitudes towards immigrants.<sup>13</sup> The endogeneity problem can be addressed by using values of interethnic contact at higher levels of spatial aggregation as suitable instruments (Dustmann et al., 2011). Since interethnic contact in the neighborhood depends on the presence of immigrants, the actual ethnic heterogeneity at a higher level of spatial aggregation is a valid instrument. For this purpose, the share of immigrants at the NUTS level 2, which is calculated based on the 2011 Population and Housing Census, is used (European Commission, 2016).<sup>14</sup> The immigrant population shares vary widely across European countries as well as across NUTS level 2 regions within countries (see Figure 4). The region with the highest share is Brussels (70 percent) in Belgium and the region with the lowest share is Sud-Vest Oltenia (0.3 percent) in Romania. Additionally, the United Kingdom shows the largest variation of the immigrant population share across the NUTS level 2 regions, whereas Croatia has the smallest variation. Furthermore, the countries of the former Eastern bloc have relatively low immigrant ratios compared to the Western European countries. The two Baltic states, Latvia and Estonia, are an exception. This is due to the high proportion of ethnic Russians who were settled there in the Soviet era. Aside from that, the immigrant population share is generally higher in urban agglomerations than in rural regions of the European countries. Overall, the variation of the immigrant population shares across NUTS level 2 regions is sufficient to use them as an instrument for natives' interethnic contact in everyday life.

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<sup>13</sup>In most empirical studies, reverse causality is less pronounced (Powers and Ellison, 1995; Pettigrew and Tropp, 2006).

<sup>14</sup>For the estimations, the log of immigrant population share is used to reduce the effect of outlier values. The results are similar when the immigrant population share is used instead.

**Figure 4:** Immigrant population shares across European NUTS level 1/2 regions



*Notes:* For Germany and the United Kingdom, the NUTS level 1 regions are mapped. For all other countries, the NUTS level 2 regions are presented.

Here, the key idea is that natives who have negative outgroup attitudes will leave their neighborhood due to an increase in the number of immigrants, though they are more likely to migrate to areas that are relatively close in distance and have less immigrants, e.g. from cities to rural areas nearby, than to regions that are far away. Another reason for a restricted mobility out of a given geographical region could be the desire to remain in proximity to family, friends, and workplace. [Dustmann and Preston \(2001\)](#) show that such instruments reduce the bias induced by natives' self-sorting. Since the measure of interethnic contact is ordinal, the instrumenting equation is added as a latent variable model to the bivariate recursive probit model:

$$y_1^* = \mathbf{x}'_1 \beta_1 + \gamma \cdot y_2 + \epsilon_1, \quad y_1 = m \quad \text{if} \quad \kappa_{m-1} \leq y_1^* < \kappa_m \quad \text{for} \quad m = 1, \dots, 4, \quad (15)$$

$$y_2^* = \mathbf{x}'_2 \beta_2 + \delta \cdot \psi + \epsilon_2, \quad y_2 = 1 \quad \text{if} \quad y_2^* > 0, 0 \quad \text{otherwise}, \quad (16)$$

$$\psi^* = \mathbf{x}'_3 \beta_3 + \theta \cdot \text{impop} + \epsilon_3, \quad \psi = r \quad \text{if} \quad \kappa_{r-1} \leq \psi^* < \kappa_r \quad \text{for} \quad r = 1, \dots, 7, \quad (17)$$

where the errors  $\epsilon_1, \epsilon_2$  and  $\epsilon_3$  are jointly normally distributed and may correlate, which is mirrored in the significance of the coefficients of correlation  $\rho_{12}$ ,  $\rho_{13}$  and  $\rho_{23}$ . Furthermore,  $y_1^*$  and  $y_2^*$  are the latent endogenous variables of natives' preference for redistribution and perceived outgroup threats, respectively, whereas  $\psi^*$  is the latent endogenous variable of

natives' interethnic contact. As in the bivariate recursive case, the dependent variable  $\psi^*$  can be carried as observed  $\psi$  into the equation of  $y_2^*$  with no special attention to its endogeneity. Moreover, the right-hand side of the third equation contains the full set of basic covariates, whereby  $x_1 = x_2 = x_3$  holds, and the immigrant population share at the NUTS level 2 (*impop*). In order to receive consistent and efficient estimates, full information maximum likelihood is applied. Since the full observed recursive probit model contains the simultaneous estimation of three equations, a modification of the Geweke-Hajivassiliou-Keane algorithm is implemented to compute higher-dimensional cumulative normal distributions (Geweke, 1989; Hajivassiliou and McFadden, 1998; Keane, 1994).<sup>15</sup> The obtained results are similar in magnitude and significance to the estimated parameters of the pure bivariate recursive probit estimations (see Table 7).

**Table 7:** Bivariate probit estimations of natives' preference for redistribution and outgroup threats controlling for selective out-migration

	Preference for Redistribution		Outgroup Threat		Interethnic Contact	
<i>outgroup threat: culture undermined</i>						
<b>culture undermined</b>	-0.726	(0.163)***				
interethnic contact			-0.078	(0.034)**		
immigrant population share					0.471	(0.030)***
atanh $\hat{\rho}_{12}$			0.431	(0.116)***		
atanh $\hat{\rho}_{23}$			0.017	(0.064)		
atanh $\hat{\rho}_{13}$			-0.018	(0.014)		
<i>outgroup threat: social life worsens</i>						
<b>social life worsens</b>	-0.774	(0.117)***				
interethnic contact			-0.083	(0.035)**		
immigrant population share					0.474	(0.030)***
atanh $\hat{\rho}_{12}$			0.440	(0.075)***		
atanh $\hat{\rho}_{23}$			0.063	(0.679)		
atanh $\hat{\rho}_{13}$			-0.005	(0.013)		
<i>outgroup threat: crime problems worsen</i>						
<b>crime problems worsen</b>	-0.081	(0.212)				
interethnic contact			0.029	(0.054)		
immigrant population share					0.472	(0.030)***
atanh $\hat{\rho}_{12}$			-0.032	(0.079)		
atanh $\hat{\rho}_{23}$			-0.119	(0.102)		
atanh $\hat{\rho}_{13}$			0.008	(0.013)		

Notes: The Born sample is employed and raw coefficients of the estimations are reported. In maximum likelihood estimation,  $\rho$  is not directly estimated, but  $\text{atanh } \rho = 0.5 \cdot \ln((1 + \rho)/(1 - \rho))$  applies. Country fixed effects and basic set of covariates are included at every stage of estimation, but not reported. Standard errors are in parentheses. \*\*\*significant at 1 percent, \*\*significant at 5 percent, \*significant at 10 percent.

This can be traced to the fact that the correlation coefficients ( $\rho_{23}$ ) are insignificant for all three outgroup threat measures, thus ruling out the possibility of endogeneity due to selective out-migration. Since there is no significant correlation ( $\rho_{13}$ ) between the instrumenting equation and the first outcome equation, the decomposition of the marginal effects can be

<sup>15</sup>See Roodman (2011) for a detailed explanation about the advantages and disadvantages of the modified Geweke-Hajivassiliou-Keane algorithm.

done independently of the instrumenting equation and differs only slightly in the magnitude of the direct and indirect effects from the results thus far.

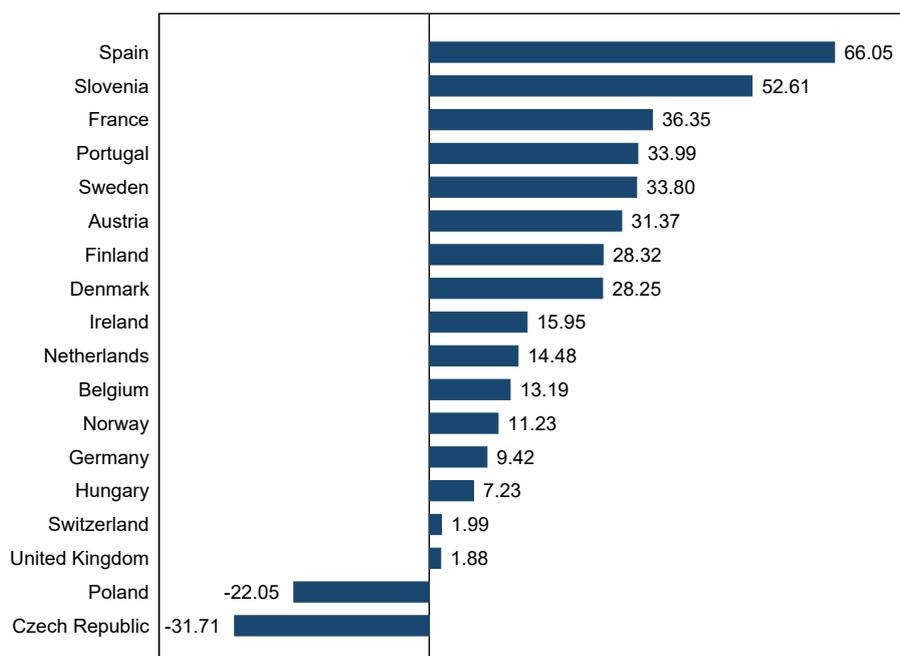
#### **6.4 Ethnic Income Gap and Natives' Preference for Redistribution**

Based on the results thus far, it has been shown that merely natives' perception of symbolic threats presented by immigrants have a direct negative influence on their support of redistribution. This could be attributed to the predictions of the conflict theory if a more intense competition for intangible goods, such as culture or social life, between the majority group and the ethnic minorities increases natives' solidarity towards their same-ethnic peers, but diminishes their solidarity towards outgroup members. In contrast, the constrict theory predicts that natives who have stronger anti-immigrant attitudes lower their solidarity towards both immigrants and same-ethnic fellows at the same time. One way to check the validity of this hypothesis is to investigate whether the effect of outgroup threats on natives' redistribution preference depends on the ethnic income gap. The ethnic income gap measures the difference in the average income of natives and immigrants at the country level. Thus, a positive ethnic income gap indicates that immigrants earn less than natives, whereas a negative ethnic income gap expresses that immigrants earn even more than natives. Hence, a decreased ethnic income gap represents a relative rise in immigrants' average standard of living in comparison to natives. According to the conflict theory, natives who take a negative attitude towards immigrants and live in countries with a greater ethnic income gap should lower their redistribution preference more than natives with similar circumstances who live in countries with a lower or even negative ethnic income gap. If the ethnic income gap increases, natives anticipate that immigrants benefit disproportionately from the governmental redistribution, since an immigrant's probability to be a net social benefit recipient increases. Among the European countries, there is some variation in the ethnic income gaps (see Figure 5).<sup>16</sup> Spain shows the greatest ethnic income gap. Immigrants earn, on average, 66 percent less than an average native worker there. In turn, the Czech Republic and Poland are at the lower end of the ranking. There, immigrants' average income exceeds natives' average income by 22 to 32 percent. Thus, less governmental redistribution would disproportionately benefit the immigrants' net income in these countries. Since country fixed effects already capture both observable and unobservable country effects in the recursive probit models, additional country-level variables cannot be considered in the estimations. However, country-specific variables can be integrated into interaction terms with individual variables without taking the main effect into account. Thus, this empirical strategy fulfills the purpose of the analysis, since the major interest lies in determining whether the effect of natives' outgroup threat on their redistribution preference changes dependent on the extent of the national ethnic income gap. Therefore, an interaction term between the perceived outgroup threat and the

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<sup>16</sup>Ethnic income gaps are calculated using the average income of natives and immigrants in purchasing power parity to control for different cost of living and price levels across European countries. For the estimations, the log of the ratio between natives' and immigrants' average income is used to reduce the effect of outlier values. The results are similar when the ethnic income gap is used instead.

**Figure 5: Ethnic income gap across European countries**



Notes: Natives' and immigrants' average incomes are in purchasing power parity. The ethnic income gap is measured in percentage of immigrants' average income. For Switzerland and Hungary, data refer to 2013 and 2011, respectively. For all other countries, ethnic income gap is measured in 2014.

ethnic income gap is added to the first outcome equation. Since there is no indication of selective out-migration, a bivariate recursive probit model is used without the instrumenting equation.<sup>17</sup>

**Table 8: Bivariate probit estimations of natives' preference for redistribution and outgroup threats taking the ethnic income gap into account**

	Preference for Redistribution		Outgroup Threat	
<i>outgroup threat: culture undermined</i>				
culture undermined	-0.557	(0.170)***		
<b>culture undermined x ethnic income gap</b>	<b>-0.168</b>	<b>(0.146)</b>		
interethnic contact			-0.070	(0.009)***
<i>ougroup threat: social life worsens</i>				
social life worsens	-0.658	(0.126)***		
<b>social life worsens x ethnic income gap</b>	<b>-0.509</b>	<b>(0.189)***</b>		
interethnic contact			-0.052	(0.010)***

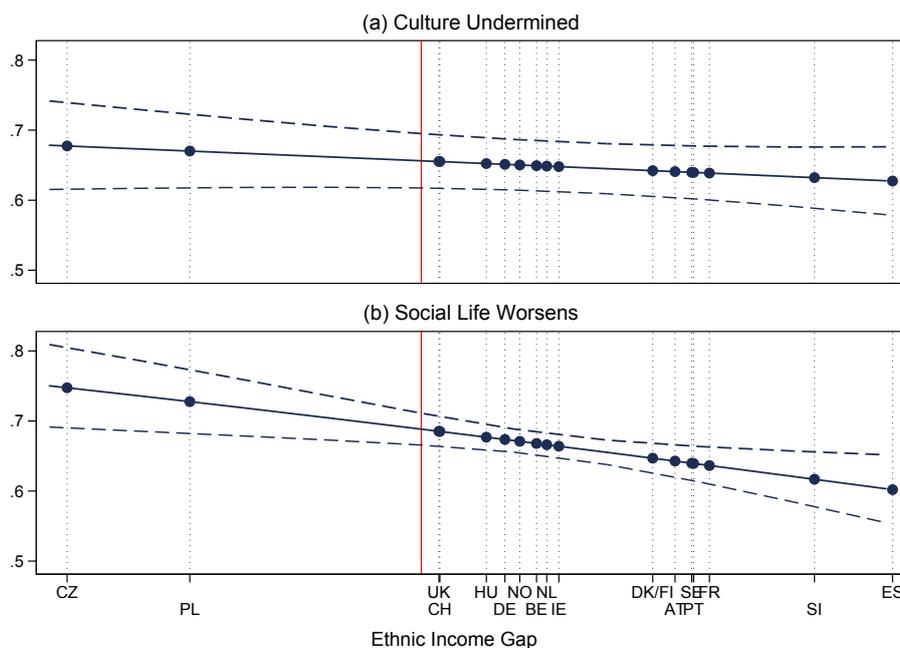
Notes: The born sample is employed and the raw coefficients of the estimations are reported. Country fixed effects and basic set of covariates are included at every stage of the estimations, but not reported. Standard errors are in parentheses. \*\*\*significant at 1 percent, \*\*significant at 5 percent, \*significant at 10 percent.

Taking a closer look at the raw coefficient estimates, the main terms of both outgroup threat measures, cultural threat and social life threat, are negatively significant and in their magnitude similar to previous results (see Table 8). Using the threat to social life in the

<sup>17</sup>Repeating the estimations using the full recursive probit model maintains similar results.

estimation, the interaction term between natives' outgroup threat and the ethnic income gap has a significantly negative impact on natives' preference for redistribution. Thus, a rise in the ethnic income gap strengthens the negative effect of natives' perceived threat to social life on their support of redistribution. Once a native perceives immigrants as a threat to social life, his or her preference for redistribution generally diminishes through the main effect of the perceived outgroup threat and decreases more strongly if the ethnic income gap rises. Thus, the effect of negative attitudes towards immigrants on natives' preference for redistribution is higher in countries that have a wide ethnic income gap than in countries that have a narrow ethnic income gap. Whereas a higher ethnic income gap entails that immigrants would benefit disproportionately from more governmental redistribution, the opposite is true for a negative ethnic income gap. Thus, a native's probability of a high preference for redistribution is, on average, 60.2 percent in Spain if he or she assesses immigrants as a threat to social life (see Figure 6).<sup>18</sup> In contrast, a similar native who lives

**Figure 6:** Probability of a high preference for redistribution as a function of the ethnic income gap



*Notes:* The red line detects the zero value for the ethnic income gap, e.g. natives and immigrants earn, on average, the same income. Dashed lines show the 95 percent confidence boundaries. For Switzerland and Hungary, data refer to 2013 and 2011, respectively. For all other countries, ethnic income gap is from 2014. ES = Spain, SI = Slovenia, FR = France, PT = Portugal, SE = Sweden, AT = Austria, DK = Denmark, FI = Finland, IE = Ireland, NL = Netherlands, BE = Belgium, NO = Norway, DE = Germany, HU = Hungary, CH = Switzerland, UK = United Kingdom, PL = Poland, CZ = Czech Republic.

in Poland shows, on average, a probability of around 72.8 percent, since immigrants earn more than Poles, on average. However, the effect of perceived cultural threat on natives' support of redistribution subject to the ethnic income gap varies only slightly across the

<sup>18</sup>Since the ethnic income gap is solely included within an interaction term and outgroup threat measures are binary, the latter are treated as continuous variables for the calculation of the probabilities. However, this procedure merely results in a small bias of the estimates.

European countries. The values are between 62.7 and 67.7 percent, which points out that there is no significant difference in the probabilities of natives who perceive immigrants as a cultural threat depending on varying ethnic income gaps. In general, the results provide an illustrative test to what extent the conflict theory or the constrict theory occurs in reality. According to the constrict theory, the effects of the outgroup threat measures on natives' redistribution preference should not differ across various values of the ethnic income gap, since stronger outgroup threats should be associated with diminished solidarity towards both immigrants and same-ethnic peers. This is true for natives' perceived cultural threat, but not for natives' perceived threat to social life. Thus, the results do not provide clear evidence for the constrict theory, but rather evidence - although limited to one outgroup threat measure - for the conflict theory. Therefore, natives' negative attitudes towards immigrants may have opposing effects on the solidarity towards their same-ethnic peers and outgroup members, such as immigrants.

## 7 Conclusion

Immigration and ethnic heterogeneity are important in shaping national economic and social policies. They change the social environment of a country and may challenge essential societal values, such as trust and solidarity. In the literature, there are two notable theories which predict diametrically opposed effects of ethnic heterogeneity on societal values. Whereas the conflict theory predicts that ethnic heterogeneity erodes the basis for general solidarity and encourages natives to focus more strongly on their own ethnic group (ethnocentrism), the intergroup contact theory expects that ethnic heterogeneity reduce information gaps, prejudices, and stereotypes and also generate a higher solidarity towards foreign-born people. The empirical results confirm this hypothesis and show that more interethnic contact in everyday life is positively related to a native's attitudes towards immigrants. Thus, prejudices and stereotypes can be reduced through more social togetherness and the personal experience of ethnic heterogeneity. This applies to both natives' social distance from immigrants and natives' perceived threat to the norms and values of the majority society due to immigrants. In turn, an open-minded and tolerant attitude promotes natives' solidarity. Since solidarity towards fellow residents is an important driver of the individual preference for redistribution, there is a causal connection between interethnic contact via natives' attitudes towards immigrants and natives' preference for redistribution. In order to implement this connection, bivariate recursive probit estimations are applied. The results show that the social distance measures are not reflected in natives' demand for redistribution; however, natives' perceived threats to societal values due to immigrants have a significantly negative impact. If immigrants are perceived as a threat to the national culture and social life, a native's probability of a high preference for redistribution decreases by 6.4 percent and 8.2 percent, respectively. In contrast, if ethnic heterogeneity rises, this probability increases by 0.8 percent. These findings are maintained even after controlling for the possibility of

natives' selective out-migration. Whether this reduction can be attributed to a selective decline in natives' solidarity towards immigrants or a decline in natives' solidarity towards all residents of the country remains open at first. Hence, adding the ethnic income gap to the estimations enables the testing of the constrict theory, which predicts that natives lower their solidarity towards both immigrants and same-ethnic peers once they take negative attitudes towards immigrants. Thus, the magnitude of the effect of perceived outgroup threats should not depend on the ethnic income gap. In contrast, the derived Meltzer and Richard (1981) model predicts that the negative effect of perceived outgroup threats should be stronger if immigrants benefit disproportionately from governmental redistribution. The results show that the predictions of the constrict theory are not valid. Natives who take negative attitudes towards immigrants show, ceteris paribus, a lower preference for redistribution if immigrants earn much less than natives in their respective country.

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# Appendix

**Table 9:** Summary statistics of basic covariates

	average	standard deviation
age	52.421	16.700
female	0.508	0.500
married	0.551	0.497
kids at home	0.367	0.482
household member	2.487	1.292
(sub-)urban	0.294	0.455
political orientation	5.939	2.182
education years	13.116	4.041
public sector	0.330	0.470
private sector	0.555	0.497
self-employed	0.092	0.289
other	0.022	0.148
employed	0.570	0.495
unemployed	0.051	0.221
not in labor force	0.378	0.485
household income	5.533	2.752
interethnic contact	4.515	2.100
Austria	0.049	0.216
Belgium	0.054	0.226
Czech Republic	0.055	0.228
Denmark	0.049	0.217
Finland	0.076	0.265
France	0.063	0.244
Germany	0.099	0.298
Hungary	0.048	0.214
Ireland	0.064	0.245
Netherlands	0.066	0.248
Norway	0.048	0.214
Poland	0.044	0.205
Portugal	0.038	0.191
Slovenia	0.035	0.184
Spain	0.045	0.207
Sweden	0.058	0.234
Switzerland	0.038	0.191
United Kingdom	0.071	0.257

Source: ESS 2014/2015. Notes: Responses of the final born sample, unweighted.

**Table 10:** Survey questions about attitudes towards immigrants

Attitudinal Dimensions	Variable	Survey Question	Range of Responses
<i>Individual Concern (Social Distance)</i>	Mind Marriage with Relative	Would you mind or not mind if someone like this (different race or ethnic group) married a close relative of yours ?	1: not mind at all 11: mind a lot
	Mind as Boss	Would you mind or not mind if someone like this (different race or ethnic group) was appointed as your boss ?	1: not mind at all 11: mind a lot
	Immigrant Friends	Do you have any close friends of a different race or ethnic group ?	1: no, none at all 2: yes, a few ; 3: yes, several
	Culture Undermined	Is cultural life generally undermined or enriched by people coming to live here from other countries ?	1: cultural life enriched 11: cultural life undermined
<i>Societal Concern (Outgroup Threat)</i>	Social Life Worsens	Is this country made a worse or better place to live by people coming to live here from other countries ?	1: better place to live 11: worse place to live
	Crime Problems Worsen	Are crime problems made worse or better by people coming to live here from other countries ?	1: crime problems made better 11: crime problems made worse

Notes: Questions about attitudes towards immigrants are based on original scaling of the European Social Survey, but ordering is partially reversed.

**Table 11: Bivariate recursive probit estimations based on ordinal treatment of interethnic contact**

	Social Distance Measures					Outgroup Threat Measures						
	preference for redistribution	mind marriage with relative	preference for redistribution	mind immigrant as boss	preference for redistribution	immigrant friends	preference for redistribution	culture undermined	preference for redistribution	social life worsens	preference for redistribution	crime problems worsen
mind marriage with relative	-0.177 (0.206)											
mind immigrant as boss			-0.109 (0.149)									
immigrant friends				0.063 (0.102)								
culture undermined							-0.686 (0.149)***					
social life worsens												
crime problems worsen												
no contact at all												
contact less than once a month						reference						
contact once a month												
contact several times a month												
contact once a week												
contact several times a week												
everyday contact												
atanh $\hat{\rho}$	0.098 (0.128)	0.075 (0.091)	-0.022 (0.065)	0.405 (0.103)***	0.447 (0.074)***	-0.021 (0.081)						
Obs.	18915	18915	18915	19405	19405	19405						
AIC	71,835.17	71,788.00	70,416.08	67,128.44	61,261.89	52,245.62						
BIC	72,415.90	72,368.73	70,996.81	67,726.81	61,860.26	52,843.99						
Log Likelihood	-35843.59	-35820.00	-35134.04	-33488.22	-30554.95	-26046.81						

Notes: The born sample is employed and raw coefficients of the estimations are reported. In maximum likelihood estimation,  $\rho$  is not directly estimated, but  $\text{atanh } \rho = 0.5 \cdot \ln((1 + \rho)/(1 - \rho))$  applies. Country fixed effects and basic set of covariates are included at every stage of estimations, but not reported. Standard errors are in parentheses. \*\*\*significant at 1 percent, \*\*significant at 5 percent, \*significant at 10 percent.

**Table 12:** Binary probit estimation of bad experience with interethnic contact on the frequency of interethnic contact

age	-0.001	(0.000)**
female	-0.006	(0.011)
married	-0.016	(0.014)
kids at home	0.023	(0.017)
household member	-0.007	(0.008)
(sub-)urban	0.018	(0.012)
political orientation	-0.017	(0.003)***
education years	-0.009	(0.002)***
public sector	<i>reference</i>	
private sector	0.019	(0.013)
self-employed	-0.023	(0.021)
other	0.084	(0.035)***
employed	<i>reference</i>	
unemployed	0.009	(0.027)
not in labor force	0.017	(0.016)
household income	-0.008	(0.003)***
<b>interethnic contact</b>	<b>-0.031</b>	<b>(0.003)***</b>

*Notes:* The born sample is employed and the average marginal effects of the estimation are reported. *Political orientation* is a measure of ideological self-assessment on an 11-point-scale, where 1 is “extreme right” and 11 is “extreme left”. Country fixed effects are included, but not reported. Standard errors are in parentheses. \*\*\*significant at 1 percent, \*\*significant at 5 percent, \*significant at 10 percent.