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Income Comparisons and Attitudes towards Foreigners

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Income Comparisons and Attitudes towards Foreigners

Evidence from a Natural Experiment

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Abstract

We exploit a natural experiment related to the German re-unification to address the question whether disutility from income comparisons affects attitudes towards foreigners. Our empirical approach rests upon East German individuals with West German relatives and friends. We use the exogenous variation of wealth to West Germans shortly after the fall of the Berlin Wall as instrument to identify the effect of disutility from income comparisons on East Germans' attitudes. We find robust evidence that East Germans expose strong negative attitudes towards foreigners, particularly from low-wage countries, if they worry about their economic status compared to better-off West Germans.

Keywords: Income Comparisons; Attitudes towards Foreigners; Natural Experiment

JEL classification: D31; J61; N34

1. Introduction

The discussion on liberalizing or restricting immigration is of high political relevance in the US, in Europe, and many other countries. Economic implications of immigration on the domestic population, particularly the perceived effects on income inequality and social status concerns dominate political campaigns. Understanding attitudes over immigration is, therefore, of gaining interest to scholars and policymakers. In this paper, we address the effect of (upward) income comparisons on attitudes towards foreigners. We show that people expose strong negative attitudes towards foreigners if they worry about their economic status compared to a better-off reference group. Our analysis also reveals that this adverse effect of upward income comparisons is more pronounced towards foreigners stemming from low-wage countries. We interpret our findings as identifying a source of xenophobic attitudes: distress from income comparisons.

Assessing the role of income comparisons for attitudes and behavior has gathered growing interest in recent years in economics. Several economists have adopted the idea that people are not only motivated by the *absolute* level of income but rather by the *relative position* in comparison to others in one's reference group.[1] The primary tenet of this literature is that individuals derive disutility when they do less well than members of their reference group. Empirically, the importance of those comparisons is confirmed in explaining, for example, happiness (Luttmer, 2005; Ferrer-i-Carbonell 2005; Clark et al., 2008), health (Eibner and Evans, 2005; Pham-Kanter, 2009; Balsa et al., 2014), job satisfaction (Card et al., 2012a), migration (Stark and Taylor, 1991), or effort at the workplace (Dur and Glazer, 2008; Gaechter and Thoeni, 2010; Cohn et al. 2014).

[1] As early as half a century ago, Festinger (1954) pointed out that humans routinely compare themselves to others. The idea that relative income impinges on welfare dates back at least to Veblen's theory of conspicuous consumption (1899).

Disentangling the effect of income comparisons on attitudes and behavior is – besides data limitations – deterred by one major conceptual concern, i.e. the non-randomness of incomes one compares to. *First*, incomes are non-random since a person deliberately choses its place in social space, i.e. its reference group (Falk and Knell 2004; Clark and Senik 2010). To *whose* income someone compares might be driven by positional concerns themselves. People might cut existing or establish new personal ties in order to improve their social rank. *Second*, even within a fixed reference group incomes are non-random since one's social network affects one's income as well as the income of the other network members. According to the most documented channel, well-established social networks might enhance labor market matching and thus market earnings (Schmutte, 2015; Dustmann et al., 2016). A promising strategy to deal with the problem of endogenous income comparisons relies on laboratory or field experiments. In two recent seminal experimental studies addressing the effect of fair wages on effort provision at the workplace, participants are randomly assigned to work-groups treated differently in terms of (perceived) relative wage (Gaechter and Thoeni, 2010; Cohn et al., 2014). Both experiments credibly show that the behavioral outcome variable of work effort is causally affected by income comparisons. However, concerning other outcome categories, e.g. health or political attitudes, these convincing experimental designs can hardly be adopted since the time span of treatment seems to be too short to obtain plausible findings.

For testing the effect of income comparisons on a long-term outcome as attitudes towards foreigners, we take advantage of a long-term 'natural' experiment, namely the division and reunification of Germany. More specifically, our empirical approach rests upon individuals from the German Democratic Republic (GDR), who have a West German reference group. We use the variation of wealth of *West* German relatives and friends shortly after the breakdown of the communist system to identify the effect of income comparisons on attitudes towards foreigners among *East* Germans. In particular, we apply an IV approach where attitudes towards foreigners are explained via the distress someone experiences from upward

income comparisons to West German relatives and friends. This distress, in turn, is instrumented by the relative wealth gap compared to the better-off West German reference group. Strictly speaking, we instrument a person's psychological burden of income comparison by the relative wealth gap that person is facing.

The specific historical situation in 1989/90 provides a unique setting for addressing the mentioned major obstacle in testing the effect of income comparisons on attitudes. With respect to the *first* problem of self-selected reference groups we argue that an East German's comparison group in West Germany was *not* determined by income-related considerations. East Germans lived in a radically different and closed economic system with different relative prices, different goods and qualities, an unconvertable currency, and almost no chance of moving or even visiting the other side of the wall. Thus, economic comparisons between East and West Germans have rather been unfeasible, and, equally important, speculative comparisons have not been of major relevance for East Germans. Further note that in the GDR as well as in West Germany the German division was believed to be permanent. Even in summer 1989 no one expected the breakdown of the communist system nor the German re-unification. Thus, until the fall of the iron wall, West Germans did not belong to the relevant social space of East Germans causing distress. Consequently, East Germans did not adjust their West German contacts to improve their relative economic position. Note that this reasoning is very much in line with the theory of relative deprivation, which predicts that individuals will be influenced adversely in life satisfaction and behavior if they do less well than members of their reference group. Runciman (1966) formulates the following conditions for relative deprivation to hold: an individual senses relative deprivation if he does not have X, knows other individuals who have X, wants X, and believes having X is feasible. Since the "feasibility condition" was not fulfilled during German separation, individuals could not be deprived from unfavorable comparisons to their West German reference group. But that situation dramatically changed by the unpredicted fall of the wall and the subsequent adoption

of the West German economic system in 1990. All of a sudden visiting West Germans was possible without difficulty. More important, both parts of Germany now shared one labor market, one currency, and one welfare state. As a consequence, West Germans *actually* entered East Germans' reference groups.

With respect to the *second* mentioned difficulty, we can rule out that significant social network effects could have affected one's income position. Neither West Germans benefited from contacts to their East German relatives and friends nor did East Germans perform better on the GDR labor market due to their social ties to West Germany. Thus, the social network effects typically affecting labor market outcomes in a single economy did not work across the German border and across economic systems. From an East German's view, whether West German friends or relatives had acquired a high standard of living or not during the period of Germany's division was a matter of chance. Consequently, the confrontation with different levels of higher incomes caused by an unexpected enlargement of one's reference group can be considered as exogenous treatment.

The depicted historical setting is exploited in a comparable manner by the study of Burchardi and Hassan (2013).[2] Here, the exogeneity of *West* German social ties to *East* Germans during the period of Germany's separation is used to identify the causal effect of social ties on economic outcomes *after* German reunification. It is show that West Germans with social ties to East Germans perform better in terms of labor market outcomes – but not before re-unification. Our identification strategy is grounded on the equivalent argument of the exogeneity of *East* Germans reference group in West Germany.

We advance the existing literature in several respects. First, we link income comparisons to attitudes towards foreigners and propose an alternative economic explanation for xenophobic

[2] For other empirical papers using German separation and reunification as quasi-experimental setting see Alesina and Fuchs-Schuendeln (2007), Kern and Hainmueller (2009), Hyll and Schneider (2013), and, recently, Bursztyn and Cantoni (2016), as well as Fuchs-Schuendeln and Masella (2016).

feelings, namely adverse repercussions on relative economic status of individuals. Second, the historical setting of our empirical analysis allows us to apply an IV approach addressing the endogeneity of distress from income comparisons. Third, our data set enables us to determine the social group someone compares; to observe the disutility a person experiences from income comparisons; and, to assess the relative income status compared to one's reference group. Finally, we contribute to the growing empirical literature on the economic relevance of social concerns but in a different way; whereas most previous papers focus on observational data and few rely on lab or field experiments, we provide evidence generated by a fascinating natural experiment.

2. Attitudes towards foreigners and income comparisons

In the empirical literature, most studies explaining negative attitudes towards foreigners emphasize the role of (perceived) economic threats, particularly concerning labor market competition (Scheve and Slaughter, 2001; Mayda, 2006) or the welfare state (Dustmann and Preston, 2007; Facchini and Mayda 2009; Helbling and Kriesi 2014). Other studies also consider non-economic factors, particularly nationalism and cultural distance (O'Rourke and Sinnott, 2006; Dustmann and Preston, 2007; Card et al., 2012b; Barone et al. 2016). With respect to labor market competition some papers suggest that less skilled individuals are more likely to oppose immigration than highly skilled individuals; probably, by fearing that most immigrants are also less skilled and substitutes on the labor market (Scheve and Slaughter, 2001; Mayda, 2006). However, other papers are somewhat skeptical concerning the labor market competition explanation of anti-immigrant sentiments (Hainmueller and Hiscox, 2010; Card et al., 2012b; Hainmueller et al. 2015). With respect to welfare concerns, negative attitudes towards immigrants are correlated with fears about fiscal burdens caused by immigration (Dustmann and Preston, 2007). Concerning non-economic explanations, it is shown that adverse attitudes are stronger towards immigrants from ethnically distant regions

(Dustmann and Preston, 2007; Card et al., 2012b). In our analysis, we provide a different economic explanation of negative attitudes towards foreigners: distress caused by unfavorable income comparison regarding one's reference group.[3]

Since foreigners typically do not enter a native's reference group, a notable impact of income comparisons on attitudes towards foreigners appears to be, at a first glance, implausible. By contrast, if foreigners affect a *native* individual's relative economic standing compared to the *native* reference group, income comparisons come into play. In accordance to the empirical literature one could imagine several channels how foreigners might affect a native's relative economic standing. If some native individuals and foreigners compete on local labor markets those native individuals might face pressure on wages and therefore constant or hardly improving wages whereas other members of the same social group experience a (higher) wage increase. In turn, the relative economic situation of some natives compared to the economic situation of others worsens. Therefore, natives with similar skills than immigrants should oppose immigration. Moreover, the competition for public goods or social transfers between natives and immigrants might also affect the relative economic status of natives compared to the relevant reference group. Another important channel that could be at work does not concern immigration but trade. Foreigners might produce goods and services less costly in their home economy than natives do. If, as a consequence, production in some industries of the native economy shrinks, the relative economic position of natives working in those industries might be affected. For that reasons, an individual's attitude toward foreigners could be determined by the effect foreigners exert on the individual's income position within his or her social group. Then, individuals show negative sentiments towards foreigners due to a depressed economic position compared to their reference group. Note that such sentiments do not require an *actual* deterioration in one's income ranking. Negative sentiments should

[3] In investigating the attitudes towards foreigners based on a sample within the GDR in 1990, we also contribute to the literature addressing the considerable right-wing extremism in East Germany during the 1990s (Krueger and Pischke, 1997; Lubbers and Scheepers, 2001; Falk et al., 2011; Siedler, 2011). Those analyses primarily concentrate on the effect of unemployment on right-wing extremism.

already arise if foreigners are *perceived* as a potential threat towards natives' relative economic standing.

In the empirical analysis, we focus on East Germany shortly after the adoption of the West German currency. After the monetary union in July 1990 the shield of the weak East German currency vanished overnight. Due to the politically determined exchange rate of 1:1 for wages, East German firms had to pay salaries far above the productivity level (Akerlof et al., 1991; Sinn and Sinn, 1992; Dornbusch et al., 1992). At this time, many East Germans realized that large parts of their economy could not compete on international markets, specifically with firms from low-wage countries (Barrel and Te Velde, 2000). In addition, the already settled and upcoming political union with West Germany removed many barriers in terms of international labor and capital mobility as wells as obstacles towards international trade. Thus, for East Germans the German reunification was also a shock of international integration (Burda and Hunt, 2001). With respect to this specific historical situation, it seems likely that East Germans perceive persons from low-wage countries as potential threat concerning the relative economic standing compared to better-off West Germans. East Germans might fear to fall even more behind West Germans in terms of economic status since East Germans, in competing with low-wage countries, could face (downward) wage pressure or increased risk of unemployment. Note that East Germans might be less scared of foreigners from high wage countries since firms and immigrants from those economies seldom were competitors on markets relevant for East Germans. Consequently, they should not affect the relative economic standing of East Germans compared to the West German reference group. Hence, we hypothesize that for East Germans in 1990 income comparisons to better-off West Germans could cause negative attitudes towards foreigners. These negative views, however, should be almost entirely directed towards foreigners stemming from low-wage countries.

3. Empirical Design

3.1. Historical background

At the end of World War II the remaining territory of Germany was divided into four parts occupied from the victorious powers of the United Kingdom, the United States, the Soviet Union and France. In autumn 1949, the three western sectors and West Berlin merged to the Federal Republic of Germany (FRG, West Germany), and the eastern Soviet sector became the German Democratic Republic (GDR, East Germany). Both parts of Germany experienced very different treatments during the 45 years after the division in 1945, both in terms of economic system (market economy vs. central planning) and political institutions (representative democracy vs. dictatorship).[4] Within East Germany, medium- and large-scale assets, farms, and firms were for the most part expropriated. As a consequence, the formerly well-endowed East German territory became considerably poorer than West Germany. The most recent estimation of Blum (2013) suggests that the almost equal income per capita between East and West German regions in 1946 diverged to a value of only 30 per cent in 1990 in the GDR compared to the FRG level. However, in accordance with communist ideology, income inequality remained very low (Alesina and Fuchs-Schuendeln, 2007).

An important feature of the German division was the erection of the Berlin Wall in August 1961. Until then, emigration to West Germany was illegal but could not be prevented. After the construction of the wall, migration from the East to the West came to a rest for almost 30 years until autumn 1989. Even traveling to West Germany and visiting relatives was almost impossible. Personal contacts between East and West Germans could be maintained only via mail exchange or short visits of West Germans in the GDR. These contacts remained almost entirely 'apolitical' since the GDR's state security service ('Stasi') monitored the exchange

[4] See Staritz (1996) for a comprehensive analysis of the political, economic, and social history of the GDR and Wolle (1998) for an illuminating portrait of many aspects of daily life under the totalitarian rule during the Honecker era between 1971 and 1989.

and the contacts between East Germans and their West German relatives and friends very strictly (Ghouas, 2004; Scheer, 2014).

During the 1970s and 1980s, the Inner-German situation was guided by the so called new eastern policy ('Ostpolitik') normalizing the relations between both German states; the idea of a re-unified Germany was dismissed. Still in summer 1989, the partition of Germany was generally believed to be permanent, both from East and West German people. Neither the public mass protests against the political system and its restriction of basic civil rights in autumn 1989 were expected nor were the fall of the Berlin wall in November 1989 and the breakdown of the entire communist system.[5] The rapid institutional transition culminated in the first free election in GDR in March 1990 and in the economic, monetary and social union in July 1990 when the West German currency was adopted in East Germany. In October 1990, the political reunification terminated the period of 45 years of Germany's separation.

3.2. Identification – IV approach

In the empirical analysis, we regress East Germans' attitudes towards foreigners on the distress these persons experience from comparisons to their better-off reference group in West Germany. To exclude that this correlation is driven by unobserved common factors or by reverse causality we apply an IV approach. We instrument the endogenous regressor of distress caused by comparisons to the West German reference group by the wealth gap between the East German respondents and their closest West German relatives or friends. In other words, only that part of variation in distress is used for explaining xenophobic attitudes, which is attributable to the gap in economic status between East Germans and their West German reference group. In validating the IV approach we, first, have to justify a significant

[5] Note that the political protest movements in the GDR in 1989 did *not* intend a reunification of Germany. The famous slogan "*We* are the people" aimed at a fundamental democratic reformation of the existing political regime. For a brilliant economic analysis of the development in the GDR in 1989/90, particularly, the protest movements, see Hirschman (1993). Concerning West Germany in 1989, a reunification was totally out of mind or, as the former chancellor Gerhard Schroeder said in a newspaper interview still in June 1989, "after 40 years of Federal Republic of Germany we should not lie to ourselves about the chances for a German reunification. They do not exist [authors' translation]."

correlation between the wealth gap and the distress variable. Since a large wealth gap should be naturally associated with higher distress the instrument is supposed to be highly relevant for the endogenous regressor. The performed weak instrument tests strongly confirm this supposition (see section 4.1.). Second, a valid instrument must fulfill the exclusion restriction, i.e. the assumption that the wealth gap affects attitudes towards foreigners only via the channel of income comparisons. In justifying the exclusion restriction we make use of the depicted unique setting in German history shortly after the fall of the iron curtain but already after the adoption of the West German currency and welfare system. With respect to the IV approach, the historical setting has two essential advantages.

First, the period allows us to focus on a group of people – East Germans – with an exogenously given reference group in the Western part of Germany, namely West German relatives and friends. On the one hand, in the period after the erection of the Berlin wall it was almost impossible to acquire *new* contacts to West Germans since emigration as well as visits to West Germany were prevented. Either a West German reference group existed before the erection of the Berlin wall or there was none. On the other hand, East Germans had – besides psychological motives of sustaining personal or family ties – strong incentives to stay in touch with their West German relatives and friends since they assured access to at least some of the appealing consumer goods of the 'capitalistic' economy.[6] In particular, we can rule out that East Germans who were, for whatever reason, highly sensitive for income comparisons cut ties to well-off West Germans because of distress from income comparisons. These comparisons to West Germans became *effective* not before the fall of the Berlin Wall, mostly after the currency conversion of financial assets, wages, and rents by the monetary union in July 1990. During the period of Germany's division until 1989, having affluent West German relatives or friends never was a concern in terms of income inequality. The West German

[6] Commonly, those goods were sent per parcel (the famous "Westpaket") to East German relatives containing coffee, chocolate, jeans, toys etc. Per year, around 10 million parcels were sent to East Germany counting 17 million inhabitants. See Lindner (2000) for a detailed analyses of the inner German parcel exchange.

economy was physically and mentally out of reach for East Germans; consequently, East Germans compared their economic status to other East Germans but not to West Germans.[7] Moreover, comparing real incomes would have been unfeasible since relatives prices, goods, and qualities greatly differed between East and West Germany before 1990. Prices were low for state-subsidized goods like food, transport, rents. By contrast, prices for all kinds of technical products were high. Some goods even were not available in East Germany, e.g. home computer, video cameras, and holiday trips outside the communist bloc. Equally important, for comparing real incomes an unambiguous exchange rate between D-Mark and GDR-Mark would have been required. During the period of the German separation the official exchange rate was 1:1 – but no East German was allowed to exchange GDR-Mark into D-Mark at this rate. The actual exchange rates in West Berlin exchange offices varied between 1:4 and 1:10 during the 1980s (Schwarzer, 1999). It was hardly possible to compare real incomes on the basis of those highly fluctuating exchange rates. All in all, we find a historically unique situation where people maintain close social contacts to a better-off group without worrying about income comparisons. Hence, selection or sorting effects concerning social ties to West Germany should be negligible. If selection effects existed at all they are unlikely systematically related to income considerations.

Second, for East Germans, the wealth gap compared to their West German reference group can be considered as an exogenous variation. Whether West German friends or relatives had acquired a high standard of living or not during the period of Germany's division was – from an East German's view – a matter of chance. The historical situation assures that East Germans did not affect the income of the West German reference group. Moreover, during the German separation, West Germans could not benefit from their contacts to East Germans

[7] For a related argument concerning the noneconomic reasons for maintaining social ties across the inner German border, see Burchardi and Hassan (2013). Note that this line of reasoning corresponds to Runciman's (1966) definition of relative deprivation, as pointed out in the introduction section: A precondition for sensing relative deprivation is that desired goods have to be feasible. Without feasibility distress cannot become effective.

(Burchardi and Hassan, 2013). Vice versa, the opportunity to reduce the gap in economic status by improving the own income in the GDR was unrealistic given the very flat wage distribution within the communist country. Likewise, West Germans had no chance to enhance the standard of living of East Germans beyond the mentioned small "Westpaket" parcel presents.[8]

The historical setting at the beginning of the German reunification qualifies for our analysis also from another critical perspective. Typically, attitudes towards foreigners are affected by contacts to immigrants (Dustmann and Preston, 2001). In our context, unobserved variation with respect to such interactions to foreigners should play no significant role. Throughout the history of the GDR, immigration was a negligible phenomenon. The share of labor immigrants ('Vertragsarbeiter') from other communist states, as most important group of immigrants, was approximately 0.5 per cent of the native population in 1989 (Elsner and Elsner, 1992). In addition, those few immigrants lived and worked strictly separated from the native population and had to leave the state after two to four years (Zwengel, 2011). Hence, the individuals in our sample – due to exogenous historical factors – are very homogenous concerning their interactions to foreign people which lends our econometric analysis still more credibility.

Even if the historical situation dissolves major methodological problems with respect to the exclusion restriction three major challenges still remain. We discuss those concerns extensively in section 4.2.

(1) *Effects of common social/biological background.* A major challenge arises by a potential correlation of an individual's abilities, personality, and attitudes towards foreigners,

[8] The private import of West German currency in the GDR was not officially prohibited. However, the 'Stasi' radiographed or opened letters and parcels, also to confiscate sent Deutschmark (Schulte Döinghaus, 2000). As a consequence, only small amounts of currency changed over from West Germans to their East German relatives. Moreover, since 1979 East Germans were obliged to convert their Deutschmark into so-called Forumschecks only usable in 'Intershops' where East Germans could buy a small range of Western consumer products (Boeske, 2000).

along with a correlation of those personal characteristics *between* East and West Germans. A better-off reference group in the West might be characterized by high abilities as well as specific personality traits and, hence, attitudes towards foreigners. If their East German relatives share those abilities, personality traits, and attitudes, e.g. due to a common social or biological background, we find a correlation between the wealth gap and attitudes towards foreigners that would be wrongly attributed to distress from income comparisons. However, in the extension section we do not find any indication of an ability disparity between East Germans with high, low or no wealth gap to their West German relatives and friends. Furthermore, controlling the entire set of the big five personality traits does not change our findings.

(2) *Peer effects.* A slightly different concern arises by the potential effect of increasing peer interaction between East and West Germans after the fall of the wall. If rich West Germans show different attitudes towards foreigners than less well-off West Germans they could simply "export" their attitudes directly to their East German peer. In this case, we would wrongly attribute the effect caused by peer communication to an income comparison effect. We address that concern although strong influence of West German peers could not have emerged before 1990.

(3) *Perception Bias*. In our empirical analysis we rely on survey measures. This is particularly relevant regarding the reported wealth gap with respect to West German relatives and friends. A problem with accepting an individual's reported wealth gap as her actual wealth gap is that his or her responses may be biased. If a certain psychological disposition causes an overstatement of the wealth gap and, simultaneously, drives xenophobic feelings, our findings would be driven by underlying forces of one' personality and not by income comparisons. We address this issue in several ways. First, since psychological factors might drive the perception of the wealth gap and attitudes, we control for (the big five) personality traits. Second, we provide a test for the existence of

a systematic perception bias based on individual's evaluation of his or her own income. We find that based on personal income East Germans with different levels of wealth gaps to West Germans do not show divergent perceptions of their economic status. Finally, a promising way to account for a perception bias is to control for the bias in the main regressions, which does not affect our results either.

3.3. Data and Measurement

In explaining how distress from income comparisons might cause negative attitudes towards foreigners, we make use of a representative survey conducted in the GDR in September 1990, after the monetary union but still before the political reunification.[9] The survey was performed to obtain – for the first time – a comprehensive, representative, and politically unbiased picture of East Germans' attitudes and beliefs in the field of economic, social, and political life.[10] It covers many aspects alongside the East-West dimension, e.g. on the relative economic status of East Germans in comparison to their West German reference group, but also more general aspects, as education, employment, personality, social relationships, political orientation, voting behavior, and, important in the present context, xenophobic attitudes.

The survey contains records on 1,307 individuals aged between 15 and 86 years.[11] Since our research question requires survey information on the wealth of an East Germans' reference group in the West, we could not use data of respondents that do not have West German relatives or friends (roughly 12 per cent of the survey). Therefore and due to other missing values, our sample reduces to almost 950 observations depending on the particular

[9] The interviews were conducted by the Central Institute for Youth Research Leipzig in collaboration with the most prominent West German political magazine DER SPIEGEL. Data are available by the GESIS Data Archive, Cologne. ZA6016 Data file Version 1.0.0, doi:10.4232/1.6016. Since the survey might be less known than other German micro data, specifically the GSOEP and the ALLBUS, we confirm the reliability of our data by comparing the distribution of crucial variables with the first East German wave of the GSOEP (1990) and the ALLBUS (1991). See Appendix table A8 for a comparison.

[10] Note that our study is the first focusing on such an early point in time – ten months after the breakdown of the Berlin wall and two months after the adoption of the West German currency.

[11] For descriptive statistics, see Appendix table A1.

specification. In what follows, the measurement of crucial variables applied in the empirical analysis is described.

Dependent variable: Negative Attitudes towards Foreigners

With respect to the dependent variable, three different approaches for identifying negative attitudes towards foreigners are applied. *First,* survey respondents are asked whether they are against political rights for immigrants in Germany, namely voting rights. Response categories are: "being against political rights", "being in favor", or "do not know". This innocuous political question enables us to identify negative attitudes towards foreigners avoiding a too direct reference to stigmatized political positions that could produce social desirability biases. We construct a binary variable, which is set to one if the respondent is against political rights for immigrants.[12] In our survey, almost 42 per cent of East Germans are against political rights for immigrants.

Second, people locating themselves on an extreme right political position on the well-established ten-point left-right scheme of political opinions are considered as holding negative attitudes towards foreigners. Even if right-wing attitudes comprise other facets of the political agenda, this disposition should be strongly correlated with negative attitudes towards foreigners. All main conceptual approaches of right-wing extremism in Germany consider strong negative attitudes towards foreigners as one of the key elements of those political views (Frindte et al., 2016).[13] Technically, a binary variable is constructed where persons with eight points and above on the ten-point scale are viewed as showing right-wing attitudes.[14] Since only seven per cent of the sample show right-wing political views it seems quite plausible to infer that this approach identifies extremely hostile persons in terms of attitudes towards foreigners.

[12] Results remain robust when omitting indecisive individuals. See robustness section and table A4 in the appendix.
[13] For a related argument for Italy see Barone et al. (2016).
[14] Results remain robust when applying the original scale or a different threshold. See robustness section and table A4 in the appendix.

Third and probably most promising, the survey entails questions addressing attitudes towards foreigners *directly.* Persons are asked to express their sympathy for foreigners on a scale between minus five and plus five. Moreover, in answering these questions, respondents have to distinguish between attitudes towards *specific* nationalities.[15] Since our hypothesis suggests that East Germans should be more hostile to foreigners from low-wage countries, we construct a variable averaging the attitude to those foreigners.[16] Technically, we construct a binary variable set to one if the expressed value of sympathy falls within the lower third on the sympathy scale (lower than minus two). This threshold is chosen to identify attitudes towards foreigners, which are evidently "hostile."[17] In the survey, 13 per cent of East Germans take such views towards foreigners from low-wage countries.

Endogenous regressor: Distress from Income comparisons

In the empirical analysis, negative attitudes towards foreigners are explained by the distress individuals' experience from upward income comparisons. We measure distress by using a survey question that reflects the personal disutility caused by the respondent's discrepancy in the standard of living in comparison to West Germans relatives or friends: 'Is this difference [to the standard of living of West German relatives and friends – the authors] a burden to you?' – 'No', 'Yes, a bit', 'Yes, very much so'. Thus, we do not derive a person's distress from upward comparisons from information on an abstract East-West income gap; we use the psychological distress that a person expresses. In the sample, 73 per cent report no distress, 22 per cent confess some inconvenience and five per cent express strong negative feelings caused by the gap in economic status.

[15] The addressed foreigners comprise nine nationalities, namely Vietnam, Turkey, Cuba, Romania, Russia, Poland, USA, France, and Austria.

[16] The low-wage group consists of Vietnam, Turkey, Cuba, Romania, Russia, and Poland. The assignment is based on the countries' GDP per capita in 1990 in relation to that of East Germany using the Maddison historical GDP data (The Maddison-Project, http://www.ggdc.net/maddison/maddison-project/home.htm, 2013 version) together with Maddison and Alton (2011).

[17] In the robustness section (see chapter 4.4), we also use variables representing the -5 to +5 scale directly. We also focus on non-communist nationalities; restrict the analysis to European nationalities to construct cultural homogenous groups; and address every single nationality separately. All those modifications strongly confirm the robustness of our main findings.

Instrument: Wealth Gap

Following the identification strategy, we use the wealth gap of an East German person in comparison to his or her West German reference group for instrumenting the regressor of distress. Our survey data provides information on the wealth gap of the East German respondents. The wealth gap is defined by using the question: 'What is the economic status of your closest relatives or friends in the West in comparison to your status?' According to the survey, 49 per cent report a high wealth gap in comparison to West Germans, 35 percent perceive a low wealth gap, 14 per cent observe no difference in wealth, and only 1.5 percent find a somewhat or very negative gap, i.e. a somewhat or much lower economic status of West Germans. Note that in September 1990 after the monetary union and the corresponding conversion of financial assets, rents, and wages, East Germans could estimate the wealth gap compared to West German relatives or friends with much more precision than before.

Controls

To disentangle the effect of distress arising from income comparisons on negative attitudes towards foreigners, we control for a rich set of variables found to be relevant in previous studies, i.e. main socio-demographic characteristics (age, sex, partnership status, and children), labour market status, personal income, qualification, and regional information. Equally crucial, we are able to consider the effect of nationalistic views by observing how strong the respondents identify themselves as Germans.

Since one's personality might affect attitudes, distress and the reported wealth gap we account for well-established traits of personality (see chapter 4.2), namely the five factors (big five) according to McCrae and Costa (1999): Neuroticism, Openness, Extraversion, Agreeableness, and Conscientiousness. Neuroticism reflects feelings of depression and helplessness. Openness is measured as willingness to take risks and to be creative. Extraversion is approximated by the frequency of meeting friends. Agreeableness represents the disposition

of helping others. Conscientiousness is measured via the self-reported tendency of being disciplined and reliable. The five personality traits are coded as binary variables.

In section 4.2, we also control for the strength of contacts to either West German relatives or West German friends. The corresponding variable is supposed to account for the extent to which an East German person might be influenced by beliefs and attitudes of the West German peers. For constructing this variable, we use the available separate information for either relatives or friends in the Federal Republic of Germany: 'Do you have relatives ['friends'] in the other part of Germany?' – 'Yes, with close contact', 'Yes, no close contact', 'Yes, but no contact at all', 'No'. Since peer interaction occurs only in the case of actual contacts the latter items are aggregated to one category.

4. Results

4.1. Basic specification

Table 1 presents the results of the second stage IV probit regressions. First stage regressions are displayed in table A2 in the appendix. In all specifications we use the wealth gap as instrument for distress from upward income comparisons. In analyzing the effect of income comparisons on attitudes towards foreigners, we first focus on the opposition to political rights for immigrants as dependent variable. As shown in table 1, column 1, the estimated coefficient of distress is highly significant and positive: when East Germans feel distressed by income comparisons to their West German reference group they are more likely against political rights for immigrants. In terms of the size of the effect, the marginal value indicates that a rise in distress by one (e.g. from 'some' to 'high') increases the average probability of being against political rights for immigrants by 27.8 percentage points.

We next apply right-wing political attitudes as proxy for negative attitudes towards foreigners. Results are depicted in column 2. Our results reveal that distress has a positive and highly significant impact on holding right-wing political attitudes, indicating that when

relative concerns matter, individuals are more likely to support right-wing policy. More precisely, experiencing higher distress increases the average probability of (extreme) right-wing political attitudes by 35 percentage points.

Table 1: Income comparison and attitudes towards foreigners (IV-PROBIT)

	Against Political Rights for Immigrants	Right-wing Political Attitude	Antipathy towards Foreigners from Low-wage Countries
	(1)	(2)	(3)
Income comparison Distress	0.784**	1.657***	1.004***
	[0.318]	[0.129]	[0.364]
Marginal Effect	*0.276*	*0.355*	*0.218*
Age	-0.004	0.013***	-0.008
	[0.004]	[0.005]	[0.005]
Male	0.163*	0.042	0.050
	[0.089]	[0.100]	[0.110]
Living in a Partnership	-0.003	-0.234*	-0.141
	[0.107]	[0.123]	[0.131]
Having Children	0.270*	-0.179	0.024
	[0.144]	[0.150]	[0.168]
Labour Market Status (Base Group: *No Workforce*)			
(Self-)Employed	-0.063	-0.059	-0.206
	[0.141]	[0.153]	[0.159]
Unemployed	0.025	0.182	-0.267
	[0.245]	[0.264]	[0.268]
Education (Base Group: *Unskilled*)			
Still in Training	-0.018	-0.222	-0.518
	[0.296]	[0.312]	[0.319]
Skilled	-0.084	-0.255	-0.491*
	[0.243]	[0.214]	[0.254]
Academic	-0.270	-0.308	-0.779***
	[0.250]	[0.236]	[0.284]
Living in a City	-0.321***	-0.133	-0.293**
	[0.093]	[0.102]	[0.116]
Nationalist Identity	0.306***	0.165	0.289**
	[0.102]	[0.123]	[0.126]
Personal Net Income (Log)	0.131	0.119	0.103
	[0.107]	[0.128]	[0.133]
2SLS F-test	40.222	31.776	39.824
Wealth Gap (First Stage)	0.174***	0.161***	0.175***
Observations	940	849	927

Notes: Significance levels: * $p<0.10$; ** $p<0.05$; *** $p<0.01$. Robust standard errors in parentheses; constant not reported. Instrument: Wealth gap relative to West German relatives or friends. First-stage results are displayed in Appendix table A2. F-test refers to the 2SLS estimation of the models.

Since right-wing political attitudes might not only reflect attitudes towards foreigners but also other political dimensions in our third set of regressions, we apply our variable indicating antipathy to foreigners from low-wage nations. East Germans sensing a high distress express a significantly greater antipathy to these people. The average marginal effect is about 20 percentage points. Since workers from low-wage nations are the main competitors of East Germans – either by migrating to Germany or by performing tasks of the East German economy less costly in their home economy – this result is clearly in line with our theoretical considerations. Note that in all three specifications, the instrument (wealth gap) is highly significant in the first stage equations as is the F-test of weak instruments. According to the first stage results and in line with our prediction, a higher wealth gap compared to West Germans significantly increases the personal distress caused by income comparison.

In sum, we find evidence for a strong effect of distress experienced by income comparisons on attitudes towards foreigners: East Germans who sense more distress with respect to their West German reference group hold more negative views against foreigners by opposing to political rights for foreigners, by expressing a right-wing political attitude, and by showing strong antipathy for foreigners from low-wage countries. Even if we control for main determinants found to be relevant for xenophobic attitudes in previous studies (education, sex, age, unemployment, nationalism or economic situation) in what follows, the credibility of the basic result is checked by a range of additional tests, particularly concerning the applied IV approach.

4.2. Extensions – Validity of exclusion restriction

Effects of common social/biological background

A serious objection to our identification strategy points to a potential correlation of an individual's abilities, personality, and hence attitudes, namely attitudes towards foreigners, in combination with a correlation of those characteristics *between* East and West Germans. Rich

relatives in the West might be characterized by high abilities and an open personality and, hence, specific attitudes towards foreigners. If East German relatives or friends share those characteristics due to a common social or biological background, we also observe a correlation between a high wealth gap and specific attitudes towards foreigners that are not caused by distress from income comparisons.[18]

To overrule the objection, we, *first*, test whether East Germans with different levels of wealth gaps to West Germans differ among themselves in observable abilities. We focus on educational and labor-market outcomes, namely the highest educational grade, personal income, and labor-market status (unemployment, part- and short-time employment). Table 2 confirms no significant differences between those ability-related outcomes in our sample.

Table 2: Ability selection (Differences in Labor Market Related Outcomes)

	Highest Qualification	Personal Income (DM)	Unemployed	Part-time/ Short-time
	Ordered Probit	*OLS*	*Probit*	*Probit*
	(1)	(2)	(3)	(4)
Wealth Gap (Base Group: *High*)				
Low	-0.053	17.230	-0.271	0.142
	[0.087]	[32.639]	[0.172]	[0.123]
None	-0.036	72.221	-0.384	0.240
	[0.163]	[70.621]	[0.362]	[0.230]
Observations	810	438	633	581
Sample	Without people in education	Full-time employees	Entire labour force	Employees

Notes: Significance levels: * $p<0.10$; ** $p<0.05$; *** $p<0.01$. Robust standard errors in parentheses. Sample based on regression of table 1, column (1). Age and gender are controlled.

As a *second* strategy we account for personality traits (table 3). In line with the well-established five-factor model of personality in psychology (McCrae and Costa 1999), Neuroticism, Openness, Extraversion, Agreeableness, and Conscientiousness are taken into consideration. As can be seen in table 3, neuroticism and agreeableness tend to reduce

[18] Note that persons in egalitarian East Germany did not benefit from high abilities as much as their reference group in the West German free market economy. Consequently, the wealth gap between East and West Germans should be greater for persons sharing high abilities.

negative feelings towards foreigners; by contrast, conscientiousness is positively related to opposition against foreigners. However, implementing these personality traits does not change our findings concerning the effect of income comparisons on xenophobic attitudes: Our estimates of distress from income comparisons are not affected by the inclusion of these variables.

Table 3: Accounting for personality traits, Big 5 (IV-PROBIT)

	Against Political Rights for Immigrants (1)	Right-wing Political Attitude (2)	Antipathy towards Foreigners from Low-wage Countries (3)
Income comparison Distress	0.862***	1.700***	0.981**
	[0.327]	[0.121]	[0.395]
Personality Traits (Big 5)			
Neuroticism	-0.336***	-0.408***	-0.058
	[0.087]	[0.097]	[0.119]
Openness	0.100	0.154	-0.211
	[0.115]	[0.115]	[0.145]
Agreeableness	-0.287**	0.023	-0.233
	[0.132]	[0.135]	[0.144]
Extraversion	0.137	0.055	-0.009
	[0.112]	[0.115]	[0.128]
Conscientiousness	0.497***	-0.232	0.354*
	[0.179]	[0.172]	[0.204]
Controls	Yes	Yes	Yes
2SLS F-test	38.144	30.255	37.786
Wealth Gap (First Stage)	0.171***	0.160***	0.172***
Observations	938	848	925

Notes: Significance levels: * $p<0.10$; ** $p<0.05$; *** $p<0.01$. Robust standard errors in parentheses; constant not reported. Instrument: Wealth gap relative to West German relatives or friends.

A *third* robustness test focuses on the direction of a potential bias that the shared background between East and West German relatives would imply. If richer West Germans show warmer feelings towards foreigners – which we show in the next section – their relatives in East Germany should, by argument of the common background, share those attitudes. But then, our main findings would be biased downwards and the true effect arising from distress should be even stronger.

Altogether, we do not find any indication of a bias caused by an underlying correlation of relevant individual characteristics between West and East German relatives and friends. Furthermore, if such a bias would exist it should not harm our results since it pressures the estimates of social distress downwards.

Peer effects of West Germans

Direct peer influence might be another unobserved channel how the wealth gap could be correlated with attitudes. Specifically, if wealthy West Germans have different attitudes towards foreigners than other West Germans, close contact to those peers could rub off on East Germans' attitudes. Thus, the intensity of peer contacts might directly affect attitudes towards foreigners. To account for this channel, we include information on the strength of peer contacts to West Germans. Thereby we separately control for contact intensity to relatives and to friends. Regression results are depicted in table 4. The inclusion of contact intensity has no impact on the effect of distress on attitudes towards foreigners.

Table 4: Controlling the strength of contacts to West Germans (IV-PROBIT)

	Against Political Rights for Immigrants (1)	Right-wing Political Attitude (2)	Antipathy towards Foreigners from Low-wage Countries (3)
Income comparison Distress	0.782**	1.696***	1.062***
	[0.353]	[0.122]	[0.389]
Strength of Contacts to Relatives (Base Group: *None*)			
Low	0.151	0.255	0.098
	[0.126]	[0.170]	[0.145]
High	0.115	0.227	0.007
	[0.128]	[0.182]	[0.144]
Strength of Contacts to Friends (Base Group: *None*)			
Low	0.010	-0.154	-0.046
	[0.115]	[0.117]	[0.133]
High	0.064	-0.087	-0.038
	[0.109]	[0.112]	[0.133]
Personality Traits (Big 5)	Yes	Yes	Yes
Controls	Yes	Yes	Yes
2SLS F-test	35.259	27.179	34.871
Wealth Gap (First Stage)	0.165***	0.152***	0.165***
Observations	917	829	904

Notes: Significance levels: * $p<0.10$; ** $p<0.05$; *** $p<0.01$. Robust standard errors in parentheses; constant not reported. Instrument: Wealth gap relative to West German relatives or friends. Controls as in table (1).

Even after accounting for the *strength* of contact, the *direction* of peer impact might still be a concern. Ideally, we would control for xenophobic attitudes of the West German reference group in our sample; yet, we do not have information on West Germans' attitudes. However, by performing an auxiliary regression based on the ALLBUS 1991 survey we argue that better-off West Germans are characterized by – if any – more friendly attitudes towards immigrants from low-wage countries. Table 5 depicts the results of the regression. As dependent variable we utilize a question on the attitude towards labor immigration from countries outside the European Community (EC) as Turkey or Yugoslavia. This attitude is regressed on a *West German* dummy indicating whether an individual lives in West Germany and, crucially, on the interaction between *West German* and *economic status*. Economic status

is a dummy variable coded one if the perceived economic status is high, and zero otherwise. In the second column, we restrict the West German respondents to people born in the GDR.[19] Hence, this sample might be more representative for West Germans with East German social ties.

Table 5: Attitudes towards immigrants from low-wage countries – East Germans vs. West Germans vs. better-off West Germans (ALLBUS 1991, ORDERED PROBIT)

Against Labor Immigration from Non-EC Countries (e.g. Turkey, Yugoslavia)	All West Germans (1)	West Germans with East German roots (2)
West German (Base Group: *East German*)	-0.143* [0.074]	-0.226 [0.277]
Interaction: High Economic Status × West German	-0.215*** [0.080]	-0.004 [0.319]
Observations	2,544	1,369

Notes: Significance levels: * $p<0.10$; ** $p<0.05$; *** $p<0.01$. Robust standard errors in parentheses; cutoff points not reported.

From column 1 in table 5 it can be seen that West Germans in general show significantly less anti-immigration views than East Germans. The sign of the interaction coefficient suggests that the effect is more pronounced for West Germans with high economic status. With respect to West Germans with East German roots we also find negative coefficients, but the estimates are not significant. However, the group of West German relatives and friends likely consist of both groups – West Germans with and without East German roots. Therefore, if peer effects are at work at all, East Germans with *well-endowed* West German relatives or friends should show warmer feelings towards immigrants. Then, the coefficient of our main regression should be biased towards zero. Note however, since the potential West German influence on xenophobic attitudes practically could only work during the few months after the fall of the iron curtain, the effects should be of modest strength.

[19] The restricted sample of West Germans is considerably older than the full sample indicating that most of the West Germans born in the GDR moved to West Germany before the erection of the wall in 1961.

Perception Bias

Finally, our results might suffer credibility if East Germans facing a high wealth gap show systematic differences in *perceiving* or *assessing* the economic status of their reference group compared to East Germans facing a low or no wealth gap. We address this concern in several ways. First, if an unobserved personal factor simultaneously causes overestimation of someone's wealth gap and adverse attitudes towards foreigners our basic findings could be biased. In our regression results depicted in table 3 we also control for personality traits. Since estimates of distress from income comparisons are not affected by the inclusion of these variables, this issue might be of minor importance. Second, we also prove the reliability of the IV-approach by another test relating information of someone's personal income to the perceived economic status. Since in our sample we have information on the personal (net) income (in Deutschmark) as well as on the perceived economic status ranging from very poor to very rich we check if the correlation between income and status is different for individuals experiencing a high wealth gap to West Germans compared to individuals experiencing a low or no wealth gap.

Table 6: Self-assessed economic status and actual personal net income (ORDERED PROBIT)

Perceived Economic Status (Very Poor/Poor/Average/Good/Very Good)	(1)	(2)
Personal Income (Relative to Sample Mean)	0.549*** [0.124]	0.369*** [0.090]
Interaction Income × Wealth Gap (Base Group: High Wealth Gap)		
Personal Income × Low Wealth Gap	0.053 [0.069]	0.069 [0.066]
Personal Income × No Wealth Gap	0.179 [0.138]	0.189 [0.141]
Controls	Yes	No
Observations	916	939

Notes: Significance levels: * $p<0.10$; ** $p<0.05$; *** $p<0.01$. Robust standard errors in parentheses. Size of household is always controlled. Sample based on regression of table 1, column (1).

As shown in table 6 we find that, individuals with a high wealth gap do not differ to other individuals in reporting their own economic status on the basis of their personal income. That is, since irrespective of the wealth gap to their West German reference group individuals perform similarly in predicting their own economic status based on their personal income, we see no reason for a systematic assessment bias of the wealth gap.

Yet, a third promising way to account for the perception bias is to directly control for a potential perception bias on the individual level in the main regressions. We use different strategies for estimating an individual's perception bias. First, we infer an individual's perception bias by calculating OLS residuals from regressing one's economic status on personal income. Second, we deduce an individual's perception bias by making use of his perceived economic status and his *actual* relative position based on his personal income and the GDR income distribution (see table A10). The actual relative position is determined in classifying the personal income within the GDR income distribution (see table A9). The actual relative position then is compared with the perceived economic status. The deviation between the actual relative position and the economic status is used as perception bias.[20] A third method of calculating the perception bias relies on a method proposed by Pham-Kanter (2009). We first run an ordered probit regression where, again, perceived economic status is regressed on the personal income. Then, we rank individuals according to their predicted (latent) economic status. Based on the frequency distribution of the five categories of the perceived economic status we assign individuals into five classes (of predicted economic status).[21] Finally, the difference between the predicted and the perceived economic status is used as individual perception bias.

[20] Technically, we compare one's personal income to the GDR's distribution and classify the personal income as being very poor/poor/average/good/very good. We use two classifications: a lower bound and an upper bound. For instance, a personal income of 1,200 DM is evaluated as 'good' according to the upper bound and as 'average' according to the lower bound (see table A9).

[21] That is, we generate five classes for the predicted economic status where the frequency distribution of each class corresponds to the frequency distribution of the perceived economic status.

After having derived all these different perception biases, we include them in our main regressions. Results are depicted in table 7. As can be seen, results concerning the effect of income comparisons on attitudes towards foreigners seem not to be driven by a potential perception bias independently how it is calculated. Neither the size of the coefficients nor the significance are affected.

Table 7: Corrections of Potential Perception Bias (IV-PROBIT)

		Against Political Rights for Immigrants (1)	Right-wing Political Attitude (2)	Antipathy towards Foreigners from Low-wage Countries (3)
Test I	Income comparison Distress	0.786** [0.365]	1.708*** [0.124]	1.046** [0.408]
	Bias: Residuals from OLS-Regression	*-0.048 [0.071]*	*-0.129* [0.078]*	*0.023 [0.092]*
Test IIa	Income comparison Distress	0.783** [0.360]	1.695*** [0.125]	1.049*** [0.401]
	Bias: Based on actual GDR Wage Distribution (lower bound)	*-0.041 [0.057]*	*-0.052 [0.061]*	*0.028 [0.075]*
Test IIb	Income comparison Distress	0.795** [0.365]	1.705*** [0.125]	1.052*** [0.408]
	Bias: Based on actual GDR Wage Distribution (upper bound)	*-0.061 [0.066]*	*-0.106 [0.070]*	*0.005 [0.086]*
Test III	Income comparison Distress	0.775** [0.359]	1.705*** [0.123]	1.047*** [0.397]
	Bias: Predicted Probability Ranking	*-0.018 [0.062]*	*-0.116* [0.065]*	*0.099 [0.087]*

Notes: Significance levels: * $p<0.10$; ** $p<0.05$; *** $p<0.01$. Robust standard errors in parentheses. Every regression entails the entire set of controls, including contact intensity and personality traits. Instrument: Wealth gap relative to West German relatives or friends.

4.3. Validating the low-wage country effect

Results in table 1, column 3, suggest that individuals characterized by distress from income comparisons have negative attitudes towards foreigners stemming from low-wage countries. A potential concern with this specification is that we do not measure negative sentiments towards *low-wage* foreigners but adverse feelings caused by other aspects, e.g. cultural or

ethnical distance (Dustmann and Preston, 2001, 2007). Since several countries within the low-wage group consist of communist countries, our findings might simply reflect negative attitudes towards a detested communist ideology. To address this concern, we consider only low-wage countries, which were non-communist countries or overthrew the communist system before 1990. Therefore we construct a new dependent variable, which only consists of Poland, Romania, and Turkey. Regression results are depicted in table 8, column 1. As in the previous regressions, we instrument the distress variable with the wealth gap. In support of our main regressions, we find a highly significant and positive effect of distress on negative attitudes towards foreigners of non-communist low-wage countries.[22]

Table 8: Antipathy towards specific groups of countries (IV-PROBIT)

	Low-Wage Countries		
	Non-communist [PL, RO, TR] (1)	European [PL, RO, RU, TR] (2)	Low- and High-Wage Countries (3)
Income comparison Distress	1.051*** [0.333]	0.899** [0.416]	0.606 [0.897]
Personality Traits (Big 5)	Yes	Yes	Yes
Strength of Peer Contacts	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes
Observations	905	905	902

Notes: Significance levels: * $p<0.10$; ** $p<0.05$; *** $p<0.01$. Robust standard errors in parentheses.
Instrument: Wealth gap relative to West German relatives and friends.

Furthermore, our low-wage country measure also includes non-European countries commonly perceived as having a very different culture. To alleviate the effects of cultural distance we next restrict the dependent variable measuring negative attitudes towards low-wage countries from Europe (Poland, Romania, Russia, and Turkey). As shown in column 2 of table 8 our results remain almost unchanged after excluding non-European countries.

[22] We also performed a regression for antipathy towards Turkish people alone since Polish and Romanian people might be seen in the light of a former communist country even if the protest against the communist system was powerful in these countries. The results confirm our finding that it is not communism that drives negative attitudes. See Appendix table 3a.

According to the historical context in 1990, negative attitudes towards foreigners of East Germans should be much more pronounced towards low-wage countries than towards high wage countries. In other words, the effect of distress on negative attitudes towards foreigners should be smaller, when also considering individuals stemming from countries that are no threat to the relative standing of East German individuals compared to their West German reference group. Therefore, we construct a variable indicating sympathy for foreigners in general, where individuals come from both, low-wage and high wage countries (USA, Austria, and France). Column 3 in table 8 presents the estimation results. As expected, we find no distress effect on attitudes toward foreigners in general. In the Appendix tables A3a and A3b, regression results are shown when we address every single nationality separately. In line with these findings, we observe no effect of distress on attitudes towards individuals stemming from high wage countries. The regressions strongly confirm the robustness of our main findings.

4.4. Further robustness checks

In the main regressions we tried to identify the group of people showing *strong* negative attitudes towards foreigners. In doing so we restricted information on xenophobic attitudes in the data to binary variables. To ensure that the defined thresholds and the loss of information does not affect our results, we also performed regressions for alternative thresholds and coding of our dependent variables (see table A4). Our findings remain robust when dropping the 'indecisive' category with respect to political rights for immigrants (see table A4, column 1), redefining the threshold of being right-wing oriented (see table A4, column 2a), using the original scale of the political viewpoint attitudes (see table A4, column 2b), using a lower bound for antipathy towards foreigners for low-income countries (see table A4, column 3a) and applying the cardinal antipathy-sympathy scale (see table A4, column 3b). Furthermore findings remain almost unchanged by the restriction of the sample to East Germans with high

or low wealth gaps (see table A5) or to East Germans with *close* contacts to West Germans (see table A7). Results are even robust to the recoding of the variable of income comparison distress in a binary way (1 = high/some, 0 = none) (see table A6).

5. Conclusion

Relative concerns affect behavior in many dimensions. Our findings provide strong evidence that individuals exhibiting distress from upward income comparisons also have more negative attitudes towards foreigners. Those attitudes are measured by using three different proxies: right-wing political attitudes, being against political rights for immigrants, and antipathy towards different nationalities. It is shown that negative attitudes are more pronounced when considering individuals emanating from low-wage countries. Since we exploit a fascinating natural experiment and provide additional support for the reliability of our identification strategy, we interpret the results as evidence of a causal link between distress from income comparisons and attitudes towards foreigners.

Moreover, the findings are in line with our theoretical predictions. Since East Germans are less economically well off than their West German reference group, immigration from low-wage countries is capable of worsening the relative standing of the East German individuals' compared to their West German reference group. In sum, immigration that is perceived as harming the relative standing will decrease utility and likely results in attitudes and actions against immigration. Our findings support previous studies suggesting that supposed labor market threats caused by immigration might trigger sentiments against specific groups of foreigners within a society. However, individuals seem to worry not only about their own income level but also about the relative degradation of the economic status within their reference group.

Our analysis also sheds some light on the current European refugee crisis. Compared to central European countries, East European countries engage in much more restrictive asylum

policies. While central European countries push forward policies including a European quota that regulates the distribution of asylum seekers across Europe, Slovakia, the Czech Republic, Hungary, and Romania vehemently oppose the quotas for refugee sharing. What most East European countries have in common is a communist history. Alesina and Fuchs-Schuendeln (2007) provide evidence that living under Communism shapes preferences in a distinct manner. They find that East Germans are more in favor of state intervention and of income redistribution than West Germans (see also Corneo and Gruener, 2002). All in all, they observe that East Germans have a strong aversion to inequality. Hence, the distress from relative concerns should be much more pronounced in former Communist countries. Furthermore, East European countries are relatively poorer than central European countries which constitute their natural comparison group within Europe. Therefore, negative sentiments towards asylum seekers in East Europe might be triggered by fears of falling behind (in terms of income) to West Europeans. Even in the US an analogous mechanism appears on the current political agenda: the US opponents of liberal immigration policies put forward that immigrants from low-wage countries as Mexico are a threat towards one's economic standing within the income distribution of working-class Americans.

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Appendix

Table A1: Descriptive statistics for regression samples

Variable		Label	Share/ Mean
Against Political Rights for Immigrants (Dummy)		M08_0011	43.9
Right-Wing Political Attitude (Dummy)		M08_0112	8.2
Antipathy towards Foreigners from			
Low-wage Countries (Dummy)			13.9
Non-communist Low-wage Countries (Dummy)		M08_0065 – M08_0078	20.4
European Low-wage Countries (Dummy)			16.0
Low- and High-wage Countries (Dummy)			2.1
Income comparison Distress: *None*			72.6
Some		M08_0141	22.5
High			5.0
Age (years)		M08_0114	38.9
Male (Dummy)		M08_0113	46.1
Living in Partnership (Dummy)		M08_0115	60.2
Having Children (Dummy)		M08_0116	69.5
Labour Market Status: *No Workforce*			32.7
(Self-)Employed		M08_0121	62.6
Unemployed			4.8
Qualification: *Unskilled*			3.6
Still in Training		M08_0120	13.8
Skilled			47.6
Academic			35.0
Personal Net Income in DM		M08_0169	826.4
Living in a City >100,000 Residents (Dummy)		M08_0178	28.3
Nationalist Identity (Dummy)		M08_0012	72.1
Strength of Contacts to Relatives: *None*			21.7
Low		M08_0138	30.0
High			48.3
Strength of Contacts to Friends: *None*			33.6
Low		M08_0139	29.9
High			36.5
Neuroticism (Dummy)		M08_0103 M08_0105	45.9
Openness (Dummy)		M08_0091 M08_0092	80.3
Agreeableness (Dummy)		M08_0087	85.6
Extraversion (Dummy)		M08_0161	28.8
Conscientiousness (Dummy)		M08_0088	93.0
Wealth Gap to West German Relatives or Friends:			
High	*[Wealth West >> Wealth East]*		55.4
Low	*[Wealth West > Wealth East]*		39.5
None	*[Wealth West = Wealth East]*	M08_0140	3.3
Negative	*[Wealth West < Wealth East]*		1.5
Very negative	*[Wealth West << Wealth East]*		0.3
Observations			940

Notes: Statistics for variables are based on the regression sample ('Against Political Rights for Immigrants' table 1, columns (1)).

Table A2: First stage regression (cf. table 1): Income comparison distress

Endogenous Regressor: Income comparison Distress	Against Political Rights for Immigrants (1)	Right-wing Political Attitude (2)	Antipathy towards Foreigners from Low-wage Countries (3)
Wealth Gap to West Germans	0.174*** [0.034]	0.161*** [0.036]	0.175*** [0.034]
Age	-0.005*** [0.002]	-0.004*** [0.002]	-0.005*** [0.002]
Male	-0.011 [0.038]	-0.004 [0.039]	-0.013 [0.038]
Living in a Partnership	0.029 [0.044]	0.033 [0.046]	0.025 [0.044]
Having Children	0.034 [0.056]	0.039 [0.059]	0.029 [0.057]
Labour Market Status (Base Group: *None*)			
(Self-)Employed	0.006 [0.064]	0.024 [0.067]	0.010 [0.065]
Unemployed	-0.146 [0.100]	-0.141 [0.104]	-0.144 [0.100]
Qualification (Base Group: *Unskilled*)			
Still in Training	-0.031 [0.118]	-0.039 [0.138]	-0.026 [0.119]
Skilled	0.146 [0.093]	0.138 [0.110]	0.151 [0.093]
Academic	0.058 [0.097]	0.051 [0.114]	0.065 [0.097]
Personal Income (log)	-0.054 [0.050]	-0.061 [0.053]	-0.053 [0.052]
Living in a City	0.095** [0.041]	0.117*** [0.043]	0.089** [0.042]
Nationalist Identity	-0.014 [0.045]	0.012 [0.047]	-0.015 [0.045]

Notes: Significance levels: * $p<0.10$; ** $p<0.05$; *** $p<0.01$. Robust standard errors in parentheses; constant not reported.

Table A3a: Antipathy towards specific low-wage countries

	Poland	Russia	Turkey	Vietnam	Romania	Cuba
Income comparison Distress	0.880** [0.363]	1.045*** [0.381]	0.815** [0.384]	0.823* [0.437]	1.006*** [0.332]	0.803** [0.388]
Strength of Peer Contacts	Yes	Yes	Yes	Yes	Yes	Yes
Personality Traits (Big 5)	Yes	Yes	Yes	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	909	908	907	908	906	907

Notes: Significance levels: * $p<0.10$; ** $p<0.05$; *** $p<0.01$. Robust standard errors in parentheses; constant not reported. IV-PROBIT results. Instrument: Wealth gap relative to West German relatives or friends.

Table A3b: Antipathy towards specific high-wage countries

	USA	Austria	France
Income comparison Distress	-0.024 [0.067]	-0.004 [0.016]	-0.029 [0.021]
Strength of Peer Contacts	Yes	Yes	Yes
Personality Traits (Big 5)	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes
Observations	904	906	905

Notes: Significance levels: * $p<0.10$; ** $p<0.05$; *** $p<0.01$. Robust standard errors in parentheses. IV-2SLS results. Instrument: Wealth gap relative to West German relatives or friends.

Table A4: Models with alternatively coded dependent variables

	Against Political Rights for Immigrants (Without Indecisive) *IVPROBIT* (1)	Right-wing Political Attitude (Right-wing >=7) *IVPROBIT* (2a)	Right-wing Political Attitude (1...Left to 10...Right) *2SLS* (2b)
Income comparison Distress	0.877** [0.399]	1.207*** [0.374]	2.065** [0.812]
Strength of Peer Contacts	Yes	Yes	Yes
Personality Traits (Big 5)	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes
Observations	723	829	829

Table A4 (continued): Models with alternatively coded dependent variables

	Antipathy – Foreigners Low-wage Countries (Antipathy < 0) *IVPROBIT* (3a)	Antipathy – Foreigners Low-wage Countries (-5 Sympathy to 5 Antipathy) *2SLS* (3b)
Income comparison Distress	0.999*** [0.314]	1.115* [0.589]
Strength of Peer Contacts	Yes	Yes
Personality Traits (Big 5)	Yes	Yes
Other Controls	Yes	Yes
Observations	904	904

Notes: Significance levels: * $p<0.10$; ** $p<0.05$; *** $p<0.01$. Robust standard errors in parentheses. Instrument: Wealth gap relative to West German relatives or friends. Note that in regression (3b) the antipathy variable is adversely coded in comparison to the original survey variable ranging from -5 (antipathy) to 5 (sympathy).

Table A5: Models only for high vs. low wealth gap

	Against Political Rights for Immigrants (1)	Right-wing Political Attitude (2)	Antipathy – Foreigners Low-wage Countries (3)
Income comparison Distress	0.732*** [0.259]	1.347*** [0.227]	0.877*** [0.304]
Strength of Peer Contacts	Yes	Yes	Yes
Personality Traits (Big 5)	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes
Observations	869	785	856

Notes: Significance levels: * $p<0.10$; ** $p<0.05$; *** $p<0.01$. Robust standard errors in parentheses. Instrument: Wealth gap relative to West German relatives or friends.

Table A6: Models with distress vs. no distress (binary endogenous regressor)

	Against Political Rights for Immigrants (1)	Right-wing Political Attitude (2)	Antipathy – Foreigners Low-wage Countries (3)
Income comparison Distress	0.947** [0.425]	2.066*** [0.159]	1.300*** [0.476]
Strength of Peer Contacts	Yes	Yes	Yes
Personality Traits (Big 5)	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes
Observations	917	829	904

Notes: Significance levels: * $p<0.10$; ** $p<0.05$; *** $p<0.01$. Robust standard errors in parentheses. Instrument: Wealth gap relative to West German relatives or friends.

Table A7: Sample restricted to respondents with *close* West German contacts

	Against Political Rights for Immigrants (1)	Right-wing Political Attitude (2)	Antipathy – Foreigners Low-wage Countries (3)
Income comparison Distress	0.790** [0.395]	1.595*** [0.191]	0.935** [0.414]
Personality Traits (Big 5)	Yes	Yes	Yes
Other Controls	Yes	Yes	Yes
Observations	561	507	556

Notes: Significance levels: * $p<0.10$; ** $p<0.05$; *** $p<0.01$. Robust standard errors in parentheses. Instrument: Wealth gap relative to West German relatives or friends.

Table A8: Reliability of data

	SOEP Summer 1990 (Spring 1991) East Germans Sample > 17 Years	ALLBUS May 1991 East Germans Sample > 17 Years	ZA6016 September 1990 Sample >17 Years
Existence of West German Peers	84.9% (1991)	No Data	88.2%
Left-right-scheme (1 Left / 10 Right)	No Data	4.89	4.61
Qualification			
Academic	34.0%	39.2%	38.2%
Skilled	55.5%	53.0%	52.6%
Unskilled	6.2%	7.8%	4.0%
Male	49.1%	46.6%	46.2%
Age	46.0	45.4	41.1
No Child (Only Women)	22.7%	15.0%	21.5%
Original Sample Size (Without Age Restriction)	1,987	1,544	1,307

Notes: Since the SOEP is a household survey only data for the first person is used. Since the ALLBUS only contains persons 18 years old and above other samples are restricted to those persons. Therefore, in the table some small deviations in comparison to the descriptive statistics in table A1 can be seen.

Table A9: Assignment of Personal Net Incomes to Economic Status

	Very poor	Poor	Average	Good	Very Good
Lower bound	<=700	>700 <=900	>900 <=1200	>1200 <=2000	>2000
Upper bound	<=500	>500 <=700	>700 <=900	>900 <=1500	>1500

Notes: The Quartiles of the GDR Distribution of Personal Net Incomes in 1988/89 are – based on table A10 – approximated by: 25%-Q.: 750 M, 50%-Q.: 950 M, 75%-Q.: 1100 M. Due to the exchange rate of 1:1 we transform the GDR-Mark thresholds in corresponding DM thresholds to categorize the incomes in the sample.

Table A10: Distribution of Monthly Household Net Income (1988)

Income spans (M)	<800	800 1000	1000 1200	1200 1400	1400 1600	1600 1800	1800 2000	2000 2200	2200 2400	2400 2800	>2800
All Households											
Share %	4,5	6,4	6,4	6,3	7,3	10,5	13,1	12,6	9,9	12	10,7
Cumulative	*4,5*	*10,9*	*17,3*	*23,6*	*30,9*	*41,4*	*54,5*	*67,1*	*77*	*89*	*99,7*
One Adult Households											
Share %	25,6	28,1	22,2	14,1	5,4	2,2	1	0,4	0,4	0,3	0,3
Cumulative	*25,6*	*53,7*	*75,9*	*90*	*95,4*	*97,6*	*98,6*	*99*	*99,4*	*99,7*	*100*
Two Adult Households											
Share %	0,3	1	3,3	7,7	13,2	17,6	18,5	14,4	9,9	9,5	4,6
Cumulative	*0,3*	*1,3*	*4,6*	*12,3*	*25,5*	*43,1*	*61,6*	*76*	*85,9*	*95,4*	*100*

Source: Statistical Yearbook of GDR 1990