

Ethnic Diversity and Social Trust

Ethnic Diversity, Economic and Cultural Contexts, and Social Trust: Cross-Sectional and Longitudinal Evidence from European Regions, 2002–2010

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A growing literature investigates the relationship between ethnic diversity and social trust. Comparative research in the European context employing country-level indicators has predominantly produced inconclusive results. This study examines the relationship between immigration-related diversity and social trust at the sub-national level of European regions. The regional perspective allows the capture of relevant variations in ethnic context while it still generates comparable results for a broader European context. Using survey data from the European Social Survey 2002–2010 merged with immigration figures from the European Labour Force Survey, this study builds upon previous research by testing the relationships between various diversity indicators and social trust in cross-sectional and longitudinal perspective. In addition, it investigates the role of economic and cultural contexts as moderators. The results show that across European regions, different aspects of immigration-related diversity are negatively related to social trust. In longitudinal perspective, an increase in immigration is related to a decrease in social trust. Tests of the conditional hypotheses reveal that regional economic growth and ethnic polarization as a cultural context moderate the relationship. Immigration growth is particularly strongly associated with a decrease in social trust in contexts of economic decline and high ethnic polarization. However, there is some evidence that in contexts of low polarization the relationship is actually positive.

Introduction

For the past decades, increasing immigration has remarkably changed the ethnic composition of Western societies (Castles and Miller 2003). Following this development, a growing body of research investigates the social consequences of ethnic diversity. A major focal point of this debate is on the question as to whether ethnic diversity is negatively related to social trust (e.g., Alesina and La

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Ferrara 2002; Gijsberts, van der Meer, and Dagevos 2012; Hooghe et al. 2009; Putnam 2007; Stolle, Soroka, and Johnston 2008)—that is, on the generalized expectation that “others will not deliberately or knowingly do us harm, if they can avoid it, and will look after our interests, if this is possible” (Delhey and Newton 2005, 311). While studies in the North American context find a negative relationship between levels of local ethnic diversity and trust, comparative research in the European context has produced inconclusive results. This ambiguity might reflect real differences between contexts, but it might also be a result of differences in research designs, especially with regard to case selection and the measurement of ethnic diversity.

This study examines the relationship between immigration-related ethnic diversity and social trust in comparative European perspective, focusing on the sub-national level of European regions. Previous pan-European studies have often relied on country-level indicators, which is a quite far-removed perspective. Using regions instead will allow the modeling of important variations in ethnic context, while still generating comparable results for a broader European context. Doing so, this study covers several sub-aspects of immigration-related ethnic diversity and applies an analytical framework that enables the examining of both cross-sectional and longitudinal relationships. It has been argued that, in particular, recent or undergoing increases in ethnic diversity may pose a challenge to social trust (Hooghe 2007); however, only a few authors actually investigate this claim (but see Dinesen and Sønderkov 2012; Kesler and Bloemraad 2010). This study addresses this gap by examining the longitudinal impact of immigration-related diversity, covering the period of 2002–2010.

Other than research design, this study builds on a growing body of research investigating conditions for which the relationship between ethnic diversity and trust may differ (e.g., Kesler and Bloemraad 2010; Reeskens and Wright 2013; Stolle, Soroka, and Johnston 2008). More specifically, I argue that the relationship is contingent upon economic and cultural conditions. Economic and cultural factors have been considered mainly as competitive explanations for different levels of trust (Bjørnskov 2008; Letki 2008; Park and Subramanian 2012), but to a far lesser extent as interactive mechanisms. In this study, I explore whether and to what extent such conditions influence the way people respond to ethnic diversity in terms of social trust.

The results of the empirical analyses indicate that across European regions, different aspects of ethnic diversity are negatively related to social trust. In longitudinal perspective, an increase in immigration is associated with a decrease in trust. Tests of the conditional hypotheses reveal that regional economic growth mitigates the negative relationship between immigration and social trust, while unemployment rates and economic inequality are of less importance. Moreover, ethnic group polarization as a cultural condition moderates the relationship. In contexts of high polarization, increasing immigration is associated with lower social trust, while an increase in the non-Western population in contexts of low polarization is actually positively related.

Previous Research

The scholarly interest in studying the relationship between ethnic diversity and social trust has increased remarkably since empirical studies showed that people in the United States tend to express less trust in their fellow citizens if they live in ethnically diverse neighborhoods (Putnam 2007; Stolle, Soroka, and Johnston 2008), metropolitan areas (Alesina and La Ferrara 2002), or U.S. states (Dincer 2011). As an underlying mechanism, scholars refer to the so-called homophily principle (McPherson, Smith-Lovin, and Cook 2001), according to which people avoid heterogeneity and prefer to interact with and rely on others who are similar to them. As a consequence, people living in heterogeneous settings tend to “hunker down” in terms of social connectivity, civic engagement, and social trust (Putnam 2007).¹

Subsequent to these findings, a number of studies examine whether the negative relationship holds also in contexts other than the United States. For British neighborhoods, scholars find a negative relationship between ethnic diversity and trust in neighbors, but only limited evidence for a negative effect on generalized social trust (Laurence 2011; Letki 2008; Sturgis et al. 2011). Gundelach and Traunmüller (2013) observe a trust-eroding effect of ethnic fractionalization and proportions of Turks or Muslims across German regions. Moreover, research on Australian (Leigh 2006), Canadian (Stolle, Soroka, and Johnston 2008), and Danish (Dinesen and Sønderskov 2012) neighborhoods sustains the finding that local ethnic diversity is negatively associated with social trust. In contrast, the ethnic composition of neighborhoods in the Netherlands is not systematically related to social trust (Gijsberts, van der Meer, and Dagevos 2012; Tolsma, van der Meer, and Gesthuizen 2009).

Beside these within-country studies scrutinizing the relationship between local or regional indicators of ethnic diversity and trust, several cross-national studies examine the role of country-level diversity (Bjørnskov 2008; Delhey and Newton 2005; Gesthuizen, van der Meer, and Scheepers 2009; Hooghe et al. 2009; Lolle and Torpe 2011). In most cases, comparative studies of European countries find no significant relationship between nationwide diversity and social trust (Gesthuizen, van der Meer, and Scheepers 2009; Hooghe et al. 2009; Lolle and Torpe 2011). One possible explanation for the inconclusive results is that immigration-related ethnic diversity is simply less systematically related to social trust in the European context. On the other hand, the country level might be too far removed to capture a relationship existent at lower levels of aggregation (Dinesen and Sønderskov 2013). This study addresses this ambiguity and uses regions as an analytical level, which allows the consideration of important sub-national variations in ethnic diversity while including at the same time a broad range of European countries.

Apart from the analytical level, previous scholarship suggests that different conceptualizations of ethnic diversity can lead to different outcomes (Dincer 2011; Laurence 2011; Montalvo and Reynal-Querol 2005). In the European context, ethnic diversity is shaped mainly by post–World War II immigration. This is also reflected in the research design of most studies using indicators based

on foreign-born (or first-generation) immigrants. However, due to limitations concerning detailed comparative data on immigration, these studies do not explicitly account for the role ethnic diversity related to immigrant descendants might play. In the European context, proportions of first- and second-generation immigrants are considerably interrelated.² Nonetheless, remaining variations may exhibit important explanatory power for societal outcomes, including differences in social trust. Due to data limitations, this study cannot improve on this practice, meaning that ethnic diversity will essentially refer to characteristics of the foreign-born population. On the other hand, it builds upon previous research by incorporating a longitudinal perspective and several sub-aspects of immigration-related diversity. In particular, I consider the skill level of immigrants, their origin, as well as different group constellations.

Besides the average association between ethnic diversity and trust, several studies investigate whether the relationship is moderated by third variables, such as income inequality (Kesler and Bloemraad 2010), national identity (Reeskens and Wright 2013), or education (Tolsma, van der Meer, and Gesthuizen 2009). Intergroup contact theory (Pettigrew and Tropp 2011) suggests that contact across group boundaries reduces negative outgroup attitudes and even fosters outgroup and generalized social trust (Stolle, Soroka, and Johnston 2008; Uslaner 2012). Actual intergroup contact or contexts that facilitates contact opportunities (e.g., a low degree of residential segregation) serve in these studies as moderators. The research presented in this study adds additional insight to the debate by developing and testing arguments about the conditioning role of economic and cultural contexts.

European Regions as Contextual Units

In this study, sub-national regions are used as core contextual units. The respondent-level data consist of repeated cross-sectional survey waves from the European Social Survey (ESS). The ESS data are of high quality (Koch et al. 2009), cover most European countries, and allow for assigning respondents to their region of living. Within this comparative framework, regions are the lowest contextual cluster into which respondents can be grouped. Similarly, the data on immigration-related ethnic diversity supplementing the repeated cross-sections are available only at the regional level. Compared to country-level indicators, this is considered a step forward in terms of capturing variance in ethnic context that is relevant to citizens' perceptions. However, it is important to note that regional indicators are not suited to directly measure an individual exposure to ethnic diversity.

For the most part, research on ethnic diversity effects emphasizes the role of local contexts or neighborhoods as an experiential source (Blalock 1967; Dinesen and Sønderskov 2013; Sampson, Morenoff, and Gannon-Rowley 2002). Also with regard to social trust, an individual exposure to people of a different ethnic background in one's immediate living environment is considered a crucial mechanism driving the relationship (Dinesen and Sønderskov 2013). In this way, a regional perspective would still dismiss important variation from

local environments, which could very well result in overlooking an existing relationship.

However, there are two alternative options by which the regional ethnic context is related to individual social trust. First, people gain information about ethnic diversity also from contexts they spend time in other than their immediate residential environment. Some of the places are related to daily activities, such as commuting, being at work or school, spending time at organizational or club activities, as well as visiting family or friends. These places are located not necessarily in the same neighborhood, but most likely within the same region. From this perspective, the regional ethnic context reflects a variety of experiential environments that iteratively add to a person's perception of ethnic diversity. Second, it can be argued that people who live in regions with high ethnic diversity are on average more likely to also live in a neighborhood that is characterized by high diversity (compared to those who live in regions of lower diversity). All other things being equal, a regional indicator can thus be interpreted as an approximate measure of immigration-related diversity that is sometimes higher or lower than what is actually perceived by individuals, but correct on average (King, Keohane, and Verba 1994, 165).³

The relationship between regional context and individual perception can also be addressed empirically. One cross-section of the data in use contains an item about how much ethnic diversity respondents perceive in their area of living. Another item refers to individually perceived job chances. In relating these variables with regional indicators, an auxiliary analysis determines to what extent the regional ethnic and economic context corresponds to individual perceptions. The results of this analysis are presented in tables A1 and A2 in the online appendix. Regional levels of immigration are substantively associated with how much ethnic diversity individuals perceive in their area of living. Similarly, regional unemployment rates substantively and significantly predict how favorable respondents perceive their job chances. The findings therefore provide empirical support for the claim that the regional level reflects a meaningful context for individual perceptions concerning ethnic diversity and economic opportunity structures.

Theoretical Framework and Hypotheses

Scholars frequently refer to theories of intergroup relations (e.g., Blalock 1967; Blumer 1958; Pettigrew and Tropp 2011; Tajfel and Turner 1986) as a theoretical framework. According to this perspective, the relationship between ethnic diversity and trust is essentially mediated by perceived group conflict or experiences of intergroup contact. However, as these mechanisms are centered on attitudes toward outgroups, it is not obvious why trust beyond outgroup members should get affected. In this vein, Putnam (2007) finds that ethnic diversity impedes trust not only in people of other ethnic backgrounds, but also in co-ethnics and people in general. From these findings, Putnam concludes that there is a general tendency that ethnic diversity hampers trust and cooperation.

In order to specify the underlying theoretical mechanism, this study refers to arguments derived from social control theory (for a similar argument, see Koopmans and Veit [2014]; Öberg, Oskarsson, and Svensson [2011]). In this view, (ethnically) homogeneous settings are, compared to heterogeneous contexts, characterized by more effective social norms and informal control mechanisms promoting cooperation and trust (Habyarimana et al. 2007; King and Wheelock 2007). A main reason for this is that similarity among people fosters the makeup of dense social networks (McPherson, Smith-Lovin, and Cook 2001). Moreover, homogeneity facilitates interpersonal communication and coordination (Adams et al. 2010) and serves as an indicator for widely accepted social norms (Öberg, Oskarsson, and Svensson 2011). Taken together, homogeneous contexts tend to be characterized by higher social control, which reduces uncertainty about others' intentions and behavior. This, in turn, generally increases perceptions of trustworthiness (Hardin 2002). By contrast, ethnically diverse surroundings are more likely to produce less integrated social networks characterized by lower social connectivity (Laurence 2013; Putnam 2007) and social control (Sampson, Raudenbush, and Earls 1997), as well as weaker cooperative norms (Koopmans and Veit 2014)—factors that are all crucially related to the formation of social trust. Following this line of thought, the relationship between diversity and trust is expected to be negative, on average.

As an important specification, it is not self-evident why ethnic diversity in a specific geographic area (e.g., community or region) should exhibit effects on trust in people beyond this area. Indeed, several studies find a substantive relationship between local ethnic diversity and trust in neighbors or people who live in the same area as the respondents (e.g., Stolle, Soroka, and Johnston 2008; Wollebæk, Lundåsen, and Trägårdh 2012). However, there is reason to believe that experiences within a specific social context may also affect trust toward “most people” or people not known to us, which is essentially the scope of social trust (Delhey, Newton, and Welzel 2011). First, the social control argument is centered on the structure and consistency of social norms that provide cues about likely intentions and behavior of people one is not particularly acquainted with. In comparison, trust in family, friends, and acquainted persons rests upon personal ties and experiences rather than community norms. Second, scholarship on the experiential foundations of social trust indicates that positive experiences with strangers (Freitag and Traunmüller 2009), informal social ties (Glanville, Andersson, and Paxton 2013), associational membership (Paxton 2007), and experiences with impartial public officials (Rothstein and Stolle 2008) shape social trust also beyond the specific object the experience is based on (e.g., the specific stranger, friend, association member, or public official). In this sense, specific experiences within an ethnic context also will contribute to a person's heuristic about people's trustworthiness.⁴ Additional support for this argument comes from studies reporting substantive correlations between different forms of trust (Freitag and Traunmüller 2009; Newton and Zmerli 2011).

A second specification relates to scholarly work focusing on the social relevance of changes in ethnic diversity patterns (Hooghe 2007; Kesler and Bloemraad

2010). The underlying rationale here is that especially recent increases in ethnic diversity capture the attention of citizens (Newman 2013) and stimulate perceptions of intergroup threat and conflict (Blalock 1967; King and Wheelock 2007). With regard to the study's argument, the social control mechanism applies to both levels of and changes in ethnic diversity. Nonetheless, recent or undergoing changes in diversity may yield a stronger effect on the social fabric of an environment than long-lasting patterns, where processes of adaptation and acculturation may have reconditioned social control to some extent. In summary, I contend that immigration-related ethnic diversity is negatively related to social trust, in both cross-sectional and longitudinal perspectives. Moreover, and in accordance with previous studies, I expect also that different sub-aspects of immigration, such as the skill level of immigrants (Hainmueller and Hiscox 2010), their cultural background (Schneider 2008), or specific group constellations (Alesina et al. 2003; Montalvo and Reynal-Querol 2005), are negatively associated with social trust.

H1: Immigration-related ethnic diversity in the form of proportions of (a) immigrants in general, (b) poorly educated immigrants, and (c) non-Western immigrants, as well as (d) ethnic fractionalization, and (e) ethnic polarization is negatively associated with social trust.

H2a–e: The indicators are negatively related to social trust in longitudinal perspective.

This being said, economic and cultural conditions are expected to moderate the strength and possibly also the direction of the relationship. Research on group conflict and threat has investigated the role of economic conditions, suggesting that particularly the combination of stressful economic conditions and high levels of immigration foster perceived immigrant threat and opposition to immigration (Blumer 1958; Kessler and Freeman 2005; King and Wheelock 2007; Quillian 1995). Whether this interactive relationship holds also in the case of generalized social trust needs to be further substantiated.

Economic prosperity equips people with better economic opportunities, and resourceful individuals are less vulnerable to potential non-reciprocal or trust-breaching behavior, a reason for why they are constantly found to express high levels of trust (Delhey and Newton 2003). In addition, affluent people tend to prioritize values related to individualism and self-direction over security, conformity, and tradition (Schwartz 2007). Moreover, scholarship suggests that individualists are more likely than collectivists to trust others beyond ingroup boundaries (Berigan and Irwin 2011), as well as to pursue collective group interests out of intrinsic motivation and even in an absence of a social sanctioning system (Yamagishi 1988). Taken together, economic prosperity fosters people's individualist orientation, which makes their trust less dependent on dense social networks and efficient social control, mechanisms that are presumably hampered by immigration. In this sense, economic prosperity is expected to mitigate a trust-eroding effect of increasing immigration. By contrast, times of economic downturn confront people with material loss, which increases costs of non-cooperation and activates their preference for security. This, in turn, enhances the

dependency on effective social monitoring and sanctioning in order to maintain trust. As periods of economic decline increase individuals' reliance on social control mechanisms, an increase in immigration to such contexts is expected to particularly diminish social trust.

Besides economic prosperity, the relative distribution of incomes is a prominent predictor of levels of trust (Uslaner and Brown 2005). In unequal societies, the division of groups into the poor and the rich is deeper, which erodes how trustworthy others are generally perceived as. Moreover, a society divided between wealthy and poor people is more likely to reproduce group division along other cleavages, such as ethnicity (Uslaner 2012). Similarly to the previous argument, high levels of income inequality are expected to increase the importance of social control mechanisms for maintaining trust, which reinforces a negative effect of increasing immigration (Kesler and Bloemraad 2010).

Arguably, the longer a state of economic expansion or downshift prevails, the more likely this context constitutes a setting that makes individuals either resilient or vulnerable toward an increase in immigration-related diversity. In order to test the proposed relationships, I examine the moderating role of levels of regional economic growth, unemployment rates, and income inequality. Besides growth of the foreign-born population in general, I also consider changes in proportions of low-skilled immigrants as an explanatory variable. Research on labor-market competition suggests that this group particularly evokes adverse reactions in the receiving society (Hainmueller and Hiscox 2010), which might be additionally fueled in contexts of economic constraint. Therefore, I expect similar or even stronger interactive effects for increasing levels of low-skilled immigrants.

H3a: In contexts of poor economic conditions (indicated by low economic growth, high unemployment, or high income inequality), the negative relationship between immigration and social trust is amplified.

H3b: In contexts of favorable economic conditions (indicated by high economic growth, low unemployment, or low income inequality), the negative relationship between immigration and social trust is offset.

Besides the economy, the cultural context is expected to moderate the relationship. Research on cultural conflict and threat suggests that the larger the minority population of a given context, the more majority members feel threatened in their national identity and cultural dominance (Citrin, Reingold, and Green 1990; Sniderman, Hagendoorn, and Prior 2004). Other authors argue that particularly ethnic polarization, which is a single or few large-sized ethnic minority groups facing the majority, increases propensities for conflict (Montalvo and Reynal-Querol 2005). In contexts of high ethnic polarization, members of the majority are more likely to feel threatened in their group identity and "way of life" (Sniderman, Hagendoorn, and Prior 2004) and tend to express less social trust (Dincer 2011). Moreover, polarization reduces incentives for an assimilation of minority members into the receiving society, which might intensify group division and perceptions of ethnic conflict (DeFina and Hannon 2009).

With regard to the study's argument, a highly polarized context is expected to build a social environment in which tight-knit relations and social control become increasingly important in order to maintain cooperation and social trust. This is supported by findings from conflict studies showing that during intergroup conflict people are more willing to punish non-cooperative group members and reward cooperative behavior (Gneezy and Fessler 2012). Since social control is of exposed relevance in highly polarized contexts, an increase in immigration to such contexts is expected to constitute an exceeding hurdle for citizens' maintenance of trust.

In contrast, homogeneous or even highly fragmented contexts, which are characterized by lower conflict propensities, attenuate people's reliance on security, conformity, and social control. This, in turn, makes their trust more resilient toward increasing diversity. Moreover, intergroup contact theory suggests that a setting of low residential segregation facilitates interpersonal contact and friendship across group boundaries, mechanisms that have been shown to reduce prejudice (Pettigrew and Tropp 2011) and foster generalized social trust (Stolle, Soroka, and Johnsten 2008; Uslaner 2012). In a similar vein, high ethnic polarization is expected to hinder intergroup contact, while low polarization facilitates it.

In summary, levels of ethnic group polarization are expected to trigger the effect of increasing immigration on social trust. Besides foreign-born immigrants in general, similar relationships are expected for the inflow of non-Western immigrants, a proxy for rather visible and culturally distant immigrant groups (Schneider 2008).

H4a: In contexts of high ethnic polarization, the negative relationship between immigration and social trust is amplified.

H4b: In contexts of low ethnic polarization, the negative relationship between immigration and social trust is offset or reversed.

Data and Methods

Data and Measures

The individual-level data come from the first five waves of the European Social Survey (ESS; 2002, 2004, 2006, 2008, and 2010), a repeated cross-sectional survey of between 20 (wave 1) and 29 (wave 4) European country samples. In accordance with the applied theoretical framework and previous research, I focus on effects in the native population and hence include only respondents with national citizenship and who indicated that they and their parents were born in the survey country. The dependent variable *social trust* consists of a mean index of the three items trustworthiness ("most people can be trusted"), fairness ("most people would try to be fair"), and helpfulness ("most of the time people try to be helpful"). All three items are measures on an 11-point Likert scale. Hence, the computed social trust index ranges from 0, "low," to 10, "high" trust. Reeskens and Hooghe (2008) show that the items measure the

same latent construct across ESS countries and can thus be used in comparative research.

Although the main interest of this study is to assess the impact of regional-level variables, it is important to control for the influence of potential confounding from individual-level characteristics via compositional effects (Enders and Tofghi 2007, 128–30). Therefore, all analyses include the following individual-level controls, which has been shown to be influential in previous research (e.g., Alesina and La Ferrara 2002; Delhey and Newton 2003): *age in years*, *age squared*, *gender*, *education in years*, *satisfaction with household income* (ranging from 0, “Very difficult on present income,” to 3, “Living comfortably on present income”), *subjective religiosity* (from 0, “Not at all religious,” to 10, “Very religious”), *membership of a group discriminated against* (dummy variable), dummy variables for *respondent’s living area* (countryside, country village, small city, suburb, big city), dummy variables of *personal job-market position* (high or intermediate professional, self-employed or family business, manual or lower service job, routine job, student, unemployed, retired, home duties, other), and dummy variables for respondent’s *marital status* (never been married, married, divorced, widowed). All key results are substantively similar under an exclusion of the individual-level controls.

The respondents of each wave were grouped into regional units corresponding to the Nomenclature of Statistical Units classification scheme NUTS 2 or NUTS 1. The NUTS scheme consists of three subdivisions that divide a country into large-scale (NUTS 1), medium-scale (NUTS 2), and small-scale (NUTS 3) regions. Respondents from Cyprus, Belgium, Denmark, Estonia, France, Germany, and the United Kingdom were grouped according to NUTS 1, since the ESS survey provides no other information for these samples. For Cyprus, Denmark, and Estonia, the NUTS 1 level corresponds to the country as a whole. Respondents from all other country samples were grouped according to NUTS 2. The median (mean) population of the regions included in the empirical analysis is 1,400,287 (2,501,926). For NUTS 1-classified regions, the median (mean) population is 5,106,000 (5,403,203), while this value is 1,180,825 (1,526,907) for NUTS 2 (Eurostat 2014, data source code: demo_r_d2jan, reference year 2006). The mean number of survey respondents per region-year is $M = 209.31$.

Immigration-related ethnic diversity is measured by five different indicators: *proportion of foreign-born immigrants*, *proportion of poorly educated foreign-born immigrants*, *proportion of non-Western foreign-born immigrants*, a *fractionalization index*, and a *polarization index*. The figures are based on data from the European Union Labour Force Survey (EU-LFS, Eurostat 2011), which were aggregated to regional averages in the way that they match the ESS scheme concerning NUTS 1 and NUTS 2. The EU-LFS data are highly standardized, which reduces problems of comparability. Nevertheless, several regions had to be dropped due to small case numbers or a lack of data reliability (Eurostat 2013). Due to a modified sampling procedure, the native population was temporarily overestimated for Germany in 2006 and Sweden in 2008. In order to minimize missing values, both time points were imputed using linear interpolation. Moreover, the figures are based on information about place of birth instead

of citizenship in order to facilitate comparability across countries (see also Schneider 2008, 56).⁵ Table 1 displays the countries and number of regions per year for which survey data and figures on regional proportions of foreign-born immigrants are available. Exclusions made due to the non-availability of other variables are indicated in notes below the tables in the Results section.

Poorly educated immigrants are identified by an EU-LFS variable on respondent's education level based on the ISCED classification. On this scale, respondents with formal education ranging from no formal education up to lower secondary education (ISCED 1 or 2) were classified as poorly educated. Another variable identifies respondents' region of origin available from 2004 onward.⁶ Non-Western immigrants come from world regions other than the EU-27 countries, member states of the European Free Trade Association (EFTA), and North

Table 1. Region-Years with Available Data on Individual-Level Variables (ESS) and Proportions of Foreign-Born Immigrants (EU-LFS)

Country	Code	Regional level	2002	2004	2006	2008	2010	Total
Austria	AT	NUTS 2	8	8	9	.	.	25
Belgium	BE	NUTS 1	3	3	3	3	3	15
Cyprus	CY	NUTS 1	.	.	1	1	1	3
Czech Republic	CZ	NUTS 2	6	4	.	6	6	22
Denmark	DK	NUTS 1	1	1	.	.	.	2
Estonia	EE	NUTS 1	.	1	1	1	1	4
Finland	FI	NUTS 2	3	3	2	3	3	14
France	FR	NUTS 1	.	.	8	8	8	24
Germany	DE	NUTS 1	11	11	11	11	12	56
Greece	GR	NUTS 2	3	5	.	8	10	26
Hungary	HU	NUTS 2	1	1	4	4	4	14
Ireland	IE	NUTS 2	2	2	2	2	2	10
Netherlands	NL	NUTS 2	10	12	11	12	.	45
Norway	NO	NUTS 2	5	5	4	3	5	22
Poland	PL	NUTS 2	.	5	4	8	.	17
Portugal	PT	NUTS 2	4	4	4	4	4	20
Slovakia	SK	NUTS 2	.	.	1	2	2	5
Slovenia	SI	NUTS 2	2	2	2	2	2	10
Spain	ES	NUTS 2	14	16	16	17	17	80
Sweden	SE	NUTS 2	8	8	8	8	8	40
Switzerland	CH	NUTS 2	6	7	7	7	7	34
United Kingdom	UK	NUTS 1	11	11	11	11	11	55
Total			98	109	109	121	106	543

America. Ethnic fractionalization as a standard measure of group diversity is based on a Herfindahl Concentration Index, which represents the probability that two randomly selected individuals in a population belong to a different group (Alesina et al. 2003). This index is calculated as

$$FRAC = 1 - \sum_{i=1}^N p_i^2,$$

where each ethnic or immigrant group constitutes proportion p_i of the total population. The measure reaches a minimum of zero in a totally homogeneous population and a theoretical maximum of one in an infinite population where every person constitutes its own ethnic group. The polarization index (Montalvo and Reynal-Querol 2005) is given by the formula

$$POLAR = 4 \sum_{i=1}^N p_i^2 (1 - p_i).$$

Like fractionalization, this measure scores zero in a completely homogeneous population. However, it also scores zero in an infinitely fractionalized population and reaches its maximum of one for two equally sized groups (i.e., $i = 2$, $p_1 = 0.5$, $p_2 = 0.5$). Both indices, fractionalization and polarization, incorporate information on relative proportions of up to nine immigrant groups (see note 6).

Data on economy-related variables are obtained from the Eurostat online database (Eurostat 2014): regional *GDP per capita* (PPS, reference year 2000), *unemployment rates* (in %), and *real growth rates* of regional gross value added (GVA) at basic prices (in %). Income inequality is usually measured by GINI coefficients. Since Eurostat provides no official regional GINI figures, I use regional *poverty risk rates* (available from 2004 onward) instead. Poverty risk rates represent the share of people with an equalized disposable income (after social transfer) below the at-risk-of-poverty threshold (60 percent of national median). In a preliminary analysis, country-level poverty risk rates were highly correlated with official GINI figures (Pearson's $r = .89$, $P < .001$, $n = 24$), providing some confidence that poverty risk rates are a valid substitute of economic inequality.

Analysis

All models are estimated by employing multilevel modeling (MLM; Snijders and Bosker 2012), accounting for non-independence due to clustered or hierarchically nested observational units. MLM is a very flexible approach in handling longitudinal data. In multilevel panel models, measurement occasions are usually nested within individuals. However, in the present study, the data come from repeated cross-sectional survey waves including respondents from randomly drawn samples. Fairbrother (2014) proposes a multilevel model framework for repeated cross-sectional survey data, where respondents are nested within time (e.g., country-years) and the research focus is on upper-level explanatory variables.

Analogously to multilevel hybrid models (Allison 2009, 23–25; Andreß, Golsch, and Schmidt 2013, 164–66), the core (macro-level) explanatory variables are here disaggregated into a between (or cross-sectional) and a within (or longitudinal) component and simultaneously estimated in a multilevel regression model. Technically, the disaggregation is usually accomplished by group-mean centering, where the group-mean represents the between component and the demeaned values variations over time (Curran and Bauer 2011). The substantive interest of the present study is on regional predictors. Thus, survey respondents were grouped in region-years, nested in regions and countries. This results in a four-level structured model with the individual-level outcome y and the control variable x at Level 1, the regional-level explanatory variable z decomposed into a within component \dot{z} located at Level 2 (region-years), and a between component \bar{z} located at Level 3 (regions). Accounting for the fact that regions are nested within country contexts, Level 4 includes a random country-level intercept. The corresponding formula is given by

$$y_{itjk} = \beta_{0itjk} + \beta_{1itjk}x_{itjk} + R_{itjk},$$

where β_{0itjk} is the intercept in the Level-2 unit t (region-years) within the Level-3 unit j (regions) within the Level-4 unit k (countries)

$$\beta_{0itjk} = \gamma_{00jk} + \gamma_{01jk}\dot{z}_{itjk} + U_{0itjk},$$

and γ_{00jk} is the intercept in the Level-3 unit j (regions) within the Level-4 unit k (countries)

$$\gamma_{00jk} = \delta_{000k} + \delta_{001k}\bar{z}_{jk} + V_{00jk},$$

and δ_{000k} is the average intercept in the Level-4 unit k (countries)

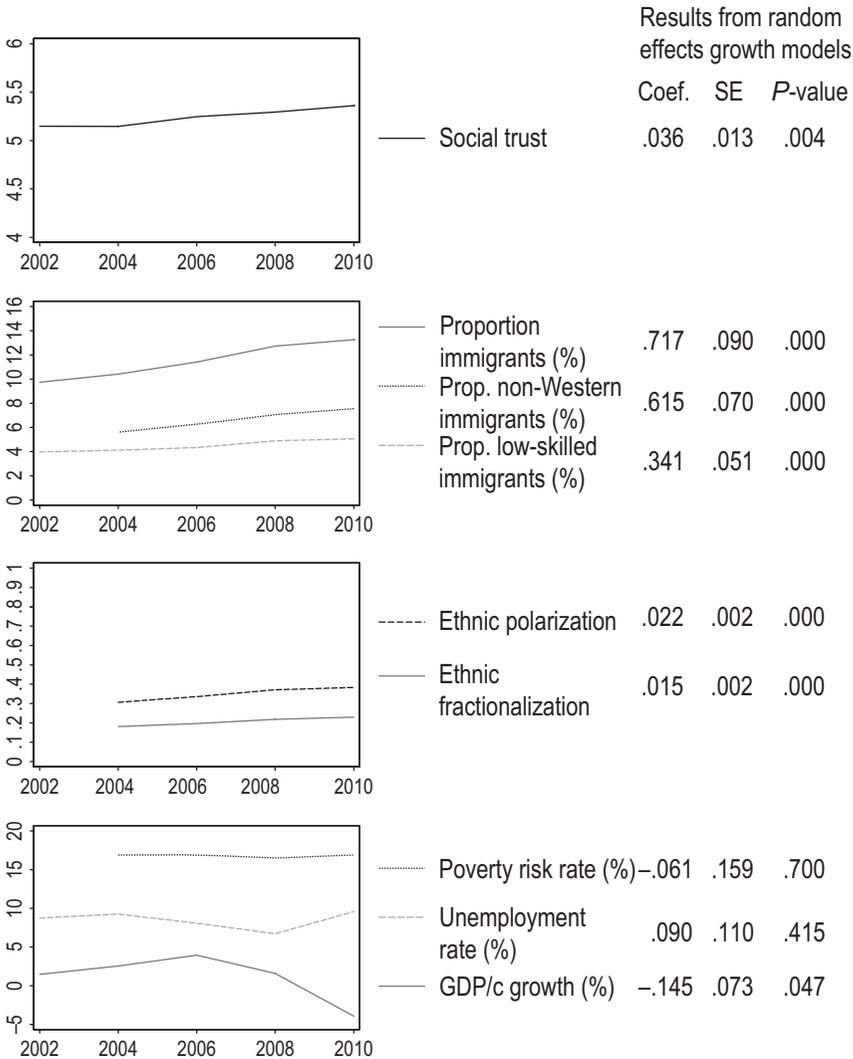
$$\delta_{000k} = \eta_{0000} + W_{000k}.$$

The random effects (U , V , and W) and the residual (R) are assumed to be independent and normally distributed with zero means and constant variances. Given the appropriate disaggregation, the between estimator δ_{001k} represents the long-term cross-sectional effect of regional characteristic z and the within estimator γ_{01jk} the effect of a change in z over time. The between estimator uses only the variance between units, while the within estimator uses only variance of changes over time. In this sense, the within estimate reflects how a change in z is related to a change in y .⁷ This estimator is free of unobserved heterogeneity from time-invariant confounders and identical to an estimate one would obtain from fixed effects panel regression (Allison 2009). Within this hybrid approach, the outcome variable is not decomposed, in order to allow the model to estimate both types of variable relationships, between and within, simultaneously

(Curran and Bauer 2011, 600; Andreß, Golsch, and Schmidt 2013, 157–66). In the present case, the outcome social trust is measured at the respondent level and incorporated as intercepts at higher analytical levels.

In applying MLM to longitudinal data, some specific properties need to be considered. Curran and Bauer (2011) demonstrate that if explanatory variables change systematically with the passage of time (i.e., follow a trend), a specific disaggregation strategy needs to be applied in order to avoid biased estimates. Figure 1 displays the

Figure 1. Time-Series Plots and Time Dependency of Hypothesis-Relevant Variables



Note: Social trust was aggregated to region-years (applying sampling weight). All region-year information was collapsed to yearly averages (equally weighted) under listwise deletion. Random effects growth models entail time as predictor and random effect (unstructured covariance). Significant estimates indicate systematic growth over time.

time series of all hypothesis-relevant regional variables as well as results of random effects growth models with time as predictor and random effect. Most explanatory variables depend significantly on time (except unemployment and poverty risk rates), and thus I use intercepts and residuals from unit-specific regressions on time for disaggregation (Curran and Bauer 2011).⁸ Moreover, since several time series are unbalanced, time was grand-mean centered in this procedure (see Curran and Bauer 2011, 610–11). Descriptives of the key variables used in the analyses are presented in table A3 in the online appendix.

A correlation matrix of the key explanatory variables is presented in table A4 in the online appendix. In particular, the components of the immigration variables are highly correlated. To avoid multicollinearity, a separate model for each immigration indicator and interaction term is estimated. The implementation of the interactive hypotheses follows the theoretical expectation that immigration growth is especially relevant for social trust.⁹ Economic and cultural conditions are expected to structure how citizens react toward immigration growth. Therefore, the interactions are specified as immigration growth (within) moderated by a structural economic or cultural condition (between).¹⁰ Moreover, all models include a trend variable to avoid the risk of spurious correlations due to an underlying common trend. In addition, the models include a country-level random intercept. Using country dummy variables instead produces virtually the same results, which indicates that the inclusion of a separate country level sufficiently controls for time-constant variations between countries.

Empirical Findings

In a first step, I estimate models including cross-sectional and longitudinal variables of different diversity indicators. The results of the between and within estimates are presented in table 2. The models include all regions with available data, which means that differences in sample size between models occur. All models include regional GDP per capita as a region-level control. The results are robust to an inclusion of further regional-level covariates, such as economic growth, unemployment, or poverty rates. Since several of these indicators comprise missing values, they are not included in the models focusing on average effects. The results of the empirical models show that all five between estimates of ethnic diversity are negative and statistically significant.¹¹ Across European regions, higher regional proportions of foreign-born immigrants, poorly educated immigrants, and non-Western immigrants as well as higher degrees of ethnic fractionalization and polarization are associated with lower levels of trust. This provides empirical support for hypotheses H1a–e.

The size of the effects can be illustrated by looking at the predicted value associated with a change between the observed minimum and maximum values of the explanatory variable. Multiplying the maximum range of the composite indicator of proportions of immigrants (table A3) with the parameter estimate from model 1a gives a maximum effect size of $-.40$. This is equivalent to a decrease by between one fourth and one fifth of a standard deviation in social trust ($SD = 1.9$). Maximum changes in the remaining indicators are related to

Table 2. Multilevel Models – Average Cross-Sectional (between) and Longitudinal (within) Effects

	Model 1a	Model 1b	Model 1c	Model 1d	Model 1e
	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)
Intercept	5.046*** (0.168)	5.107*** (0.194)	5.065*** (0.196)	5.056*** (0.196)	5.053*** (0.199)
Trend	0.041*** (0.009)	0.038*** (0.010)	0.049*** (0.013)	0.049*** (0.013)	0.049*** (0.013)
<i>Regional-level predictors</i>					
GDP per capita (logged) – bw	0.179* (0.086)	0.141 (0.095)	0.182 (0.120)	0.212† (0.119)	0.171 (0.115)
GDP per capita (logged) – wi	0.163 (0.174)	0.112 (0.196)	0.219 (0.205)	0.225 (0.206)	0.216 (0.207)
Prop. foreign-born immigrants – bw	–0.009* (0.004)				
Prop. foreign-born immigrants – wi	–0.039* (0.019)				
Prop. poorly educated immigrants – bw		–0.028* (0.011)			
Prop. poorly educated immigrants – wi		0.007 (0.037)			
Prop. non-Western immigrants – bw			–0.016* (0.007)		
Prop. non-Western immigrants – wi			0.011 (0.030)		
Ethnic fractionalization – bw				–0.889** (0.344)	
Ethnic fractionalization – wi				–0.328 (1.207)	
Ethnic polarization – bw					–0.595* (0.260)
Ethnic polarization – wi					0.073 (0.778)
<i>Variance components</i>					
Country	0.533	0.564	0.550	0.548	0.570
Region	0.021	0.022	0.039	0.037	0.038
Region-year	0.037	0.045	0.038	0.038	0.038
Residual	2.808	2.765	2.760	2.760	2.760

(Continued)

Table 2. continued

	Model 1a	Model 1b	Model 1c	Model 1d	Model 1e
	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)
Waves (covered years)	5 (2002– 2010)	5 (2002– 2010)	4 (2004– 2010)	4 (2004– 2010)	4 (2004– 2010)
N (country)	20	16	16	16	16
N (region)	124	93	93	93	93
N (region-year)	487	390	323	323	323
N (respondents)	102,591	85,883	71,692	71,692	71,692

*** $p < .001$ ** $p < .01$ * $p < .05$ † $p < .1$ (two-sided)

Note: Bw = between (cross-sectional) component; wi = within (longitudinal) component. No available GDP data for regions of Norway and Switzerland. Due to missing EU-LFS figures, Models 1b–e exclude Austria, the Netherlands, Poland, and Slovenia. Models include individual-level controls.

the following effects on trust: $-.57$ for proportions of poorly educated immigrants, $-.46$ for non-Western immigrants, $-.58$ for ethnic fractionalization, and $-.41$ for ethnic polarization. Although these figures differ to some extent, their magnitude is quite similar.

Table 2 also presents the estimates of the longitudinal variables (within). The longitudinal estimate for proportions of foreign-born immigrants is negative and statistically significant (model 1a).¹² This means that an increase in proportions of immigrants is associated with a decrease in social trust. The maximum effect here is -1.74 , which is equivalent to about one standard deviation in regional social trust and, at the same time, distinctly higher than the between effect. In this sense, the theoretical prediction that especially changes in immigration are related to lower social trust finds empirical support. The within effect controls for all variance between regions, which certainly encompasses factors such as degrees of immigrant integration. Holding all long-term characteristics constant, an increase in immigration is strongly related to lower trust. Nonetheless, the estimates of changing proportions of poorly educated immigrants, non-Western immigrants, ethnic fractionalization, and polarization are unsystematically and non-significantly related to social trust. From this perspective, trust in European regions tends to be hampered by inflows of immigrants, regardless of their cultural or educational background. Hence, only hypothesis H2a finds empirical support.

In a next step, models incorporating interaction effects are estimated. The results are presented in table 3. In model 2a, the estimate of the interaction effect incorporating immigration (within) by economic growth (between) is positive and significant. Figure 2 displays the corresponding marginal effects of immigration growth for different levels of economic development. For minimum to average economic growth,¹³ represented by the zero value on the x -axis, the relationship between immigration and trust is negative and statistically significant. For values greater than average economic growth, the relationship is

Table 3. Multilevel Models – Interaction Effects

	Model 2a Immigration (within) by econ. growth (between)	Model 2b Low-skilled immigration (within) by econ. growth (between)	Model 3a Immigration (within) by unempl. (between)	Model 3b Low-skilled immigration (within) by unempl. (between)	Model 4a Immigration by poverty (between)	Model 4b Low-skilled immigration by poverty (between)	Model 5a Immigration (within) by polarization (between)	Model 5b Non-West. immigration (within) by polarization (between)
	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)
Intercept	5.044*** (0.168)	5.107*** (0.194)	5.043*** (0.168)	5.104*** (0.193)	5.138*** (0.169)	5.228*** (0.193)	5.100*** (0.198)	5.065*** (0.199)
Trend	0.041*** (0.009)	0.038*** (0.010)	0.041*** (0.009)	0.038*** (0.010)	0.047*** (0.008)	0.045*** (0.010)	0.039*** (0.010)	0.046*** (0.013)
<i>Regional-level predictors</i>								
GDP/c (logged) – bw	0.185* (0.087)	0.138 (0.095)	0.190† (0.103)	0.163 (0.116)	0.253** (0.094)	0.207* (0.101)	0.148 (0.101)	0.171 (0.119)
Prop. foreign-born immigrants – wi	-0.019 (0.021)		-0.036† (0.019)		-0.040* (0.020)		-0.017 (0.023)	
Prop. poorly educated immigrants – wi		0.055 (0.046)		-0.013 (0.040)		-0.006 (0.040)		
Prop. non-Western immigrants – wi								0.039 (0.032)
Economic growth – bw	-0.009 (0.019)	0.005 (0.022)						

Unemployment rate – bw	0.002 (0.009)	0.003 (0.010)			
Poverty risk rate – bw		0.007 (0.005)	0.007 (0.005)	0.007 (0.005)	
Ethnic polarization – bw				-0.186 (0.554)	-0.443 (0.581)
<i>Interaction effects</i>					
Immigration indicator (wi) × Economic growth (bw)	0.040* (0.019)	0.072 [†] (0.040)			
Immigration indicator (wi) × Unemployment (bw)	-0.002 (0.006)	0.012 (0.010)			
Immigration indicator (wi) × Poverty risk (bw)		0.001 (0.004)	0.002 (0.006)		
Immigration indicator (wi) × Polarization (bw)				-0.396* (0.195)	-0.530* (0.231)
<i>Variance components</i>					
Country	0.530	0.567	0.533	0.559	0.455
Region	0.021	0.022	0.021	0.022	0.011
Region-year	0.037	0.044	0.037	0.044	0.028
Residual	2.808	2.765	2.808	2.765	2.747
Waves (covered years)	5 (2002–2010)	5 (2002–2010)	5 (2002–2010)	5 (2002–2010)	5 (2002–2010)
<i>N</i> (country)	20	16	20	16	17
				13	16

(Continued)

Table 3. continued

	Model 2a Immigration (within) by econ. growth (between)	Model 2b Low-skilled immigration (within) by econ. growth (between)	Model 3a Immigration (within) by unempl. (between)	Model 3b Low-skilled immigration (within) by unempl. (between)	Model 4a Immigration (within) by poverty (between)	Model 4b Low-skilled immigration (within) by poverty (between)	Model 5a Immigration (within) by polarization (between)	Model 5b Non-West. immigration (within) by polarization (between)
	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)
N (region)	124	93	124	93	99	68	93	93
N (region-year)	487	390	487	390	408	311	390	323
N (respondents)	102,591	85,883	102,591	85,883	83,078	66,370	85,883	71,692

*** $p < .001$ ** $p < .01$ * $p < .05$ † $p < .1$ (two-sided)

Note: Bw = between (cross-sectional) component; wi = within (longitudinal) component. No available GDP data for regions of Norway and Switzerland. Due to missing EU-LFS figures, models 2b and 3b–5b exclude Austria, Netherlands, Poland, and Slovenia. No available poverty rate figures for regions of the Czech Republic, France, Portugal, and UK (models 4a and 4b). Models include individual-level controls and between components corresponding to the included immigration indicators.

positive, although statistically not significant. In other words, an increase in immigration is systematically associated with a decrease in social trust only in contexts of (enduring) low economic performance, whereas the negative relationship is offset in contexts of average economic growth and above. Therefore, the results provide empirical support for hypotheses 3a and 3b. The predicted effect for average immigration ($M = 9.49$) at the condition of lowest observed economic growth is -1.65 , which is about one standard deviation of social trust. Considering the full range of immigration values would lead to a predicted value of -7.77 , which is equivalent to about four standard deviations of social trust.

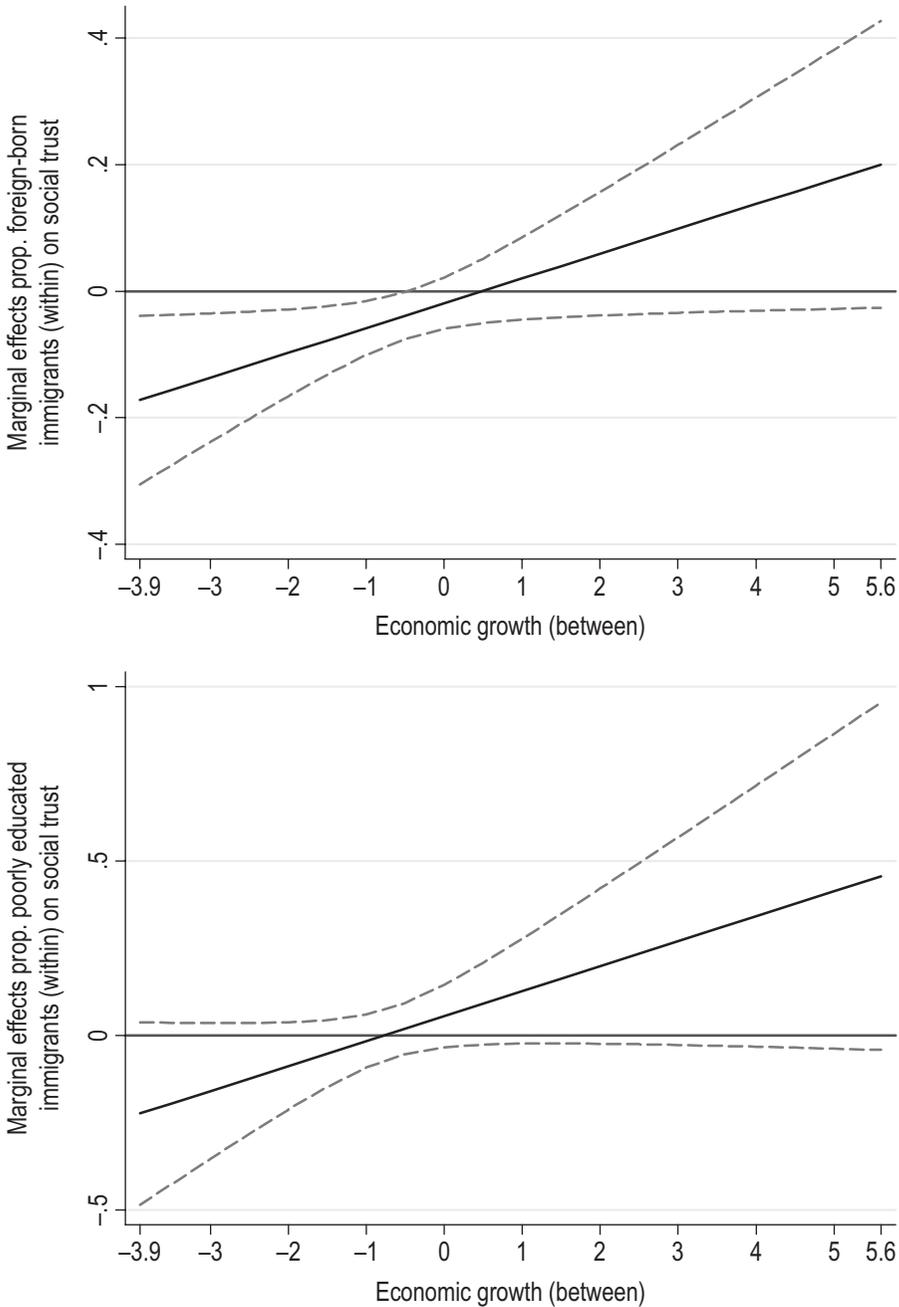
Model 2b examines the role of changing proportions of poorly educated immigrants. The interaction effect is marginally significant at a $P < .10$ threshold. The marginal effects plotted in figure 2 largely follow the pattern of general immigration growth; however, the 95 percent confidence intervals for the marginal effects include zero, meaning that the estimates are rather inaccurate.

Models 3a–4b include interaction terms of immigration growth by indicators of unemployment and income inequality. Neither of the interaction estimates is significant. This means that, in contrast to the theoretical expectations, the relationship between changes in immigration and changes in trust is not systematically contingent upon levels of regional unemployment or inequality. In summary, the results on economic conditions indicate that particularly economic decline in terms of enduring low economic growth amplifies a negative relationship, whereas rates of unemployment and poverty play no substantive role as moderators.

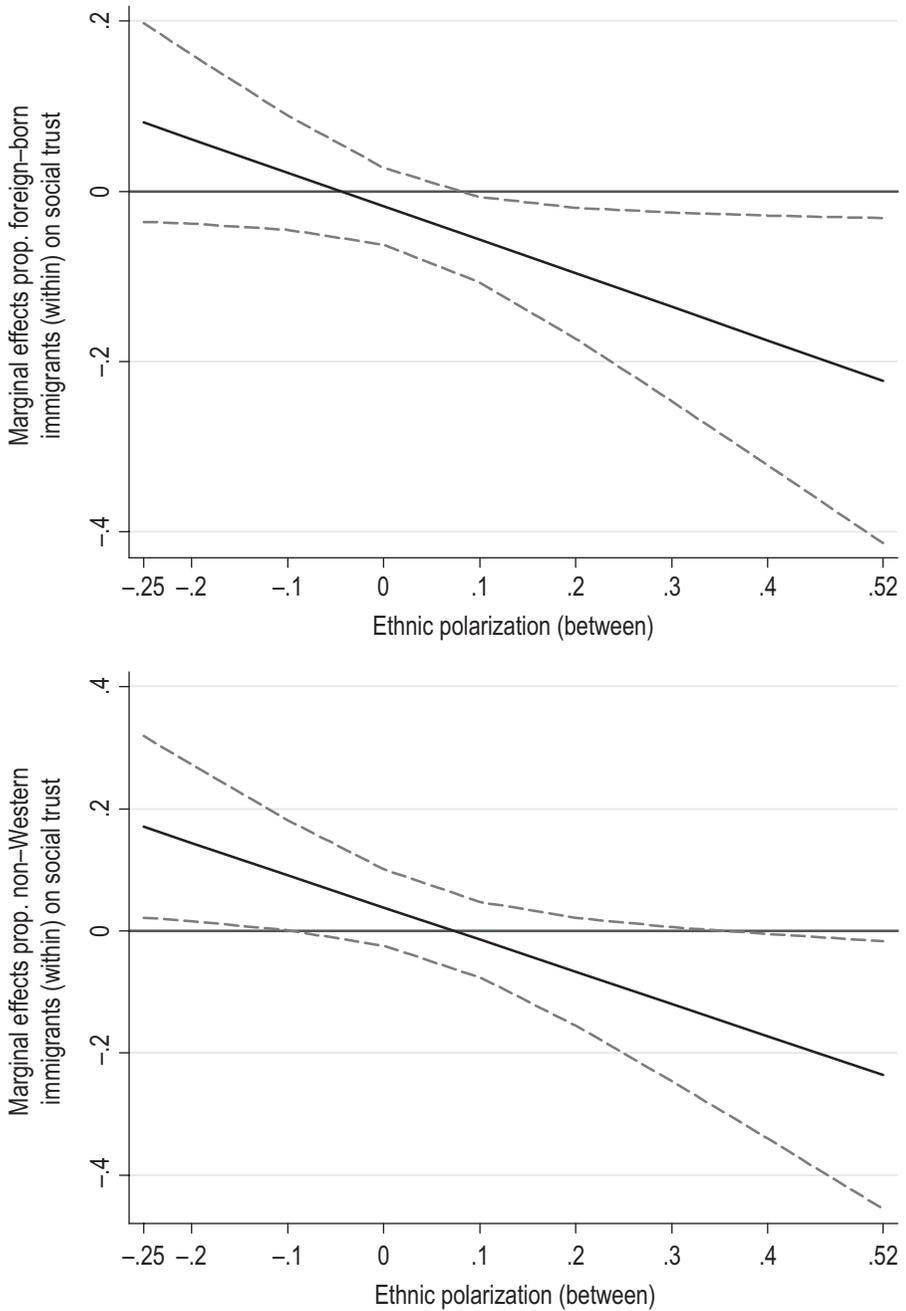
Regarding cultural context, models 5a and 5b introduce interactions between increasing (non-Western) immigration and levels of ethnic polarization. In model 5a, the coefficient of the interaction term is negative and statistically significant. As the marginal effects plot from figure 3 shows, the relationship becomes increasingly negative as the level of ethnic polarization rises. The marginal effects are significant in contexts of above average to high polarization. However, the relationship is positive in contexts of low polarization, although statistically not significant. To illustrate the size of the effect, an average amount of immigration at the condition of highest observed polarization is associated with a change in social trust by -2.12 . This result provides empirical support for hypothesis H4a, stating that contexts of high polarization reinforce the negative relationship between immigration and trust.

In model 5b, the interaction effect between non-Western immigration growth and polarization is negative and significant. The corresponding marginal effects plot (figure 3) shows a similar pattern as for growth in general immigration. The relationship between changes in non-Western immigration and changes in trust is negative and significant in contexts of high ethnic polarization. By contrast, in contexts of low ethnic polarization, the relationship is positive and significant. This means that in contexts of low polarization, an increase in the non-Western population is actually associated with an increase in social trust. People may profit from intergroup contact in such contexts, and in particular if they interact with immigrants who have a different cultural background. This finding adds additional support to hypothesis H4b and underscores theoretical claims made

Figure 2. Marginal Effects of Immigration (within) by Economic Growth (between)



Note: Dashed lines represent 95% confidence intervals. The explanatory variables are centered at the overall regional average, meaning that zero economic growth reflects the overall average.

Figure 3. Marginal Effects of Immigration (within) by Ethnic Polarization (between)

Note: Dashed lines are 95% confidence intervals. The explanatory variables are centered at the overall regional average, meaning that zero ethnic polarization reflects the overall average.

by intergroup contact theory and related arguments (Pettigrew and Tropp 2011; Uslaner 2012).¹⁴ In terms of effect sizes, average non-Western immigration ($M = 5.92$) at the highest level of ethnic polarization is associated with a predicted trust value of -1.40 . At the lowest level of polarization, this value is 1.01 .

To ensure that the results are not depending on outliers, all models were re-estimated under a one-by-one exclusion of single countries. The substantive results were consistent throughout this procedure. In a supplementary analysis, all models were re-estimated using country-level indicators (see tables A5 and A6 in the online appendix for detailed results). For this purpose, region-years and regions were replaced by country-years and countries. The results show that—similar to previous cross-national studies (Gesthuizen, van der Meer, and Scheepers 2009; Hooghe et al. 2009)—none of the ethnic diversity indicators yield a significant effect in cross-sectional perspective. In longitudinal perspective, the relationship between changes in proportions of foreign-born immigrants and changes in social trust is negative and marginally significant ($P < .10$). Regarding the conditional effects, only immigration growth by economic growth yields a marginally significant effect ($B = .03$, $SE = .02$, $P < .10$), analogous to the pattern at the regional level.¹⁵ In summary, the findings support the contention that the country level is rather too far removed to capture existing relationships at lower levels of aggregation.

Conclusion

Focusing on the sub-national level of European regions, this study investigated whether immigration-related ethnic diversity is related to social trust in both cross-sectional and longitudinal perspectives. Drawing on social control theory, this study developed arguments for why ethnic diversity and generalized social trust are expected to be negatively associated and economic and cultural conditions moderate the relationship.

For the first time, this study provided comparative empirical evidence that also in the European context, immigration-related diversity yields a predominantly negative association with social trust. Using different sources of variance, it showed that higher levels of immigration and immigration growth over time are both related to lower social trust. The size of the longitudinal effect was thereby considerably larger. This is in line with the theoretical expectation that particularly undergoing changes are relevant for citizens' trust, while in the long-term perspective processes of adaption and integration attenuate a negative relationship.

Besides the average relationship, this study scrutinized the role of economic and cultural conditions as moderators. The empirical results showed that in contexts of economic decline, the negative association between immigration growth and social trust is amplified. Similarly, immigration to contexts characterized by high ethnic polarization is related to a particularly high decrease in social trust. By contrast, the relationship is offset in contexts of average economic growth and ethnic polarization and becomes even positive in contexts of high economic growth and low ethnic polarization, although estimates in this

segment are rather imprecise and thus mostly non-significant. In summary, the results underline the variability and contextual dependency of the relationship between ethnic diversity and social trust.

In contrast to the theoretical expectations, the relationship does not systematically depend on regional levels of unemployment or income inequality (but see Kesler and Bloemraad 2010). In order to examine these counter-theoretical results, it would be an important task to further investigate the complex relationship between unemployment, poverty, immigration, and social trust, also by including additional mediating and/or moderating factors, such as the degree of segmentation within the labor market or regional specifics on economic sectors (Dancygier and Donnelly 2013). From an empirical perspective, some of these extensions can be addressed by utilizing data from the European Union Labour Force Survey.

This study built upon existing theoretical work and moved beyond previous empirical research by addressing several methodological issues. Nevertheless, some limitations need to be acknowledged. The regional perspective applied in this study enabled a systematic cross-sectional and longitudinal examination of the European context. While this is a step forward compared to prior country-level studies, the investigated relationships need to be proven as reliable also at local levels, where the proximity between ethnic diversity and individual exposure is high (Dinesen and Sønderskov 2013). Clearly, this would mean to utilize data that are suited to investigate local contexts not only in a cross-sectional manner, but also to consider the role of changing patterns of ethnic diversity over time. Another avenue for further research would be to examine the role of additional conditional factors for which the relationship between immigration-related diversity and trust may differ. This includes an explicit consideration of indicators of local or regional immigrant integration. Finally, it would be an important task for future research to examine the relationship between immigration and social trust over an extended time frame.

Notes

1. Scholars also refer to group conflict theory (e.g., Blumer 1958) as a theoretical framework predicting a negative relationship. However, as this theory is designed primarily to explain negative attitudes toward outgroup members, it is not self-evident why actual or perceived intergroup conflict should affect trust not just in outgroup members, but also in fellow citizens in general.
2. A correlation analysis using aggregated information on the migration status of survey respondents from the European Social Survey 2008 (wave 4) shows that proportions of first- and second-generation immigrants correlate by $r = .63$ ($P < .01$) across the countries considered in the empirical analysis of this study.
3. This phenomenon is also known as random measurement error. It is important to note that a deviation (U) between the objective regional context and the actual (and not directly measured) perception of ethnic diversity can be considered random only under the assumption that U is unrelated to the outcome variable (Y) social trust (i.e., $\text{Cor}(U, Y^*) = 0$; see King, Keohane, and Verba [1994], 162). If, for instance, residential self-selection (e.g., resourceful individuals who tend to express more trust move

systematically to areas in which housing prices are high and ethnic diversity is rather low) was prevalent, this assumption would be violated. To address whether or not this is the case, I conducted an auxiliary analysis relating regional immigration and individual perceptions about ethnic diversity (described in the next paragraph and presented in the online appendix) also for different trust groups. The results show that the relationship between regional proportions of immigrants and average perceptions of local ethnic diversity is not significantly different across trust groups. This indicates that the assumption about U and Y* being unrelated holds in the present case.

4. Nonetheless, it would be decisively useful to examine different objects of trust. Unfortunately, the data at hand do not allow analyzing the role of ethnic diversity for trust in specific groups.
5. For Germany, only data for non-nationals were available. An exclusion of German regions does not alter the substantive meaning of the results.
6. Regions of origin were collapsed to the following nine: (1) Own country; (2) EU15 and member states of the European Free Trade Association; (3) the new 12 EU members as of 2004; (4) other Europe (including countries of the former Soviet Union and Turkey); (5) MENA (Middle East and North Africa) countries; (6) Sub-Saharan Africa; (7) South and East Asia; (8) North America; and (9) Central and South America. See also Eurostat (2013).
7. Besides a model specification based on within variance, it is possible to examine longitudinal effects by regressing levels of an outcome variable on changes in an explanatory variable. A multilevel specification using the difference in regional immigration between 2002 and 2008 as predictor for social trust in 2008 produces substantively similar results (average effect and interaction terms) as obtained from within estimates of multilevel hybrid models presented in the Results section.
8. If a trend is present, standard group-mean centering will produce potentially biased results for the within (longitudinal) estimates. In the present case, re-estimations of the models using group-mean centering lead to substantively similar results.
9. This has also the methodological advantage that the interaction and the constitutive term for immigration are estimated in a within manner, meaning that both terms are free of potential unobserved heterogeneity from time-invariant confounders.
10. Using a within (immigration) \times within (context) specification would provide a heterogeneity free estimate also for constitutive terms of the moderator. However, from a theoretical point of view, it is hardly plausible that mere changes around levels build a meaningful contextual condition. This would mean that, for instance, a region with a 5 percent unemployment rate built an equivalent economic context to a region with a 20 percent unemployment, only because both regions faced an increase in unemployment by 2 percent between two time points. However, it is more plausible that enduring economic conditions and group constellations build a meaningful experiential source for individuals. Re-estimations applying within (immigration) \times within (context) specifications reveal a significant effect only for the term within non-Western immigration \times within ethnic polarization (analogously to the within \times between result presented in the Results section).
11. In contrast to the positive bivariate correlation (see table A4 in the online appendix), the relationship between immigration and social trust is negative and significant once controlled for differences in economic wealth. Since economic wealth is associated with both immigration and social trust, a positive bivariate relationship between immigration and trust reflects the influence of wealth as joint confounder. Besides, multilevel analyses for each survey wave revealed that proportions of foreign-born immigrants are negatively associated with social trust for all time points; significantly in 2004, 2006, 2008, and 2010.

12. Note that adjusting the sample size of model 1a to those of model 1b or models 1c-2e leads to a similar coefficient estimate, but a higher standard error.
13. Economic growth was centered at the overall regional mean. For the regions included in the analysis, this mean is 2.5.
14. Using ethnic fractionalization (between) or proportions of immigrants (between) as an alternate moderator leads to non-significant estimates of the interaction term.
15. As an alternative specification, I considered multilevel models in which respondents are cross-classified in region-years and country-years simultaneously (see tables A7 and A8 in the online Appendix). The results from these models show that only regional immigration indicators are significantly related to social trust, producing substantively similar results as displayed in tables 2 and 3.

About the Author

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